

**HYDROGEOLOGICAL INVESTIGATION REPORT
HIGHWAY 404 EXTENSION
FROM GREEN LANE TO QUEENSVILLE SIDEROAD
ONTARIO**

VOLUME 2

G.W.P. 2109-05-00

Geocres Number: 31D-491

Report to

Philips Engineering / Hatch Mott MacDonald Joint Venture

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GRAIN SIZE DISTRIBUTION CURVES

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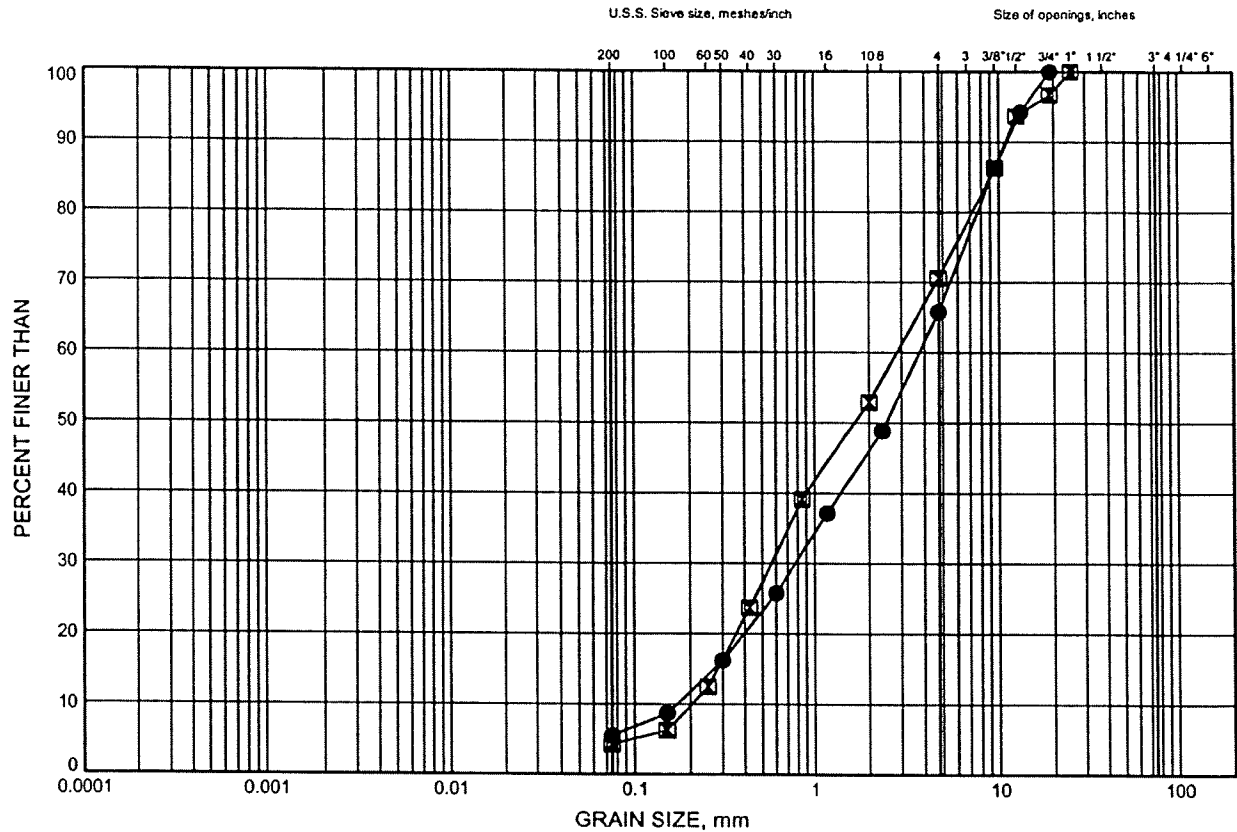
ATTERBERG LIMITS PLOTS

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Hwy 404 Extension GRAIN SIZE DISTRIBUTION

FIGURE E1

GRAVELLY SAND FILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-35	0.46	277.19
◻	08-41	0.46	263.24

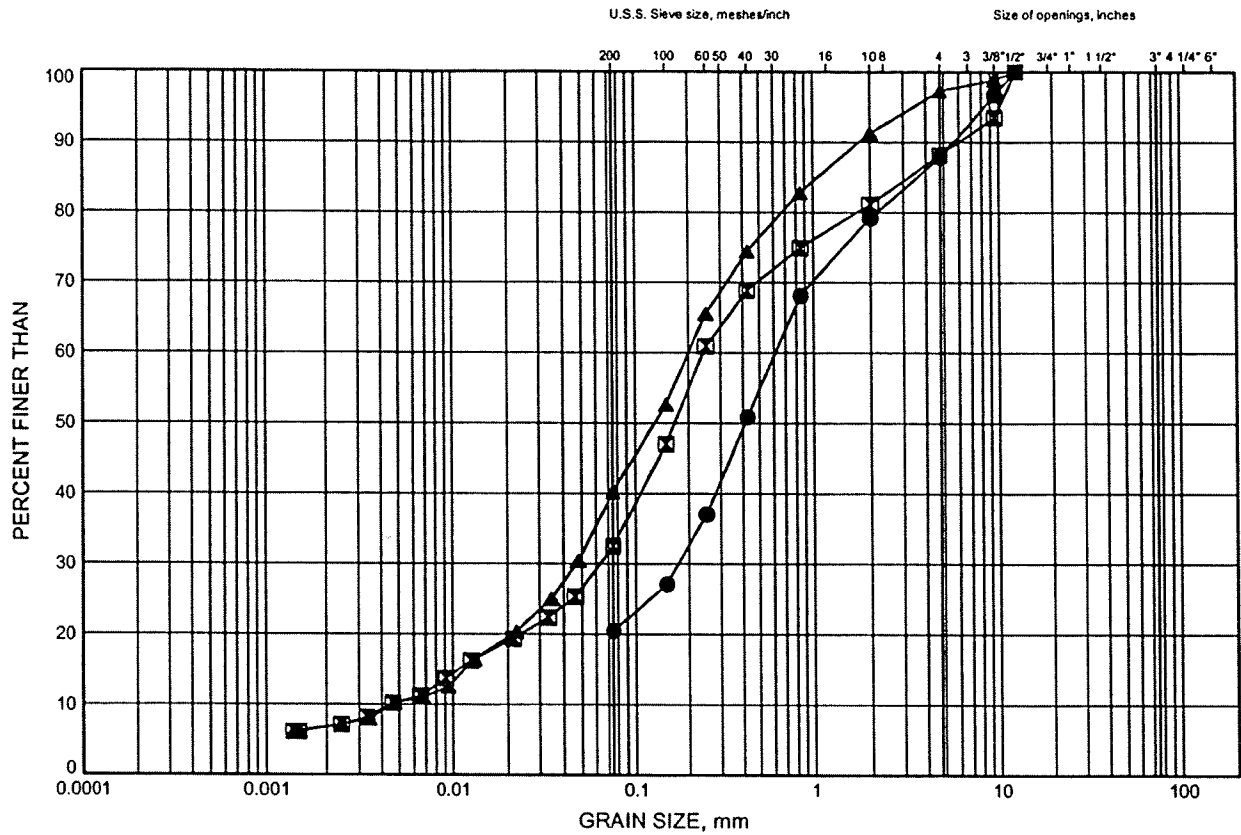


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FIGURE E2

SILTY SAND FILL & SAND FILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-42	0.91	263.53
■	08-43	0.99	262.87
▲	08-47	2.82	254.56

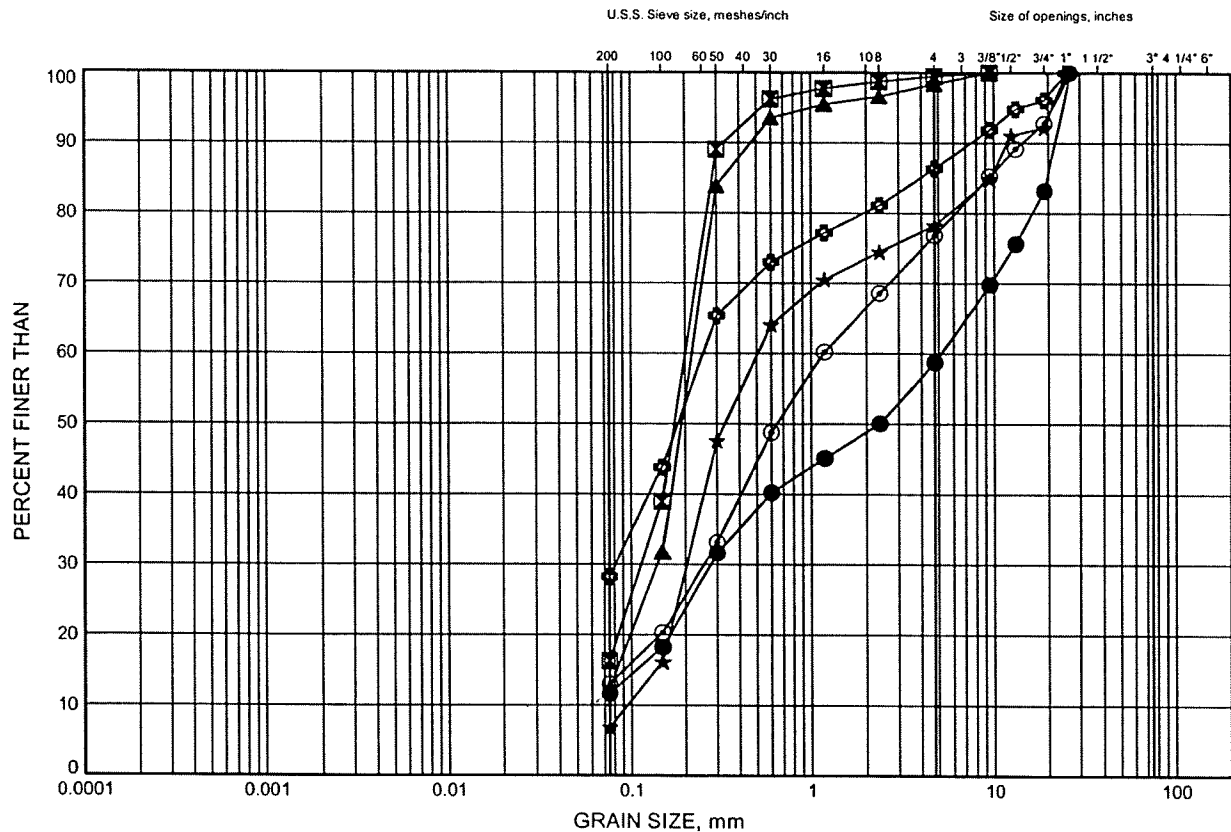


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FIGURE E3

SAND to SAND & GRAVEL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-18	1.68	265.33
⊠	08-24	13.75	
▲	08-25	15.28	
★	08-45	10.79	247.48
⊙	08-48	3.35	262.28
⊕	QSR3-2	10.60	244.91

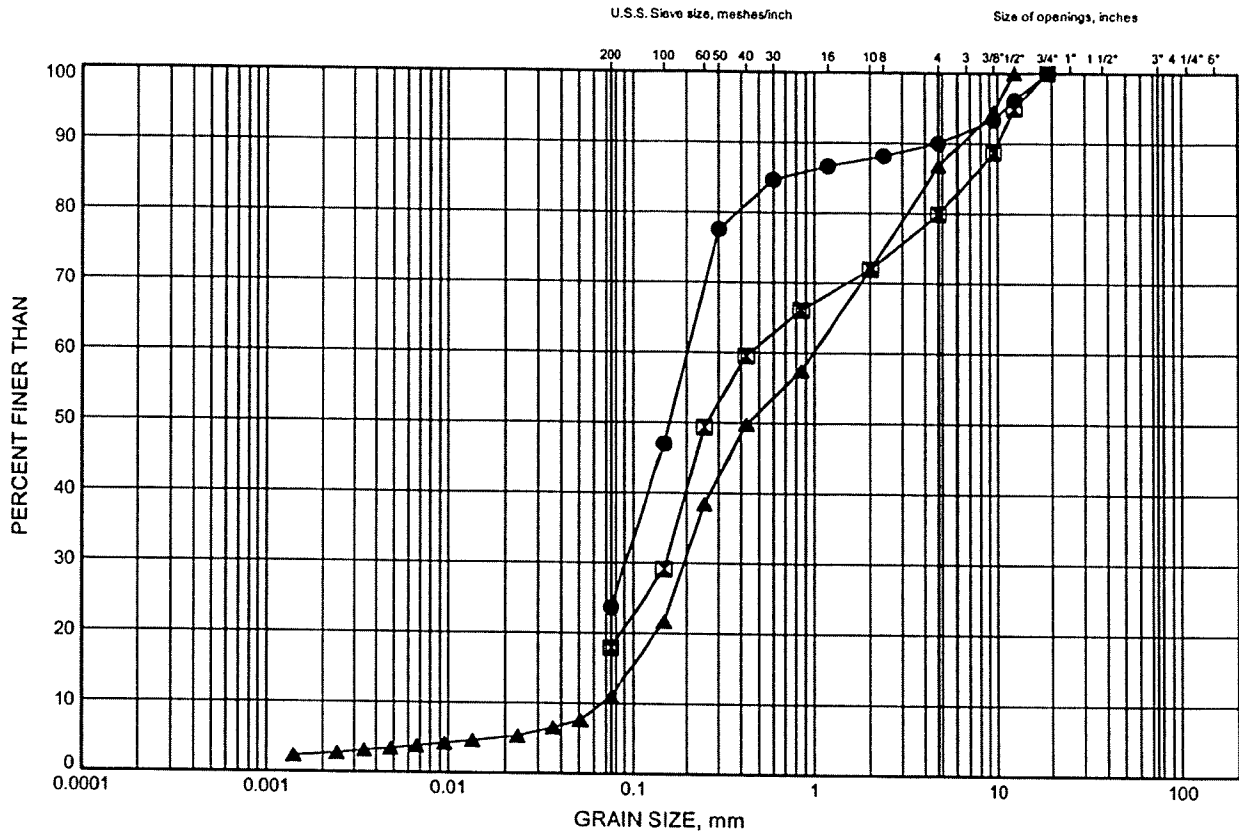


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FIGURE E4

SAND to SAND & GRAVEL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

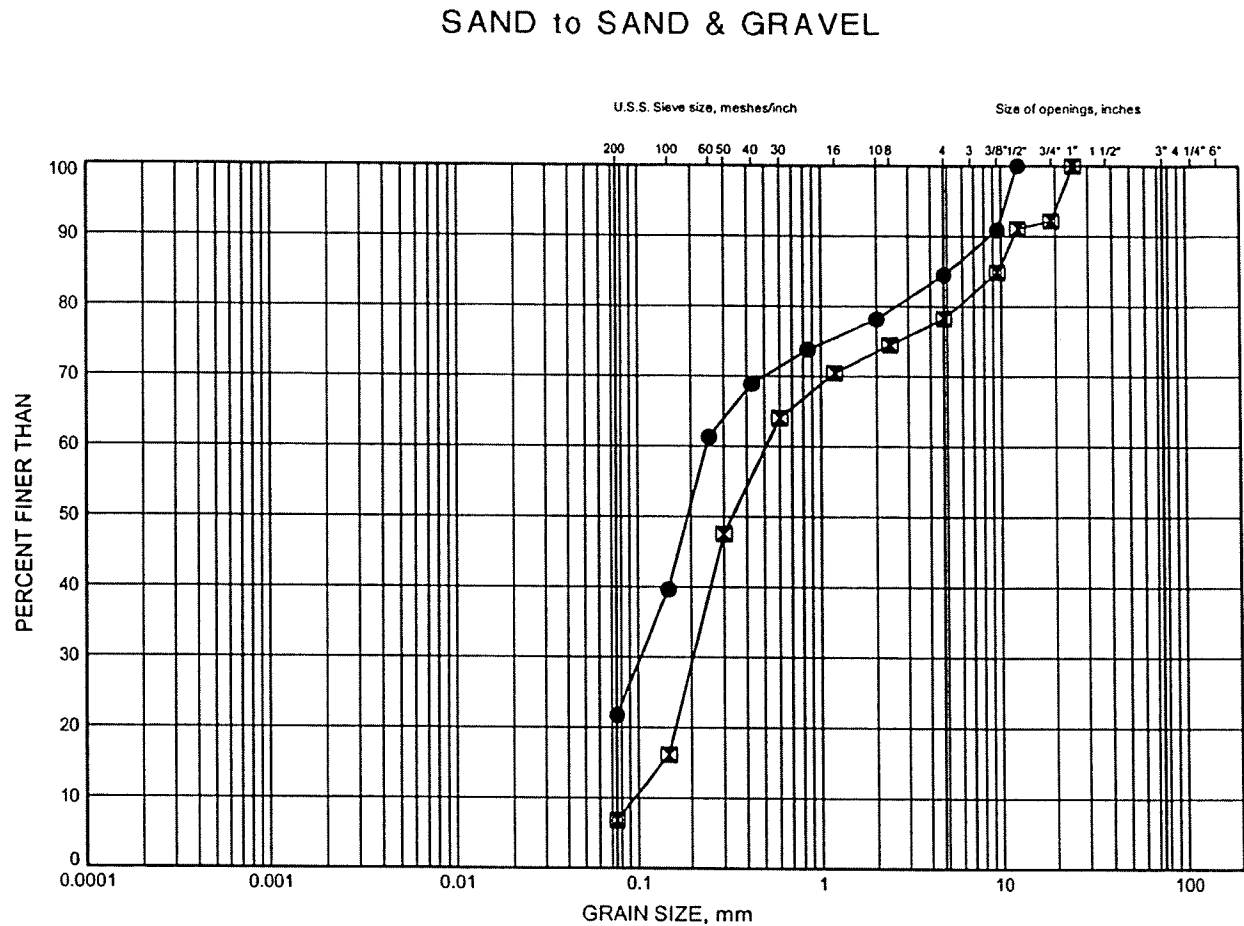
SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-36	1.75	271.73
⊠	08-44	2.51	256.58
▲	08-61	1.07	283.83



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FIGURE E5



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

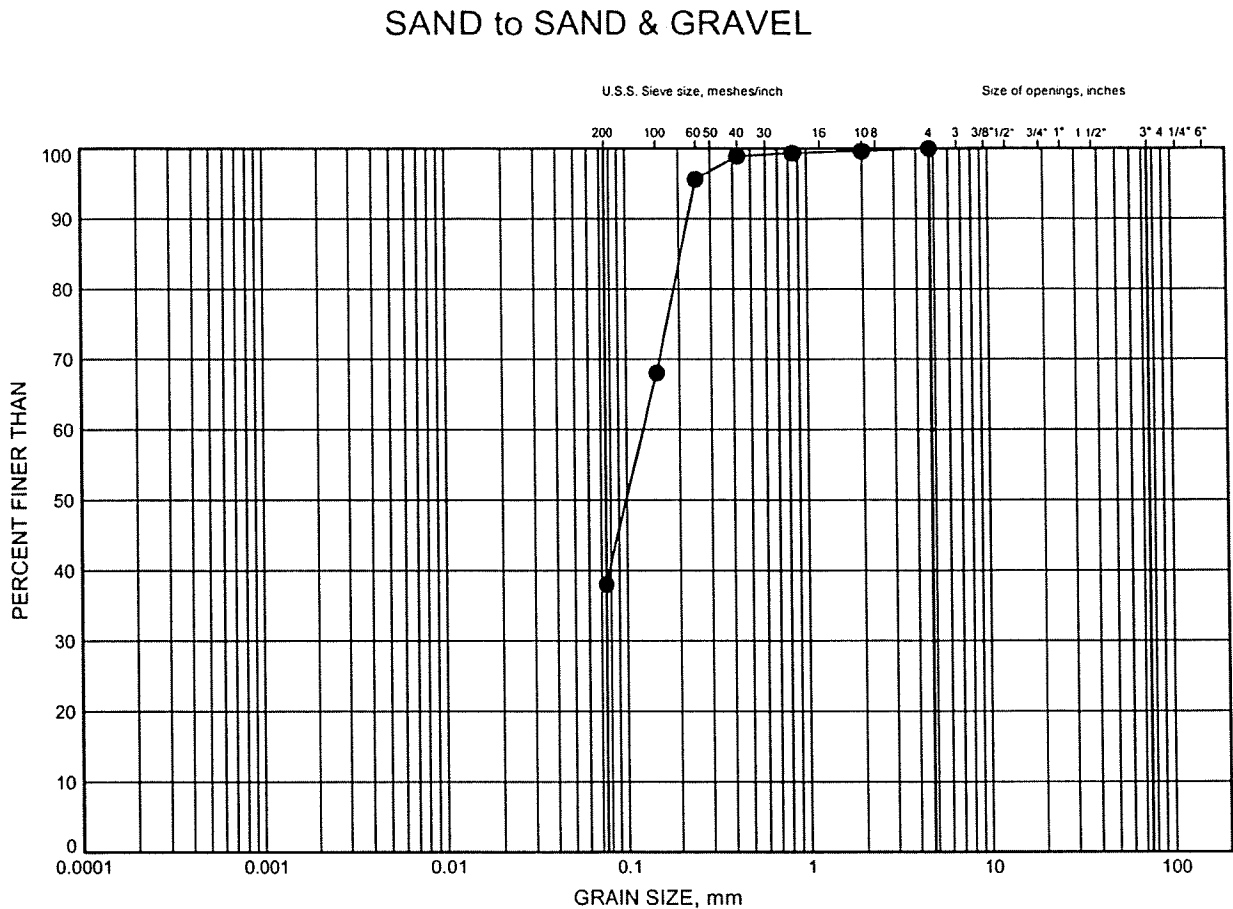
SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-45	9.27	249.00
☒	08-45	10.79	247.48



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FIGURE E6



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	QSR3-3	10.60	245.24

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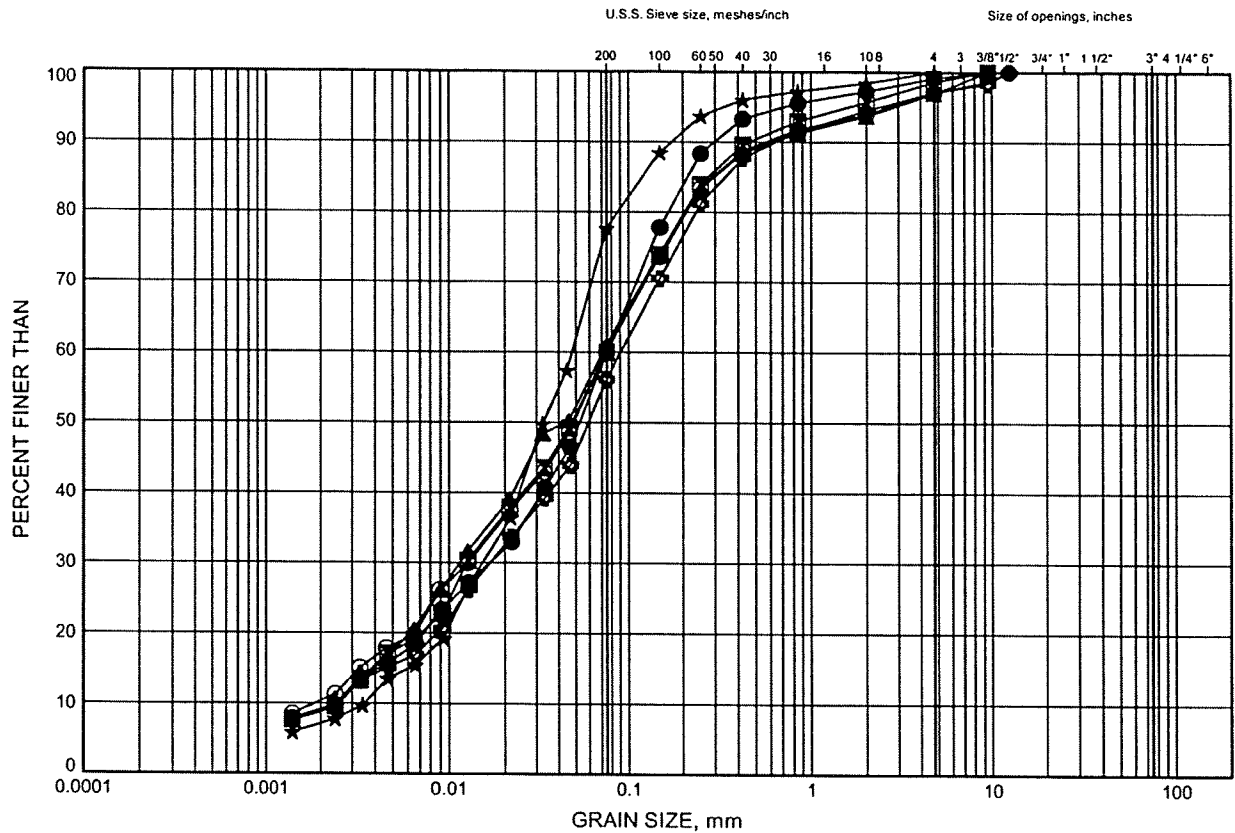
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FIGURE E7

SAND & SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-15	1.07	289.40
⊠	08-15	3.26	287.21
▲	08-15	6.17	284.30
★	08-16	1.83	287.79
⊙	08-16	2.59	287.03
⊛	08-17	1.83	286.35

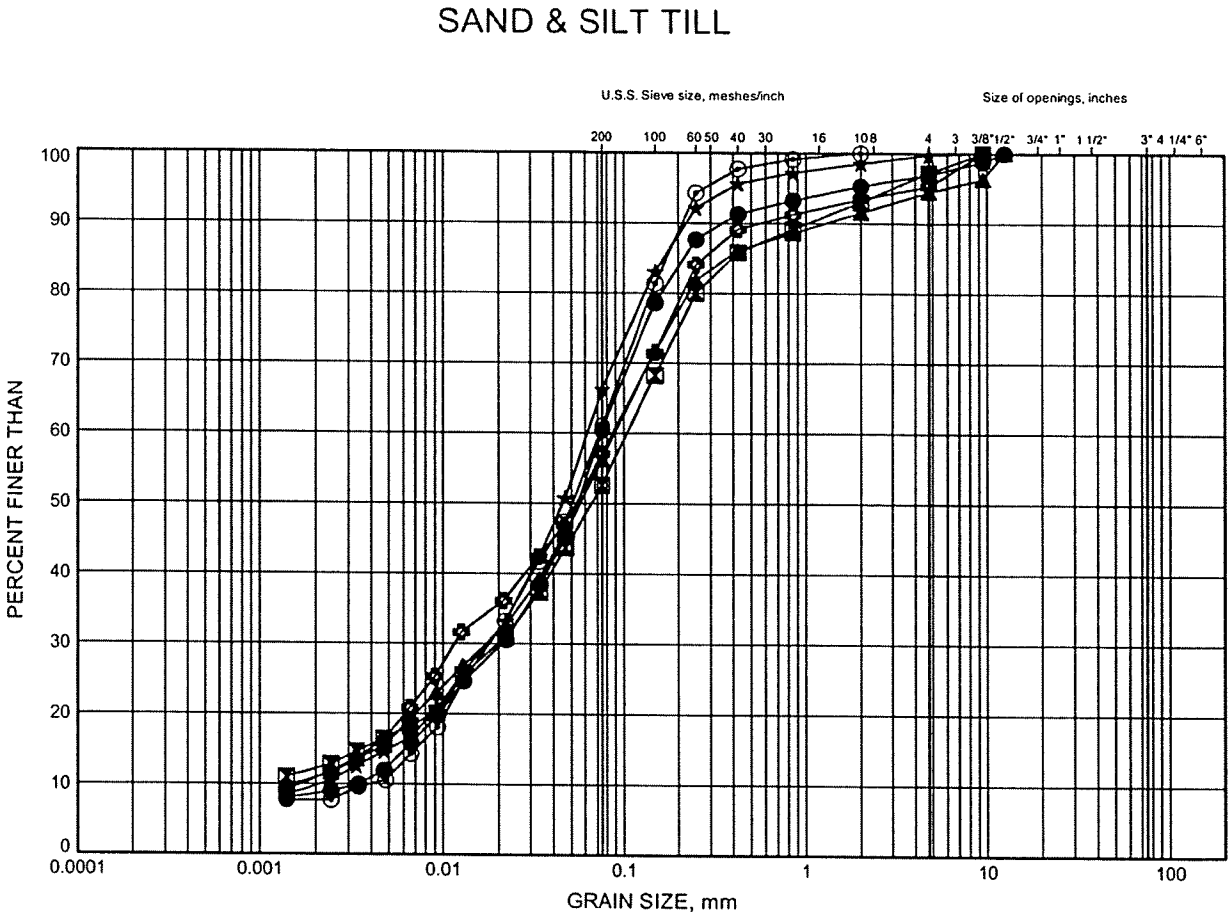
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FIGURE E8



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-18	7.67	259.34
⊠	08-19	6.13	262.47
▲	08-20	7.68	261.02
★	08-21	6.17	261.93
⊙	08-22	3.25	264.76
⊕	08-23	4.65	269.29

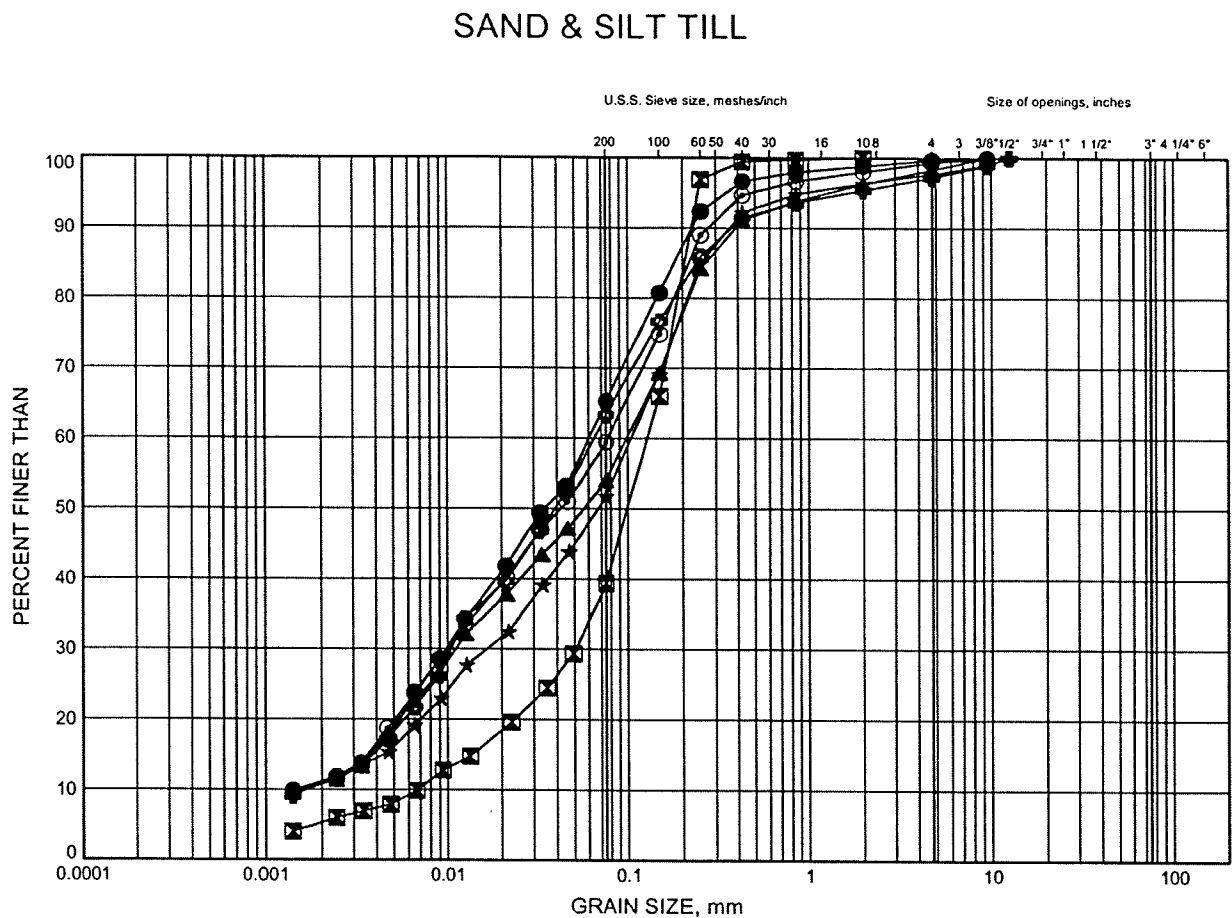
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FIGURE E9



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-23	7.70	266.24
⊠	08-23	12.27	261.67
▲	08-24	2.51	
★	08-25	0.99	
⊙	08-25	3.28	
⊕	08-26	1.75	

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FIGURE E10

U.S.S. Sieve size, meshes/inch

Size of openings, inches

PERCENT FINER THAN

GRAIN SIZE, mm

SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-26	6.17	
⊠	08-26	18.31	
▲	08-43	3.28	260.58
★	08-44	4.80	254.29
⊙	08-44	7.85	251.24
⊕	08-44	10.73	248.36

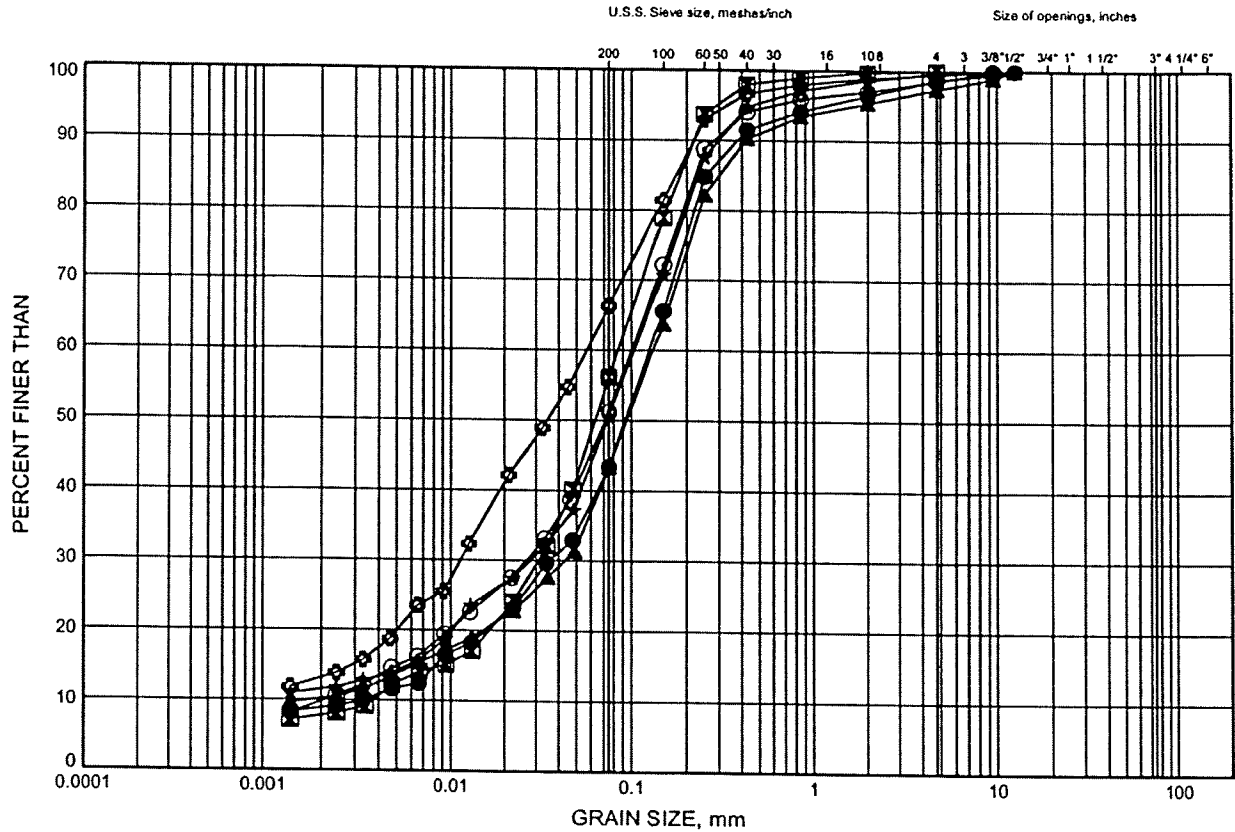


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FIGURE E11

SAND & SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-33	1.75	282.27
⊠	08-33	4.62	279.40
▲	08-33A	1.83	284.37
★	08-33A	3.35	282.85
⊙	08-34	2.51	278.82
⊕	08-34	4.80	276.53

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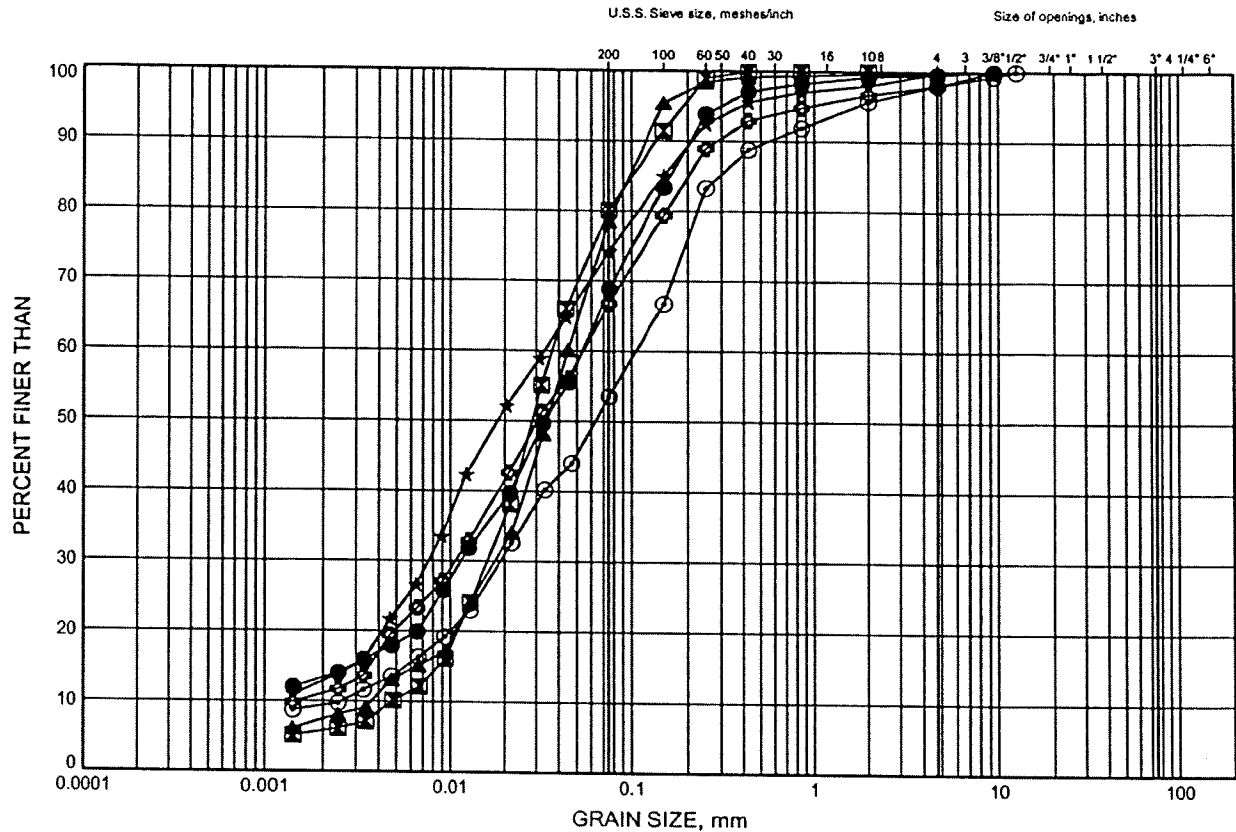
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FIGURE E12

SAND & SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

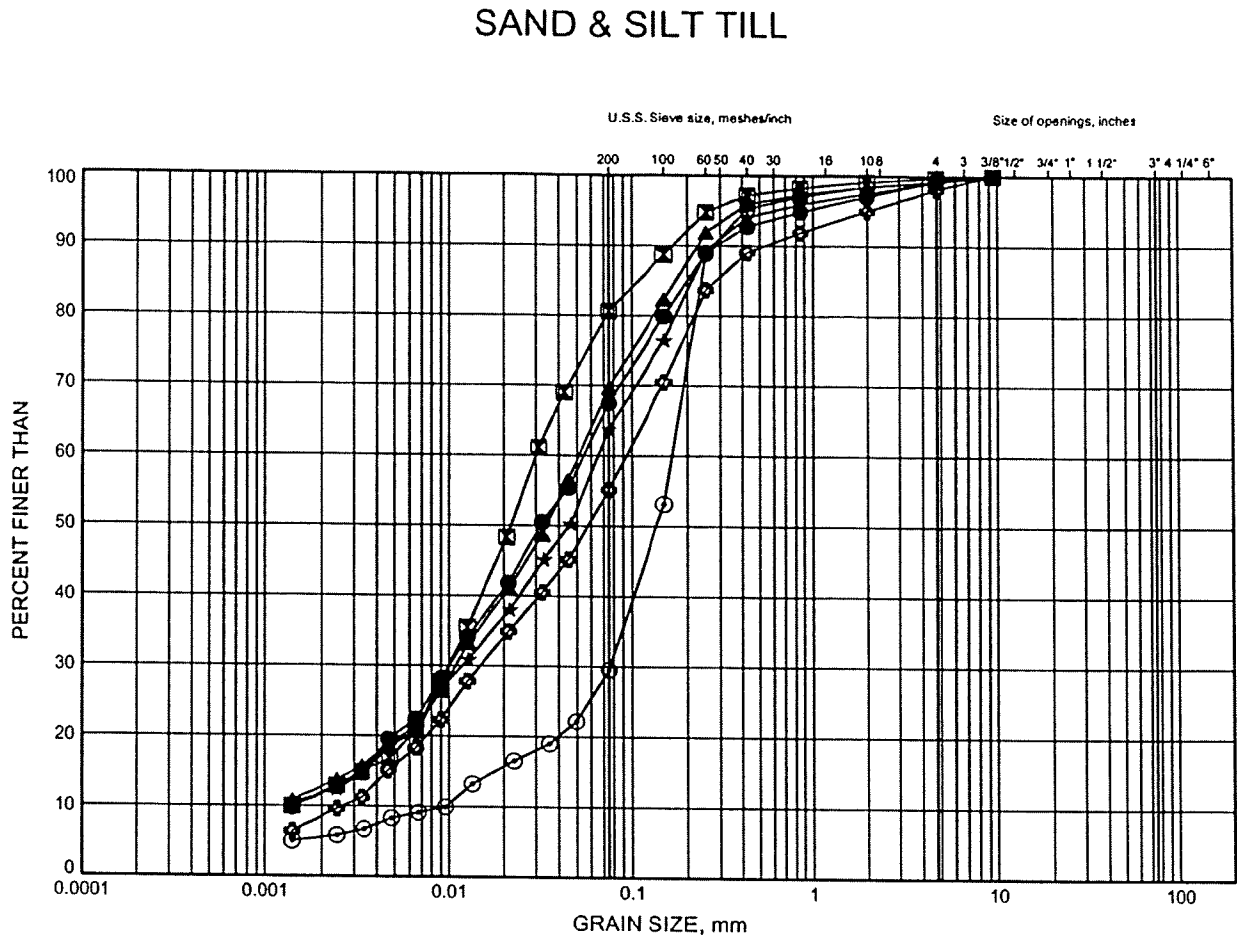
SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-35	2.51	275.14
⊠	08-35	4.71	272.94
▲	08-36	3.12	270.36
★	08-36	6.14	267.34
⊙	08-37	2.51	267.62
⊕	08-37	3.26	266.87



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FIGURE E13



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-37	6.14	263.99
⊠	08-38	2.51	264.34
▲	08-38	10.71	256.14
★	08-39	9.28	249.67
⊙	08-39	10.97	247.98
⊗	08-40	10.69	250.62

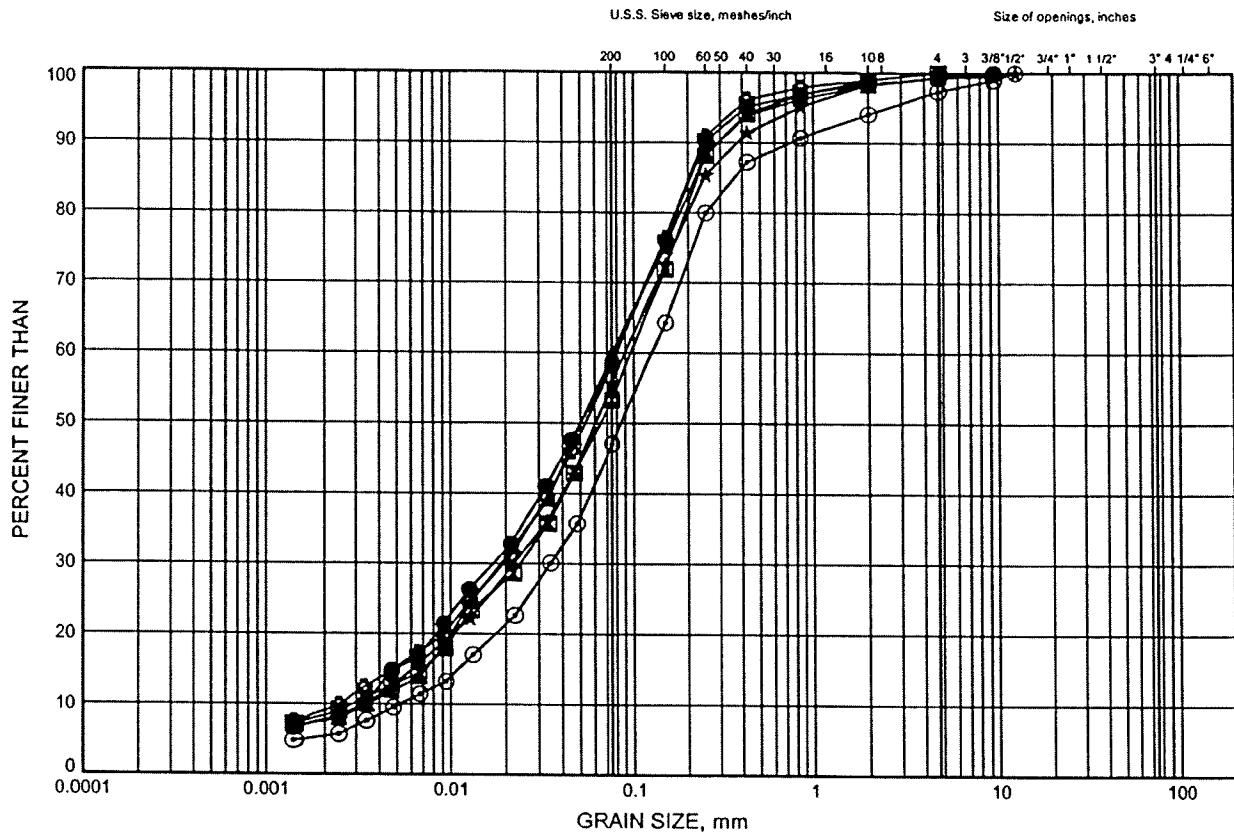


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FIGURE E14

SAND & SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE
FINE GRAINED	SAND			GRAVEL		SIZE

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-41	6.16	257.54
⊠	08-42	4.72	259.72
▲	08-43	3.28	260.58
★	08-44	4.80	254.29
⊙	08-44	7.85	251.24
⊛	08-44	10.73	248.36

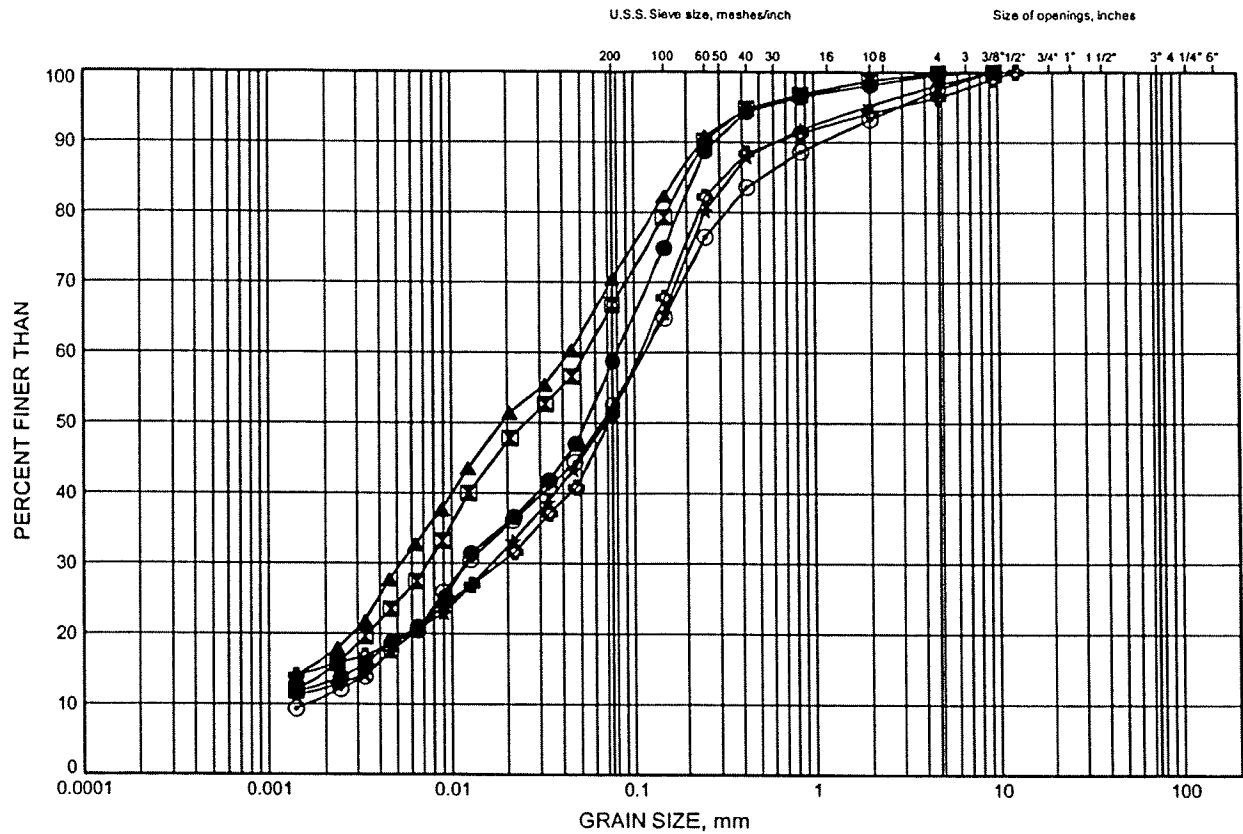


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FIGURE E15

SAND & SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

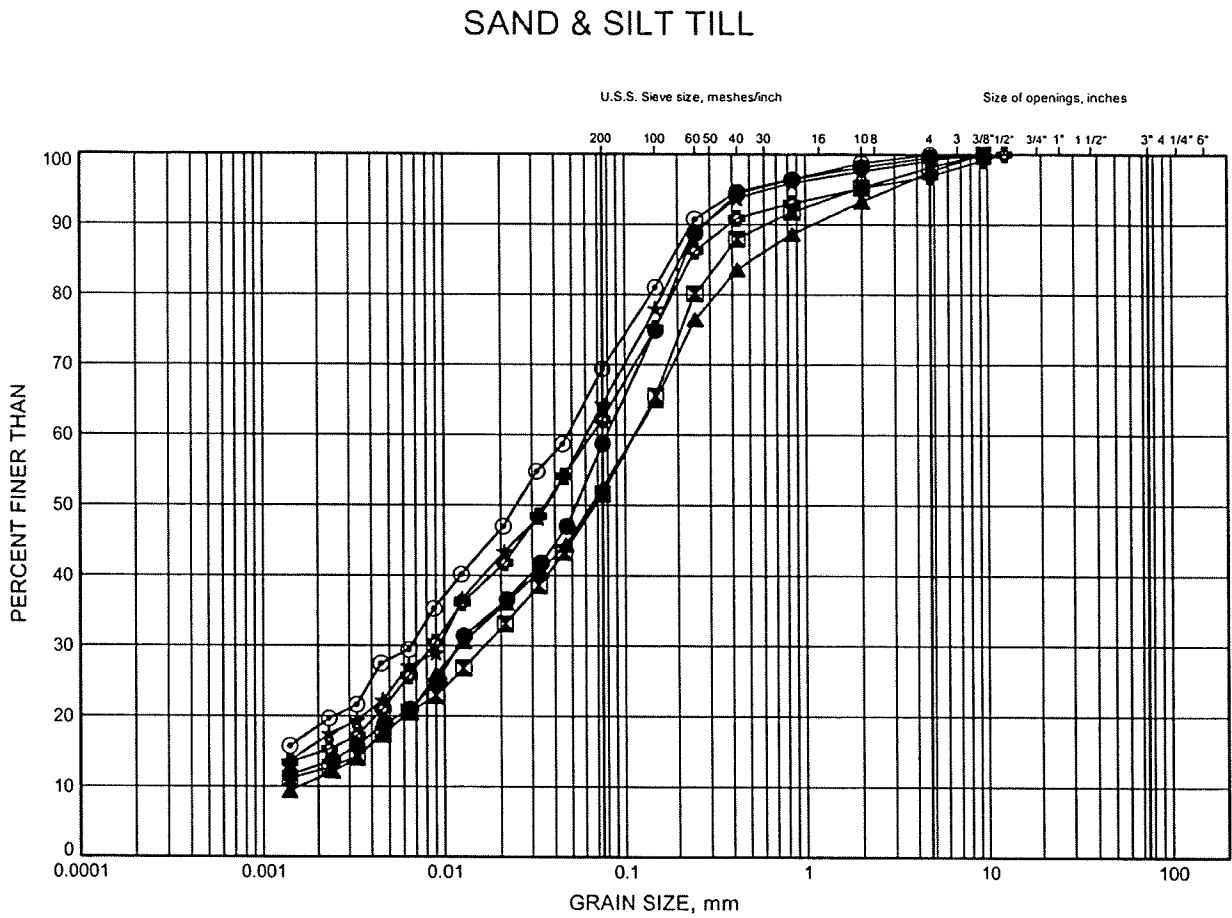
SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-45	3.28	254.99
⊠	08-45	7.85	250.42
▲	08-45	15.47	242.80
★	08-45	19.87	238.40
⊙	08-46	4.88	251.82
⊛	08-61	2.44	282.46



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FIGURE E16



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-45	3.28	254.99
⊠	08-45	19.87	238.40
▲	08-46	4.88	251.82
★	08-46	14.02	242.68
⊙	08-46	17.07	239.63
⊕	08-46	18.52	238.18

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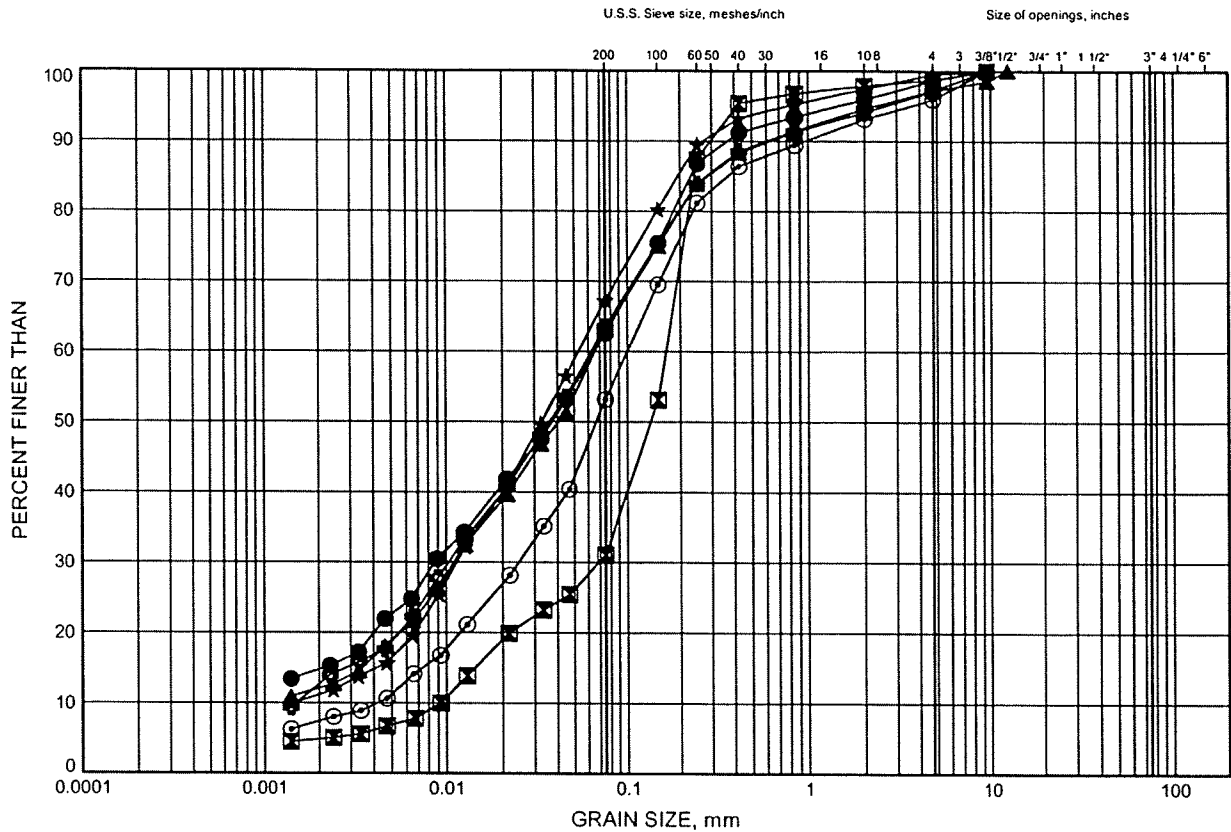
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FIGURE E17

SAND & SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE
FINE GRAINED	SAND			GRAVEL		SIZE

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-46	20.12	236.58
⊠	08-50	4.62	259.76
▲	08-51	2.59	261.05
★	08-51	6.17	257.47
⊙	08-51	9.18	254.46
⊛	08-52	1.07	261.31

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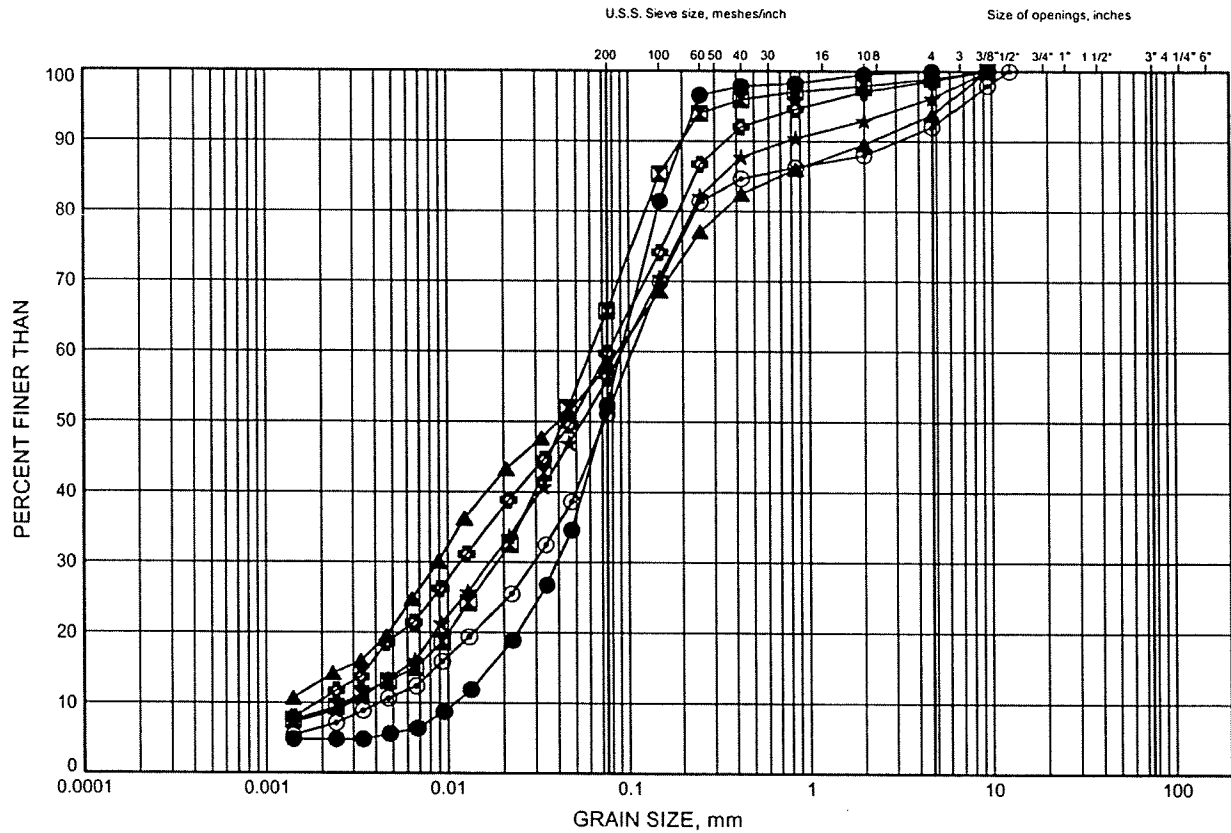
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FIGURE E18

SAND & SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-52	2.59	259.79
⊠	08-52	9.35	253.03
▲	08-53	3.47	258.67
★	08-53	9.26	252.88
⊙	08-54	7.83	253.17
⊕	MW 08-02	2.51	255.85

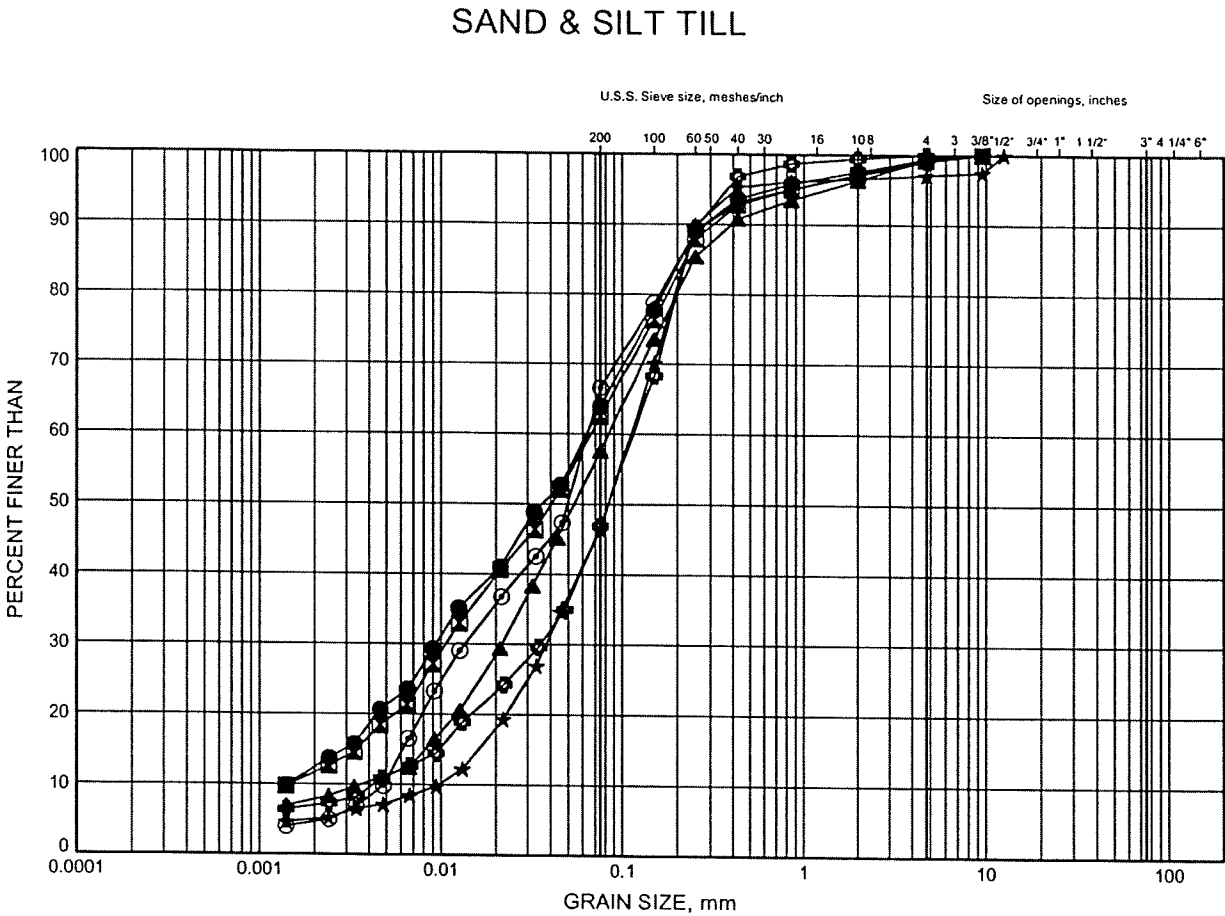
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FIGURE E19



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	MW 08-02	3.28	255.08
⊠	MW 08-02	6.32	252.04
▲	MW 08-03	3.35	260.27
★	MW 08-03	4.88	258.74
⊙	QSR2-3	6.40	250.43
⊕	QSR3-1	9.45	245.92

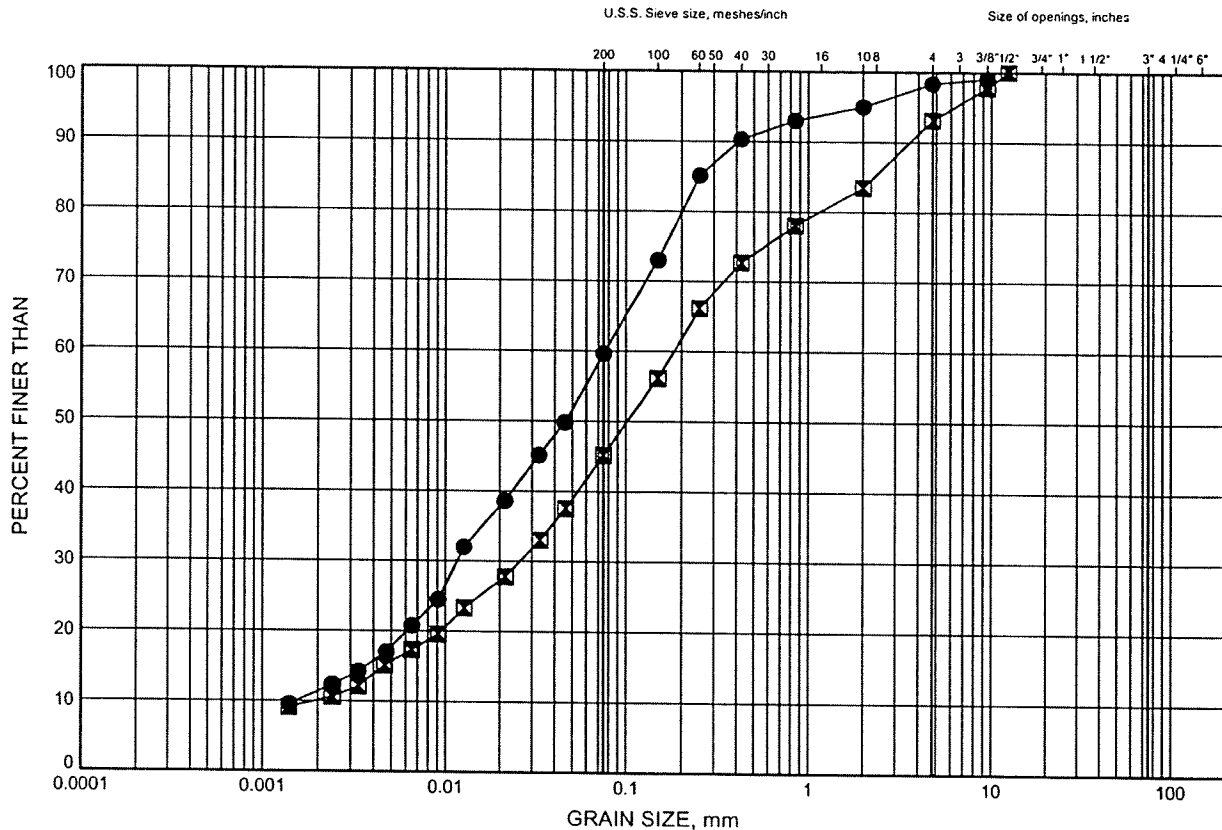


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FIGURE E20

SAND & SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

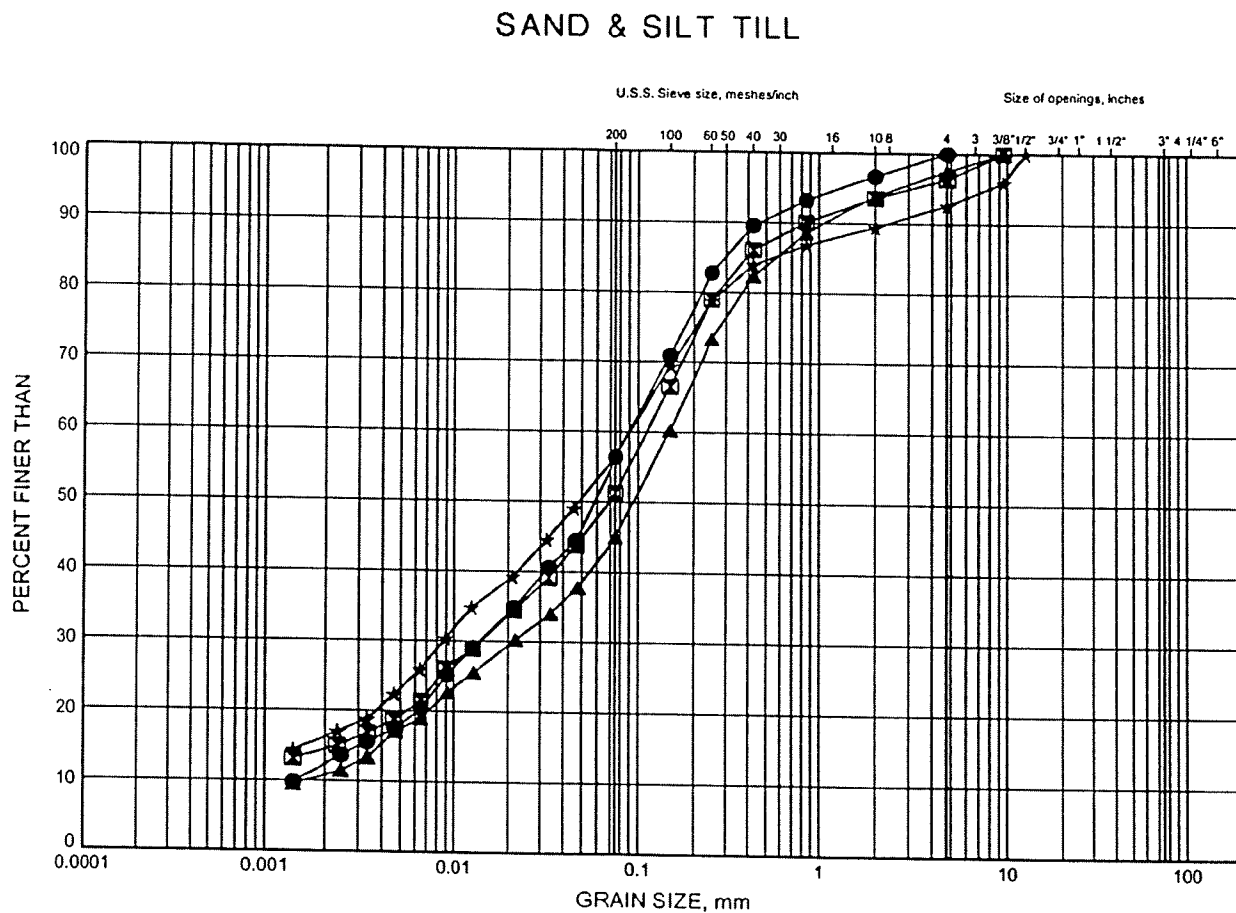
SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	QSR3-3	14.02	241.82
◻	QSR4-3	7.92	249.23



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FIGURE E21



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	RW09-1	2.58	287.44
⊠	RW09-1	4.71	285.31
▲	RW09-2	3.12	285.20
★	RW09-3	6.17	280.87

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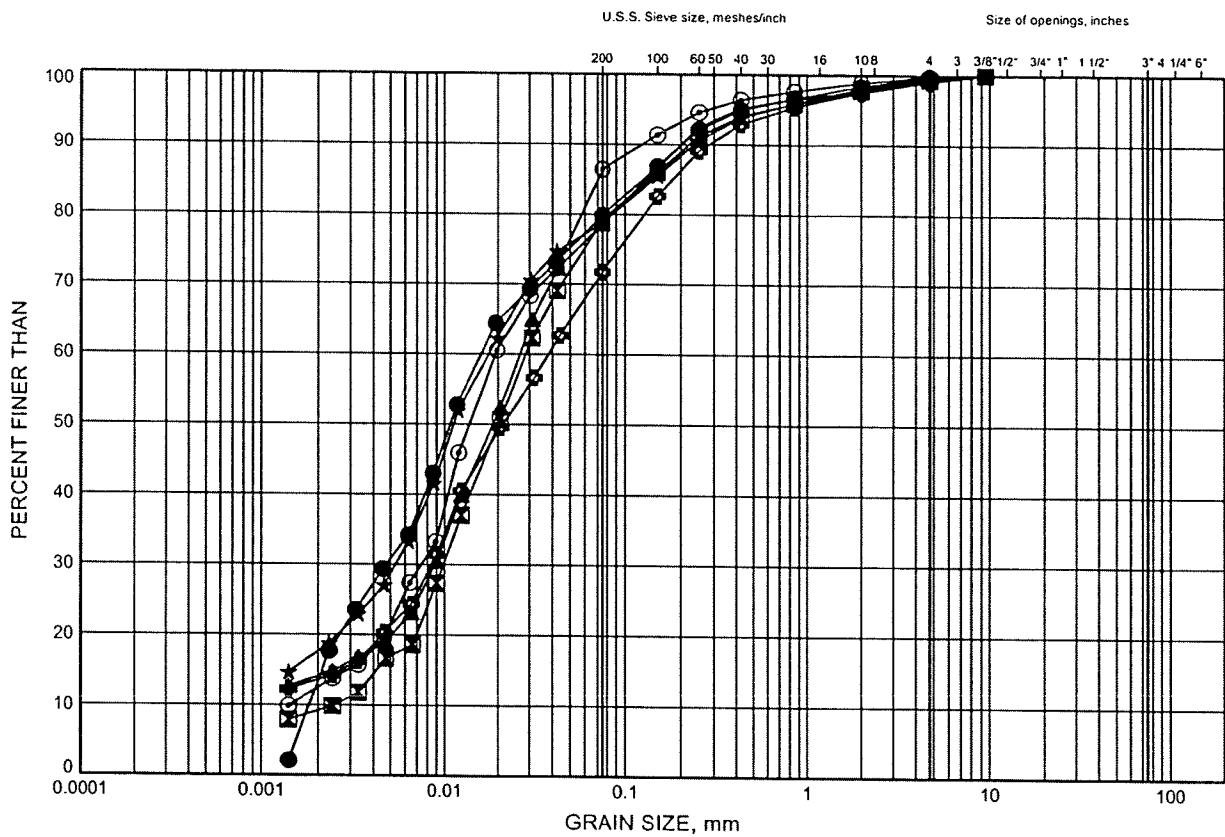
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FIGURE E22

SANDY SILT TILL to SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-16	4.76	284.86
⊠	08-17	3.35	284.83
▲	08-18	4.64	262.37
★	08-19	2.51	266.09
⊙	08-20	1.75	266.95
⊕	08-20	3.28	265.42



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FIGURE E23

SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

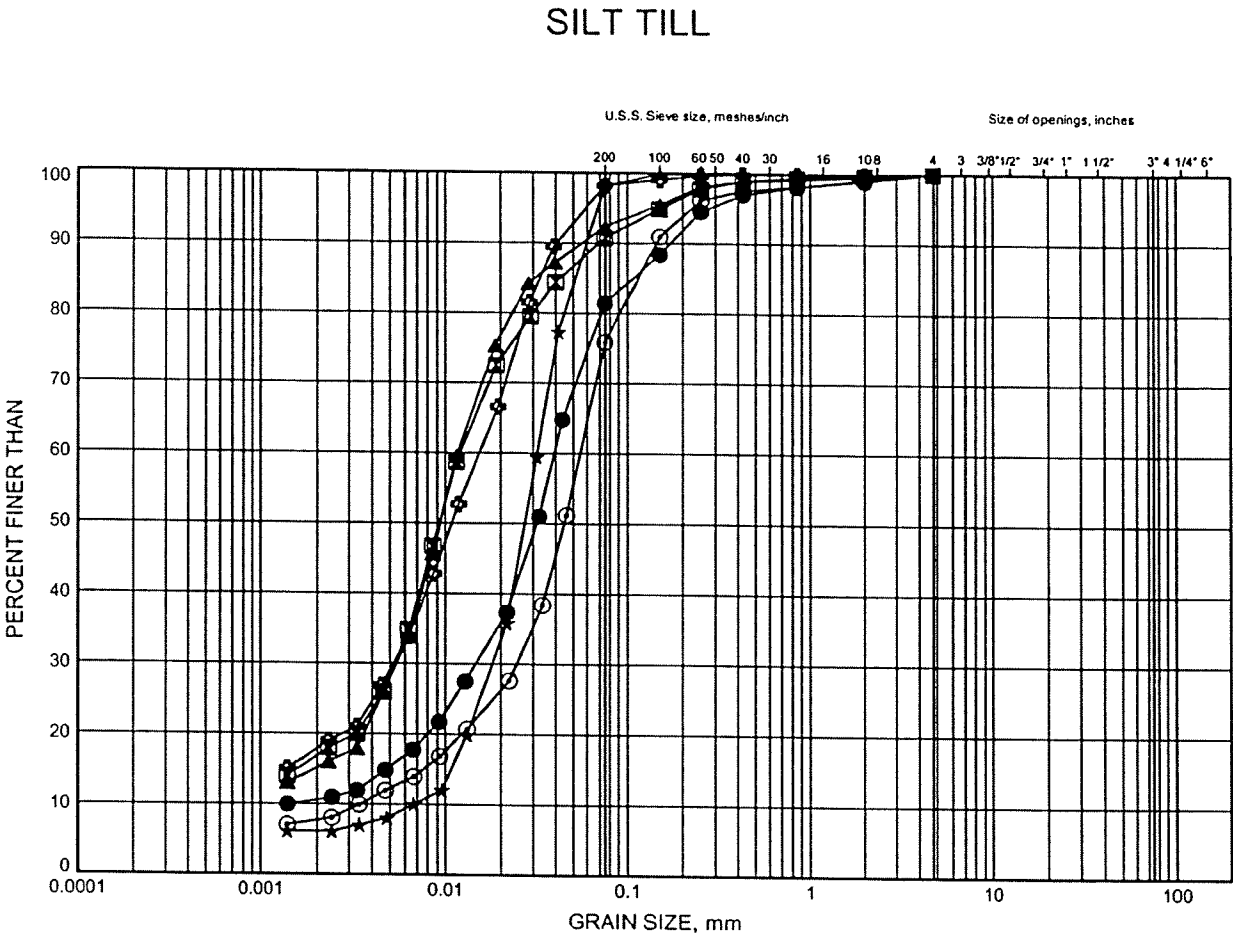
SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-21	3.28	264.82
⊠	08-23	1.83	272.11
▲	08-24	6.16	
★	08-24	10.72	
⊙	08-25	9.19	
⊛	08-26	6.17	



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FIGURE E24



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-33A	6.40	279.80
⊠	08-33A	10.97	275.23
▲	08-33A	14.02	272.18
★	08-47	24.52	232.86
⊙	08-61	9.45	275.45
⊕	08-61	10.97	273.93

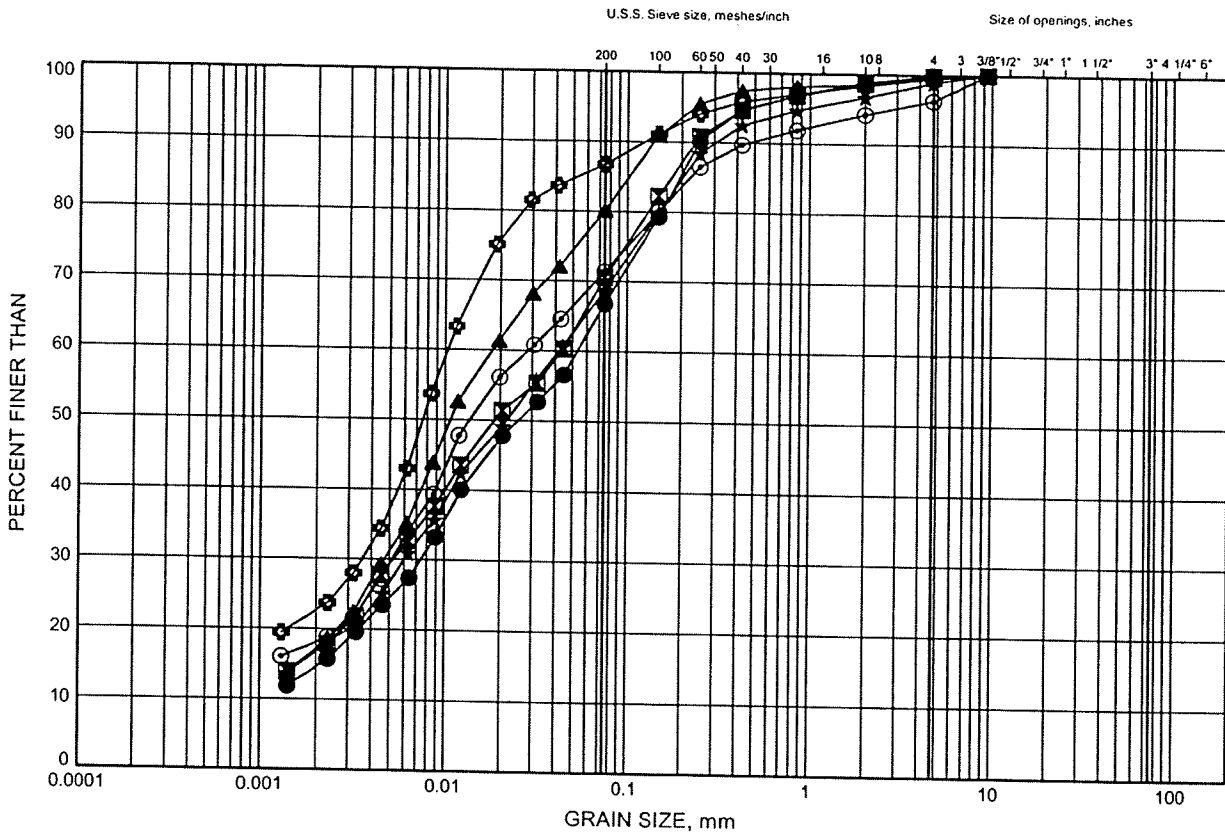


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Hwy 404 Extension GRAIN SIZE DISTRIBUTION

FIGURE E25

SANDY SILT TILL to SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-45	7.85	250.42
⊠	08-45	15.47	242.80
▲	08-46	7.92	248.78
★	08-47	6.32	251.06
⊙	08-47	7.92	249.46
⊕	08-47	12.50	244.88

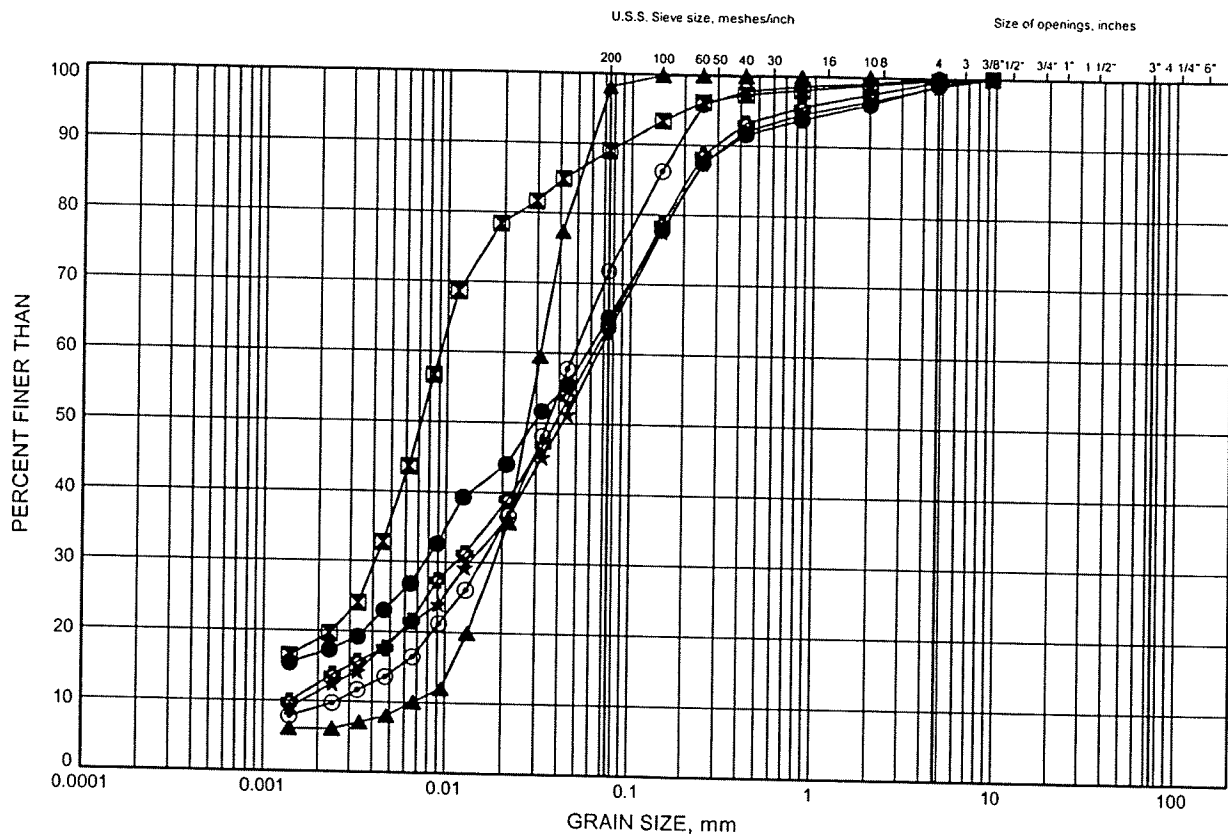


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FIGURE E26

SANDY SILT TILL to SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-47	17.07	240.31
⊠	08-47	20.12	237.26
▲	08-47	24.52	232.86
★	08-48	1.83	263.80
⊙	08-48	6.23	259.40
⊕	08-49	1.07	265.02

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FIGURE E27

U.S.S. Sieve size, meshes/inch

Size of openings, inches

200 100 60 50 40 30 16 10 8 4 3 3/8" 1/2" 1" 1 1/2" 3" 4 1/4" 6"

PERCENT FINER THAN

100
90
80
70
60
50
40
30
20
10
0

0.0001 0.001 0.01 0.1 1 10 100

GRAIN SIZE, mm

SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-49	6.40	259.69
⊠	08-50	2.59	261.79
▲	08-50	6.29	258.09
★	08-54	2.59	258.41
⊙	08-54	10.72	250.28
⊛	08-55	1.83	259.84

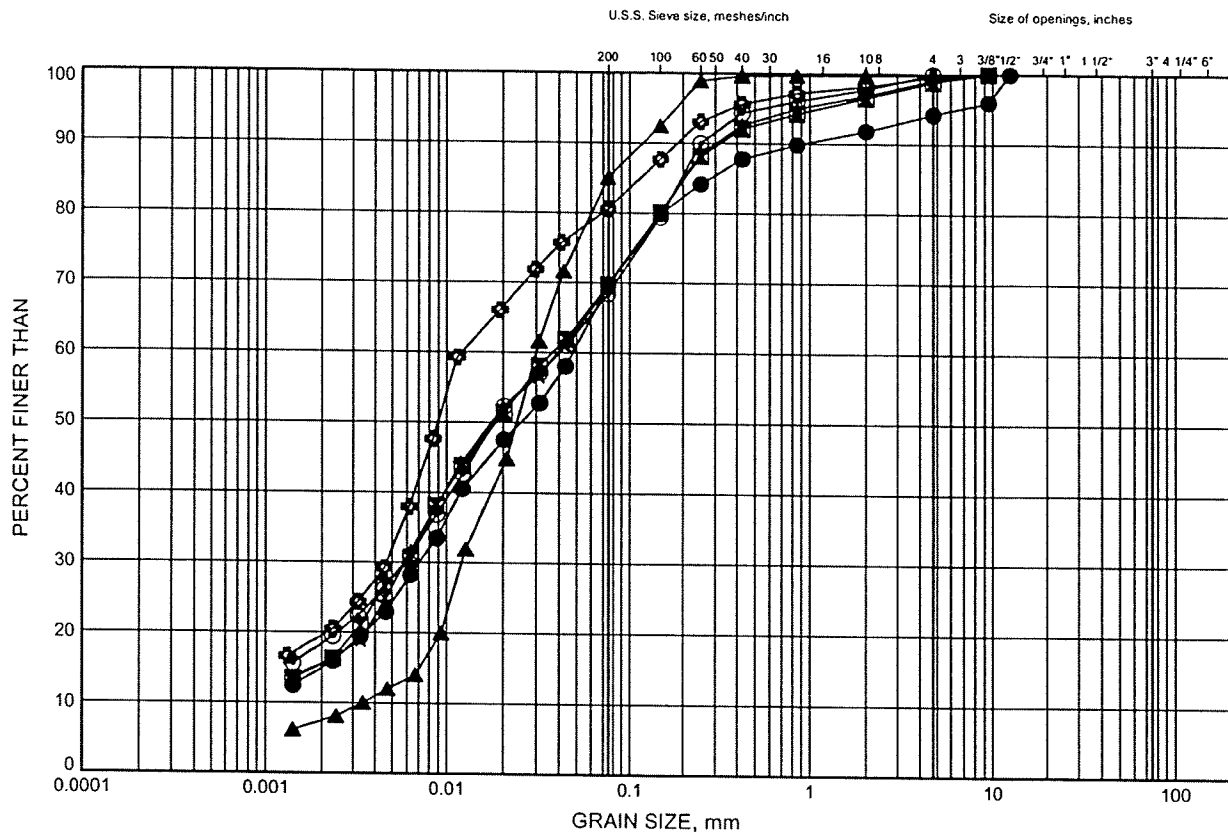


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Hwy 404 Extension GRAIN SIZE DISTRIBUTION

FIGURE E28

SANDY SILT TILL to SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-55	6.40	255.27
⊠	MW 08-01	7.92	248.26
▲	MW 08-03	6.32	257.30
★	QSR1-1	2.59	254.33
⊙	QSR1-1	9.45	247.47
⊗	QSR1-1	12.50	244.42

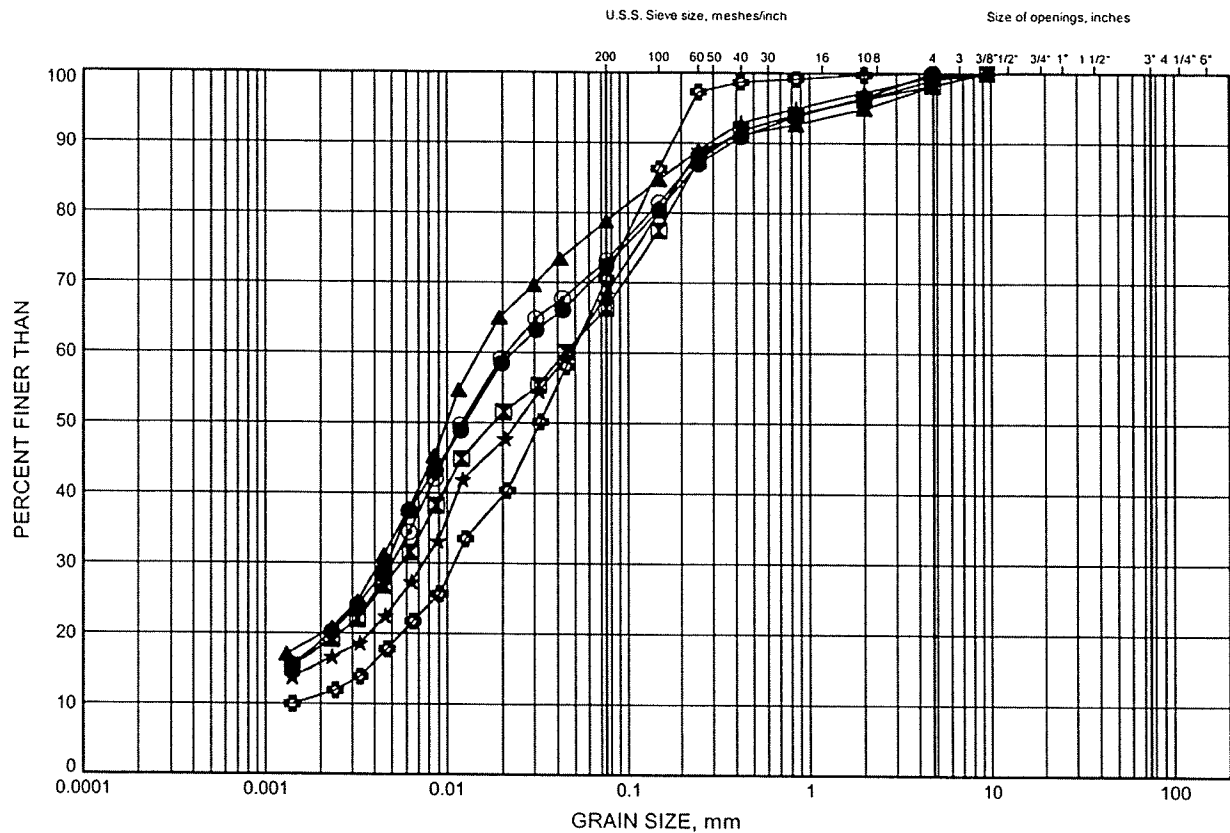


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FIGURE E29

SANDY SILT TILL to SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	QSR1-2	3.35	253.69
⊠	QSR1-2	7.92	249.12
▲	QSR1-2	10.97	246.07
★	QSR1-2	12.50	244.54
⊙	QSR1-3	3.35	253.26
⊗	QSR1-3	7.92	248.69

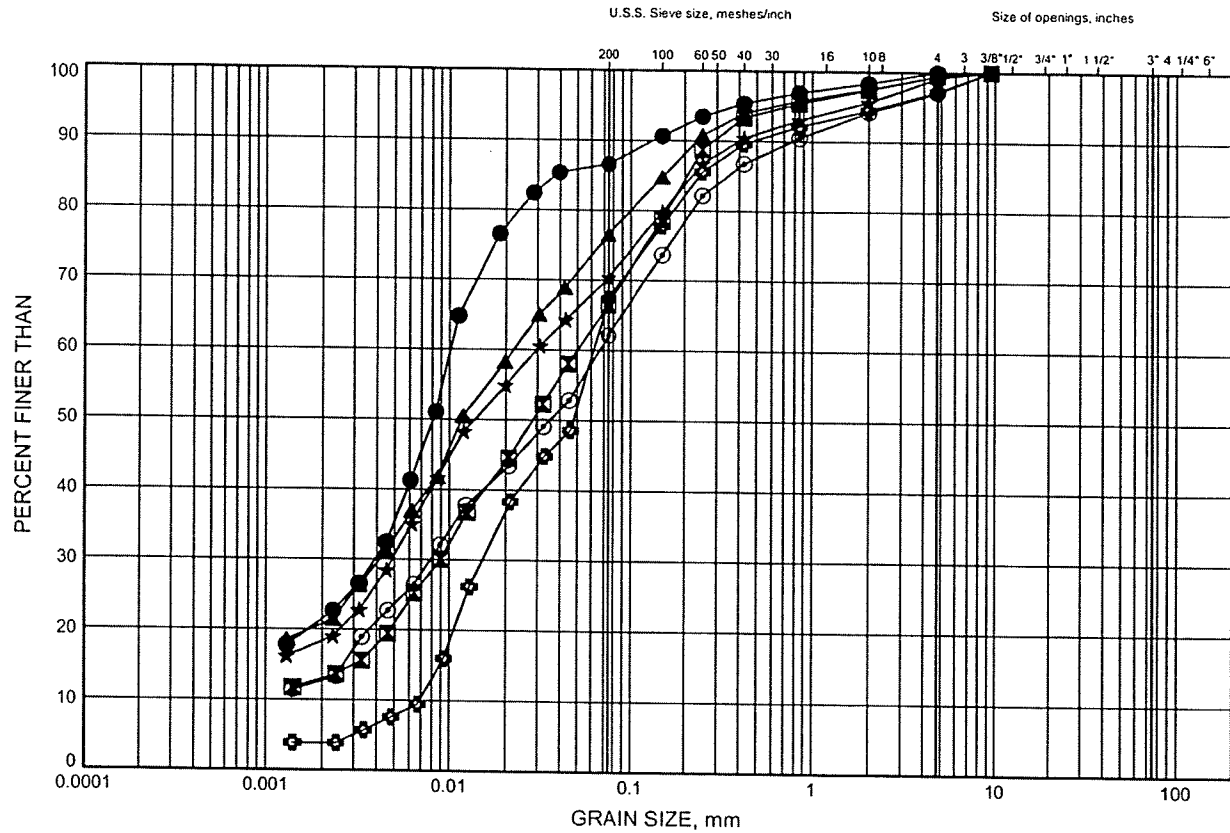


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FIGURE E30

SANDY SILT TILL to SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	QSR1-3	10.82	245.79
⊠	QSR2-1	1.83	254.37
▲	QSR2-1	4.88	251.32
★	QSR2-1	9.45	246.75
⊙	QSR2-2	3.35	253.01
⊛	QSR2-2	7.92	248.44

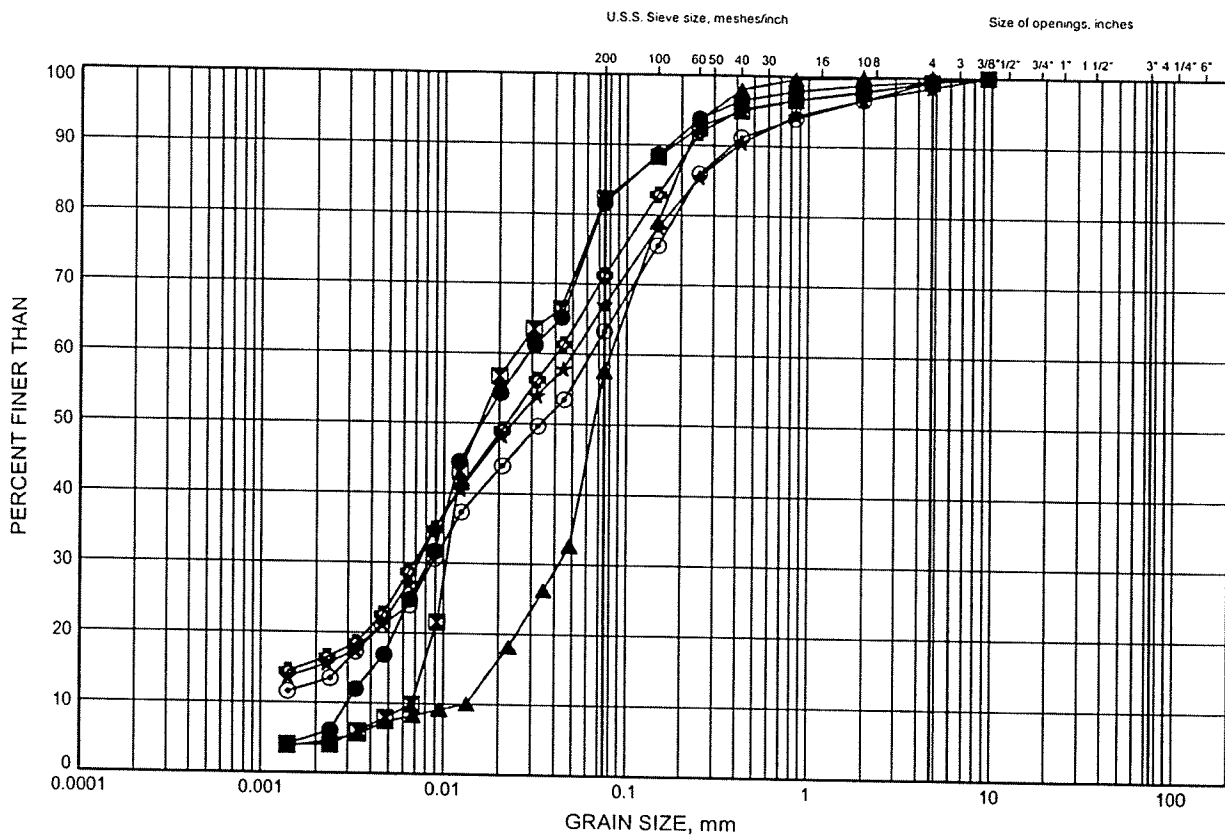


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FIGURE E31

SANDY SILT TILL to SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

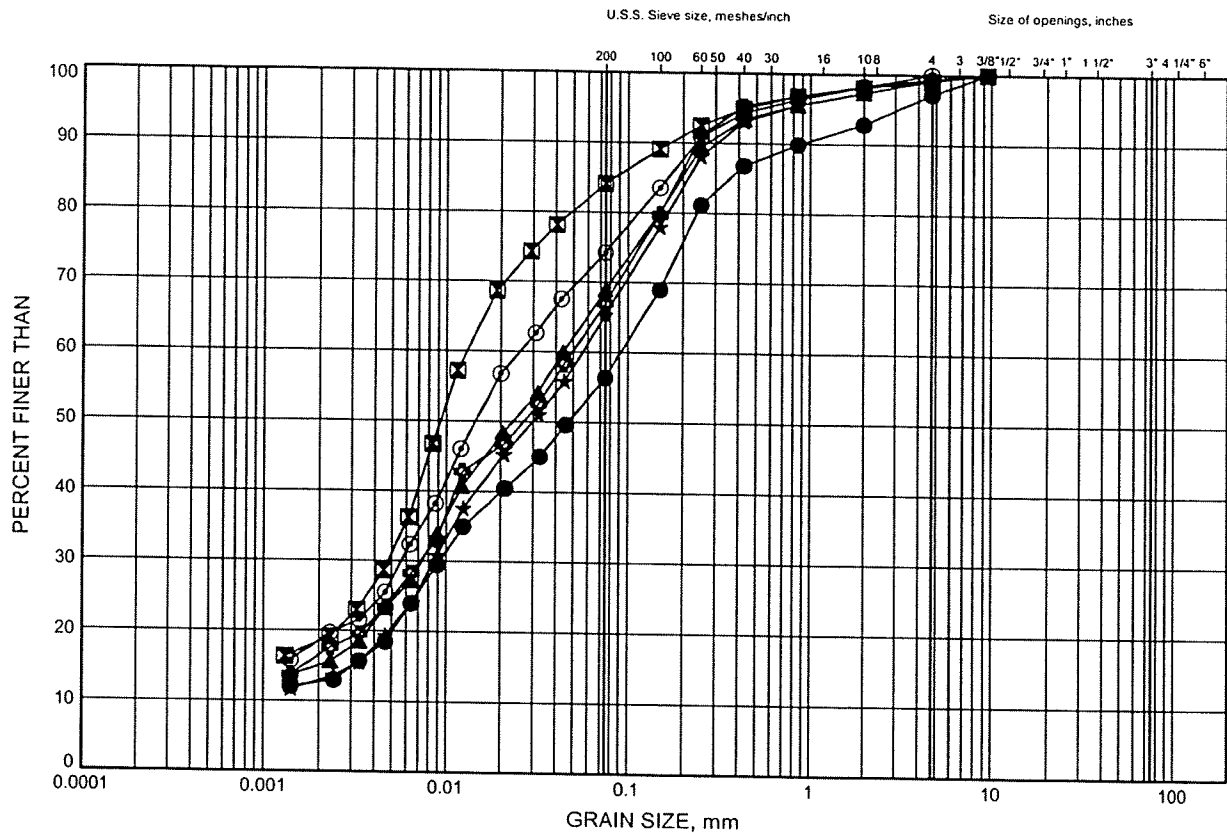
LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	QSR2-2	10.97	245.39
⊠	QSR2-3	3.35	253.48
▲	QSR2-3	10.97	245.86
★	QSR2-4	2.59	252.91
⊙	QSR2-4	3.35	252.15
⊛	QSR2-4	6.40	249.10

Hwy 404 Extension GRAIN SIZE DISTRIBUTION

FIGURE E32

SANDY SILT TILL to SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	QSR2-4	9.45	246.05
⊠	QSR2-4	12.50	243.00
▲	QSR3-1	4.88	250.49
★	QSR3-1	7.92	247.45
⊙	QSR3-1	14.02	241.35
⊕	QSR3-2	1.83	253.68

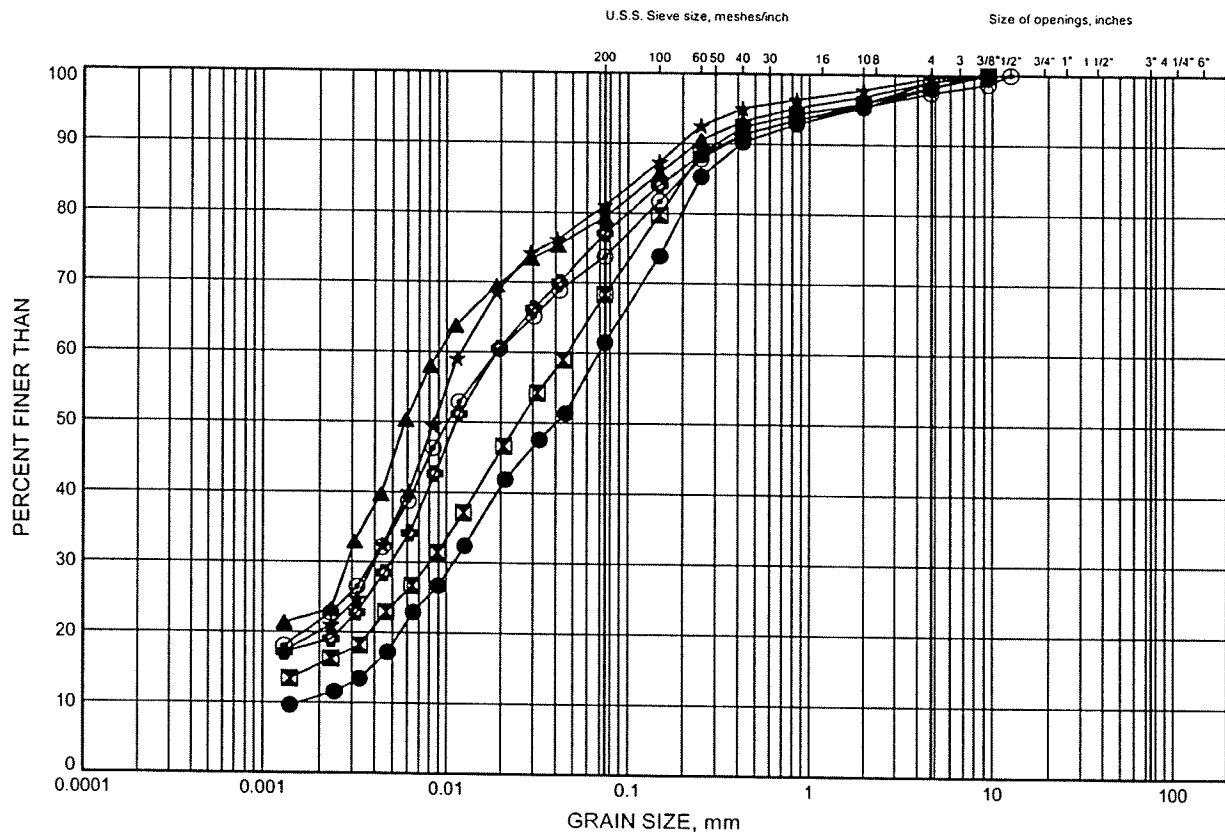


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Hwy 404 Extension GRAIN SIZE DISTRIBUTION

FIGURE E33

SANDY SILT TILL to SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	QSR3-2	6.40	249.11
⊠	QSR3-2	12.50	243.01
▲	QSR3-3	4.88	250.96
★	QSR3-3	7.92	247.92
⊙	QSR3-4	6.40	249.25
⊛	QSR3-4	12.50	243.15

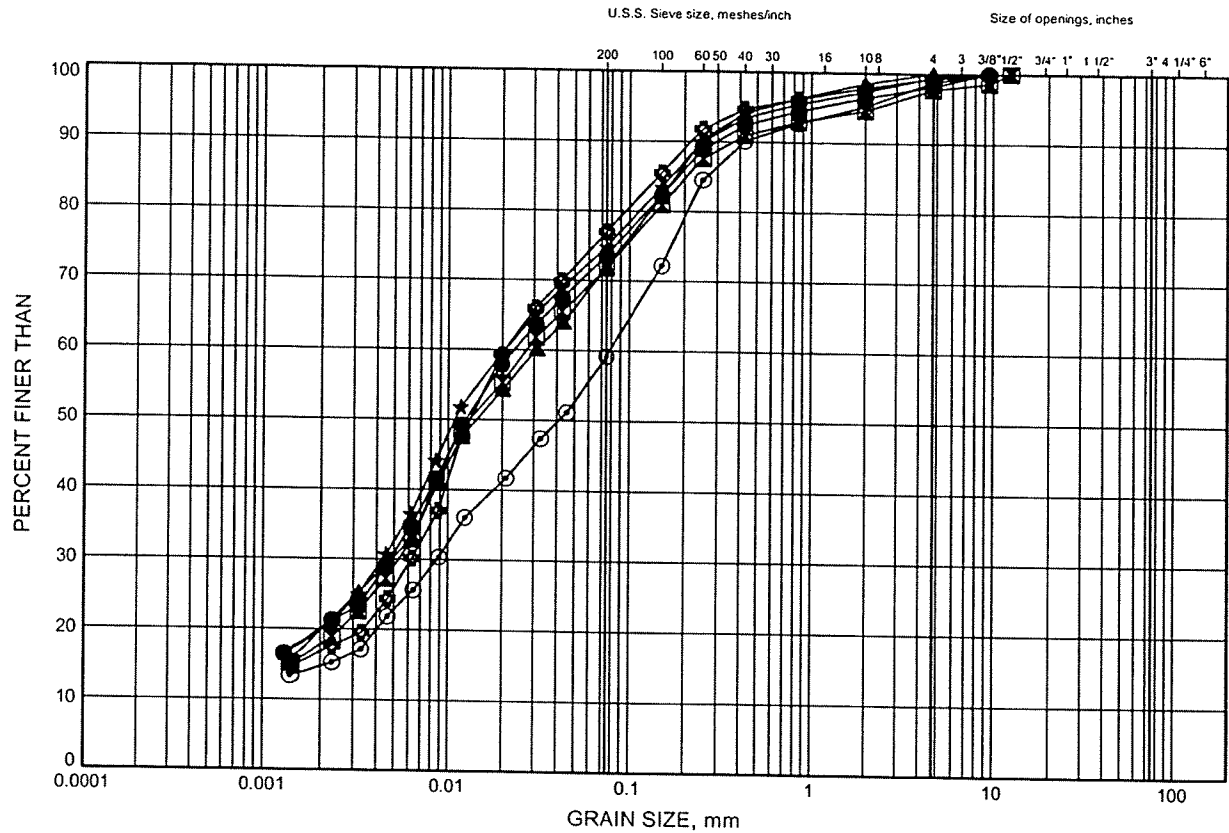


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Hwy 404 Extension GRAIN SIZE DISTRIBUTION

FIGURE E34

SANDY SILT TILL to SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	QSR3-5	2.59	252.44
⊠	QSR3-5	6.40	248.63
▲	QSR3-5	9.45	245.58
★	QSR4-1	2.59	251.15
⊙	QSR4-1	6.40	247.34
⊛	QSR4-1	10.90	242.84

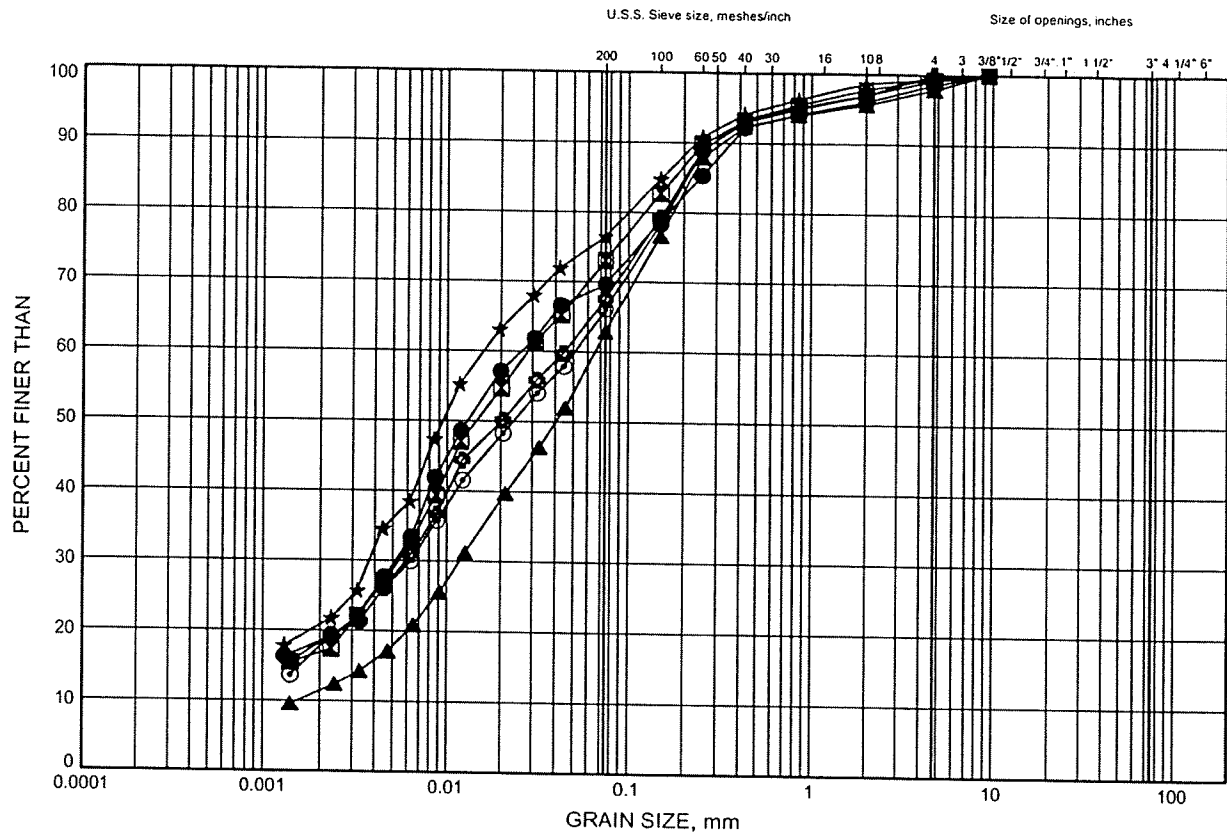


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Hwy 404 Extension GRAIN SIZE DISTRIBUTION

FIGURE E35

SANDY SILT TILL to SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	QSR4-2	2.59	252.26
⊠	QSR4-2	6.40	248.45
▲	QSR4-2	9.45	245.40
★	QSR4-3	4.88	252.27
⊙	QSR4-3	10.97	246.18
⊛	QSR4-4	3.35	252.08

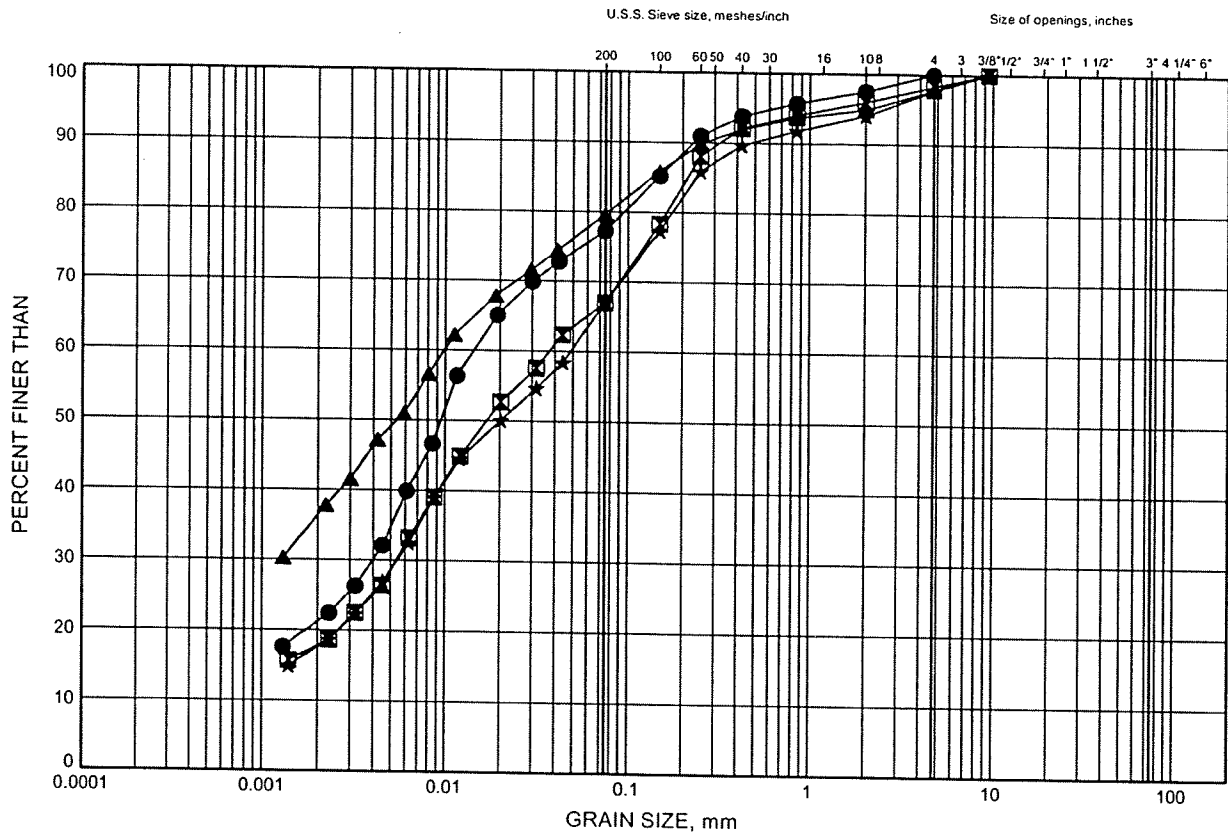


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FIGURE E36

SANDY SILT TILL to SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	QSR4-4	7.92	247.51
⊠	QSR4-4	10.97	244.46
▲	QSR4-5	4.88	250.55
★	QSR4-5	9.45	245.98

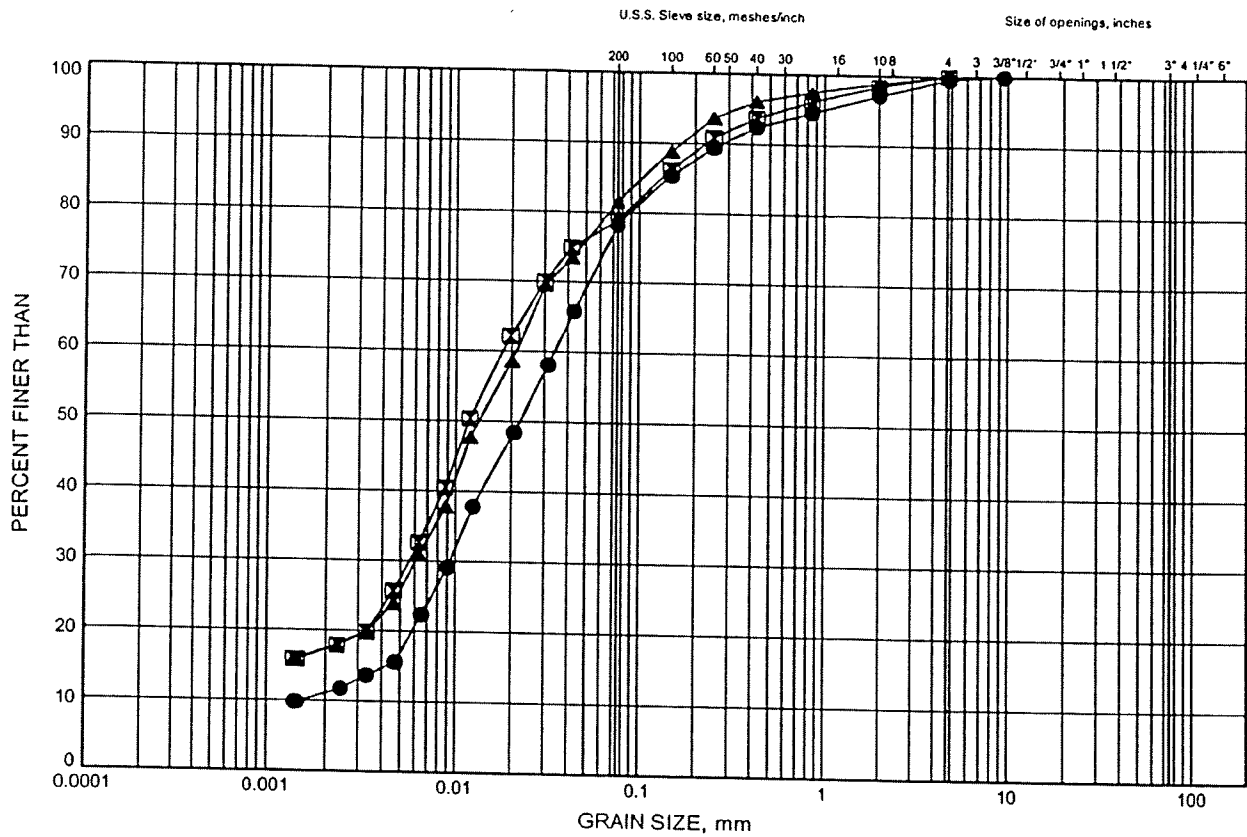


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FIGURE E37

SANDY SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	RW09-1	0.99	289.03
⊠	RW09-2	1.75	286.57
▲	RW09-3	2.51	284.53

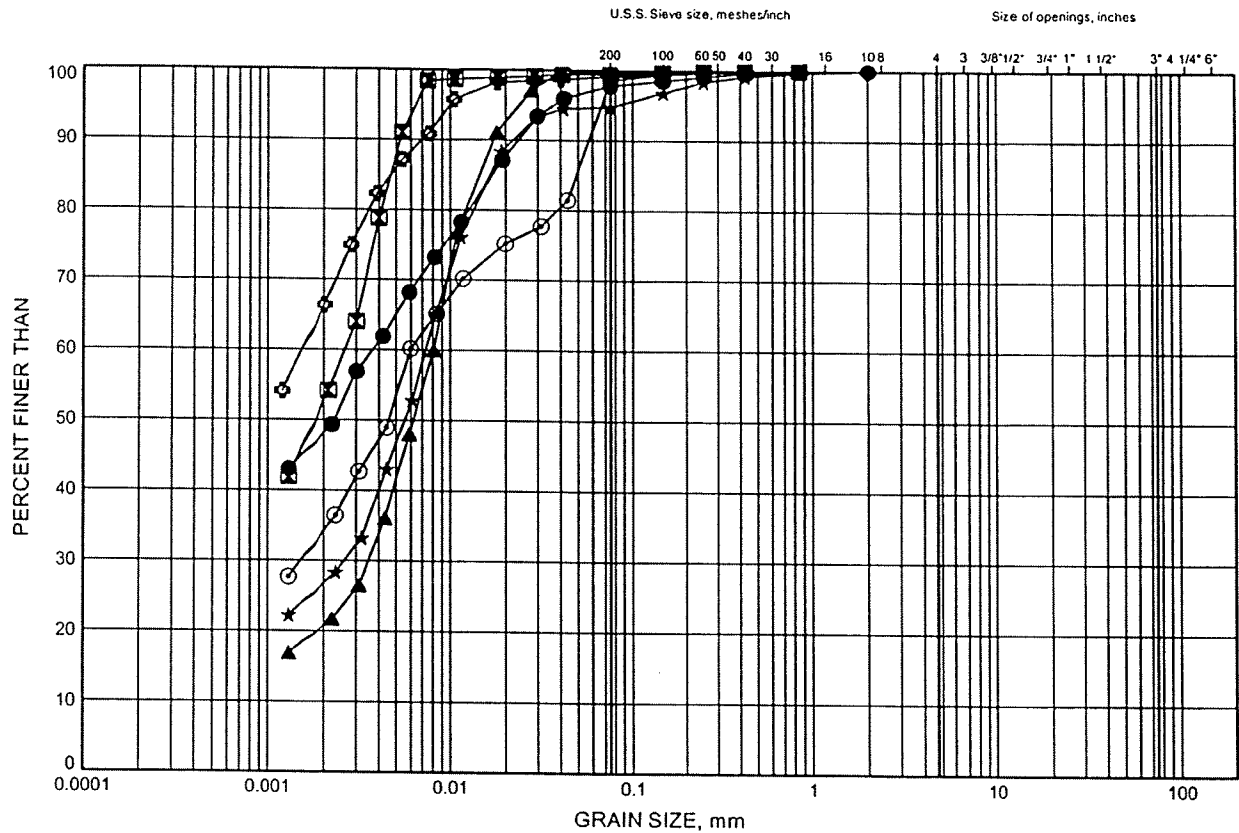


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FIGURE E38

SILTY CLAY



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-01	2.59	254.56
⊠	08-01	4.88	252.27
▲	08-01	6.40	250.75
★	08-01	9.45	247.70
⊙	08-02	1.83	255.30
⊗	08-02	4.88	252.25

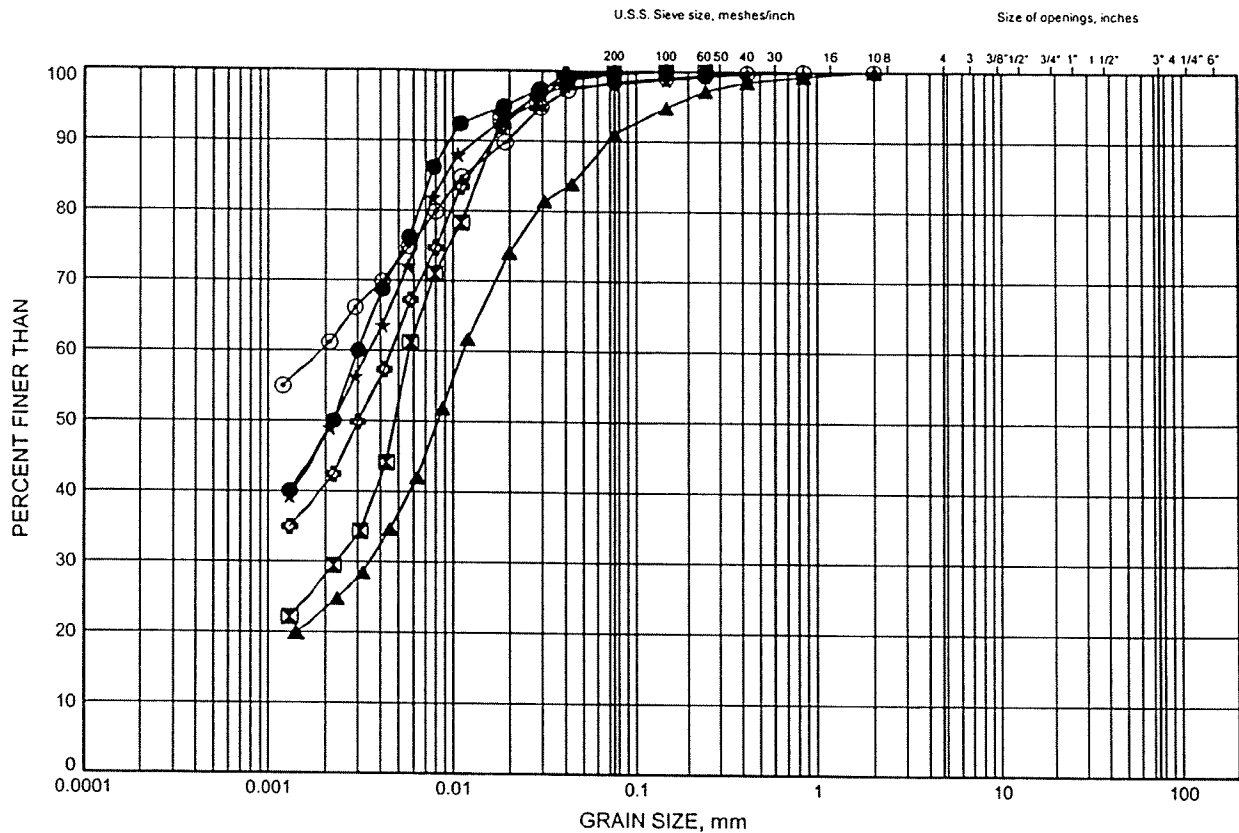


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FIGURE E39

SILTY CLAY



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-03	2.59	254.84
⊠	08-03	6.40	251.03
▲	08-03	9.45	247.98
★	08-04	1.83	260.97
⊙	08-04	3.35	259.45
⊗	08-05	1.07	259.76

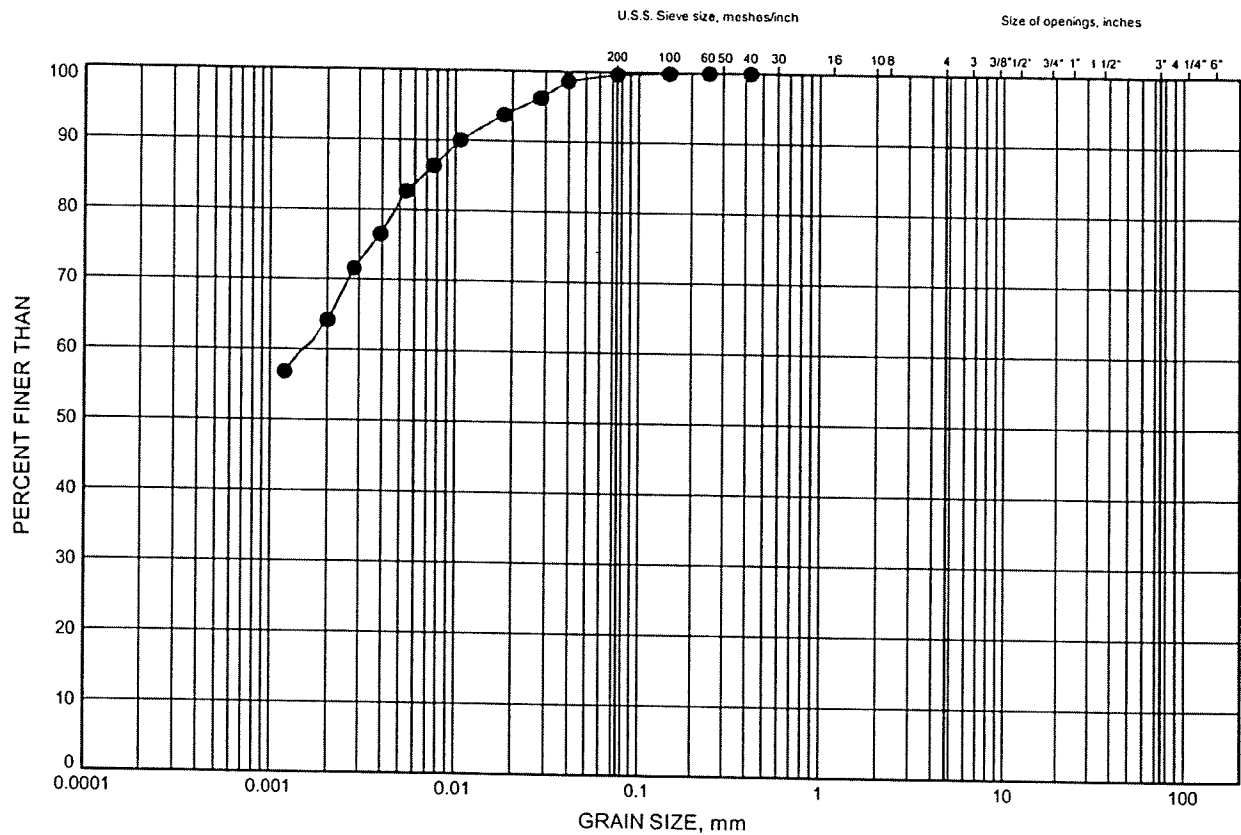


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FIGURE E40

SILTY CLAY



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

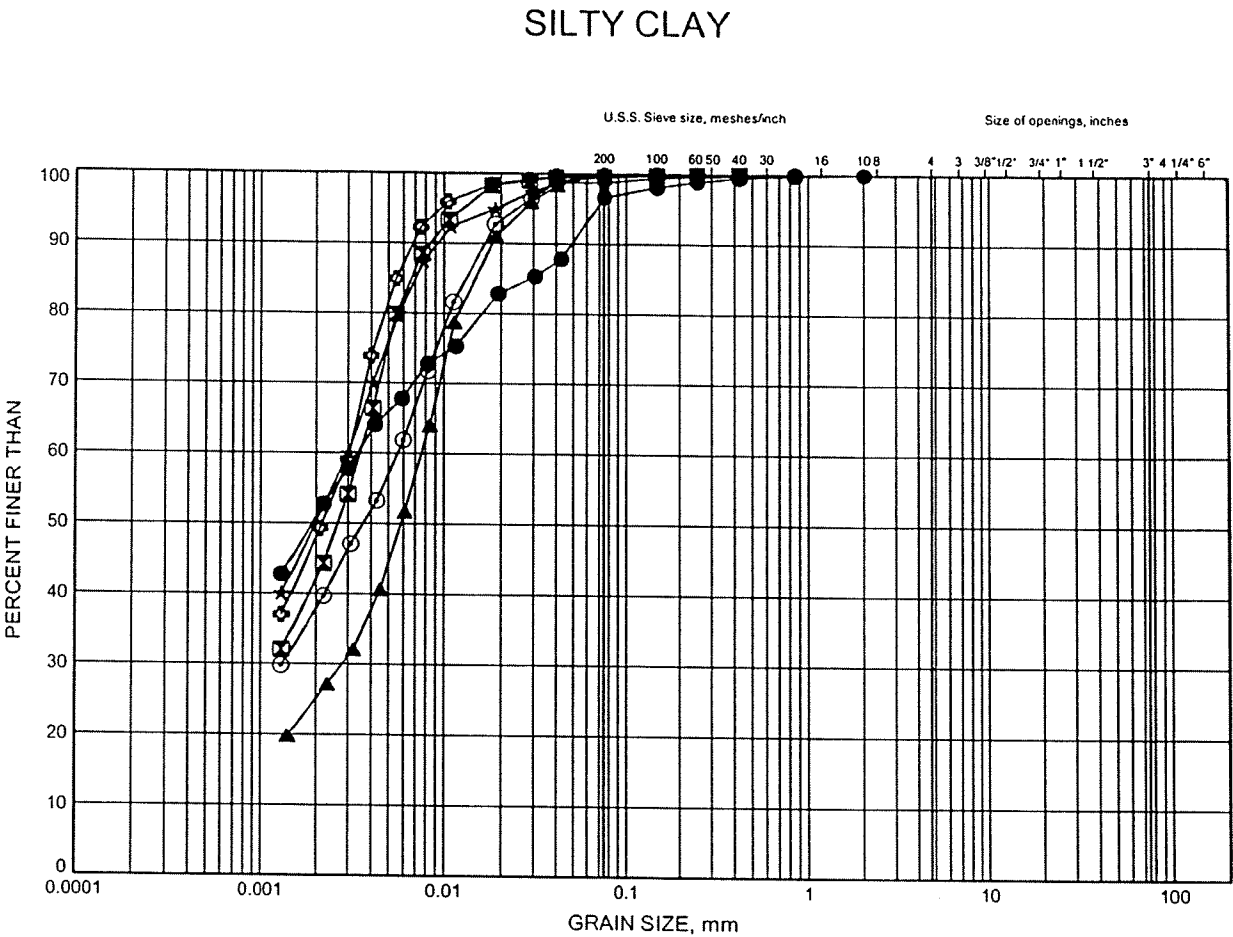
SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-05	3.35	257.48



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Hwy 404 Extension
GRAIN SIZE DISTRIBUTION

FIGURE E41



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-06	1.07	258.86
⊠	08-06	3.35	256.58
▲	08-06	4.88	255.05
★	08-07	1.83	257.25
⊙	08-07	3.35	255.73
⊛	08-08	2.59	256.01

GRAIN SIZE DISTRIBUTION - THURBER 0596.GPJ 10/16/09

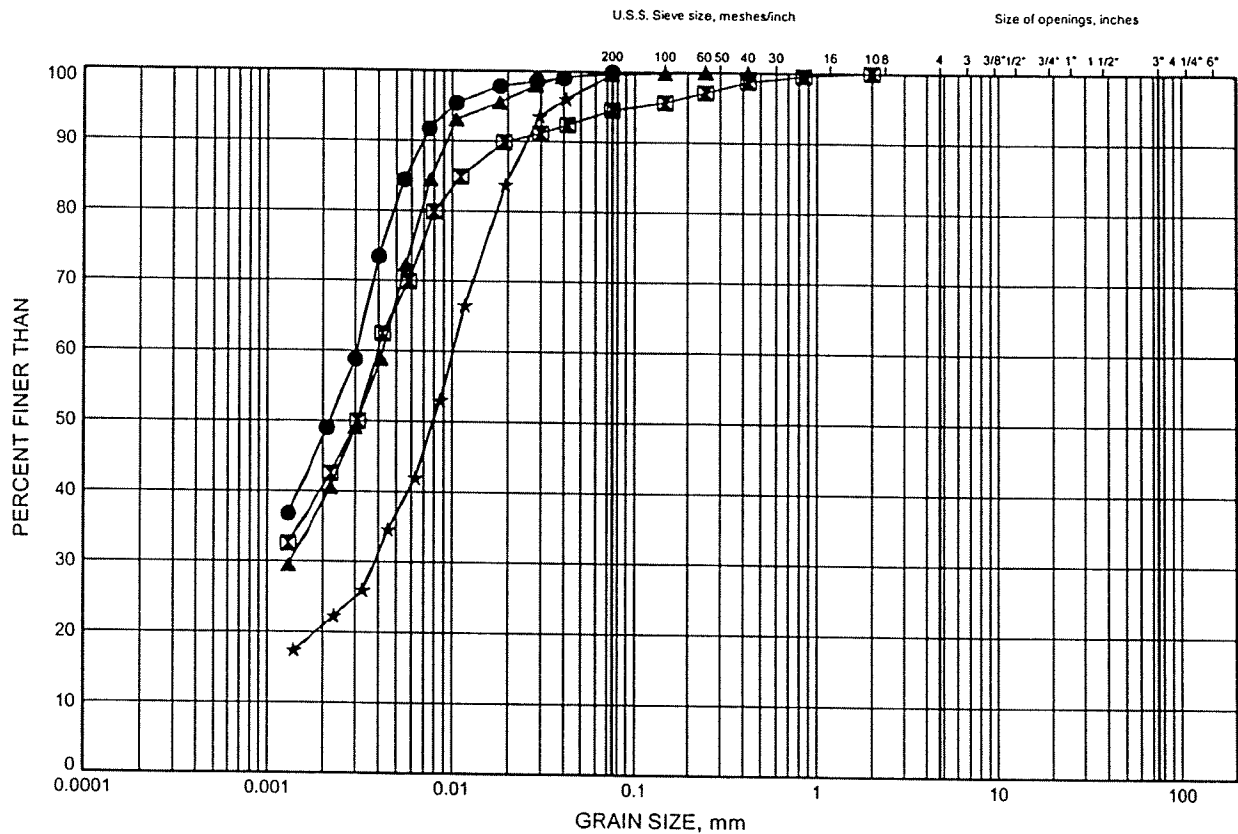
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Hwy 404 Extension GRAIN SIZE DISTRIBUTION

FIGURE E42

SILTY CLAY



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-08	3.35	255.25
⊠	08-09	1.83	256.07
▲	08-09	3.35	254.55
★	08-09	4.88	253.02

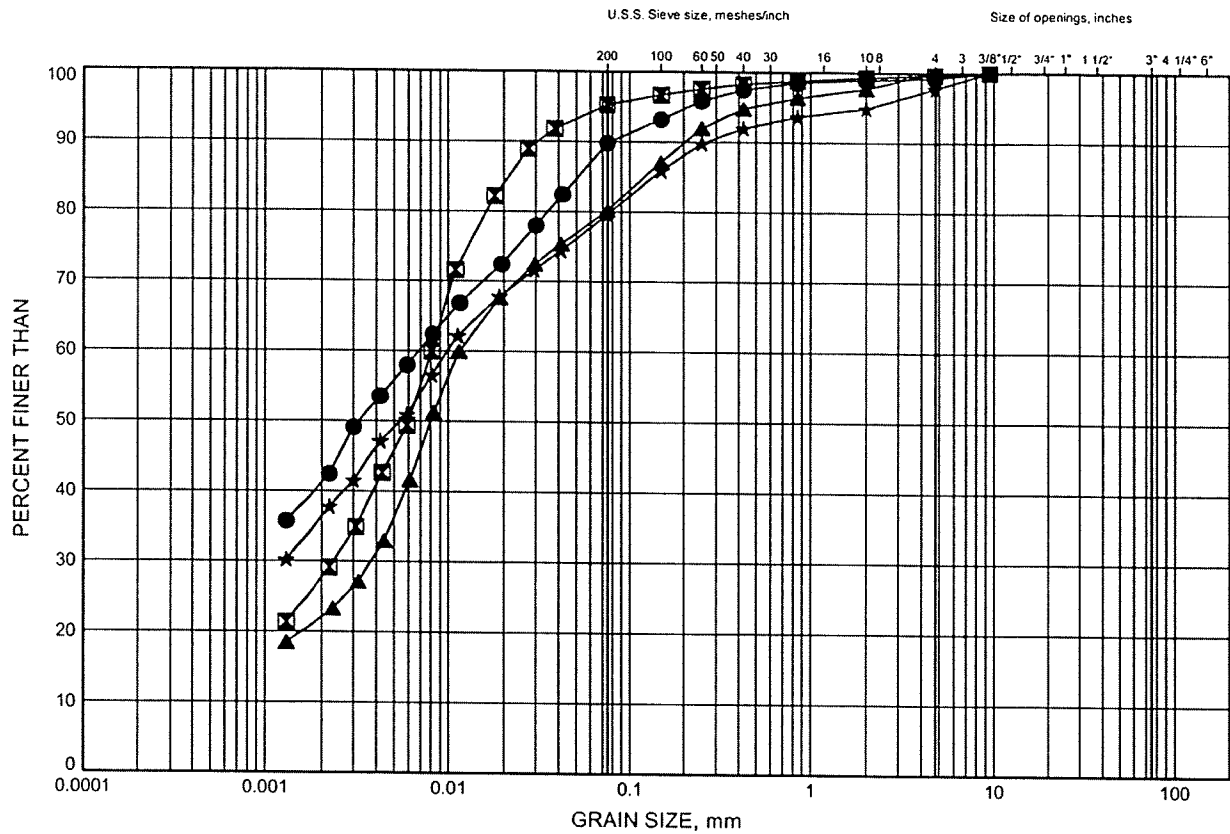


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Checked By .RPR.....

Hwy 404 Extension GRAIN SIZE DISTRIBUTION

FIGURE E43

SILTY CLAY to CLAYEY SILT



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-21	1.07	267.03
⊠	08-53	1.83	260.31
▲	QSR4-5	3.35	252.08
★	QSR4-5	4.88	250.55

GRAIN SIZE DISTRIBUTION - THURBER 0595.GPJ 7/7/09

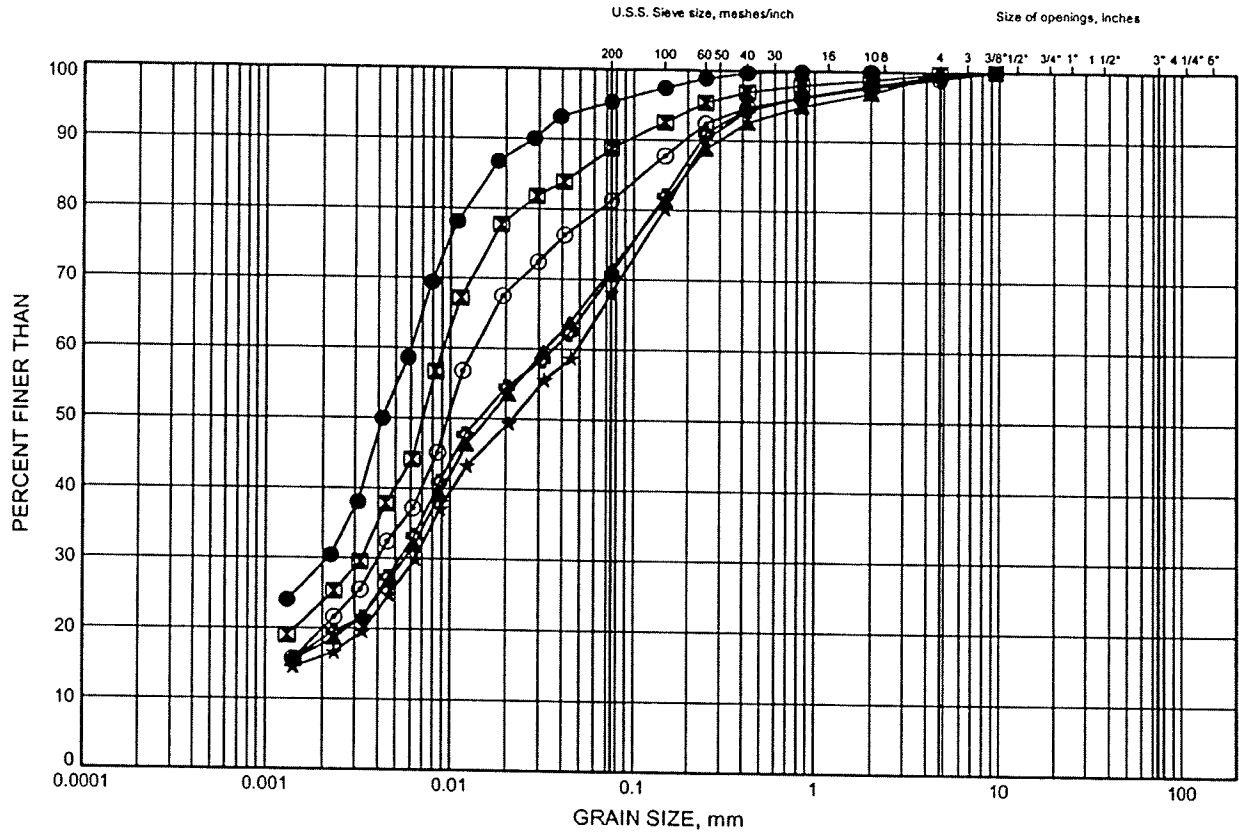
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Prepared By MFA
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Hwy 404 Extension GRAIN SIZE DISTRIBUTION

FIGURE E44

CLAYEY SILT & CLAYEY SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-38A	2.51	254.79
⊠	08-38A	4.80	252.50
▲	08-38A	9.37	247.93
★	08-38A	13.94	243.36
⊙	08-39	2.51	256.44
⊛	08-39	6.32	252.63

GRAIN SIZE DISTRIBUTION - THURBER 0596.GPJ 9/24/09

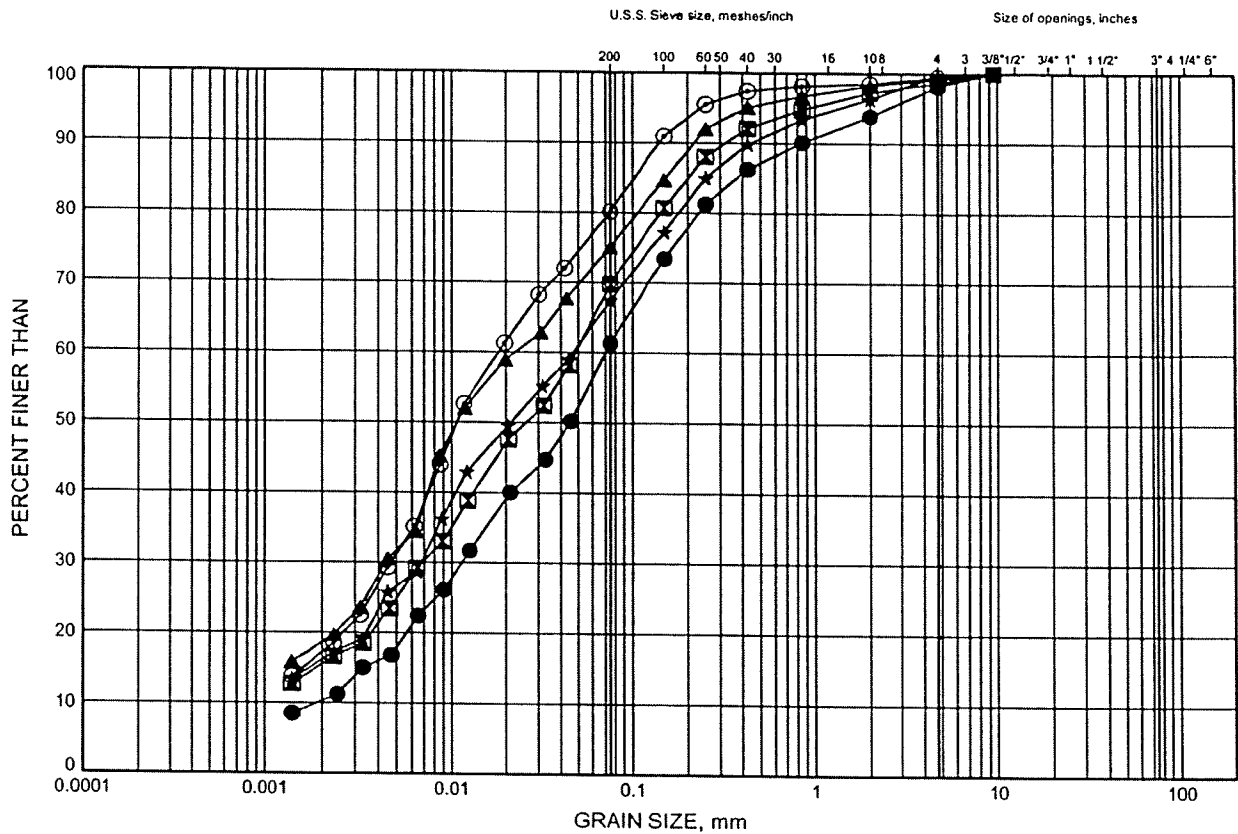
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Hwy 404 Extension GRAIN SIZE DISTRIBUTION

FIGURE E45

CLAYEY SILT & CLAYEY SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-40	3.28	258.03
⊠	08-40	6.40	254.91
▲	08-41	2.51	261.19
★	08-42	1.83	262.61
⊙	08-46	7.92	248.78

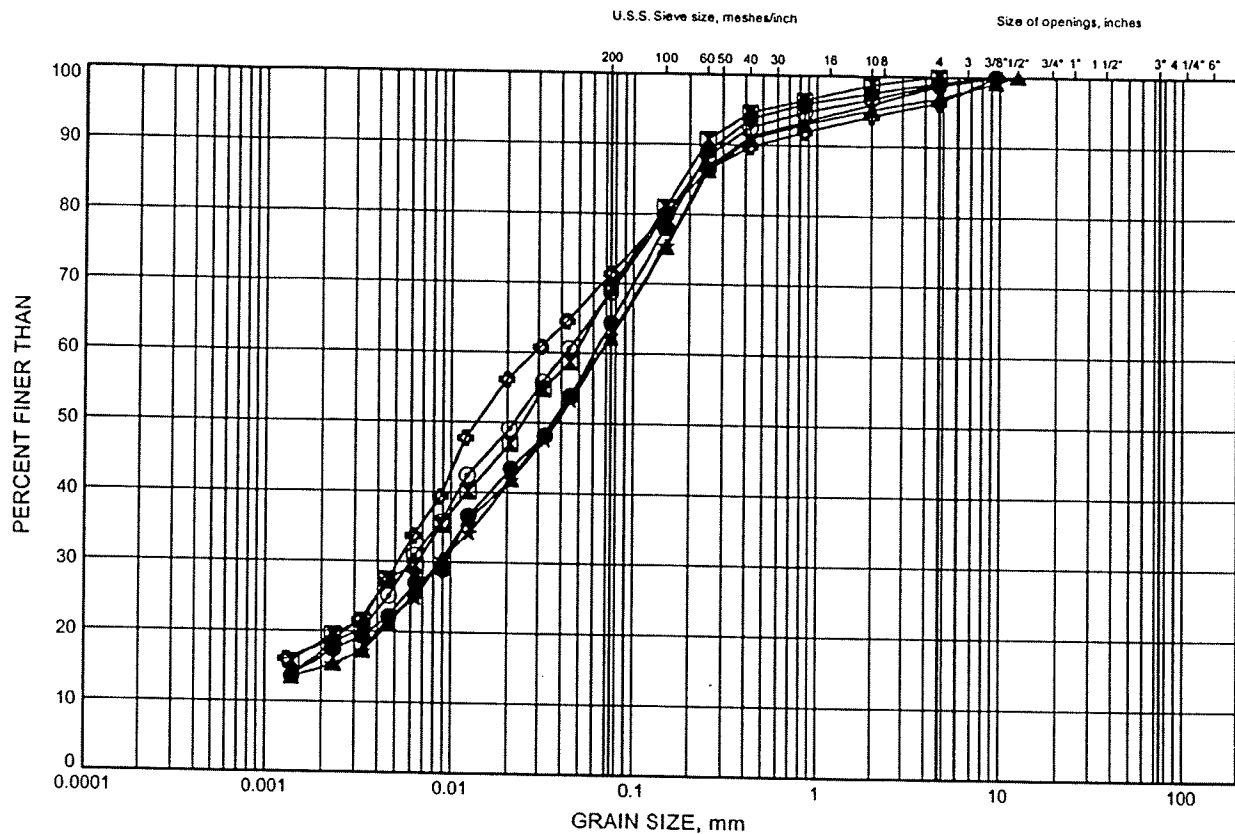


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Hwy 404 Extension GRAIN SIZE DISTRIBUTION

FIGURE E46

CLAYEY SILT & CLAYEY SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-46	14.02	242.68
⊠	08-46	17.07	239.63
▲	08-46	18.52	238.18
★	08-46	20.12	236.58
⊙	08-47	6.32	251.06
⊕	08-47	7.92	249.46

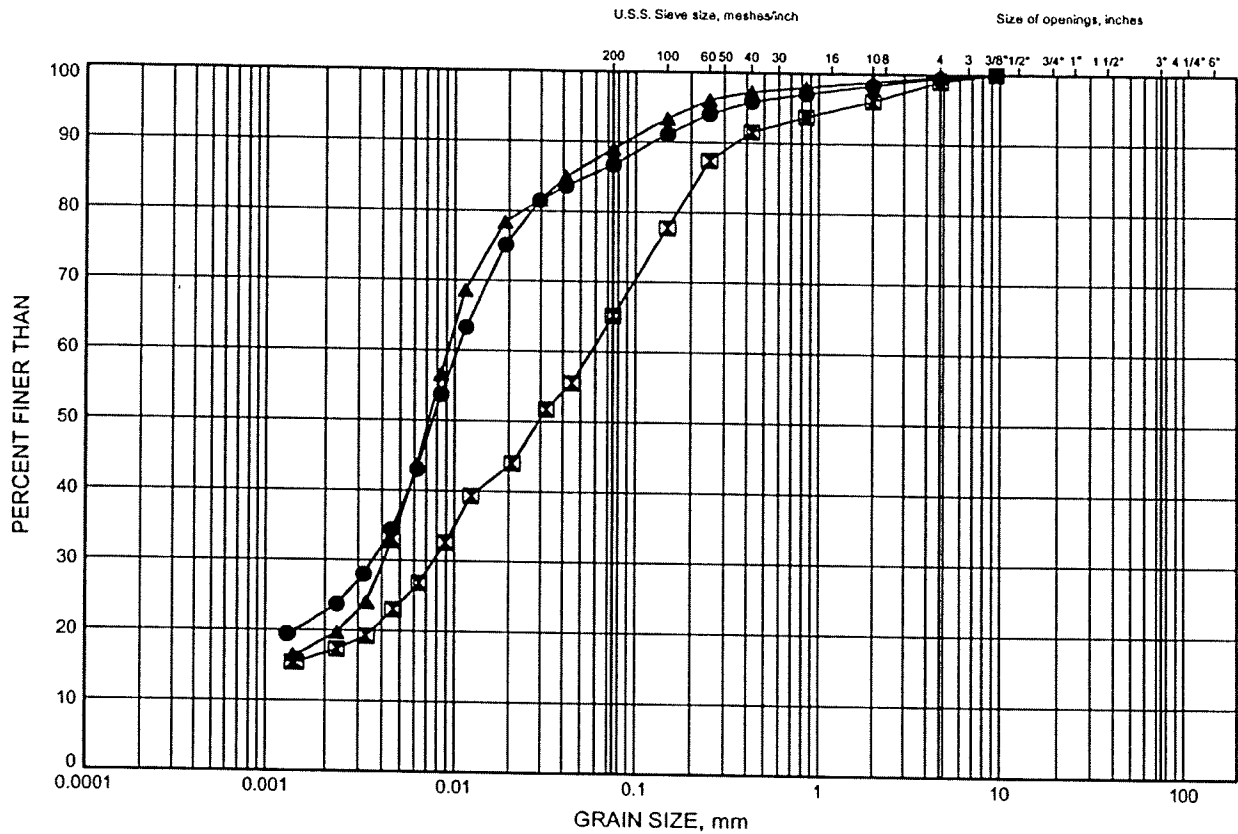


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FIGURE E47

CLAYEY SILT & CLAYEY SILT TILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	08-47	12.50	244.88
◻	08-47	17.07	240.31
▲	08-47	20.12	237.26

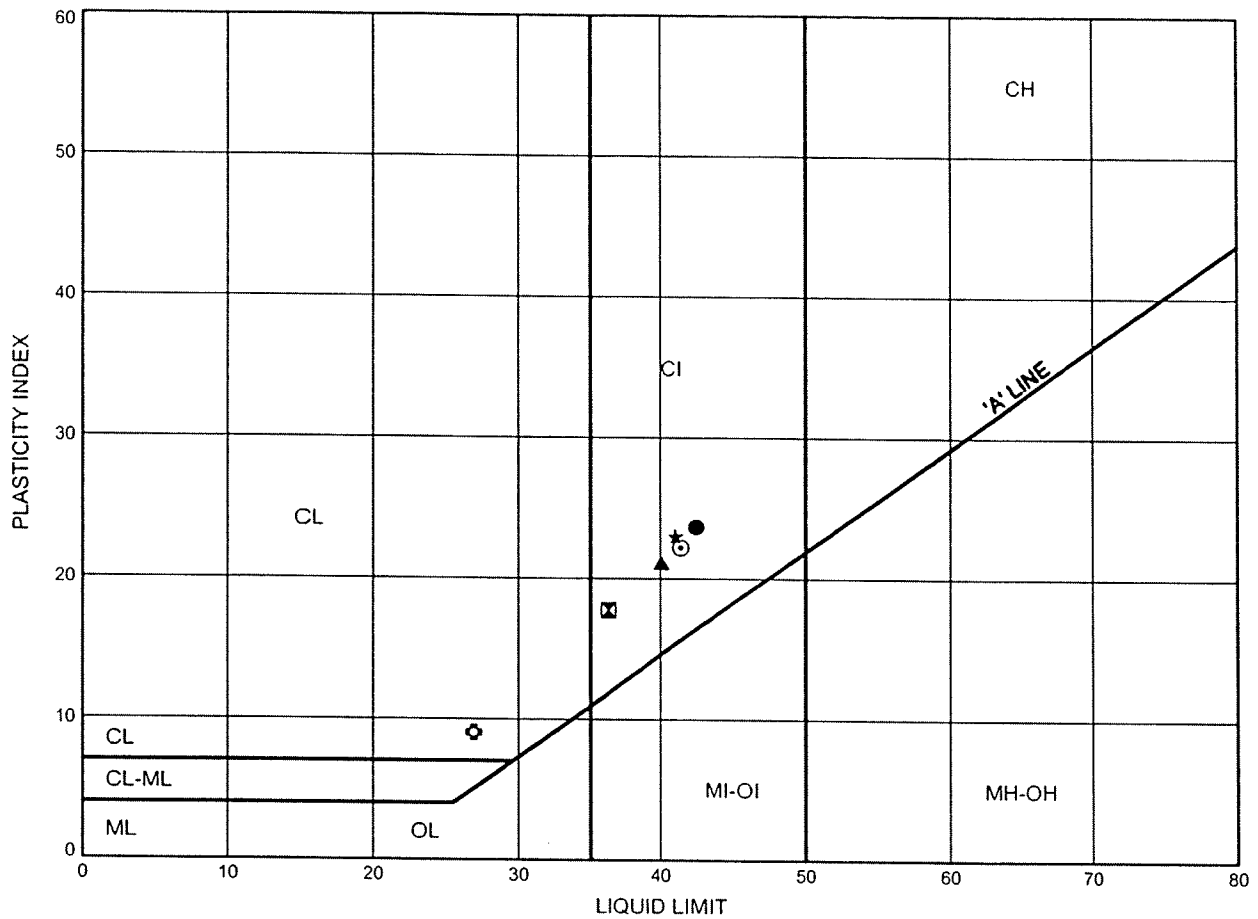


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Hwy 404 Extension ATTERBERG LIMITS TEST RESULTS

FIGURE E48

SILTY CLAY



SYMBOL	BH	DEPTH (m)	ELEV. (m)
●	08-01	2.59	254.56
⊠	08-01	4.88	252.27
▲	08-02	1.83	255.30
★	08-02	4.88	252.25
⊙	08-03	2.59	254.84
⊛	08-03	6.40	251.03

Date September 2009

Project 2109-05-00



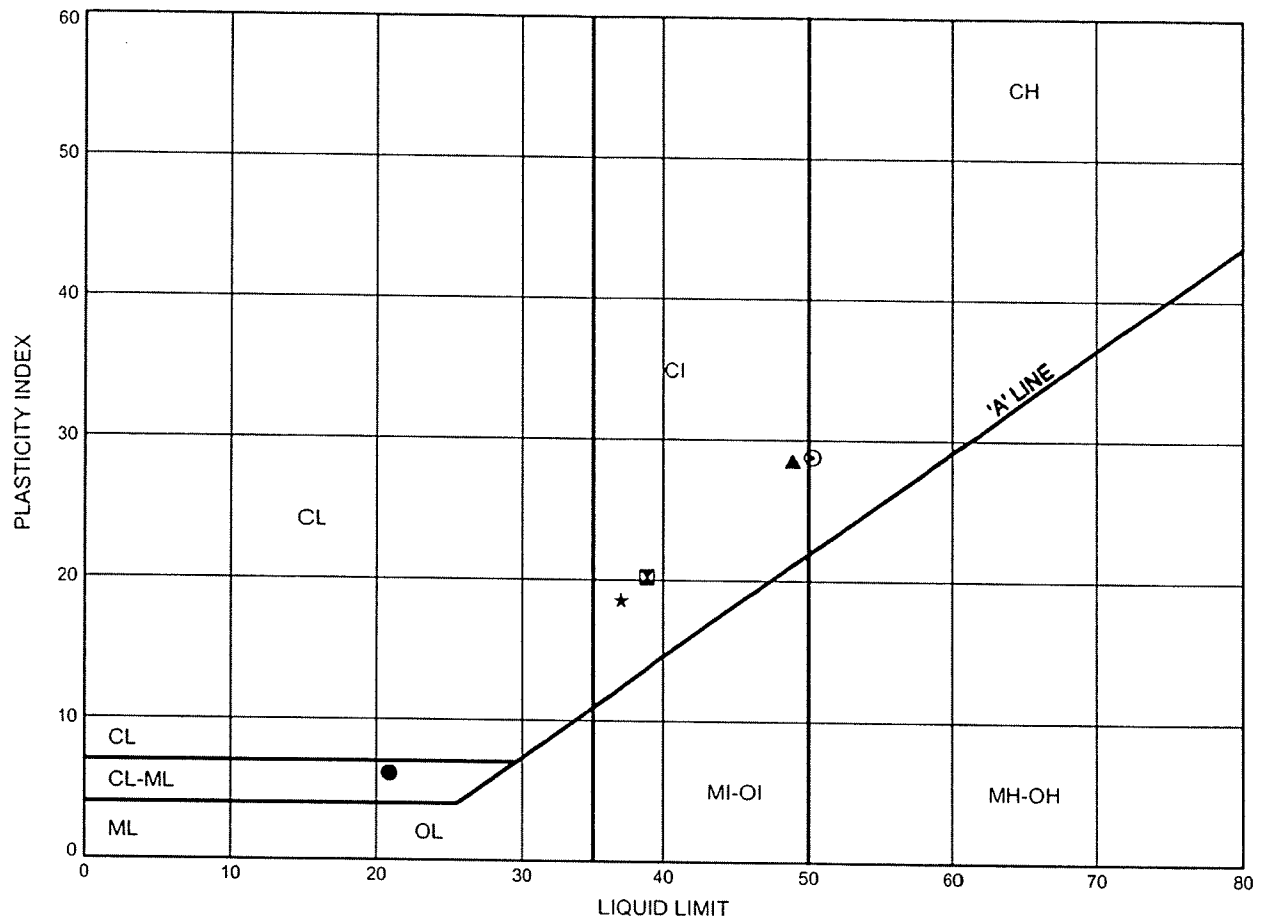
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FIGURE E49

SILTY CLAY



SYMBOL	BH	DEPTH (m)	ELEV. (m)
●	08-03	9.45	247.98
⊠	08-04	1.83	260.97
▲	08-04	3.35	259.45
★	08-05	1.07	259.76
⊙	08-05	3.35	257.48

Date September 2009
Project 2109-05-00

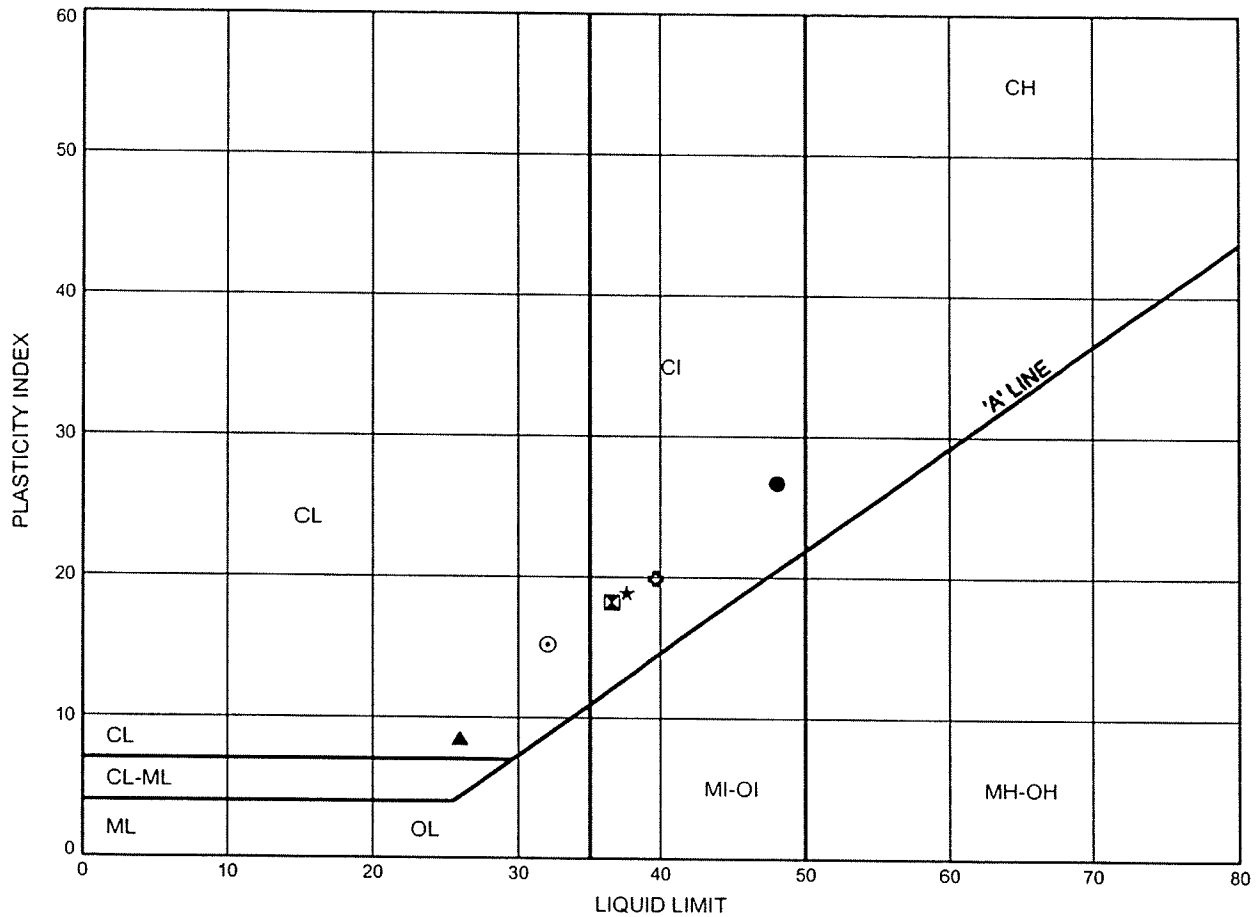


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FIGURE E50

SILTY CLAY



SYMBOL	BH	DEPTH (m)	ELEV. (m)
●	08-06	1.07	258.86
⊠	08-06	3.35	256.58
▲	08-06	4.88	255.05
★	08-07	1.83	257.25
⊙	08-07	3.35	255.73
⊛	08-08	2.59	256.01

Date October 2009
Project 2109-05-00

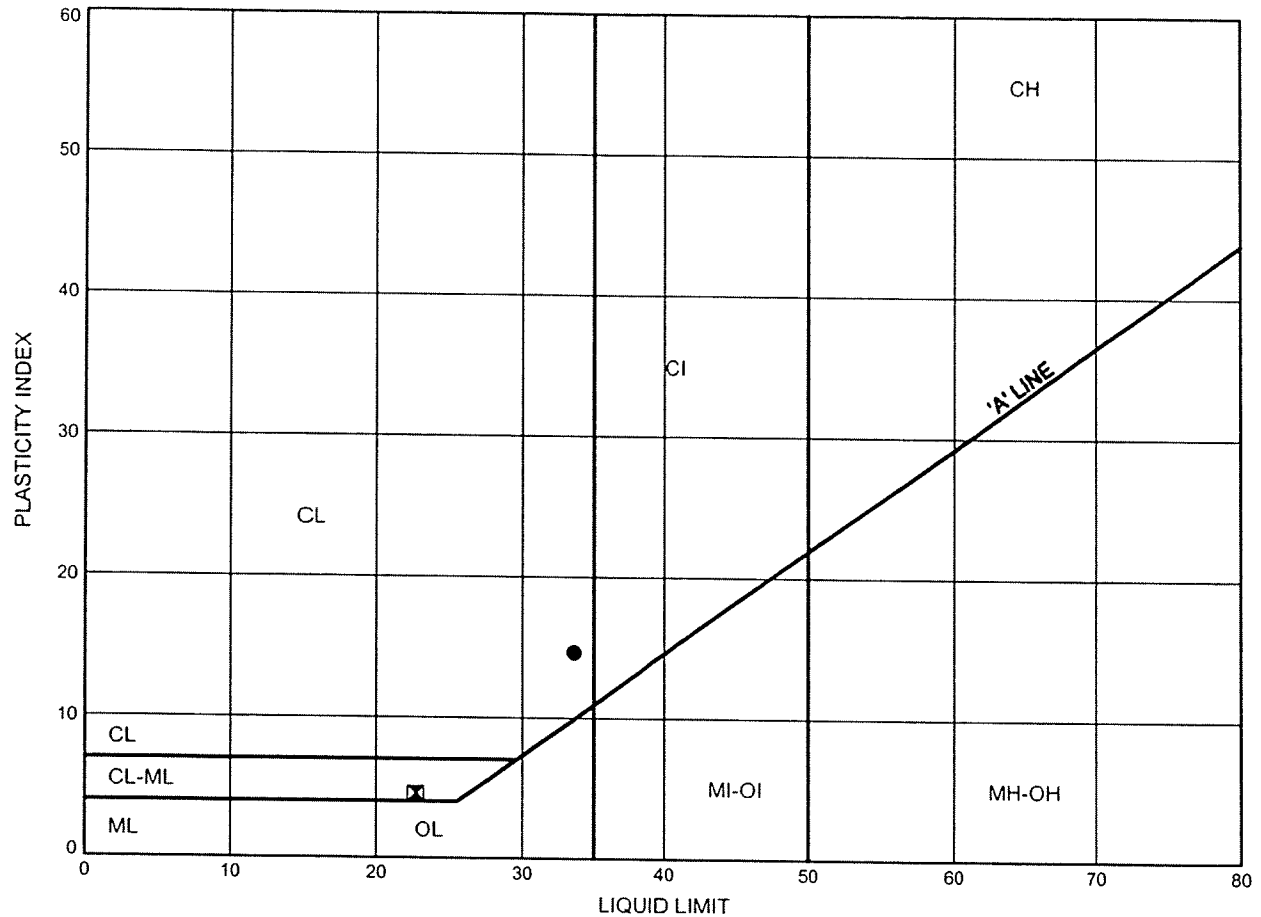


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Hwy 404 Extension ATTERBERG LIMITS TEST RESULTS

FIGURE E51

SILTY CLAY



SYMBOL	BH	DEPTH (m)	ELEV. (m)
●	08-09	3.35	254.55
⊠	08-09	4.88	253.02

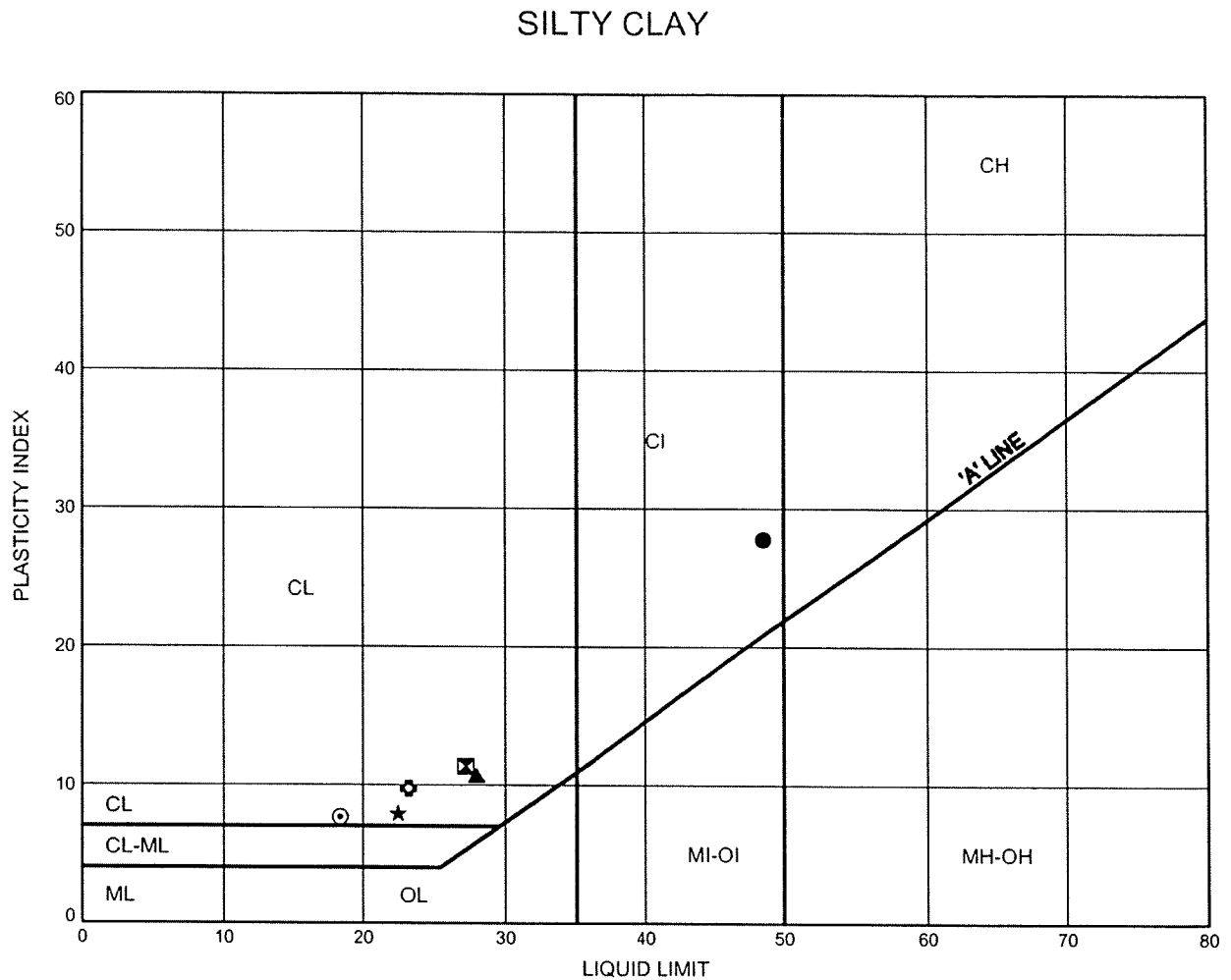
Date October 2009
Project 2109-05-00



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Hwy 404 Extension ATTERBERG LIMITS TEST RESULTS

FIGURE E52



SYMBOL	BH	DEPTH (m)	ELEV. (m)
●	08-21	1.07	267.03
⊠	08-53	1.83	260.31
▲	MW 08-01	1.83	254.35
★	MW 08-01	4.88	251.30
⊙	QSR3-2	1.83	253.68
⊕	QSR3-3	4.88	250.96

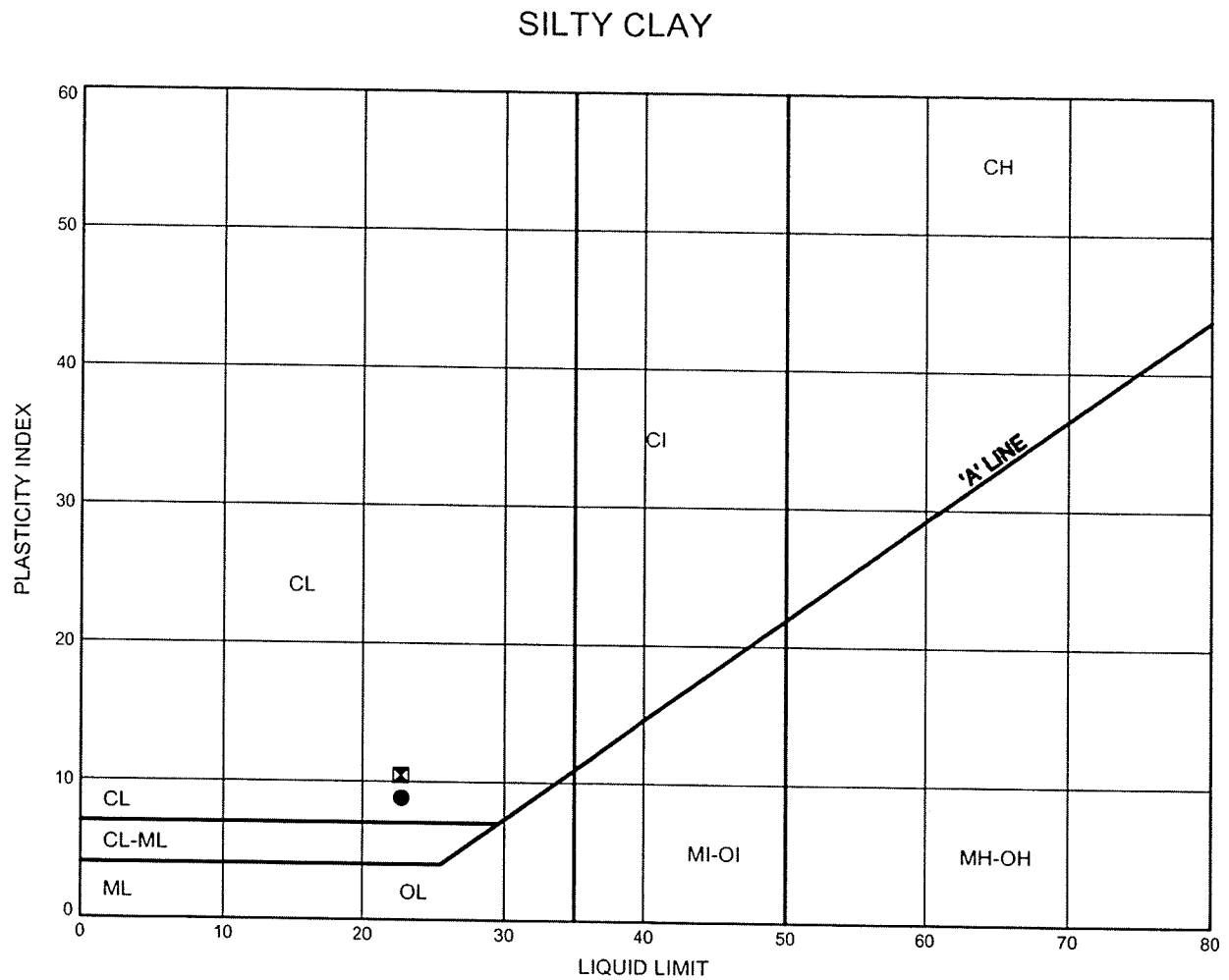
Date July 2009
Project 19-1605-95



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Chkd. DEE

Hwy 404 Extension ATTERBERG LIMITS TEST RESULTS

FIGURE E53



SYMBOL	BH	DEPTH (m)	ELEV. (m)
●	QSR4-5	3.35	252.08
⊠	QSR4-5	4.88	250.55

Date July 2009
Project 19-1605-95

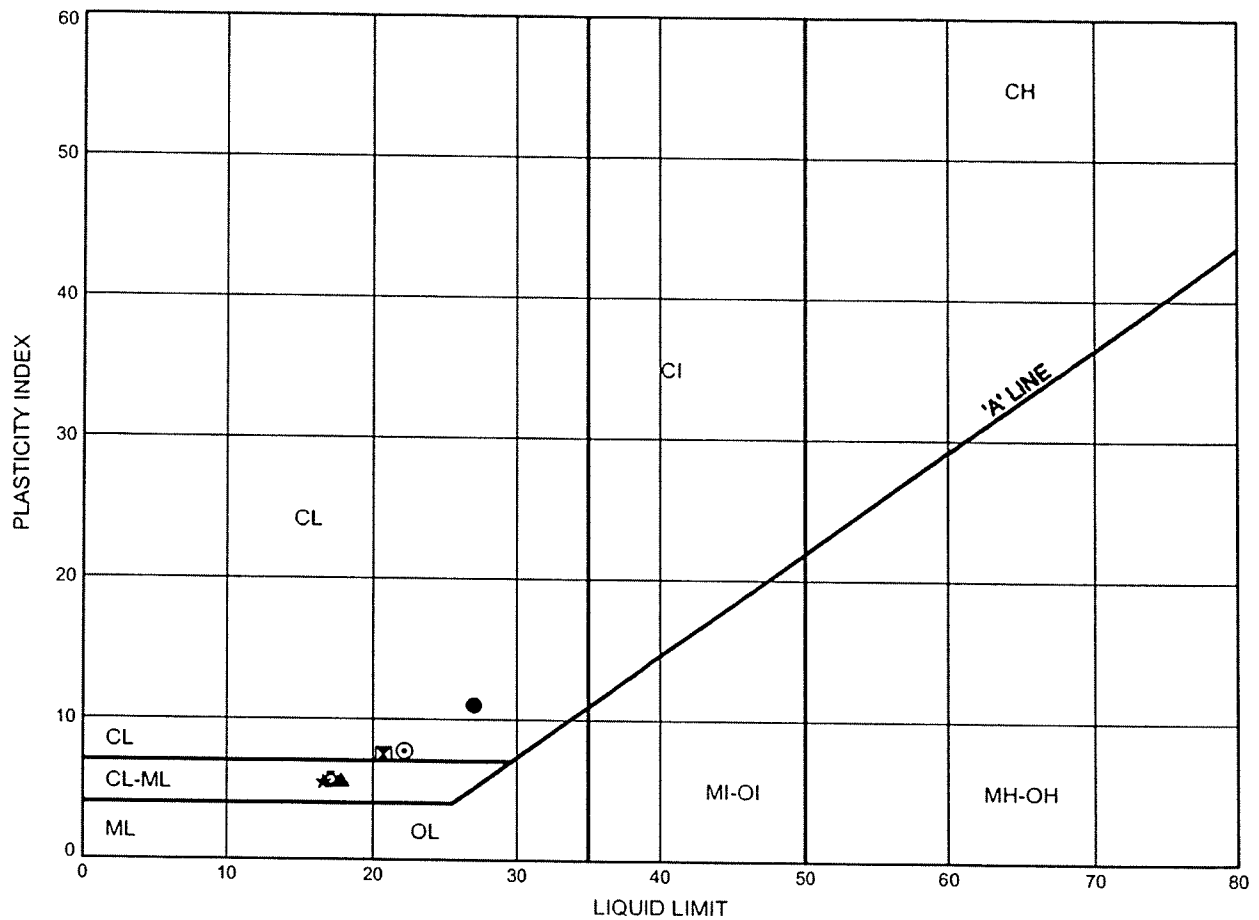


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FIGURE E54.

CLAYEY SILT & CLAYEY SILT TILL



SYMBOL	BH	DEPTH (m)	ELEV. (m)
●	08-38A	2.51	254.79
⊠	08-38A	4.80	252.50
▲	08-38A	9.37	247.93
★	08-38A	13.94	243.36
⊙	08-39	2.51	256.44
⊕	08-39	6.32	252.63

Date October 2009

Project 2109-05-00



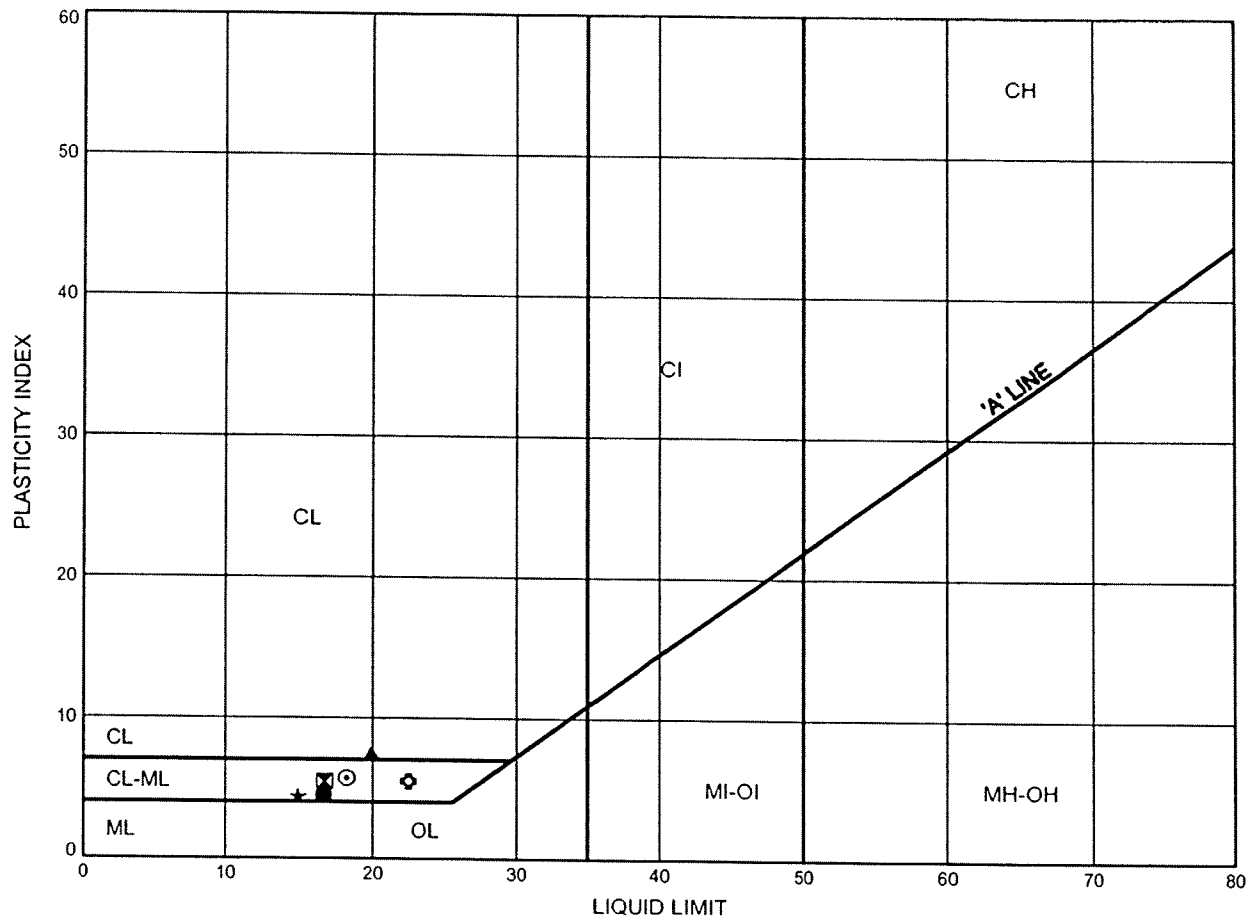
Prep'd AN

Chkd. RPR

Hwy 404 Extension ATTERBERG LIMITS TEST RESULTS

FIGURE E55

CLAYEY SILT & CLAYEY SILT TILL



SYMBOL	BH	DEPTH (m)	ELEV. (m)
●	08-40	3.28	258.03
⊠	08-40	6.40	254.91
▲	08-41	2.51	261.19
★	08-46	17.07	239.63
⊙	08-47	7.92	249.46
⊛	08-47	20.12	237.26

Date September 2009
Project 2109-05-00

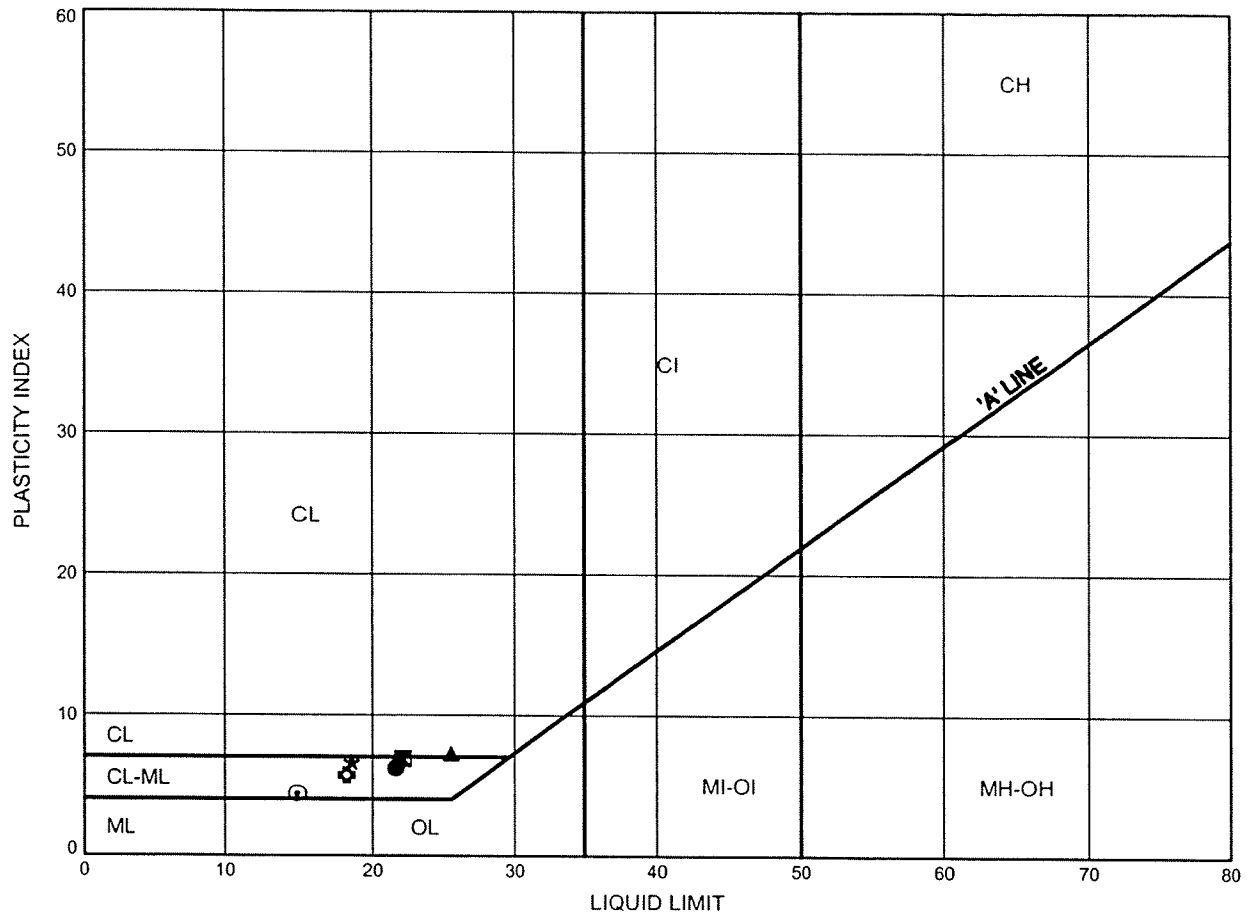


Prep'd AN
Chkd. RPR

Hwy 404 Extension ATTERBERG LIMITS TEST RESULTS

FIGURE E56

CLAYEY SILT to SILT



SYMBOL	BH	DEPTH (m)	ELEV. (m)
●	08-19	2.51	266.09
⊠	08-20	1.75	266.95
▲	08-21	3.28	264.82
★	08-45	15.47	242.80
⊙	08-46	17.07	239.63
⊗	08-47	7.92	249.46

Date July 2009
Project 19-1605-95

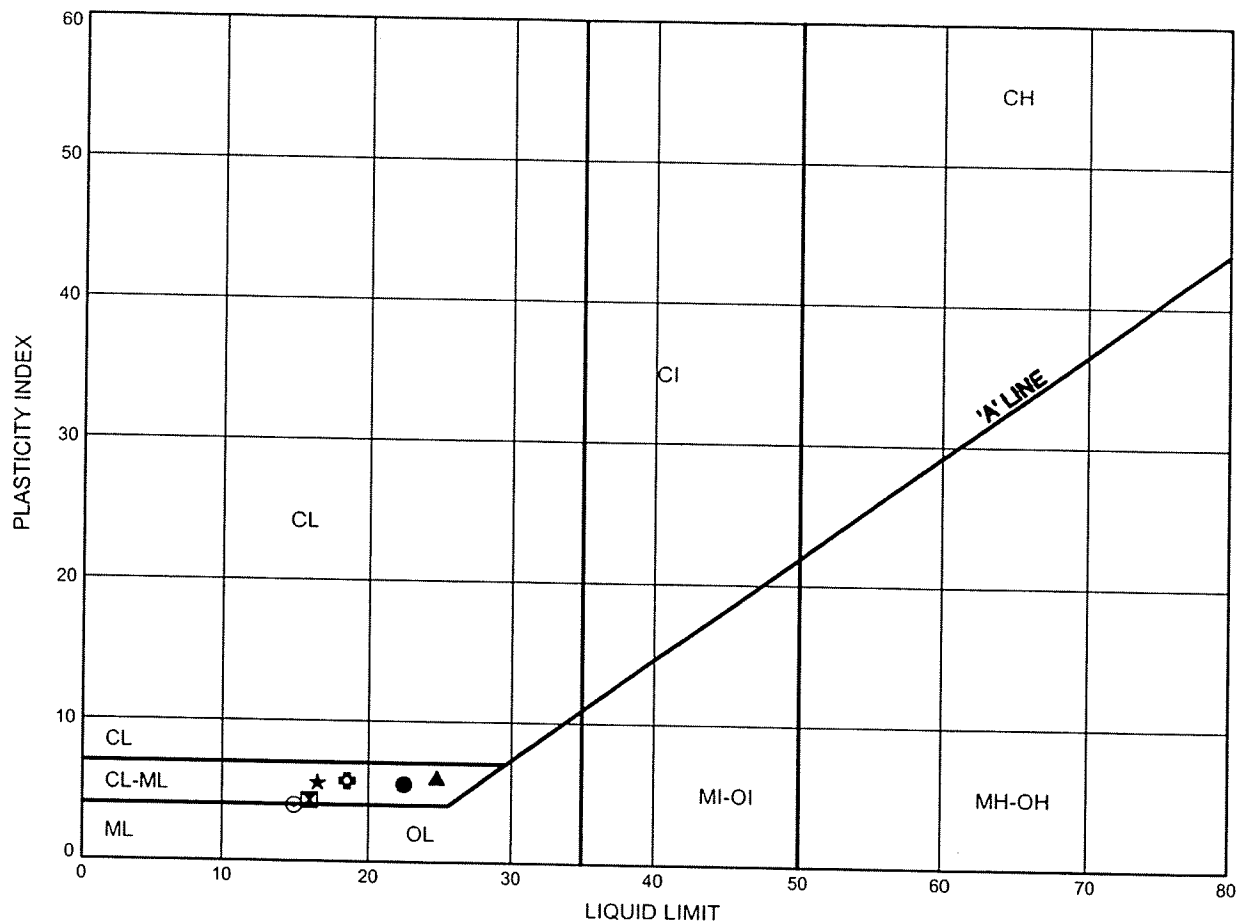


Prep'd MFA
Chkd. DEE

Hwy 404 Extension ATTERBERG LIMITS TEST RESULTS

FIGURE E57

CLAYEY SILT to SILT



SYMBOL	BH	DEPTH (m)	ELEV. (m)
●	08-47	20.12	237.26
⊠	08-53	3.54	258.60
▲	08-54	2.59	258.41
★	08-55	6.40	255.27
⊙	QSR1-1	9.45	247.47
⊕	QSR1-2	3.35	253.69

Date July 2009

Project 19-1605-95



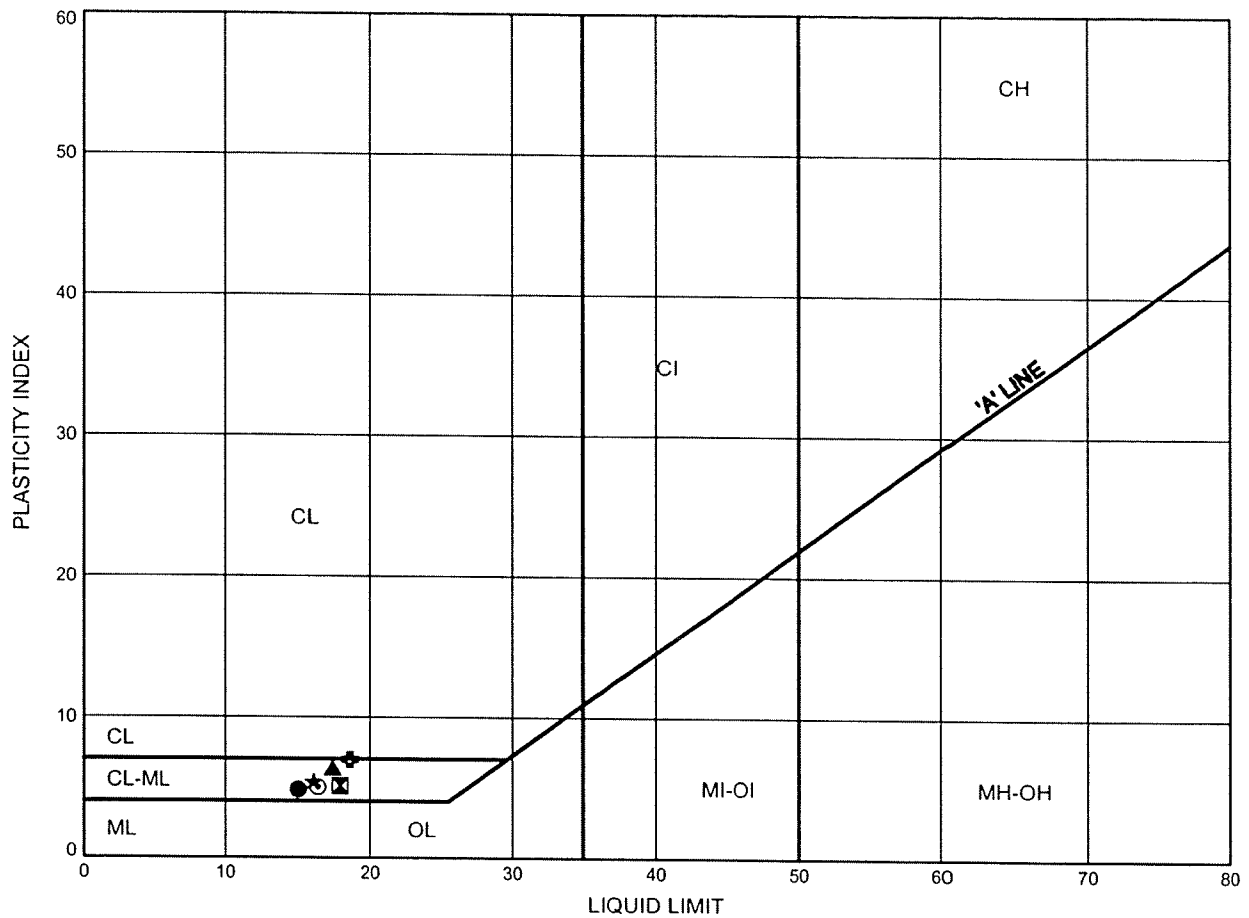
Prep'd MFA

Chkd. DEE

Hwy 404 Extension ATTERBERG LIMITS TEST RESULTS

FIGURE E58

CLAYEY SILT to SILT



SYMBOL	BH	DEPTH (m)	ELEV. (m)
●	QSR1-2	7.92	249.12
⊠	QSR1-2	10.97	246.07
▲	QSR2-1	4.88	251.32
★	QSR2-1	9.45	246.75
⊙	QSR2-2	7.92	248.44
⊞	QSR2-3	3.35	253.48

Date July 2009
Project 19-1605-95

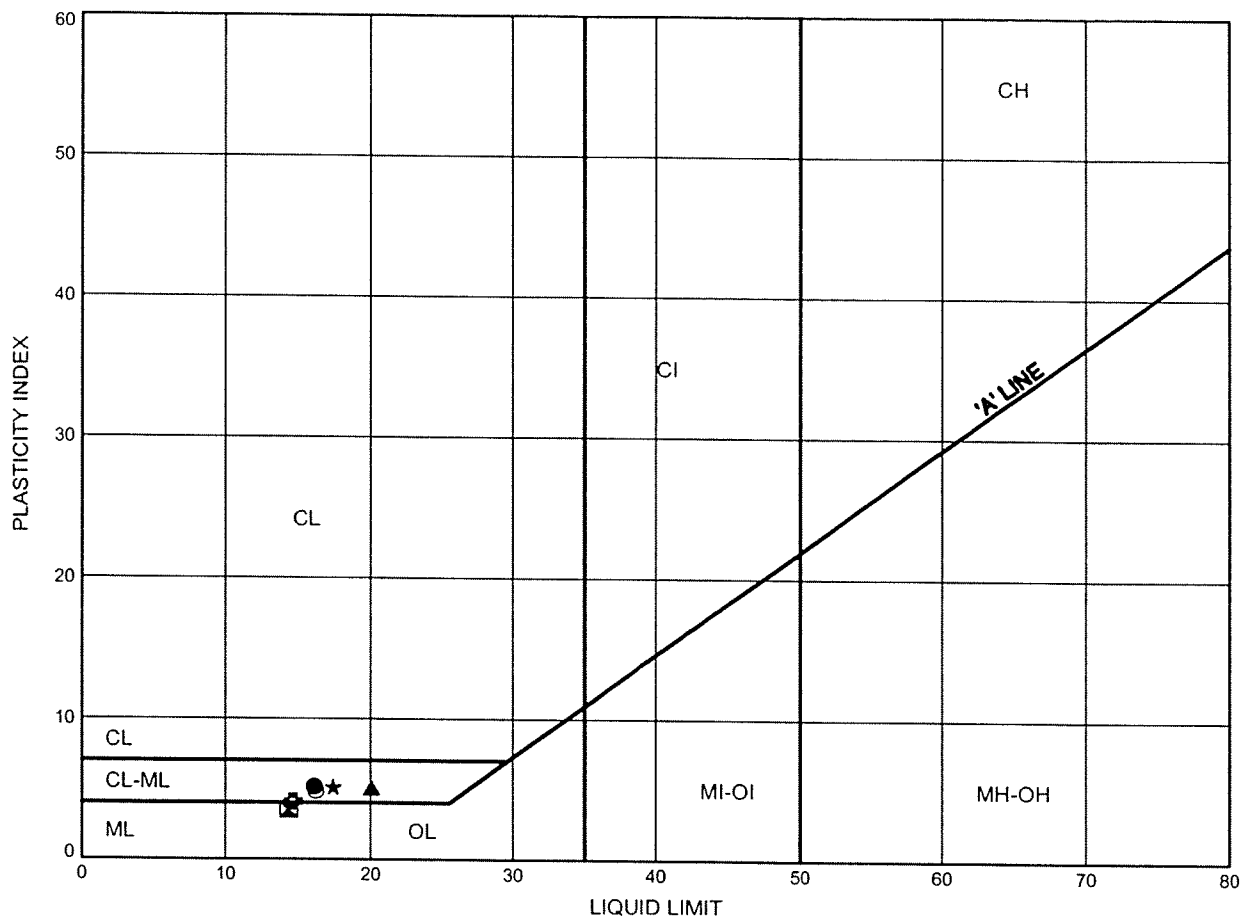


Prep'd MFA
Chkd. DEE

Hwy 404 Extension ATTERBERG LIMITS TEST RESULTS

FIGURE E59

CLAYEY SILT to SILT



SYMBOL	BH	DEPTH (m)	ELEV. (m)
●	QSR2-3	6.40	250.43
⊠	QSR2-4	6.40	249.10
▲	QSR2-4	12.50	243.00
★	QSR3-1	3.35	252.02
⊙	QSR3-1	14.02	241.35
⊛	QSR3-2	12.50	243.01

Date July 2009

Project 19-1605-95



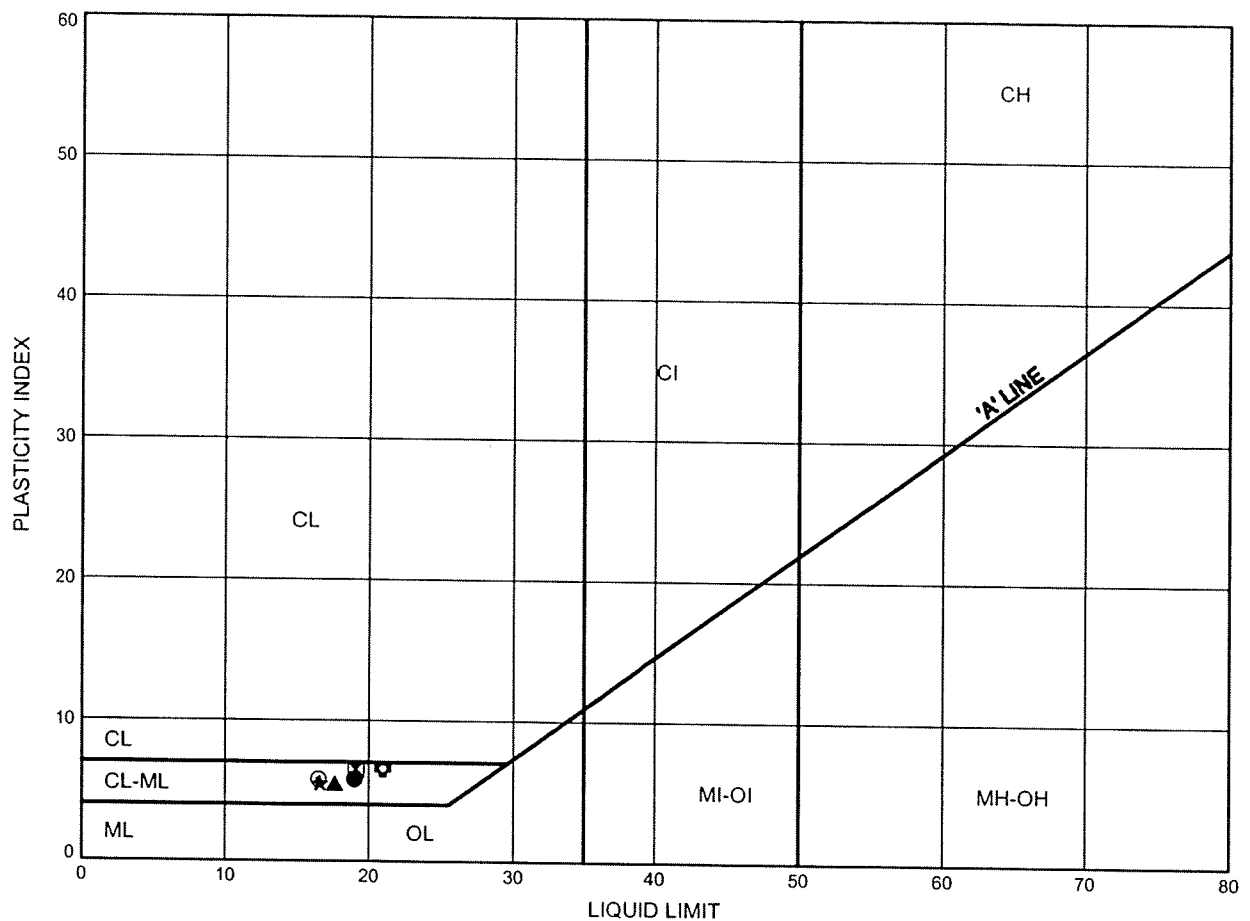
Prep'd MFA

Chkd. DEE

Hwy 404 Extension ATTERBERG LIMITS TEST RESULTS

FIGURE E60

CLAYEY SILT to SILT



SYMBOL	BH	DEPTH (m)	ELEV. (m)
●	QSR3-3	7.92	247.92
⊠	QSR3-4	6.40	249.25
▲	QSR3-5	2.59	252.44
★	QSR3-5	6.40	248.63
⊙	QSR3-5	9.45	245.58
⊕	QSR4-1	2.59	251.15

Date July 2009

Project 19-1605-95



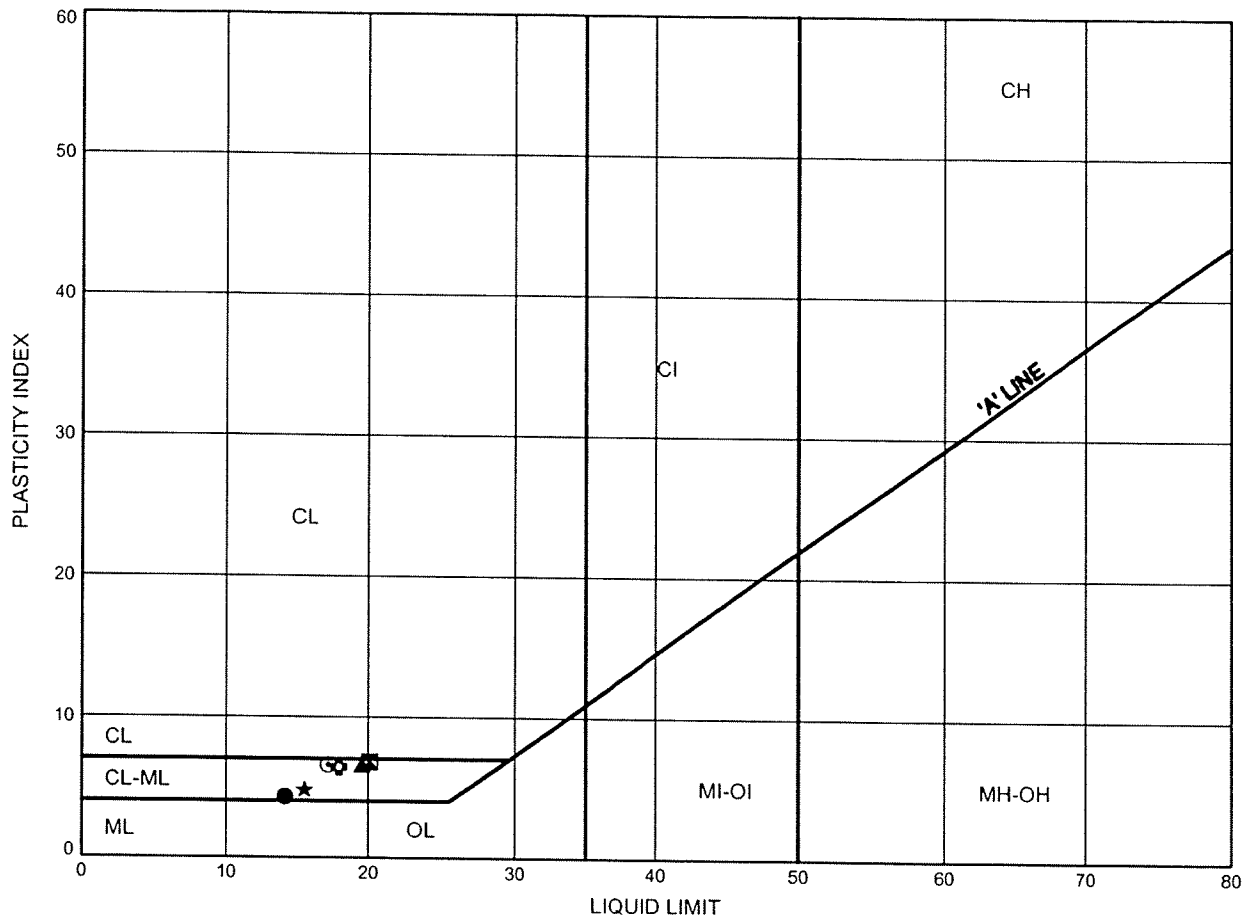
Prep'd MFA

Chkd. DEE

Hwy 404 Extension ATTERBERG LIMITS TEST RESULTS

FIGURE E61

CLAYEY SILT to SILT



SYMBOL	BH	DEPTH (m)	ELEV. (m)
●	QSR4-1	6.40	247.34
⊠	QSR4-2	2.59	252.26
▲	QSR4-3	4.88	252.27
★	QSR4-3	10.97	246.18
⊙	QSR4-4	3.35	252.08
⊛	QSR4-4	7.92	247.51

Date July 2009

Project 19-1605-95



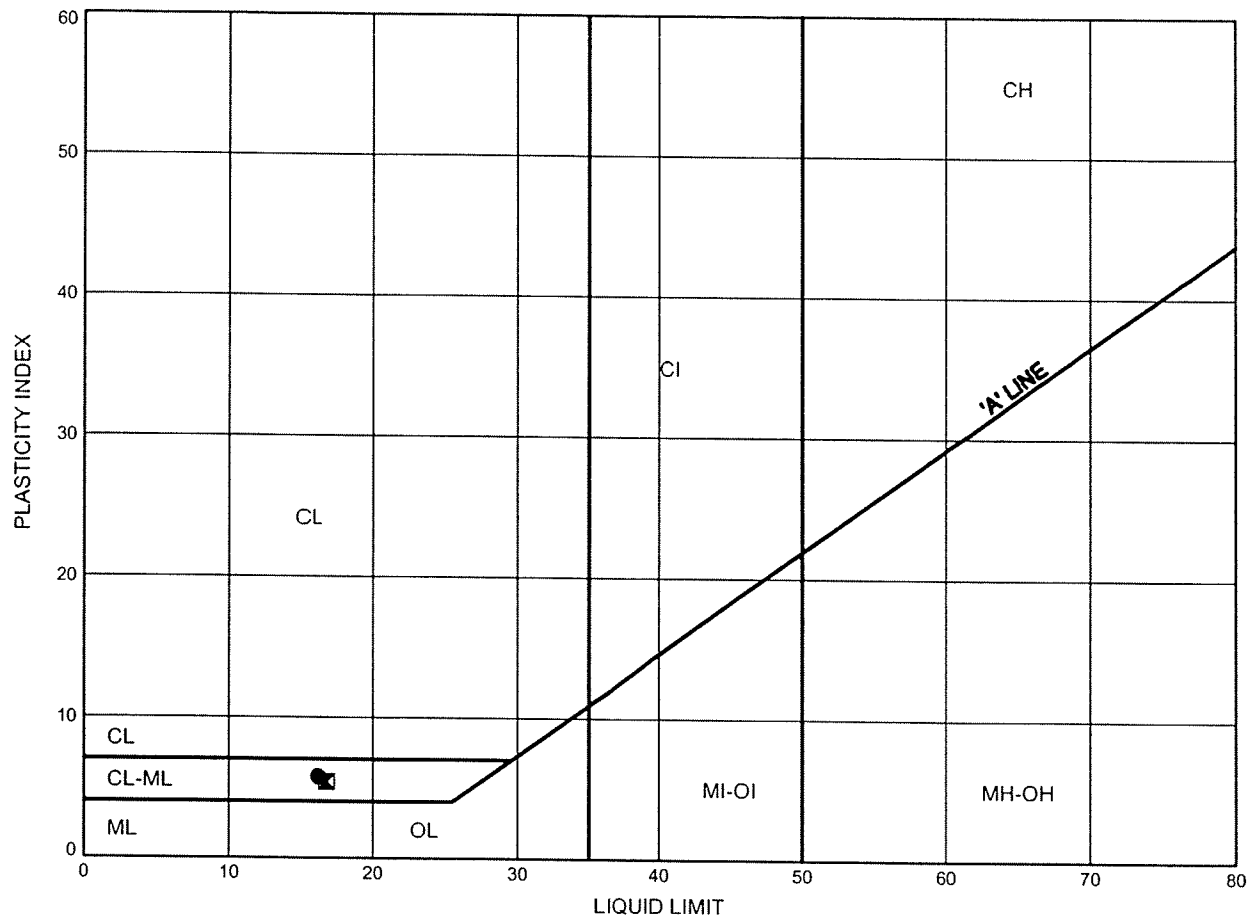
Prep'd MFA

Chkd. DEE

Hwy 404 Extension ATTERBERG LIMITS TEST RESULTS

FIGURE E62

CLAYEY SILT to SILT



SYMBOL	BH	DEPTH (m)	ELEV. (m)
●	QSR4-4	10.97	244.46
☒	QSR4-5	9.45	245.98

Date July 2009
Project 19-1605-95



Prep'd MFA
Chkd. DEE

APPENDIX F

**PRIVATE WELL SURVEY FORMS
AND WELL CONSTRUCTION DETAILS**

Section 3: STANDARD FORMS

Form 1: Field Survey Documentation Form

General

Location: 1656 Green Lane Project: Hwy 404
Owner: Rice Commercial Group Date: June 30, 2001
Person Interviewed: John Metcalfe

Background

Owned Property / Tenant Since: tenant June 2007
Current Problems? Describe: N/A

Water Use (Number of Residents): 3 people (domestic, drink)

Recent Changes In Water Use: None

Prior Investigations On Water / Well: None

Results: No shortages

Resident's Statement: Since acquiring the property there have
been no known problems with the water
supply.

Section 3: STANDARD FORMS

Page 2 of 3

Well In Use

Location On Property: North of house (approx 15m from house)

Type: ☐ Dug ☒ Overburden
☒ Drilled ☐ Bedrock

Installation Date: mid 80's

From Well Record:

Pump Rate: _____ Total Depth: _____ Pump Depth: _____

Screened Interval: _____ Diameter: 0.15m

Completed In: _____ Static Water Level: _____

Measured Water Level: _____

Reference Point: ☐ Ground Surface
☐ Casing Top

Casing Extension Above Ground Surface: 0.3m

Problems / Comments: None

Historic Sample Results?: None known
Sampled By: _____

Results (Append If Insufficient Space): _____

Sample Obtained Today? yes Location: outside faucet

Observations:

Colour: None Odour: None

Sediment: None Sheening: None

Section 3: STANDARD FORMS

Page 3 of 3

Water Treatment System

System Present? Softener

Type:

Particle Filter / Carbon Filter / Reverse Osmosis / Distillation / Iron Filter
Green Sand / Ultra Violet / Other _____

Date Of Installation: Unknown

Services:

☒ Entire House
☐ Kitchen Faucet Only

Septic System

Location On Property: Unknown by John Metcalfe

Problems / Comments: None known

Notes

Attach a hand drawn site plan showing location of the well relative to other features.

Section 3: STANDARD FORMS

Form 1: Field Survey Documentation Form

General

Location: 1965 Greenlane Project: Hung 404

Owner: Rice Commercial Group Date: June 30, 2007

Person Interviewed: Clay / John Metcalfe

Background

Owned Property / Tenant Since: July 2007

Current Problems? Describe: None reported

Water Use (Number of Residents): 1 domestic and drink

Recent Changes In Water Use:

Prior Investigations On Water / Well:

Results: No shortages

Resident's Statement: No problems reported since
acquiring the property.

Section 3: STANDARD FORMS

Page 2 of 3

Well In Use

Location On Property: South west (40 m from house)

Type: ☐ Dug ☒ Overburden
☒ Drilled ☐ Bedrock

Installation Date: unknown

From Well Record:

Pump Rate: _____ Total Depth: _____ Pump Depth: _____

Screened Interval: _____ Diameter: 0.15 m

Completed In: _____ Static Water Level: _____

Measured Water Level: _____

Reference Point: ☐ Ground Surface
☐ Casing Top

Casing Extension Above Ground Surface: 0.45 m

Problems / Comments: None reported

Historic Sample Results?: None known

Sampled By: _____

Results (Append If Insufficient Space): _____

Sample Obtained Today? yes Location: kitchen faucet

Observations:

Colour: None Odour: None

Sediment: None Sheening: None

Section 3: STANDARD FORMS

Page 3 of 5

Water Treatment System

System Present? Nothing

Type:

Particle Filter / Carbon Filter / Reverse Osmosis / Distillation / Iron Filter
Green Sand / Ultra Violet / Other _____

Date Of Installation: _____

Services:

☒ Entire House
☐ Kitchen Faucet Only

Septic System

Location On Property: North of the house

Problems / Comments: No backups known of

Notes

Attach a hand drawn site plan showing location of the well relative to other features.

Section 3: STANDARD FORMS

Form 1: Field Survey Documentation Form

General

Location: 18574 Woodbine Ave Project: Hwy 404 Extension

Owner: Rice Commercial Group Date: June 29/2009

Person Interviewed: M. Mendes

Background

Owned Property / Tenant Since: Dec 2008

Current Problems? Describe: No shortages, no chemical issues

No problems reported

Water Use (Number of Residents): 2 people (domestic use; no drink)

Recent Changes In Water Use: N/A

Prior Investigations On Water / Well: None

Results: No shortages

Resident's Statement: No problems to date.

Section 3: STANDARD FORMS

Page 2 of 3

Well In Use

Location On Property: West of house (approx 35m) at baseline

Type: ☒ Dug ☒ Overburden
☐ Drilled ☐ Bedrock

Installation Date: _____

From Well Record:

Pump Rate: _____ Total Depth: _____ Pump Depth: _____

Screened Interval: _____ Diameter: 0.15 m

Completed In: _____ Static Water Level: _____

Measured Water Level: Not measured

Reference Point: ☐ Ground Surface
☐ Casing Top

Casing Extension Above Ground Surface: 0.45m

Problems / Comments: N/A

Historic Sample Results?:

Sampled By: None known

Results (Append If Insufficient Space): _____

Sample Obtained Today? yes

Location: Kitchen faucet

Observations:

Colour: clear

Odour: None

Sediment: None

Sheening: None

Section 3: STANDARD FORMS

Page 3 of 3

Water Treatment System

System Present? Water Softener only

Type: Particle Filter / Carbon Filter / Reverse Osmosis / Distillation / Iron Filter
Green Sand / Ultra Violet / Other _____

Date Of Installation: _____

Services: ☒ Entire House
☐ Kitchen Faucet Only

Septic System

Location On Property: Not known / appears north of house

Problems / Comments: None reported

Notes *Attach a hand drawn site plan showing location of the well relative to other features.*

Section 3: STANDARD FORMS

Form 1: Field Survey Documentation Form

General

Location: 20086 Woodbine Project: Hwy 404 Extension

Owner: Buckle Date: June 24/09

Person Interviewed: Sarah Buckle

Background

Owned Property / Tenant Since: 50 years

Current Problems? Describe: no shortages, ~~some water quality~~

Water Use (Number of Residents): 4 domestic / livestock

Recent Changes In Water Use: None

Prior Investigations On Water / Well: No

Results: _____

Resident's Statement: No problems at all in the past

Section 3: STANDARD FORMS

Page 2 of 3

Well In Use

Location On Property: South of the house (~10m from house/~30m from livestock)

Type: ☐ Dug ☒ Overburden
☒ Drilled ☐ Bedrock

Installation Date: Unknown

From Well Record:

Pump Rate: _____ Total Depth: _____ Pump Depth: _____

Screened Interval: _____ Diameter: 0.150m

Completed In: _____ Static Water Level: _____

Measured Water Level: unknown sealed

Reference Point: ☐ Ground Surface
☐ Casing Top

Casing Extension Above Ground Surface: 0.2m

Problems / Comments: None reported

Historic Sample Results?:

Sampled By: None

Results (Append If Insufficient Space):

Sample Obtained Today? Yes Location: Kitchen sink

Observations:

Colour: None Odour: None

Sediment: None Sheening: None

Section 3: STANDARD FORMS

Page 3 of 3

Water Treatment System

System Present? None / water softener

Type:

Particle Filter / Carbon Filter / Reverse Osmosis / Distillation / Iron Filter
Green Sand / Ultra Violet / Other _____

Date Of Installation: _____

Services:

☒ Entire House
☐ Kitchen Faucet Only

Septic System

Location On Property: West of house (up gradient)

Problems / Comments: livestock upgradient from well

Notes

Attach a hand drawn site plan showing location of the well relative to other features.

Section 3: STANDARD FORMS

Form 1: Field Survey Documentation Form

General

Location: 2088 Farr Ave Project: Hwy 404 Extension

Owner: M. Franza Date: June 24, 2009

Person Interviewed: Marianna Franza

Background

Owned Property / Tenant Since: owner since 1977

Current Problems? Describe: slight shortage since the const.
of Doane Road well (since 1991-93). Wait 20-30
mins. for recovery.

Water Use (Number of Residents): 3 people

Recent Changes In Water Use: N/A

Prior Investigations On Water / Well: N/A

Results: _____

Resident's Statement: cannot ~~empty~~ use water continuously
as well will run dry (large quantities of water)
runs around 20 min. Drink the water (not for
company/guests)

Section 3: STANDARD FORMS

Page 2 of 3

Well In Use

Location On Property: North west corner (~10m from house)

Type: ☐ Dug ☒ Overburden
☒ Drilled ☐ Bedrock

Installation Date: _____

From Well Record:

Pump Rate: _____ Total Depth: 30.07m Pump Depth: _____

Screened Interval: _____ Diameter: 135 mm

Completed In: ~1977 Static Water Level: _____

Measured Water Level: 15.92m

Reference Point: ☐ Ground Surface
☒ Casing Top

Casing Extension Above Ground Surface: 300mm

Problems / Comments: Well is around 32 years old
use for all domestic purposes.

Historic Sample Results?:

Sampled By: Health Dept. yes (around 2008)

Results (Append If Insufficient Space): N/A

Sample Obtained Today? yes Location: Kitchen tap

Observations:

Colour: clear Odour: N/A

Sediment: N/A Sheening: None

Section 3: STANDARD FORMS

Page 3 of 3

Water Treatment System

System Present? yes - water softener

Type:

Particle Filter / Carbon Filter / Reverse Osmosis / Distillation / Iron Filter
Green Sand / Ultra Violet / Other _____

Date Of Installation: ~ 2005 (filter replaced in 2008)

Services:

☒ Entire House
☐ Kitchen Faucet Only

Septic System

Location On Property: Not known

Problems / Comments: No problems reported.

Notes

Attach a hand drawn site plan showing location of the well relative to other features.

Paid around \$2000 for UV filter because of
E.Coli outbreak in the area. Never had issues
with flooding. Well overflowed last year during
rain. Some contamination was suspected.

Section 3: STANDARD FORMS

Form 1: Field Survey Documentation Form

General

Location: 2176 Farr Ave Project: Hwy 404 Extension
Owner: Charles Avenue Date: 06/24/02
Person Interviewed: N/A

Background

Owned Property / Tenant Since: Unknown

Current Problems? Describe: Water well not used / house
abandoned

Water Use (Number of Residents): _____

Recent Changes In Water Use: Not used

Prior Investigations On Water / Well: N/A

Results: _____

Resident's Statement: N/A

Section 3: STANDARD FORMS

Page 2 of 3

Well In Use

Location On Property: South west of house (approx. 15m)

Type: ☐ Dug ☒ Overburden
☒ Drilled ☐ Bedrock

Installation Date: _____

From Well Record:

Pump Rate: _____ Total Depth: N/A Pump Depth: _____

Screened Interval: _____ Diameter: 0.150 m

Completed In: _____ Static Water Level: Sealed well (retrofit into dug well)

Measured Water Level: Not measured

Reference Point: ☐ Ground Surface approx. 1.5 m BGS
☒ Casing Top

Casing Extension Above Ground Surface: -1.5 m

Problems / Comments: N/A

Historic Sample Results?:

Sampled By: N/A

Results (Append If Insufficient Space):

Sample Obtained Today? yes Location: back faucet

Observations:

Colour: clear Odour: None

Sediment: None Sheening: None

Section 3: STANDARD FORMS

Page 3 of 3

Water Treatment System

System Present? N/A

Type:

Particle Filter / Carbon Filter / Reverse Osmosis / Distillation / Iron Filter
Green Sand / Ultra Violet / Other _____

Date Of Installation: N/A

Services:

☐ Entire House
☐ Kitchen Faucet Only

Septic System

Location On Property: NA

Problems / Comments:

Notes

Attach a hand drawn site plan showing location of the well relative to other features.

Not occupied

Section 3: STANDARD FORMS

Form 1: Field Survey Documentation Form

General

Location: 2203 Farr Ave Project: Henry 404 Extension
Owner: Ida Bertolin Date: June 24/07
Person Interviewed: Ida Bertolin

Background

Owned Property / Tenant Since: yes
Current Problems? Describe: None

Water Use (Number of Residents): drink / wash domestic

Recent Changes In Water Use: None

Prior Investigations On Water / Well: No

Results:

Resident's Statement: No problems to date.

Section 3: STANDARD FORMS

Page 2 of 3

Well In Use

Location On Property: Northwest property (40m from house)

Type: ☒ Dug ☒ Overburden
☐ Drilled ☐ Bedrock

Installation Date: unknown

From Well Record:

Pump Rate: _____ Total Depth: _____ Pump Depth: _____

Screened Interval: concrete Diameter: 1.2m

Completed In: _____ Static Water Level: _____

Measured Water Level: 3.21m

Reference Point: ☐ Ground Surface
☒ Casing Top

Casing Extension Above Ground Surface: 0.3m

Problems / Comments: NA

Historic Sample Results?:

Sampled By: None

Results (Append If Insufficient Space):

Sample Obtained Today? yes Location: Kitchen

Observations:

Colour: None Odour: None

Sediment: None Sheening: None

Section 3: STANDARD FORMS

478-4136

Page 3 of 3

Would like a call when results are known.

Water Treatment System

System Present? None

Type:

Particle Filter / Carbon Filter / Reverse Osmosis / Distillation / Iron Filter
Green Sand / Ultra Violet / Other None

Date Of Installation: _____

Services:

☒ Entire House
☐ Kitchen Faucet Only

Septic System

Location On Property: Southwest property

Problems / Comments: _____

None

Notes

Attach a hand drawn site plan showing location of the well relative to other features.

Section 3: STANDARD FORMS

Form 1: Field Survey Documentation Form *A060299*

General

Location: *19601 Leslie Ave* Project: *Hwy 404 Extension*

Owner: _____ Date: *June 24/2009*

Person Interviewed: *Bill Wheeler*

Background

Owned Property / Tenant Since: _____

Current Problems? Describe: *only 5' (1.5m) static water,*

*Two wells have gone dry since installation of
Docue Road well*

Water Use (Number of Residents): *Domestic, livestock*

Recent Changes In Water Use: *lower water level*

Prior Investigations On Water / Well: *weekly bacteriological testing*

Results: *Posted on web - kept under O.Reg 17*

Resident's Statement: _____

*3 wells onsite (1 removed @ 100 ft - dry)
employs ~200 people - 12 residents full time and
livestock; agriculture; Pump @ 12 GPM full time*

Section 3: STANDARD FORMS

Page 2 of 3

Well In Use

Location On Property: East portion (10m south of maintenance building)

Type: ☐ Dug ☐ Overburden
☒ Drilled ☒ Bedrock

Installation Date: ~2007

From Well Record:

Pump Rate: 12 GAL/min Total Depth: ~300 ft Pump Depth: ~300 ft

Screened Interval: 3' (1m) Diameter: 150 mm

Completed In: ~2007 Static Water Level: reported @ 5' (1.5m)

Measured Water Level: N/A

Reference Point: ☐ Ground Surface
☐ Casing Top

Casing Extension Above Ground Surface: 1.0m

Problems / Comments: Low static level due to
other wells in proximity / poor drainage to
the east

Historic Sample Results?:

Sampled By: B. Wheeler (weekly)

Results (Append If Insufficient Space): on web

Sample Obtained Today? Yes

Location: Maintenance Building

Observations:

Colour: Clear

Odour: None

Sediment: None

Sheening: None

Section 3: STANDARD FORMS

Page 3 of 3

Water Treatment System

System Present? yes

Type:

Particle Filter / Carbon Filter / Reverse Osmosis / Distillation / Iron Filter
Green Sand / Ultra Violet / Other Chlorine

Date Of Installation:

Services: A066299 ☒ Entire House / compound
☐ Kitchen Faucet Only

Septic System

Location On Property: Several throughout property

Problems / Comments: None reported.

Notes

Attach a hand drawn site plan showing location of the well relative to other features.

Section 3: STANDARD FORMS

Form 1: Field Survey Documentation Form

General

Location: 20089 Leslie Project: Heavy 404 Extension
Owner: Metris Development Date: June 24/2009
Person Interviewed: Kevin Chadwick

Background

Owned Property / Tenant Since: Feb '09
Current Problems? Describe: Some door issues, no shortages
use for livestock

Water Use (Number of Residents): 4 use the water (washing only; no drinking)

Recent Changes In Water Use: None

Prior Investigations On Water / Well: No

Results: _____

Resident's Statement: No concerns about the water
since becoming a tenant. Recently installed
a new foot valve on pump.

Section 3: STANDARD FORMS

Page 2 of 3

Well In Use

Location On Property: in barn

Type: ☒ Dug ☒ Overburden
☐ Drilled ☐ Bedrock

Installation Date: > 50 years old

From Well Record:

Pump Rate: _____ Total Depth: 6.42 m Pump Depth: ~6.4 m

Screened Interval: bricked Diameter: 1.5 m

Completed In: unknown Static Water Level: _____

Measured Water Level: 1.73 m

Reference Point: ☒ Ground Surface
☒ Casing Top

Casing Extension Above Ground Surface: None

Problems / Comments: in barn with livestock

Historic Sample Results?:

Sampled By: N/A

Results (Append If Insufficient Space):

Sample Obtained Today? yes Location: kitchen sink

Observations:

Colour: pink Odour: none

Sediment: None Sheening: None

Section 3: STANDARD FORMS

Page 3 of 3

Water Treatment System

System Present? water softener.

Type:

Particle Filter / Carbon Filter / Reverse Osmosis / Distillation / Iron Filter
Green Sand / Ultra Violet / Other unknown

Date Of Installation: _____

Services:

☒ Entire House/Barn
☐ Kitchen Faucet Only

Septic System

Location On Property: South and north side of residence

Problems / Comments: No problems / flushed regularly

Notes

Attach a hand drawn site plan showing location of the well relative to other features.

Section 3: STANDARD FORMS

Form 1: Field Survey Documentation Form

General

Location: 1825 Doane Road Project: Hwy 404
Owner: Paul Mayhew Date: May 17, 2009
Person Interviewed: Paul Mayhew

Background

Owned Property / Tenant Since: 1990
Current Problems? Describe: occasional shortages of supply

Water Use (Number of Residents): 4 (domestic and drinking)

Recent Changes In Water Use: None

Prior Investigations On Water / Well: None

Results:

Resident's Statement: Occasional shortages after prolonged use (multiple showers/washing dishes/laundry)

Section 3: STANDARD FORMS

Page 2 of 3

Well In Use

Location On Property: North of Commercial building (~20m)

Type: ☒ Dug ☒ Overburden
☐ Drilled ☐ Bedrock

Installation Date: Unknown

From Well Record:

Pump Rate: _____ Total Depth: ~35ft (~10.6m) Pump Depth: _____

Screened Interval: _____ Diameter: 0.9m

Completed In: _____ Static Water Level: _____

Measured Water Level: 0.96m

Reference Point: ☐ Ground Surface
☒ Casing Top

Casing Extension Above Ground Surface: 0.25 - 0.3m

Problems / Comments: None reported

Historic Sample Results?: None reported

Sampled By: _____

Results (Append If Insufficient Space): _____

Sample Obtained Today? yes

Location: Commercial kitchen faucet

Observations:

Colour: None

Odour: None

Sediment: None

Sheening: None

Section 3: STANDARD FORMS

Page 3 of 3

Water Treatment System

System Present? yes

Type: Particle Filter / Carbon Filter / Reverse Osmosis / Distillation / Iron Filter
Green Sand / Ultra Violet / Other _____

Date Of Installation: _____

Services: ☒ Entire House
☐ Kitchen Faucet Only

Septic System

Location On Property: South of residence

Problems / Comments: None reported

Notes

Attach a hand drawn site plan showing location of the well relative to other features.

Section 3: STANDARD FORMS

Form 1: Field Survey Documentation Form

General

Location: 1982 Quinsville SR Project: Hwy 404

Owner: 1604270 Ontario Inc Date: May 17, 2009

Person Interviewed: Tenant (declined to give name)

Background

Owned Property / Tenant Since: Mar 2009

Current Problems? Describe: None reported

Water Use (Number of Residents): 3 (domestic and drink)

Recent Changes In Water Use: New well installed by owner

Prior Investigations On Water / Well: None known

Results:

Resident's Statement: Since new well installed there
have been no problems with supply or other
issues. Some sediment in water at first, though
the amount has reduced with time and use.

Section 3: STANDARD FORMS

Page 2 of 3

Well In Use

Location On Property: South of house (~5m from residence)

Type: ☐ Dug ☐ Overburden
☒ Drilled ☒ Bedrock

Installation Date: April 2009

From Well Record:

Pump Rate: _____ Total Depth: >100ft (>30m) Pump Depth: _____

Screened Interval: _____ Diameter: 0.15 m

Completed In: 2009 Static Water Level: _____

Measured Water Level: >30m depth

Reference Point: ☒ Ground Surface
☐ Casing Top

Casing Extension Above Ground Surface: 1.0m

Problems / Comments: None reported: MOE Well ID#
AD81416

Historic Sample Results?: No

Sampled By: _____

Results (Append If Insufficient Space): _____

Sample Obtained Today? yes

Location: Kitchen Faucet

Observations:

Colour: None Odour: None

Sediment: None Sheening: None

Section 3: STANDARD FORMS

Page 3 of 3

Water Treatment System

System Present? No (water softener - maybe)

Type:

Particle Filter / Carbon Filter / Reverse Osmosis / Distillation / Iron Filter
Green Sand / Ultra Violet / Other _____

Date Of Installation: _____

Services:

Entire House

Kitchen Faucet Only

} unknown to tenant

Septic System

Location On Property: North of residence (reported)

Problems / Comments: None

Notes

Attach a hand drawn site plan showing location of the well relative to other features.

APPENDIX G
MUNICIPAL WELLS – ANNUAL REPORT

OPTIONAL ANNUAL REPORT TEMPLATE

Drinking-Water System Number:	260001955
Drinking-Water System Name:	Sharon/Queensville Water Supply System
Drinking-Water System Owner:	Regional Municipality of York
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2008 to December 31, 2008

Complete if your Category is Large Municipal Residential or Small Municipal Residential

Does your Drinking-Water System serve more than 10,000 people? Yes [] No [X]

Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No []

Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.

Regional Municipality of York
Administrative Building
Transportation and Works Department
17250 Yonge Street
Newmarket, Ontario

Complete for all other Categories.

Number of Designated Facilities served:

Did you provide a copy of your annual report to all Designated Facilities you serve?

Yes [] No []

Number of Interested Authorities you report to:

Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?

Yes [] No []

Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number
Sharon Distribution System	260001747
Queensville Distribution System	260001942

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?

Yes [X] No []



Indicate how you notified system users that your annual report is available, and is free of charge.

- ☒ **Public access/notice via the web**
- ☒ **Public access/notice via Government Office**
- ☒ **Public access/notice via a newspaper**
- ☒ **Public access/notice via Public Request**
- ☐ **Public access/notice via a Public Library**
- ☐ **Public access/notice via other method** _____

Describe your Drinking-Water System

York Region operates four production wells in the community of Queensville. The wells are a major source of water for the Town of Newmarket. These wells also supply water to the residents of Queensville and Sharon. There are no production wells in Sharon.

The Queensville wells draw water from the Yonge Street Aquifer which is also the water source for the Town of Newmarket and the Town of Aurora. Water withdrawal from each of the wells is regulated by a Permit to Take Water, issued by the Ministry of the Environment for the Yonge Street Aquifer as a whole. York Region is continuing to work to improve our understanding of the Yonge Street Aquifer and the effects of water taking through detailed hydrogeological studies, numerical modeling analysis and an extensive monitoring program.

Chloramination (adding chlorine and ammonia) is the disinfection process used for the Sharon/Queensville production wells. Sodium silicate is added to the water to reduce the potential for iron to stain plumbing fixtures and laundry in the serviced area. Fluoride is not added to the water supply.

Following treatment water enters the Sharon/Queensville distribution system from two points: wells #1 and #2 combined, and wells #3 and #4 combined. There is one storage tank servicing the community of Sharon.

York Region is the wholesale supplier of water to the communities of Sharon and Queensville and is responsible for the supply, production, treatment and storage of water. The Town of East Gwillimbury owns and operates the distribution system that delivers the water from the regional watermain to homes in Sharon and Queensville.

List all water treatment chemicals used over this reporting period

Chlorine Gas
Sodium Silicate
Ammonium Sulphate

Were any significant expenses incurred to?

- ☐ **Install required equipment**
- ☐ **Repair required equipment**
- ☐ **Replace required equipment**

Please provide a brief description and a breakdown of monetary expenses incurred
Some of the following expenditures represent only part of the total project costs.

Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date

Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.

	Number of Samples	Range of E.Coli Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	212	0	0-1		
Treated	106	0	0	106	1-5
Distribution					

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

	Number of Grab Samples	Range of Results (min #)-(max #)
Turbidity (Treated)	8760	0.032 – 3.458
Turbidity (Raw)	54	0.130 – 2.2
Chlorine	8760	0.760 – 3.368
Fluoride (If the DWS provides fluoridation)		

NOTE: For continuous monitors use 8760 as the number of samples.

NOTE: Record the unit of measure if it is *not* milligrams per litre.

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure

Summary of Inorganic parameters tested during this reporting period or the most recent sample results

Note: See attached results for Inorganic parameters

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony				
Arsenic				
Barium				
Boron				
Cadmium				
Chromium				
Lead				
Mercury				
Selenium				
Sodium				
Uranium				
Fluoride				
Nitrite				
Nitrate				

Summary of lead testing under Schedule 15.1 during this reporting period

(applicable to the following drinking water systems; large municipal residential systems, small municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Number of Exceedances
Plumbing			
Distribution			

Summary of Organic parameters sampled during this reporting period or the most recent sample results

Note: See attached results for Organic parameters (THM values in table below)

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor				
Aldicarb				
Aldrin + Dieldrin				
Atrazine + N-dealkylated metabolites				
Azinphos-methyl				
Bendiocarb				
Benzene				
Benzo(a)pyrene				

Bromoxynil				
Carbaryl				
Carbofuran				
Carbon Tetrachloride				
Chlordane (Total)				
Chlorpyrifos				
Cyanazine				
Diazinon				
Dicamba				
1,2-Dichlorobenzene				
1,4-Dichlorobenzene				
Dichlorodiphenyltrichloroethane (DDT) + metabolites				
1,2-Dichloroethane				
1,1-Dichloroethylene (vinylidene chloride)				
Dichloromethane				
2,4 Dichlorophenol				
2,4-Dichlorophenoxy acetic acid (2,4-D)				
Diclofop-methyl				
Dimethoate				
Dinoseb				
Diquat				
Diuron				
Glyphosate				
Heptachlor + Heptachlor Epoxide				
Lindane (Total)				
Malathion				
Methoxychlor				
Metolachlor				
Metribuzin				
Monochlorobenzene				
Paraquat				
Parathion				
Pentachlorophenol				
Phorate				
Picloram				
Polychlorinated Biphenyls(PCB)				
Prometryne				
Simazine				
THM (NOTE: show latest annual average)				
Wells #1, #2		0.014	Mg/L	
Wells #3, #4		0.02	Mg/L	
Temephos				

Terbufos				
Tetrachloroethylene				
2,3,4,6-Tetrachlorophenol				
Triallate				
Trichloroethylene				
2,4,6-Trichlorophenol				
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)				
Trifluralin				
Vinyl Chloride				

York Region monitors another group of disinfection by-products called haloacetic acids (HAAs). There are no limits set for HAAs in Ontario Drinking Water Standards.

Haloacetic acid	Wells #1, #2 Mg/L June 30	Wells #3, #4 Mg/L June 30
Bromochloroacetic acid	<0.004	<0.004
Dibromoacetic acid	<0.004	<0.004
Dichloroacetic acid	<0.004	0.005
Monobromoacetic acid	<0.004	<0.004
Monochloroacetic acid	<0.02	<0.02
Trichloroacetic acid	0.005	0.006

“<” indicates the result is below the Method Detection Limit

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Result Value	Unit of Measure	Date of Sample

(Only if DWS category is large municipal residential, small municipal residential, large municipal non residential, non municipal year round residential, large non municipal non residential)



Inorganics Test Results

Reading	Units	ODWS		21/01/2008	09/04/2008	14/07/2008	06/10/2008
Antimony as Sb	mg/L	0.006	IMAC	0.0003	0.0005	0.0005	0.0005
Arsenic as As	mg/L	0.025	IMAC	0.0005	0.0006	0.0005	0.0004
Barium as Ba	mg/L	1	MAC		0.148		
Boron as B	mg/L	5	IMAC		0.041		
Cadmium as Cd	mg/L	0.005	MAC	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chromium as Cr	mg/L	0.05	MAC	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Fluoride as F	mg/L	0.8	MAC	0.2	0.2	0.21	0.18
Lead as Pb	mg/L	0.01	MAC	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury as Hg	mg/L	0.001	MAC		< 0.00002		
Nitrate as N	mg/L	10	MAC	0.06	0.15	0.05	0.03
Nitrite	mg/L	1	MAC	< 0.01	< 0.01	0.01	0.01
Selenium as Se	mg/L	0.01	MAC	0.0002	0.0001	0.0001	< 0.0001
Sodium as Na	mg/L	200	AO	17	17.4	16.4	17.9
Uranium as U	mg/L	0.02	MAC		< 0.0001		

<: indicates the result is below Method Detection Limit

ODWS: Ontario Drinking Water Standard

MAC: Ontario Drinking Water Standard - Health Related (Maximum Acceptable Concentration)

AO: Ontario Drinking Water Standard - Non Health Related (Aesthetic Objective)

mg/L: milligrams per litre, parts per million (ppm)



Organics Test Results

Reading	Units	ODWS	21/01/2008	09/04/2008	14/07/2008	06/10/2008
(DDT) + Metabolites	mg/L	0.03	MAC	< 0.000008		
1,1-dichloroethylene (vinylidene chloride)	mg/L	0.014	MAC	< 0.0003	< 0.0003	< 0.0003
1,2-(o-dcb) Dichlorobenzene	mg/L	0.2	MAC	< 0.0001	< 0.0001	< 0.0001
1,2-Dichloroethane	mg/L	0.005	IMAC	< 0.0001	< 0.0001	< 0.0001
1,4-(p-dcb) Dichlorobenzene	mg/L	0.005	MAC	< 0.0001	< 0.0001	< 0.0001
2,3,4,6-Tetrachlorophenol	mg/L	0.1	MAC	< 0.0005		
2,4,5-trichlorophenoxyacetic acid (2,4,5-T)	mg/L	0.28	MAC	< 0.0005		
2,4,6-Trichlorophenol	mg/L	0.005	MAC	< 0.0005		
2,4-Dichlorophenol	mg/L	0.9	MAC	< 0.0004		
2,4-dichlorophenoxyacetic acid (2,4-D)	mg/L	0.1	IMAC	< 0.0008		
Alachlor	mg/L	0.005	IMAC	< 0.0004		
Aldicarb	mg/L	0.009	MAC	< 0.0035		
Aldrin + Dieldrin	mg/L	0.0007	MAC	< 0.000006		
Atrazine + N-dealkylated metabolites	mg/L	0.005	IMAC	< 0.0002		
Azinphos-methyl	mg/L	0.02	MAC	< 0.0003		
Bendiocarb	mg/L	0.04	MAC	< 0.003		
Benzene	mg/L	0.005	MAC	< 0.0001	< 0.0001	< 0.0001
Benzo(a)pyrene	mg/L	0.00001	MAC	< 0.00001		
Bromoxynil	mg/L	0.005	IMAC	< 0.0004		
Carbaryl	mg/L	0.09	MAC	< 0.0002		
Carbofuran	mg/L	0.09	MAC	< 0.004		
Carbon Tetrachloride	mg/L	0.005	MAC	< 0.0002	< 0.0002	< 0.0002
Chlordane (Total)	mg/L	0.007	MAC	< 0.000006		
Chlorpyrifos	mg/L	0.09	MAC	< 0.0002		
Cyanazine	mg/L	0.01	IMAC	< 0.0003		
Diazinon	mg/L	0.02	MAC	< 0.0002		
Dicamba	mg/L	0.12	MAC	< 0.0004		
Dichloromethane	mg/L	0.05	MAC	< 0.0005	< 0.0005	< 0.0005
Diclofop-methyl	mg/L	0.009	MAC	< 0.0004		
Dimethoate	mg/L	0.02	IMAC	< 0.0003		
Dinoseb	mg/L	0.01	MAC	< 0.0005		
Diquat	mg/L	0.07	MAC	< 0.0001		
Diuron	mg/L	0.15	MAC	< 0.0002		
Glyphosate	mg/L	0.28	IMAC	< 0.002		
Heptachlor + Heptachlor Epoxide	mg/L	0.003	MAC	< 0.000008		
Lindane	mg/L	0.004	MAC	< 0.000005		
Malathion	mg/L	0.19	MAC	< 0.0002		
Methoxychlor	mg/L	0.9	MAC	< 0.000009		
Metolachlor	mg/L	0.05	IMAC	< 0.0002		
Metribuzin	mg/L	0.08	MAC	< 0.0003		
Monochlorobenzene	mg/L	0.08	MAC	< 0.0001	< 0.0001	< 0.0001
Paraquat	mg/L	0.01	IMAC	< 0.0001		
Parathion	mg/L	0.05	MAC	< 0.0002		



Organics Test Results

Reading	Units	ODWS		21/01/2008	09/04/2008	14/07/2008	06/10/2008
Pentachlorophenol	mg/L	0.06	MAC		< 0.0004		
Phorate	mg/L	0.002	IMAC		< 0.0002		
Picloram	mg/L	0.19	IMAC		< 0.0007		
Polychlorinated Biphenyls (PCBs)	mg/L	0.003	IMAC		< 0.00002		
Prometryne	mg/L	0.001	IMAC		< 0.0002		
Simazine	mg/L	0.01	IMAC		< 0.0002		
Temephos	mg/L	0.28	IMAC		< 0.003		
Terbufos	mg/L	0.001	IMAC		< 0.0002		
Tetrachloroethylene (perchloroethylene)	mg/L	0.03	MAC	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Triallate	mg/L	0.23	MAC		< 0.002		
Trichloroethene	mg/L	0.005	MAC	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Trifluralin	mg/L	0.045	IMAC		< 0.000006		
Vinyl Chloride	mg/L	0.002	MAC	< 0.0002	< 0.0002	< 0.0002	< 0.0002

*<: indicates the result is below Method Detection Limit

ODWS: Ontario Drinking Water Standard

MAC: Ontario Drinking Water Standard - Health Related (Maximum Acceptable Concentration)

AO: Ontario Drinking Water Standard - Non Health Related (Aesthetic Objective)

mg/L: milligrams per litre, parts permillion (ppm)



Inorganics Test Results

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Antimony as Sb	mg/L	0.006	IMAC	0.0002	0.0004	0.0003	0.0005
Arsenic as As	mg/L	0.025	IMAC	0.0006	0.0007	0.0005	0.0007
Barium as Ba	mg/L	1	MAC		0.137		
Boron as B	mg/L	5	IMAC		0.045		
Cadmium as Cd	mg/L	0.005	MAC	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chromium as Cr	mg/L	0.05	MAC	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Fluoride as F	mg/L	0.8	MAC	0.23	0.22	0.22	0.2
Lead as Pb	mg/L	0.01	MAC	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury as Hg	mg/L	0.001	MAC		< 0.00002		
Nitrate as N	mg/L	10	MAC	0.08	0.04	0.05	0.02
Nitrite	mg/L	1	MAC	0.01	< 0.01	< 0.01	0.01
Selenium as Se	mg/L	0.01	MAC	0.0001	0.0003	< 0.0001	0.0003
Sodium as Na	mg/L	200	AO	22.3	22	21.8	21.5
Uranium as U	mg/L	0.02	MAC		< 0.0001		

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(DDT) + Metabolites	mg/L	0.03	MAC		< 0.000008		
1,1-dichloroethylene (vinylidene chloride)	mg/L	0.014	MAC	< 0.0003	< 0.0003	< 0.0003	< 0.0003
1,2-(o-dcb) Dichlorobenzene	mg/L	0.2	MAC	< 0.0001	< 0.0001	< 0.0001	< 0.0001
1,2-Dichloroethane	mg/L	0.005	IMAC	< 0.0001	< 0.0001	< 0.0001	< 0.0001
1,4-(p-dcb) Dichlorobenzene	mg/L	0.005	MAC	< 0.0001	< 0.0001	< 0.0001	< 0.0001
2,3,4,6-Tetrachlorophenol	mg/L	0.1	MAC		< 0.0005		
2,4,5-trichlorophenoxyacetic acid (2,4,5-T)	mg/L	0.28	MAC		< 0.0005		
2,4,6-Trichlorophenol	mg/L	0.005	MAC		< 0.0005		
2,4-Dichlorophenol	mg/L	0.9	MAC		< 0.0004		
2,4-dichlorophenoxyacetic acid (2,4-D)	mg/L	0.1	IMAC		< 0.0008		
Alachlor	mg/L	0.005	IMAC		< 0.0004		
Aldicarb	mg/L	0.009	MAC		< 0.0035		
Aldrin + Dieldrin	mg/L	0.0007	MAC		< 0.000006		
Atrazine + N-dealkylated metabolites	mg/L	0.005	IMAC		< 0.0002		
Azinphos-methyl	mg/L	0.02	MAC		< 0.0003		
Bendiocarb	mg/L	0.04	MAC		< 0.003		
Benzene	mg/L	0.005	MAC	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Benzo(a)pyrene	mg/L	0.00001	MAC		< 0.00001		
Bromoxynil	mg/L	0.005	IMAC		< 0.0004		
Carbaryl	mg/L	0.09	MAC		< 0.0002		
Carbofuran	mg/L	0.09	MAC		< 0.004		
Carbon Tetrachloride	mg/L	0.005	MAC	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chlordane (Total)	mg/L	0.007	MAC		< 0.000006		
Chlorpyrifos	mg/L	0.09	MAC		< 0.0002		
Cyanazine	mg/L	0.01	IMAC		< 0.0003		
Diazinon	mg/L	0.02	MAC		< 0.0002		
Dicamba	mg/L	0.12	MAC		< 0.0004		
Dichloromethane	mg/L	0.05	MAC	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Diclofop-methyl	mg/L	0.009	MAC		< 0.0004		
Dimethoate	mg/L	0.02	IMAC		< 0.0003		
Dinoseb	mg/L	0.01	MAC		< 0.0005		
Diquat	mg/L	0.07	MAC		< 0.0001		
Diuron	mg/L	0.15	MAC		< 0.0002		
Glyphosate	mg/L	0.28	IMAC		< 0.002		
Heptachlor + Heptachlor Epoxide	mg/L	0.003	MAC		< 0.000008		
Lindane	mg/L	0.004	MAC		< 0.000005		
Malathion	mg/L	0.19	MAC		< 0.0002		
Methoxychlor	mg/L	0.9	MAC		< 0.000009		
Metolachlor	mg/L	0.05	IMAC		< 0.0002		
Metribuzin	mg/L	0.08	MAC		< 0.0003		
Monochlorobenzene	mg/L	0.08	MAC	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Paraquat	mg/L	0.01	IMAC		< 0.0001		
Parathion	mg/L	0.05	MAC		< 0.0002		



Organics Test Results

Reading	Units	ODWS		21/01/2008	09/04/2008	16/07/2008	06/10/2008
Pentachlorophenol	mg/L	0.06	MAC		< 0.0004		
Phorate	mg/L	0.002	IMAC		< 0.0002		
Picloram	mg/L	0.19	IMAC		< 0.0007		
Polychlorinated Biphenyls (PCBs)	mg/L	0.003	IMAC		< 0.00002		
Prometryne	mg/L	0.001	IMAC		< 0.0002		
Simazine	mg/L	0.01	IMAC		< 0.0002		
Temephos	mg/L	0.28	IMAC		< 0.003		
Terbufos	mg/L	0.001	IMAC		< 0.0002		
Tetrachloroethylene (perchloroethylene)	mg/L	0.03	MAC	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Triallate	mg/L	0.23	MAC		< 0.002		
Trichloroethene	mg/L	0.005	MAC	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Trifluralin	mg/L	0.045	IMAC		< 0.000006		
Vinyl Chloride	mg/L	0.002	MAC	< 0.0002	< 0.0002	< 0.0002	< 0.0002

<: indicates the result is below Method Detection Limit

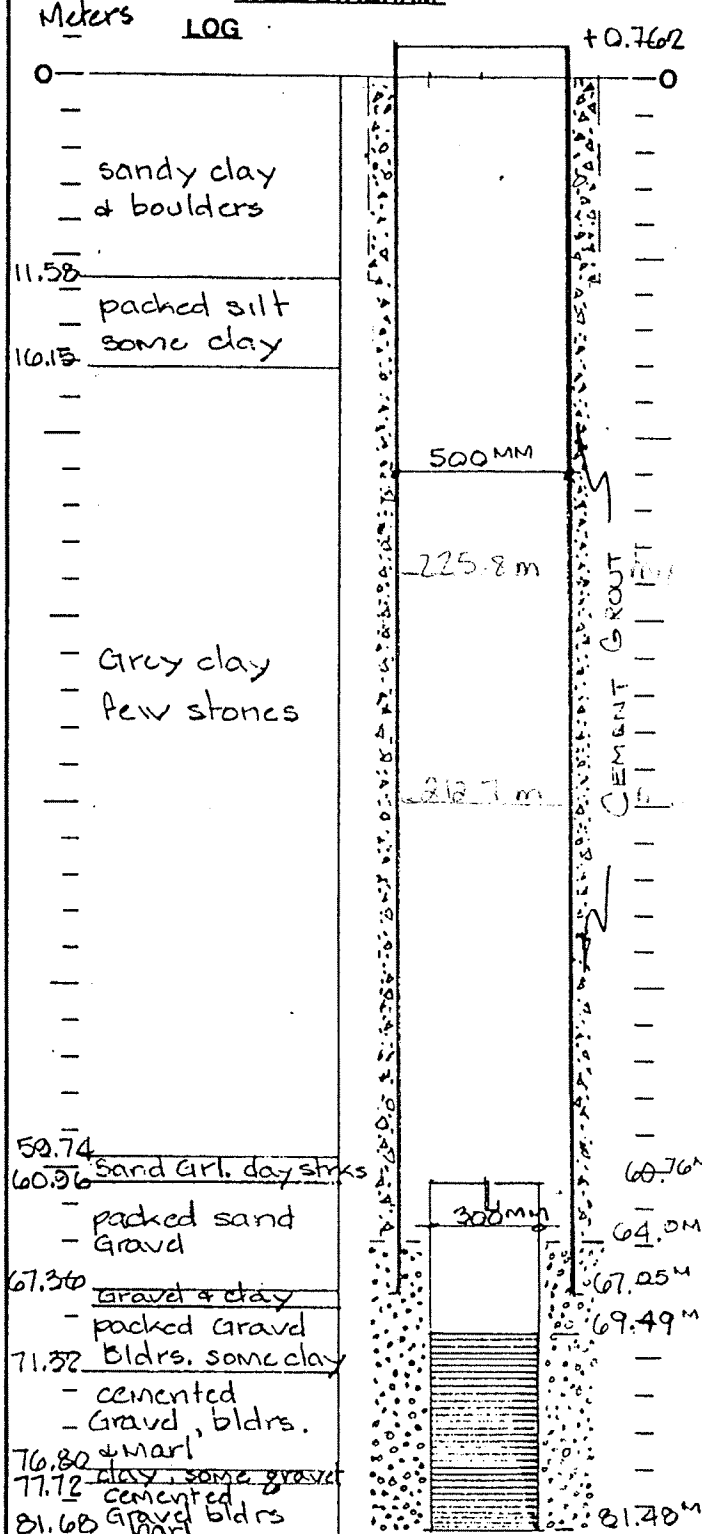
ODWS: Ontario Drinking Water Standard

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AO: Ontario Drinking Water Standard - Non Health Related (Aesthetic Objective)

mg/L: milligrams per litre, parts permillion (ppm)

Meters LOG



Outer Casing: 500^{MM} dia., 2^{MM} Wall Thk. Matl.: steel
Cemented from 0 ' to 64 '
Inner Casing: 300^{MM} dia., 9^{MM} Wall Thk. Matl.: steel
Screen: Make Johnson " dia., Opening & Matl.: 50 slot ss
Plug: Type plate 300 ps, Matl. st. steel Other: _____
Gravel: Type silica, Size 1/8 x 10, Quantity 10 tons

Preliminary Test Date: _____ by _____
 Static Level: _____' _____" below M.P. _____
 Pumping Rate IGM: _____
 Pumping Duration: _____ hrs. _____ min.
 Pumping Level at Test End: _____' _____"
 Performance Plots: dd-t Dwg. _____
 dd-r Dwg. _____
 Step Test _____

Final Test: Date _____ by _____
 Rated Well Capacity IGM _____
 Pumping Rate IGM _____ Static level _____' _____"
 Pumping level _____' _____" at _____ hrs. _____ min.
 Pump pressure: _____ psi; Main pressure _____ psi
 Shut off: AGH _____ psi; W.L. _____' _____"
 Clear Well Depth from B.P. _____' _____" Air Line 190' 0"

Pump Make: LAYNE Rating 1000 GPM @ 500 TH
Head: Type SDH 1018 S.N. 114914
Column: 190 X 10 X 2 1/2": Shaft Mtl: CS
Bowl: 15D4C Stage 5: Curve: 18-121
Suction: NIL " dia. _____ " Long
Special: Zinc Sleeves _____: Taped Oil Line _____
Other _____

Motor Make: USEM Frame: 445TP SN: 66506840
200HP, 3 ph, 60 hz, 1775 rpm, 575 Volts
 Bearing No. Upper _____
 Lower _____

Special Equipment

RUE MOTOR WITH THERMISTORS

[illegible]

International Water Supply Limited

SASKATOON - BARRIE - MONTREAL

CLIENT: REGION of YORK

WELL NO: 5476011 H 1

GREENVILLE

DRILLED BY: W. Nobles

DATE: 8/91

DRAWN: J. Vall

INSTALLED BY:

DATE:

DATE: Aug. '91



Ministry
of the
Environment

The Ontario Water Resources Act

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED

2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11

6922338

MUNICIP

69003

CON

CON

103

COUNTY OR DISTRICT York	TOWNSHIP BOROUGH CITY TOWN VILLAGE East Gwillimbury	CON BLOCK TRACT SURVEY ETC 111	LOT 2
OWNER (SURNAME FIRST) Region of York	ADDRESS P.O. Box 206 Newmarket.	DATE COMPLETED DAY 8 MO 21 YEAR 91	
21			

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
	clay	sandy & boulders		0	38
	silt	some clay	packed	38	53
gray	clay	few stones		53	196
	Sand, Gravel	clay streaks		196	200
	sand gravel		packed	200	221
	gravel	clay		221	223
	gravel	blcks some clay	packed	223	224
	gravel	blcks marl	cemented	224	252
	clay	some gravel		252	255
	clay gravel	clay blcks marl	cemented	255	268

31	32
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41 WATER RECORD	
WATER FOUND AT - FEET 200	KIND OF WATER 1 <input checked="" type="checkbox"/> FRESH 3 <input checked="" type="checkbox"/> SULPHUR 2 <input checked="" type="checkbox"/> SALTY 4 <input checked="" type="checkbox"/> MINERALS 5 <input checked="" type="checkbox"/> GAS
10-15	1 <input checked="" type="checkbox"/> FRESH 3 <input checked="" type="checkbox"/> SULPHUR 2 <input checked="" type="checkbox"/> SALTY 4 <input checked="" type="checkbox"/> MINERALS 5 <input checked="" type="checkbox"/> GAS
20-25	1 <input checked="" type="checkbox"/> FRESH 3 <input checked="" type="checkbox"/> SULPHUR 2 <input checked="" type="checkbox"/> SALTY 4 <input checked="" type="checkbox"/> MINERALS 5 <input checked="" type="checkbox"/> GAS
25-30	1 <input checked="" type="checkbox"/> FRESH 3 <input checked="" type="checkbox"/> SULPHUR 2 <input checked="" type="checkbox"/> SALTY 4 <input checked="" type="checkbox"/> MINERALS 5 <input checked="" type="checkbox"/> GAS
30-35	1 <input checked="" type="checkbox"/> FRESH 3 <input checked="" type="checkbox"/> SULPHUR 2 <input checked="" type="checkbox"/> SALTY 4 <input checked="" type="checkbox"/> MINERALS 5 <input checked="" type="checkbox"/> GAS

51 CASING & OPEN HOLE RECORD	
INSIDE DIAM INCHES 20"	MATERIAL 1 <input checked="" type="checkbox"/> STEEL 2 <input checked="" type="checkbox"/> GALVANIZED 3 <input checked="" type="checkbox"/> CONCRETE 4 <input checked="" type="checkbox"/> OPEN HOLE 5 <input checked="" type="checkbox"/> PLASTIC
WALL THICKNESS INCHES .375	DEPTH FEET 10-15 42 15-20 220 20-25 267
10-15	1 <input checked="" type="checkbox"/> STEEL 2 <input checked="" type="checkbox"/> GALVANIZED 3 <input checked="" type="checkbox"/> CONCRETE 4 <input checked="" type="checkbox"/> OPEN HOLE 5 <input checked="" type="checkbox"/> PLASTIC
15-20	1 <input checked="" type="checkbox"/> STEEL 2 <input checked="" type="checkbox"/> GALVANIZED 3 <input checked="" type="checkbox"/> CONCRETE 4 <input checked="" type="checkbox"/> OPEN HOLE 5 <input checked="" type="checkbox"/> PLASTIC
20-25	1 <input checked="" type="checkbox"/> STEEL 2 <input checked="" type="checkbox"/> GALVANIZED 3 <input checked="" type="checkbox"/> CONCRETE 4 <input checked="" type="checkbox"/> OPEN HOLE 5 <input checked="" type="checkbox"/> PLASTIC

SCREEN	SIZE(S) OF OPENING (SLOT NO.) 50 slot	DIAMETER 12	LENGTH 40
MATERIAL AND TYPE chain st. wire wrap		DEPTH TO TOP OF SCREEN 228	

61 PLUGGING & SEALING RECORD	
DEPTH SET AT FEET FROM TO	MATERIAL AND TYPE CEMENT GROUT LEAD PACKER ETC.
10-15 268 210	silica gravel.
15-20 210 0	cement grout.
20-25	

71 PUMPING TEST	PUMPING TEST METHOD 1 <input checked="" type="checkbox"/> PUMP 2 <input type="checkbox"/> BAILEY	PUMPING RATE 1050	DURATION OF PUMPING 48
	STATIC LEVEL 99.71	WATER LEVEL END OF PUMPING 124.9	WATER LEVELS DURING 15 MINUTES 109.8 30 MINUTES 110.6 45 MINUTES 111.0 60 MINUTES 112.8
	IF FLOWING, GIVE RATE	PUMP STARTED SET AT	WATER AT END OF TEST
	RECOMMENDED PUMP TYPE <input type="checkbox"/> SHALLOW <input type="checkbox"/> DEEP	RECOMMENDED PUMP SETTING FEET	RECOMMENDED PUMPING RATE GPM

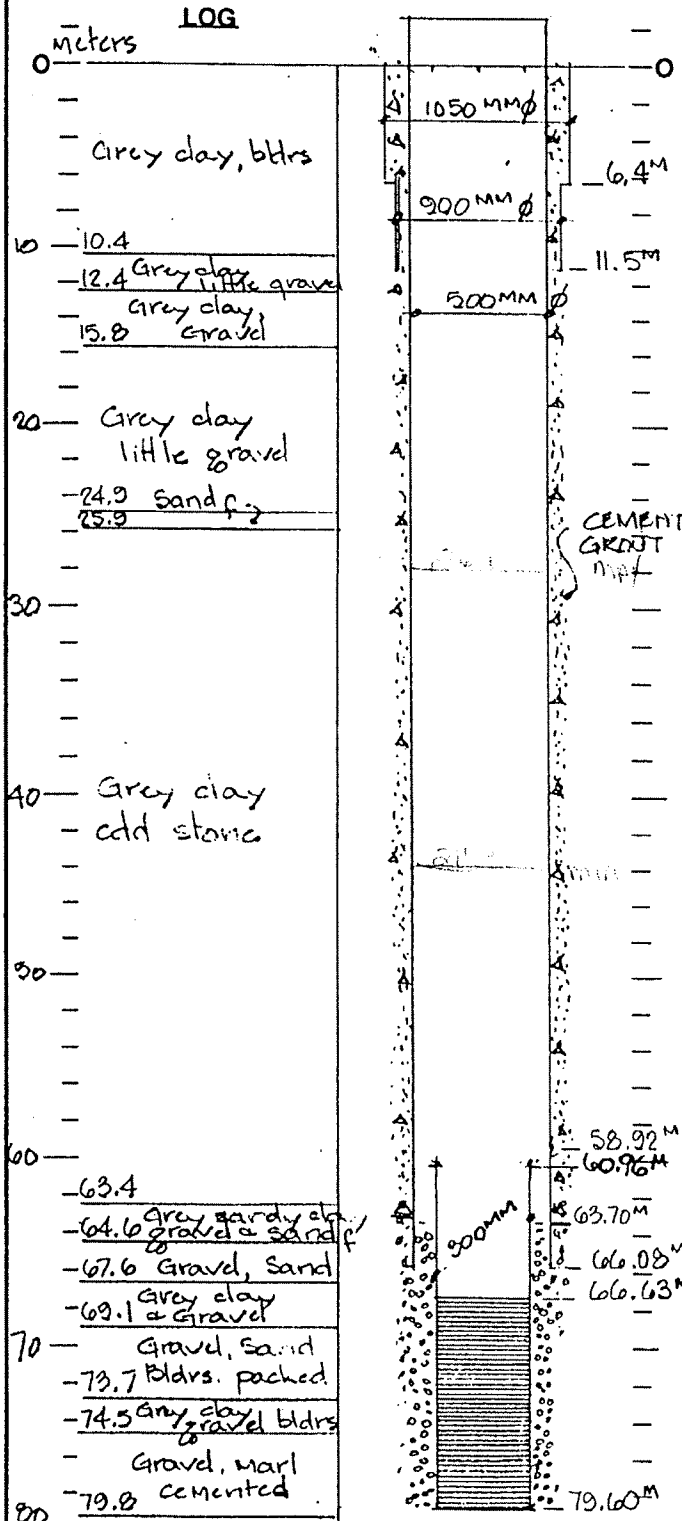
FINAL STATUS OF WELL	1 <input checked="" type="checkbox"/> WATER SUPPLY 5 <input type="checkbox"/> ABANDONED INSUFFICIENT SUPPLY 2 <input type="checkbox"/> OBSERVATION WELL 6 <input type="checkbox"/> ABANDONED POOR QUALITY 3 <input type="checkbox"/> TEST HOLE 7 <input type="checkbox"/> UNFINISHED 4 <input type="checkbox"/> RECHARGE WELL 8 <input type="checkbox"/> DEWATERING
	WATER USE 1 <input type="checkbox"/> DOMESTIC 5 <input type="checkbox"/> COMMERCIAL 2 <input type="checkbox"/> STOCK 6 <input type="checkbox"/> MUNICIPAL 3 <input type="checkbox"/> IRRIGATION 7 <input type="checkbox"/> PUBLIC SUPPLY 4 <input type="checkbox"/> INDUSTRIAL 8 <input type="checkbox"/> COOLING OR AIR CONDITIONING 9 <input type="checkbox"/> OTHER 10 <input type="checkbox"/> NOT USED
	METHOD OF CONSTRUCTION 1 <input type="checkbox"/> CABLE TOOL 4 <input type="checkbox"/> BORING 2 <input type="checkbox"/> ROTARY (CONVENTIONAL) 5 <input type="checkbox"/> DIAMOND 3 <input type="checkbox"/> ROTARY (REVERSE) 6 <input type="checkbox"/> JETTING 4 <input type="checkbox"/> ROTARY (AIR) 7 <input type="checkbox"/> DRIVING 8 <input type="checkbox"/> AIR PERCUSSION 9 <input type="checkbox"/> OTHER

LOCATION OF WELL #1	
IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE INDICATE NORTH BY ARROW	
88740	

CONTRACTOR	NAME OF WELL CONTRACTOR International Water Supply	WELL CONTRACTOR'S LICENCE NUMBER 2801
	ADDRESS P.O. Box 310 Barrie	
	NAME OF WELL TECHNICIAN Walter Nobles	WELL TECHNICIAN'S LICENCE NUMBER 1-0115
	SIGNATURE OF TECHNICIAN/CONTRACTOR W. Nobles	SUBMISSION DATE DAY 26 MO 08 YEAR 93

OFFICE USE ONLY	DATE OF INSPECTION 2801	DATE RECEIVED SEP 01 1993
	REMARKS	

WELL DIAGRAM



WELL MATERIAL

Outer Casing: 500 mm dia., 9 mm Wall Thk. Matl.: steel
Cemented from 0' to 66.08m

Inner Casing: 300 mm dia., 9 mm Wall Thk. Matl.: steel
Screen: Make: Johnson 300 mm dia., Opening & Matl.: 50 slot st. st.
Plug: Type plate Matl. st. steel Other:
Gravel: Type silica Size 1/8 x 10 Quantity:

WELL TEST DATA

Preliminary Test Date: by
Static Level: below M.P.
Pumping Rate IGM:
Pumping Duration: hrs. min.
Pumping Level at Test End:
Performance Plots: dd-t Dwg.
dd-r Dwg.
Step Test

Final Test: Date: by
Rated Well Capacity IGM
Pumping Rate IGM Static level
Pumping level at hrs. min.
Pump pressure: psi Main pressure psi
Shut off: AGH psi W.L.
Clear Well Depth from B.P. Air Line 190'

PUMP & MOTOR DATA

Pump Make: LAYNE Rating: 1000 IGM @ 500' TH
Head: Type SDH 1018 S.N. 114255
Column: 190' X 10" X 2 1/2" Shaft Mtl: C.S.
Bowl: ISDRLC Stage: 5 1 1/2 Curve: 12-121
Suction: NIL dia. Long
Special: Zinc Sleeves Taped Oil Line

Other:
Motor Make: USM Frame: 445TP S.N. 667159 W07
200 HP, 3 ph, 60 Hz, 1775 rpm, 575 Volts
Bearing No. Upper
Lower

Special Equipment

RUE MOTOR WITH THERMISTORS

WELL REVISIONS AND REHABILITATION

DATE	WORK DONE	BY

International Water Supply Limited

SASKATOON - BARRIE - MONTREAL

CLIENT: YORK SHARON-QUEENSVILLE

WELL NO: 2

DRILLED BY: J. Augustine DATE: May 90

DRAWN: J. Wall

INSTALLED BY:

DATE:

DATE: May '90



Ministry
of the
Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11

6921868

MUNICIPAL

CON.

69003

CON.

103

COUNTY OR DISTRICT York	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE East Gwillimbury	CON. BLOCK, TRACT, SURVEY, ETC. III	LOT 21
OWNER (SURNAME FIRST) Region of York	ADDRESS P.O. Box 296 Newmarket	DATE COMPLETED DAY 22 MO 5 YR 91	
ZONES EASTING NORTHING 21			

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
grey	clay	bldrs		0	35
grey	clay	little gravel		35	41
grey	clay	gravel		41	52
grey	clay	little gravel		52	82
	sandp			82	85
grey	clay	old stone		85	208
grey	clay	sandy, gravel, sandp		208	212
	gravel	sand		212	222
	clay	gravel		222	227
	gravel	sand, bldrs packed		227	242
grey	clay	gravel bldrs		242	245
	gravel	brnd	cemented.	245	261

31	32
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41 WATER RECORD WATER FOUND AT - FEET KIND OF WATER 1 FRESH 2 SALT 3 SULPHUR 4 MINERALS 5 GAS 10-12 1 FRESH 2 SALT 3 SULPHUR 4 MINERALS 5 GAS 15-18 1 FRESH 2 SALT 3 SULPHUR 4 MINERALS 5 GAS 20-23 1 FRESH 2 SALT 3 SULPHUR 4 MINERALS 5 GAS 25-28 1 FRESH 2 SALT 3 SULPHUR 4 MINERALS 5 GAS 30-33 1 FRESH 2 SALT 3 SULPHUR 4 MINERALS 5 GAS	51 CASING & OPEN HOLE RECORD INSIDE DIAM INCHES MATERIALS WELL THICKNESS INCHES DEPTH - FEET FROM TO 10-12 20" 1 STEEL 2 GALVANIZED 3 CONCRETE 4 OPEN HOLE 5 PLASTIC 17-18 12 1 STEEL 2 GALVANIZED 3 CONCRETE 4 OPEN HOLE 5 PLASTIC 20-23 1 STEEL 2 GALVANIZED 3 CONCRETE 4 OPEN HOLE 5 PLASTIC 25-28 1 STEEL 2 GALVANIZED 3 CONCRETE 4 OPEN HOLE 5 PLASTIC 30-33 1 STEEL 2 GALVANIZED 3 CONCRETE 4 OPEN HOLE 5 PLASTIC	61 PLUGGING & SEALING RECORD DEPTH SET AT - FEET MATERIAL AND TYPE 10-12 261 209 silica gravel. 15-18 216 0 Cement gravel. 20-23 20-23 20
--	--	---

71 PUMPING TEST PUMPING TEST METHOD 1 PUMP 2 BAILEY PUMPING RATE DURATION OF PUMPING 15-18 HOURS 17-18 MIN WATER LEVELS DURING 1 PUMPING 2 RECOVERY 10-12 15 MINUTES 30 MINUTES 45 MINUTES 60 MINUTES 20-23 25-28 30-33 35-38 PUMP INTAKE SET AT WATER AT END OF TEST RECOMMENDED PUMP TYPE 1 SHALLOW 2 DEEP RECOMMENDED PUMP SETTING RECOMMENDED PUMPING RATE
--

FINAL STATUS OF WELL 1 WATER SUPPLY 2 OBSERVATION WELL 3 TEST HOLE 4 RECHARGE WELL 5 ABANDONED - INSUFFICIENT SUPPLY 6 ABANDONED - POOR QUALITY 7 UNFINISHED 8 DEWATERING	WATER USE 1 DOMESTIC 2 STOCK 3 IRRIGATION 4 INDUSTRIAL 5 OTHER 6 COMMERCIAL 7 MUNICIPAL 8 PUBLIC SUPPLY 9 COOLING OR AIR CONDITIONING 10 NOT USED	METHOD OF CONSTRUCTION 1 CABLE TOOL 2 ROTARY (CONVENTIONAL) 3 ROTARY (REVERSE) 4 ROTARY (AIR) 5 AIR PERCUSSION 6 BORING 7 DIAMOND 8 JETTING 9 DRIVING 10 DIGGING 11 OTHER
--	--	--

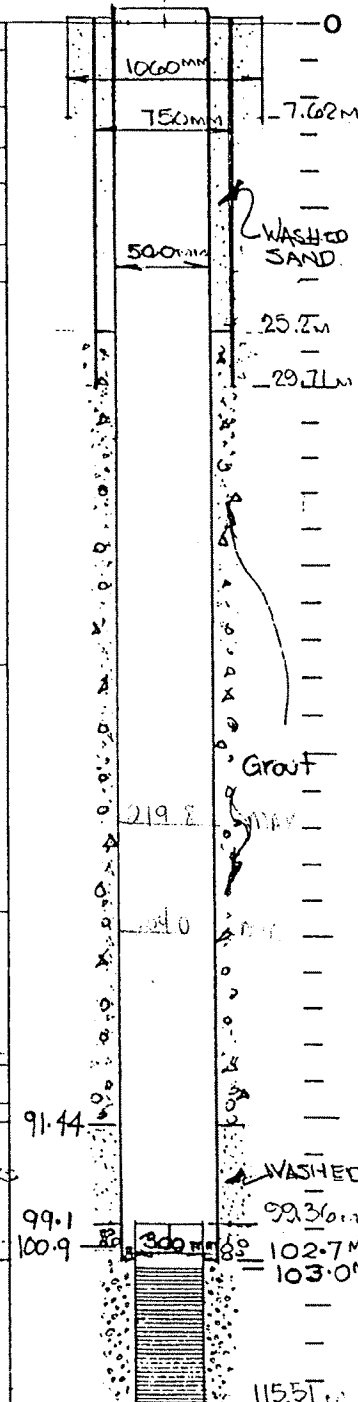
LOCATION OF WELL 2 IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE INDICATE NORTH BY ARROW North CON III CON IV Woodbine Ave. Well No. 2 831 76 Roxensville S/R Lot 21 Lot 20 88675
--

CONTRACTOR NAME OF WELL CONTRACTOR International Water Supply ADDRESS P.O. Box 310 Barrie NAME OF WELL TECHNICIAN Augustine SIGNATURE OF TECHNICIAN/CONTRACTOR Augustine WELL CONTRACTOR'S LICENCE NUMBER 2801 WELL TECHNICIAN'S LICENCE NUMBER 2801 SUBMISSION DATE DAY 22 MO 5 YR 91	OFFICE USE ONLY DATE OF INSPECTION 2801 DATE RECEIVED APR 14 1992 REMARKS
--	---

WELL DIAGRAM

LOG

0
2.4 brown clay
7.6 Sand f.m
10.6 Gravel clay sand
13.4 Sand & little gravel
19.8 Sand & silt hard.
21.2 sandy clay
23.4
Grey clay
soft
25.4
Grey clay hard
29.1
sticky clay
grey
35.9 Gravel & clay
36.5
38.5 Sand & gravel
40.22 Sand & hard
91.44
99.1
100.5 sand clay marl
102.7
107.0 Packed sand
gravel bldrs.
113.28
115.51 gravel f.c.



WELL MATERIAL

Outer Casing: 500mm dia., 375" Wall Thk. Matl.: steel
Cemented from 25.2m to 21.44m
Inner Casing: 300mm dia., 9.5mm Wall Thk. Matl.: steel
Screen: Make JOHN 300mm dia., Opening & Matl.: 50 slot
Plug: Type plate, Matl. st. steel, Other:
Gravel: Type silica, Size 1/8 x 10, Quantity 14 ton

WELL TEST DATA

Preliminary Test Date: April 8, 1990 by J.A.
Static Level: 51.30m below M.P. ± 0.76m
Pumping Rate IGM: 79.5 l/sec
Pumping Duration: 48 hrs. 0 min.
Pumping Level at Test End: 61.7m
Performance Plots: dd-t Dwg. A90099
dd-r Dwg. A30105
Step Test A90102

Final Test: Date by
Rated Well Capacity IGM
Pumping Rate IGM Static level
Pumping level at hrs. min.
Pump pressure: psi Main pressure psi
Shut off: AGH psi W.L. 194.91 (164.0m)
Clear Well Depth from B.P. 378' 9" Air Line 300"

PUMP & MOTOR DATA

Pump Make LAYNE Rating 1000 IGM @ 538 TH
Head: Type SDH 1018 S.N. 111633
Column: 300 X 10 X 2 1/2 Shaft Mt: 11/2 CS.
Bowl: 15DRLC Stage 6 Curve: 18121
Suction: 10" dia. 10" 0" Long
Special: Zinc Sleeves Taped Oil Line
Other
Motor Make USEM Frame 445TP SN: 48281
200 HP, 3 ph, 60 Hz, 1800 rpm, 575 Volts
Bearing No. Upper
Lower

Special Equipment

WELL REVISIONS AND REHABILITATION

DATE	WORK DONE	BY

International Water Supply Limited

SASKATOON - BARRIE - MONTREAL

CLIENT: REGION of YORK

WELL NO: SHADON - #3

QUEENSWILE

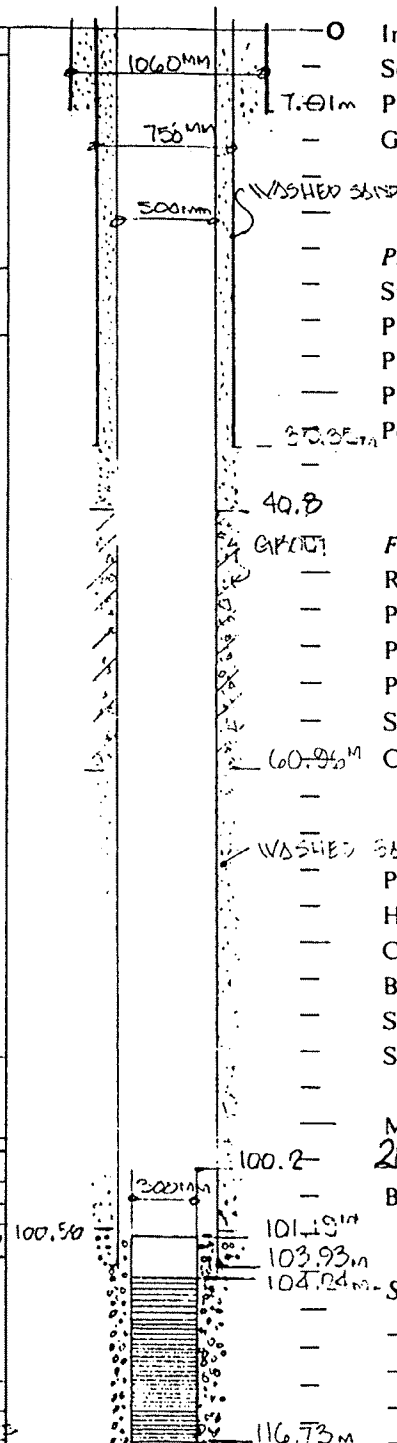
DRILLED BY: J. Augustine DATE: Apr 90 DRAWN: J. Wall

INSTALLED BY: DATE: DATE: Apr. 90

WELL DIAGRAM

LOG

2.7 brown clay
Sand f. m
21.33 sand, silt
25.50 little clay
Gray clay
85.95 Gray clay
92.65 sand
92.96 sand & gravel
95.4 sand clay vari
97.3 Gravel sand, clay
98.7 silty clay gravel
103.62 Gravel sand clay
sand gravel
packed
111.25
115.21 sand gravel cem.
116.49 Gravel sand blk



WELL MATERIAL

Outer Casing: 500^m dia., 375^m Wall Thk. Matl.: steel
Cemented from 60.96^m to 35.35^m
Inner Casing: 300^m dia., Wall Thk. Matl.:
Screen: Make Johnson 300^m dia., Opening & Matl.: 30 slot st. st.
Plug: Type plate Matl. st. steel Other:
Gravel: Type silica, Size 1/8 to 1/10, Quantity 9 ton

WELL TEST DATA

Preliminary Test Date: Mar 24, 1990 by JA.
Static Level: 50.576 m below M.P. 0.46 m
Pumping Rate IGM: 26.6, 53.2, 79.8 l/sec
Pumping Duration: 6 hours hrs. min.
Pumping Level at Test End: 57.46 m
Performance Plots: dd-t Dwg.
dd-r Dwg.
Step Test A 20107

Final Test: Date by
Rated Well Capacity IGM
Pumping Rate IGM Static level
Pumping level at hrs. min.
Pump pressure: psi Main pressure: psi
Shut off: AGH psi W.L.
Clear Well Depth from B.P. Air Line

PUMP & MOTOR DATA

Pump Make LAYNE Rating 1000 GM @ 538 TH
Head: Type SDH 1018 S.N. 11632
Column: 300 X 10 X 2 1/2 Shaft Mtl: 1 1/2 CS
Bowl: 15DR1C Stage 6 Curve: 18121
Suction: 10 dia. 10 - 0 Long
Special: Zinc Sleeves Taped Oil Line
Other
Motor Make USEM Frame: 445TP SN:
200 HP, 3 ph, 60 hz, 1800 rpm, 575 Volts
Bearing No. Upper
Lower

Special Equipment

WELL REVISIONS AND REHABILITATION

DATE	WORK DONE	BY

International Water Supply Limited

SASKATOON - BARRIE - MONTREAL

CLIENT: REGION of YORK

WELL NO: 3110 #4

DRILLED BY: J. Daoust DATE: Apr 90
INSTALLED BY: DATE: DATE: Apr 90

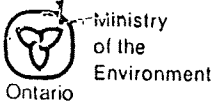
WATER WELL

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WATER WELL RECORD

6922300

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1992

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11

SHEET 1 OF 2

69003

CON.

COUNTY OR DISTRICT York	TOWNSHIP BOROUGH CITY TOWN VILLAGE East	CON. BLOCK TRACT SURVEY ETC.	LOT 16
OWNER (SURNAME FIRST) Region of York	ADDRESS Box 296 Newmarket	DATE COMPLETED DAY 8 MO 2 YR 20	
<p>21</p> <p>U.S. FEET</p> <p>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32</p>			

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
brown	clay			0	0
	Sand muf			0	70
	sand	silt little clay		70	85
gray	clay			85	280
gray	clay	sandp		280	282
	Sandp	Gravel		282	304
	sand	clay (marl) little gravel		304	305
	clay	silty		305	313
	Gravelp	sand little clay		313	320
	clay	silty little gravel		320	324
	Gravel	sand & clay		324	326
	clay	silty & sand		326	340

31

32

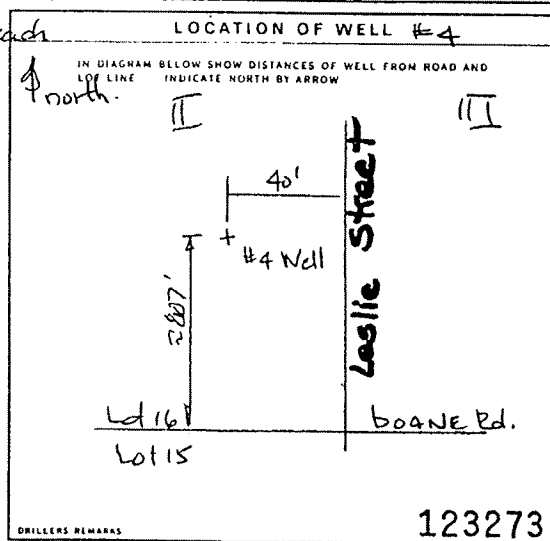
41 WATER RECORD	
WATER FOUND AT - FEET	KIND OF WATER
10-12	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 4 <input type="checkbox"/> MINERALS 6 <input type="checkbox"/> GAS
13-18	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 4 <input type="checkbox"/> MINERALS 6 <input type="checkbox"/> GAS
20-22	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 4 <input type="checkbox"/> MINERALS 6 <input type="checkbox"/> GAS
23-28	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 4 <input type="checkbox"/> MINERALS 6 <input type="checkbox"/> GAS
30-33	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 4 <input type="checkbox"/> MINERALS 6 <input type="checkbox"/> GAS

51 CASING & OPEN HOLE RECORD			
INSIDE DIA INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET
42	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE 5 <input type="checkbox"/> PLASTIC	.375	0 23
30"	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE 5 <input type="checkbox"/> PLASTIC	.375	0 116
20"	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE 5 <input type="checkbox"/> PLASTIC	.375	0 341
12	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE 5 <input type="checkbox"/> PLASTIC	.375	328 342

60 SCREEN		
SIZE OF OPENING (SLOT NO.) 50 slot	DIAMETER 12	LENGTH 41
MATERIAL AND TYPE steel wirewrap		
DEPTH TO TOP OF SCREEN 342		

61 PLUGGING & SEALING RECORD		
DEPTH SET AT - FEET	MATERIAL AND TYPE	CEMENT GROUT LEAD PACKER ETC.
FROM	TO	
382-392	330-342	Gravel
330-342	200-210	washed sand.
200-210	116	Grout

71 PUMPING TEST	
PUMPING TEST METHOD 1 <input checked="" type="checkbox"/> PUMP 2 <input type="checkbox"/> BAILEY	PUMPING RATE 350, 700, 1050
STATIC LEVEL 10-12	WATER LEVEL END OF PUMPING 22-24
FEET	FEET
15 MINUTES 20-24	30 MINUTES 20-31
FEET	FEET
45 MINUTES 22-34	60 MINUTES 23-37
FEET	FEET
IF FLOWING GIVE RATE	PUMP INTAKE SET AT
FEET	FEET
RECOMMENDED PUMP TYPE 1 <input type="checkbox"/> SHALLOW 2 <input type="checkbox"/> DEEP	RECOMMENDED PUMP SETTING FEET
WATER LEVEL AT END OF TEST FEET	WATER AT END OF TEST FEET
1 <input type="checkbox"/> CLEAR 2 <input type="checkbox"/> CLOUDY	1 <input type="checkbox"/> CLEAR 2 <input type="checkbox"/> CLOUDY
RECOMMENDED PUMP RATE GPM	RECOMMENDED PUMP RATE GPM



81 FINAL STATUS OF WELL	
1 <input checked="" type="checkbox"/> WATER SUPPLY 2 <input type="checkbox"/> OBSERVATION WELL 3 <input type="checkbox"/> TEST HOLE 4 <input type="checkbox"/> RECHARGE WELL	5 <input type="checkbox"/> ABANDONED INSUFFICIENT SUPPLY 6 <input type="checkbox"/> ABANDONED POOR QUALITY 7 <input type="checkbox"/> UNFINISHED 8 <input type="checkbox"/> DEWATERING
91 WATER USE	
1 <input type="checkbox"/> DOMESTIC 2 <input type="checkbox"/> STOCK 3 <input type="checkbox"/> IRRIGATION 4 <input type="checkbox"/> INDUSTRIAL 5 <input type="checkbox"/> OTHER	6 <input type="checkbox"/> COMMERCIAL 7 <input type="checkbox"/> MUNICIPAL 8 <input type="checkbox"/> PUBLIC SUPPLY 9 <input type="checkbox"/> COOLING OR AIR CONDITIONING 10 <input type="checkbox"/> NOT USED
101 METHOD OF CONSTRUCTION	
1 <input type="checkbox"/> CABLE TOOL 2 <input type="checkbox"/> ROTARY (CONVENTIONAL) 3 <input type="checkbox"/> ROTARY (REVERSE) 4 <input type="checkbox"/> ROTARY (AIR) 5 <input type="checkbox"/> AIR PERCUSSION	6 <input type="checkbox"/> BORING 7 <input type="checkbox"/> DIAMOND 8 <input type="checkbox"/> SETTING 9 <input type="checkbox"/> DRIVING 10 <input type="checkbox"/> DIGGING 11 <input type="checkbox"/> OTHER

NAME OF WELL CONTRACTOR International Water Supply	WELL CONTRACTOR'S LICENSE NUMBER 2801
ADDRESS Box 310 Barrie	
NAME OF WELL TECHNICIAN J. Furushtine	WELL TECHNICIAN'S LICENSE NUMBER F-0424
SIGNATURE OF TECHNICIAN/CONTRACTOR	SUBMISSION DATE DAY 27 MO 7 YR 93

OFFICE USE ONLY	
DATA SOURCE 2801	DATE RECEIVED AUG 05 1993
DATE OF INSPECTION	INSPECTOR
REMARKS	

APPENDIX H

MOE REGIONAL WATER WELL RECORD SHEETS

[illegible][illegible][illegible][illegible]

Well Computer Print Out Data as of July 29 2008

[illegible]

Well Computer Print Out Data as of July 29 2008

[illegible]

Well Computer Print Out Data as of July 29 2008

[illegible]

Well Computer Print Out Data as of July 29 2008

[illegible]

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Well Computer Print Out Data as of July 29 2008

[illegible]

Well Computer Print Out Data as of July 29 2008

Well Computer Print Out Data as of July 29 2008

[illegible]

Well Computer Print Out Data as of July 29 2008

Well Computer Print Out Data as of July 29 2008

[illegible]

[illegible][illegible][illegible][illegible]

[illegible]Well Computer Print Out Data as of July 29 2008Page: 28 / 178[illegible]Well Computer Print Out Data as of July 29 2008Page: 26 / 178[illegible]

CONCRETE	UNIT	DATE	CHASING	WATER	SPRINK	REMARKS	REMARKS
CONCRETE	UNIT	DATE	CHASING	WATER	SPRINK	REMARKS	REMARKS
EAST GRILLIMBURY TOW	17 622314	1360/31	86	FR 2117	0.06 / 0.06	0.06 / 0.06	Y-16 CLAY GRVL SAND 0316 BRNK CLAY
CON 021035	4894303 ⁺	1360/31	1413	FR 2117	0.16 / 0.16	0.16 / 0.16	GRV BLK 0520 RUP CLAY GRV 0516
EAST GRILLIMBURY TOW	17 622312	2024/08	85	FR 0120	0.11 / 0.01	0.01	GRV BLK 0520 RUP CLAY GRV 0516
CON 021035	4894311 ⁺	1413			0.06 / 0.10	0.06	GRV BLK 0520 RUP CLAY GRV 0516
EAST GRILLIMBURY TOW	17 622437	1394/09	85	FR 0136	0.06 / 0.06	0.06 / 0.06	GRV BLK 0520 RUP CLAY GRV 0516
CON 021035	4894329 ⁺	5019			0.16 / 0.16	0.16	GRV BLK 0520 RUP CLAY GRV 0516
EAST GRILLIMBURY TOW	17 622421	1984/11	86	FR 0182	0.17 / 0.06	0.06	GRV BLK 0520 RUP CLAY GRV 0516
CON 021035	4894332 ⁺	1413			0.16 / 0.16	0.16	GRV BLK 0520 RUP CLAY GRV 0516
EAST GRILLIMBURY TOW	17 622433	1390/05	86	FR	0.06 / 0.10	0.10	GRV BLK 0520 RUP CLAY GRV 0516
CON 021035	4894411 ⁺	1350			0.06 / 0.10	0.10	GRV BLK 0520 RUP CLAY GRV 0516
EAST GRILLIMBURY TOW	17 622547	1390/04	85	FR 0177	0.01 / 0.06	0.06	GRV BLK 0520 RUP CLAY GRV 0516
CON 021035	4894312 ⁺	5017			0.01 / 0.10	0.10	GRV BLK 0520 RUP CLAY GRV 0516
EAST GRILLIMBURY TOW	17 622504	1390/08	86	FR 0182	0.06 / 0.10	0.10	GRV BLK 0520 RUP CLAY GRV 0516
CON 021035	4894263 ⁺	1413			0.10 / 0.10	0.10	GRV BLK 0520 RUP CLAY GRV 0516
EAST GRILLIMBURY TOW	17 622547	1390/11	86	FR 0218	0.06 / 0.10	0.10	GRV BLK 0520 RUP CLAY GRV 0516
CON 021035	4894328 ⁺	1413			0.10 / 0.10	0.10	GRV BLK 0520 RUP CLAY GRV 0516
EAST GRILLIMBURY TOW	17 622473	2024/11	86	FR 0186	0.06 / 0.10	0.10	GRV BLK 0520 RUP CLAY GRV 0516
CON 021035	4894328 ⁺	1413			0.10 / 0.10	0.10	GRV BLK 0520 RUP CLAY GRV 0516
EAST GRILLIMBURY TOW	17 622549	2024/11	86	FR 0186	0.06 / 0.10	0.10	GRV BLK 0520 RUP CLAY GRV 0516
CON 021035	4894384 ⁺	1359			0.10 / 0.10	0.10	GRV BLK 0520 RUP CLAY GRV 0516
EAST GRILLIMBURY TOW	17 622625	1387/06	18	FR 0220	0.10 / 0.06	0.06	GRV BLK 0520 RUP CLAY GRV 0516
CON 021035	4894468 ⁺	4919			0.10 / 0.10	0.10	GRV BLK 0520 RUP CLAY GRV 0516

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CONCRETE ID	DATE 1	DATE 2	DATE 3	DATE 4	DATE 5	DATE 6	DATE 7	DATE 8	DATE 9	DATE 10	DATE 11	DATE 12	DATE 13	DATE 14	DATE 15	DATE 16	DATE 17	DATE 18	DATE 19	DATE 20	DATE 21	DATE 22	DATE 23	DATE 24	DATE 25	DATE 26	DATE 27	DATE 28	DATE 29	DATE 30	DATE 31	DATE 32	DATE 33	DATE 34	DATE 35	DATE 36	DATE 37	DATE 38	DATE 39	DATE 40	DATE 41	DATE 42	DATE 43	DATE 44	DATE 45	DATE 46	DATE 47	DATE 48	DATE 49	DATE 50	DATE 51	DATE 52	DATE 53	DATE 54	DATE 55	DATE 56	DATE 57	DATE 58	DATE 59	DATE 60	DATE 61	DATE 62	DATE 63	DATE 64	DATE 65	DATE 66	DATE 67	DATE 68	DATE 69	DATE 70	DATE 71	DATE 72	DATE 73	DATE 74	DATE 75	DATE 76	DATE 77	DATE 78	DATE 79	DATE 80	DATE 81	DATE 82	DATE 83	DATE 84	DATE 85	DATE 86	DATE 87	DATE 88	DATE 89	DATE 90	DATE 91	DATE 92	DATE 93	DATE 94	DATE 95	DATE 96	DATE 97	DATE 98	DATE 99	DATE 100	DATE 101	DATE 102	DATE 103	DATE 104	DATE 105	DATE 106	DATE 107	DATE 108	DATE 109	DATE 110	DATE 111	DATE 112	DATE 113	DATE 114	DATE 115	DATE 116	DATE 117	DATE 118	DATE 119	DATE 120	DATE 121	DATE 122	DATE 123	DATE 124	DATE 125	DATE 126	DATE 127	DATE 128	DATE 129	DATE 130	DATE 131	DATE 132	DATE 133	DATE 134	DATE 135	DATE 136	DATE 137	DATE 138	DATE 139	DATE 140	DATE 141	DATE 142	DATE 143	DATE 144	DATE 145	DATE 146	DATE 147	DATE 148	DATE 149	DATE 150	DATE 151	DATE 152	DATE 153	DATE 154	DATE 155	DATE 156	DATE 157	DATE 158	DATE 159	DATE 160	DATE 161	DATE 162	DATE 163	DATE 164	DATE 165	DATE 166	DATE 167	DATE 168	DATE 169	DATE 170	DATE 171	DATE 172	DATE 173	DATE 174	DATE 175	DATE 176	DATE 177	DATE 178	DATE 179	DATE 180	DATE 181	DATE 182	DATE 183	DATE 184	DATE 185	DATE 186	DATE 187	DATE 188	DATE 189	DATE 190	DATE 191	DATE 192	DATE 193	DATE 194	DATE 195	DATE 196	DATE 197	DATE 198	DATE 199	DATE 200	DATE 201	DATE 202	DATE 203	DATE 204	DATE 205	DATE 206	DATE 207	DATE 208	DATE 209	DATE 210	DATE 211	DATE 212	DATE 213	DATE 214	DATE 215	DATE 216	DATE 217	DATE 218	DATE 219	DATE 220	DATE 221	DATE 222	DATE 223	DATE 224	DATE 225	DATE 226	DATE 227	DATE 228	DATE 229	DATE 230	DATE 231	DATE 232	DATE 233	DATE 234	DATE 235	DATE 236	DATE 237	DATE 238	DATE 239	DATE 240	DATE 241	DATE 242	DATE 243	DATE 244	DATE 245	DATE 246	DATE 247	DATE 248	DATE 249	DATE 250	DATE 251	DATE 252	DATE 253	DATE 254	DATE 255	DATE 256	DATE 257	DATE 258	DATE 259	DATE 260	DATE 261	DATE 262	DATE 263	DATE 264	DATE 265	DATE 266	DATE 267	DATE 268	DATE 269	DATE 270	DATE 271	DATE 272	DATE 273	DATE 274	DATE 275	DATE 276	DATE 277	DATE 278	DATE 279	DATE 280	DATE 281	DATE 282	DATE 283	DATE 284	DATE 285	DATE 286	DATE 287	DATE 288	DATE 289	DATE 290	DATE 291	DATE 292	DATE 293	DATE 294	DATE 295	DATE 296	DATE 297	DATE 298	DATE 299	DATE 300	DATE 301	DATE 302	DATE 303	DATE 304	DATE 305	DATE 306	DATE 307	DATE 308	DATE 309	DATE 310	DATE 311	DATE 312	DATE 313	DATE 314	DATE 315	DATE 316	DATE 317	DATE 318	DATE 319	DATE 320	DATE 321	DATE 322	DATE 323	DATE 324	DATE 325	DATE 326	DATE 327	DATE 328	DATE 329	DATE 330	DATE 331	DATE 332	DATE 333	DATE 334	DATE 335	DATE 336	DATE 337	DATE 338	DATE 339	DATE 340	DATE 341	DATE 342	DATE 343	DATE 344	DATE 345	DATE 346	DATE 347	DATE 348	DATE 349	DATE 350	DATE 351	DATE 352	DATE 353	DATE 354	DATE 355	DATE 356	DATE 357	DATE 358	DATE 359	DATE 360	DATE 361	DATE 362	DATE 363	DATE 364	DATE 365	DATE 366	DATE 367	DATE 368	DATE 369	DATE 370	DATE 371	DATE 372	DATE 373	DATE 374	DATE 375	DATE 376	DATE 377	DATE 378	DATE 379	DATE 380	DATE 381	DATE 382	DATE 383	DATE 384	DATE 385	DATE 386	DATE 387	DATE 388	DATE 389	DATE 390	DATE 391	DATE 392	DATE 393	DATE 394	DATE 395	DATE 396	DATE 397	DATE 398	DATE 399	DATE 400	DATE 401	DATE 402	DATE 403	DATE 404	DATE 405	DATE 406	DATE 407	DATE 408	DATE 409	DATE 410	DATE 411	DATE 412	DATE 413	DATE 414	DATE 415	DATE 416	
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Well Completion Data as of July 2, 2000									
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CONSIDERED	CONSIDERED	CONSIDERED	CONSIDERED	CONSIDERED	CONSIDERED	CONSIDERED	CONSIDERED	CONSIDERED	CONSIDERED
CONSIDERED	CONSIDERED	CONSIDERED	CONSIDERED	CONSIDERED	CONSIDERED	CONSIDERED	CONSIDERED	CONSIDERED	CONSIDERED
EAST GRILLINBURRY TOW	17 6273948	1989/10/11	06	FF 0115	050 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1411			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273913	1989/11/11	06	FF 0166	015 / 110	010 / 110	06	013	010
CON 04 (0155)	4887317	1411			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273921	1989/07/05	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW	17 6273923	1989/07/07	06	FF 0182	013 / 112	010 / 110	06	012	010
CON 04 (0155)	4887317	1308			010 / 110			010	010
EAST GRILLINBURRY TOW</									

CONCESSION #	TOWNSHIP	UNIT	DATE 1	CASING	DATE 2	DATE 3	DATE 4	DATE 5	DATE 6	DATE 7	DATE 8	DATE 9	DATE 10	DATE 11	DATE 12	DATE 13	DATE 14	DATE 15	DATE 16	DATE 17	DATE 18	DATE 19	DATE 20	DATE 21	DATE 22	DATE 23	DATE 24	DATE 25	DATE 26	DATE 27	DATE 28	DATE 29	DATE 30	DATE 31	DATE 32	DATE 33	DATE 34	DATE 35	DATE 36	DATE 37	DATE 38	DATE 39	DATE 40	DATE 41	DATE 42	DATE 43	DATE 44	DATE 45	DATE 46	DATE 47	DATE 48	DATE 49	DATE 50	DATE 51	DATE 52	DATE 53	DATE 54	DATE 55	DATE 56	DATE 57	DATE 58	DATE 59	DATE 60	DATE 61	DATE 62	DATE 63	DATE 64	DATE 65	DATE 66	DATE 67	DATE 68	DATE 69	DATE 70	DATE 71	DATE 72	DATE 73	DATE 74	DATE 75	DATE 76	DATE 77	DATE 78	DATE 79	DATE 80	DATE 81	DATE 82	DATE 83	DATE 84	DATE 85	DATE 86	DATE 87	DATE 88	DATE 89	DATE 90	DATE 91	DATE 92	DATE 93	DATE 94	DATE 95	DATE 96	DATE 97	DATE 98	DATE 99	DATE 100	DATE 101	DATE 102	DATE 103	DATE 104	DATE 105	DATE 106	DATE 107	DATE 108	DATE 109	DATE 110	DATE 111	DATE 112	DATE 113	DATE 114	DATE 115	DATE 116	DATE 117	DATE 118	DATE 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785	DATE 786	DATE 787	DATE 788	DATE 789	DATE 790	DATE 791	DATE 792	DATE 793	DATE 794	DATE 795	DATE 796	DATE 797	DATE 798	DATE 799	DATE 800	DATE 801	DATE 802	DATE 803	DATE 804	DATE 805	DATE 806	DATE 807	DATE 808	DATE 809	DATE 810	DATE 811	DATE 812	DATE 813	DATE 814	DATE 815	DATE 816	DATE 817	DATE 818	DATE 819	DATE 820	DATE 821	DATE 822	DATE 823	DATE 824	DATE 825	DATE 826	DATE 827	DATE 828	DATE 829	DATE 830	DATE 831	DATE 832	DATE 833	DATE 834	DATE 835	DATE 836	DATE 837	DATE 838	DATE 839	DATE 840	DATE 841	DATE 842	DATE 843	DATE 844	DATE 845	DATE 846	DATE 847	DATE 848	DATE 849	DATE 850	DATE 851	DATE 852	DATE 853	DATE 854	DATE 855	DATE 856	DATE 857	DATE 858	DATE 859	DATE 860	DATE 861	DATE 862	DATE 863	DATE 864	DATE 865	DATE 866	DATE 867	DATE 868	DATE 869	DATE 870	DATE 871	DATE 872	DATE 873	DATE 874	DATE 875	DATE 876	DATE 877	DATE 878	DATE 879	DATE 880	DATE 881	DATE 882	DATE 883	DATE 884	DATE 885	DATE 886	DATE 887	DATE 888	DATE 889	DATE 890	DATE 891	DATE 892	DATE 893	DATE 894	DATE 895	DATE 896	DATE 897	DATE 898	DATE 899	DATE 900	DATE 901	DATE 902	DATE 903	DATE 904	DATE 905	DATE 906	DATE 907	DATE 908	DATE 909	DATE 910	DATE 911	DATE 912	DATE 913	DATE 914	DATE 915	DATE 916	DATE 917	DATE 918	DATE 919	DATE 920	DATE 921	DATE 922	DATE 923	DATE 924	DATE 925	DATE 926	DATE 927	DATE 928	DATE 929	DATE 930	DATE 931	DATE 932	DATE 933	DATE 934	DATE 935	DATE 936	DATE 937	DATE 938	DATE 939	DATE 940	DATE 941	DATE 942	DATE 943	DATE 944	DATE 945	DATE 946	DATE 947	DATE 948	DATE 949	DATE 950	DATE 951	DATE 952	DATE 953	DATE 954	DATE 955	DATE 956	DATE 957	DATE 958	DATE 959	DATE 960	DATE 961	DATE 962	DATE 963	DATE 964	DATE 965	DATE 966	DATE 967	DATE 968	DATE 969	DATE 970	DATE 971	DATE 972	DATE 973	DATE 974	DATE 975	DATE 976	DATE 977	DATE 978	DATE 979	DATE 980	DATE 981	DATE 982	DATE 983	DATE 984	DATE 985	DATE 986	DATE 987	DATE 988	DATE 989	DATE 990	DATE 991	DATE 992	DATE 993	DATE 994	DATE 995	DATE 996	DATE 997	DATE 998	DATE 999	DATE 1000	DATE 1001	DATE 1002	DATE 1003	DATE 1004	DATE 1005	DATE 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1106	DATE 1107	DATE 1108	DATE 1109	DATE 1110	DATE 1111	DATE 1112	DATE 1113	DATE 1114	DATE 1115	DATE 1116	DATE 1117	DATE 1118	DATE 1119	DATE 1120	DATE 1121	DATE 1122	DATE 1123	DATE 1124	DATE 1125	DATE 1126	DATE 1127	DATE 1128	DATE 1129	DATE 1130	DATE 1131	DATE 1132	DATE 1133	DATE 1134	DATE 1135	DATE 1136	DATE 1137	DATE 1138	DATE 1139	DATE 1140	DATE 1141	DATE 1142	DATE 1143	DATE 1144	DATE 1145	DATE 1146	DATE 1147	DATE 1148	DATE 1149	DATE 1150	DATE 1151	DATE 1152	DATE 1153	DATE 1154	DATE 1155	DATE 1156	DATE 1157	DATE 1158	DATE 1159	DATE 1160	DATE 1161	DATE 1162	DATE 1163	DATE 1164	DATE 1165	DATE 1166	DATE 1167	DATE 1168	DATE 1169	DATE 1170	DATE 1171	DATE 1172	DATE 1173	DATE 1174	DATE 1175	DATE 1176	DATE 1177	DATE 1178	DATE 1179	DATE 1180	DATE 1181	DATE 1182	DATE 1183	DATE 1184	DATE 1185	DATE 1186	DATE 1187	DATE 1188	DATE 1189	DATE 1190	DATE 1191	DATE 1192	DATE 1193	DATE 1194	DATE 1195	DATE 1196	DATE 1197	DATE 1198	DATE 1199	DATE 1200	DATE 1201	DATE 1202	DATE 1203	DATE 1204	DATE 1205	DATE 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Well Computer Print Out Data as of July 29 2008

TOWNSHIP	CONCESSION (LOT)	UTM	DATE	CASING	WATER	STAT	WATER	WATER	WATER
			CHN	CHN	CHN	DATE <td>DATE</td> <td>DATE</td> <td>DATE</td>	DATE	DATE	DATE
GEORGIANA TOWNSHIP IN	CON 01(004)	17 623136	1959/02	FR 0075	02	FR 0075	02	FR 0075	02
CON 01(004)		4895931	1421						
GEORGIANA TOWNSHIP IN	CON 02(004)	17 623041	1957/07	02					
CON 02(004)		4895941	4241						
GEORGIANA TOWNSHIP IN	CON 02(004)	17 623654	1849/12	02	FR 0108	/	0		
CON 02(004)		4895791	1443						
GEORGIANA TOWNSHIP IN	CON 02(004)	17 6242882	1967/06	04	FR 0135	026 / 010	0		
CON 02(004)		4895937	3107						
GEORGIANA TOWNSHIP IN	CON 02(005)	17 623829	1957/05	02	FR 0088	062 / 010	0		
CON 02(005)		4895996	3107						
GEORGIANA TOWNSHIP IN	CON 02(1)	17 623305	1984/05	06	FR 0246	156 / 210	0		
CON 02(1)		4894771	2134						
GEORGIANA TOWNSHIP IN	CON 03(001)	17 622798	1962/01	30	FR 0029	015 / 0	0		
CON 03(001)		4894889	4109						
GEORGIANA TOWNSHIP IN	CON 03(001)	17 624616	2009/10	06	FR 0117	040 / 097	0		
CON 03(001)		4895136	1413						
GEORGIANA TOWNSHIP IN	CON 04(001)	17 624703	1958/11	30	FR 0008	003 / 0	0		
CON 04(001)		4895399	4102						
GEORGIANA TOWNSHIP IN	CON 04(001)	17 624237	1966/02	04	FR 0150	026 / 130	0		
CON 04(001)		4895448	3107						
GEORGIANA TOWNSHIP IN	CON 04(001)	17 624704	1984/04	01	FR	/	0		
CON 04(001)		4895986	1543						
GEORGIANA TOWNSHIP IN	CON 04(002)	17 622882	1967/12	04	FR 0145	045 / 080	0		
CON 04(002)		4895897	2104						
GEORGIANA TOWNSHIP IN	CON 04(002)	17 624509	1997/08	06	FR 0049	005 / 037	0		
CON 04(002)		4895961	1413						
GEORGIANA TOWNSHIP IN	CON 04(002)	17 624703	1958/11	30	FR 0008	003 / 0	0		
CON 04(002)		4895399	4102						
GEORGIANA TOWNSHIP IN	CON 04(003)	17 624037	1966/02	04	FR 0150	026 / 130	0		
CON 04(003)		4895448	3107						
GEORGIANA TOWNSHIP IN	CON 04(003)	17 624704	1984/04	01	FR	/	0		
CON 04(003)		4895986	1543						
GEORGIANA TOWNSHIP IN	CON 04(004)	17 624554	1968/05	30	FR 0006	006 / 014	0		
CON 04(004)		4895493	1555						

Well Computer Print Out Data as of July 29 2008

TOWNSHIP	CONCESSION (LOT)	UTM	DATE	CASING	WATER	STAT	WATER	WATER	WATER
			CHN	CHN	CHN	DATE <td>DATE<td>DATE</td><td>DATE</td></td>	DATE <td>DATE</td> <td>DATE</td>	DATE	DATE
GEORGIANA TOWNSHIP IN	CON 04(002)	17 624512	1962/11	30	FR 0013	015 / 0	0		
CON 04(002)		4895921	4102						
GEORGIANA TOWNSHIP IN	CON 04(002)	17 624562	1961/08	30	FR 0020	010 / 0	0		
CON 04(002)		4895976	4102						
GEORGIANA TOWNSHIP IN	CON 04(003)	17 624743	1984/11	06	FR 0246	017 / 174	0		
CON 04(003)		4895986	1413						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 623814	1997/11	06	FR 0091	012 / 080	0		
CON 05(001)		4895976	5528						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 623297	1998/07	06	FR 0127	011 / 130	0		
CON 05(001)		4895973	5528						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 627319	1999/01	05	FR 0091	032 / 072	0		
CON 05(001)		4895957	5019						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 627343	1998/11	05	FR 0240	148 / 210	0		
CON 05(001)		4894950	1413						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 622482	1998/12	31	FR 0016	033 / 0	0		
CON 05(001)		4894936	8834						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 624669	2004/04	09	FR 0069	018 / 060	0		
CON 05(001)		4895869	5019						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 623297	1998/07	06	FR 0091	032 / 072	0		
CON 05(001)		4895957	5019						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 627319	1999/01	05	FR 0091	032 / 072	0		
CON 05(001)		4895957	5019						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 627343	1998/11	05	FR 0240	148 / 210	0		
CON 05(001)		4894950	1413						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 622482	1998/12	31	FR 0016	033 / 0	0		
CON 05(001)		4894936	8834						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 624669	2004/04	09	FR 0069	018 / 060	0		
CON 05(001)		4895869	5019						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 623297	1998/07	06	FR 0091	032 / 072	0		
CON 05(001)		4895957	5019						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 627319	1999/01	05	FR 0091	032 / 072	0		
CON 05(001)		4895957	5019						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 627343	1998/11	05	FR 0240	148 / 210	0		
CON 05(001)		4894950	1413						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 622482	1998/12	31	FR 0016	033 / 0	0		
CON 05(001)		4894936	8834						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 624669	2004/04	09	FR 0069	018 / 060	0		
CON 05(001)		4895869	5019						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 623297	1998/07	06	FR 0091	032 / 072	0		
CON 05(001)		4895957	5019						
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CON 05(001)		4894950	1413						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 622482	1998/12	31	FR 0016	033 / 0	0		
CON 05(001)		4894936	8834						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 624669	2004/04	09	FR 0069	018 / 060	0		
CON 05(001)		4895869	5019						
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CON 05(001)		4895957	5019						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 627319	1999/01	05	FR 0091	032 / 072	0		
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CON 05(001)		4894936	8834						
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GEORGIANA TOWNSHIP IN	CON 05(001)	17 627319	1999/01	05	FR 0091	032 / 072	0		
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CON 05(001)		4894936	8834						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 624669	2004/04	09	FR 0069	018 / 060	0		
CON 05(001)		4895869	5019						
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CON 05(001)		4895957	5019						
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CON 05(001)		4895957	5019						
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CON 05(001)		4894950	1413						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 622482	1998/12	31	FR 0016	033 / 0	0		
CON 05(001)		4894936	8834						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 624669	2004/04	09	FR 0069	018 / 060	0		
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CON 05(001)		4894950	1413						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 622482	1998/12	31	FR 0016	033 / 0	0		
CON 05(001)		4894936	8834						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 624669	2004/04	09	FR 0069	018 / 060	0		
CON 05(001)		4895869	5019						
GEORGIANA TOWNSHIP IN	CON 05(001)	17 623297	1998/07	06	FR 0091	032 / 072	0		
CON 05(001)		4895957	5019						
GEORGIANA TOWNSHIP IN	CON 05(

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Well Computer Print Out Data as of July 29 2008

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Abstract

Well Computer Print Out Data as of July 29 2008

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Well Computer Print Out Data as of July 29 2008

[illegible]

APPENDIX I
ANALYTICAL LABORATORY TEST RESULTS



AGAT® Laboratories

Certificate of Analysis

AGAT WORK ORDER: 09T331534

PROJECT NO:

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
L4Z 1Y2

TEL: (905) 712-5100
FAX: (905) 712-5122
www.agatlabs.com

CLIENT NAME: THURBER ENGINEERING LTD

ATTENTION TO: D. Elwood

Microbiological Analysis (water)

DATE SAMPLED: May 12, 2009		DATE RECEIVED: May 12, 2009			DATE REPORTED: May 22, 2009		SAMPLE TYPE: Water
Parameter	Unit	G / S	RDL	1825 1309356	SMW 1309357	NMW 1309367	1570 1309377
Escherichia coli	CFU/100ml	<1	1	<1	<1	<1	<1
Fecal Coliform	CFU/100ml	<1	1	<1	<1	900	<1
Total Coliforms	CFU/100mL	<1	1	<1	<1	<1	1
Heterotrophic Plate Count	CFU/ml	<500	10	1730	<10	320	220

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to SDWA - Microbiology

Certified By:

Elizabeth Rotkowski



AGAT[®] Laboratories

Certificate of Analysis

AGAT WORK ORDER: 09T331534

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5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
L4Z 1Y2

CLIENT NAME: THURBER ENGINEERING LTD

ATTENTION TO: D. Elwood

O. Reg 153 Petroleum Hydrocarbon F1 - F4 in Water

DATE SAMPLED: May 12, 2009		DATE RECEIVED: May 12, 2009			DATE REPORTED: May 22, 2009		SAMPLE TYPE: Water
Parameter	Unit	G / S	RDL	1825 1309356	SMW 1309357	NMW 1309367	1570 1309377
Benzene	µg/L	5.0	0.2	<0.2	<0.2	<0.2	<0.2
Toluene	µg/L	24	0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	µg/L	2.4	0.1	<0.1	<0.1	<0.1	<0.1
Xylenes (Total)	µg/L	300	0.2	<0.2	<0.2	<0.2	<0.2
C6 - C10 (F1)	µg/L		100	<100	<100	<100	<100
C6 - C10 (F1 minus BTEX)	µg/L		100	<100	<100	<100	<100
C>10 - C16 (F2)	µg/L		100	<100	<100	<100	<100
C6 - C16 (F1 + F2)	µg/L		100	<100	<100	<100	<100
C>16 - C34 (F3)	µg/L		100	<100	<100	<100	<100
C>34 - C50 (F4)	µg/L		100	<100	<100	<100	<100
C>16 - C50 (F3 + F4)	µg/L		100	<100	<100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L		500	NA	NA	NA	NA

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to ODWQS AO and OG

1309356-1309377

The C6-C10 fraction is calculated using Toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and nC34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.

Total C6-C50 results are corrected for BTEX contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 nC34 average.

Linearity is within 15%.

Extraction and holding times were met for this sample.

Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

NA = Not Applicable

Certified By:



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Certificate of Analysis

AGAT WORK ORDER: 09T331534

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5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
L4Z 1Y2

CLIENT NAME: THURBER ENGINEERING LTD

ATTENTION TO: D. Elwood

Water Quality Assessment

DATE SAMPLED: May 12, 2009 DATE RECEIVED: May 12, 2009 DATE REPORTED: May 22, 2009 SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	1825 1309356	SMW 1309357	NMW 1309367	1570 1309377
Electrical Conductivity	uS/cm		2	963	767	210	378
pH	NA	6.5-8.5	NA	8.25	8.32	8.33	8.41
Saturation pH				6.70	7.04	8.03	7.34
Langlier Index				1.55	1.28	0.30	1.07
Total Dissolved Solids	mg/L	500	20	588	510	160	226
Total Hardness (as CaCO ₃)	mg/L	80-100	10	438	382	66	157
% Difference/ Ion Balance			0.1	3.9	2.7	3.4	2.3
Alkalinity (as CaCO ₃)	mg/L	30-500	5	355	187	94	197
Bicarbonate (as CaCO ₃)	mg/L		5	355	185	93	191
Carbonate (as CaCO ₃)	mg/L		5	<5	<5	<5	6
Hydroxide (as CaCO ₃)	mg/L		5	<5	<5	<5	<5
Fluoride	mg/L		0.05	<0.05	<0.05	0.35	0.31
Chloride	mg/L	250	0.10	89.1	98.5	2.35	9.77
Bromide	mg/L		0.05	<0.05	<0.05	<0.05	<0.05
Nitrate as N	mg/L	10.0	0.05	<0.05	<0.05	0.36	<0.05
Nitrite as N	mg/L	1.0	0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	500	0.10	32.0	72.1	11.9	1.16
Ortho phosphate as P	mg/L		0.10	<0.10	<0.10	<0.10	<0.10
Reactive Silica	mg/L		0.05	15.4	13.8	8.46	16.6
Colour	TCU	5	5	<5	<5	<5	7
Turbidity	NTU	5	0.5	<0.5	8.6	96.7	6.0
Calcium	mg/L		0.05	144	104	17.2	35.1
Magnesium	mg/L		0.05	19.0	29.7	5.71	16.8
Sodium	mg/L	20 (200)	0.05	54.1	18.1	23.6	29.5
Potassium	mg/L		0.05	0.48	2.00	0.79	1.06
Aluminum	mg/L	0.1	0.004	0.004	0.227	0.547	0.014
Arsenic	mg/L	0.025	0.003	<0.003	<0.003	<0.003	<0.003
Barium	mg/L	1.0	0.002	0.087	0.106	0.062	0.078
Boron	mg/L	5.0	0.010	0.029	0.014	0.095	0.064
Cadmium	mg/L	0.005	0.002	<0.002	<0.002	<0.002	<0.002
Chromium	mg/L	0.05	0.003	0.003	0.004	<0.003	<0.003

Certified By:

Mike Munro



AGAT[®] Laboratories

Certificate of Analysis

AGAT WORK ORDER: 09T331534

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5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
L4Z 1Y2

CLIENT NAME: THURBER ENGINEERING LTD

ATTENTION TO: D. Elwood

Water Quality Assessment

DATE SAMPLED: May 12, 2009			DATE RECEIVED: May 12, 2009			DATE REPORTED: May 22, 2009			SAMPLE TYPE: Water	
Parameter	Unit	G / S	RDL	1825 1309356	SMW 1309357	NMW 1309367	1570 1309377			
Copper	mg/L	1	0.003	0.107	<0.003	0.004	<0.003			
Iron	mg/L	0.3	0.010	0.013	0.521	0.891	1.59			
Lead	mg/L	0.01	0.002	<0.002	<0.002	0.002	<0.002			
Manganese	mg/L	0.05	0.002	0.032	0.125	0.094	0.047			
Mercury	mg/L	0.001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001			
Molybdenum	mg/L		0.002	<0.002	<0.002	<0.002	0.003			
Nickel	mg/L		0.003	<0.003	<0.003	<0.003	<0.003			
Selenium	mg/L	0.01	0.004	<0.004	<0.004	<0.004	<0.004			
Silver	mg/L		0.002	<0.002	<0.002	<0.002	<0.002			
Strontium	mg/L		0.005	0.505	0.303	0.337	0.466			
Thallium	mg/L		0.006	<0.006	<0.006	<0.006	<0.006			
Titanium	mg/L		0.002	<0.002	0.011	0.018	<0.002			
Uranium	mg/L	0.02	0.002	<0.002	<0.002	<0.002	<0.002			
Vanadium	mg/L		0.002	<0.002	<0.002	0.002	<0.002			
Zinc	mg/L	5	0.005	0.026	<0.005	0.009	0.057			

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to ODWQS AO and OG

Certified By:

Phil Morrison



AGAT® Laboratories

Guideline Violation

AGAT WORK ORDER: 09T331534

PROJECT NO:

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MISSISSAUGA, ONTARIO
L4Z 1Y2

CLIENT NAME: THURBER ENGINEERING LTD

ATTENTION TO: D. Elwood

SAMPLE ID	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	GUIDEVALUE	RESULT
1309356	ODWQS AO and OG	Water Quality Assessment	Sodium	20 (200)	54.1
1309356	ODWQS AO and OG	Water Quality Assessment	Total Dissolved Solids	500	588
1309356	ODWQS AO and OG	Water Quality Assessment	Total Hardness (as CaCO3)	80-100	438
1309357	ODWQS AO and OG	Water Quality Assessment	Aluminum	0.1	0.227
1309357	ODWQS AO and OG	Water Quality Assessment	Iron	0.3	0.521
1309357	ODWQS AO and OG	Water Quality Assessment	Manganese	0.05	0.125
1309357	ODWQS AO and OG	Water Quality Assessment	Total Dissolved Solids	500	510
1309357	ODWQS AO and OG	Water Quality Assessment	Total Hardness (as CaCO3)	80-100	382
1309357	ODWQS AO and OG	Water Quality Assessment	Turbidity	5	8.6
1309357	ODWQS AO and OG	Water Quality Assessment	Aluminum	0.1	0.547
1309367	ODWQS AO and OG	Water Quality Assessment	Iron	0.3	0.891
1309367	ODWQS AO and OG	Water Quality Assessment	Manganese	0.05	0.094
1309367	ODWQS AO and OG	Water Quality Assessment	Sodium	20 (200)	23.6
1309367	ODWQS AO and OG	Water Quality Assessment	Total Hardness (as CaCO3)	80-100	66
1309377	ODWQS AO and OG	Water Quality Assessment	Turbidity	5	96.7
1309377	ODWQS AO and OG	Water Quality Assessment	Colour	5	7
1309377	ODWQS AO and OG	Water Quality Assessment	Iron	0.3	1.59
1309377	ODWQS AO and OG	Water Quality Assessment	Sodium	20 (200)	29.5
1309377	ODWQS AO and OG	Water Quality Assessment	Total Hardness (as CaCO3)	80-100	157
1309377	ODWQS AO and OG	Water Quality Assessment	Turbidity	5	6.0



Quality Assurance

CLIENT NAME: THURBER ENGINEERING LTD

AGAT WORK ORDER: 09T331534

PROJECT NO:

ATTENTION TO: D. Elwood

Microbiology Analysis

RPT Date: May 22, 2009			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE	
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measure d Value	Acceptable Limits	Recovery	Acceptable Limits	Recovery	Acceptable Limits
								Lower		Upper		Lower

Microbiological Analysis (water)

Escherichia coli (CFU/100ml)	1		< 1	< 1	0.0%	< 1
Fecal Coliform (CFU/100ml)	1		< 1	< 1	0.0%	< 1
Total Coliforms (CFU/100mL)	1		< 1	< 1	0.0%	< 1
Heterotrophic Plate Count (CFU/ml)	1		< 10	< 10	0.0%	< 10

Certified By:

Elizabeth Polakowska

AGAT QUALITY ASSURANCE REPORT (V1)

Page 7 of 12

AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Analytical Laboratories (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Analytical Laboratories (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation.



Quality Assurance

CLIENT NAME: THURBER ENGINEERING LTD

AGAT WORK ORDER: 09T331534

PROJECT NO:

ATTENTION TO: D. Elwood

Trace Organics Analysis

RPT Date: May 22, 2009			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE	
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measure d Value	Acceptable Limits	Recovery	Acceptable Limits	Recovery	Acceptable Limits
								Lower		Upper		Lower

O. Reg 153 Petroleum Hydrocarbon F1 - F4 in Water

Benzene (µg/L)	1		< 0.2	< 0.2	0.0%	< 0.2	98%	70%	130%	81%	70%	130%	84%	70%	130%
Toluene (µg/L)	1		< 0.2	< 0.2	0.0%	< 0.2	90%	70%	130%	71%	70%	130%	73%	70%	130%
Ethylbenzene (µg/L)	1		< 0.1	< 0.1	0.0%	< 0.1	105%	70%	130%	85%	70%	130%	89%	70%	130%
Xylenes (Total) (µg/L)	1		< 0.2	< 0.2	0.0%	< 0.2	94%	70%	130%	97%	70%	130%	100%	70%	130%
C6 - C10 (F1) (µg/L)	1		< 100	< 100	0.0%	< 100	89%	80%	120%	77%	70%	130%	70%	70%	130%
C>10 - C16 (F2) (µg/L)	1					< 100	102%	70%	130%	98%	70%	130%		70%	130%
C>16 - C34 (F3) (µg/L)	1					< 100	104%	70%	130%	107%	70%	130%		70%	130%
C>34 - C50 (F4) (µg/L)	1					< 100	106%	70%	130%	99%	70%	130%		70%	130%

Certified By:

AGAT QUALITY ASSURANCE REPORT (V1)

Page 8 of 12

AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Analytical Laboratories (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Analytical Laboratories (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation.



Quality Assurance

CLIENT NAME: THURBER ENGINEERING LTD

AGAT WORK ORDER: 09T331534

PROJECT NO:

ATTENTION TO: D. Elwood

Water Analysis

RPT Date: May 22, 2009			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE	
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measure d Value	Acceptable Limits	Recovery	Acceptable Limits	Recovery	Acceptable Limits
								Lower		Upper		Lower

Water Quality Assessment

Electrical Conductivity (uS/cm)	1		2480	2470	0.4%	< 2	100%	80%	120%						
pH (NA)	1		7.93	7.93	0.0%	NA	100%	80%	120%						
Total Dissolved Solids (mg/L)	1	1309377	226	236	4.3%	< 20	102%	80%	120%						
Alkalinity (as CaCO3) (mg/L)	1		296	306	3.3%	< 5	100%	80%	120%	98%	80%	120%	96%	80%	120%
Fluoride (mg/L)	1	1309377	0.31	0.32	3.2%	< 0.05	101%	90%	110%	101%	90%	110%	98%	80%	120%
Chloride (mg/L)	1	1309377	9.77	9.664	1.1%	< 0.10	100%	90%	110%	95%	90%	110%	101%	80%	120%
Bromide (mg/L)	1	1309377	< 0.05	< 0.05	0.0%	< 0.05	104%	90%	110%	102%	90%	110%	103%	80%	120%
Nitrate as N (mg/L)	1	1309377	< 0.05	< 0.05	0.0%	< 0.05	89%	80%	120%	97%	90%	110%	102%	80%	120%
Nitrite as N (mg/L)	1	1309377	< 0.05	< 0.05	0.0%	< 0.05	NA	90%	110%	93%	90%	110%	81%	80%	120%
Sulphate (mg/L)	1	1309377	1.16	1.10	5.3%	< 0.10	96%	80%	120%	96%	90%	110%	100%	80%	120%
Ortho phosphate as P (mg/L)	1	1309377	< 0.10	< 0.10	0.0%	< 0.10	101%	90%	110%	97%	90%	110%	98%	80%	120%
Reactive Silica (mg/L)	1	1309641	4.21	4.31	2.3%	< 0.05	99%	90%	110%	99%	80%	120%	106%	80%	120%
Colour (TCU)	1	1309377	7	6	15.4%	< 5	100%	90%	110%						
Turbidity (NTU)	1		0.5	0.5	0.0%	< 0.5	101%	90%	110%				100%	90%	110%
Calcium (mg/L)	1		89.2	89.1	0.1%	< 0.05	101%	90%	110%	89%	80%	120%	108%	70%	130%
Magnesium (mg/L)	1		60.2	60.2	0.0%	< 0.05	99%	90%	110%	90%	90%	110%	109%	70%	130%
Sodium (mg/L)	1		17.9	17.9	0.0%	< 0.05	102%	90%	110%	103%	90%	110%	101%	70%	130%
Potassium (mg/L)	1		41.8	41.6	0.5%	< 0.05	102%	90%	110%	99%	90%	110%	109%	70%	130%
Aluminum (mg/L)	1		< 0.004	< 0.004	0.0%	< 0.004	109%	90%	110%	108%	80%	120%	96%	70%	130%
Arsenic (mg/L)	1		< 0.003	< 0.003	0.0%	< 0.003	99%	90%	110%	109%	90%	110%	113%	70%	130%
Barium (mg/L)	1		0.066	0.068	3.0%	< 0.002	100%	90%	110%	104%	90%	110%	101%	70%	130%
Boron (mg/L)	1		0.018	0.018	0.0%	< 0.010	106%	90%	110%	106%	80%	120%	107%	70%	130%
Cadmium (mg/L)	1		< 0.002	< 0.002	0.0%	< 0.002	97%	90%	110%	101%	90%	110%	117%	70%	130%
Chromium (mg/L)	1		< 0.003	< 0.003	0.0%	< 0.003	100%	90%	110%	104%	90%	110%	100%	70%	130%
Copper (mg/L)	1		< 0.003	< 0.003	0.0%	< 0.003	98%	90%	110%	104%	90%	110%	108%	70%	130%
Iron (mg/L)	1		< 0.010	< 0.010	0.0%	< 0.010	102%	90%	110%	103%	90%	110%	101%	70%	130%
Lead (mg/L)	1		< 0.002	< 0.002	0.0%	< 0.002	99%	90%	110%	104%	90%	110%	96%	70%	130%
Manganese (mg/L)	1		0.016	0.016	0.0%	< 0.002	98%	90%	110%	103%	80%	120%	102%	70%	130%
Mercury (mg/L)	1	1309377	< 0.0001	< 0.0001	0.0%	< 0.0001	102%	90%	110%	101%	70%	130%	105%	70%	130%
Molybdenum (mg/L)	1		< 0.002	< 0.002	0.0%	< 0.002	100%	90%	110%	105%	90%	110%	112%	70%	130%
Nickel (mg/L)	1		< 0.003	< 0.003	0.0%	< 0.003	100%	90%	110%	104%	90%	110%	109%	70%	130%
Selenium (mg/L)	1		< 0.004	< 0.004	0.0%	< 0.004	96%	90%	110%	97%	90%	110%	117%	70%	130%
Silver (mg/L)	1		< 0.002	< 0.002	0.0%	< 0.002	94%	90%	110%	102%	90%	110%	101%	70%	130%
Strontium (mg/L)	1		0.134	0.131	2.3%	< 0.005	100%	90%	110%	101%	70%	130%	102%	70%	130%

AGAT QUALITY ASSURANCE REPORT (V1)

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Quality Assurance

CLIENT NAME: THURBER ENGINEERING LTD

AGAT WORK ORDER: 09T331534

PROJECT NO:

ATTENTION TO: D. Elwood

Water Analysis (Continued)

RPT Date: May 22, 2009			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measure d Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Thallium (mg/L)	1		< 0.006	< 0.006	0.0%	< 0.006	99%	90%	110%	104%	90%	110%	99%	70%	130%
Titanium (mg/L)	1		< 0.002	< 0.002	0.0%	< 0.002	109%	90%	110%	105%	90%	110%	105%	70%	130%
Uranium (mg/L)	1		< 0.002	< 0.002	0.0%	< 0.002	103%	90%	110%	103%	90%	110%	105%	70%	130%
Vanadium (mg/L)	1		< 0.002	< 0.002	0.0%	< 0.002	97%	90%	110%	100%	90%	110%	103%	70%	130%
Zinc (mg/L)	1		0.046	0.046	0.0%	< 0.005	101%	90%	110%	112%	80%	120%	117%	70%	130%

Certified By:

Mike Munster

AGAT QUALITY ASSURANCE REPORT (V1)

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Method Summary

CLIENT NAME: THURBER ENGINEERING LTD

AGAT WORK ORDER: 09T331534

PROJECT NO:

ATTENTION TO: D. Elwood

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
Escherichia coli	MIC 0110	EPA 1604	Membrane Filtration
Fecal Coliform	MIC 0100	SM 9222 D	Membrane Filtration
Total Coliforms	MIC 0110	EPA 1604	Membrane Filtration
Heterotrophic Plate Count	MIC 0120	SM 9215C	Spread Plate
Trace Organics Analysis			
Benzene	VOL 5010	EPA SW-846 5230B & 8260	(P&T)GC/MS
Toluene	VOL 5010	EPA SW-846 5230B & 8260	(P&T)GC/MS
Ethylbenzene	VOL 5010	EPA SW-846 5230B & 8260	(P&T)GC/MS
Xylenes (Total)	VOL 5010	EPA SW-846 5230B & 8260	(P&T)GC/MS
C6 - C10 (F1)	VOL - 5010	MOE E3421	(P&T)GC/FID
C6 - C10 (F1 minus BTEX)	VOL - 5010	MOE E3421	(P&T)GC/FID
C>10 - C16 (F2)	VOL - 5010	MOE E3421	GC/FID
C6 - C16 (F1 + F2)	VOL - 5010	MOE E3421	GC/FID
C>16 - C34 (F3)	VOL - 5010	MOE E3421	GC/FID
C>34 - C50 (F4)	VOL - 5010	MOE E3421	GC/FID
C>16 - C50 (F3 + F4)	VOL - 5010	MOE E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL - 5010	MOE E3421	(P&T)GC/FID



Method Summary

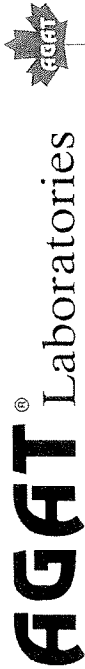
CLIENT NAME: THURBER ENGINEERING LTD

AGAT WORK ORDER: 09T331534

PROJECT NO:

ATTENTION TO: D. Elwood

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Electrical Conductivity	INOR 1016	SM 2510 B	EC METER
pH	INOR 1020	SM 4500-H+ B	PC TITRATE
Saturation pH		SM 2320 B	CALCULATION
Langlier Index			CALCULATION
Total Dissolved Solids	INOR 1028	SM 2540 C	BALANCE
Total Hardness (as CaCO ₃)		EPA SW-846 6010C & 200.7 & SM 2340 B	ICP/OES
% Difference/ Ion Balance		SM 1030 E	CALCULATION
Alkalinity (as CaCO ₃)	INOR 1000	SM 2320 B	PC TITRATE
Bicarbonate (as CaCO ₃)	INOR 1000	SM 2320 B	PC TITRATE
Carbonate (as CaCO ₃)	INOR 1000	SM 2320 B	PC TITRATE
Hydroxide (as CaCO ₃)	INOR 1000	SM 2320 B	PC TITRATE
Fluoride	INOR 1004	SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR 1004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR 1004	SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR 1004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR 1004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR 1004	SM 4110 B	ION CHROMATOGRAPH
Ortho phosphate as P	INOR 1004	SM 4110 B	ION CHROMATOGRAPH
Reactive Silica	INOR 1047	AQ2 EPA-122A & SM 4500 SiO ₂ D	AQ2 DISCRETE ANALYSER
Colour	INOR 1046	SM 2120 B	SPECTROPHOTOMETER
Turbidity	INOR 1044	SM 2130 B	NEPHELOMETER
Calcium	MET 1005	EPA SW-846 6010C & 200.7	ICP/OES
Magnesium	MET 1005	EPA SW-846 6010C & 200.7	ICP/OES
Sodium	MET 1005	EPA SW-846 6010C & 200.7	ICP/OES
Potassium	MET 1005	EPA SW-846 6010C & 200.7	ICP/OES
Aluminum	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Iron	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Manganese	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET 1000	EPA SW 846 7470 & 245.1	CVAAS
Molybdenum	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Strontium	MET 1002	EPA SW-846 6020 & 200.8	ICP-MS
Thallium	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Titanium	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS



AGAT® Laboratories



Certificate of Analysis

AGAT WORK ORDER: 09T331359

PROJECT NO: 19-1605-95

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
L4Z 1Y2

TEL: (905) 712-5100
FAX: (905) 712-5122
www.agatlabs.com

CLIENT NAME: THURBER ENGINEERING LTD

ATTENTION TO: D. Elwood

Microbiological Analysis (water)

DATE SAMPLED: May 11, 2009 DATE RECEIVED: May 11, 2009 DATE REPORTED: May 21, 2009 SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MW03 1308278
Escherichia coli	CFU/100ml		1	<1
Fecal Coliform	CFU/100ml		1	<1
Total Coliforms	CFU/100mL		1	<1
Heterotrophic Plate Count	CFU/ml		10	<10

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

Elizabeth Polakowska



Certificate of Analysis

AGAT WORK ORDER: 09T331359

PROJECT NO: 19-1605-95

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5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
L4Z 1Y2

CLIENT NAME: THURBER ENGINEERING LTD

ATTENTION TO: D. Elwood

O. Reg 153 Petroleum Hydrocarbon F1 - F4 in Water

SAMPLE TYPE: Water

DATE RECEIVED: May 11, 2009

DATE REPORTED: May 21, 2009

DATE SAMPLED: May 11, 2009

Parameter	Unit	G / S	RDL	MW03 1308278
Benzene	µg/L		0.2	<0.2
Toluene	µg/L		0.2	<0.2
Ethylbenzene	µg/L		0.1	<0.1
Xylenes (Total)	µg/L		0.2	<0.2
C6 - C10 (F1)	µg/L		100	<100
C6 - C10 (F1 minus BTEX)	µg/L		100	<100
C>10 - C16 (F2)	µg/L		100	<100
C6 - C16 (F1 + F2)	µg/L		100	<100
C>16 - C34 (F3)	µg/L		100	<100
C>34 - C50 (F4)	µg/L		100	<100
C>16 - C50 (F3 + F4)	µg/L		100	<100
Gravimetric Heavy Hydrocarbons	µg/L		500	NA

Comments: RDL - Reported Detection Limit: G / S - Guideline / Standard

1308278

The C6-C10 fraction is calculated using Toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and nC34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.

Total C6-C50 results are corrected for BTEX contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 nC34 average.

Linearity is within 15%.

Extraction and holding times were met for this sample.

Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

NA = Not Applicable

Certified By:

Jody Takewell



5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
L4Z 1Y2

AGAT WORK ORDER: 09T331359

PROJECT NO: 19-1605-95

TEL: (905) 712-5100
FAX: (905) 712-5122
www.aqatlabs.com

CLIENT NAME: THURBER ENGINEERING LTD

ATTENTION TO: D. Elwood

Water Quality Assessment

DATE SAMPLED: May 11, 2009	DATE RECEIVED: May 11, 2009	DATE REPORTED: May 21, 2009	SAMPLE TYPE: Water	
Parameter	Unit	G / S	RDL	MW03 1308278
Electrical Conductivity	uS/cm		2	1100
pH	NA		NA	8.08
Saturation pH				6.83
Langlier Index				1.25
Total Dissolved Solids	mg/L		20	768
Total Hardness (as CaCO3)	mg/L		10	416
% Difference/ Ion Balance			0.1	3.2
Alkalinity (as CaCO3)	mg/L		5	278
Bicarbonate (as CaCO3)	mg/L		5	278
Carbonate (as CaCO3)	mg/L		5	<5
Hydroxide (as CaCO3)	mg/L		5	<5
Fluoride	mg/L		0.05	<0.05
Chloride	mg/L		0.10	172
Bromide	mg/L		0.05	<0.05
Nitrate as N	mg/L		0.05	7.03
Nitrite as N	mg/L		0.05	<0.05
Sulphate	mg/L		0.10	21.7
Ortho phosphate as P	mg/L		0.10	<0.10
Reactive Silica	mg/L		0.05	12.4
Colour	TCU		5	<5
Turbidity	NTU		0.5	<0.5
Calcium	mg/L		0.05	146
Magnesium	mg/L		0.05	12.5
Sodium	mg/L		0.05	53.2
Potassium	mg/L		0.05	1.25
Aluminum	mg/L		0.004	0.474
Arsenic	mg/L		0.003	<0.003
Barium	mg/L		0.002	0.077
Boron	mg/L		0.010	<0.010
Cadmium	mg/L		0.002	<0.002
Chromium	mg/L		0.003	0.014

Mike Anderson



Certificate of Analysis

AGAT WORK ORDER: 09T331359

PROJECT NO: 19-1605-95

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MISSISSAUGA, ONTARIO
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CLIENT NAME: THURBER ENGINEERING LTD

ATTENTION TO: D. Elwood

Water Quality Assessment

DATE SAMPLED: May 11, 2009 DATE RECEIVED: May 11, 2009 DATE REPORTED: May 21, 2009 SAMPLE TYPE: Water

MW03

1308278

Parameter	Unit	G / S	RDL	
Copper	mg/L		0.003	<0.003
Iron	mg/L		0.010	1.23
Lead	mg/L		0.002	0.003
Manganese	mg/L		0.002	0.268
Mercury	mg/L		0.0001	<0.0001
Molybdenum	mg/L		0.002	<0.002
Nickel	mg/L		0.003	<0.003
Selenium	mg/L		0.004	<0.004
Silver	mg/L		0.002	<0.002
Strontium	mg/L		0.005	0.541
Thallium	mg/L		0.006	<0.006
Titanium	mg/L		0.002	0.024
Uranium	mg/L		0.002	<0.002
Vanadium	mg/L		0.002	0.003
Zinc	mg/L		0.005	<0.005

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By: _____

Mike Munro



Quality Assurance

CLIENT NAME: THURBER ENGINEERING LTD
PROJECT NO: 19-1605-95

AGAT WORK ORDER: 09T331359
ATTENTION TO: D. Elwood

Microbiology Analysis

RPT Date: May 21, 2009			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measure d Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Microbiological Analysis (water)

Escherichia coli (CFU/100ml)	1		< 1	< 1	0.0%	< 1
Fecal Coliform (CFU/100ml)	1		< 1	< 1	0.0%	< 1
Total Coliforms (CFU/100mL)	1		< 1	< 1	0.0%	< 1
Heterotrophic Plate Count (CFU/ml)	1		< 10	< 10	0.0%	< 10

Certified By:

Elizabeth Potakowska

AGAT QUALITY ASSURANCE REPORT (V1)

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Quality Assurance

CLIENT NAME: THURBER ENGINEERING LTD

AGAT WORK ORDER: 09T331359

PROJECT NO: 19-1605-95

ATTENTION TO: D. Elwood

Trace Organics Analysis

RPT Date: May 21, 2009			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE	
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measure d Value	Acceptable Limits	Recovery	Acceptable Limits	Recovery	Acceptable Limits
								Lower		Upper		Lower

O. Reg 153 Petroleum Hydrocarbon F1 - F4 in Water

Benzene (µg/L)	1		< 0.2	< 0.2	0.0%	< 0.2	98%	70%	130%	81%	70%	130%	84%	70%	130%
Toluene (µg/L)	1		< 0.2	< 0.2	0.0%	< 0.2	90%	70%	130%	71%	70%	130%	73%	70%	130%
Ethylbenzene (µg/L)	1		< 0.1	< 0.1	0.0%	< 0.1	105%	70%	130%	85%	70%	130%	89%	70%	130%
Xylenes (Total) (µg/L)	1		< 0.2	< 0.2	0.0%	< 0.2	94%	70%	130%	97%	70%	130%	100%	70%	130%
C6 - C10 (F1) (µg/L)	1		< 100	< 100	0.0%	< 100	89%	80%	120%	77%	70%	130%	70%	70%	130%
C>10 - C16 (F2) (µg/L)	1					< 100	100%	70%	130%	90%	70%	130%		70%	130%
C>16 - C34 (F3) (µg/L)	1					< 100	99%	70%	130%	108%	70%	130%		70%	130%
C>34 - C50 (F4) (µg/L)	1					< 100	98%	70%	130%	104%	70%	130%		70%	130%

Certified By:

Jacky Takewski

AGAT QUALITY ASSURANCE REPORT (V1)

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Quality Assurance

CLIENT NAME: THURBER ENGINEERING LTD

AGAT WORK ORDER: 09T331359

PROJECT NO: 19-1605-95

ATTENTION TO: D. Elwood

Water Analysis

RPT Date: May 21, 2009			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measure d Value	Acceptable Limits	Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower		Upper	Lower		Upper	Lower

Water Quality Assessment

Electrical Conductivity (uS/cm)	1		449	453	0.9%	< 2	100%	80%	120%						
pH (NA)	1		8.32	8.33	0.1%	NA	100%	80%	120%						
Total Dissolved Solids (mg/L)	1		460	448	2.6%	< 20	102%	80%	120%						
Alkalinity (as CaCO3) (mg/L)	1		209	218	4.2%	< 5	99%	80%	120%	99%	80%	120%	97%	80%	120%
Fluoride (mg/L)	1		< 0.05	< 0.05	0.0%	< 0.05	102%	90%	110%	102%	90%	110%	92%	80%	120%
Chloride (mg/L)	1		91.2	90.0	1.3%	< 0.10	100%	90%	110%	99%	90%	110%	101%	80%	120%
Bromide (mg/L)	1		< 0.05	< 0.05	0.0%	< 0.05	103%	90%	110%	100%	90%	110%	99%	80%	120%
Nitrate as N (mg/L)	1		0.98	0.96	2.1%	< 0.05	96%	90%	110%	96%	90%	110%	96%	80%	120%
Nitrite as N (mg/L)	1		< 0.05	< 0.05	0.0%	< 0.05	NA	90%	110%	102%	90%	110%	87%	80%	120%
Sulphate (mg/L)	1		18.5	18.2	1.6%	< 0.10	92%	80%	120%	94%	90%	110%	96%	80%	120%
Ortho phosphate as P (mg/L)	1		< 0.10	< 0.10	0.0%	< 0.10	103%	90%	110%	99%	90%	110%	100%	80%	120%
Reactive Silica (mg/L)	1		16.9	17.3	2.3%	< 0.05	99%	90%	110%	99%	80%	120%	106%	80%	120%
Colour (TCU)	1		10	10	0.0%	< 5	100%	90%	110%						
Turbidity (NTU)	1		3.0	2.9	3.4%	< 0.5	101%	90%	110%				100%	90%	110%
Calcium (mg/L)	1	1308278	146	148	1.4%	< 0.05	103%	90%	110%	101%	90%	110%	95%	70%	130%
Magnesium (mg/L)	1	1308278	12.5	12.6	0.8%	< 0.05	101%	90%	110%	99%	90%	110%	101%	70%	130%
Sodium (mg/L)	1	1308278	53.2	53.0	0.4%	< 0.05	101%	90%	110%	97%	90%	110%	97%	70%	130%
Potassium (mg/L)	1	1308278	1.25	1.26	0.8%	< 0.05	99%	90%	110%	100%	90%	110%	106%	70%	130%
Aluminum (mg/L)	1		0.008	0.008	0.0%	< 0.004	104%	90%	110%	105%	80%	120%	87%	70%	130%
Arsenic (mg/L)	1		< 0.003	< 0.003	0.0%	< 0.003	97%	90%	110%	103%	90%	110%	104%	70%	130%
Barium (mg/L)	1		0.019	0.018	5.4%	< 0.002	96%	90%	110%	106%	90%	110%	106%	70%	130%
Boron (mg/L)	1		0.011	0.011	0.0%	< 0.010	110%	90%	110%	108%	90%	110%	96%	70%	130%
Cadmium (mg/L)	1		< 0.002	< 0.002	0.0%	< 0.002	102%	90%	110%	111%	80%	120%	108%	70%	130%
Chromium (mg/L)	1		< 0.003	< 0.003	0.0%	< 0.003	97%	90%	110%	108%	90%	110%	100%	70%	130%
Copper (mg/L)	1		< 0.003	< 0.003	0.0%	< 0.003	100%	90%	110%	106%	90%	110%	102%	70%	130%
Iron (mg/L)	1		< 0.010	< 0.010	0.0%	< 0.010	96%	90%	110%	105%	90%	110%	111%	70%	130%
Lead (mg/L)	1		< 0.002	< 0.002	0.0%	< 0.002	103%	90%	110%	107%	80%	120%	101%	70%	130%
Manganese (mg/L)	1		0.008	0.008	0.0%	< 0.002	95%	90%	110%	112%	80%	120%	105%	70%	130%
Mercury (mg/L)	1		< 0.0001	< 0.0001	0.0%	< 0.0001	103%	90%	110%	101%	70%	130%	91%	70%	130%
Molybdenum (mg/L)	1		< 0.002	< 0.002	0.0%	< 0.002	99%	90%	110%	113%	80%	120%	109%	70%	130%
Nickel (mg/L)	1		< 0.003	< 0.003	0.0%	< 0.003	102%	90%	110%	108%	90%	110%	106%	70%	130%
Selenium (mg/L)	1		< 0.004	< 0.004	0.0%	< 0.004	92%	90%	110%	100%	90%	110%	104%	70%	120%
Silver (mg/L)	1		< 0.002	< 0.002	0.0%	< 0.002	106%	90%	110%	105%	80%	120%	104%	70%	130%
Strontium (mg/L)	1		0.116	0.115	0.9%	< 0.005	99%	90%	110%	108%	90%	110%	98%	60%	140%

AGAT QUALITY ASSURANCE REPORT (V1)

Page 8 of 11

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Quality Assurance

CLIENT NAME: THURBER ENGINEERING LTD

AGAT WORK ORDER: 09T331359

PROJECT NO: 19-1605-95

ATTENTION TO: D. Elwood

Water Analysis (Continued)

RPT Date: May 21, 2009			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measure d Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Thallium (mg/L)	1		< 0.006	< 0.006	0.0%	< 0.006	97%	90%	110%	108%	90%	110%	106%	70%	130%
Titanium (mg/L)	1		< 0.002	< 0.002	0.0%	< 0.002	102%	90%	110%	109%	90%	110%	110%	70%	130%
Uranium (mg/L)	1		< 0.002	< 0.002	0.0%	< 0.002	98%	90%	110%	108%	90%	110%	104%	70%	130%
Vanadium (mg/L)	1		< 0.002	< 0.002	0.0%	< 0.002	91%	90%	110%	103%	90%	110%	101%	70%	130%
Zinc (mg/L)	1		< 0.005	< 0.005	0.0%	< 0.005	102%	90%	110%	110%	80%	120%	115%	70%	130%

Certified By:

M. Munir

AGAT QUALITY ASSURANCE REPORT (V1)

Page 9 of 11

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Results relate only to the items tested



Method Summary

CLIENT NAME: THURBER ENGINEERING LTD

AGAT WORK ORDER: 09T331359

PROJECT NO: 19-1605-95

ATTENTION TO: D. Elwood

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
Escherichia coli	MIC 0110	EPA 1604	Membrane Filtration
Fecal Coliform	MIC 0100	SM 9222 D	Membrane Filtration
Total Coliforms	MIC 0110	EPA 1604	Membrane Filtration
Heterotrophic Plate Count	MIC 0120	SM 9215C	Spread Plate
Trace Organics Analysis			
Benzene	VOL 5010	EPA SW-846 5230B & 8260	(P&T)GC/MS
Toluene	VOL 5010	EPA SW-846 5230B & 8260	(P&T)GC/MS
Ethylbenzene	VOL 5010	EPA SW-846 5230B & 8260	(P&T)GC/MS
Xylenes (Total)	VOL 5010	EPA SW-846 5230B & 8260	(P&T)GC/MS
C6 - C10 (F1)	VOL - 5010	MOE E3421	(P&T)GC/FID
C6 - C10 (F1 minus BTEX)	VOL - 5010	MOE E3421	(P&T)GC/FID
C>10 - C16 (F2)	VOL - 5010	MOE E3421	GC/FID
C6 - C16 (F1 + F2)	VOL - 5010	MOE E3421	GC/FID
C>16 - C34 (F3)	VOL - 5010	MOE E3421	GC/FID
C>34 - C50 (F4)	VOL - 5010	MOE E3421	GC/FID
C>16 - C50 (F3 + F4)	VOL - 5010	MOE E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL - 5010	MOE E3421	(P&T)GC/FID



Method Summary

CLIENT NAME: THURBER ENGINEERING LTD

AGAT WORK ORDER: 09T331359

PROJECT NO: 19-1605-95

ATTENTION TO: D. Elwood

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Electrical Conductivity	INOR 1016	SM 2510 B	EC METER
pH	INOR 1020	SM 4500-H+ B	PC TITRATE
Saturation pH		SM 2320 B	CALCULATION
Langlier Index			CALCULATION
Total Dissolved Solids	INOR 1028	SM 2540 C	BALANCE
Total Hardness (as CaCO ₃)		EPA SW-846 6010C & 200.7 & SM 2340 B	ICP/OES
% Difference/ Ion Balance		SM 1030 E	CALCULATION
Alkalinity (as CaCO ₃)	INOR 1000	SM 2320 B	PC TITRATE
Bicarbonate (as CaCO ₃)	INOR 1000	SM 2320 B	PC TITRATE
Carbonate (as CaCO ₃)	INOR 1000	SM 2320 B	PC TITRATE
Hydroxide (as CaCO ₃)	INOR 1000	SM 2320 B	PC TITRATE
Fluoride	INOR 1004	SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR 1004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR 1004	SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR 1004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR 1004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR 1004	SM 4110 B	ION CHROMATOGRAPH
Ortho phosphate as P	INOR 1004	SM 4110 B	ION CHROMATOGRAPH
Reactive Silica	INOR 1047	AQ2 EPA-122A & SM 4500 SiO ₂ D	AQ2 DISCRETE ANALYSER
Colour	INOR 1046	SM 2120 B	SPECTROPHOTOMETER
Turbidity	INOR 1044	SM 2130 B	NEPHELOMETER
Calcium	MET 1005	EPA SW-846 6010C & 200.7	ICP/OES
Magnesium	MET 1005	EPA SW-846 6010C & 200.7	ICP/OES
Sodium	MET 1005	EPA SW-846 6010C & 200.7	ICP/OES
Potassium	MET 1005	EPA SW-846 6010C & 200.7	ICP/OES
Aluminum	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Iron	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Manganese	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET 1000	EPA SW 846 7470 & 245.1	CVAAS
Molybdenum	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Strontium	MET 1002	EPA SW-846 6020 & 200.8	ICP-MS
Thallium	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Titanium	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET 1002	EPA SW-846 6020A & 200.8	ICP-MS



Certificate of Analysis

AGAT WORK ORDER: 09T340984

PROJECT NO: 19-1605-95

5835 COOPERS AVENUE
MISSISSAUGA, ON
CANADA L4Z 1Y2
PH: (905)712-5100
FAX: (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: THURBER ENGINEERING LTD

ATTENTION TO: D. Elwood

Microbiological Analysis (water)

DATE SAMPLED: Jun 30, 2009		DATE RECEIVED: Jun 30, 2009		DATE REPORTED: Jul 08, 2009		SAMPLE TYPE: Water
Parameter	Unit	G / S	RDL	1965 1376207	1656 1376256	18574 1376272
Escherichia coli	CFU/100ml		1	<1	<1	<1
Fecal Coliform	CFU/100ml		1	<1	<1	<1
Total Coliforms	CFU/100mL		1	<1	<1	1
Heterotrophic Plate Count	CFU/ml		10	<10	<10	<10

Comments: RDL - Reported Detection Limit: G / S - Guideline / Standard

Certified By:

Elizabeth Rotkowski



Certificate of Analysis

AGAT WORK ORDER: 09T340984

PROJECT NO: 19-1605-95

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CLIENT NAME: THURBER ENGINEERING LTD

ATTENTION TO: D. Elwood

O. Reg 153 Petroleum Hydrocarbon F1 - F4 in Water

DATE SAMPLED: Jun 30, 2009		DATE RECEIVED: Jun 30, 2009			DATE REPORTED: Jul 08, 2009		SAMPLE TYPE: Water
Parameter	Unit	G / S	RDL	1965 1376207	1656 1376256	18574 1376272	
Benzene	µg/L	5.0	0.2	<0.2	<0.2	<0.2	
Toluene	µg/L	24	0.2	<0.2	<0.2	<0.2	
Ethylbenzene	µg/L	2.4	0.1	<0.1	<0.1	<0.1	
Xylenes (Total)	µg/L	300	0.2	<0.2	<0.2	<0.2	
C6 - C10 (F1)	µg/L		100	<100	<100	<100	
C6 - C10 (F1 minus BTEX)	µg/L		100	<100	<100	<100	
C>10 - C16 (F2)	µg/L		100	<100	<100	<100	
C6 - C16 (F1 + F2)	µg/L	1000	100	<100	<100	<100	
C>16 - C34 (F3)	µg/L		100	<100	<100	<100	
C>34 - C50 (F4)	µg/L		100	<100	<100	<100	
C>16 - C50 (F3 + F4)	µg/L	1000	100	<100	<100	<100	
Gravimetric Heavy Hydrocarbons	µg/L		500	NA	NA	NA	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to T2(PGW)

1376207-1376272 The C6-C10 fraction is calculated using Toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.

Total C6-C50 results are corrected for BTEX contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 nC34 average.

Linearity is within 15%.

Extraction and holding times were met for this sample.

Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

NA = Not Applicable

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 09T340984

PROJECT NO: 19-1605-95

5835 COOPERS AVENUE
MISSISSAUGA, ON
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http://www.agatlabs.com

CLIENT NAME: THURBER ENGINEERING LTD

ATTENTION TO: D. Elwood

Water Quality Assessment						
DATE SAMPLED: Jun 30, 2009	DATE RECEIVED: Jun 30, 2009	DATE REPORTED: Jul 08, 2009	SAMPLE TYPE: Water			
Parameter	Unit	G / S	RDL	1965 1376207	1656 1376256	18574 1376272
Electrical Conductivity	uS/cm		2	526	349	379
pH	NA		NA	8.10	8.23	8.20
Saturation pH				7.09	7.37	7.23
Langlier Index				1.01	0.86	0.97
Total Dissolved Solids	mg/L		20	348	204	224
Total Hardness (as CaCO ₃)	mg/L		10	283	184	211
% Difference/ Ion Balance			0.1	1.8	5.2	4.9
Alkalinity (as CaCO ₃)	mg/L		5	209	157	191
Bicarbonate (as CaCO ₃)	mg/L		5	209	157	191
Carbonate (as CaCO ₃)	mg/L		5	<5	<5	<5
Hydroxide (as CaCO ₃)	mg/L		5	<5	<5	<5
Fluoride	mg/L		0.05	<0.05	0.08	0.06
Chloride	mg/L	250	0.10	19.3	4.82	0.71
Bromide	mg/L		0.05	<0.05	<0.05	<0.05
Nitrate as N	mg/L	10	0.05	<0.05	<0.05	<0.05
Nitrite as N	mg/L	1	0.05	<0.05	<0.05	<0.05
Sulphate	mg/L		0.10	48.2	24.0	18.8
Ortho phosphate as P	mg/L		0.10	<0.10	<0.10	<0.10
Ammonia as N	mg/L		0.02	0.05	0.07	0.10
Total Organic Carbon	mg/L		0.5	1.0	0.9	1.0
Reactive Silica	mg/L		0.05	21.2	9.70	17.3
Colour	TCU		5	<5	<5	<5
Turbidity	NTU		0.5	7.9	1.7	3.8
Calcium	mg/L		0.05	77.3	37.3	56.4
Magnesium	mg/L		0.05	21.8	22.1	17.0
Sodium	mg/L	200	0.05	5.84	11.1	9.63
Potassium	mg/L		0.05	1.20	1.12	0.94
Aluminum	mg/L		0.004	0.043	0.011	0.037
Arsenic	mg/L	0.25	0.003	<0.003	0.004	<0.003
Barium	mg/L	1.0	0.002	0.109	0.130	0.095
Boron	mg/L	5.0	0.010	<0.010	0.022	0.026

Certified By:

Elizabeta Rotkowska



Certificate of Analysis

AGAT Laboratories

AGAT WORK ORDER: 09T340984

PROJECT NO: 19-1605-95

5835 COOPERS AVENUE
MISSISSAUGA, ON
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http://www.agatlabs.com

CLIENT NAME: THURBER ENGINEERING LTD

ATTENTION TO: D. Elwood

Water Quality Assessment

DATE SAMPLED: Jun 30, 2009		DATE RECEIVED: Jun 30, 2009			DATE REPORTED: Jul 08, 2009		SAMPLE TYPE: Water
Parameter	Unit	G / S	RDL	1965 1376207	1656 1376256	18574 1376272	
Cadmium	mg/L	0.005	0.002	<0.002	<0.002	<0.002	
Chromium	mg/L	0.05	0.003	0.003	<0.003	<0.003	
Copper	mg/L	0.023	0.003	0.176	<0.003	<0.003	
Iron	mg/L		0.010	0.716	0.387	0.594	
Lead	mg/L	10	0.002	0.002	<0.002	<0.002	
Manganese	mg/L		0.002	0.046	0.018	0.050	
Mercury	mg/L	0.12	0.0001	<0.0001	<0.0001	<0.0001	
Molybdenum	mg/L	7.3	0.002	<0.002	<0.002	<0.002	
Nickel	mg/L	0.1	0.003	<0.003	<0.003	<0.003	
Selenium	mg/L	0.01	0.004	<0.004	<0.004	<0.004	
Silver	mg/L	0.0012	0.002	<0.002	<0.002	<0.002	
Strontium	mg/L		0.005	0.234	0.279	0.224	
Thallium	mg/L	2.0	0.006	<0.006	<0.006	<0.006	
Titanium	mg/L		0.002	<0.002	<0.002	<0.002	
Uranium	mg/L		0.002	<0.002	<0.002	<0.002	
Vanadium	mg/L	0.200	0.002	<0.002	<0.002	<0.002	
Zinc	mg/L	1.1	0.005	0.062	0.022	<0.005	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to T2(PGW)

Certified By:

Elizabeth Rotkowska



Guideline Violation

AGAT WORK ORDER: 09T340984
PROJECT NO: 19-1605-95

5835 COOPERS AVENUE
MISSISSAUGA, ON
CANADA L4Z 1Y2

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CLIENT NAME: THURBER ENGINEERING LTD

ATTENTION TO: D. Elwood

SAMPLE ID	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	GUIDEVALUE	RESULT
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1376207	T2(PGW)	Water Quality Assessment	Copper	0.023	0.176
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Certificate of Analysis

AGAT WORK ORDER: 09T339862

PROJECT NO: 19-1605-95

5835 COOPERS AVENUE
MISSISSAUGA, ON
CANADA L4Z 1Y2

PH: (905)712-5100
FAX: (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: THURBER ENGINEERING LTD

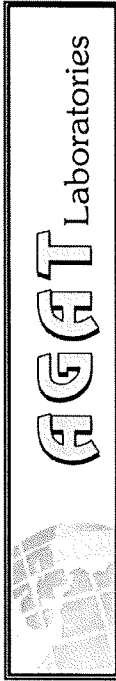
ATTENTION TO: D. Elwood

Microbiological Analysis (water)									
DATE SAMPLED: Jun 24, 2009		DATE RECEIVED: Jun 24, 2009		DATE REPORTED: Jul 06, 2009		SAMPLE TYPE: Water			
Parameter	Unit	G / S	RDL	2203 1367357	20086 1367368	2176 1367379	2088 1367390	19601 1367407	20089 1367418
Escherichia coli	CFU/100ml	1	1	1	<1	<1	<1	<1	<1
Fecal Coliform	CFU/100ml	1	1	1	<1	<1	<1	<1	<1
Total Coliforms	CFU/100mL	1	1	124	<1	<1	<1	<1	<1
Heterotrophic Plate Count	CFU/ml		10	30	20	810	<10	<10	<10

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to SDWA -Schedule 23

Certified By:

Judy Tokumaki



Certificate of Analysis

AGAT WORK ORDER: 09T339862

PROJECT NO: 19-1605-95

5835 COOPERS AVENUE
MISSISSAUGA, ON
CANADA L4Z 1Y2

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CLIENT NAME: THURBER ENGINEERING LTD

ATTENTION TO: D. Elwood

O. Reg 153 Petroleum Hydrocarbon F1 - F4 in Water

DATE SAMPLED: Jun 24, 2009		DATE RECEIVED: Jun 24, 2009				DATE REPORTED: Jul 06, 2009				SAMPLE TYPE: Water	
Parameter	Unit	G / S	RDL	2203 1367357	20086 1367368	2176 1367379	2088 1367390	19601 1367407	20089 1367418		
Benzene	µg/L	5.0	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		
Toluene	µg/L	24	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		
Ethylbenzene	µg/L	2.4	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
Xylenes (Total)	µg/L	300	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		
C6 - C10 (F1)	µg/L		100	<100	<100	<100	<100	<100	<100		
C6 - C10 (F1 minus BTEX)	µg/L		100	<100	<100	<100	<100	<100	<100		
C>10 - C16 (F2)	µg/L		100	<100	<100	<100	<100	<100	<100		
C6 - C16 (F1 + F2)	µg/L	1000	100	<100	<100	<100	<100	<100	<100		
C>16 - C34 (F3)	µg/L		100	<100	<100	<100	<100	<100	<100		
C>34 - C50 (F4)	µg/L		100	<100	<100	<100	<100	<100	<100		
C>16 - C50 (F3 + F4)	µg/L	1000	100	<100	<100	<100	<100	<100	<100		
Gravimetric Heavy Hydrocarbons	µg/L		500	NA	NA	NA	NA	NA	NA		

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to T2(PGW)

1367357-1367418 The C6-C10 fraction is calculated using Toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.

Total C6-C50 results are corrected for BTEX contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 nC34 average.

Linearity is within 15%.

Extraction and holding times were met for this sample.

Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

NA = Not Applicable

Certified By:

Judy Tokowski



Certificate of Analysis

AGAT WORK ORDER: 09T339862

PROJECT NO: 19-1605-95

5835 COOPERS AVENUE
MISSISSAUGA, ON
CANADA L4Z 1Y2

PH: (905)712-5100
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http://www.agatlabs.com

CLIENT NAME: THURBER ENGINEERING LTD

ATTENTION TO: D. Elwood

Water Quality Assessment

DATE SAMPLED: Jun 24, 2009			DATE RECEIVED: Jun 24, 2009			DATE REPORTED: Jul 06, 2009			SAMPLE TYPE: Water		
Parameter	Unit	G / S	RDL	2203 1367357	20086 1367368	2176 1367379	2088 1367390	19601 1367407	20089 1367418		
Electrical Conductivity	uS/cm		2	582	2130	<2	522	460	387		
pH	NA		NA	8.03	7.96	6.00	8.18	8.15	8.35		
Saturation pH				6.88	6.63	11.5	10.0	7.23	10.0		
Langlier Index				1.15	1.33	-5.48	-1.83	0.92	-1.68		
Total Dissolved Solids	mg/L		20	372	1330	20	310	262	240		
Total Hardness (as CaCO3)	mg/L		10	327	554	<10	<10	171	<10		
% Difference/ Ion Balance			0.1	3.7	1.9	100	1.8	1.8	2.0		
Alkalinity (as CaCO3)	mg/L		5	292	339	<5	216	230	192		
Bicarbonate (as CaCO3)	mg/L		5	292	339	<5	216	230	189		
Carbonate (as CaCO3)	mg/L		5	<5	<5	<5	<5	<5	<5		
Hydroxide (as CaCO3)	mg/L		5	<5	<5	<5	<5	<5	<5		
Fluoride	mg/L		0.05	<0.05	<0.25	<0.05	0.06	0.13	0.13		
Chloride	mg/L	250	0.10	11.5	516	<0.10	22.2	21.9	5.43		
Bromide	mg/L		0.05	<0.05	<0.25	<0.05	<0.05	<0.05	<0.05		
Nitrate as N	mg/L	10	0.05	0.66	15.1	<0.05	0.06	<0.05	<0.05		
Nitrite as N	mg/L	1	0.05	<0.05	<0.25	<0.05	<0.05	<0.05	<0.05		
Sulphate	mg/L		0.10	16.9	55.4	<0.10	30.2	<0.10	11.5		
Ortho phosphate as P	mg/L		0.10	<0.10	<0.50	<0.10	<0.10	0.83	0.10		
Total Phosphorus	mg/L		0.05	<0.05	<0.05	<0.05	<0.05	0.08	0.14		
Ammonia as N	mg/L		0.05	<0.05	<0.05	0.08	<0.05	<0.05	0.19		
Total Organic Carbon	mg/L		0.5	1.9	1.1	1.5	1.0	2.3	1.5		
Reactive Silica	mg/L		0.05	12.5	18.8	0.80	19.9	23.2	18.2		
Colour	TCU		5	<5	<5	<5	<5	<5	5		
Turbidity	NTU		0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
Calcium	mg/L		0.05	114	179	<0.05	<0.05	45.2	<0.05		
Magnesium	mg/L		0.05	10.2	26.0	<0.05	<0.05	14.2	<0.05		
Sodium	mg/L	200	0.05	11.5	266	<0.05	133	36.3	101		
Potassium	mg/L		0.05	1.38	2.01	<0.05	0.22	1.13	0.15		
Aluminium	mg/L		0.004	0.022	0.004	<0.004	<0.004	<0.004	<0.004		
Arsenic	mg/L	0.25	0.003	<0.003	<0.003	0.006	0.003	<0.003	<0.003		
Barium	mg/L	1.0	0.002	0.025	0.161	0.031	<0.002	0.070	<0.002		

Mike Munro

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 09T339862
PROJECT NO: 19-1605-95

5835 COOPERS AVENUE
MISSISSAUGA, ON
CANADA L4Z 1Y2

PH: (905)712-5100
FAX: (905)712-5122
http://www.agatlabs.com

CLIENT NAME: THURBER ENGINEERING LTD

ATTENTION TO: D. Elwood

Water Quality Assessment

DATE SAMPLED: Jun 24, 2009			DATE RECEIVED: Jun 24, 2009				DATE REPORTED: Jul 06, 2009				SAMPLE TYPE: Water						
Parameter	Unit	G / S	RDL	2203	1367357	RDL	20086	1367368	RDL	2176	1367379	2088	1367390	19601	1367407	20089	1367418
Boron	mg/L	5.0	0.010	0.014	0.010	0.010	0.042	0.042	0.010	0.061	0.018	0.045	0.046				
Cadmium	mg/L	0.005	0.002	<0.002	0.002	0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002				
Chromium	mg/L	0.05	0.003	0.010	0.003	0.003	0.016	0.016	0.003	0.004	0.006	0.005	0.004				
Copper	mg/L	0.023	0.003	0.017	0.003	0.003	0.103	0.103	0.003	0.019	0.005	0.041	<0.003				
Iron	mg/L		0.010	<0.010	0.010	0.010	<0.010	<0.010	0.010	<0.010	<0.010	0.120	<0.010				
Lead	mg/L	10	0.002	<0.002	0.002	0.002	0.006	0.006	0.002	0.004	<0.002	<0.002	<0.002				
Manganese	mg/L		0.002	0.005	0.002	0.002	<0.002	<0.002	0.002	0.008	<0.002	0.029	<0.002				
Mercury	mg/L	0.12	0.0001	<0.0001	0.0001	0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
Molybdenum	mg/L	7.3	0.002	<0.002	0.002	0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002				
Nickel	mg/L	0.1	0.003	<0.003	0.003	0.003	<0.003	<0.003	0.003	<0.003	<0.003	<0.003	<0.003				
Selenium	mg/L	0.01	0.004	<0.004	0.004	0.004	<0.004	<0.004	0.004	<0.004	<0.004	<0.004	<0.004				
Silver	mg/L	0.0012	0.002	<0.002	0.002	0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002				
Strontium	mg/L		0.005	0.194	0.005	0.005	0.364	0.364	0.005	0.279	<0.005	0.250	<0.005				
Thallium	mg/L	2.0	0.006	<0.006	0.006	0.006	<0.006	<0.006	0.006	<0.006	<0.006	<0.006	<0.006				
Titanium	mg/L		0.002	<0.002	0.002	0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002				
Uranium	mg/L		0.002	<0.002	0.002	0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002				
Vanadium	mg/L	0.200	0.002	0.003	0.002	0.002	0.005	0.005	0.002	<0.002	<0.002	<0.002	<0.002				
Zinc	mg/L	1.1	0.005	0.009	0.005	0.005	0.048	0.048	0.005	0.108	<0.005	0.303	<0.005				

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to T2(PGW)

1367379

Note: The value reported for the Ion Balance is high due to absence of any detectable amount of major anions & cations in the sample. The sample appears to be a Blank.

Certified By:

Mark M. M. M.



Guideline Violation

AGAT WORK ORDER: 09T339862
PROJECT NO: 19-1605-95

5835 COOPERS AVENUE
MISSISSAUGA, ON
CANADA L4Z 1Y2

PH: (905)712-5100
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CLIENT NAME: THURBER ENGINEERING LTD

ATTENTION TO: D. Elwood

SAMPLE ID	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	GUIDEVALUE	RESULT
1367357	SDWA -Schedule 23	Microbiological Analysis (water)	Total Coliforms	1	124
1367368	T2(PGW)	Water Quality Assessment	Chloride	250	516
1367368	T2(PGW)	Water Quality Assessment	Copper	0.023	0.103
1367368	T2(PGW)	Water Quality Assessment	Nitrate as N	10	15.1
1367368	T2(PGW)	Water Quality Assessment	Sodium	200	266
1367407	T2(PGW)	Water Quality Assessment	Copper	0.023	0.041

APPENDIX J

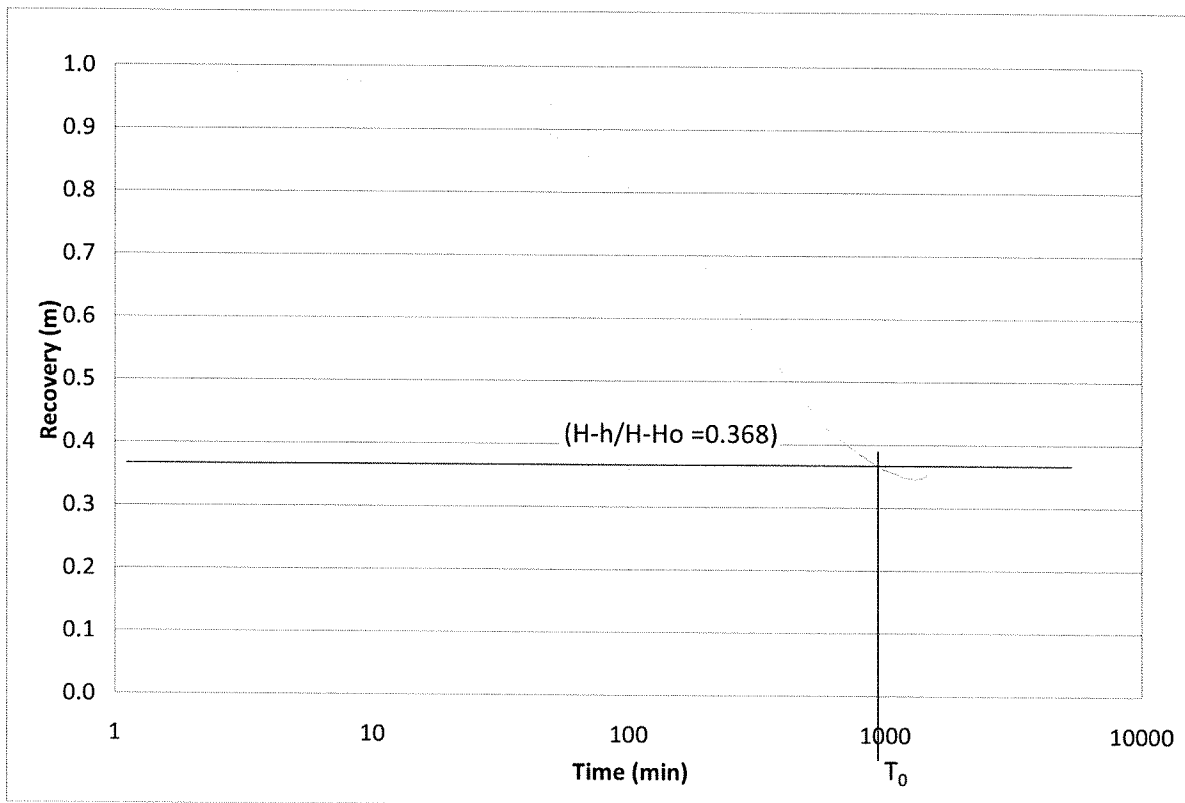
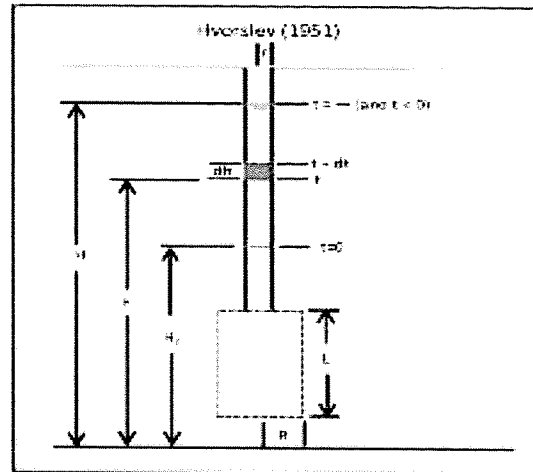
IN-SITU HYDRAULIC CONDUCTIVITY TEST RESULTS

MW08-01 (Queensville Sideroad) Rising Head Test
Hvorslev Analysis (1951)

INPUT	
Screen Length (L)	3.05 m
Radius of Casing (r)	0.025 m
Radius of Annulus (R)	0.05 m
L/R	61
Depth to Datum	9 m
Initial Water Level (H ₀)	13.6219 m
Final Water Level (H)	15.2013 m
H-H ₀	1.5794 m
T ₀	15.230 hrs

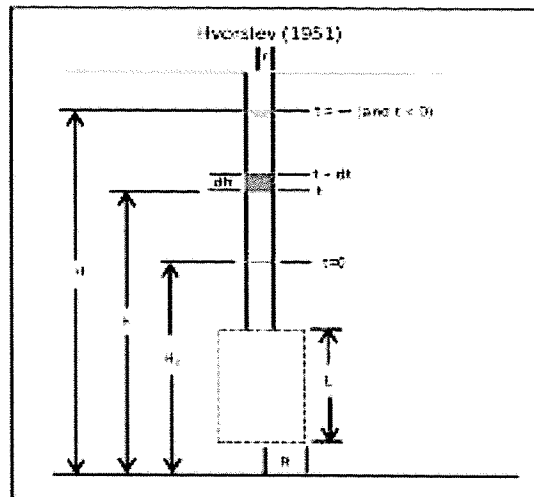
$$K = \frac{r^2 \ln(L/R)}{2LT_0}$$

$$K = 7.68E-09 \text{ m/s}$$



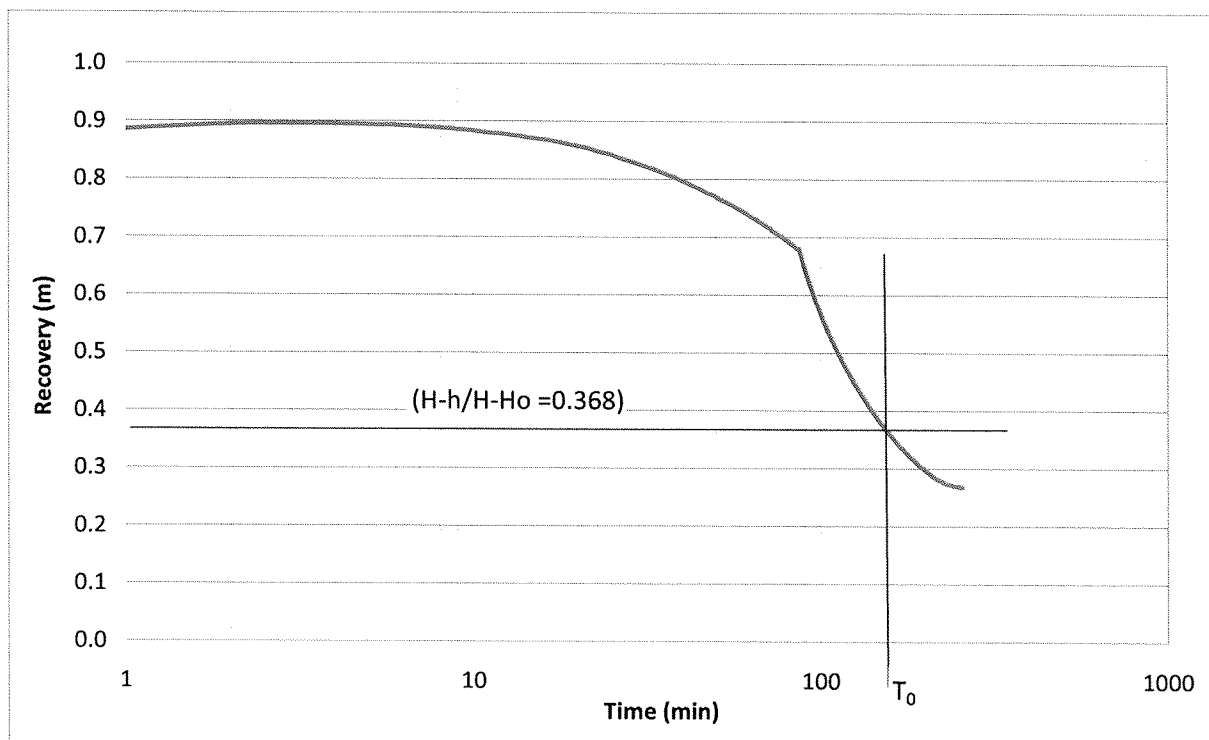
**MW08-02 (Queensville Sideroad) Rising Head Test
Hvorslev Analysis (1951)**

INPUT	
Screen Length (L)	3.05 m
Radius of Casing (r)	0.025 m
Radius of Annulus (R)	0.05 m
L/R	61
Depth to Datum	9 m
Initial Water Level (H ₀)	12.5553 m
Final Water Level (H)	13.7526 m
H-H ₀	1.1973 m
T ₀	2.567 hrs



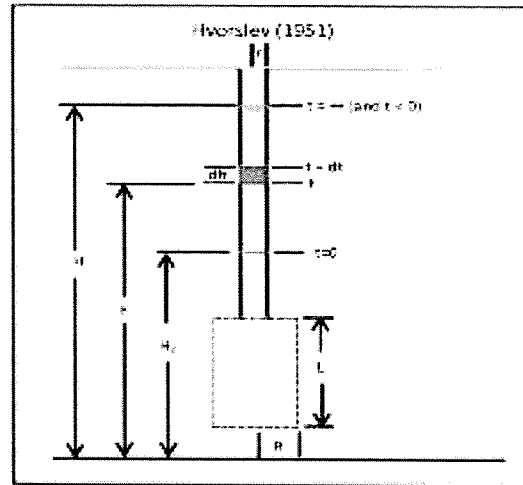
$$K = \frac{r^2 \ln(L/R)}{2LT_0}$$

$$K = 4.56E-08 \text{ m/s}$$



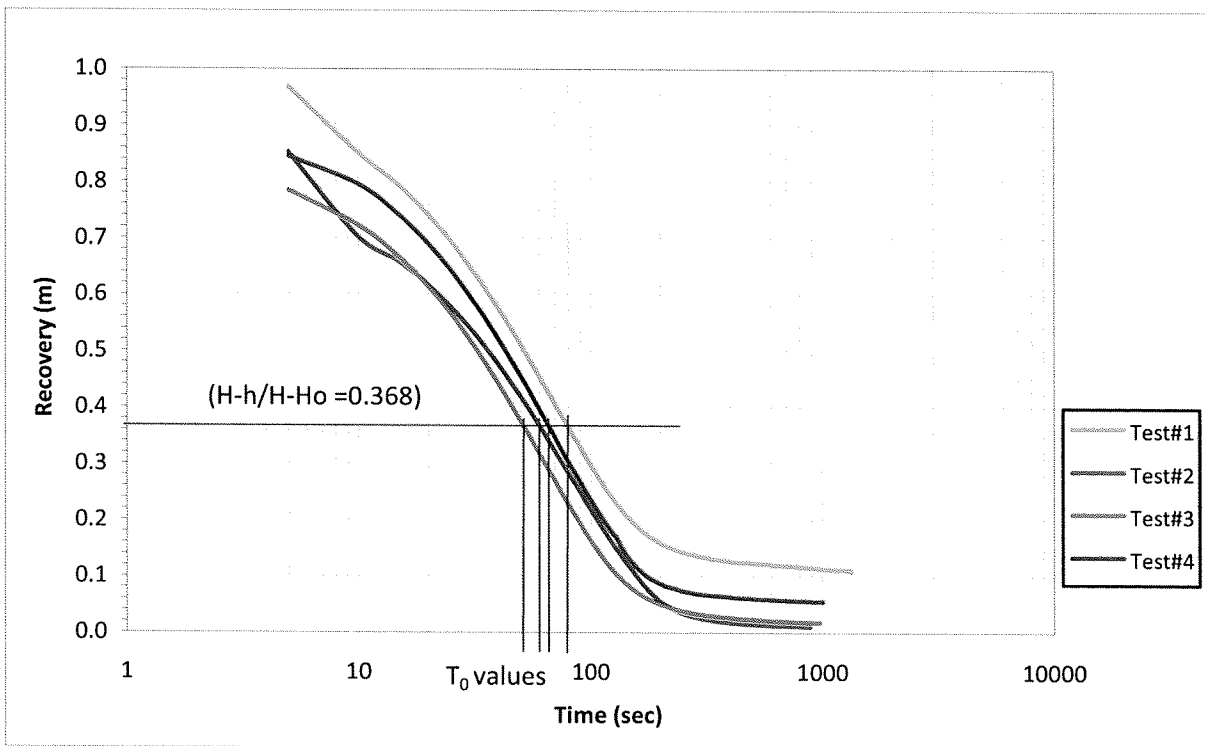
MW08-03 (Doane Road) Rising Head Tests Hvorslev Analysis (1951)

INPUT	
Screen Length (L)	1.52 m
Radius of Casing (r)	0.025 m
Radius of Annulus (R)	0.05 m
L/R	30.4
Depth to Datum	25 m
Initial Water Level (H ₀)	26.22 m
Final Water Level (H)	23.78 m
H-H ₀	-2.44 m
Test #1 T ₀	0.020 hrs
Test #2 T ₀	0.017 hrs
Test #3 T ₀	0.014 hrs
Test #4 T ₀	0.018 hrs



$$K = \frac{r^2 \ln(L/R)}{2LT_0}$$

Test#1	K = 9.8E-06 m/s
Test#2	K = 1.5E-05 m/s
Test#3	K = 1.4E-05 m/s
Test#4	K = 1.1E-05 m/s



MW08-01 (Queensville Sideroad) Rising Head Test Bouwer Rice Analysis

INPUT

Construction:	
Casing dia. (d_c)	0.05 Meter
Annulus dia. (d_w)	0.1 Meter
Screen Length (L)	3.05 Meter
Depths to:	
water level (DTW)	1.3 Meter
top of screen (TOS)	4.5 Meter
Base of Aquifer (DTB)	9 Meter
Annular Fill:	
across screen --	Coarse Sand
above screen --	Bentonite
Aquifer Material --	
Till	

COMPUTED

$L_{wetterd}$	3.05 Meter
D =	7.7 Meter
H =	6.25 Meter
L/r_w =	61.00
y_0 -DISPLACEMENT =	131.40 cm
y_0 -SLUG =	154.00 cm
From look-up table using L/r_w	
Partial penetrate A =	3.442
B =	0.557
$\ln(Re/r_w)$ =	3.175
Re =	3.93 cm
Slope =	$6.69E-06 \log_{10}/\text{sec}$
$t_{90\% \text{ recovery}}$ =	149400 sec

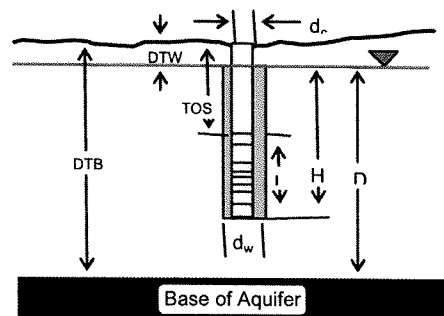
Input is consistent.

K = 5E-07 cm/Second

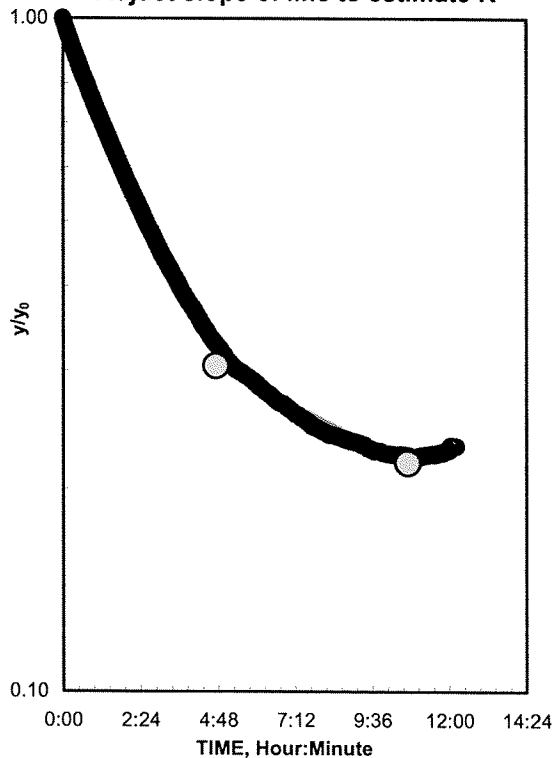
Local ID: DEE

Date: 05/15/2008

Time: 0:01



Adjust slope of line to estimate K



REMARKS:

MW08-02 (Queensville Sideroad) Rising Head Test Bouwer Rice Analysis

INPUT

Construction:	
Casing dia. (d_c)	0.05 Meter
Annulus dia. (d_w)	0.1 Meter
Screen Length (L)	3.05 Meter
Depths to:	
water level (DTW)	-0.52 Meter
top of screen (TOS)	4.5 Meter
Base of Aquifer (DTB)	10 Meter
Annular Fill:	
across screen --	Coarse Sand
above screen --	Bentonite
Aquifer Material --	
Till	

COMPUTED

L_{wetted}	3.05 Meter
$D =$	10.52 Meter
$H =$	8.07 Meter
$L/r_w =$	61.00
y_0 -DISPLACEMENT =	104.47 cm
y_0 -SLUG =	120.00 cm
From look-up table using L/r_w	
Partial penetrate A =	3.442
B =	0.557
$\ln(Re/r_w) =$	3.243
Re =	4.21 cm
Slope =	$6.81E-05 \log_{10}/\text{sec}$
$t_{90\%}$ recovery =	14691 sec

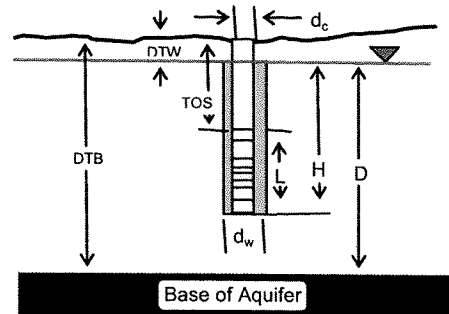
Input is consistent.

K = 5.2E-06 cm/Second

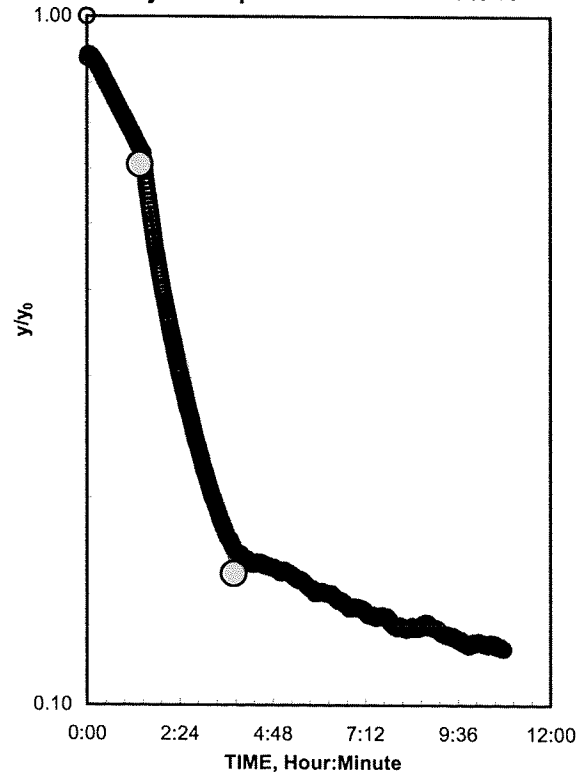
Local ID: DEE

Date: 05/15/2008

Time: 0:01



Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

WELL ID: MW08-3 Test 1

Engineer: DEE

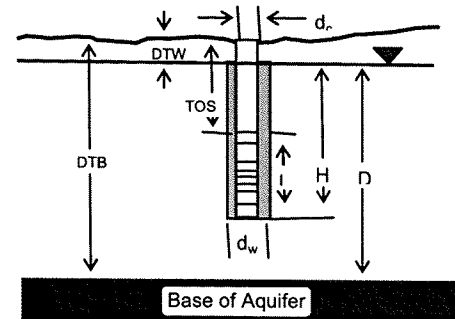
Date: 05/20/2009

INPUT

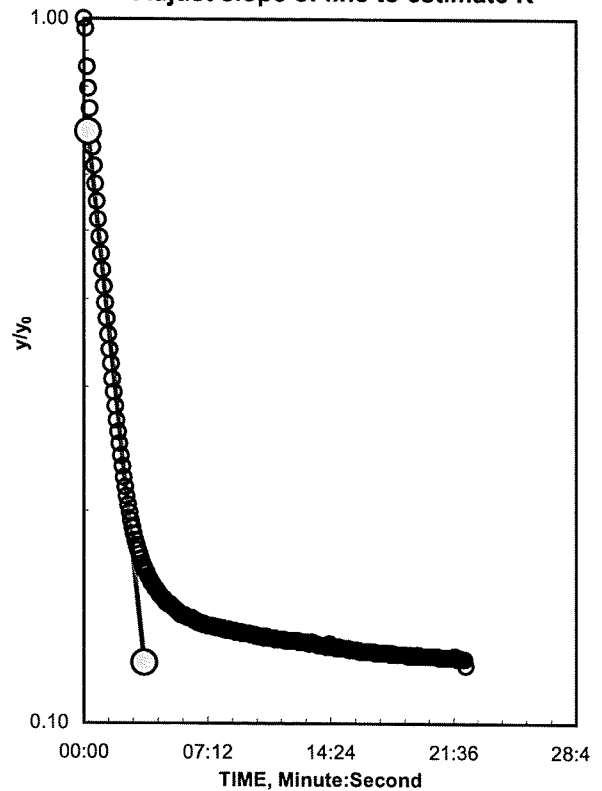
Construction:	
Casing dia. (d_c)	0.05 Meter
Annulus dia. (d_w)	0.1 Meter
Screen Length (L)	1.5 Meter
Depths to:	
water level (DTW)	1.3 Meter
top of screen (TOS)	6.1 Meter
Base of Aquifer (DTB)	8.1 Meter
Annular Fill:	
across screen --	Coarse Sand
above screen --	Bentonite
Aquifer Material --	
Fine Sand	

COMPUTED

L_{wetted}	1.5 Meter
D =	6.8 Meter
H =	6.3 Meter
L/r_w =	30.00
Y_0 -DISPLACEMENT =	220.06 cm
Y_0 -SLUG =	216.86 cm
From look-up table using L/r_w	
Partial penetrate A =	2.514
B =	0.414
$\ln(Re/r_w)$ =	2.915
Re =	3.03 cm
Slope =	0.003828 \log_{10}/sec
$t_{90\%}$ recovery =	261 sec
Input is consistent.	
K = 0.00053 cm/Second	



Adjust slope of line to estimate K



Bouwer and Rice analysis of slug test, \

WELL ID: MW08-3 Test 2

Engineer: DEE

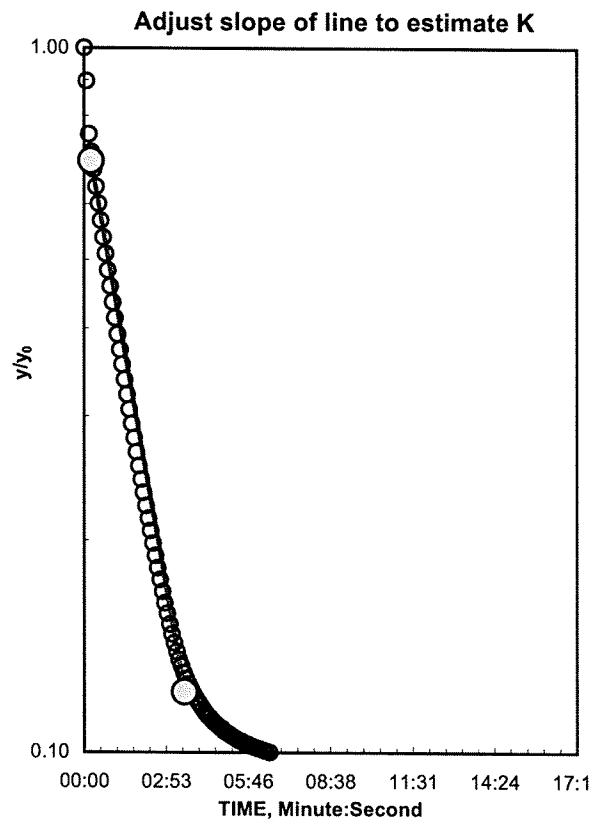
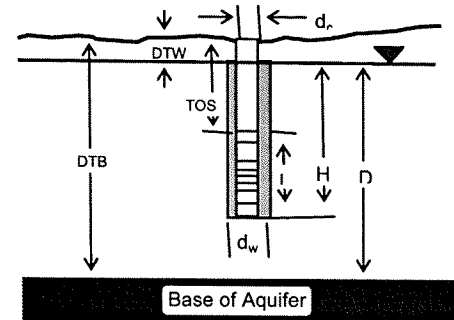
Date: 05/20/2009

INPUT

Construction:	
Casing dia. (d_c)	0.05 Meter
Annulus dia. (d_w)	0.1 Meter
Screen Length (L)	1.5 Meter
Depths to:	
water level (DTW)	1.3 Meter
top of screen (TOS)	6.1 Meter
Base of Aquifer (DTB)	8.1 Meter
Annular Fill:	
across screen --	Coarse Sand
above screen --	Bentonite
Aquifer Material --	
Fine Sand	

COMPUTED

L_{wetted}	1.5 Meter
$D =$	6.8 Meter
$H =$	6.3 Meter
$L/r_w =$	30.00
Y_0 -DISPLACEMENT =	524.54 cm
Y_0 -SLUG =	481.46 cm
From look-up table using L/r_w	
Partial penetrate A =	2.514
B =	0.414
$\ln(Re/r_w) =$	2.915
Re =	3.03 cm
Slope =	0.003828 \log_{10}/sec
$t_{90\%}$ recovery =	261 sec
Input is consistent.	
K = 0.00053 cm/Second	



Bouwer and Rice analysis of slug test, \

WELL ID: MW08-3 Test 3

Engineer: DEE

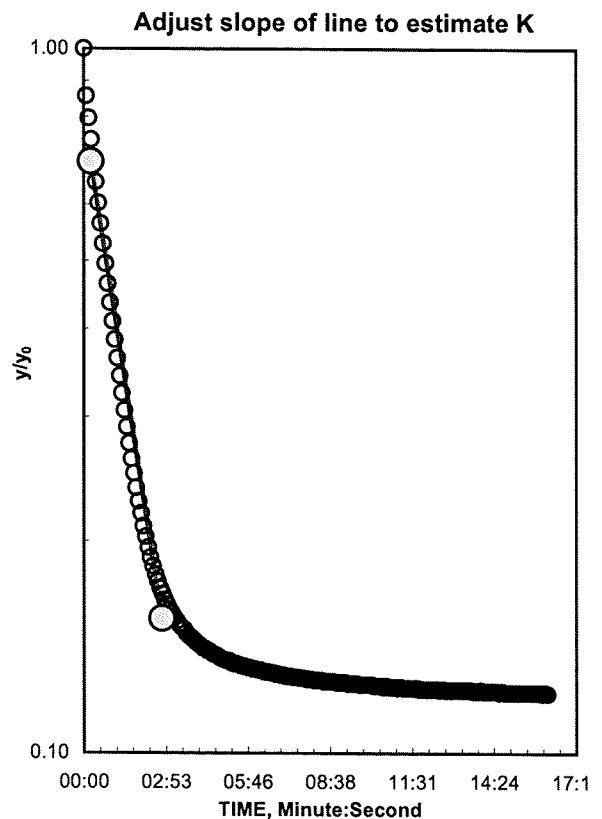
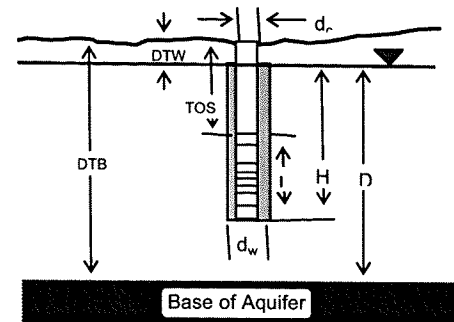
Date: 05/20/2009

INPUT

Construction:	
Casing dia. (d_c)	0.05 Meter
Annulus dia. (d_w)	0.1 Meter
Screen Length (L)	1.5 Meter
Depths to:	
water level (DTW)	1.3 Meter
top of screen (TOS)	6.1 Meter
Base of Aquifer (DTB)	8.1 Meter
Annular Fill:	
across screen --	Coarse Sand
above screen --	Bentonite
Aquifer Material --	
Fine Sand	

COMPUTED

L_{wetted}	1.5 Meter
$D =$	6.8 Meter
$H =$	6.3 Meter
$L/r_w =$	30.00
Y_0 -DISPLACEMENT =	314.90 cm
Y_0 -SLUG =	301.70 cm
From look-up table using L/r_w	
Partial penetrate A =	2.514
B =	0.414
$\ln(Re/r_w) =$	2.915
Re =	3.03 cm
Slope =	0.004342 \log_{10}/sec
$t_{90\%}$ recovery =	230 sec
Input is consistent.	
K = 0.00061 cm/Second	



Bouwer and Rice analysis of slug test, \

WELL ID: MW08-3 Test 4

Engineer: DEE

Date: 05/20/2009

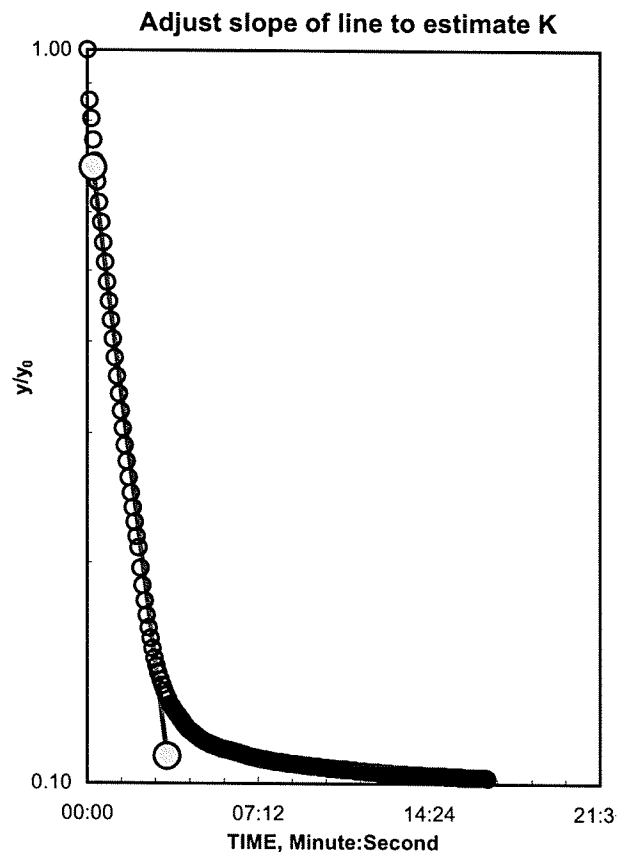
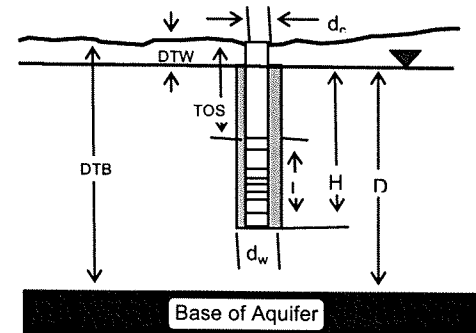
INPUT

Construction:	
Casing dia. (d_c)	0.05 Meter
Annulus dia. (d_w)	0.1 Meter
Screen Length (L)	1.5 Meter
Depths to:	
water level (DTW)	1.3 Meter
top of screen (TOS)	6.1 Meter
Base of Aquifer (DTB)	8.1 Meter
Annular Fill:	
across screen --	Coarse Sand
above screen --	Bentonite
Aquifer Material --	
Fine Sand	

COMPUTED

L_{wetted}	1.5 Meter
D =	6.8 Meter
H =	6.3 Meter
L/r_w =	30.00
y_0 -DISPLACEMENT =	472.18 cm
y_0 -SLUG =	448.98 cm
From look-up table using L/r_w	
Partial penetrate A =	2.514
B =	0.414
$\ln(Re/r_w)$ =	2.915
Re =	3.03 cm
Slope =	0.004283 \log_{10}/sec
$t_{90\%}$ recovery =	233 sec
Input is consistent.	

K = 0.0006 cm/Second



Bouwer and Rice analysis of slug test, \