

TEST BORING LOG

BOREHOLE NO.: TNT-1P

WELL NO.: NA

PAGE: 1 OF 2

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: All Terrain

DRILLING EQUIPMENT: CME 550

DRILLER: Richard Lighter

SAMPLING METHOD: Drive Split Spoon and coring

TOTAL DEPTH: 47.0' BGS

START DATE: 3/27/2000

COMPLETION DATE: 4/3/2000

LOGGED BY: R. Heidrick

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; TNT Strip #1

SURFACE ELEVATION:

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPW)	REMARKS
			TNT-1P/0			RESIDUAL SOIL		Hand augered 0'-3'. Obtain samples with slide hammer. Reamed hole to 12" for 10" PVC protective casing. Drilled with 8" Hollow Stem Auger beginning at 3.0'. 3.0'-4.5', DR Drove 2" splitspoon with 140 lb hammer, 30" drop.
			TNT-1P/1			0.0'-3.0' FAT CLAY (CH): dark yellowish brown; firm to stiff; damp; from 1'-2' ~ 10% inclusions and seams of 1" to 2" soft, gray, translucent, crystalline material; low specific gravity.		
			TNT-1P/2					
5	1.5/1.5	7	TNT-1P/4			BEDROCK		3.0'-4.5', DR Drove 2" splitspoon with 140 lb hammer, 30" drop.
		14	TNT-1P/4.5			3.0'-11.0' SHALE/SILTSTONE: dark yellowish brown; severely weathered; soft; friable to weak; intensely fractured and crushed; extensively iron stained; damp.		5.0'-6.5', DR.
	1.5/1.5	8	TNT-1P/6					7.0'-8.5', DR.
		13						
		36						
	1.5/1.5	10	TNT-1P/8					9.0'-10.5', DR.
		27						
		39						
10	1.5/1.5	10	TNT-1P/10					
		31						
		50/4"						
	2.5/2.5		Box 1			11.0'-34.0' SHALE/SILTSTONE: brown to light olive brown; moderately weathered; intensely fractured to crushed; most fracture surfaces iron stain; laminated bedding at high angles; soft in hardness; easily crumbles.		11.5' Convert to 2 1/2" x 5.0' continuous dry core system.
	2.0/2.0							14.0'-16.0' = 4 min/ft.
15	3.0/3.0					16.0' Local iron oxide staining become less extensive; spotty.		16.0'-19.0' = 6 min/ft.
	5.0/5.0							19.0'-24.0'
20			Box 2					
	5.0/5.0					24.0' Becomes a little softer.		24.0' 29.0' = 2 min/ft.

DEPTH	RECOVERY / ROD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
30	5.0/5.0		Box 3					29.0'-34.0' = 3 min/ft.
35	5.0/5.0					34.0'-47.0' SHALE/SILTSTONE: moderately weathered, light olive brown to light olive gray; local heavy iron staining; sheared to intensely fractured and crushed; crumbles to a gravelly clay; consistency of compacted gravelly fat clay; soft in hardness; compact; tight; very dense; damp.		34.0'-39.0' = 2.5 min/ft.
40	5.0/5.0		Box 4					39.0'-44.0' = 6 min/ft.
45	2.0/2.0							44.0'-46.0' = 8 min/ft.
	1.0/1.0							46.0'-47.0' = 8 min/ft.
						Total Depth 47.0'		Auger refusal @ 47.0'. Backfilled with cement grout.

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: All Terrain

DRILLING EQUIPMENT: CME 550

DRILLER: Richard Lighter

SAMPLING METHOD: Drive Split Spoon and coring

TOTAL DEPTH: 48.0' BGS

START DATE: 4/4/2000

COMPLETION DATE: 4/4/2000

LOGGED BY: R. Heidrick

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; TNT Strip #1

SURFACE ELEVATION:

DEPTH	RECOVERY / ROD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS	
			TNT-1Q/0			RESIDUAL SOIL		Hand augered 0'-3'. Obtain samples with slide hammer. Reamed hole to 12" for 10" PVC protective casing. Drilled with 8" Hollow Stem Auger beginning at 3.0'.	
			TNT-1Q/1			0.0'-2.0' FAT CLAY (CH): dark yellowish brown; firm to stiff; damp; from 1'-2' - 10% inclusions and seams of 1" to 2" soft, gray, translucent, crystalline material; low specific gravity.			
			TNT-1Q/2			2.0'-3.5' SANDY FAT CLAY (CH): light olive brown; firm to stiff; included shale fragments; damp.			
5	1.5/1.5	9	TNT-1Q/4			BEDROCK			
		26				3.5'-30.0' SHALE: light olive gray moderately weathered; soft in hardness; weak; intensely fractured; fractured surfaces partially iron stained; 50 degree laminated bedding intact; crumbles to dry fat clay.			5.0'-6.5', DR.
		35							7.0'-8.5', DR.
	1.5/1.5	20	TNT-1Q/6						9.0'-10.5', DR.
		39							
		50/3"							
	1.0/1.0	24	TNT-1Q/8						
		50/5"							
10	0.8/0.8	37	TNT-1Q/10						
		50/3"							
	4.0/4.0		Box 1					11.0' Convert to 2 1/2" x 5 continuous dry core system. 11.0'-15.0' = 1 min/ft.	
15	5.0/5.0							15.0'-20.0' = 2 min/ft.	
20	5.0/5.0		Box 2					20.0'-25.0' = 2.5 min/ft.	

DEPTH	RECOVERY / FGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
25.0	5.0/5.0		Box 3					25.0'-30.0' = 2.5 min/ft.
30.0	5.0/5.0					30.0'-48.0' SHALE/SILTSTONE: moderately weathered, light olive brown to light olive gray; local heavy iron staining; showed to intensely fractured and crushed; crumbles to a gravelly clay; was consistency of compacted gravelly fat clay; soft in hardness; compact; light; very dense; damp.		30.0'-35.0' = 1 min/ft.
35.0	5.0/5.0							35.0'-40.0' = 1 min/ft.
40.0	5.0/5.0		Box 4					40.0'-45.0' = 1 min/ft.
45.0	3.0/3.0							45.0'-48.0' = 8 min/ft.
48.0						Total Depth 48.0'.		Auger refusal @ 48.0'. Backfilled with cement grout.

TEST BORING LOG

BOREHOLE NO.: TNT-2A

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: 2.5' BGS

START DATE: 7/19/1999

COMPLETION DATE: 7/19/1999

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #2*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0			TNT-2A/0.5	II		RESIDUAL SOIL 0.0'-2.5' FAT CLAY (CH): dark yellowish brown mottled moderate yellow orange; about 10% fine sand; trace gravel; firm; damp; inclusions of soft grayish translucent crystalline material; very brittle.		
0.5			TNT-2A/1	III				
1.5			TNT-2A/1.5	III				
2.5			TNT-2A/2	III		Total Depth 2.5'		

TEST BORING LOG

BOREHOLE NO.: TNT-2B

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: <i>Tourtelot Cleanup Project</i>	PROJECT NO.: <i>35734</i>
CLIENT: <i>Granite</i>	DRILLING CONTRACTOR: <i>Earth Tech</i>
DRILLING EQUIPMENT: <i>Hand Auger</i>	DRILLER: <i>R. Burzinski</i>
SAMPLING METHOD: <i>Slide Hammer</i>	TOTAL DEPTH: <i>4.5' BGS</i>
START DATE: <i>7/19/1999</i>	COMPLETION DATE: <i>7/19/1999</i>
LOGGED BY: <i>R. Burzinski</i>	APPROVED BY: <i>A. Buangan CEG 824</i>
LOCATION: <i>North Valley; TNT Strip #2</i>	SURFACE ELEVATION:

DEPTH	RECOVERY RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">5</div> <div style="margin-bottom: 10px;">10</div> <div style="margin-bottom: 10px;">15</div> <div style="margin-bottom: 10px;">20</div> </div>			TNT-2B/0.5 TNT-2B/1 TNT-2B/1.5 TNT-2B/2 TNT-2B/3.5 TNT-2B/4	 	 	<p><i>RESIDUAL SOIL</i> 0.0'-3.5' FAT CLAY (CH): dark yellowish brown mottled moderate yellow brown and dark yellowish orange; 10% fine sand; traces shale gravel; firm; damp.</p> <p><i>BEDROCK</i> 3.5'-4.5' SHALE: olive gray; moderately weathered; damp; soft in hardness.</p> <p>Total Depth 4.5'.</p>		

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TEST BORING LOG

BOREHOLE NO.: TNT-2C

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: *2.5' BGS*

START DATE: *7/20/1999*

COMPLETION DATE: *7/20/1999*

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #2*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0			TNT-2C/0.5 TNT-2C/1 TNT-2C/1.5 TNT-2C/2	II		RESIDUAL SOIL 0.0'-2.5' FAT CLAY (CH): dark yellowish brown mottled moderate yellow brown and dark yellowish orange; 10% fine sand; traces shale gravel; firm; damp. Total Depth 2.5'		
5								
10								
15								
20								

TEST BORING LOG

BOREHOLE NO.: TNT-2D

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: *4.5' BGS*

START DATE: *7/19/1999*

COMPLETION DATE: *7/19/1999*

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #2*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
5			TNT-2D/0.5 TNT-2D/1 TNT-2D/1.5 TNT-2D/2			RESIDUAL SOIL 0.0'-3.5' FAT CLAY (CH): dark yellowish brown mottled moderate yellow brown and dark yellowish orange; 10% fine sand; traces shale gravel; firm; damp.		
						BEDROCK 3.5'-4.5' SHALE: olive gray; moderately weathered; damp; soft in hardness. Total Depth 4.5'.		
10								
15								
20								

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PROJECT NAME: *Tourtlot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: 4.5' BGS

START DATE: 7/19/1999

COMPLETION DATE: 7/19/1999

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #2*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (ppm)	REMARKS
5			TNT-2E/0.5 TNT-2E/1 TNT-2E/1.5 TNT-2E/2			RESIDUAL SOIL 0.0'-3.5' FAT CLAY (CH): dark yellowish brown mottled moderate yellow brown and dark yellowish orange; 10% fine sand; traces shale gravel; firm; damp.		
						BEDROCK 3.5'-4.5' SHALE: olive gray; moderately weathered; damp; soft in hardness. Total Depth 4.5'		
10								
15								
20								

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: All Terrain

DRILLING EQUIPMENT: CME 550

DRILLER: Richard Lighter

SAMPLING METHOD: Drive Sampling; continuous dry core TOTAL DEPTH: 50.0' BGS

START DATE: 3/30/2000

COMPLETION DATE: 4/1/2000

LOGGED BY: A. Buangan

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; TNT Strip #2

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
5	1.5/1.5	6 12	TNT-2F0	[Symbol]	[Symbol]	RESIDUAL SOIL		Hand augered 0'-3'. Obtain samples with slide hammer. Reamed hole to 12" for 10" PVC protective casing. Drilled with 8" Hollow Stem Auger beginning at 3.0'. 3.0'-4.5', DR Drove 2" splitspoon with 140 lb hammer, 30" drop. 5.0'-6.5', DR.
			TNT-2F1			0.0'-2.0' FAT CLAY (CH): dark yellowish brown; firm to stiff; damp; from 1'-2' -10% inclusions and seams of 1" to 2" soft gray translucent, crystalline material.		
			TNT-2F2			2.0'-3.5' SANDY FAT CLAY (CH): light olive brown; firm to stiff; included shale fragments; damp.		
	1.5/1.5	5 13	TNT-2F4	[Symbol]	[Symbol]	BEDROCK		7.0'-8.5', DR.
			TNT-2F6			3.5'-7.5' SHALE: severely weathered to a gravelly fat clay; mottled light olive gray to light olive brown; heavy iron staining; intensely fractured to crushed; dry to slightly damp; very dense.		
			TNT-2F8			7.5'-25.0' SHALE/SILTSTONE: moderately weathered; closely to intensely fractured; iron staining along fractures; light olive gray to light olive brown and dark yellowish orange; fractures oriented in various direction; soft in hardness; very dense; dry to slightly damp.		
	10	1.5/1.5	14 34	TNT-2F10	[Symbol]	[Symbol]		9.0'-10.5', DR.
				Box 1				
	15	3.5/3.5	41		[Symbol]	[Symbol]		14.5'-19.5' C, Took 35 min.
				Box 2				
20	5.0/5.0	2.5/2.5		[Symbol]	[Symbol]		22.0'-24.5' C, Took 20 min.	
								22.0' Moderately weathered; fractured and bedding surfaces, partially iron stained. 4" extensively iron staining done; intensely fractured; fractures healed, tight.

TEST BORING LOG

BOREHOLE NO.: TNT-2F

WELL NO.: NA

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 39901

PAGE: 2 OF 2

DEPTH	RECOVERY / ROD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS				
0.5/0.5	2.0/2.0		Box 3			25.0'-50.0' SHALE: slightly weathered; light olive gray; moderately hard; moderately strong; closely fractured; laminated bedding at 75 degrees; fractured surfaces partially iron stained and clay filled; locally moderately weathered; tight; compact; dry to damp.		25.0' Convert to conventional 2" NW diamond core barrel. Recirculate water/bentonite additive.				
0.5/1.5		25.0'-27.0' = 14 min/ft., Full rtn.										
2.0/2.5		27.0'-28.5' = 5 min/ft.										
30								28.5'-31.0' = 20 min/ft. Full rtn.				
1.5/2.0								31.0'-33.0' = 13 min/ft.				
1.5/2.5			Box 4			33.0'-35.5' intensely fractured; iron stained; partially clay filled.		33.0'-35.5' = 14 min/ft. Full rtn.				
35												
1.6/2.5								35.5'-38.0' closely to moderately fractured.	35.5'-38.0' = 12 min/ft.			
1.4/2.5								38.0'-40.5' = 12 min/ft. Full rtn.				
40												
0.3/2.0			NR			41.0'-42.0' possibly loose and fractured shale in clay matrix.		40.5'-42.5' = 10 min/ft.				
1.2/2.0								42.5'-44.5' = 16 min/ft.				
45												44.5'-46.5' = 12 min/ft.
0.7/1.0								46.5'-47.5' = 7 min.ft. Full rtn.				
0.0/2.5								47.5'-50.0' = 5 min/ft.				
50						Total Depth 50.0'.						
55												

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Earth Tech

DRILLING EQUIPMENT: Hand Auger

DRILLER: R. Burzinski

SAMPLING METHOD: Slide Hammer

TOTAL DEPTH: 2.5' BGS

START DATE: 7/20/1999

COMPLETION DATE: 7/20/1999

LOGGED BY: R. Burzinski

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; TNT Strip #3

SURFACE ELEVATION:

DEPTH	RECOVERY/ RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0			TNT-3A/0.5	II		RESIDUAL SOIL 0.0'-2.5' FAT CLAY (CH): dark yellowish brown; firm to stiff, damp. ~Inclusions of white to gray soft translucent crystalline material, 0.0'-1.0'. Total Depth 2.5'.		
5			TNT-3A/1					
			TNT-3A/1.5					
			TNT-3A/2					
10								
15								
20								

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TEST BORING LOG

BOREHOLE NO.: TNT-3B

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: 4.5' BGS

START DATE: 7/20/1999

COMPLETION DATE: 7/20/1999

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #3*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (ppm)	REMARKS
0			TNT-3B/0.5			RESIDUAL SOIL.		
0.5			TNT-3B/1			0.0'-3.0' FAT CLAY (CH): dark yellowish brown; firm to stiff; damp.		
1.5			TNT-3B/1.5			-Inclusions of white to gray soft translucent crystalline material, 0.0'-1.0'.		
2.0			TNT-3B/2			3.0'-4.5' FAT CLAY (CH): dark grayish brown; stiff; damp.		
3.0			TNT-3B/3.5					
4.0			TNT-3B/4					
4.5						Total Depth 4.5'.		

TEST BORING LOG

BOREHOLE NO.: TNT-3C

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: 2.5' BGS

START DATE: 7/20/1999

COMPLETION DATE: 7/20/1999

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #3*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0			TNT-3C/0.5 TNT-3C/1 TNT-3C/1.5 TNT-3C/2			RESIDUAL SOIL 0.0'-2.5' FAT CLAY (CH): dark yellowish brown; firm to stiff, damp.		
5						Total Depth 2.5'		
10								
15								
20								

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TEST BORING LOG

BOREHOLE NO.: TNT-4A

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: 2.5' BGS

START DATE: 7/20/1999

COMPLETION DATE: 7/20/1999

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #4*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0			TNT-4A/0.5 TNT-4A/1 TNT-4A/1.5 TNT-4A/2	II		RESIDUAL SOIL 0.0'-2.5' FAT CLAY (CH): dark yellowish brown; firm to stiff, damp.		
5						Total Depth 2.5'		
10								
15								
20								

TEST BORING LOG

BOREHOLE NO.: TNT-4B

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: *4.5' BGS*

START DATE: *7/20/1999*

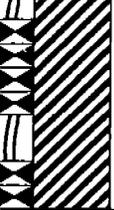
COMPLETION DATE: *7/20/1999*

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #4*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0			TNT-4B/0.5 TNT-4B/1 TNT-4B/1.5 TNT-4B/2			RESIDUAL SOIL 0.0'-4.5' FAT CLAY (CH): dark yellowish brown mottled dark yellowish orange; firm to stiff, damp.		
5			TNT-4B/3.5 TNT-4B/4			Total Depth 4.5'		
10								
15								
20								

TEST BORING LOG

BOREHOLE NO.: TNT-4C

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: 2.5' BGS

START DATE: 7/20/1999

COMPLETION DATE: 7/20/1999

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #4*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0			TNT-4C/0.5	II		RESIDUAL SOIL 0.0'-2.5' FAT CLAY (CH): dark yellowish brown to moderate yellowish brown; firm to stiff; damp.		
0			TNT-4C/1					
0			TNT-4C/1.5					
0			TNT-4C/2					
5						Total Depth 2.5'		
10								
15								
20								

TEST BORING LOG

BOREHOLE NO.: TNT-4C1

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Precision Drilling*

DRILLING EQUIPMENT: *MD-1*

DRILLER:

SAMPLING METHOD: *Direct Push continuously sampled* TOTAL DEPTH: 3.0' BGS

START DATE: 12/9/1999

COMPLETION DATE: 12/9/1999

LOGGED BY: *R. Goldberg*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #4*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0	2.0/3.0		TNT-4C1/0			RESIDUAL SOIL 0.0'-3.0' FAT CLAY (CH): dusky yellowish brown; 10% plant roots; firm to stiff; dry to damp.		Direct push continuously sample.
0			TNT-4C1/1					
0			TNT-4C1/2					
3.0						BEDROCK 3.0' SHALE: weathered; olive brown to yellowish gray; very dense; damp. Total Depth 3.0'.	2.1	Backfill borehole to surface with Portland cement grout.
5								
10								
15								
20								

TEST BORING LOG

BOREHOLE NO.: TNT-4C2

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Precision Drilling*

DRILLING EQUIPMENT: *MD-1*

DRILLER:

SAMPLING METHOD: *Direct Push continuously sampled*

TOTAL DEPTH: 3.0' BGS

START DATE: 12/19/1999

COMPLETION DATE: 12/9/1999

LOGGED BY: *R. Goldberg*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #4*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
3.0	3.0		TNT-4C2/0			RESIDUAL SOIL		<i>Direct push continuously sample.</i>
			TNT-4C2/0.5			0.0'-3.0' FAT CLAY (CH); dusky yellowish brown; 10% plant roots; firm to stiff, dry to damp.	1.9	
			TNT-4C2/1					
			TNT-4C2/2					
			TNT-4C2/2.5					
5						Total Depth 3.0'.		<i>Backfill borehole to surface with Portland cement grout.</i>
10								
15								
20								

TEST BORING LOG

BOREHOLE NO.: TNT-4C3

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Precision Drilling

DRILLING EQUIPMENT: MD-1

DRILLER:

SAMPLING METHOD: Direct Push continuously sampled TOTAL DEPTH: 6.0' BGS

START DATE: 12/9/1999

COMPLETION DATE: 12/9/1999

LOGGED BY: R. Goldberg

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; TNT Strip #4

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
2.5/3.0			TNT-4C3/0			RESIDUAL SOIL 0.0'-5.0' FAT CLAY (CH): dusky yellowish brown to light olive gray; 10% plant roots; firm to stiff, dry to damp.	2	Direct push continuously sample.
			TNT-4C3/1					
			TNT-4C3/1.5					
			TNT-4C3/2					
3.0/3.0			TNT-4C3/4				2.1	
5			TNT-4C3/5.5			BEDROCK 5.0'-6.0' SHALE: weathered; moderate olive brown; very dense; damp. Total Depth 6.0'.		Refusal at 6.0' Backfill borehole to surface with Portland cement grout.
10								
15								
20								

TEST BORING LOG

BOREHOLE NO.: TNT-4C4

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: *35734*

CLIENT: *Granite*

DRILLING CONTRACTOR: *Precision Drilling*

DRILLING EQUIPMENT: *MD-1*

DRILLER:

SAMPLING METHOD: *Direct Push continuously sampled* TOTAL DEPTH: *3.0' BGS*

START DATE: *12/9/1999*

COMPLETION DATE: *12/9/1999*

LOGGED BY: *R. Goldberg*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #4*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0	3.0/3.0		TNT-4C4/0 TNT-4C4/0.5 TNT-4C4/1 TNT-4C4/2			RESIDUAL SOIL 0.0'-3.0' FAT CLAY (CH); dusky yellowish brown; 10% plant roots; firm to stiff, dry to damp.	1.9	Direct push continuously sample beginning at 09:30.
3.0						Total Depth 3.0'		
5								
10								
15								
20								Note: Duplicate samples from 0.0'-3.0' were collected as collocated samples from an immediately adjacent borehole as follows: TNT-4C4A/0

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Precision Drilling

DRILLING EQUIPMENT: MD-1

DRILLER:

SAMPLING METHOD: Direct Push continuously sampled TOTAL DEPTH: 5.0' BGS

START DATE: 12/9/1999

COMPLETION DATE: 12/9/1999

LOGGED BY: R. Goldberg

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; TNT Strip #4

SURFACE ELEVATION:

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
3.0	3.0		TNT-4C5/0			RESIDUAL SOIL 0.0'-4.5' FAT CLAY (CH): dusky yellow brown to dusky yellow; 10% plant roots; firm to stiff; dry to damp.	1.8	Direct push continuously sample
			TNT-4C5/0.5					
			TNT-4C5/1					
			TNT-4C5/2					
5.0	2.0	2.0	TNT-4C5/4			BEDROCK 4.5'-5.0' SHALE/SILTSTONE: dark yellowish brown to dark yellowish orange; weathered; very dense; dry; damp. Total Depth 5.0'.	1.5	Backfill borehole to surface with Portland cement grout.

TEST BORING LOG

BOREHOLE NO.: TNT-4C6

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: *35734*

CLIENT: *Granite*

DRILLING CONTRACTOR: *Precision Drilling*

DRILLING EQUIPMENT: *MD-1*

DRILLER:

SAMPLING METHOD: *Direct Push continuously sampled* TOTAL DEPTH: *4.0' BGS*

START DATE: *12/9/1999*

COMPLETION DATE: *12/9/1999*

LOGGED BY: *R. Goldberg*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #4*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
2.5/3.0			TNT-4C6/0 TNT-4C6/0.5 TNT-4C6/1 TNT-4C6/2			RESIDUAL SOIL 0.0'-3.5' FAT CLAY (CH): grayish brown mottled with moderate yellowish brown; 5% plant roots; firm to stiff; dry to damp.	2.4	Direct push continuously sample.
1.0/1.0			TNT-4C6/3.5			BEDROCK 3.5'-4.0' SHALE: moderate yellowish brown mottled with light olive gray; weathered; very dense; damp. Total Depth 4.0'.	2.6	Backfill borehole to surface with Portland cement grout.

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Precision Drilling

DRILLING EQUIPMENT: MD-1

DRILLER:

SAMPLING METHOD: *Direct Push continuously sampled* **TOTAL DEPTH:** 3.0' BGS

START DATE: 12/9/1999

COMPLETION DATE: 12/9/1999

LOGGED BY: R. Goldberg

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; TNT Strip #4

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0	2.0/3.0		TNT-4C7/0			RESIDUAL SOIL 0.0'-3.0' FAT CLAY (CH): grayish brown; 5% plant roots; firm to stiff, dry to damp.		Direct push continuously sample.
			TNT-4C7/1					
			TNT-4C7/2			-Change to light olive gray, mottled with dark yellowish orange. Total Depth 3.0'.	3.4	Backfill borehole to surface with Portland cement grout.
5								
10								
15								
20								
								Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows: TNT-4C7A/1 TNT-4C7B/1

TEST BORING LOG

BOREHOLE NO.: TNT-4C8

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Precision Drilling

DRILLING EQUIPMENT: MD-1

DRILLER:

SAMPLING METHOD: Direct Push continuously sampled TOTAL DEPTH: 3.0' BGS

START DATE: 12/9/1999

COMPLETION DATE: 12/9/1999

LOGGED BY: R. Goldberg

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; TNT Strip #4

SURFACE ELEVATION:

DEPTH	RECOVERY/ RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
3.0	3.0		TNT-4C8/0			RESIDUAL SOIL		Direct push continuously sample.
			TNT-4C8/0.5			0.0'-3.0' FAT CLAY (CH): grayish brown; 5% plant roots; firm to stiff; dry to damp.		
			TNT-4C8/1					
			TNT-4C8/2			-Change to light olive gray, mottled with dark yellowish orange. Total Depth 3.0'	2.3	Backfill borehole to surface with Portland cement grout.
5								
10								
15								
20								

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Precision Drilling

DRILLING EQUIPMENT: MD-1

DRILLER:

SAMPLING METHOD: Direct Push continuously sampled TOTAL DEPTH: 5.0' BGS

START DATE: 12/9/1999

COMPLETION DATE: 12/9/1999

LOGGED BY: R. Goldberg

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; TNT Strip #4

SURFACE ELEVATION:

DEPTH	RECOVERY/ ROD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
3.0	3.0		TNT-4C9/0			RESIDUAL SOIL 0.0'-4.5' FAT CLAY (CH): dusky yellow brown to dusky yellow; 10% plant roots; firm to stiff; dry to damp.		Direct push continuously sample
			TNT-4C9/0.5				2.4	
			TNT-4C9/1					
			TNT-4C9/2					
			TNT-4C9/4				2.2	
5.0	2.0	2.0	TNT-4C9/4			BEDROCK 4.5' 5.0' SHALE: light olive gray to olive gray; weathered; very dense; damp. Total Depth 5.0'.		Backfill borehole to surface with Portland cement grout.
			TNT-4C9/4.5					

TEST BORING LOG

BOREHOLE NO.: TNT-4C11

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER:

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: 2.5' BGS

START DATE: 12/19/1999

COMPLETION DATE: 12/19/1999

LOGGED BY: *P. Ody*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #4*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
			TNT-4C11/0	II		RESIDUAL SOIL	5.5	Sample collected using slide hammer.
			TNT-4C11/1	II		0.0'-2.5' FAT CLAY (CH): moderate brown; slightly sandy; fine to coarse; dry.	2.1	
			TNT-4C11/2	II		BEDROCK 2.5' SHALE: light olive gray; weathered; very dense. Total Depth 2.5'.		
5								
10								
15								
20								

Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows:
TNT-4C11A/1

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Earth Tech

DRILLING EQUIPMENT: Hand Auger

DRILLER:

SAMPLING METHOD: Slide Hammer

TOTAL DEPTH: 2.5' BGS

START DATE: 12/19/1999

COMPLETION DATE: 12/19/1999

LOGGED BY: P. Ody

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; TNT Strip #4

SURFACE ELEVATION:

DEPTH	RECOVERY/ RCD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
			TNT-4C120	II		RESIDUAL SOIL		
			TNT-4C121	II		0.0'-1.5' FAT CLAY (CH): moderate brown; fine; slightly sandy; fine sand; dry.		
			TNT-4C122	II		BEDROCK 1.5'-2.5' SILTSTONE/SANDSTONE: moderate brown; weathered to a clayey sand; low plastic fines. Total Depth 2.5'.		

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: *35734*

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER:

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: *4.5' BGS*

START DATE: *12/19/1999*

COMPLETION DATE: *12/19/1999*

LOGGED BY: *P. Ody*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #4*

SURFACE ELEVATION:

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
			TNT-4C14/0	II		RESIDUAL SOIL 0.0'-3.0' FAT CLAY (CH): moderate brown; firm to stiff, damp.		Refusal at 4.5'
			TNT-4C14/1	II				
			TNT-4C14/2	II				
5			TNT-4C14/4	III	BEDROCK 3.0'-4.5' SILTSTONE: pale yellowish brown; very dense; damp. Total Depth 4.5'			
10								
15								
20								

Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows:
TNT-4C14A/2

TEST BORING LOG

BOREHOLE NO.: TNT-5A

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtlot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR:

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: 2.5' BGS

START DATE: *7/20/1999*

COMPLETION DATE: *7/20/1999*

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #5*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
5			TNT-5A/0.0			RESIDUAL SOIL		
			TNT-5A/0.5			0.0-0.25 FAT CLAY (CH): dark brown; firm; damp.		
			TNT-5A/1					
			TNT-5A/1.5					
			TNT-5A/2					
						Total Depth 2.5'		
10								
15								
20								

TEST BORING LOG

BOREHOLE NO.: TNT-5A1

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Precision Drilling

DRILLING EQUIPMENT: MD-1

DRILLER:

SAMPLING METHOD: Direct Push continuously sampled TOTAL DEPTH: 6.0' BGS

START DATE: 12/10/1999

COMPLETION DATE: 12/10/1999

LOGGED BY: R. Goldberg

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; TNT Strip #5

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
2.0/3.0			TNT-5A1/0			RESIDUAL SOIL 0.0'-5.5' FAT CLAY (CH): grayish brown mottled moderate yellowish brown; 10% plant roots, 0-1'; firm to stiff; day to damp.		Direct push continuously sample.
			TNT-5A1/1				1.2	
			TNT-5A1/1.5					
			TNT-5A1/2				1.4	
2.5/3.0			TNT-5A1/4					
5			TNT-5A1/5.5			BEDROCK 5.5'-6.0' SHALE: grayish olive mottled with moderate yellowish brown and greenish black; weathered; very dense; damp. Total Depth 6.0'.		Backfill borehole to surface with Portland cement grout.
10								
15								
20								Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows: TNT-5A1A/4

TEST BORING LOG

BOREHOLE NO.: TNT-5A2

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Precision Drilling*

DRILLING EQUIPMENT: *MD-1*

DRILLER:

SAMPLING METHOD: *Direct Push continuously sampled* TOTAL DEPTH: 8.5' BGS

START DATE: 12/10/1999

COMPLETION DATE: 12/10/1999

LOGGED BY: *R. Goldberg*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #5*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
2.5/3.0			TNT-5A2/0			RESIDUAL SOIL 0.0'-7.0' FAT CLAY (CH): moderate brown; 5% plant roots 0-1; firm to stiff, dry to damp..	1.4	Direct push continuously sample.
			TNT-5A2/0.5					
			TNT-5A2/1					
			TNT-5A2/2					
3.0/3.0			TNT-5A2/4					
			TNT-5A2/6					
2.5/2.5			TNT-5A2/8		BEDROCK 7.0'-8.5' SHALE: light olive gray mottled with olive gray; weathered; very dense; damp.	1.4	Backfill borehole to surface with Portland cement grout.	
					Total Depth 8.5'			

TEST BORING LOG

BOREHOLE NO.: TNT-5A3

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Precision Drilling*

DRILLING EQUIPMENT: *MD-1*

DRILLER:

SAMPLING METHOD: *Direct Push continuously sampled*

TOTAL DEPTH: 7.0' BGS

START DATE: 12/10/1999

COMPLETION DATE: 12/10/1999

LOGGED BY: *R. Goldberg*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #5*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS	
3.0	3.0		TNT-5A3/0			RESIDUAL SOIL 0.0'-6.5' FAT CLAY (CH): dusky brown to moderate brown; 15% plant roots 0-1; firm to stiff; dry to damp.		Direct push continuously sample.	
			TNT-5A3/0.5						
			TNT-5A3/1						
			TNT-5A3/2						2
2.5	2.5		TNT-5A3/4						2.2
5	1.5	1.5	TNT-5A3/6						
			TNT-5A3/6.5			1.4	Backfill borehole to surface with Portland cement grout.		
					BEDROCK 6.5'-7.0' SHALE: light olive gray mottled with dark yellowish orange; weathered; very dense; damp. Total Depth 7.0'				

TEST BORING LOG

BOREHOLE NO.: TNT-5A4

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: *35734*

CLIENT: *Granite*

DRILLING CONTRACTOR: *Precision Drilling*

DRILLING EQUIPMENT: *MD-1*

DRILLER:

SAMPLING METHOD: *Direct Push continuously sampled* TOTAL DEPTH: *5.5' BGS*

START DATE: *12/10/1999*

COMPLETION DATE: *12/10/1999*

LOGGED BY: *R. Goldberg*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #5*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
3.0	3.0		TNT-5A4/0			RESIDUAL SOIL 0.0'-4.5' FAT CLAY (CH): moderate brown; 5% plant roots 0-1.0'; firm to stiff; dry to damp;	1.8	Direct push continuously sample.
			TNT-5A4/1					
			TNT-5A4/2					
2.5	2.5		TNT-5A4/4					
5			TNT-5A4/5			BEDROCK 4.5'-5.5' SHALE: light olive gray mottled with dark yellowish orange; weathered; very dense; damp. Total Depth 5.5'	2.1	Backfill borehole to surface with Portland cement grout.
10								
15								
20								Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows: TNT-5A4A/0 TNT-5A4B/0

TEST BORING LOG

BOREHOLE NO.: TNT-5A5

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Precision Drilling

DRILLING EQUIPMENT: MD-1

DRILLER:

SAMPLING METHOD: Direct Push continuously sampled TOTAL DEPTH: 8.5' BGS

START DATE: 12/10/1999

COMPLETION DATE: 12/10/1999

LOGGED BY: R. Goldberg

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; TNT Strip #5

SURFACE ELEVATION:

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
3.0/3.0			TNT-5A5/0			RESIDUAL SOIL 0.0'-7.0' FAT CLAY (CH): moderate brown; 5% plant roots 0-1; firm to stiff, dry to damp.	1.1	Direct push continuously sample.
			TNT-5A5/1					
			TNT-5A5/1.5					
			TNT-5A5/2					
3.0/3.0			TNT-5A5/4					
5			TNT-5A5/6					
2.5/2.5			TNT-5A5/8			BEDROCK 7.0'-8.5' SHALE: light olive gray mottled with olive gray; weathered; very dense; damp. Total Depth 8.5'.	1.1	Backfill borehole to surface with Portland cement grout.
10								
15								
20								

TEST BORING LOG

BOREHOLE NO.: TNT-5A6

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Precision Drilling*

DRILLING EQUIPMENT: *MD-1*

DRILLER:

SAMPLING METHOD: *Direct Push continuously sampled* TOTAL DEPTH: *5.5' BGS*

START DATE: *12/10/1999*

COMPLETION DATE: *12/10/1999*

LOGGED BY: *R. Goldberg*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #5*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
2.0/3.0			TNT-5A6/0			RESIDUAL SOIL 0.0'-5.5' FAT CLAY (CH): moderate brown; 5% plant roots 0-1.0'; firm to stiff; dry to damp.		Direct push continuously sample.
			TNT-5A6/1					
2.5/2.5			TNT-5A6/2.5					
			TNT-5A6/4					
			TNT-5A6/4.5					
5						BEDROCK 5.5' SHALE: light olive gray mottled with olive gray; weathered. Total Depth 5.5'.		Backfill borehole to surface with Portland cement grout.
10								
15								
20								

TEST BORING LOG

BOREHOLE NO.: TNT-5A8

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: *35734*

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski/Greg Peterson*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: *4.5' BGS*

START DATE: *12/21/1999*

COMPLETION DATE: *12/21/1999*

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #5*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
			TNT-5A8/0			RESIDUAL SOIL		
			TNT-5A8/1			0.0'-2.0' SILT (ML): moderate brown; non-plastic; stiff; dry to damp.		
			TNT-5A8/2			2.0'-4.5' FAT CLAY (CH): brown; firm to stiff; damp.		
			TNT-5A8/4			Total Depth 4.5'		
5								
10								
15								
20								

Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows: TNT-5A8A/0

TEST BORING LOG

BOREHOLE NO.: TNT-5A9

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtlot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski/Greg Peterson*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: 4.5' BGS

START DATE: 12/22/1999

COMPLETION DATE: 12/22/1999

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #5*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
			TNT-5A9/0		RESIDUAL SOIL 0.0'-2.0' LEAN CLAY (CL): moderate brown; firm to stiff, dry to damp.			
			TNT-5A9/1					
			TNT-5A9/2		2.0'-4.5' FAT CLAY (CH): dark brown; stiff; damp.			
			TNT-5A9/4					
5						Total Depth 4.5'		
10								
15								
20								

*Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows:
TNT-5A9A/2*

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski/Greg Peterson*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: 7.8' BGS

START DATE: 12/21/1999

COMPLETION DATE: 12/21/1999

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #5*

SURFACE ELEVATION:

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
			TNT-510/0			RESIDUAL SOIL		
			TNT-5A10/1			0.0'-5.0' FAT CLAY (CH): moderate brown; firm to stiff, damp.		
			TNT-5A10/2			1.0'-1.5' inclusions of soft grey translucent crystalline material.		
5			TNT-5A10/4					
			TNT-5A10/5			5.0'-7.5' FAT CLAY (CH): yellowish brown; stiff, damp to dry.		
			TNT-5A10/7.5			BEDROCK		
10						7.5'-7.75' SHALE: moderate yellow-brown; weathered; very dense.		
						Total Depth 7.75'.		
15								
20								

Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows: TNT-5A10A/2

TEST BORING LOG

BOREHOLE NO.: TNT-5B

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: 2.5' BGS

START DATE: 7/20/1999

COMPLETION DATE: 7/20/1999

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #5*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
			TNT-5B/0.5 TNT-5B/1 TNT-5B/1.5 TNT-5B/2	II III IV V		RESIDUAL SOIL 0.0'-2.5' LEAN CLAY (CL): moderate yellowish brown; firm to stiff, dry to damp.		
5						Total Depth 2.5'		
10								
15								
20								

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Earth Tech

DRILLING EQUIPMENT: Hand Auger

DRILLER: R. Burzinski

SAMPLING METHOD: Slide Hammer

TOTAL DEPTH: 2.5' BGS

START DATE: 7/20/1999

COMPLETION DATE: 7/20/1999

LOGGED BY: R. Burzinski

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; TNT Strip #5

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0'			TNT-5C/0.5	II		RESIDUAL SOIL		
0.5'			TNT-5C/1	III		0.0'-2.5' FAT CLAY (CH): dark yellowish brown; firm to stiff; damp.		
1.0'			TNT-5C/1.5	III				
1.5'			TNT-5C/2	III				
2.5'						Total Depth 2.5'		

TEST BORING LOG

BOREHOLE NO.: TNT-5D

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: 2.5' BGS

START DATE: 7/20/1999

COMPLETION DATE: 7/20/1999

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #5*

SURFACE ELEVATION:

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
			TNT-5D/0.5 TNT-5D/1 TNT-5D/1.5 TNT-5D/2	II		RESIDUAL SOIL 0.0'-2.5' FAT CLAY (CH): dark yellowish brown; firm to stiff; damp.		
5						Total Depth 2.5'.		
10								
15								
20								

TEST BORING LOG

BOREHOLE NO.: TNT-5E

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR:

DRILLING EQUIPMENT: Hand Auger

DRILLER: R. Burzinski

SAMPLING METHOD: Slide Hammer

TOTAL DEPTH: 2.5' BGS

START DATE: 7/20/1999

COMPLETION DATE: 7/20/1999

LOGGED BY: R. Burzinski

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; TNT Strip #5

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0			TNT-5E/0.5	II		RESIDUAL SOIL 0.0'-2.5' FAT CLAY (CH): dark yellowish brown; firm to stiff, damp.		
0.5			TNT-5E/1					
1.0			TNT-5E/1.5					
1.5			TNT-5E/2					
2.5						Total Depth 2.5'		

TEST BORING LOG

BOREHOLE NO.: TNT-5F

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Precision Drilling

DRILLING EQUIPMENT: MD-1

DRILLER:

SAMPLING METHOD: Direct Push continuously sampled

TOTAL DEPTH: 10.5' BGS

START DATE: 12/10/1999

COMPLETION DATE: 12/10/1999

LOGGED BY: R. Goldberg

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; TNT Strip #5

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
2.5/3.0			TNT-5F0			RESIDUAL SOIL 0.0'-10.0' FAT CLAY (CH): dark yellowish orange mottled grayish brown and moderate yellowish brown; 10% plant roots 0-1.; firm to stiff; dry to damp.	1.1	Direct push continuously sample.
			TNT-5F1					
			TNT-5F2					
3.0/3.0			TNT-5F4					
			TNT-5F4.5					
			TNT-5F5					
			TNT-5F6					
			TNT-5F8					
3.0/3.0			TNT-5F8					
			TNT-5F10					
5								
10						BEDROCK 10.0'-10.5' SHALE: moderate olive brown mottled with dark yellowish orange; weathered; very dense; damp. Total Depth 10.5'	1.4	Backfill borehole to surface with Portland cement grout.
15								
20								

TEST BORING LOG

BOREHOLE NO.: TNT-5G

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Precision Drilling

DRILLING EQUIPMENT: MD-1

DRILLER:

SAMPLING METHOD: Direct Push continuously sampled TOTAL DEPTH: 5.0' BGS

START DATE: 12/10/1999

COMPLETION DATE: 12/10/1999

LOGGED BY: R. Goldberg

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; TNT Strip #5

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0	3.0/3.0		TNT-5G/0			RESIDUAL SOIL 0.0'-5.0' FAT CLAY (CH): dark yellowish orange mottled grayish brown and moderate yellowish brown; 10% plant roots 0-1.; firm to stiff, dry to damp.		Direct push continuously sample.
			TNT-5G/1				2.1	
	1.0/2.0		TNT-5G/2					
5			TNT-5G/4				2.4	
						BEDROCK 5.0' SHALE: moderate olive brown mottled with dark yellowish orange; weathered; very dense; damp. Total Depth 5.0'.		Backfill borehole to surface with Portland cement grout.

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TEST BORING LOG

BOREHOLE NO.: TNT-5H

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtlot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER:

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: 2.5' BGS

START DATE: 12/19/2000

COMPLETION DATE: 12/19/2000

LOGGED BY: *P. Ody*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #5*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
			TNT-5H/0			RESIDUAL SOIL		
			TNT-5H/1			0.0'-2.5' FAT CLAY (CH): moderate brown; slightly sandy; firm; slightly damp to damp.	1.6	
			TNT-5H/2			Total Depth 2.5'.	1.8	
5								
10								
15								
20								

Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows: TNT-5HA/0

TEST BORING LOG

BOREHOLE NO.: TNT-5I

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtlot Cleanup Project*

PROJECT NO.: *35734*

CLIENT: *Granite*

DRILLING CONTRACTOR:

DRILLING EQUIPMENT: *Hand Auger*

DRILLER:

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: *2.5' BGS*

START DATE: *12/19/2000*

COMPLETION DATE: *12/19/2000*

LOGGED BY: *P. Ody*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #5*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
			TNT-5U0	II		RESIDUAL SOIL		
			TNT-5U1	II		0.0'-2.5' FAT CLAY (CH): moderate brown; slightly sandy; firm; slightly damp to damp.	1.3	
			TNT-5U2	II		Total Depth 2.5'	2	
5								
10								
15								
20								

Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows: TNT-5IA/D

TEST BORING LOG

BOREHOLE NO.: TNT-5J

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski/Greg Peterson*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: 6.5' BGS

START DATE: 12/22/1999

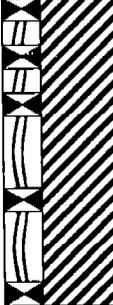
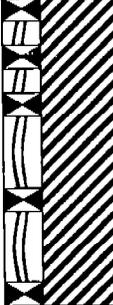
COMPLETION DATE: 12/22/1999

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; TNT Strip #5*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS		
			TNT-5J0			RESIDUAL SOIL 0.0'-6.5' FAT CLAY (CH): dark yellowish orange mottled grayish brown and moderate yellowish brown; 10% plant roots 0-1.'; firm to stiff, dry to damp.				
			TNT-5J1							
			TNT-5J2							
5			TNT-5J4						1	
			TNT-5J6						1	
							Total Depth 6.5'			
10										
15										
20										

Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows:
TNT-5JA/1

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Earth Tech

DRILLING EQUIPMENT: Hand Auger

DRILLER: R. Burzinski/Greg Peterson

SAMPLING METHOD: Slide Hammer

TOTAL DEPTH: 6.5' BGS

START DATE: 12/22/1999

COMPLETION DATE: 12/22/1999

LOGGED BY: R. Burzinski

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; TNT Strip #5

SURFACE ELEVATION:

DEPTH	RECOVERY / ROD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
			TNT-5L/0			RESIDUAL SOIL 0.0'-6.5' FAT CLAY (CH): dark yellowish orange mottled grayish brown and moderate yellowish brown; 10% plant roots 0-1'; firm to stiff; dry to damp.		
			TNT-5L/1					
			TNT-5L/2					
5			TNT-5L/4					
			TNT-5L/6				Total Depth 6.5'	
10								
15								
20								

Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows:
TNT-5LA/2

PROJECT NAME: **Tourtelot Cleanup Project**

PROJECT NO.: **39901**

CLIENT: **Granite**

DRILLING CONTRACTOR: **Clear Heart Drilling**

DRILLING EQUIPMENT: **Morooka MST-600**

DRILLER: **Chris Herrell**

SAMPLING METHOD: **1 1/2" SPT, Split Spoon**

TOTAL DEPTH: **17.5' BGS**

START DATE: **6/7/2000**

COMPLETION DATE: **6/7/2000**

LOGGED BY: **Rick Heidrick**

APPROVED BY: **A. Buangan**

LOCATION: **North Ridge, east end**

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS	
0	1.5/1.5	2	R16/0			COLLUVIUM		Advance boring using 4" flight augers. Drive samples driven with 140 lb hammer with 30" fall.	
0		2				0'-11' FAT CLAY: dark yellowish brown; 25% fine sand; moist; stiff.			
0		3	R16/1						
1	1.0/1.5	2	R16/2			2' occasional caliche deposits.			
1		3							
1		5							
5	1.0/1.5	9	R16/4			BEDROCK			4' moderate rig chatter. R16/4=Bedrock-interface sample.
5		15				4'-6' SHALE: severely weathered to residual soil, disturbed.			
5		17							
6	1.5/1.5	12	R16/6			6'-11' SHALE: light olive brown severely weathered; soft; weak; locally iron-oxide stained w/some caliche deposits; in place; locally weathered to fat clay; bedding planes present.			
6		13							
6		16							
6	1.5/1.5	13	R16/8						
6		17							
6		21							
10	1.5/1.5	16	R16/10			11'-16.5' SHEAR ZONE: sheared to clay w/weathered pieces of shale randomly oriented; friable and loose.		Backfilled with bentonite chips and water.	
10		14							
10		19							
10	1.5/1.5	11	R16/12			11.4'-11.5' Extensively iron-oxide stained throughout.			
10		14							
10		17							
15	1.0/1.5	11	R16/14						
15		12							
15		18							
15	1.5/1.5	19	R16/16			16.5'-17.5' SANDSTONE: light olive brown; severely weathered; soft; friable; fine grained sand; appears intact.			
15		24							
15		26							
20						Total Depth 17.5'			

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PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart Drilling

DRILLING EQUIPMENT: Morooka MST-600

DRILLER: Chris Herrell

SAMPLING METHOD: 1 1/2" SPT, Split Spoon

TOTAL DEPTH: 16.5' BGS

START DATE: 6/7/2000

COMPLETION DATE: 6/7/2000

LOGGED BY: Rick Heidrick

APPROVED BY: A. Buangan

LOCATION: North Ridge, south slope

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0	0.5/1.5	1	R17/0			COLLUVIUM		Advance boring using 4" flight augers. Drive samples driven with 140 lb hammer with 30" fall. R17/6=Bedrock-interface sample. Backfilled with bentonite chips and water.
		2				0'-4' FAT CLAY: dark brown; high plastic clay; 30% fine sand; dry; medium stiff; rootlets.		
		4	R17/1					
1.0	1.0/1.5	4	R17/2			2.5' sand becomes fine and medium.		
		6						
		10						
5	1.0/1.5	7	R17/4			4'-6.5' SANDY FAT CLAY: pale brown; high plastic clay; 40% fine to coarse sand of subangular shale; very stiff; moist; slope wash.		
		11						
		12						
	1.0/1.5	7	R17/6			BEDROCK		
		11				6.5'-14.5' SHALE: very dark grayish brown; severely weathered; moderately hard; friable; locally crumbles to sandy fat clay; iron-oxide stained.		
		12						
	1.5/1.5	9	R17/8					
		10						
		14						
10	1.0/1.5	16	R17/10					
		16						
		14						
	1.5/1.5	9	R17/12			12.5'-13.5' SHEAR ZONE: completely weathered to clay; dry; loose.		
		16						
		18						
15	1.0/1.0	16	R17/14			14.5'-16.5' SANDSTONE: pale brown; moderately weathered; moderately hard; moderately strong; medium to fine sand; some fracture surfaces iron-oxide stained.		
		50						
	0.4/0.5	50/5"	R17/16			Total Depth 16.5'.		

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PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart Drilling

DRILLING EQUIPMENT: Morooka MST-600

DRILLER: Chris Herrell

SAMPLING METHOD: 1 1/2" SPT, Split Spoon

TOTAL DEPTH: 14.8' BGS

START DATE: 6/5/2000

COMPLETION DATE: 6/5/2000

LOGGED BY: Rick Heidrick

APPROVED BY: A. Buangan

LOCATION: North Valley, below TNT Strip #5

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0-4.5'	0.5/1.5	4	R18/0			ALLUVIUM 0-4.5' FAT CLAY: dark brown; high plastic clay; 25% fine sand; dry, stiff.		Advance boring using 4" flight augers. Drive samples driven with 140 lb hammer with 30" fall.
4-6'		4	R18/1					
6-8'	0.5/1.5	3	R18/2					
8-9'		8						
9-17'	1.0/1.5	5	R18/4			BEDROCK 4.5'-14.8' SHALE: brown; severely weathered; pieces of 1/4" angular shale in clay matrix; soft; weak; dry. 6' become moderately weathered; moderate hard; weak to moderate strong; iron-oxide stained.		TNT-R18/4, Bedrock-interface sample.
17-21'		17						
21-27'	0.5/1.0	27	R18/6					
27-36'		50						
36-43'	1.5/1.5	18	R18/8					
43-49'		23						
49-50'	1.5/1.5	19	R18/10					
50-53'		21						
53-55'	1.0/1.0	43	R18/12					
55-57'		50						
57-60.3'	0.5/0.7	32	R18/14					
60.3'-14.8'		50/3"				Total Depth 14.8'.		Back filled with bentonite chips and water.

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart Drilling

DRILLING EQUIPMENT: Morooka MST-600

DRILLER: Chris Herrell

SAMPLING METHOD: 1 1/2" SPT, Split Spoon

TOTAL DEPTH: 20.5' BGS

START DATE: 6/5/2000

COMPLETION DATE: 6/6/2000

LOGGED BY: Rick Heidrick

APPROVED BY: A. Buangan

LOCATION: North Valley, below TNT Strip #4

SURFACE ELEVATION:

DEPTH	RECOVERY / ROD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
5	1.0/1.5	7	R19/0			ALLUVIUM		Advance boring using 4" flight augers. Drive samples driven with 140 lb hammer with 30" fall.
		6				0'-10.5' FAT CLAY: dark brown; high plastic clay; 10% fine sand; dry; stiff; occasional rootlets.		
		7	R19/1			1' becomes moist; occasional caliche deposit.		
	1.0/1.5	6	R19/2					
		7						
		9						
	1.0/1.5	9	R19/4					
		11						
		12						
	1.0/1.5	12	R19/6				6.5' Shale cobble; moderately weathered;	
	22							
	15							
1.0/1.5	6	R19/8			8' caliche deposits			
	9							
	11							
10	1.0/1.5	15	R19/10			BEDROCK		R19/10, Bedrock interface sample.
	19					10.5'-20.5' SHALE: grayish brown; severely weathered; soft; weak; crumbles to dry clay; residual soil; iron oxide; stained throughout.		
	22							
1.0/1.5	15	R19/12						
	23							
	30							
1.0/1.0	43	R19/14				14' become moderately weathered crumbles to angular shale chips; fracture surfaces iron oxide stained		
	50/5"							
15	1.4/1.4	15	R19/16					
	30							
	50/5"							
0.8/0.8	40	R19-18						
	50/4"							
20	0.5/0.5	50/5"	R19/20					
						Total Depth 20.5'		Back filled with bentonite chips and water.

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PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart Drilling

DRILLING EQUIPMENT: Morooka MST-600

DRILLER: Chris Herrell

SAMPLING METHOD: 1 1/2" SPT, Split Spoon

TOTAL DEPTH: 13.5' BGS

START DATE: 6/6/2000

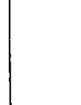
COMPLETION DATE: 6/7/2000

LOGGED BY: Rick Heidrick

APPROVED BY: A. Buangan

LOCATION: North Ridge

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0	1.5/1.5	3	R20/0			ALLUVIUM 0'-2.5' FAT CLAY: dark brown; high plastic clay; 20% fine sand; stiff, dry; rootlets.		Advance boring using 6" hollow stem augers. Drive samples driven with 140 lb hammer with 30" fall.
0-2.5		3	R20/1					
2.5	1.0/1.5	10	R20/2			BEDROCK 2.5'-12.5' SANDSTONE: yellowish brown; severely weathered; soft; friable; traces of caliche deposits; dry; fine grained sand; some surfaces iron-oxide stained.		R20/2=Bedrock-interface sample.
2.5-6	0.5/0.6	50	R20/4					
6	0.3/0.5	50/5"	R20/4			6' sandstone becomes slightly weathered; moderately hard; moderately strong.		6' Heavy rig chatter, auger refusal. Convert to 4" flight augers.
6-8	0.3/0.5	50/4"	R20/8					
8-10	0.3/0.5	50	R20/10					
10-12.5	1.0/1.5	17 30 41	R20/12			12.5' becomes finer grained, mudstone.		
13.5						Total Depth 13.5'.		Back filled with bentonite chips and water.

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TEST BORING LOG

BOREHOLE NO.: HF-1

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Precision Drilling

DRILLING EQUIPMENT: MD-1

DRILLER:

SAMPLING METHOD: Direct Push continuously sampled TOTAL DEPTH: 6.0' BGS

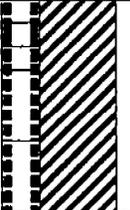
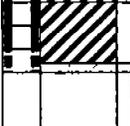
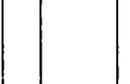
START DATE: 12/9/1999

COMPLETION DATE: 12/9/1999

LOGGED BY: M. Osburn

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; Bldg 183 Howitzer Test Facility SURFACE ELEVATION:

DEPTH	RECOVERY/ RCD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0			HF-1/0.5 HF-1/1			FILL 0'-4.5' FAT CLAY WITH GRAVEL (CH): light yellowish brown mottled dusky yellow; 20-30% fragments of siltstone and sandstone; firm; damp to moist.	1 1	No water encountered.
5			HF-1/4.5 HF-1/5			ALLUVIUM 4.5'-5.8' SANDY FAT CLAY (CH): moderate yellowish brown; ~20% fine to coarse sand; ~10-15% inclusions of weathered angular shale and siltstone; very stiff; damp.	1	Backfilled to surface with cement grout.
5.8						BEDROCK 5.8'-6.0' SHALE: light olive gray to dark gray; dry to slightly damp.		
6.0						Total Depth 6.0'		

Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows:
HF-1A/0.5
HF-1B/0.5
HF-1A/1

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Precision Drilling

DRILLING EQUIPMENT: MD-1

DRILLER:

SAMPLING METHOD: Direct Push continuously sampled TOTAL DEPTH: 11.5' BGS

START DATE: 12/6/1999

COMPLETION DATE: 12/6/1999

LOGGED BY: M. Osburn

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; Bldg 183 Howitzer Test Facility SURFACE ELEVATION:

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
			HF-2/0.5			FILL 0.0'-4.0' FAT CLAY WITH GRAVEL (CH): light yellowish brown mottled dusky yellow; 20-30% fragments of siltstone and sandstone; firm; damp to moist.	7	PID reading Background
5			HF-2/4 HF-2/4.5 HF-2/5 HF-2/5.5			ALLUVIUM 4.0'-9.0' SANDY FAT CLAY (CH): moderate yellowish brown; 20% fine to course sand; ~10-15% inclusion of weathered angular shale and siltstone; very stiff, damp.	3 3	
10			HF-2/10 HF-2/10.5			BEDROCK 9.0'-11.5' SHALE: brownish gray to dark gray; weathered; very dense; dry to slightly damp.	4	No water encountered.
						Total Depth 11.5'		Backfilled to surface with cement grout.
15								
20								

Note: Duplicate samples 0.0'-3.0' were collected as collocated samples from adjacent borehole(s) as follows:
HF-2A/0.5
HF-2B/0.5



TEST BORING LOG

BOREHOLE NO.: HF-3

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Precision Drilling

DRILLING EQUIPMENT: MD-1

DRILLER:

SAMPLING METHOD: Direct Push continuously sampled

TOTAL DEPTH: 22.0' BGS

START DATE: 12/7/1999

COMPLETION DATE: 12/7/1999

LOGGED BY: M. Osburn

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; Howitzer Test Facility

SURFACE ELEVATION:

DEPTH	RECOVERY/ROD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0			HF-3/0.5			FILL 0.0'-8.0' FAT CLAY WITH GRAVEL (CH): mottled moderate yellowish brown to dusky yellow; 20-30% gravel; mostly shale and sandstone; stiff, slightly damp to damp; no odor.	0	
5			HF-3/5 HF-3/5.5 HF-3/6				0 0	
10			HF-3/10 HF-3/10.5			ALLUVIUM 8.0'-18.0' FAT CLAY (CH): dusky yellowish brown; firm; stiff, moist to wet.	0 0	
15			HF-3/15 HF-3/15.5				0 0	
20			HF-3/20 HF-3/20.5			BEDROCK 18.0'-22.0' SHALE: weathered; light olive brown to light olive gray; soft in hardness; breaks down into gravelly fat clay; very dense; dry to damp.	0 0	Backfilled to surface with cement grout.
						Total Depth 22.0'		Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows: HF-3A/0.5

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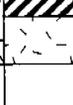
TEST BORING LOG

BOREHOLE NO.: HF-3R

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: <i>Toutelot Cleanup Project</i>	PROJECT NO.: 39901
CLIENT: <i>Granite</i>	DRILLING CONTRACTOR: <i>All Terrain</i>
DRILLING EQUIPMENT: <i>CME 650</i>	DRILLER: <i>Mike Johnson</i>
SAMPLING METHOD: <i>2" Cal. Mod. Split Spoon</i>	TOTAL DEPTH: <i>10.5' BGS</i>
START DATE: <i>4/6/2000</i>	COMPLETION DATE: <i>4/6/2000</i>
LOGGED BY: <i>R. Goldberg</i>	APPROVED BY: <i>A. Buangan CEG 824</i>
LOCATION: <i>North Valley; Howitzer Test Facility</i>	SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0'	1.3/1.5	10	HF-3R/0.5	X		FILL 0.0'-6.0' FAT CLAY (CH): dark yellowish brown; very stiff, medium to coarse gravel fragments of shale; dry to moist.	3.8	Hollow Stem Auger with 8". 0.0'-1.5', DR Drive 2" split spoon with 140 lb hammer falling 30".
3.3'	1.3/1.5	8	HF-3R/4	X		-3.3' becomes moderate yellowish brown.	6.5	3.0'-4.5, DR.
6.1'		11		X		ALLUVIUM 6.0'-9.5' FAT CLAY (CH): dusky yellow; firm to very stiff; damp.		
9.5'	1.3/1.5	30	HF-3R/10	X		BEDROCK 9.5'-10.5' SHALE: light olive gray; moderately to highly weathered; intensely fractured; iron stained weak; wet at 9.5', contact; dry below contact. Total Depth 10.5'.	6.1	9.0'-10.5', DR. Backfill to surface with grout.

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TEST BORING LOG

BOREHOLE NO.: HF-4

WELL NO.: NA

PAGE: 1 OF 2

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Precision Drilling

DRILLING EQUIPMENT: MD-1

DRILLER:

SAMPLING METHOD: Direct Push continuously sampled TOTAL DEPTH: 25.0' BGS

START DATE: 12/8/1999

COMPLETION DATE: 12/8/1999

LOGGED BY: M. Osburn

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; Howitzer Test Facility

SURFACE ELEVATION:

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
			HF-4/0.5			FILL 0.0'-7.0' FAT CLAY WITH GRAVEL (CH): mottled dusky yellow to moderate brown; ~20% fine gravel in clay matrix; sticky; very stiff; damp.	0	
5			HF-4/4 HF-4/4.5				0	
10			HF-4/10 HF-4/10.5			ALLUVIUM 7.0'-24.5' SANDY FAT CLAY (CH): light olive brown to grayish yellow; dark brown coarse sand specks; 10-15% fine to coarse sand; traces of fine shale and siltstone gravel; sticky; tight; compact; very stiff to hard; damp.	6	10.0' Background air measured at 4ppm. Background air 2 ppm.
15			HF-4/15 HF-4/15.5				4	
20			HF-4/20 HF-4/20.5				3	
			HF-4/23 HF-4/23.5				3	1ppm in air (background), 3ppm at borehole.

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PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: All Terrain

DRILLING EQUIPMENT: CME 650

DRILLER: Mike Johnson

SAMPLING METHOD: 2" Cal. Mod. Split Spoon

TOTAL DEPTH: 26.0' BGS

START DATE: 4/6/2000

COMPLETION DATE: 4/6/2000

LOGGED BY: R. Goldberg

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; Howitzer Test Facility

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0' - 10.1'	1.3/1.5	2 4 6	HF-5/0.5 HF-5/1.0			ALLUVIUM 0.0'-10.1' FAT CLAY (CH): dusky yellowish brown; trace plant roots upper 2'; stiff, moist.	4.1	Hollow Stem Auger rig 8" O.D. 0.0'-1.5', DR Drive 2" split spoon with 140 lb hammer falling 30".
10.1' - 16.0'	1.1/1.5	2 4 6	HF-5/4			-3.5' becomes dusky brown; 5% fine gravel of angular shale.	4.2	3.5'-5.0', DR.
16.0' - 24.0'	1.3/1.5	2 4 5	HF-5/10			10.0'-24.0' FAT CLAY w/ GRAVEL (CH): moderate yellowish brown; 10-15% fine to coarse gravel of angular shale; stiff, moist.	4.1	9.5'-11.0', DR.
24.0' - 26.0'	1.1/1.5	6 9 16	HF-5/15			-15.0' trace iron oxide staining.	5.1	14.5'-16.0', DR. 16.0' Hard Drilling First water - 18.0'
26.0'	1.3/1.5	6 13 18	HF-5/20			Very stiff.	4.6	19.5'-21.0', DR.

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TEST BORING LOG

BOREHOLE NO.: HF-5

WELL NO.: NA

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

PAGE: 2 OF 2

DEPTH	RECOVERY/ RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
<div style="display: flex; flex-direction: column; align-items: center;"> 30 35 40 45 50 55 </div>	1.2/1.5	47 50/4	HF-5/25	X	X	<p>BEDROCK 24.5'-26.0' SHALE: olive gray; moderately weathered; intensely fractured to crushed; very dense; crumbles to a gravelly fat clay. Total Depth 26.0'</p>	4.4	<p>24.5'-26.0', DR. Backfill borehole with Portland cement grout.</p>

PROJECT NAME: *Toutelot Cleanup Project* PROJECT NO.: 39901

CLIENT: *Granite* DRILLING CONTRACTOR: *All Terrain*

DRILLING EQUIPMENT: *CME 650* DRILLER: *Mike Johnson*

SAMPLING METHOD: *2" Cal. Mod. Split Spoon* TOTAL DEPTH: *25.0' BGS*

START DATE: *4/7/2000* COMPLETION DATE: *4/7/2000*

LOGGED BY: *R. Goldberg* APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; Howitzer Test Facility* SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
1.0/1.5	0	6	HF-6/1	X		ALLUVIUM 0.0'-9.5' FAT CLAY (CH): moderate yellowish brown; medium stiff; trace shale fragments; trace plant roots 0.0'-1.5'; moist.	18.1	Hollow Stem Auger 8" O.D. 0.0'-1.5'; DR, Drive split spoon with 140 lb hammer falling 30".
1.3/1.5	8	10	HF-6/4	X		-3.5' becomes dusky yellowish brown.	5	3.5'-5.0', DR
	17		HF-6/4.5	X				
10	1.5/1.5	5	HF-6/10	X		9.5'-24.0' SANDY FAT CLAY (CH): moderate yellowish brown; very stiff, 15-20% fine to coarse sand; trace fine gravel of angular shale.	6.2	9.5'-11.0', DR.
	14	23		X				
15	1.5/1.5	5	HF-6/15	X		8	14.5'-16.0', DR.	
	12	30		X				
20	1.5/1.5	5	HF-6/20	X		4.5	19.5'-21.0', DR.	
	12	30		X				
	1.0/1.0	6		X		BEDROCK		24.0'-25.0', DR.

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TEST BORING LOG

BOREHOLE NO.: HF-6

WELL NO.: NA

PROJECT NAME: Toutelot Cleanup Project PROJECT NO.: 39901 PAGE: 2 OF 2

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
<p>30</p> <p>35</p> <p>40</p> <p>45</p> <p>50</p> <p>55</p>		50/2*	HF-6/24.5			<p>24.0'-25.0' SHALE: moderately weathered; intensely fractured; very dense; moist.</p> <p>Total Depth 25.0'.</p>		

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: All Terrain

DRILLING EQUIPMENT: CME 650

DRILLER: Mike Johnson

SAMPLING METHOD: 2" Cal. Mod. Split Spoon

TOTAL DEPTH: 23.0' BGS

START DATE: 4/6/2000

COMPLETION DATE: 4/6/2000

LOGGED BY: R. Goldberg

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; Howitzer Test Facility

SURFACE ELEVATION:

DEPTH	RECOVERY / ROD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0' - 1.5'	1.0/1.5	6 11 14	HF-7/0.5	X	[Hatched Pattern]	ALLUVIUM 0.0'-3.5' FAT CLAY (CH): dusky yellowish brown; firm to stiff; moist to wet		Hollow Stem Auger 8" O.D. 0.0'-1.5', DR Drive 2" split spoon with 140 lb hammer falling 30".
3.5' - 5.0'	1.0/1.5	6 12 19	HF-7/4	X	[Hatched Pattern]	3.5'-15.0' FAT CLAY (CH): dusky brown; fine to coarse sand; trace fine gravel-angular shale; very stiff to hard; damp to moist.	4.5	3.5'-5.0', DR
9.5' - 11.0'	0.75/1.5	12 18 20	HF-7/10	X	[Hatched Pattern]		5.4	9.5'-11.0', DR.
14.5' - 16.0'	1.2/1.5	8 19 26	HF-7/15	X	[Hatched Pattern]	15.0'-20.5' SANDY FAT CLAY (CH): moderate yellowish brown; iron-staining; shale fragments; stiff; moist.	4	14.5'-16.0', DR.
19.5' - 21.0'	1.0/1.5	3 11 21	HF-7/20	X	[Hatched Pattern]	20.5' sharp contact; FAT CLAY and weathered bedrock.	4.4	19.5'-21.0, DR.
20.5' - 23.0'		17 50/2"	HF-7/22.5	X	[Dotted Pattern]	BEDROCK 20.5'-23.0' SHALE: moderately weathered; brownish gray; iron oxide staining; intensely fractured to crushed; very dense; moist.	6	20.5' Hard Drilling 21.5'-23.0', DR.
						Total Depth 23.0'.		

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PROJECT NAME: *Toutelot Cleanup Project*

PROJECT NO.: 39901

CLIENT: *Granite*

DRILLING CONTRACTOR: *All Terrain*

DRILLING EQUIPMENT: *CME 550*

DRILLER: *Mike Johnson*

SAMPLING METHOD: *2" Cal. Mod. Split Spoon*

TOTAL DEPTH: *26.5' BGS*

START DATE: *4/5/2000*

COMPLETION DATE: *4/5/2000*

LOGGED BY: *R. Heidrick*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; Howitzer Test Facility*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0' - 1.5'	1.4/1.5	3 5 6	HF-8/0.5	⊗		ALLUVIUM 0.0'-9.5' FAT CLAY (CH): dusky yellowish brown; 5% fine organic material 0'-2'; stiff, moist.		Hollow Stem Auger with 8". 0.0'-1.5'; DR Drive 2" split spoon with 140 lb hammer falling 30".
1.5' - 5.0'	1.3/1.5	2 6 10	HF-8/4	⊗		Becomes brown		3.5'-5.0'; DR.
5.0' - 9.5'	1.2/1.5	3 4 7	HF-8/10	⊗		9.5'-17.5' SANDY FAT CLAY WITH GRAVEL (CH): moderate yellowish brown to light olive brown; 15% fine to coarse sand; trace fine gravel of angular shale.		9.5'-11.0'; DR.
9.5' - 14.5'	1.3/1.5	4 10 16	HF-8/15	⊗				First water - 13.0' 14.5'-16.0'; DR.
14.5' - 17.5'						BEDROCK 17.5'-26.5' SHALE: olive gray; moderately weathered; sheared to crushed; soft; weak; very dense; moist.		17.5' Harder Drilling.
17.5' - 20.0'	0.9/0.9	28 50/5"	HF-8/20	⊗				19.5'-21.0'; DR.



TEST BORING LOG

BOREHOLE NO.: HF-8

WELL NO.: NA

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

PAGE: 2 OF 2

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
	1.0/1.5	25 30 43		X		Total Depth 26.5'		25.0'-26.5', DR.
30								
35								
40								
45								
50								
55								

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TEST BORING LOG

BOREHOLE NO.: HF-9

WELL NO.: NA

PAGE: 1 OF 2

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 39901

CLIENT: *Granite*

DRILLING CONTRACTOR: *All Terrain*

DRILLING EQUIPMENT: *CME 75*

DRILLER: *Tim Whitney.*

SAMPLING METHOD: *2" Cal. Mod. Split Spoon*

TOTAL DEPTH: *25.0' BGS*

START DATE: *3/31/2000*

COMPLETION DATE: *3/31/2000*

LOGGED BY: *A. Buangan*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; Howitzer Test Facility*

SURFACE ELEVATION:

DEPTH	RECOVERY / ROD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
5	1.5/1.5	20 11 6	HF-9/0.5			FILL 0.0'-7.0' FAT CLAY WITH GRAVEL (CH): mottled dusky yellow to moderate brown; ~20% fine gravel in clay matrix; sticky; very stiff; damp.		Drill with 8" Hollow Stem Auger. 0.5'-2.0' DR Drove 2" split spoon with 140 lb hammer falling 30".
	1.5/1.5	7 8 15	HF-9/4			3.5'-5.0', DR		
10	1.5/1.5	8 19 30	HF-9/10		ALLUVIUM 7.0'-24.5' SANDY FAT CLAY (CH): light olive brown grayish yellow; dark brown coarse sand specks; 10-15% fine to coarse sand; traces of fine shale and siltstone gravel; sticky; tight; compact; very stiff to hard; damp.		9.5' 11.0', DR.	
15	1.5/1.5	20 7 8	HF-9/15				14.5'-16.0', DR.	
20	1.5/1.5	17 28 40					17.0'-18.5', DR.	
	1.5/1.5	19 15 22	HF-9/20				19.5'-21.0', DR.	
								Backfilled with cement grout.

TEST BORING LOG

BOREHOLE NO.: HF-9

WELL NO.: NA

PROJECT NAME: Tortelot Cleanup Project PROJECT NO.: 39901 PAGE: 2 OF 2

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0 5 10 15 20 25 30 35 40 45 50 55	0.5/0.5	50/0.5	HF-9/24.5			BEDROCK 24.5'-25.0' SHALE: olive gray; moderately weathered; intensely fractured; tight; compact; very dense; dry. Total Depth 25.0'.		24.5'-25.0', DR.

TEST BORING LOG

BOREHOLE NO.: AR-1

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtlot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Precision Drilling*

DRILLING EQUIPMENT: *MD-1*

DRILLER:

SAMPLING METHOD: *Direct Push continuously sampled* TOTAL DEPTH: 10.0' BGS

START DATE: 12/11/1999

COMPLETION DATE: 12/11/1999

LOGGED BY: *M. Osburn*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley; Ammunition Renovation Site*

SURFACE ELEVATION:

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0	.08/1.0		AR-1/0.5			ALLUVIUM 0.0'-7.0' FAT CLAY (CH): dusky yellowish brown; sticky; firm to stiff; damp to moist.	0.8	0.5'-1.0'; 1.0'-15.0' Duplicates taken at the completion of boring.
0.08	.33/3.0	AR-1/1						
0.16		AR-1/4 AR-1/4.5						
2.0	2.0/3.0		AR-1/8		7.0'-10.0' SANDY FAT CLAY (CH): moderate yellowish brown; 15-20% fine to coarse sand; traces of fine gravel; stiff to very stiff; tight; compact; damp.	1.1		
10.0					Total Depth 10.0'			Backfilled with cement grout.

Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows:
 AR-1A/0.5
 AR-1B/0.5
 AR-1A/1.0

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Precision Drilling

DRILLING EQUIPMENT: MD-1

DRILLER:

SAMPLING METHOD: Direct Push continuously sampled

TOTAL DEPTH: 12.0' BGS

START DATE: 12/11/1999

COMPLETION DATE: 12/11/1999

LOGGED BY: M. Osburn

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; Ammunition Renovation Site

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
2.67/3.0			AR-2/0.5			FILL 0.0'-1.0' SILTY SAND (SM): moderate brown; fine sand.	1	
2.33/3.0			AR-2/4 AR-2/4.5 AR-2/5 AR-2/5.5			ALLUVIUM 1.0'-5.0' FAT CLAY (CH): dusky yellowish brown; sticky; firm to stiff; damp to moist.	1.6	
2.67/3.0			AR-2/10 AR-2/10.5			BEDROCK 10.0'-12.0' SHALE: olive gray mottled olive brown; moderately weathered; intensely fractured; compact; tight; dry to slightly damp; breaks down to a gravelly fat clay. Total Depth 12.0'.	1.6	12.0' Olive gray angular shale chips. Backfilled with cement grout.

Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows: AR-2A/0.5

TEST BORING LOG

BOREHOLE NO.: AR-3

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Precision Drilling

DRILLING EQUIPMENT: MD-1

DRILLER:

SAMPLING METHOD: Direct Push continuously sampled TOTAL DEPTH: 19.0' BGS

START DATE: 12/10/1999

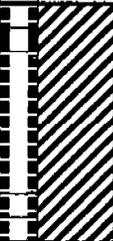
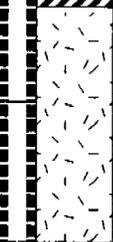
COMPLETION DATE: 12/11/1999

LOGGED BY: M. Osburn

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; Ammunition Renovation Site

SURFACE ELEVATION:

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0	1.5/3.0		AR-3/0.5 AR-3A/0.5			FILL 0.0'-5.0' GRAVELLY FAT CLAY (CH): mottled moderate yellow brown to moderate brown; about 30% gravel; mostly angular shale and sandstone; stiff to very stiff; damp.	0	Significant rain on 12/9/99. Borehole in puddle in center of road.
5	2.5/3.0		AR-3/4 AR-3/4.5			ALLUVIUM 5.0'-8.0' FAT CLAY (CH): dusky yellowish brown; sticky; firm to stiff; damp to moist.	0	
10	2.5/3.0		AR-3/10.5			8.0'-14.0' SANDY FAT CLAY (CH): moderate yellowish brown; 15-20% fine to coarse sand; traces of fine gravel; stiff to very stiff; tight; compact; damp.	0	
15	2.5/3.0					BEDROCK 14.0'-19.0' SHALE: olive gray mottled olive brown; moderately weathered; intensely fractured; compact; tight; dry to slightly damp; breaks down to a gravelly fat clay.	2.2	15.0' Background air 1 ppm.
20	2.67/3.0					Total Depth 19.0'	2.2 2.4	Backfilled with cement grout. Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows: AR-3A/0.5

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Precision Drilling

DRILLING EQUIPMENT: MD-1

DRILLER:

SAMPLING METHOD: Direct Push continuously sampled TOTAL DEPTH: 31.0' BGS

START DATE: 12/11/1999

COMPLETION DATE: 12/11/1999

LOGGED BY: M. Osburn

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; Ammunition Renovation Site SURFACE ELEVATION:

DEPTH	RECOVERY / ROD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0			AR-4/0.5 AR-4A/0.5			FILL 0.0'-0.5' GRAVELLY CLAY (CH):		0.0'-0.5' Gravelly layer.
1.67	3.0					ALLUVIUM 0.5'-4.0' FAT CLAY (CH): dark brown; homogenous; firm; damp.		
2.33	3.0		AR-4/4 AR-4/4.5			4.0'-10.0' SANDY FAT CLAY (CH): moderate yellowish brown; 15-20% fine to coarse sand; traces of fine gravel; stiff to very stiff; tight; compact; damp.	1.8	
2.5	3.0							
2.17	3.0		AR-4/10 AR-4/11			BEDROCK 10.0'-19.0' SHALE/SILTSTONE: severely weathered; moderate yellowish brown to light olive gray; oxidized; dense to very dense; dry to slightly damp.		10.5'-11.0' Only 2" of recovery, 11.0'-11.5' used for QES sample.
2.5	3.0							
15			AR-4/15 AR-4/15.5					
2.5	3.0							
19.5			AR-4/20 AR-4/20.5			19.5'-31.0' SHALE/SILTSTONE: moderately weathered, dense to very dense; dry to slightly damp.	2.2	
2.5	3.0							
2.17	3.0							

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TEST BORING LOG

BOREHOLE NO.: AR-4

WELL NO.: NA

PROJECT NAME: *Tourtlot Cleanup Project*

PROJECT NO.: 35734

PAGE: 2 OF 2

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0	2.33/3.0		AR-4/25 AR-4/25.5					
30			AR-4/30 AR-4/30.5			Total Depth 31.0'		Backfilled with cement grout.
35								
40								
45								
50								
55								

Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows: AR-4A/0.5

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: All Terrain

DRILLING EQUIPMENT: CME 650

DRILLER: Mike Johnson

SAMPLING METHOD: 2" Cal. Mod. Split Spoon

TOTAL DEPTH: 16.0' BGS

START DATE: 4/14/2000

COMPLETION DATE: 4/14/2000

LOGGED BY: R. Goldberg

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; Ammunition Renovation Site

SURFACE ELEVATION:

DEPTH	RECOVERY/ RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0'	1.0/1.5	6	AR-5/0.5			FILL		Drilled with 8" Hollow Stem Auger.
0.0'-3.0'		11	AR-5/1.0			0.0'-3.0' FAT CLAY WITH GRAVEL (CH): dark yellowish brown; 10-15% fine to coarse shale gravel; stiff, damp; trace plant roots.		0.0'-1.5': DR Drive 2" split spoon with 140 lb hammer falling 30".
3.0'-4.5'	1.1/1.5	5	AR-5/4			ALLUVIUM		3.0'-4.5': DR.
3.0'-9.0'		9				3.0'-9.0' FAT CLAY (CH): grayish brown stiff, damp; trace fine; gravel.		
9.0'-10.5'	1.5/1.5	6	AR-5/10			9.0'-11.0' SANDY FAT CLAY (CH): moderate yellowish brown; 15% fine to coarse sand; traces of fine gravel; stiff, sticky, damp.		9.0'-10.5': DR.
11.0'-16.0'		13				BEDROCK		11.0' Hard drilling.
11.0'-16.0'		17				11.0'-16.0' SHALE: light olive gray and dark yellowish brown; highly weathered; intensely fractured; crushed; some clay matrix; very dense; dry to damp.		
14.0'-14.5'	0.4/0.4	50/0.5	AR-5/15					No Sample.
14.0'-14.5'								14.0'-14.5': DR.
15.0'-15.0'	1.0/1.0	25						15.0'-15.0': DR.
15.0'-15.0'		50/5"						
						Total Depth 16.0'		Backfilled to surface with Portland cement grout.

TEST BORING LOG

BOREHOLE NO.: AR-6

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: West Hazmat

DRILLING EQUIPMENT: CME 75

DRILLER: Tim Whitney

SAMPLING METHOD: 2" Cal. Mod. Split Spoon

TOTAL DEPTH: 16.0' BGS

START DATE: 3/31/2000

COMPLETION DATE: 3/31/2000

LOGGED BY: R. Burzinski, A. Buangan

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; Ammunition Renovation Site

SURFACE ELEVATION:

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0	1.0/1.0	8	AR-6/1	X		FILL 0.0'-3.0' GRAVELLY FAT CLAY (CH): mottled moderate yellowish brown to moderate brown; about 30% gravel; mostly angular shale and sandstone; stiff to very stiff, damp.		Drilled with 8" Hollow Stern Auger. 0.5-1.5, DR Drove 2" split spoon with 140 lb hammer and 30" drop.
3.0	1.5/1.5	13 13 20	AR-6/4	X		ALLUVIUM 3.0'-8.0' FAT CLAY (CH): mottled orange brown and light brown; about 10% fine sand; ~5% dark reddish brown organics, stiff, damp to moist.		3.5'-5.0', DR.
8.0	1.5/1.5	6 11 15	AR-6/10	X		8.0'-14.5' SANDY FAT CLAY (CH): mottled light olive gray to dusky yellow; 15-20% fine to coarse sand; ~5% fine shale and sandstone fragments; sticky, stiff, damp.		9.5'-11.0', DR.
14.5	1.5/1.5	21 40 50/4"	AR-6/15	X		BEDROCK 14.5'-16.0' SHALE/SILTSTONE: light olive gray; moderately weathered; intensely fractured; iron stained; fracture surface; easily crumbles; very dense; dry to slightly damp. Total Depth 16.0'.		14.5' 16.0', DR. Backfilled with cement grout.

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PROJECT NAME: *Tourtlot Cleanup Project* PROJECT NO.: *39901*
 CLIENT: *Granite* DRILLING CONTRACTOR: *West Hazmat/All Terrain*
 DRILLING EQUIPMENT: *CME 75* DRILLER: *Tim Whitney.*
 SAMPLING METHOD: *2" Cal. Mod. Split Spoon* TOTAL DEPTH: *20.8' BGS*
 START DATE: *3/30/2000* COMPLETION DATE: *3/30/2000*
 LOGGED BY: *A. Buangan* APPROVED BY: *A. Buangan CEG 824*
 LOCATION: *North Valley; Ammunition Renovation Site* SURFACE ELEVATION:

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0' - 5.0'	1.5/1.5	10 10 15		X		FILL 0.0'-5.0' GRAVELLY FAT CLAY (CH): mottled moderate yellowish brown to moderate brown; about 30% gravel; mostly angular shale and sandstone; stiff to very stiff; damp.		Drilled with 8" Hollow Stem Auger. 0.5'-2.0', DR Drove 2" split spoon with 140 lb hammer and 30" drop.
5.0' - 5.5'	1.5/1.5	60 25 20	AR-7/4 AR-7/4.5	X		ALLUVIUM 5.0'-8.0' FAT CLAY (CH): dusky yellowish brown; sticky; firm to stiff; damp to moist.		4.5'-5.5', DR.
8.0' - 14.0'	1.0/1.0	6 10	AR-7/10	X		8.0'-14.0' SANDY FAT CLAY (CH): moderate yellowish brown; 15-20% fine to coarse sand; trace of fine gravel; stiff to very stiff; tight; compact; damp.		10.0'-11.5', DR.
14.0' - 16.5'	1.0/1.0	6 10	AR-7/15	X		BEDROCK 14.0'-27.0' SHALE: olive gray mottled olive brown; moderately weathered; intensely fractured; compact; tight; dry to slightly damp; breaks down to a gravelly fat clay.		Stiff drilling at 14.0'. 15.0'-16.5', DR.
20.0' - 20.8'	0.8/0.8	45 54/3	AR7/20	X				20.0'-20.8', DR. 3/30/2000 Temporarily stopped drilling at 20'; will continue with dry coring. 4/17/2000 Redrilled with All Terrain CME 650 to 25' using 8" Hollow Stem Auger.

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TEST BORING LOG

BOREHOLE NO.: AR-7

WELL NO.: NA

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 39901

PAGE: 2 OF 2

DEPTH	RECOVERY / ROD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
4.0/4.0			Box 1					25.0'-44.0' Continuous dry coring with 8" Hollow Stem Auger.
30	3.0/5.0					27.0'-44.0' SHALE: dark gray; slightly weathered to fractured; unoxidized; intensely fractured to crushed; soft in hardness; compact; tight; dry.		32.0' Blocked off.
35	3.0/5.0							
40	2.0/2.5							
	2.5/2.5		Box 2					
	2.5/2.5							
45						Total Depth 44.0'		Backfilled w/grout.
50								
55								

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: West Hazmat

DRILLING EQUIPMENT: CME 75

DRILLER: Tim Whitney

SAMPLING METHOD: 2" Cal. Mod. Split Spoon

TOTAL DEPTH: 15.5' BGS

START DATE: 3/30/2000

COMPLETION DATE: 3/30/2000

LOGGED BY: A. Buangan

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; Ammunition Renovation Site

SURFACE ELEVATION:

DEPTH	RECOVERY / RSD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0-1.0'	1.5/1.5	12 8 12	AR-8/0.5			FILL 0.0'-1.0' GRAVELLY FLAT CLAY (CH): moderate yellowish brown to moderate brown; firm; damp.		Drilled with 8" Hollow Stem Auger. 0.5'-2.0', DR Drove 2" split spoon with 140 lb hammer and 30" drop.
1.0-8.0'	1.5/1.5	5 8 14	AR-8/4 AR-8/4.5			ALLUVIUM 1.0'-8.0' FAT CLAY (CH): dusky yellowish brown; sticky; firm to stiff; damp to moist.		3.5'-5.5', DR
8.0-12.0'	1.5/1.5	8 12 13	AR-8/10			8.0'-12.0' SANDY FAT CLAY (CH): moderate yellowish brown; 15-20% fine to coarse sand; traces of fine gravel; stiff to very stiff; tight; compact; damp.		9.5'-11.0', DR.
12.0'-15.5'	1.5/1.5	18 28 40				BEDROCK 12.0'-15.5' SHALE: olive gray mottled olive brown; moderately weathered; intensely fractured; compact; tight; dry to slightly damp; breaks down to a gravelly fat clay.		12.5'-14.0', DR.
14.0'-15.5'	1.5/1.5	28 48 50						14.0'-15.5', DR.
Total Depth 15.5'								Backfilled with cement grout.

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: West Hazmat

DRILLING EQUIPMENT: CME 75

DRILLER: Tim Whitney

SAMPLING METHOD: 2" Cal. Mod. Split Spoon

TOTAL DEPTH: 16.5' BGS

START DATE: 3/31/2000

COMPLETION DATE: 3/31/2000

LOGGED BY: A. Buangan

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; Ammunition Renovation Site

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0' - 8.0'	1.5/1.5	13 11 11	AR-9/1			FILL 0.0'-8.0' GRAVELLY FAT CLAY (CH): mottled moderate yellow brown to moderate brown; about 30% gravel; mostly angular shale and sandstone; stiff to very stiff, damp.		Drilled with 8" Hollow Stem Auger. 0.5'-2.0', DR Drove 2" split spoon with 140 lb hammer and 30" drop.
8.0' - 10.0'	1.5/1.5	11 8 7	AR-9/4			7.0' hard massive object		36.5'-5.0', DR.
10.0' - 16.0'	1.5/1.5	8 9 16	AR-9/10 AR-9/10.5			ALLUVIUM 8.0'-10.0' FAT CLAY (CH): dusky yellowish brown sticky; firm to stiff, damp to moist.		7.0' Hard massive object probably concrete; move hole 3.0' south.
16.0' - 16.5'	1.5/1.5	9 11 21	AR-9/15			10.0'-16.0' SANDY FAT CLAY (CH): moderate yellowish brown; 15-20% fine to coarse sand; about 10% shale/siltstone gravel; stiff to very stiff, tight; compact, damp.		9.5'-11.0', DR.
16.0' - 16.5'	0.4/0.4	50/0.4			BEDROCK 16.0'-16.5' SANDSTONE: weathered; light olive gray to dusky brown; iron oxide staining; moderately hard, probably sandstone lens; damp.		14.5'-16.0', DR. Hard at end of drive sample.	
						Total Depth 16.5'		16.0'-16.5', DR. Backfilled with cement grout.

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: West Hazmat

DRILLING EQUIPMENT: CME 75

DRILLER: Tim Whitney

SAMPLING METHOD: 2" Cal. Mod. Split Spoon

TOTAL DEPTH: 17.5' BGS

START DATE: 3/31/2000

COMPLETION DATE: 3/31/2000

LOGGED BY: A. Buangan

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; Ammunition Renovation Site

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0 - 4.0'			AR-10/0.5			FILL 0.0'-4.0' GRAVELLY FAT CLAY (CH): mottled moderate yellowish brown to moderate brown; about 30% gravel; mostly angular shale and sandstone; stiff to very stiff; damp.		Hand Auger to 2.0' collect 0.5' sample with slide hammer.
4.0 - 13.0'	1.5/1.5	9 2 20	AR-10/4			ALLUVIUM 4.0'-13.0' FAT CLAY (CH): dusky yellowish brown; sticky; firm to stiff; damp to moist.		3.5'-5.0'; DR Drove 2" split spoon with 140 lb hammer and 30" drop.
13.0 - 17.0'	1.5/1.5	3 9 19	AR-10/10			13.0'-17.0' SANDY FAT CLAY (CH): moderate yellowish brown; 15-20% fine to coarse sand; traces of fine gravel; stiff to very stiff; tight; compact; damp.		9.0'-10.5'; DR.
17.0 - 17.5'	1.5/1.5	11 15 17	AR-15/15			BEDROCK 17.0'-17.5' SHALE: olive gray mottled olive brown; moderately weathered; intensely fractured; compact; tight; dry to slightly damp; breaks down to a gravelly fat clay.		14.5'-16.0'; DR.
17.5'	0.5/0.5	50	AR-10/17			Total Depth 17.5'		17.0'-17.5'; DR. Backfilled with cement grout.

TEST BORING LOG

BOREHOLE NO.: AR-11

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: All Terrain

DRILLING EQUIPMENT: CME 650

DRILLER: Mike Johnson

SAMPLING METHOD: 2" Cal. Mod. Split Spoon

TOTAL DEPTH: 17.5' BGS

START DATE: 4/14/2000

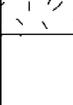
COMPLETION DATE: 4/14/2000

LOGGED BY: R. Goldberg

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; Ammunition Renovation Site

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0'	1.3/1.5	6	AR-11/0.5			FILL 0.0'-9.0' GRAVELLY FAT CLAY (CH): moderate yellowish brown; 25% fine to coarse angular shale fragments; stiff, damp.		Hollow Stem Auger with 8". 0.0'-1.5'; DR Drive 2" split spoon.
1.5'	1.5/1.5	5 7 7	AR-11/4			-3.5' becomes light olive gray.		3.0'-4.5'; DR.
9.0'	1.5/1.5	4 7 11	AR-11/10			ALLUVIUM 9.0'-14.5' SANDY FAT CLAY WITH GRAVEL (CH): grayish brown; 15-20% fine to coarse sand; trace fine gravel; firm to stiff; tight; damp.		9.0'-10.5'; DR.
14.0'	1.5/1.5	6 22 50/5"	AR-11/15			BEDROCK 14.5'-17.5' SHALE: severely weathered; moderate olive brown; intensely fractured; very dense; dry to damp.		14.0'-14.5'; DR.
16.5'	0.75/1.0	30 50/5"	AR-11/17					16.5'-17.5, DR.
						Total Depth 17.5'.		Backfill to surface with Portland cement grout.

PROJECT NAME: *Toutelot Cleanup Project*

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: West Hazmat

DRILLING EQUIPMENT: CME 75

DRILLER: Tim Whitney

SAMPLING METHOD: Drive sampling

TOTAL DEPTH: 11.0' BGS

START DATE: 3/30/2000

COMPLETION DATE: 3/30/2000

LOGGED BY: A. Buangan

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; Ammunition Renovation Site

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
1.5	1.5	11	AR-120.5			FILL 0.0'-0.5' GRAVELLY FAT CLAY (CH): mottled moderate yellowish brown to moderate brown; about 30% gravel; mostly angular shale and sandstone; stiff to very stiff; damp.		Drilled with 8" Hollow Stem Auger. 0.0'-1.5', DR Drove 2" split spoon with 140 lb hammer and 30" fall.
1.5	1.5	9	AR-12/4			ALLUVIUM 0.5'-8.0' FAT CLAY (CH): dusky yellowish brown; sticky; firm to stiff; damp to moist.		3.5'-5.0', DR.
5		18	AR-12/4.5					
5		28				8.0'-10.0' SANDY FAT CLAY (CH): moderate yellowish brown 15-20% fine to coarse sand; traces of fine gravel; stiff to very stiff; tight; compact; damp.		9.5'-11.0', DR.
10	1.5	11	AR-12/10			BEDROCK 10.0'-11.0' SHALE: light olive gray to light olive brown; weathered; very dense; dry to damp.		Backfilled with cement grout.
10		26						
10		40				Total Depth 11.0'.		

TEST BORING LOG

BOREHOLE NO.: FA-1

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtlot Cleanup Project*

PROJECT NO.: *35734*

CLIENT: *Granite*

DRILLING CONTRACTOR:

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: *2.5' BGS*

START DATE: *7/21/1999*

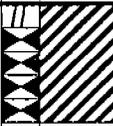
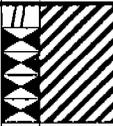
COMPLETION DATE: *7/21/1999*

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *South Valley; Flare Site*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
5			FA1/0.5			COLLUVIUM		
			FA1/1			0.0'-2.5' FAT CLAY (CH): <i>dark brown; firm; damp.</i>		
			FA1/1.5					
			FA1/2					
10								
15								
20								
						Total Depth 2.5'.		

TEST BORING LOG

BOREHOLE NO.: FA-2

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtlot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR:

DRILLING EQUIPMENT: *Hand Auger*

DRILLER:

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: 2.5' BGS

START DATE: *7/21/1999*

COMPLETION DATE: *7/21/1999*

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *South Valley; Flare Site*

SURFACE ELEVATION:

DEPTH	RECOVERY/ RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
5			FA2/0.5			COLLUVIUM		
			FA2/1			0.0'-2.5' FAT CLAY (CH): dark brown; firm; damp.		
			FA2/1.5					
			FA2/2					
						Total Depth 2.5'		
10								
15								
20								

TEST BORING LOG

BOREHOLE NO.: FA-3

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtlot Cleanup Project*

PROJECT NO.: *35734*

CLIENT: *Granite*

DRILLING CONTRACTOR:

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: *1.0' BGS*

START DATE: *7/21/1999*

COMPLETION DATE: *7/21/1999*

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *South Valley; Flare Site*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
			FA30.5	II		COLLUVIUM 0.0'-1.0' FAT CLAY (CH): dark brown; firm; damp. Total Depth 1.0'.		
5								
10								
15								
20								

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST-600

DRILLER: Chris Herrel

SAMPLING METHOD: 2" Cal. Mod. Split Spoon

TOTAL DEPTH: 3.5' BGS

START DATE: 12/16/1999

COMPLETION DATE: 12/16/1999

LOGGED BY: A. Storm

APPROVED BY: A. Buangan CEG 824

LOCATION: South Valley; Flare Site

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.5/1.5		0	FA-4/0			COLLUVIUM		Drilled with 5 5/8" Hollow Stem Auger. Sample collected with 1.5" split spoon driven by 140 lb hammer falling 30". PID is erratic. Sealed to surface with Bentonite chips. Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows: FA-4A/0
		1	FA-4/0.5			0.0'-2.5' FAT CLAY (CH): medium brown; damp.		
1.0/2.0		2	FA-4/1.0					
		8						
		11	FA-4/2.5			BEDROCK		
		16	FA-4/3			2.5'-3.5' SILTSTONE: weathered; yellowish brown.		
		17				Total Depth 3.5'		

TEST BORING LOG

BOREHOLE NO.: FA-6

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST-600

DRILLER: Chris Herrel

SAMPLING METHOD: 2" Cal. Mod. Split Spoon

TOTAL DEPTH: 3.5' BGS

START DATE: 12/16/1999

COMPLETION DATE: 12/16/1999

LOGGED BY: A. Storm

APPROVED BY: A. Buangan CEG 824

LOCATION: South Valley; Flare Site

SURFACE ELEVATION:

DEPTH	RECOVERY / RIGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0	1.5/2.0	1				ASH: gray		Drilled with 5 5/8" Hollow Stem Auger. Sample collected with 1.5" split spoon driven by 140 lb hammer-falling 30". Backfilled to surface with cement grout.
5		5	FA-6/1					
14		17	FA-6/1.5			SILT (ML): yellow brown.		
17	1.0/1.5	18	FA-6/2			BEDROCK		
17		17	FA-6/3			2.0'-3.5' SILTSTONE: mottled gray and dark yellowish orange; weathered; very dense; damp.		
22		22				Total Depth 3.5'.		
5								
10								
15								
20								
								Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows: FA-6A/1 FA-6B/1 FA-6A/1.5

TEST BORING LOG

BOREHOLE NO.: DA1-1

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR:

DRILLING EQUIPMENT: Hand Auger

DRILLER: R. Burzinski

SAMPLING METHOD: Slide Hammer

TOTAL DEPTH: 4.5' BGS

START DATE: 7/21/1999

COMPLETION DATE: 7/21/1999

LOGGED BY: R. Burzinski

APPROVED BY: A. Buangan CEG 824

LOCATION: South Valley; Demo Site #1

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
5			DA1-1/0.5 DA1-1/1 DA1-1/1.5 DA1-1/2			COLLUVIUM 0.0'-4.5' FAT CLAY (CH): brown; high dry strength; highly plastic; dry.		
			DA1-1/3.5 DA1-1/4					Total Depth 4.5'
10								
15								
20								

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR:

DRILLING EQUIPMENT: Hand Auger

DRILLER: R. Burzinski

SAMPLING METHOD: Slide Hammer

TOTAL DEPTH: 4.5' BGS

START DATE: 7/21/1999

COMPLETION DATE: 7/21/1999

LOGGED BY: R. Burzinski

APPROVED BY: A. Buangan CEG 824

LOCATION: South Valley; Demo Site #1

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS	
0.0'			DA1-2/0.5			COLLUVIUM 0.0'-4.5' FAT CLAY (CH): brown; about 10% shale fragments; hard; dry.			
0.5'			DA1-2/1						
1.0'			DA1-2/1.5						
1.5'			DA1-2/2						
2.0'			DA1-2/3						
2.5'			DA1-2/3.5						
4.5'						Total Depth 4.5'			

TEST BORING LOG

BOREHOLE NO.: DA2-1

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: *35734*

CLIENT: *Granite*

DRILLING CONTRACTOR:

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: *4.5' BGS*

START DATE: *7/21/1999*

COMPLETION DATE: *7/21/1999*

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *South Valley; Demo Site #2*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
			DA2-1/0.5 DA2-1/1 DA2-1/1.5 DA2-1/2			COLLUVIUM 0.0'-4.5' FAT CLAY (CH): dark brown; firm; damp.		
5			DA2-1/3.5 DA2-1/4			Total Depth 4.5'		
10								
15								
20								

TEST BORING LOG

BOREHOLE NO.: DA2-2

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtlot Cleanup Project*

PROJECT NO.: *35734*

CLIENT: *Granite*

DRILLING CONTRACTOR:

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: *4.5' BGS*

START DATE: *7/21/1999*

COMPLETION DATE: *7/21/1999*

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *South Valley; Demo Site #2*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
5			DA2-2/0.5			COLLUVIUM 0.0'-4.5' FAT CLAY (CH): dark brown; firm; damp.		
			DA2-2/1 DA2-2/1.5 DA2-2/2					
			DA2-2/3.5 DA2-2/4			Total Depth 4.5'		
10								
15								
20								

TEST BORING LOG

BOREHOLE NO.: DA3-1

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: *35734*

CLIENT: *Granite*

DRILLING CONTRACTOR:

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: *4.5' BGS*

START DATE: *7/21/1999*

COMPLETION DATE: *7/21/1999*

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *South Valley; Demo Site #3*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0			DA3-1/0.5			COLLUVIUM 0.0'-3.5' SANDY LEAN CLAY (CL): <i>brown to moderate brown; firm; damp.</i>		
			DA3-1/1					
			DA3-1/1.5			BEDROCK 3.5'-4.5' SILTSTONE/SANDSTONE: <i>dark yellowish orange; weathered; very dense; damp.</i>		
			DA3-1/2					
5			DA3-1/3.5			Total Depth 4.5'.		
			DA3-1/4					
10								
15								
20								

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR:

DRILLING EQUIPMENT: Hand Auger

DRILLER: R. Burzinski

SAMPLING METHOD: Slide Hammer

TOTAL DEPTH: 4.5' BGS

START DATE: 7/21/1999

COMPLETION DATE: 7/21/1999

LOGGED BY: R. Burzinski

APPROVED BY: A. Buangan CEG 824

LOCATION: South Valley; Demo Site #3

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
			DA3-2/0.5 DA3-2/1 DA3-2/1.5 DA3-2/2	II		COLLUVIUM 0.0'-3.5' SANDY LEAN CLAY (CL): brown to moderate brown; firm; damp.		
5			DA3-2/3.5 DA3-2/4	II		BEDROCK 3.5'-4.5' SILTSTONE/SANDSTONE: dark yellowish orange; weathered; very dense; damp. Total Depth 4.5'.		
10								
15								
20								

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: *35734*

CLIENT: *Granite*

DRILLING CONTRACTOR: *Clear Heart*

DRILLING EQUIPMENT: *Morooka MST-600*

DRILLER: *Chris Herrel*

SAMPLING METHOD: *2" Cal. Mod. Split Spoon*

TOTAL DEPTH: *16.0' BGS*

START DATE: *12/17/1999*

COMPLETION DATE: *12/17/1999*

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *South Valley; Demo Site #3*

SURFACE ELEVATION:

DEPTH	RECOVERY / ROD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0' - 6.0'						FILL 0.0'-6.0' GRAVELLY LEAN CLAY (CL): mottled moderate brown and moderate yellow brown; fragments of shale and siltstone in clay matrix; firm; dry; appears to be fill in demolition crater.	2	Drilled with 5 5/8" Hollow Stem Auger. Boring located in excavated pad at demolition site #3. Bedrock exposed on cut area adjoining pad.
6.0' - 16.0'						BEDROCK 6.0'-16.0' SHALE/SILTSTONE/SANDSTONE: interbedded; moderately weathered; moderate yellowish brown to dark yellowish orange; very dense; dry.	4	High blow counts at 6.0' in weathered bedrock.
15.0' - 16.0'						15.0'-16.0' SILTSTONE: gray; iron stained along fractures.	16	Borehole grouted to surface with Portland cement.
						Total Depth 16.0'		

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TEST BORING LOG

BOREHOLE NO.: DA3-4

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: **Tourtelot Cleanup Project**

PROJECT NO.: **35734**

CLIENT: **Granite**

DRILLING CONTRACTOR: **Clear Heart**

DRILLING EQUIPMENT: **Morooka MST-600**

DRILLER: **Chris Herrel**

SAMPLING METHOD: **2" Cal. Mod. Split Spoon**

TOTAL DEPTH: **11.0' BGS**

START DATE: **12/17/1999**

COMPLETION DATE: **12/17/1999**

LOGGED BY: **R. Burzinski**

APPROVED BY: **A. Buangan CEG 824**

LOCATION: **South Valley; Demo Site #3**

SURFACE ELEVATION:

DEPTH	RECOVERY / ROD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0						FILL 0.0'-5.0' GRAVELLY LEAN CLAY (CL): mottled moderate yellow brown, dark yellowish orange and moderate brown; fragments of siltstone and sandstone in sandy clay matrix; firm ddry; appearsto be fill in demolition carters.		Drilled with 5 5/8" Hollow Stem Auger. Boring located in excavated at demolition site #3. Bedrock exposed on cut area adjoining pad.
5	1.0/1.0	33	DA3-4/5			BEDROCK 5.0'-11.0' SHALE/SANDSTONE: moderate yellowish brown to dark yellowish orange; moderately weathered; intensely fractured; iron staining along fractures; very dense; dry.	3	
5		50	DA3-4/5.5					
10		10	DA3-4/10				50	
10		28	DA3-4/10.5			Total Depth 11.0'		Grout to surface with Portland cement.

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: *35734*

CLIENT: *Granite*

DRILLING CONTRACTOR: *Clear Heart*

DRILLING EQUIPMENT: *Morooka MST-600*

DRILLER: *Chris Herrel*

SAMPLING METHOD: *2" Cal. Mod. Split Spoon*

TOTAL DEPTH: *8.5' BGS*

START DATE: *12/17/1999*

COMPLETION DATE: *12/17/1999*

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *South Valley; Demo Site #3*

SURFACE ELEVATION:

DEPTH	RECOVERY / ROD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0						FILL 0.0'-6.0' GRAVELLY LEAN CLAY (CL): mottled moderate brown and moderate yellow brown; fragments of shale and siltstone in clay matrix; firm; dry; appears to be fill in demolition crater.		Drilled with 5 5/8" Hollow Stem Auger. Boring located in excavated pad at demolition site #3. Bedrock exposed on cut area adjoining pad.
5		7	DA3-5/6			BEDROCK 6.0'-8.5' SHALE: gray to dark yellowish orange; weathered; intensely fractured; heavy iron staining; damp; dense.		Grout to surface with Portland cement.
10		10	DA3-5/7.5			Total Depth 8.5'		
15		12	DA3-5/8					
20		14						
		15						
		17						

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST-600

DRILLER: Chris Herrel

SAMPLING METHOD: 2" Cal. Mod. Split Spoon

TOTAL DEPTH: 17.0' BGS

START DATE: 12/17/1999

COMPLETION DATE: 12/17/1999

LOGGED BY: R. Burzinski

APPROVED BY: A. Buangan CEG 824

LOCATION: South Valley; Demo Site #3

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0' - 5.0'			DA3-6/5 DA3-6/5.5			FILL 0.0'-5.0' GRAVELLY LEAN CLAY (CL): mottled moderate brown and moderate yellow brown; fragments of shale and siltstone in clay matrix; firm; dry; appears to be fill in demolition crater.		Drilled with 5 5/8" Hollow Stem Auger. Boring located in excavated pad for at demolition site #3. Bedrock exposed on cut area adjoining pad.
5.0' - 10.0'			DA3-6/10 DA3-6/10.5 DA3-6/11			5.0'-10.0' SILTY FINE SAND to SANDY CLAY (SM-CL): dark yellowish orange; hard; dry.		
10.0' - 17.0'			DA3-6/15.5 DA3-6/16 DA3-6/16.5			BEDROCK 10.0'-17.0' SHALE: dark gray to dark yellowish orange; intensely fractured; heavy iron staining; very dense; damp.		13.0' Driller reports rock.
17.0'						Total Depth 17.0'.		Grout to surface with Portland cement.

PROJECT NAME: *Tourtlot Cleanup Project*

PROJECT NO.: *35734*

CLIENT: *Granite*

DRILLING CONTRACTOR: *SECOR*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER:

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: *5.0' BGS*

START DATE: *12/18/1999*

COMPLETION DATE: *12/18/1999*

LOGGED BY: *B. Robitaille (SECOR)*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *McAllister Drive Land Bridge upstream toe*

SURFACE ELEVATION: *-85'*

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
5			LB-1/4.5			<p>EMBANKMENT FILL</p> <p>0.0'-5.0' FAT CLAY (CH): dark yellowish brown, gravels of weathered shale and siltstone; soft; moist.</p> <p>~Cobble of soft siltstone.</p> <p>Total Depth 5'.</p>		<p>Hand augered</p> <p>~Boulder, refusal, move 1.5' south.</p> <p>Auger will not catch dry material- switched to closed type.</p> <p>Collect two sleeves sample from auger.</p> <p>Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows: LB-1A/4.5</p>

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart Drilling

DRILLING EQUIPMENT: Morooka MST 600

DRILLER:

SAMPLING METHOD: Drive Sampling Split Spoon

TOTAL DEPTH: 29.0' BGS

START DATE: 12/14/1999

COMPLETION DATE: 12/14/1999

LOGGED BY: B. Robitaille (SECOR)

APPROVED BY: A. Buangan CEG 824

LOCATION: McAllister Drive Land Bridge upstream toe

SURFACE ELEVATION: -85'

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
5	1.67/2.0	6				EMBANKMENT FILL 0.0'-10.0' CLAYEY SILT w/GRAVEL (ML): yellowish brown; low to moderate plastic fines; gravels consist of weathered shale and sandstone; moist to damp.		Drilled with 5 5/8" Hollow Stem Auger. 0.0'-5.0' Pilot hole. No sampling.
		9						Begin continuous push.
		13						
	1.5/2.0	11				-Abundant gravels of dark gray shale in grayish brown soil.		
		6						
		7						
		11						
	1.67/2.0	11				-Mixed with very dark gray clayey silt, soft, moist, abundant roots and grass fragments.		
10		4						
		9						
	1.67/2.0	9				10.0'-16.0' FAT CLAY (CH): dark brown, trace gravels of dark gray shale and sandstone; firm; moist.		
		10						
		5						
		7						
	1.5/1.5	8						
		12						
		5						
15	1.5/1.5	11	LB-2/14.5			-Trace grasses		
		10	LB-2A/15					
		4						
	2.0/2.0	7				16.0'-17.0' FAT CLAY (CH): very dark gray stiff; moist, abundant grasses and roots.		
		10						
		5						
	1.5/1.5	4				17.0'-21.0' FAT CLAY (CH): dark yellowish brown; firm to stiff; moist, trace gravels of dark gray claystone/siltstone		Stopped for lunch at 17.5'. 6" of water after 1.5 hours.
		5						
		8						
20		5						
	1.17/1.5	9				-Occasional well rounded quartz pebble.		
		13						
		1						
	2.0/2.0	5				21.0'-25.0' FAT CLAY (CH): dark grayish brown to moderate yellowish brown; included fragments of weathered siltstone, sandstone and shale; firm to stiff; damp to moist.		
		13						
		7						
	2.0/2.0	11						
		13						

TEST BORING LOG

BOREHOLE NO.: LB-2

WELL NO.: NA

PROJECT NAME: Tourtlot Cleanup Project

PROJECT NO.: 35734

PAGE: 2 OF 2

DEPTH	RECOVERY / ROD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
2.0	2.0	15						
		5						
		8						
		9						
		11						
		4						
		6						
		10						
30								
35								
40								
45								
50								
55								



25.0'-29.0' FAT CLAY (CH): mottled grayish brown; dark reddish brown to dark gray; included gravel of weathered shale, siltstone and sandstone; firm to stiff; damp to moist; trace rootlets.

Total Depth 29.0'.

PROJECT NAME: *Tourtlot Cleanup Project*

PROJECT NO.: *35734*

CLIENT: *Granite*

DRILLING CONTRACTOR: *SECOR*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER:

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: *5.0' BGS*

START DATE: *12/18/1999*

COMPLETION DATE: *12/18/1999*

LOGGED BY: *B. Robitaille (SECOR)*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *McAllister Drive Land Bridge upstream toe*

SURFACE ELEVATION: *-85'*

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0						EMBANKMENT FILL 0.0'-5.0' FAT CLAY (CH): dark yellowish brown; included gravels of weathered shale and sandstone, moist at surface to 1.0' bgs; dry 1'-5'.		Hand augered.
5			LB-3/4.5			Total Depth 5.0'		Collected two sleeves sample from hand auger.
10								
15								
20								Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows: LB-3A/4.5

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TEST BORING LOG

BOREHOLE NO.: LB-4

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski/ Phil Ody*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: *5.0' BGS*

START DATE: *12/21/1999*

COMPLETION DATE: *12/21/1999*

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *McAllister Drive Land Bridge downstream toe* SURFACE ELEVATION:

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0						EMBANKMENT FILL		
0.0'-5.0'						0.0'-5.0' FAT CLAY (CH); dark yellowish orange; hard; damp grading to dry.		
5			LB-4/4.5			Total Depth 5.0'		
10								
15								
20								

Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows: LB-4A/4.5

PROJECT NAME: *Tourtlot Cleanup Project*

PROJECT NO.: **35734**

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski/ Phil Ody*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: **5.0' BGS**

START DATE: **12/21/1999**

COMPLETION DATE: **12/21/1999**

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *McAllister Drive Land Bridge downstream toe* **SURFACE ELEVATION:**

DEPTH	RECOVERY/ RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0						EMBANKMENT FILL		
5			LB-5/4.5			0.0'-5.0' FAT CLAY (CH); dark yellowish orange; hard; damp grading to dry.		
5.0						Total Depth 5.0'		
10								
15								
20								

Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows: LB-5A/4.5

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *R. Burzinski/ Phil Ody*

SAMPLING METHOD: *Slide Hammer*

TOTAL DEPTH: *5.0' BGS*

START DATE: *12/21/1999*

COMPLETION DATE: *12/21/1999*

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *McAllister Drive Land Bridge downstream toe* SURFACE ELEVATION:

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
5			LB-6/4.5			EMBANKMENT FILL 0.0'-5.0' FAT CLAY (CH): dark yellowish orange; hard; damp grading to dry.		
						Total Depth 5.0'		
10								
15								
20								

Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows: LB-6A/4.5

TEST BORING LOG

BOREHOLE NO.: TW-1

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Precision Drilling

DRILLING EQUIPMENT: MD-1

DRILLER:

SAMPLING METHOD: Direct Push continuously sampled TOTAL DEPTH: 23.5' BGS

START DATE: 12/10/1999

COMPLETION DATE: 12/10/1999

LOGGED BY: M. Osburn

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley

SURFACE ELEVATION:

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0			TW-1/0.5			FILL 0.0'-6.5' GRAVELLY FAT CLAY (CH): mottled moderate yellow brown to moderate brown; 20-30% gravel; predominantly angular shale and siltstone; firm; moist.	0	Soil wet to 1.3' (heavy rain previous day). Grades to moist to dry. 0.5'-1.0' Four samples 3.7'-4.1' Soil dry, a well cemented zone.
5			TW-1/4				1	4.5'-5.5' Total recovery 2", inadequate for sample.
			TW-1/5.5					6.8 very moist to 7.0'
10			TW-1/10 TW-1/10.5			ALLUVIUM 6.5'-15.0' FAT CLAY (CH): dusky yellowish brown; sticky; firm to stiff; damp.	0	Water droplets noted when core was removed from sleeve.
15			TW-1/15 TW-1/15.5				0	
20			TW-1/19.5 TW-1/20				0	
			TW-1/22 TW-1/22.5			BEDROCK 17.0'-23.5' SHALE-SILTSTONE: severely weathered to gravelly clay; mottled light olive brown to light olive gray; crushed to intensely fractured; loose; dense in consistency; moist.	0	Backfilled to surface with cement grout.
						Total Depth 23.5'	0	Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows: TW-1A/0.5 TW-1B/0.5

TEST BORING LOG

BOREHOLE NO.: TW-2

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST-600

DRILLER: Chris Herrel

SAMPLING METHOD: 2" Cal. Mod. Split Spoon

TOTAL DEPTH: 21.5' BGS

START DATE: 12/8/1999

COMPLETION DATE: 12/8/1999

LOGGED BY: Bob S.

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
14		14				FILL	0	Drilled with 5 5/8" Hollow Stem Auger.
21		21				0.0'-2.0' GRAVELLY SAND (SP): reddish brown; loose, 25% subangular gravel; 75% sand.		
15		15				ALLUVIUM		
						2.0'-15.0' FAT CLAY (CH): moderate brown; 5-10% sand; traces of shale gravel; firm to stiff; sticky; damp.		
5		5					0	
		7						
		7						
10		4					0	
		5						
		8						
15		4	TW-2B			15.0'-19.0' SANDY FAT CLAY WITH GRAVEL (CH): moderate yellowish brown mottled olive brown w/white caliche streaks; 10-15% fine to coarse sand; ~10% gravel; predominantly subangular to angular, brownish gray shale and siltstone; very stiff; damp; probably residual soil.	0	
		5						
		8						
20		8	TW-2C			BEDROCK	0	
		27				19.0'-21.5' SHALE/SILTSTONE: brownish gray to gray; crushed to intensely fractured; iron stained fractures; breaks down to a gravelly fat clay with sand; very dense; damp.		
		37				Total Depth 21.5'		Backfilled to surface with cement grout.

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Precision Drilling

DRILLING EQUIPMENT: MD-1

DRILLER:

SAMPLING METHOD: Direct Push continuously sampled TOTAL DEPTH: 24.0' BGS

START DATE: 12/9/1999

COMPLETION DATE: 12/9/1999

LOGGED BY: M. Osburn

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley

SURFACE ELEVATION:

DEPTH	RECOVERY / ROD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0'			TW-5/0.5			ALLUVIUM 0.0'-5.0' FAT CLAY (CH): moderate yellowish brown; stiff, moist; no odor. -3.7'-4.2' Strongly cemented. -4.0'-4.5', 1" Recovery. -4.5'-5.0', 2" recovery.	2	0.5'-1.0' Samples TW-5A/0.5, TW-5B/0.5, and TW-5C/0.5 also collected. Background air measured at 2ppm.
5.0'			TW-5/5 TW-5/5.5			5.0'-10.0' FAT CLAY (CH): moderate yellow brown; hard, slightly cemented, no odor, dry. -Dark brown, moist from 8.7'-9.5'.	3	3ppm at background, breathing zone at rig and at hole.
10.0'			TW-5/10 TW-5/10.5			BEDROCK 10.0'-16.0' SHALE/SILTSTONE: severely weathered; mottled light yellowish brown; appears like compacted gravelly clay; dense; damp to moist.	2	11:45, 4ppm at rig breathing zone, 1.1 ppm background.
15.0'			TW-5/14.5			16.0'-24.0' SHALE: mottled yellowish brown and greenish brown; weathered to gravelly fat clay; dark gray angular sand and gravel; hard; damp; no odor.	2	15.0'-15.5' Only 2" of material procured.
20.0'			TW-5/20 TW-5/20.5			- grades to medium to dark gray at 24'	2	20.0'-23.6' Only 6" of total recovery, not enough sample to analyze. Bottom is dense, shale from 23.6 to bottom. Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows: TW-5A/0.5 TW-5B/0.5 Backfilled to surface with cement grout.
						Total Depth 24.0'		

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TEST BORING LOG

BOREHOLE NO.: TW-6

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Precision Drilling

DRILLING EQUIPMENT: MD-1

DRILLER:

SAMPLING METHOD: Direct Push continuously sampled

TOTAL DEPTH: 10.0' BGS

START DATE: 12/8/1999

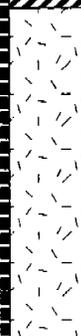
COMPLETION DATE: 12/8/1999

LOGGED BY: M. Osburn

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0			TW-6/0.5			FILL 0.0'-3.0' FAT CLAY WITH SAND (CH): mottled moderate yellowish brown and olive brown, fragments of weathered siltstone/sandstone in clay matrix; firm; moist.	2	Background air 0 ppm.
3			TW-6/4			BEDROCK 3.0'-10.0' SHALE-SILTSTONE: severely weathered; moderate yellowish brown to light olive brown and light olive gray; very dense; damp; crumbles to gravelly fat clay.	2	
4			TW-6/4.5				2	
8			TW-6/8.5				4	
10			TW-6/9.5			Total Depth 10.0'	4	Backfilled to surface with cement grout.

Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows: TW-6A/0.5

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Precision Drilling

DRILLING EQUIPMENT: MD-1

DRILLER:

SAMPLING METHOD: Direct Push continuously sampled

TOTAL DEPTH: 9.5' BGS

START DATE: 12/11/1999

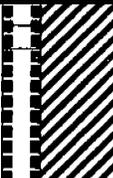
COMPLETION DATE: 12/11/1999

LOGGED BY: M. Osburn

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley

SURFACE ELEVATION:

DEPTH	RECOVERY/ RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
			TW-7/0.5			ALLUVIUM 0.0'-4.0' FAT CLAY (CH): dark brown; homogenous; no odor; firm; slightly moist.	0.6	
5			TW-7/4 TW-7/4.5			4.0'-9.5' SANDY FAT CLAY (CH): moderate yellowish brown; no odor; dry; stiff to very stiff; damp.	0.8	
			TW-7/7 TW-7/7.5 TW-7/8			BEDROCK 7.0'-9.5' SHALE/SILTSTONE: severely weathered; moderate yellowish brown to light olive gray; intensely fractured; very dense; damp.		
10						Total Depth 9.5'		Backfilled to surface with cement grout.
15								
20								

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST-600

DRILLER: Chris Herrel

SAMPLING METHOD: 2" Cal. Mod. Split Spoon

TOTAL DEPTH: 16.0' BGS

START DATE: 12/9/1999

COMPLETION DATE: 12/9/1999

LOGGED BY: Bob S.

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0 - 5.0'		1 3 8		X		ALLUVIUM 0.0'-5.0' FAT CLAY (CH): dark yellowish brown to olive brown; soft; moist.	0	Drilled with 5 5/8" Hollow Stem Auger. 0.0'-1.0' No recovery.
5.0 - 14.5'		4 6 8		X		5.0'-14.5' FAT CLAY (CH): reddish brown; mottled moderate yellowish brown; 10% trace fine, angular gravel; trace fine sand; stiff; soft; moist.	0	
14.5' - 16.0'		6 9 13		X		BEDROCK 14.5'-16.0' SHALE: weathered; brownish gray; intensely fractured; very dense; damp.	0	
16.0'		50	TW-8/15.5	X		Total Depth 16.0'		
								Backfilled to surface with cement grout.

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST-600

DRILLER: Chris Herrel

SAMPLING METHOD: 2" Cal. Mod. Split Spoon

TOTAL DEPTH: 12.0' BGS

START DATE: 12/10/1999

COMPLETION DATE: 12/10/1999

LOGGED BY: Bob S.

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley

SURFACE ELEVATION:

DEPTH	RECOVERY/ RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS																																																
2		4				ALLUVIUM 0.0'-5.0' FAT CLAY (CH): olive brown to grayish brown; organics; soft to firm; wet to moist.	0	Drilled with 5 5/8" Hollow Stem Auger. Ground is wet from rainfall on 12/9/99. No recovery from 1.0'-1.5'. Attempt second drive unsuccessful.																																																
4		5							5		6				5.0'-9.5' FAT CLAY WITH GRAVEL (CH): reddish brown to moderate brown; 10-15% very fine subangular shale, gravel; trace organics; stiff, moist.	0		8		10			10		13			10		6				BEDROCK 9.5'-12.0' SHALE: mottled moderate yellowish brown to light olive gray; stiff; weathered; intensely fractured; iron stained; very dense; damp to moist.			10		10			21		21	TW-9/11		32		32							
5		6				5.0'-9.5' FAT CLAY WITH GRAVEL (CH): reddish brown to moderate brown; 10-15% very fine subangular shale, gravel; trace organics; stiff, moist.	0																																																	
8		10							10		13							10		6				BEDROCK 9.5'-12.0' SHALE: mottled moderate yellowish brown to light olive gray; stiff; weathered; intensely fractured; iron stained; very dense; damp to moist.			10		10			21						21	TW-9/11		32		32									Total Depth 12.0'		Backfilled to surface with cement grout.		
10		13							10		6				BEDROCK 9.5'-12.0' SHALE: mottled moderate yellowish brown to light olive gray; stiff; weathered; intensely fractured; iron stained; very dense; damp to moist.			10		10							21		21	TW-9/11		32						32									Total Depth 12.0'		Backfilled to surface with cement grout.							
10		6				BEDROCK 9.5'-12.0' SHALE: mottled moderate yellowish brown to light olive gray; stiff; weathered; intensely fractured; iron stained; very dense; damp to moist.																																																		
10		10							21		21	TW-9/11						32		32													Total Depth 12.0'		Backfilled to surface with cement grout.																					
21		21	TW-9/11						32		32													Total Depth 12.0'		Backfilled to surface with cement grout.																														
32		32													Total Depth 12.0'		Backfilled to surface with cement grout.																																							
						Total Depth 12.0'		Backfilled to surface with cement grout.																																																

TEST BORING LOG

BOREHOLE NO.: TW-11

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Tourtelot Cleanup Project*

PROJECT NO.: 35734

CLIENT: *Granite*

DRILLING CONTRACTOR: *Clear Heart*

DRILLING EQUIPMENT: *Morooka MST-600*

DRILLER: *Chris Herrel*

SAMPLING METHOD: *2" Cal. Mod. Split Spoon*

TOTAL DEPTH: *17.0' BGS*

START DATE: *12/15/1999*

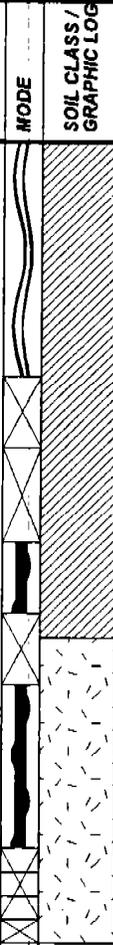
COMPLETION DATE: *12/15/1999*

LOGGED BY: *A. Storm*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *South Valley*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0	0.0/1.5	1					<p><i>FILL</i> 0.0'-10.5' GRAVELLY LEAN CLAY (CL): mottled yellowish brown to moderate brown; loose; damp; apparently backfill for test pit P-4.</p> <p><i>BEDROCK</i> 10.5'-17.0' SHALE/SILTSTONE: brownish gray to moderate yellowish brown; moderately weathered; unweathered at 16.5'-17'; dense; damp to wet at 15'-16'.</p> <p>~16.5' grades to dark gray siltstone.</p> <p>Total Depth 17.0'</p>	
5.0		1						
5.5		1						
6.0	0.5/2.0	1						
6.5		1						
7.0		1						
7.5		2						
10.0	1.0/1.5	4						
10.5		11						
11.0		9						
15.0	1.5/1.5	10	TW-11/15.5				25	15.5' Encore sample from open core.
15.5		14	TW-11/16					Hole was dry. Backfilled through augers with Portland cement to surface.
16.0	5"/5"	47	TW-11/16					
16.5		50	TW-11/16.5					

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST 600

DRILLER: Chris Herrel

SAMPLING METHOD: 1.5" SPT

TOTAL DEPTH: 24.0' BGS

START DATE: 2/22/2000

COMPLETION DATE: 2/23/2000

LOGGED BY: A. Buangan

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; Located 13' N 15 E from TW-1

SURFACE ELEVATION:

DEPTH	RECOVERY/ RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPH)	REMARKS
0.0'	1.5/1.5	2				FILL		Drilled with 5 5/8" Hollow Stem Auger. 0.0'-1.5' Drove SPT 140 lb hammer with 30" fall.
1.5'		3				0.0'-4.5' GRAVELLY FAT CLAY (CH): mottled moderate yellow brown to moderate brown; 20 to 30% gravel; predominantly angular shale and siltstone; firm; moist.		
3.0'		4						
4.0'						-4.0' cobble.		
5.0'	1.5/1.5	3				ALLUVIUM		5.0'-6.5', DR.
6.5'		4				4.5'-15.0' FAT CLAY (CH): dusky yellowish brown; sticky, firm to stiff, damp.		End of day 4:30pm 2/22/00.
7.5'		7						Resumed 07:30 hrs 2/23/00.
10.0'	1.5/1.5	3				-10.0' grade to dark yellowish brown; sticky, stiff, damp; tight.		10.0'-11.5', DR.
10.5'		5						
11.5'		7						
13.0'						-13.0' trace of round coarse sand in tight fat clay matrix.		
15.0'	1.5/1.5	5				15.0'-16.5' SANDY FAT CLAY WITH GRAVEL (CH): moderate yellow brown mottled pale orange and dusky yellow; 10-20% angular fragments; brownish gray shale and siltstone; very stiff, damp.		15.0'-16.5', DR.
16.5'		6						
18.0'	1.5/1.5	10						16.5'-18.0', DR.
17.5'		7						
18.5'		9				BEDROCK		Stiffer drilling at 18.5'.
19.5'		12				16.5'-24.0' SHALE-SILTSTONE: severely weathered to a gravelly clay; mottled light olive brown to light olive gray; crushed to intensely fractured; loose.		20'-21.2', DR.
20.5'						18.5'-24.0' moderately weathered and very dense to hard in consistency; damp.		23.0'-24.0', DR.
21.5'	1.2/1.2	18						
22.5'		40						
23.5'		34/2						Installed 2" PVC Sch 40 MW. Bentonite chip plug 19.5'-24.0' screen (0.01") slots, 14.0'-19.0' #2 sand 12.0'-19.5' Bentonite seal - 10.0'-12.0'. See well construction log.
24.0'	1.0/1.0	34				-23.0' olive brown fine sandstone at tip		
		50						
						Total Depth 24.0'		

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PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST 600

DRILLER: Chris Herrel

SAMPLING METHOD: 1.5" SPT

TOTAL DEPTH: 21.0' BGS

START DATE: 2/22/2000

COMPLETION DATE: 2/22/2000

LOGGED BY: A. Buangan

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; Located 13' S 27' W from TW-2 SURFACE ELEVATION:

DEPTH	RECOVERY / ROD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0-10.0'	1.5/1.5	2 3 5				ALLUVIUM 0.0'-10.0' FAT CLAY (CH): dark yellowish brown; 5% sand; sticky; firm; moist; rootlets and traces of charcoal to 2'.		Drill w/ 5 5/8" Hollow Stem Auger. 0.1'-1.5', DR Drove SPT. 140 lb hammer with 30" drop.
10.0-13.0'	1.5/1.5	2 3 5				10.0'-13.0' FAT CLAY (CH): moderate brown; 5-10% sand; stiff, damp.		4.0'-5.5', DR.
13.0-15.0'	2.0/2.0	3 4 6 7				13.0'-15.0' FAT CLAY (CH): moderate yellowish brown; ~10% gravel subangular shale and siltstone; firm to stiff, damp.		9.5'-11.5', DR.
15.0-18.5'	1.5/1.5	5 6 11				15.0'-18.5' SANDY FAT CLAY WITH GRAVEL (CH): moderate yellowish brown mottled olive brown w/ white caliche streaks; 10-15% fine to coarse sand; ~10% gravel; predominantly subangular to angular brownish gray shale and siltstone; very stiff; damp probably residual soil.		13.0' color change to moderate yellowish brown and fine gravel in clay. 14.0'-15.5', DR.
18.5'-21.0'	1.5/1.5	7 11 15 12 21 29 9 34 50				BEDROCK 18.5'-21.0' SHALE/SILTSTONE: brownish gray to gray; crushed to intensely fractured; iron staining along fractures; breaks down to a gravelly fat clay with sand; very dense; damp.		16.5'-18.0', DR. 18.0'-19.5', DR. 19.5'-21.0', DR.
						Total Depth 21.0'		Installed 2" PVC Sch 40 screen 0.01" slots 15.0'-20.0'; #2/12 sand- 13.0'-20.0'; Bentonite seal 11.0'-13.0'. See well construction log.

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PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST-600

DRILLER: Chris Herrel

SAMPLING METHOD: 1.5" SPT

TOTAL DEPTH: 32.0' BGS

START DATE: 12/10/1999

COMPLETION DATE: 12/10/1999

LOGGED BY: B. Singh

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley

SURFACE ELEVATION:

DEPTH	RECOVERY/ RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0		1				ALLUVIUM	0	Drilled with 5 5/8" Hollow Stem Auger. 0.0'-1.5', DR Drove SPT with 140-lb hammer with 30" fall.
0-3.0'		3				0.0'-3.0' FAT CLAY WITH GRAVEL (CH): dusky brown; ~10% plant roots; firm; damp to moist.		
3.0'-9.0'		3				3.0'-9.0' FAT CLAY (CH): moderate yellowish brown; firm to stiff; damp.		
5		7					0	5.0'-6.5', DR.
		8						
		14						
10		6				9.0'-15.0' SANDY FAT CLAY (CH): moderate yellowish brown; about 10-15% fine sand; very stiff; damp.	0	10.0'-11.5', DR.
		7						
		10						
15		8				15.0'-20.0' GRAVELLY FAT CLAY (CH): mottled light yellowish brown, light olive brown, and light olive gray; 20-25% included fragments of weathered soft shale in clay matrix; very stiff to hard; damp to moist.	0	15.0'-16.5', DR.
		10						
		18						
20		5				BEDROCK	0	20.0'-21.5', DR.
		12				20.0'-30.0' SHALE/SILTSTONE: moderately weathered; light olive brown to light olive gray; sheared to crushed; soil-like; breaks down to gravelly fat clay; moist.		
		18						
								22.1' Water sounded with water level meter. Grab groundwater sample collected: TW-3, 12/14/99, 10:30; TW-3-1, 12/14/99, 11:00.

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TEST BORING LOG

BOREHOLE NO.: (TW-3)

WELL NO.: MW-3

PROJECT NAME: Tourtlot Cleanup Project

PROJECT NO.: 35734

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DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
			TW-3/B	⊗			0	25.0'-26.0', DR. Outside of sleeves were wet.
30				⊗		30.0'-31.5' SHALE: dark gray; unweathered; sheared fresh; very dense; damp to moist.		30.0'-30.5', DR.
						Total Depth 31.5'.		Constructed Well: Blank Casing: +5.0' to 20.0' bgs. Well Screen: 20.0' to 30.0' bgs. Bentonite: 16.0' to 18.0' bgs. See well construction log.
35								
40								
45								
50								
55								

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: All Terrain

DRILLING EQUIPMENT: CME 650

DRILLER: Mike Johnson

SAMPLING METHOD: Drive Sampling; continuous coring. TOTAL DEPTH: 53.5' BGS

START DATE: 4/3/2000

COMPLETION DATE: 4/13/2000

LOGGED BY: A. Buangan

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley

SURFACE ELEVATION:

DEPTH	RECOVERY / ROD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0	1.2/1.5	3				ALLUVIUM		Drilled with 8" Hollow Stem Auger. 0.0'-1.5', DR Drove 2" split spoon using 140 lb hammer with 30" fall.
0.0		4				0.0'-3.0' FAT CLAY WITH GRAVEL (CH): dusky brown; -10% plant roots; firm; damp to moist.		
1.2	1.2/1.5	3	MW-3A/3.5			3.0'-9.0' FAT CLAY (CH): moderate yellowish brown; firm to stiff; damp.		
1.2		7						
1.5	1.5/1.5	4	MW-3A/5.5					
1.5		7						4.5'-6.0', DR.
1.5		12						
9.0	1.5/1.5	7	MW-3A/10			9.0'-15.0' SANDY FAT CLAY (CH): moderate yellowish brown; about 10-15% fine sand; very stiff; damp.		9.5'-11.0', DR.
9.0		12						
9.0		17						
15.0	1.5/1.5	6	MW-3A/15			15.0'-20.0' GRAVELLY FAT CLAY (CH): mottled light yellowish brown, light olive brown and light olive gray; 20-25% included fragments of weathered soft shale in clay matrix; very stiff to hard; damp to moist.		14.5'-16.0', DR. Encountered water at 15.0'.
15.0		21						
15.0		27						
19.5	1.5/1.5	13	MW3A/20			BEDROCK		19.5', DR.
19.5		37				20.0'-24.5' SHALE/SILTSTONE: moderately weathered light olive brown to light olive gray; sheared to crushed; soil-like; crumbles to gravelly fat clay.		
19.5		42						

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TEST BORING LOG

BOREHOLE NO.: MW-3A

WELL NO.: MW-3A

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 39901

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DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.4/0.4		50/0.4				24.5'-36.0' SHALE: dark gray; unweathered; unoxidized; pervasively sheared and crushed; crumbles to a highly plastic gravelly clay; soft to very soft in hardness; very dense; damp.		
30	1.5/1.5	11 22 27						29.5'-31.0', DR.
35	0.9/0.9	17 50/0.4						34.5'-35.4', DR.
			Box 1					
	1.0/1.0					36.0'-41.0' SHALE: dark gray; slightly weathered; soft; weak; crushed and pervasively sheared; crumbles to gravel sandy clay; formation is tight before extruding from core barrel.		Pulled out augers and reamed hole with 14" tricone bit and water to 35 feet. Set and grouted 10" PVC casing to 36.
	1.5/2.0							4/11/00 Drilled 8" hollow auger inside 10" conductor casing.
40	NR							Encountered grout from 24'-36'.
	1.0/2.0					41.0'-53.5' SHALE: fresh; dark gray; soft to moderate strong; closely to little fractured; 60 degree bedding; slicks on surfaces; tight and competent; occasional shear zones ~0.1' thick of crushed shale in fat clay matrix.		4/12/00 Continue dry coring 36.0'-39.0'; very slow; strong ammonia odor from drill fluid.
	2.0/2.0							Blocked at 39.0'.
45	2.0/2.0							39.0'-43.0' slight fluid loss.
	2.5/2.5							43.0'-53.5' Convert to NX core barrel.
			Box 2					
50	1.6/2.0							Ream boring from 36.0'-53.5' with 6" rock bit.
	2.0/2.0							
55						Total Depth 53.5.		WELL CONSTRUCTION
								0.0'-43.0' Solid 2" Sch 40 PVC
								43.0'-53.0' Slotted (0.01") Sch 40 PVC
								0.0'-37.0' Grout
								37.0'-39.0' Bentonite
								39.0'-40.0' #2/12 Lonestar sand
								40.0'-53.0' Shale cuttings.
								See well construction log.

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: All Terrain

DRILLING EQUIPMENT: CME 650

DRILLER: M. Johnson

SAMPLING METHOD: 2.5" Split Spoon

TOTAL DEPTH: 55.0' BGS

START DATE: 4/19/2000

COMPLETION DATE: 4/20/2000

LOGGED BY: R. Heidrick

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley

SURFACE ELEVATION:

DEPTH	RECOVERY/ RQD	BLOW COUNT	SAMPLE NO.	NODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
5						Hole located about 14 ft northwest of MW-3A. For description of subsurface material, see test boring log for MW- 3A.		4/19/00 Drilled with 8" tricone rock bit and water to 39.0'. 2' of bentonite pellets in bottom of boring to create seal at bottom of conductor casing. Install 6" PVC, Sch 80 flush threaded conductor casing. Grout annulus with cement bentonite mixture via tremie pipe along outside of casing. Let stand overnight.
10								4/20/00 Drilled through conductor casing and into formation with 5 7/8" tricone rock bit and water to total depth of 55'. Installed 2" PVC monitoring well, screen from 45'-55'. See well construction log for details.
15								
20								

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST-600

DRILLER: Chris Herrel

SAMPLING METHOD: 1.5" SPT

TOTAL DEPTH: 27.0' BGS

START DATE: 12/13/1999

COMPLETION DATE: 12/13/1999

LOGGED BY: R. Burzinski

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0			TW-4/0.5			FILL 0.0'-3.0' GRAVELLY LEAN CLAY (CL): dark yellowish brown; stiff, damp.	2.6	Drilled with 5 5/8" Hollow Stem Auger. 0.0' - 1.5', DR Drove SPT with 140-lb hammer and 30" fall.
3.0			TW-4/4.5 TW-4/5			ALLUVIUM 3.0'-10.0' FAT CLAY (CH): dark yellowish brown; very stiff, damp.	5.6	4.5'-6.0', DR.
7.0						7.0' - 6" gravelly layer.		
10.0	2.0/2.0	5 8 9 12	TW-4/10 TW-4/10.5 TW-4/11			10.0'-22.0' FAT CLAY (CH): dusky yellowish brown; very stiff, damp.	4.8	10.0'-12.0', DR.
15.0	2.0/2.0	5 6 8 12	TW-4/15 TW-4/15.5			-Becoming highly plastic.	1.8	15.0'-17.0', DR.
20.0	2.0/2.0	5 6 8 10	TW-4/20 TW-4/20.5 TW-4/21 TW-4/21.5			22.0'-26.0' GRAVELLY FAT CLAY (CH): dark yellowish brown; fine subrounded gravel of siltstone and sandstone; firm to very stiff, moist to wet.	22 50 4.5	20.0'-22.0', DR. ▼ 22.0' water. Wet at top of shoe. Grab groundwater sample collected: TW-4, 12/14/99, 12:30

TEST BORING LOG

BOREHOLE NO.: (TW-4)

WELL NO.: MW-4

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

PAGE: 2 OF 2

DEPTH	RECOVERY/ ROD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0	2.0/2.0	7				~Fragments of dark green shale in a brownish clayey matrix. Shale is weathered.		<p>Well Construction Screen: 17.0'-27.0' Blank Casing: +3.0'-17.0' Sand: 15.0'-27.0' Bentonite: 13.0'-15.0'</p> <p>See well construction log.</p> <p>Note: Duplicate samples from 0'-3' were collected as collocated samples from an immediately adjacent borehole as follows: TW-4A/0.5</p>
10		10				BEDROCK		
15		15				26.0'-27.0' SHALE: moderately weathered; dark yellowish brown to olive gray; very dense; wet.		
15		15				Total Depth 27.0'		
30								
35								
40								
45								
50								
55								

TEST BORING LOG

BOREHOLE NO.: MW-4A

WELL NO.: MW-4A

PAGE: 1 OF 2

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: All Terrain

DRILLING EQUIPMENT: CME 650

DRILLER: Mike Johnson

SAMPLING METHOD: Drive Sampling; continuous coring. TOTAL DEPTH: 50.6' BGS

START DATE: 4/5/2000

COMPLETION DATE: 4/4/2000

LOGGED BY: A. Buangan / R. Heidrick

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley

SURFACE ELEVATION:

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0-3.5'	0.1/1.5	6 6 10				FILL 0.0'-3.5' GRAVELLY LEAN CLAY (CL): moderate yellow brown; 20-30% gravel to cobbles of siltstone and sandstone; 20% fine to coarse sand; firm; dry to slightly damp.		Drill with 8" Hollow Stem Auger. 2.0'-3.5' Drive SPT using 140 lb hammer with 30" fall.
3.5-19.0'	1.5/1.5	4 5 11				ALLUVIUM 3.5'-19.0' FAT CLAY (CH): dark yellowish brown; ~10-15% fine to coarse sand; firm to stiff, slightly damp; compact; tight.		5.0'-6.5', DR. 5.0'-10.0' cuttings of fat clay.
19.0'-22.5'	1.5/1.5	4 6 13				same as 5'; damp to moist.		13.5'-15.0', DR.
22.5'-26.0'	1.3/1.5	4 9 14				19.0'-22.5' GRAVELLY FAT CLAY (CH): mottled dark yellowish brown and moderate yellow brown 15-20% fines subrounded gravels of siltstone and sandstone; 10-15% fines to coarse sand; very stiff, moist; free water in gravel surface.		18.5'-20.0', DR. 20.0'-23.5' alternating stiff and soft drilling. Water rose to 12.5'.
26.0'-50.6'		4 7				22.5'-26.0' SANDY FAT CLAY (CH): mottled moderate yellow brown to light olive gray; 15-20% fine to coarse sand; trace siltstone gravel; stiff, moist.		23.5'-25.0' DR sampler wet.

DEPTH	RECOVERY/ ROD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
26.0'		12				BEDROCK 26.0'-33.0' SHALE/SILTSTONE: moderately weathered; light olive brown to light olive gray; intensely fractured to crushed; associated sheared gougy shale; iron stained fracture surface; very dense; moist.		26.0' Stiff drilling; definite change.
28.5'	1.5/1.5	21						28.5'-30.0'; DR Free water in fracture surface.
30.0'		24						
30.0'		50						Hard at 32.0'-33.5'.
33.0'	1.0/1.0	21				33.0'-35.0' SHALE/SILTSTONE: light olive gray to dark gray; intensely fractured to crushed shale; moderate to slightly weathered; dry to slightly damp; no free water; compact; very dense.		33.5'-34.5' DR. Pulled out 8" Hollow Stem Auger and reamed with 15' tricone bit and water to 35.0'. Set and grout 10" Sch 80 PVC to 35'.
35.0'	1.0/2.0	45	Box 1			35.0'-50.6' SHALE: dark gray; slightly weathered to fresh; intensely fractured to crushed; varies from moderately hard to locally very soft; weak; locally friable; slicks on some bedding surfaces; appears tight and compact; damp.		4-11 Resumed drilling. Drilling out grout to 35.0'. 35.0'-46.5' Cored with HQ wireline system.
40.0'	1.0/5							
45.0'	2.0/2.0							
46.5'	2.5/2.5							
48.0'	0.8/1.4	12						46.5'-48.0'; DR Convert to tricone rock bit + 2" Cal. Split Spoon Sampler.
48.0'		43						4/12 measured water level at 7.7' from top of riser.
48.0'		50/4"						
50.0'	0.2/0.6	24						50.0'-50.6, DR.
50.0'		50/1"						
						Total Depth 50.6'.		
								WELL CONSTRUCTION 0.0'-37.0' Solid 2" Sch 40 PVC 37.0'-47.0' Slotted (0.01") 2" Sch 40 PVC. 0.0'-33.5' grout. 33.5'-35.0' Bentonite. 35.0'-47.0' #2/12 RMC Lonestar sand. See well construction log.

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TEST BORING LOG

BOREHOLE NO.: MW-5

WELL NO.: MW-5

PAGE: 1 OF 1

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST 600

DRILLER: Chris Herrel

SAMPLING METHOD: 1.5" SPT

TOTAL DEPTH: 11.0' BGS

START DATE: 2/24/2000

COMPLETION DATE: 2/24/2000

LOGGED BY: R. Goldberg

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley

SURFACE ELEVATION:

DEPTH	RECOVERY / ROD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0	1.0/1.5	3 4 7				ALLUVIUM 0.0'-5.0' GRAVELLY FAT CLAY (CH): dark yellowish brown; 25-30% gravel; angular, becoming finer with depth; soft to medium stiff; trace plant roots; moist.	0	Drilled with 5 5/8" Hollow Stem Auger. 0.0'-1.5' DR Drive SPT with 140 lb hammer and 30" fall.
5	1.5/1.5	3 7 10				5.0'-9.0' FAT CLAY (CH): moderate yellowish brown; to dusky brown; trace fine gravel; trace plant roots; medium stiff to stiff; moist.	0	5.0'-6.5', DR.
8	1.0/1.5	6 13				8.0' FAT CLAY (CH): dark yellowish brown; medium stiff to stiff, 15% small gravel clasts.	0	8.5'-10.0', DR.
10	1.0/1.5	11 16 20 33	MW-5/10.5 MW-5/11			BEDROCK 9.0'-11.5' SHALE SILTSTONE: weathered; light olive gray; intensely fractured; very dense; compact; moist.	0	10.0'-11.5', DR.
						Total Depth 11.5'		Install 2" PVC Sch 40 well screen 6.0'-11.0', # 2-12 sand 4.0'-11.0', bentonite seal 2.0'-4.0'. See well construction log.

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: All Terrain

DRILLING EQUIPMENT: CME 550

DRILLER: Richard Lighter

SAMPLING METHOD: Drive sampling

TOTAL DEPTH: 21.0' BGS

START DATE: 4/5/2000

COMPLETION DATE: 4/5/2000

LOGGED BY: R. Heidrick

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; Located 43' N of TW-6.

SURFACE ELEVATION:

DEPTH	RECOVERY RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
1.2-1.5	5	5	MW-6/0.5			FILL 0.0'-1.0' SANDY FAT CLAY (CH): brown; 30% fine and medium sand; stiff, moist; minor pieces of black organics and brick.		Advance boring using 8" Hollow Stem Augers. 0.0'-1.5'; DR Drive 2" Calif mod. split spoon. 140 lb hammer, 30" fall.
		6	MW-6/1			ALLUVIUM 1.0'-4.0' SANDY FAT CLAY WITH GRAVEL (CH): light olive brown; 20% fine to coarse sand; 15% fine gravel of angular shale; stiff, moist.		3.5'-5.0'; DR.
1.3/1.5	3	6	MW-6/4			4.0'-6.0' FAT CLAY with SAND (CH): dark yellowish brown; 15% fine to coarse sand; hard; moist.		6.0' Moderate rig chatter
5		10				BEDROCK 6.0'-15.0' SHALE: gray; moderately to slightly weathered, varies; soft; weak; crushed shale in fat clay matrix; interbedded with slightly weathered shale; moderately hard; moderately strong.		9.5'-11.0'; DR.
10	1.3/1.5	11	MW-6/10			15.0' becomes slightly weathered shale.		Ground water encountered at 14.0' while drilling. 14.5'-16.0'; DR.
		17						
		19						
15	1.1/1.5	16	MW-6/15					
		28						
		50/5						
20	0.9/0.9	21	MW-6/20					20.0'-21.0'; DR.
		50/5						Install 2" PVC Sch 40 MW, 0.01" slots 15.0'-20.0'; # 2-12 sand 13.5'-20.0'; Bentonite seal 11.5'-13.5'. See well construction log.
						Total Depth 21.0'		

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TEST BORING LOG

BOREHOLE NO.: MW-7

WELL NO.: MW-7

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PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST 600

DRILLER: Chris Herrel

SAMPLING METHOD: 1.5" SPT

TOTAL DEPTH: 9.5' BGS

START DATE: 2/25/2000

COMPLETION DATE: 2/25/2000

LOGGED BY: R. Goldberg

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	FID READING (PPM)	REMARKS
0.0	1.0/1.5	2				ALLUVIUM	0	Hollow Stem Auger 5 5/8".
0.0		2				0.0'-6.0' FAT CLAY (CH): grayish brown; soft, wet; trace plant roots.		0.0'-1.5', DR Drove SPT, 140 lb hammer falling 30".
0.0		3						
1.0	1.0/1.5	2					0	3.0'-4.5' DR driller notes harder at 6.0'.
1.0		4						
1.0		5						
6.0	1.0/1.5	6				6.0'-7.5' FAT CLAY WITH GRAVEL (CH/GC): moderate yellowish brown; angular gravel; stiff to very stiff; moist.	0	7.0'-8.5', DR.
6.0		22						
6.0		36						
7.5	0.8/1.0	37				BEDROCK	0	8.5'-9.5', DR.
7.5		50/4"				7.5'-9.5' SHALE/SILTSTONE: severely weathered moderate yellow brown to light olive gray; intensely fractured; very dense; soil-like; damp to moist.	0	See well construction log.
9.5						Total Depth 9.5'.		

PROJECT NAME: Toutelot Cleanup Project	PROJECT NO.: 39901
CLIENT: Granite	DRILLING CONTRACTOR: Clear Heart
DRILLING EQUIPMENT: Morooka MST 600	DRILLER: Chris Herrel
SAMPLING METHOD: 1.5" SPT	TOTAL DEPTH: 15.5' BGS
START DATE: 2/24/2000	COMPLETION DATE: 2/24/2000
LOGGED BY: R. Goldberg	APPROVED BY: A. Buangan CEG 824
LOCATION: North Valley	SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS	
0	1.0/1.5	1				ALLUVIUM 0.0'-13.5' FAT CLAY (CH): dark yellowish brown; trace plant roots; soft, moist.	0	Drilled Hollow Stem Auger 5 5/8". 0.0'-1.5'; DR Drove SPT, 140 lb hammer falling 30".	
		1						0	
		2							
1.0	1.0/1.5	2						0	3.0'-4.5'; DR.
		3							
		4							
5									
10	1.5/1.5	5					-9.0' fines shale clasts in fat clay.	0	9.0'-10.5'; DR.
		7							
		9							
15	2.0/2.0	14					13.5'-14.5' FAT CLAY WITH GRAVEL (CH): moderate yellowish brown; stiff, wet.	0	13.5' - 15.5'; DR.
		35					BEDROCK		
		50/3"					14.5'-15.5' SHALE/SILTSTONE: moderately weathered; light olive gray; intensely fractured; iron stains; very dense to hard; wet.		See well construction log.
						Total Depth 15.5'			
20									

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PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST 600

DRILLER: Chris Herrel

SAMPLING METHOD: 1.5" SPT

TOTAL DEPTH: 15.5' BGS

START DATE: 2/25/2000

COMPLETION DATE: 2/25/2000

LOGGED BY: R. Goldberg

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0-2.0'		1 2 3 6				ALLUVIUM 0.0'-7.5' FAT CLAY (CH): grayish brown to dusky brown; trace plant roots; soft; moist.	0	Drilled 5 5/8" Hollow Stem Auger 0.0'-2.0', DR Drove SPT, 140 lb hammer falling 30".
3.0-4.5'		3 4 6					0	3.0'-4.5', DR.
7.5-9.0'		5 8 10				7.5'-9.0' FAT CLAY WITH SAND (CH): moderate brown; 10% medium sand grains; angular; stiff to very stiff; moist.	0	7.5'-9.0', DR.
9.0-9.5'		3 7 20				9.0'-9.5' FAT CLAY WITH GRAVEL (CH): moderate brown; 15% fine gravel; angular; stiff; moist.	0	9.5'-11.0', DR.
9.5-15.5'		17 10 11				BEDROCK 9.5'-15.5' SHALE: light olive gray; weathered; iron stained; intensely fractured to crushed; appears like compacted gravelly clay; very dense; damp.	0	11.5'-13.0', DR.
14.0'-15.5'		38 50/2"				Total Depth 15.5'	0	14.0' Hand drilling. 15.0'-15.5', DR. See Well Construction log.

PROJECT NAME: Tourtelot Cleanup Project PROJECT NO.: 39901

CLIENT: Granite DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST-600 DRILLER: Chris Herrel

SAMPLING METHOD: 1.5" SPT TOTAL DEPTH: 15.5' BGS

START DATE: 3/28/2000 COMPLETION DATE: 3/28/2000

LOGGED BY: R. Heidrick APPROVED BY: A. Buangan CEG 824

LOCATION: South Valley SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0'						FILL		Drilled with 5 5/8" Hollow Stem Auger.
0.0'-11.0'						GRAVELLY FAT CLAY (CH): dark brown; 10% fine sand; firm; moist; occasional pieces of gravel size sandstone; occasional pockets of free water.		2.0'-3.5'; DR Drove SPT 140 lb hammer with 30" fall. Water first encountered at 3.5'
3.0'						One 1" piece of severely weathered sandstone.		
5.0'	1.2/1.5	2	B-1					
		3						
		3						
5.0'	1.1/1.5	2	B-2			Becomes mottled black and reddish brown 1/16" voids w/free water.		5.0'-6.5'; DR.
		3						
		6						
10.0'	1.5/1.5	4	B-3			10.5' Mangled metal shard 3/4" x 1/4".		
		4				11.0' Voids with water.		10.0'-11.5'; DR.
		6						
						COLLUVIUM		
						11.0'-13.5' SANDY FAT CLAY WITH GRAVEL (CH): 65% fines; 20% fine to coarse sand; 15% fine gravel; stiff; moist; gravel randomly oriented.		
15.0'	1.5/1.5	16	B-4			BEDROCK		Driller noted hard drilling at 13.5'
		21				13.5'-15.5' SANDSTONE: dark yellowish brown; severely weathered; very soft to soft; friable to weak; poorly cemented; iron oxide staining.		14.0'-15.5'; DR.
		41						
						Total Depth 15.5'		
20.0'								WELL CONSTRUCTION 0.0'-10.0' 2" Threaded, solid Sch 40 PVC. 10.0'-15.0' 2" Threaded, slotted (0.01") Sch 40 PVC. 8.0'-15.0' # 2/12 Lonestar sand. 6.0'-8.0' Bentonite seal. 0.0'-6.0' Cement grout. See well construction log.

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PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST-600

DRILLER: Chris Herrel

SAMPLING METHOD: 1.5" SPT

TOTAL DEPTH: 23.0' BGS

START DATE: 3/27/2000

COMPLETION DATE: 3/28/2000

LOGGED BY: R. Heidrick

APPROVED BY: A. Buangan CEG 824

LOCATION: South Valley

SURFACE ELEVATION:

DEPTH	RECOVERY / RqD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0	1.0/1.5	3	B-1			COLLUVIUM 0.0'-5.0' FAT CLAY with SAND (CH): dark yellowish brown; 80% highly plastic clay; 20% fine to coarse sand; stiff; moist; some organic material.		Drilled with 5 5/8" Hollow Stem Auger. 2.0'-3.5': DR Drove split spoon 140 lb hammer with 30" fall.
5.0	1.3/1.5	2 4 6	B-2			ALLUVIUM 5.0'-15.0' FAT CLAY (CH): dark brown; stiff; moist.		5.0'-6.5', DR.
10.0	1.5/1.5	2 4 5	B-3					10.0'-11.5', DR.
15.0	1.5/1.5	5 6 6	B-4			15.1'-21.0' SANDY FAT CLAY WITH GRAVEL (CH): brown; 60% clay; 25% fine to coarse sand; 15% fine gravel of sandstone and shale; stiff; wet.		Water first encountered at 14.0'. 15.0'-16.5', DR. 20.0'-21.3', DR. 21.0'-23.0' rough drilling.
20.0	1.3/1.3	5 12 50/4"	B-5 B-6			BEDROCK 21.0'-23.0' SANDSTONE: dark grayish brown; moderate to slightly weathered; moderately hard; moderately strong; intensely fractured; moist to wet. Total Depth 23.0'.		WELL CONSTRUCTION 0.0'-13.0' 2" Threaded, solid Sch 40 PVC. 13.0'-23.0' 2" Threaded, slotted (0.01") Sch 40 PVC. 10.5'-23.0' #2/12 Lonestar sand. 8.5'-10.0' Bentonite seal. 0.0'-8.5' Grout with bentonite.

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 35734

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST-600

DRILLER: Chris Herrel

SAMPLING METHOD: 1.5" SPT

TOTAL DEPTH: 28.0' BGS

START DATE: 12/18/1999

COMPLETION DATE: 12/18/1999

LOGGED BY: A. Storm

APPROVED BY: A. Buangan CEG 824

LOCATION: South Valley

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0'						EMBANKMENT FILL		Drilled with 5 5/8" Hollow Stem Auger.
0.0'-5.0'	0.5/1.5	4 11 7				0.0'-5.0' FAT CLAY WITH GRAVEL (CH): mottled dark yellowish orange, moderate yellow brown and light olive gray; ~20-25% gravel size fragments of sandstone, siltstone and shale; rock fragments are moderately weathered; firm to stiff; dry to damp.	10.5	5.0'-6.5', DR Drove SPT with 140 lb hammer and 30" fall. Hard sandstone in drive shoe.
10.0'	1.5/2.0	4 4 6 7				10.0' Fragments of sandstone and siltstone in fat clay.	4	10.0'-12.0', DR.
15.0'	1.0/1.5	3 6 7				15.0' Organics in fat clay.	2	15.0'-16.5', DR.
20.0'	1.5/1.5	4 6 13				20.0' Angular clasts of gray siltstone in fat clay matrix.	5	20.0'-21.5', DR. 21.0' Cobble of siltstone
23.0'								23.0' Drilling faster, probably first water. Grab groundwater sample

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TEST BORING LOG

BOREHOLE NO.: (TW-12)

WELL NO.: MW-12

PROJECT NAME: Tourtlot Cleanup Project

PROJECT NO.: 35734

PAGE: 2 OF 2

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
1.5	2.0	10				25.0'-26.5 COARSE SAND TO FINE GRAVEL (SP); saturated loose clasts are subangular to slightly rounded gray siltstone; possible drain rock.	6	collected: TW-12, 12/22/99, 12:30; TW-12A, 12/22/99, 13:00
14		14				BEDROCK		Drill out hole to 28.0', set well.
18		18				26.0'-28.0 SILTSTONE: moderately weathered; olive gray with clasts of angular gray siltstone up to 1"; dense; moist to wet.		Casing: + 2.0' to 18.0' bgs.
30						Total Depth 28.0'		Slotted screen(0.010"): 18.0' to 28.0' bgs using 1.0" I.D. PVC
35								Sand: 14.5' to 28.0' bgs.
40								Bentonite: 12.4' to 14.5' bgs.
45								Portland Cement to surface.
50								
55								

PROJECT NAME: Tourtelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST-600

DRILLER: Chris Herrel

SAMPLING METHOD: 1.5" SPT

TOTAL DEPTH: 20.5' BGS

START DATE: 3/29/2000

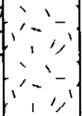
COMPLETION DATE: 3/29/2000

LOGGED BY: R. Heidrick

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0' - 2.5'			MW-13A/0.5 MW-13B/0.5			FILL 0.0'-2.5' SANDY FAT CLAY (CH): dark yellowish brown; 25% fine to medium sand; 5% fine gravel; dry.		Drilled with 5 5/8" Hollow Stem Auger. 0.0'-1.5': DR Drove SPT, 140 lb hammer and 30" fall. 2.0'-3.5': DR.
2.5' - 15.5'			MW-13/4 MW-13/4.5			BEDROCK 2.5'-15.5' SHALE: dark gray; severely to moderately weathered; very soft; friable; intensely fractured to crushed; dry; iron oxide stains along fractures; occasional caliche deposits.		3.5'-5.0': DR. 5.0'-6.5': DR.
6.0'						6.0' Becomes damp.		
10.0'			MW-13/10			10.0' Dry, becomes moderately weathered.		10.0'-11.5': DR.
15.5' - 20.5'			MW-13/15 MW-13/20			15.5'-20.5' SHALE: slightly weathered to fresh; minor local iron oxide staining on bedding planes; bedding becomes apparent as thinly laminated.		14.5'-15.5': DR. Moved 3 ft to obtain environmental samples. 20.0'-20.5': DR.
						Total Depth 20.5'		WELL CONSTRUCTION 0.0'-9.0' 2" solid Sch 40 PVC. 9.0'-19.0' 2" Threaded, slotted (0.01") Sch 40 PVC. 7.0'-19.0' #12 sand. 5.0'-7.0' Bentonite. 0.0'-5.0' Grout. See well construction log.

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TEST BORING LOG

BOREHOLE NO.: MW-14

WELL NO.: MW-14

PAGE: 1 OF 1

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST-600

DRILLER: Chris Herrel

SAMPLING METHOD: 1.5" SPT and 2" Cal. Mod. Split Spoon TOTAL DEPTH: 13.0' BGS

START DATE: 3/29/2000

COMPLETION DATE: 3/29/2000

LOGGED BY: R. Heidrick

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley; east end

SURFACE ELEVATION:

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
1.2/1.5		3 4 6	MW-14/0.5 MW14A/0.5 MW-14/1			ALLUVIUM 0.5'-5.0' FAT CLAY (CH): dark brown; 15% fine sand; stiff, moist.		Drilled with 5 5/8" Hollow Stem Auger. 0.0'-1.5', DR Drove SPT and 2" Calif Sampler, 140 lb hammer and 30" fall. 2.0'-3.5', DR. 3.5'-5.0', DR.
5	1.2/1.2	3 5 5	MW-14/4			COLLUVIUM 5.0'-10.0' SANDY FAT CLAY with GRAVEL (CH): dark yellowish brown; mottled reddish brown and black; 30% fine to medium sand (severely weathered sandstone); 10% gravel sized sandstone; stiff, moist.		5.0'-6.5', DR. 7.0' harder drilling.
10	1.5/1.5 1.5/1.5	8 10 12 10 14 27	MW-14/10			BEDROCK 10.0'-13.0' SHALE: olive brown; severely weathered; very soft; plastic and friable; locally crushed; crumbles to angular gravel with clay matrix; wet; iron oxide staining.		10.0'-11.5', DR. 10.0' water in shale fractures at contact. 11.5'-13.0', DR.
15						Total Depth 13.0'		Moved 3 ft to obtain environmental samples.
20								WELL CONSTRUCTION 0.0'-8.0' solid 2" Threaded Sch 40 PVC. 8.0'-13.0' slotted (0.01") Threaded Sch 40 PVC. 6.0'-13.0' #2/12 Lonestar sand. 4.0'-6.0' Bentonite. 0.0'-4.0' Grout.

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST-600

DRILLER: Chris Herrel

SAMPLING METHOD: 1.5" SPT and 2" Cal. Mod. Split Spoon TOTAL DEPTH: 22.0' BGS

START DATE: 3/30/2000

COMPLETION DATE: 3/30/2000

LOGGED BY: R. Heidrick

APPROVED BY: A. Buangan CEG 824

LOCATION: South Valley

SURFACE ELEVATION:

DEPTH	RECOVERY/ RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0-1.5'	1.5/1.5	4	MW15/0.5			FILL 0.0'-1.5' SANDY FAT CLAY (CH): dark yellowish brown; 30% fine to coarse sand; firm; moist.		Advance boring using 6" Hollow Stem Augers. Drive samples using SPT and 2" Cal. sampler using 140 lb hammer with 30" fall. 0.5'-2.0', DR.
1.5-19.5'	1.5/1.5	5 6	MW15A/0.5			ALLUVIUM 1.5'-19.5' FAT CLAY (CH): dark brown; stiff; damp.		
4.0-5.5'	1.5/1.5	5	MW-15/4					4.0'-5.5', DR.
9.0-11.5'	1.5/1.5	9	MW15/4.5					10.0'-11.5', DR.
10.0-11.5'	1.5/1.5	12	MW-15/10			10.0' becomes very stiff		10.0'-11.5', DR.
15.0-16.5'	1.5/1.5	14	MW-15/15			15.0' becomes moist.		15.0'-16.5', DR.
20.0-21.5'	1.5/1.5	8	MW-15/15					20.0'-21.5', DR.
19.5-22.0'	1.0/1.5	8	MW-15/20			BEDROCK 19.5'-22.0' SHALE: brown; moderate to severely weathered; very soft; friable to plastic; crushed; slightly damp; clay matrix; iron oxide stains.		WELL CONSTRUCTION 0.0'-17.0' solid Sch 40 PVC. 17.0'-22.0' slotted (0.01") Sch 40 PVC. 13.0'-15.0' Bentonite. 15.0'-23.0' #2/12 Lonestar sand. 0.0'-13.0' Grout.
22.0'	1.0/1.5	8	MW-15/20			Total Depth 22.0'.		

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TEST BORING LOG

BOREHOLE NO.: GB-1

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Toutelot Cleanup Project*

PROJECT NO.: 39901

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *Chad Dickey*

SAMPLING METHOD: *N/A*

TOTAL DEPTH: *6.0' BGS*

START DATE: *3/23/2000*

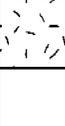
COMPLETION DATE: *3/23/2000*

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *South Valley; Adjacent to Casey Court*

SURFACE ELEVATION: *-215'*

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0						FILL 0.0'-1.0' GRAVELLY SILT (ML): brown clay; brown; 15% olive gray shales gravel; firm; damp.		Hand Auger with 4" auger. Logged by drill cuttings.
1						COLLUVIUM 1.0'-4.0' LEAN CLAY TO FAT CLAY (CL-CH): brown; moderately to highly plastic; firm; damp; grades to clay with shale gravel at 4.0'-4.5'.		
5						BEDROCK 4.5'-6.0' SHALE: olive brown to olive gray; moderately weathered; oxidized; crumbles to a gravelly clay; soft in hardness; damp to moist.		Refusal by hand auger.
6						Total Depth 6.0'		

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: Earth Tech

DRILLING EQUIPMENT: Hand Auger

DRILLER: Chad Dickey

SAMPLING METHOD: N/A

TOTAL DEPTH: 3.0' BGS

START DATE: 3/23/2000

COMPLETION DATE: 3/23/2000

LOGGED BY: R. Burzinski

APPROVED BY: A. Buangan CEG 824

LOCATION: South Valley; Adjacent to Casey Court

SURFACE ELEVATION: -220'

DEPTH	RECOVERY/ RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPW)	REMARKS
0						<p>TOPSOIL 0.0'-2.5' FAT CLAY (CH): moderate brown; firm; damp.</p>		Drilled with 4" hand auger.
2.5						<p>BEDROCK 2.5'-3.0' SILTSTONE: moderate yellowish brown; severely weathered, soft in hardness; dense; moist. Total Depth 3.0'.</p>		Refusal by hand auger.
5								
10								
15								
20								

TEST BORING LOG

BOREHOLE NO.: GB-3

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Toutelot Cleanup Project* PROJECT NO.: *39901*

CLIENT: *Granite* DRILLING CONTRACTOR: *Earth Tech*

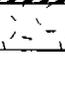
DRILLING EQUIPMENT: *Hand Auger* DRILLER: *Chad Dickey*

SAMPLING METHOD: *N/A* TOTAL DEPTH: *3.0' BGS*

START DATE: *3/23/2000* COMPLETION DATE: *3/23/2000*

LOGGED BY: *R. Burzinski* APPROVED BY: *A. Buangan CEG 824*

LOCATION: *South Valley,, Adjacent to Casey Court* SURFACE ELEVATION: *-222'*

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
						TOPSOIL 0.0'-2.0' FAT CLAY (CH): moderate brown; firm; damp.		Drilled with 4" auger.
						BEDROCK 2.0'-3.0' SHALE: moderate yellowish brown to olive gray; severely weathered; iron stained; soft in hardness; dense; moist. Total Depth 3.0'.		Refusal by hand auger.
5								
10								
15								
20								

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST 600

DRILLER: Chris Herrel

SAMPLING METHOD: 1.5" SPT

TOTAL DEPTH: 10.5' BGS

START DATE: 3/23/2000

COMPLETION DATE: 3/23/2000

LOGGED BY: R. Heidrick

APPROVED BY: A. Buangan CEG 824

LOCATION: South Valley; Sewerline Rd

SURFACE ELEVATION:

DEPTH	RECOVERY/ RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPW)	REMARKS
0.0'						FILL		Advance boring using 5 5/8" hollow stem augers. Drive samples collected with SPT using 140 lb hammer with 30" fall.
0.0'-0.5'					Asphalt concrete over base course.			
0.5'-5.0'					FAT CLAY WITH SAND (CH): yellowish brown; ~15% fine sand; very stiff; moist; occasional fine grained size pieces of angular shale.			
5.0'								
5.0'	0.5/1.5	5	B-1					
		7						
		9						
5.0'	1.0/1.5	5	B-2			COLLUVIUM/SLIDE DEBRIS		8.0' Drill noted harder drilling.
		7				FAT CLAY (CH): dark yellowish brown; 10% fine sand; very stiff; moist; occasional pieces of angular shale.		
		9	B-3					
	1.4	9						
		8						
		10				-8' Crushed and randomly oriented; fibrous organic.		
						BEDROCK.		
10.0'	0.5/0.5	50/5"	B-4			8.5'-10.5' SHALE: very dark grayish brown; moderately weathered; soft; weak; crushed; crumbles to gravel chunks.		Backfilled boring with cuttings and bentonite.
						Total Depth 10.5'.		

PROJECT NAME: *Toutelot Cleanup Project*

PROJECT NO.: 39901

CLIENT: *Granite*

DRILLING CONTRACTOR: *Clear Heart*

DRILLING EQUIPMENT: *Morooka MST 600*

DRILLER: *Chris Herrel*

SAMPLING METHOD: *1.5" SPT*

TOTAL DEPTH: *7.5' BGS*

START DATE: *3/23/2000*

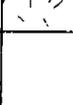
COMPLETION DATE: *3/23/2000*

LOGGED BY: *R. Heidrick*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *South Valley; Sewerline Rd*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0'-0.5'		5	B-1			FILL 0.0'-0.5' Asphaltic Concrete over base course.		<i>Advance boring using 5 5/8" hollow stem augers. Drive samples collected with SPT using 140 lb hammer falling 30".</i>
0.5'-2.5'		7 9				COLLUVIUM 0.5'-2.5' FAT CLAY (CH): dark yellowish brown; 10% fine sand; moist.		
2.5'-4.5'		8 14	B-2			COLLUVIUM 2.5'-4.5' FAT CLAY WITH GRAVEL (CH): light olive brown; 20% angular gravel sized shale; very stiff; moist.		
4.5'-7.5'		17 28 35 43	B-3			BEDROCK 4.5'-7.5' SHALE: olive brown; moderately weathered; soft; weak; iron stained fracture surfaces.		<i>Backfilled with cuttings and bentonite.</i>
						Total Depth 7.5'		

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST 600

DRILLER: Chris Herrel

SAMPLING METHOD: 1.5" SPT

TOTAL DEPTH: 5.0' BGS

START DATE: 3/23/2000

COMPLETION DATE: 3/23/2000

LOGGED BY: R. Heidrick

APPROVED BY: A. Buangan CEG 824

LOCATION: South Valley; Sewerline Rd

SURFACE ELEVATION:

DEPTH	RECOVERY/ RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPH)	REMARKS
5	1.2/1.5	11	B-1			FILL 0.0'-0.5' Asphaltic Concrete over Base Course.		Advance boring using 5 5/8" hollow stem augers. Drive samples collected with SPT using 140 lb hammer falling 30".
		18				0.5-2.2' SANDY FAT CLAY (CH): dark yellowish brown; 30% sand and fine gravel; very stiff; moist.		
5	1.0/1.0	28	B-2			BEDROCK 2.2'-5.0' SANDSTONE: dark yellowish brown; moderately weathered; soft; friable; massive; iron staining.		Backfilled boring with cuttings and bentonite.
		50/5"				Total Depth 5.0'.		

TEST BORING LOG

BOREHOLE NO.: GB-7

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Toutelot Cleanup Project*

PROJECT NO.: 39901

CLIENT: *Granite*

DRILLING CONTRACTOR: *Clear Heart*

DRILLING EQUIPMENT: *Morooka MST 600*

DRILLER: *Chris Herrel*

SAMPLING METHOD: *1.5" SPT*

TOTAL DEPTH: *7.5' BGS*

START DATE: *3/23/2000*

COMPLETION DATE: *3/23/2000*

LOGGED BY: *R. Heidrick*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *South Valley; Sewerline Rd*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0	0.9/1.5	2	B-1			FILL 0.0'-0.5' Asphaltic Concrete over base course. COLLUVIUM/SLIDE DEBRIS		Advance boring using 5 5/8" hollow stem augers. Drive samples collected with SPT using 140 lb hammer falling 30".
0.5	1.5/1.5	2 2 3	B-1			0.5'-6.2' FAT CLAY (CH): dark brown; 5% fine shale gravel; firm; moist; occasional fine fibrous organics.		
5.0	1.5/1.5	4 4 6	B-2			-4.0' very dark grayish brown layer, becomes stiff.		
6.2	1.5/1.5	23 34 44	B-3			BEDROCK. 6.2'-7.5' SHALE: brown; moderately weathered; soft; weak; pervasively fractured; iron staining.		Backfilled with cuttings and bentonite.
7.5						Total Depth 7.5'.		

PROJECT NAME: *Toutelot Cleanup Project*

PROJECT NO.: 39901

CLIENT: *Granite*

DRILLING CONTRACTOR: *Clear Heart*

DRILLING EQUIPMENT: *Morooka MST 600*

DRILLER: *Chris Herrel*

SAMPLING METHOD: *1.5" SPT*

TOTAL DEPTH: *7.5' BGS*

START DATE: *3/23/2000*

COMPLETION DATE: *3/23/2000*

LOGGED BY: *R. Heidrick*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *South Valley; Sewerline Rd*

SURFACE ELEVATION:

DEPTH	RECOVERY/ RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0'						FILL 0.0'-2.5' GRAVELLY FAT CLAY (CH): brown; 30% angular gravel; stiff, moist.		Advance boring using 5 5/8" hollow stem augers. Drive samples collected with SPT using 140 lb hammer falling 30".
2.5'					COLLUVIUM 2.5'-5.0' FAT CLAY WITH GRAVEL (CH): (10 YR 4/3); 20% soft angular shale randomly oriented in clay matrix; very stiff, moist; iron stained.			
5.0'					BEDROCK 5.0'-7.5' SHALE: very dark gray, moderately weathered; soft; weak; crumbles to gravel chunks; fracture coating extensive; iron oxide staining.			
7.5'						Total Depth 7.5'.		Backfilled boring with cuttings and bentonite chips.

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TEST BORING LOG

BOREHOLE NO.: GB-9

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: *Toutelot Cleanup Project*

PROJECT NO.: 39901

CLIENT: *Granite*

DRILLING CONTRACTOR: *Earth Tech*

DRILLING EQUIPMENT: *Hand Auger*

DRILLER: *Chad Dickey*

SAMPLING METHOD: *N/A*

TOTAL DEPTH: *5.3' BGS*

START DATE: *3/23/2000*

COMPLETION DATE: *3/23/2000*

LOGGED BY: *R. Burzinski*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *South Valley*

SURFACE ELEVATION:

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
						<p>LANDSLIDE DEBRIS</p> <p>0.0'-4.0' FAT CLAY (CH): moderate brown; trace shale fragments; damp; firm.</p>		Drilled with 4" hand auger.
5						<p>4.0'-5.0' FAT CLAY WITH GRAVEL (CH): moderate yellowish brown; 10% angular shale fragments; firm; damp.</p>		Refusal by hand auger.
						<p>BEDROCK</p> <p>5.0'-5.5' SHALE: olive gray to moderate yellowish brown; moderately weathered; soft in hardness; moist.</p> <p>Total Depth 5.5'.</p>		
10								
15								
20								

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: Earth Tech

DRILLING EQUIPMENT: Hand Auger

DRILLER: Chad Dickey

SAMPLING METHOD: N/A

TOTAL DEPTH: 3.0' BGS

START DATE: 3/23/2000

COMPLETION DATE: 3/23/2000

LOGGED BY: R. Burzinski

APPROVED BY: A. Buangan CEG 824

LOCATION: South Valley

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0'						TOPSOIL		Drilled with 4" hand auger.
0.0'-2.5'						0.0'-2.5' GRAVELLY FAT CLAY (CH): moderate brown; 10% shale fragments; sticky.		
2.5'-3.0'						2.5'-3.0' GRAVELLY FAT CLAY (CH): mottled moderate yellowish brown and moderate brown; about 5-10% shale fragments; sticky, moist, firm.		Refusal by hand auger. Auger bit spinning on hard surface; could be sandstone; sandstone outcrop close by.
						Total Depth 3'		

TEST BORING LOG

BOREHOLE NO.: GB-11

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: Earth Tech

DRILLING EQUIPMENT: Hand Auger

DRILLER: Chad Dickey

SAMPLING METHOD: N/A

TOTAL DEPTH: 6.0' BGS

START DATE: 3/23/2000

COMPLETION DATE: 3/23/2000

LOGGED BY: R. Burzinski

APPROVED BY: A. Buangan CEG 824

LOCATION: South Valley

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0						ALLUVIUM		Drilled with 4" hand auger.
0.0-2.5'						0.0'-2.5' FAT CLAY (CH): olive brown; soft; moist; sticky; trace rocks.		
2.5-6.0'						2.5'-6.0' FAT CLAY (CH): mottled light olive gray, moderate brown and moderate yellowish brown; sticky; wet at 4'.		
5						Total Depth 6.0'		Refusal at 5.0' auger bit spinning on hard surface.
10								
15								
20								

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST 600

DRILLER: Chris Herrel

SAMPLING METHOD: 1.5" SPT

TOTAL DEPTH: 5.5' BGS

START DATE: 3/23/2000

COMPLETION DATE: 3/23/2000

LOGGED BY: R. Heidrick

APPROVED BY: A. Buangan CEG 824

LOCATION: South Valley; Sewerline Rd

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
5	1.5/1.5	14	B-1	[Symbol]	[Symbol]	FILL 0.0'-2.2' FAT CLAY WITH GRAVEL (CH): yellowish brown; 75% medium to high plastic clay; 25% fine angular gravel; hard; moist.		Advance boring using 5 5/8" hollow stem augers. Drive samples collected with SPT using 140 lb hammer falling 30".
		18				BEDROCK 2.2'-5.5' SHALE: brown; moderately weathered; soft; weak; intensely fractured; iron oxide staining.		
	21							
5	1.5/1.5	14	B-2	[Symbol]	[Symbol]			Backfilled boring with cuttings and bentonite chips.
		20						
		30				Total Depth 5.5'		

PROJECT NAME: *Toutelot Cleanup Project*

PROJECT NO.: 39901

CLIENT: *Granite*

DRILLING CONTRACTOR: *Clear Heart*

DRILLING EQUIPMENT: *Morooka MST 600*

DRILLER: *Chris Herrel*

SAMPLING METHOD: *1.5" SPT*

TOTAL DEPTH: *13.5' BGS*

START DATE: *3/24/2000*

COMPLETION DATE: *3/24/2000*

LOGGED BY: *R. Heidrick*

APPROVED BY: *A Buangan*

LOCATION: *South Valley; Sewerline Rd*

SURFACE ELEVATION:

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (ppm)	REMARKS
5	1.1/1.5	2	B-1			FILL 0.0'-0.5' Asphaltic Concrete over Base Course. 0.5'-3.0' FAT CLAY (CH): dark yellowish brown; 15% fine gravel; 10% fine sand; stiff, moist.		Advance boring using 5 5/8" hollow stem augers. Drive samples collected with SPT using 140 lb hammer falling 30".
	1.5/1.5	4	B-2			COLLUVIUM /SLIDE DEBRIS 3.0'-11.5' FAT CLAY WITH GRAVEL (CH): light olive brown; 20% angular shale randomly oriented in clay matrix; stiff, moist.		
6	1.5/1.5	4	B-2					
	1.5/1.5	6	B-3					
10	1.5/1.5	6	B-4					
	1.5/1.5	7	B-5					
15	1.5/1.5	7	B-6			BEDROCK 11.5'-13.5' SHALE: olive brown; severely weathered; very soft, friable; fracture surfaces; iron stained; crushed and pulverized; occasional lenses of sandstone.		11.5' Driller noted stiffer drilling.
		8						Backfilled boring with cutting and bentonite.
		12						
						Total Depth 13.5'		

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST 600

DRILLER: Chris Herrel

SAMPLING METHOD: 1.5" SPT

TOTAL DEPTH: 26.5' BGS

START DATE: 3/24/2000

COMPLETION DATE: 3/24/2000

LOGGED BY: R. Heidrick

APPROVED BY: A. Buangan CEG 824

LOCATION: South Valley; Sewerline Rd 19' N.50 E of MH #14 SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0'						FILL/LANDSLIDE REPAIR 0.0'-0.5' CLAYEY GRAVEL/GRAVELLY CLAY (CH-GC): grayish brown; 50% fine gravel to 1" angular, igneous (imported crushed rock); 50% native fat clay.		Advance boring using 5 5/8" hollow stem augers. Drive samples collected with SPT using 140 lb hammer falling 30".
5.0'	1.0/1.5	3	B-1			5.0'-23.5' GRAVELLY FAT CLAY (CH): dark yellowish brown; dark reddish brown mottling; 80% high plastic clay; 20% gravel, angular, shale impart rock; saturated at 7'; stiff.		▽ Ground water encountered at 7.0'.
		3						
		4						
	1.5/1.5	3	B-2					
		6						
		6						
	1.5/1.5	3	B-3			-9.0' pockets of fat clay alternate w/crushed shale, fill.		
10		4						
		5						
	1.5/1.5	6	B-4			-11.0' dark gray mottling fill.		
		5						
		5						
	1.3/1.5	3	B-5					
		5						
		8						
15	1.5/1.5	3	B-6			~15.0' firm; saturated.		
		3						
		4						
	1.0/1.5	4	B-7					
		8						
		12				-19.0' one 2" piece of sandstone.		
20	1.2/1.5	5	B-8			-20.0' chards of angular shale.		
		4						
		3						
	1.3/1.5	7	B-9					17.0' Driller noted light chatter
		14						
		15						
						BEDROCK 23.5'-26.5' SHALE: very dark grayish brown; severely		

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TEST BORING LOG

BOREHOLE NO.: GB-14

WELL NO.: NA

PROJECT NAME: Toutlet Cleanup Project

PROJECT NO.: 39901

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DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
	1.5/1.5	6 11 37	B-10			weathered; soft; weak; crushed fracture surface; iron stained; laminated.		Backfilled boring with cuttings and bentonite
						Total Depth 26.5'		
30								
35								
40								
45								
50								
55								

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PROJECT NAME: <i>Toutelot Cleanup Project</i>	PROJECT NO.: <i>39901</i>
CLIENT: <i>Granite</i>	DRILLING CONTRACTOR: <i>Clear Heart</i>
DRILLING EQUIPMENT: <i>Morooka MST 600</i>	DRILLER: <i>Chris Herrel</i>
SAMPLING METHOD: <i>1.5" SPT</i>	TOTAL DEPTH: <i>11.5' BGS</i>
START DATE: <i>3/24/2000</i>	COMPLETION DATE: <i>3/24/2000</i>
LOGGED BY: <i>R. Heidrick</i>	APPROVED BY: <i>A. Buangan CEG 824</i>
LOCATION: <i>South Valley; Sewerline Rd</i>	SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0 - 5	1.5/1.5	2 3 3	B-1			FILL Asphaltic Concrete over Base Course. 0.5'-5.0' SANDY FAT CLAY (CH): dark yellowish brown mottled yellowish reddish brown; 15% fine sand; 15% fine gravel; firm; moist.		Advance boring using 5 5/8" hollow stem augers. Drive samples collected with SPT using 140 lb hammer falling 30". 8.5'-10.0' Driller noted harder drilling.
5 - 8.5	1.5/1.5	5 5 8	B-2			COLLUVIUM 5.0'-8.5' GRAVELLY FAT CLAY (CH): dark yellowish brown; 30% angular shale, gravel size in clay matrix, randomly oriented; iron stained.		
8.5 - 11.5	1.5/1.5	13 22 33	B-3			BEDROCK 8.5'-11.5' SHALE: dark gray, moderately weathered; soft; weak; crumbles to gravel chunks; iron stained.		
						Total Depth 11.5'.		Backfilled with cuttings and bentonite.

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PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: Clear Heart

DRILLING EQUIPMENT: Morooka MST 600

DRILLER: Chris Herrel

SAMPLING METHOD: 1.5" SPT

TOTAL DEPTH: 18.0' BGS

START DATE: 3/27/2000

COMPLETION DATE: 3/27/2000

LOGGED BY: R. Heidrick

APPROVED BY: A. Buangan CEG 824

LOCATION: South Valley

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0	1.3/1.5	2	B-1			FILL 0.0'-2.0' SANDY FAT CLAY (CH): dark yellowish brown; 65% high plastic clay; 30% fine to coarse sand; firm; moist; ~5% organic content.		Advance boring using 5 5/8" hollow stem augers. Drive samples collected with SPT using 140 lb hammer falling 30".
2.0		3				ALLUVIUM 2.0'-15.0' SANDY FAT CLAY (CH): dark yellowish brown; 5% organic content of fine roots; firm; moist.		
3.0		4						
4.0		4						
5.0	1.5/1.5	3	B-2					
6.0		4						
7.0		5						
8.0	1.5/1.5	3	B-3			~8.0' becomes mottled black (decomposed organics).		
9.0		5						
10.0		5						
11.0	0.0/1.5	3	B-4					▽ Ground water first encountered at 11.5'.
12.0		4						
13.0		4						
14.0	1.1/1.5	6	B-5			COLLUVIUM 14.0'-16.0' SANDY FAT CLAY WITH GRAVEL (CH): yellowish brown mottled black and reddish brown; 20% fine gravels of angular shale and sandstone; 20% fine sand; very stiff, wet; gravel randomly oriented.		14.0' harder drilling.
15.0		8						
16.0		14						
17.0		20	B-6			BEDROCK 16.0'-18.0' SHALE: very dark grayish brown; severely weathered; soft; locally bedded at high angles; locally weathered to fat clay.		Backfilled with cuttings and bentonite pellets.
18.0		26						
19.0		36						
20.0						Total Depth 18.0'		

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PROJECT NAME: *Toutelot Cleanup Project*

PROJECT NO.: 39901

CLIENT: *Granite*

DRILLING CONTRACTOR: *All Terrain*

DRILLING EQUIPMENT: *CME 650*

DRILLER: *M. Johnson*

SAMPLING METHOD: *2.5" Split Spoon*

TOTAL DEPTH: *8.8' BGS*

START DATE: *4/18/2000*

COMPLETION DATE: *4/18/2000*

LOGGED BY: *R. Heidrick*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *Ridge at east end*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0 - 1.5	0.5/1.5	8 13 17	L-1	☒		COLLUVIUM 0.0'-7.5' FAT CLAY (CH): dark brown; 10% fine sand; hard; moist; fine roots and organics.		Drilled with 8" hollow stem auger. 1.0'-2.5' DR Drive 2 1/2" split spoon with 140 lb hammer, 30" fall. Pocket penetrometer (PP) 4.8 tsf.
1.5 - 5.0	1.5/1.5	5 8 13	L-2	☒		4.0' Slight increase in moisture.		4.0'-5.5', DR. PP, 2.4 tsf.
5.0 - 8.8	0.8/0.8	24 50/3"	L-3	☒		BEDROCK 7.5'-8.8' SANDSTONE: light yellowish brown; moderately weathered; moderately hard; closely fractured; very dense; dry. Total Depth 8.8'.		7.5' Driller noted harder drilling. 8.0'-8.8', DR. Backfilled with cuttings.

PROJECT NAME: *Toutelot Cleanup Project*

PROJECT NO.: 39901

CLIENT: *Granite*

DRILLING CONTRACTOR: *All Terrain*

DRILLING EQUIPMENT: *CME 650*

DRILLER: *M. Johnson*

SAMPLING METHOD: *2.5" Split Spoon*

TOTAL DEPTH: *13.5' BGS*

START DATE: *4/18/2000*

COMPLETION DATE: *4/18/2000*

LOGGED BY: *R. Heidrick*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *Ridge at east end*

SURFACE ELEVATION:

DEPTH	RECOVERY/ RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0' - 12.0'	1.5/1.5	8 12 19	L-1	X		COLLUVIUM 0.0'-12.0' FAT CLAY (CH): <i>very dark brown; very stiff, moist; trace of organics; roots.</i>		<i>Drilled with 8" hollow stem auger. 1.0'-2.5' DR Drive 2 1/2" split spoon with 140 lb hammer, 30" fall. Pocket penetrometer (PP) 1.8 tsf.</i>
1.0' - 5.0'	1.0/1.5	7 9 19	L-2	X				<i>4.0'-5.5'; DR. PP, 2.4 tsf.</i>
5.0' - 10.0'	1.5/1.5	5 12 21	L-3	X		<i>8.0' up to 10% sand content.</i>		<i>8.0'-9.5'; DR. PP, 3.2 tsf.</i>
10.0' - 13.5'	1.5/1.5	4 32 50	L-4	X		BEDROCK 12.0'-13.5' SHALE/SILTSTONE: <i>brown; moderately weathered; soft; weak; crushed to intensely fractured; fracture surfaces iron stained; partially clay filled; not friable.</i> <i>Total Depth 13.5'.</i>		<i>12.0'-13.5'; DR. Backfilled with cuttings.</i>

PROJECT NAME: *Toutelot Cleanup Project*

PROJECT NO.: 39901

CLIENT: *Granite*

DRILLING CONTRACTOR: *All Terrain*

DRILLING EQUIPMENT: *CME 650*

DRILLER: *M. Johnson*

SAMPLING METHOD: *2.5" Split Spoon*

TOTAL DEPTH: *9.5' BGS*

START DATE: *4/17/2000*

COMPLETION DATE: *4/17/2000*

LOGGED BY: *R. Heidrick*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *Ridge at east end*

SURFACE ELEVATION:

DEPTH	RECOVERY / ROD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPH)	REMARKS
0.5	0.5/1.5	5	L-1			COLLUVIUM 0.0'-4.5' FAT CLAY (CH): dark brown; very stiff, moist.		Drilled with 8" hollow stem auger. 1.0'-2.5' DR Drive 2 1/2" split spoon with 140 lb hammer, 30" fall. Pocket penetrometer (PP) 2.0 tsf.
1.5	1.5/1.5	6 8 17	L-2			RESIDUAL SOIL 4.5'-9.0' FAT CLAY WITH SAND (CH): brown; 20% fine sand; hard; moist; occasional angular shale fragments.		4.0'-5.5'; DR. PP 2.0 tsf.
9.0	1.5/1.5	10 48 50/3"	L-3			BEDROCK 9.0'-9.5' SHALE: moderately weathered; soft in hardness; very dense; dry.		8.0'-9.5'; DR. Backfilled with cuttings.

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: All Terrain

DRILLING EQUIPMENT: CME 650

DRILLER: M. Johnson

SAMPLING METHOD: 2.5" Split Spoon

TOTAL DEPTH: 13.5' BGS

START DATE: 4/18/2000

COMPLETION DATE: 4/18/2000

LOGGED BY: R. Heidrick

APPROVED BY: A. Buangan CEG 824

LOCATION: Ridge at east end

SURFACE ELEVATION:

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0 - 1.0	1.0/1.5	2 11 13	L-1	✓		COLLUVIUM 0.0'-9.5' FAT CLAY (CH): dark brown; trace of coarse sand; very stiff; moist; trace of organics.		Drilled with 8" hollow stem auger. 1.0'-2.5' DR Drive 2 1/2" split spoon with 140 lb hammer, 30" fall. Pocket penetrometer (PP) 2.0 tsf.
1.5 - 4.0	1.5/1.5	6 8 20	L-2	✓				4.0'-5.5', DR. PP, 1.8 tsf.
4.0 - 8.0	1.5/1.5	8 16 34	L-3	✓		9.0' becomes hard.		8.0'-9.5' DR. PP, 4.1 tsf
8.0 - 9.5						BEDROCK 9.5'-13.5' SHALE/SILTSTONE: brownish gray; moderately weathered; very soft in hardness; friable; crushed; fracture surfaces; iron stained; crumbles to dry granular clay.		9.5' Driller noted harder drilling.
9.5 - 12.0	1.0/1.2	5 35 50/3"	L-4	✓				12.0'-13.5', DR.
13.5						Total Depth 13.5'		Backfilled with cuttings.

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TEST BORING LOG

BOREHOLE NO.: GB-22

WELL NO.: NA

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PROJECT NAME: <i>Toutelot Cleanup Project</i>	PROJECT NO.: 39901
CLIENT: Granite	DRILLING CONTRACTOR: All Terrain
DRILLING EQUIPMENT: CME 650	DRILLER: M. Johnson
SAMPLING METHOD: 2.5" Split Spoon	TOTAL DEPTH: 8.7' BGS
START DATE: 4/18/2000	COMPLETION DATE: 4/18/2000
LOGGED BY: R. Heidrick	APPROVED BY: A. Buangan CEG 824
LOCATION: North Valley, south slope	SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0	0.5/1.5	5 12 15	L-1			COLLUVIUM 0.0'-4.5' FAT CLAY (CH): dark brown; 10% sand of angular shale; hard; damp.		Drilled with 8" hollow stem auger. 1.0'-2.5' DR Drive 2 1/2" split spoon with 140 lb hammer, 30" fall. Pocket penetrometer (PP) 4.6 tsf.
5	1.5/1.5	4 29 32	B-1 L-2 B-1	  		BEDROCK 4.0'-7.0' SANDSTONE: dark yellowish brown; severely weathered; soft; friable to weak; iron stained throughout; crumbles to soil-like sandy clay.		4.0'-5.5'; DR.
10	0.5/0.7	36 50/2"	L-3			8.0' becomes moderately weathered. Total Depth 8.7'.		8.0'-8.7'; DR. Backfilled with cuttings. Sample B-1, 4.0' - 7.0'.

L:\WORK\39901\GENERAL\39901.GPJ 5/30/2000

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: All Terrain

DRILLING EQUIPMENT: CME 650

DRILLER: M. Johnson

SAMPLING METHOD: 2.5" Split Spoon

TOTAL DEPTH: 9.0' BGS

START DATE: 4/18/2000

COMPLETION DATE: 4/18/2000

LOGGED BY: R. Heidrick

APPROVED BY: A. Buangan CEG 824

LOCATION: South Slope

SURFACE ELEVATION:

DEPTH	RECOVERY/ RQD	BLOW COUNT	SAMPLE NO.	NODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0' - 1.5'	1.5/1.5	5 12 22	L-1			FILL 0.0'-1.5' SANDY FAT CLAY (CH): very dark brown; 30% sand consisting of angular shale and sandstone; hard; damp.		Drilled with 8" hollow stem auger. 1.0'-2.5' DR Drive 2 1/2" split spoon with 140 lb hammer, 30" fall. Pocket penetrometer (PP) 2.2 tsf.
1.5' - 3.0'	1.5/1.5	10 34 37	L-2			COLLUVIUM 1.5'-3.0' FAT CLAY (CH): brown; 15% fine sand; hard; moist.		
3.0' - 9.0'	0.9/0.9	35 50/5"	L-3			BEDROCK 3.0'-9.0' SHALE/SILTSTONE: dark gray; severely weathered; soft; friable weak; crushed; crumbles to sandy clay.		4.0'-5.5' DR.
8.0' - 9.0'						8.0' becomes harder.		8.0'-9.0' DR.
						Total Depth 9.0'		Backfilled with cuttings.

L:\WORK\39901\G.P.J. 5/20/2000

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: All Terrain

DRILLING EQUIPMENT: CME 650

DRILLER: M. Johnson

SAMPLING METHOD: 2.5" Split Spoon

TOTAL DEPTH: 21.5' BGS

START DATE: 4/18/2000

COMPLETION DATE: 4/19/2000

LOGGED BY: R. Heidrick

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley, south slope

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0'-4.5'	1.5/1.5	6 10 14	L-1			COLLUVIUM 0.0'-4.5' FAT CLAY WITH SAND (CH): dark reddish brown; 15% fine sand; very stiff; moist; ~5-10% organic content at 2.5' (roots).		Drilled with 8" hollow stem auger. 1.0'-2.5' DR Drive 2 1/2" split spoon with 140 lb hammer, 30" fall. Pocket penetrometer (PP) 2.4 tsf.
4.5'-8.0'	1.5/1.5	8 24 29	L-2 B-1			SLIDE DEBRIS 4.5'-21.0' SANDY FAT CLAY (CH): dark reddish brown; 30% fine to medium sand; hard; damp.		4.0'-5.5', DR. PP, 5.0 tsf.
8.0'-9.5'	1.5/1.5	8 19 25	L-3			8.0' becomes mottled dark red.		8.0'-9.5', DR. PP, 5.0 tsf.
9.5'-12.0'	1.5/1.5	11 20 37	L-4					12.0'-13.5', DR. PP, 3.4 tsf.
12.0'-15.0'	1.5/1.5	12 26 33	L-5			15.5' slide plane, 40 degrees, slicks on surface; roots;		15.0'-16.5', DR. End of shift, 4/19/00.
16.5'-20.0'	1.5/1.5	8 29 50/4"	L-6					20.0'-21.5', DR. PP, 3.4 tsf.
20.0'-21.5'						BEDROCK 21.0'-21.5' SHALE: very grayish brown; severely weathered; soft; friable; crushed; crumbles to clayey sand with angular shale. Total Depth 21.5'.		Backfilled with cuttings.

PROJECT NAME: *Toutelot Cleanup Project*

PROJECT NO.: 39901

CLIENT: *Granite*

DRILLING CONTRACTOR: *All Terrain*

DRILLING EQUIPMENT: *CME 650*

DRILLER: *M. Johnson*

SAMPLING METHOD: *2.5" Split Spoon*

TOTAL DEPTH: *13.5' BGS*

START DATE: *4/19/2000*

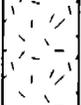
COMPLETION DATE: *4/19/2000*

LOGGED BY: *R. Heidrick*

APPROVED BY: *A. Buangan CEG 824*

LOCATION: *North Valley, south slope*

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0	1.5/1.5	2 5 6	L-1	☒		COLLUVIUM 0.0'-4.0' SANDY FAT CLAY (CH): dark brown; 35% fine sand; stiff; wet; roots.		Drilled with 8" hollow stem auger. 1.0'-2.5' DR Drive 2 1/2" split spoon with 140 lb hammer, 30" fall.
4.0	1.0/1.5	7 10 11	L-2	☒		4.0'-9.5' FAT CLAY WITH SAND (CH): dark brown mottled reddish brown; 20% fine sand; very stiff. moist.		4.0'-5.5', DR. Pocket penetrometer (PP) 2.0 tsf.
9.0	1.5/1.5	5 12 23	L-3	☒		9.0' increased shale content, angular.		8.0'-9.5', DR.
9.0						BEDROCK 9.0'-13.5' SHALE: dark brown; severely weathered; soft; weak to friable; crushed; fracture surfaces: iron stained and clay filled; wet; crumbles to clayey sand.		12.0'-13.5', DR.
13.5	1.0/1.0	10 32 45	L-4	☒		Total Depth 13.5'		Backfilled with cuttings.

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: All Terrain

DRILLING EQUIPMENT: CME 650

DRILLER: M. Johnson

SAMPLING METHOD: 2.5" Split Spoon

TOTAL DEPTH: 5.5' BGS

START DATE: 4/21/2000

COMPLETION DATE: 4/21/2000

LOGGED BY: R. Heidrick

APPROVED BY: A. Buangan CEG 824

LOCATION: North Valley, north slope

SURFACE ELEVATION:

DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
1.5'	1.5'	8	L-1	X		COLLUVIUM 0.0'-4.0' FAT CLAY WITH SAND (CH): dark brown; 15% sand; hard; moist; pieces of sandstone and shale; some fine roots.		Drilled with 8" hollow stem auger. 1.0'-2.5' DR Drive 2 1/2" split spoon with 140 lb hammer, 30" fall. Pocket penetrometer (PP) 5.0 tsf.
5'	1.5'	15	L-2	X		BEDROCK 4.0'-5.5' SHALE/SILTSTONE: grayish brown; severely weathered; very soft; friable; crushed; partially altered to clay; crumbles to dry sandy clay. Total Depth 5.5'.		4.0'-5.5', DR. Backfilled with cuttings.

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: All Terrain

DRILLING EQUIPMENT: CME 650

DRILLER: M. Johnson

SAMPLING METHOD: 2.5" Split Spoon

TOTAL DEPTH: 13.2' BGS

START DATE: 4/21/2000

COMPLETION DATE: 4/21/2000

LOGGED BY: R. Heidrick

APPROVED BY: A. Buangan CEG 824

LOCATION: Ridge, south slope

SURFACE ELEVATION:

DEPTH	RECOVERY/ RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0'	1.5/1.5	2 5 9	L-1	X		COLLUVIUM 0.0'-5.5' SANDY FAT CLAY (CH): dark reddish brown mottled brown; 35% fine sand; stiff, moist, fine organics		Drilled with 8" hollow stem auger. 1.0'-2.5' DR Drive 2 1/2" split spoon with 140 lb hammer, 30" fall. Pocket penetrometer (PP) 1.0 tsf.
4.0'	1.5/1.5	10 20 50	L-2	X		4.0' becomes very stiff, less sand.		4.0'-5.5', DR. PP, 3.6 tsf.
5.5'	1.5/1.5	6 29 30	L-3	X		BEDROCK 5.5'-13.2' SANDSTONE/SHALE: strong brown mottled brown; severely weathered; residual soil; very soft in hardness; relict rock texture and structure; soil-like; crumbles to sandy clay.		7.5'-9.0', DR
12.0'	1.0/1.2	15 44 50/3"	L-4	X		12.5' becomes SHALE; severely weathered.		12.0'-13.2', DR.
13.2'						Total Depth 13.2'		Backfilled with cuttings.

TEST BORING LOG

BOREHOLE NO.: GB-28

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: All Terrain

DRILLING EQUIPMENT: CME 650

DRILLER: M. Johnson

SAMPLING METHOD: 2.5" Split Spoon

TOTAL DEPTH: 9.0' BGS

START DATE: 4/19/2000

COMPLETION DATE: 4/19/2000

LOGGED BY: R. Heidrick

APPROVED BY: A. Buangan CEG 824

LOCATION: Ridge, west end

SURFACE ELEVATION:

DEPTH	RECOVERY / RGD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0 - 1.5	1.0/1.5	8 5 14	L-1	☒		COLLUVIUM 0.0'-4.0' FAT CLAY WITH SAND (CH): dark brown; 20% fine sand; very stiff; damp; minor organics (roots); pieces of sandstone gravel.		Drilled with 8" hollow stem auger. 1.0'-2.5' DR Drive 2 1/2" split spoon with 140 lb hammer, 30" fall.
1.5 - 5.0	1.5/1.5	10 40 28	L-2	☒		BEDROCK 4.0'-9.0' SHALE: yellowish brown; severely weathered; soft; weak; crushed; crumbles to sandy clay; extensively iron stained.		4.0'-5.5'; DR.
5.0 - 9.0	1.0/1.0	12 50/5"	L-3	☒		Total Depth 9.0'		8.0'-9.0'; DR. Backfilled with cuttings.

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: All Terrain

DRILLING EQUIPMENT: CME 650

DRILLER: M. Johnson

SAMPLING METHOD: 2.5" Split Spoon

TOTAL DEPTH: 5.5' BGS

START DATE: 4/19/2000

COMPLETION DATE: 4/19/2000

LOGGED BY: R. Heidrick

APPROVED BY: A. Buangan CEG 824

LOCATION: Ridge, west end

SURFACE ELEVATION:

DEPTH	RECOVERY/ RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS/ GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0'	1.5/1.5	25	L-1	1	Diagonal Hatching	FILL 0.0'-4.5' SANDY FAT CLAY (CH): dark brown; 30% fine sand; stiff, moist; occasional pieces of shale, angular and hard; randomly oriented.		Drilled with 8" hollow stem auger. 1.0'-2.5' DR Drive 2 1/2" split spoon with 140 lb hammer, 30" fall. Pocket penetrometer (PP) 1.4 tsf.
4.5'		16 15	B-1	2	Diagonal Hatching			
5.0'	1.0/1.0	12	L-2	1	Dotted	BEDROCK 4.5'-5.5' SHALE/SANDSTONE: strong brown; severely to moderately weathered; soft to moderately hard.; crushed to intensely fractured; shale and sandstone inter bedded; crumbles to dry sandy clay. Total Depth 5.5'.		4.0'-5.5', DR. Backfilled with cuttings.
5.5'		30 50/5"		2	Dotted			

TEST BORING LOG

BOREHOLE NO.: GB-30

WELL NO.: NA

PAGE: 1 OF 1

PROJECT NAME: Toutelot Cleanup Project

PROJECT NO.: 39901

CLIENT: Granite

DRILLING CONTRACTOR: All Terrain

DRILLING EQUIPMENT: CME 650

DRILLER: M. Johnson

SAMPLING METHOD: 2.5" Split Spoon

TOTAL DEPTH: 12.6' BGS

START DATE: 4/21/2000

COMPLETION DATE: 4/21/2000

LOGGED BY: R. Heidrick

APPROVED BY:

LOCATION: Lower west end, Ridge south slope

SURFACE ELEVATION:

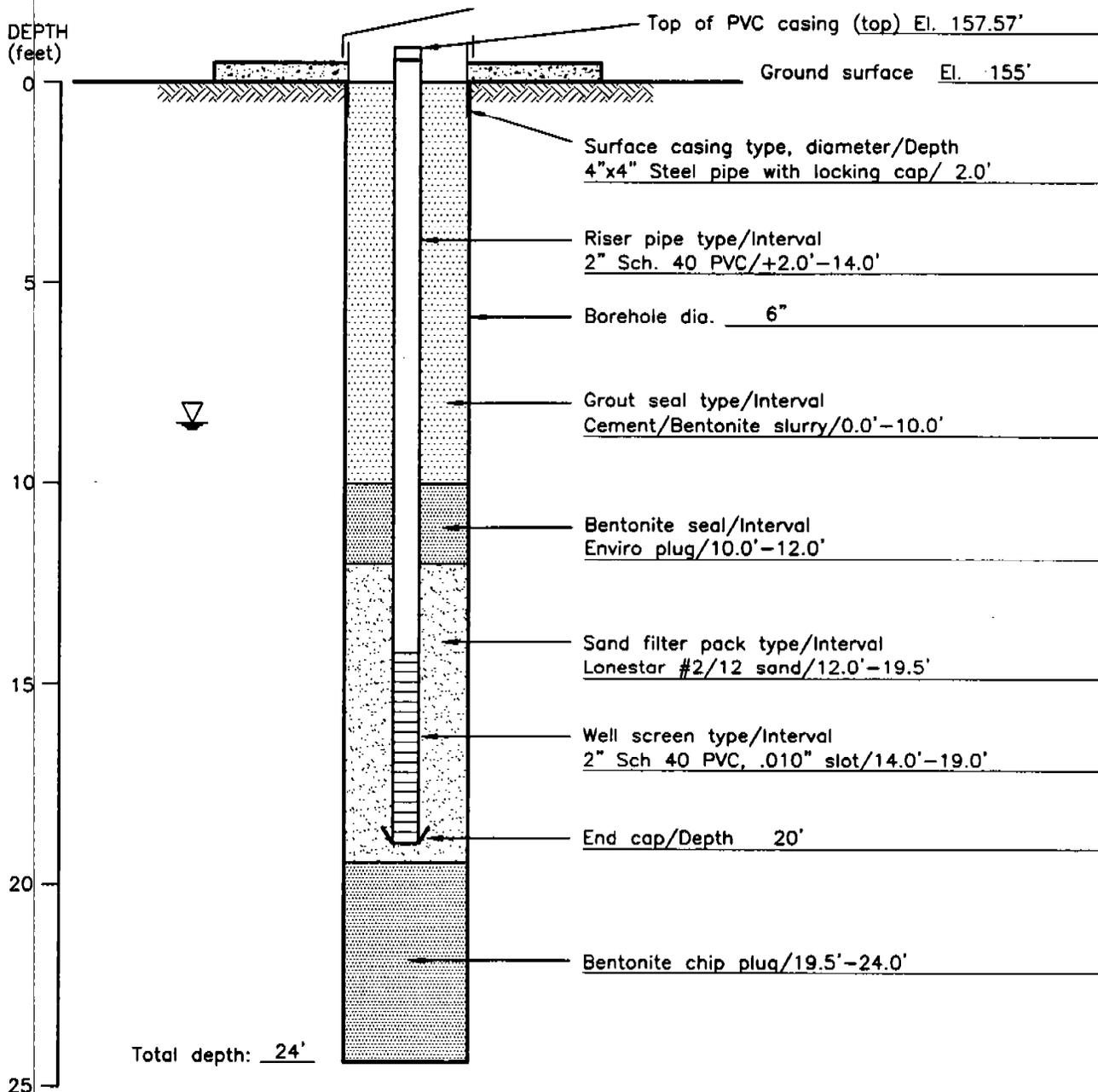
DEPTH	RECOVERY / RQD	BLOW COUNT	SAMPLE NO.	MODE	SOIL CLASS / GRAPHIC LOG	DESCRIPTION	PID READING (PPM)	REMARKS
0.0 - 1.0	1.0/1.5	2 3 4	L-1	☒		COLLUVIUM 0.0'-12.0' FAT CLAY WITH SAND (CH): dark reddish gray; 10% fine sand; medium stiff; wet; ~ 5% organic content; ground surface is swampy.		Drilled with 8" hollow stem auger. 1.0'-2.5' DR Drive 2 1/2" split spoon with 140 lb hammer, 30" fall. Pocket penetrometer (PP) 1.0 tsf.
1.5 - 5.0	1.5/1.5	8 14 26	L-2	☒		5.0' becomes dark brown and hard; less organics; moist.		4.0'-5.5', DR. PP, 2.0 tsf.
5.0 - 10.0	1.5/1.5	11 17 27	L-3	☒				8.0'-9.5', DR. PP, 3.0 tsf. PP, 4.1 tsf. 10.0' Driller noted harder drilling.
10.0 - 12.6	0.4/0.6	38 50/2*		☒		BEDROCK 12.0'-12.6' SHALE: dark gray; moderately weathered; soft; weak; intensely fractured; little clay; some iron stains. Total Depth 12.6'.		12.0'-12.6', DR. Backfilled with cuttings.

ATTACHMENT C-4

MONITORING WELL CONSTRUCTION LOGS

Monitoring Well Construction Log – Above Ground

PROJECT NAME: Tourtelot Cleanup Project	PROJECT NO: 39901	DATE:
DRILLING AGENCY: Clear Heart	BOREHOLE NO. MW-1	WELL ID: MW-1
DRILLER: Chris Herrel	DATE STARTED: 02/22/00	BOREHOLE DIAMETER: 6"
DRILLING EQUIPMENT: Morooka MST-600	DATE FINISHED: 02/23/00	DEPTH TO WATER:
DRILLING METHOD: HSA	LOGGED BY: A. Buangan	CHECKED BY:
NOTE: FOR DETAILS OF DRILLING AND LITHOLOGIC DESCRIPTION SEE TEST BORING LOG		

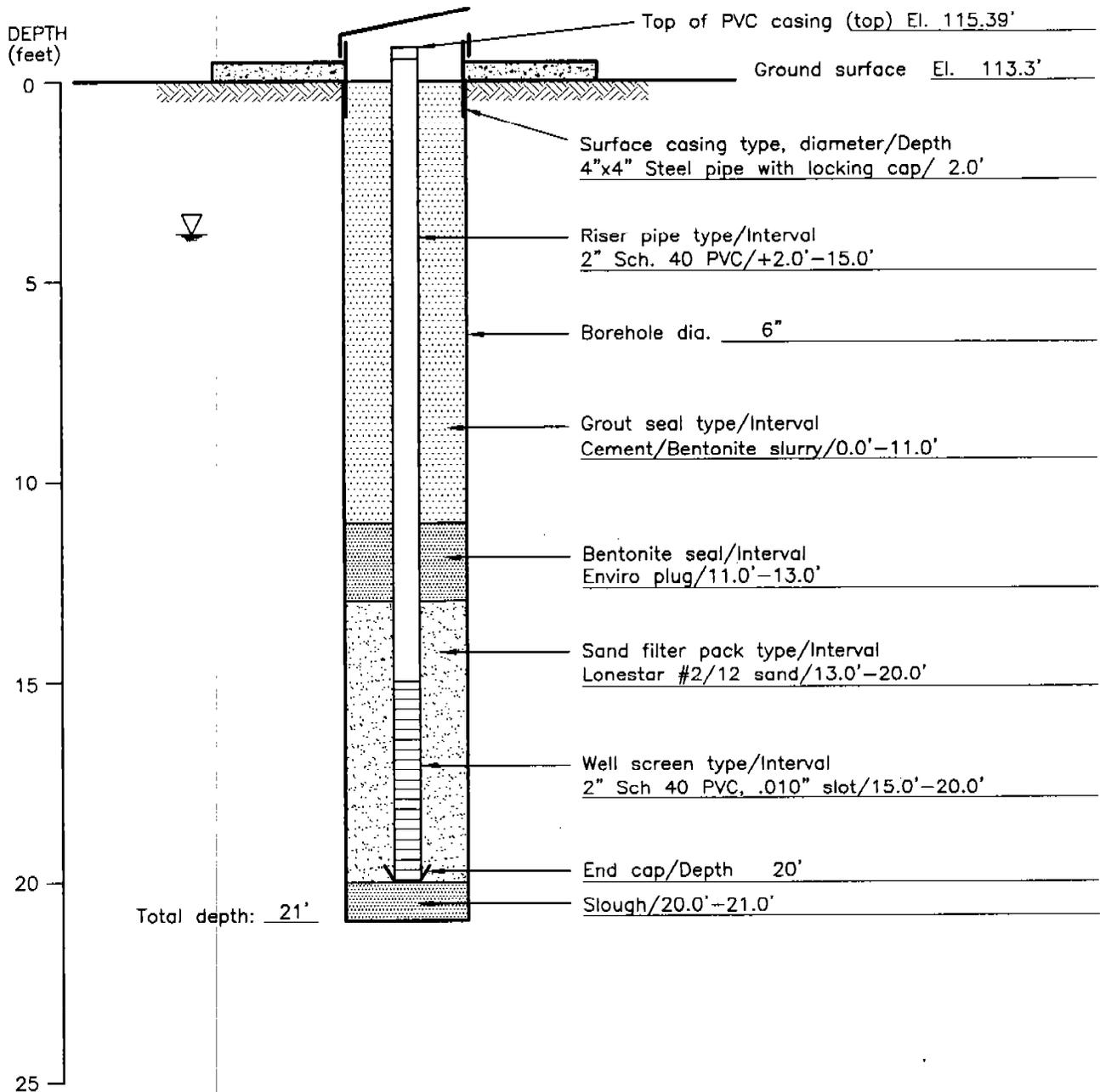


Note: All depths and depth intervals measured from ground surface

▽ Groundwater measured @ 10.53' top (05/03/00)

Monitoring Well Construction Log – Above Ground

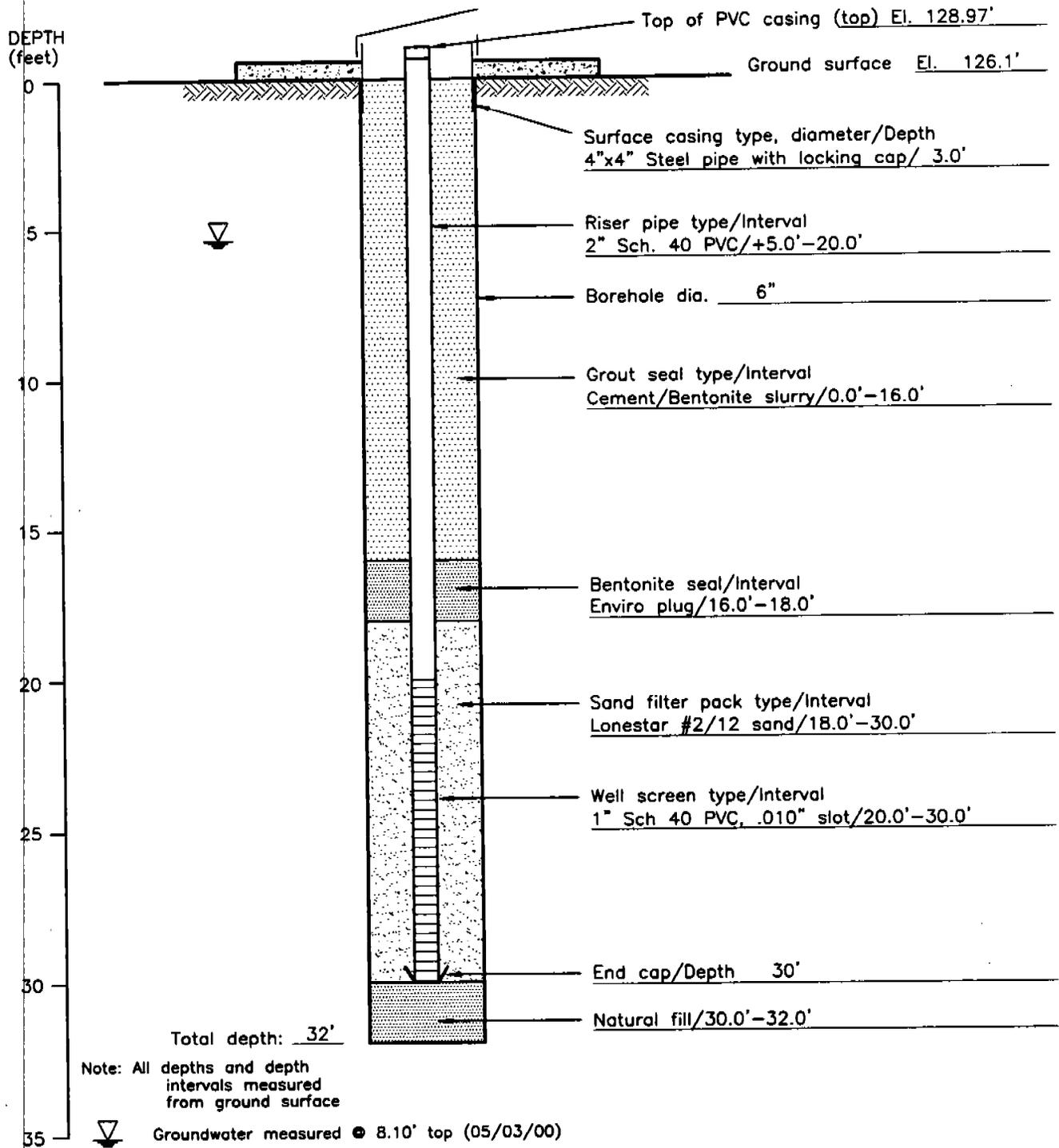
PROJECT NAME: Tourtelot Cleanup Project	PROJECT NO: 39901	DATE:
DRILLING AGENCY: Clear Heart	BOREHOLE NO. MW-2	WELL ID: MW-2
DRILLER: Chris Herrel	DATE STARTED: 02/22/00	BOREHOLE DIAMETER: 6"
DRILLING EQUIPMENT: Morooka MST-600	DATE FINISHED: 02/22/00	DEPTH TO WATER:
DRILLING METHOD: HSA	LOGGED BY: A. Buangan	CHECKED BY:
NOTE: FOR DETAILS OF DRILLING AND LITHOLOGIC DESCRIPTION SEE TEST BORING LOG		



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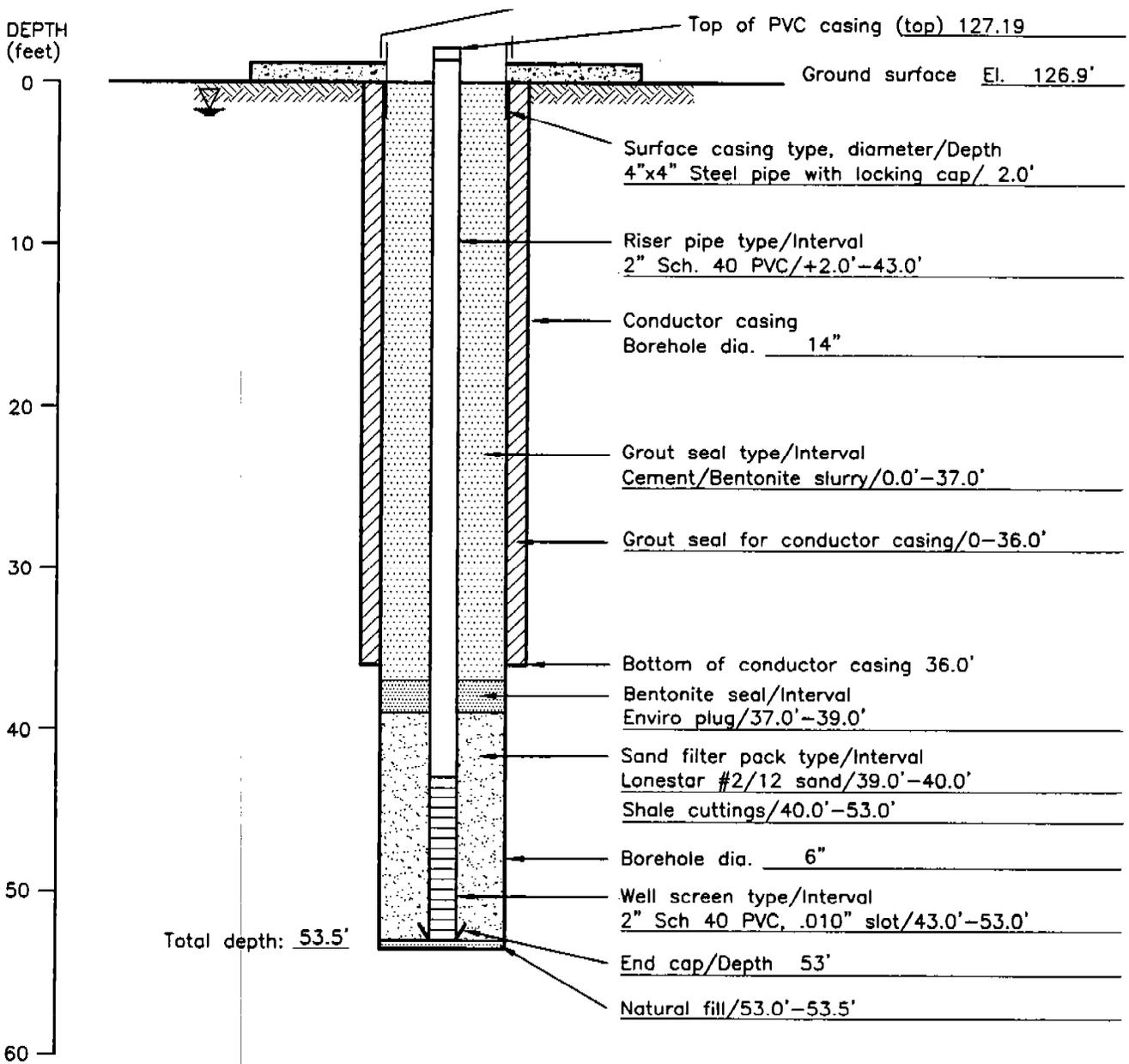
Monitoring Well Construction Log - Above Ground

PROJECT NAME: Tourtelot Cleanup Project	PROJECT NO: 39901	DATE:
DRILLING AGENCY: Clear Heart	BOREHOLE NO. (TW-3)	WELL ID: MW-3
DRILLER: Chris Herrel	DATE STARTED: 12/10/99	BOREHOLE DIAMETER: 6"
DRILLING EQUIPMENT: Morooka MST-600	DATE FINISHED: 12/10/99	DEPTH TO WATER:
DRILLING METHOD: HSA	LOGGED BY: Bob S.	CHECKED BY: A. Buangan
NOTE: FOR DETAILS OF DRILLING AND LITHOLOGIC DESCRIPTION SEE TEST BORING LOG		



Monitoring Well Construction Log - Above Ground

PROJECT NAME: Tourtelot Cleanup Project	PROJECT NO: 39901	DATE:
DRILLING AGENCY: All Terrain	BOREHOLE NO. MW-3A	WELL ID: MW-3A
DRILLER: Mike Johnson	DATE STARTED: 04/3/00	BOREHOLE DIAMETER: 8"
DRILLING EQUIPMENT: CME 650	DATE FINISHED: 04/13/00	DEPTH TO WATER:
DRILLING METHOD: HSA/Mud Rotary	LOGGED BY: R. Heidrick	CHECKED BY: A. Buangan
NOTE: FOR DETAILS OF DRILLING AND LITHOLOGIC DESCRIPTION SEE TEST BORING LOG		



Total depth: 53.5'

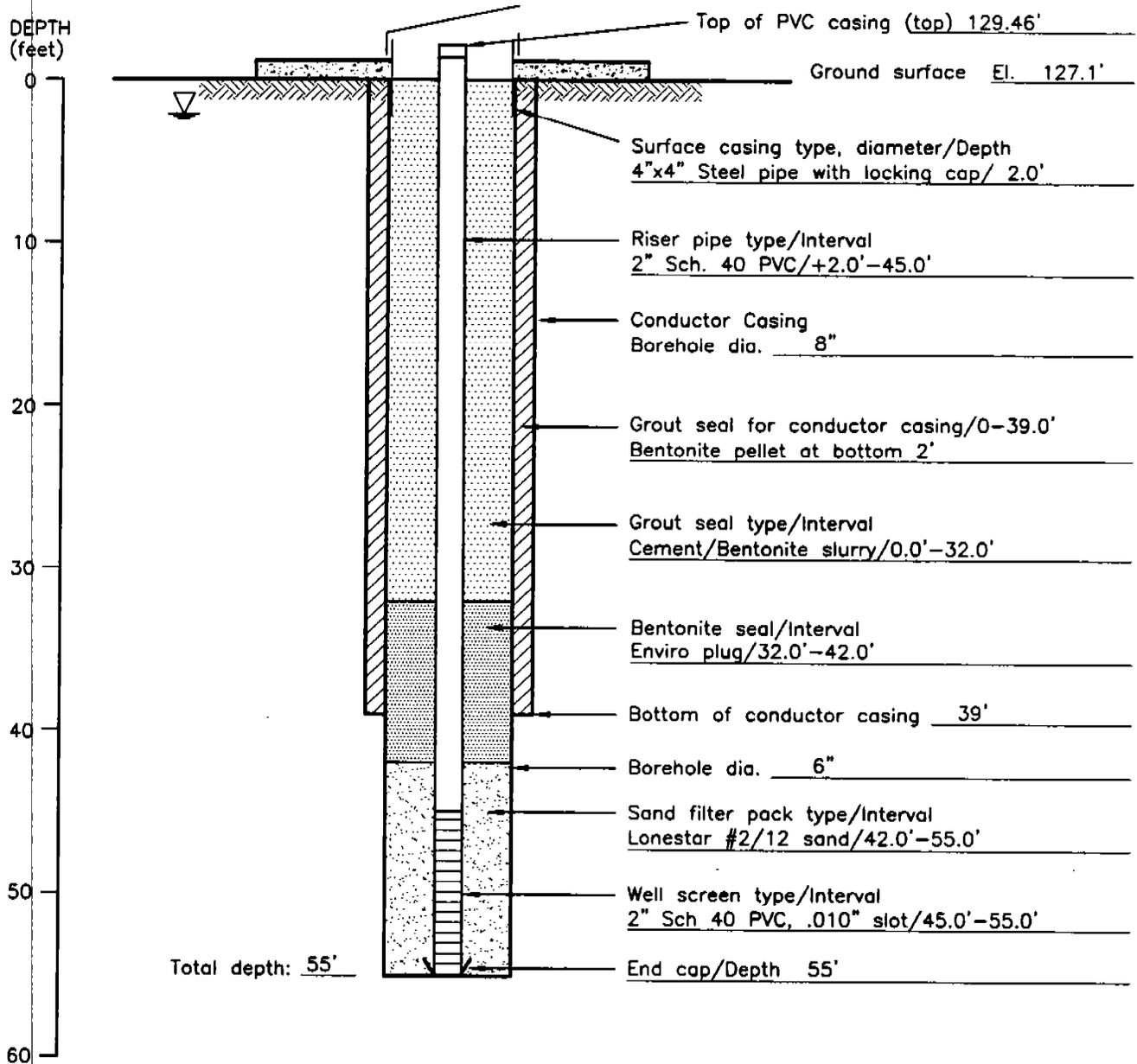
Note: All depths and depth intervals measured from ground surface

▽ Groundwater measured ● 5.97' top (05/03/00)

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Monitoring Well Construction Log – Above Ground

PROJECT NAME: Tourtelot Cleanup Project	PROJECT NO: 39901	DATE:
DRILLING AGENCY: All Terrain	BOREHOLE NO. MW-3B	WELL ID: MW-3B
DRILLER: Mike Johnson	DATE STARTED: 04/19/00	BOREHOLE DIAMETER: 8"
DRILLING EQUIPMENT: CME 650	DATE FINISHED: 04/20/00	DEPTH TO WATER:
DRILLING METHOD: HSA/Mud Rotary	LOGGED BY: R. Heidrick	CHECKED BY: A. Buangan
NOTE: FOR DETAILS OF DRILLING AND LITHOLOGIC DESCRIPTION SEE TEST BORING LOG		



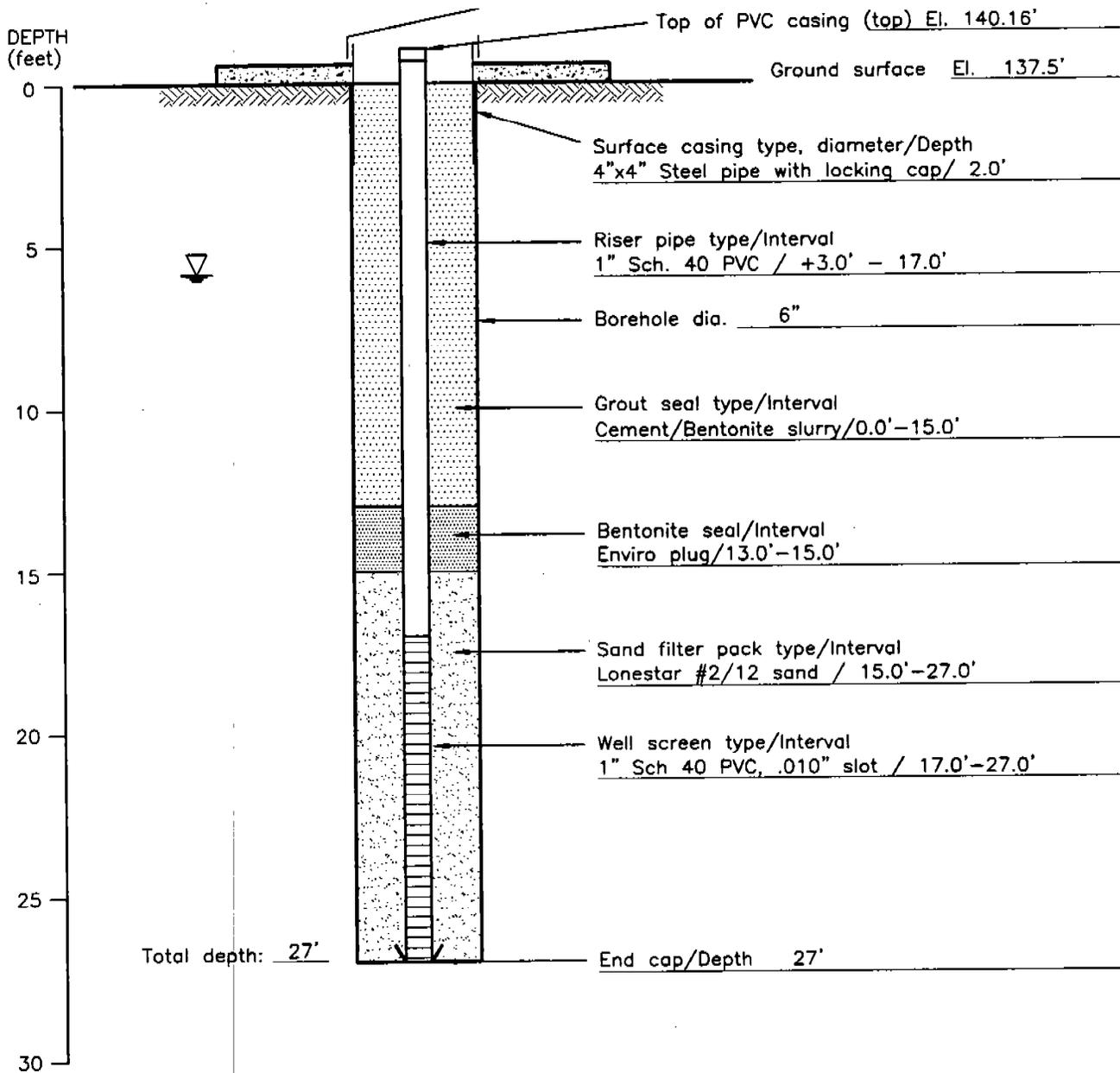
Note: All depths and depth intervals measured from ground surface



Groundwater measured @ 5.97' top (05/03/00)

Monitoring Well Construction Log – Above Ground

PROJECT NAME: Tourtlot Cleanup Project	PROJECT NO: 39901	DATE:
DRILLING AGENCY: Clear Heart	BOREHOLE NO. TW-4	WELL ID: MW-4
DRILLER: Chris Herrel	DATE STARTED: 12/13/99	BOREHOLE DIAMETER: 6"
DRILLING EQUIPMENT: Morooka MST-600	DATE FINISHED: 12/13/99	DEPTH TO WATER:
DRILLING METHOD: HSA	LOGGED BY: R. Burzinski	CHECKED BY: A. Buangan
NOTE: FOR DETAILS OF DRILLING AND LITHOLOGIC DESCRIPTION SEE TEST BORING LOG		

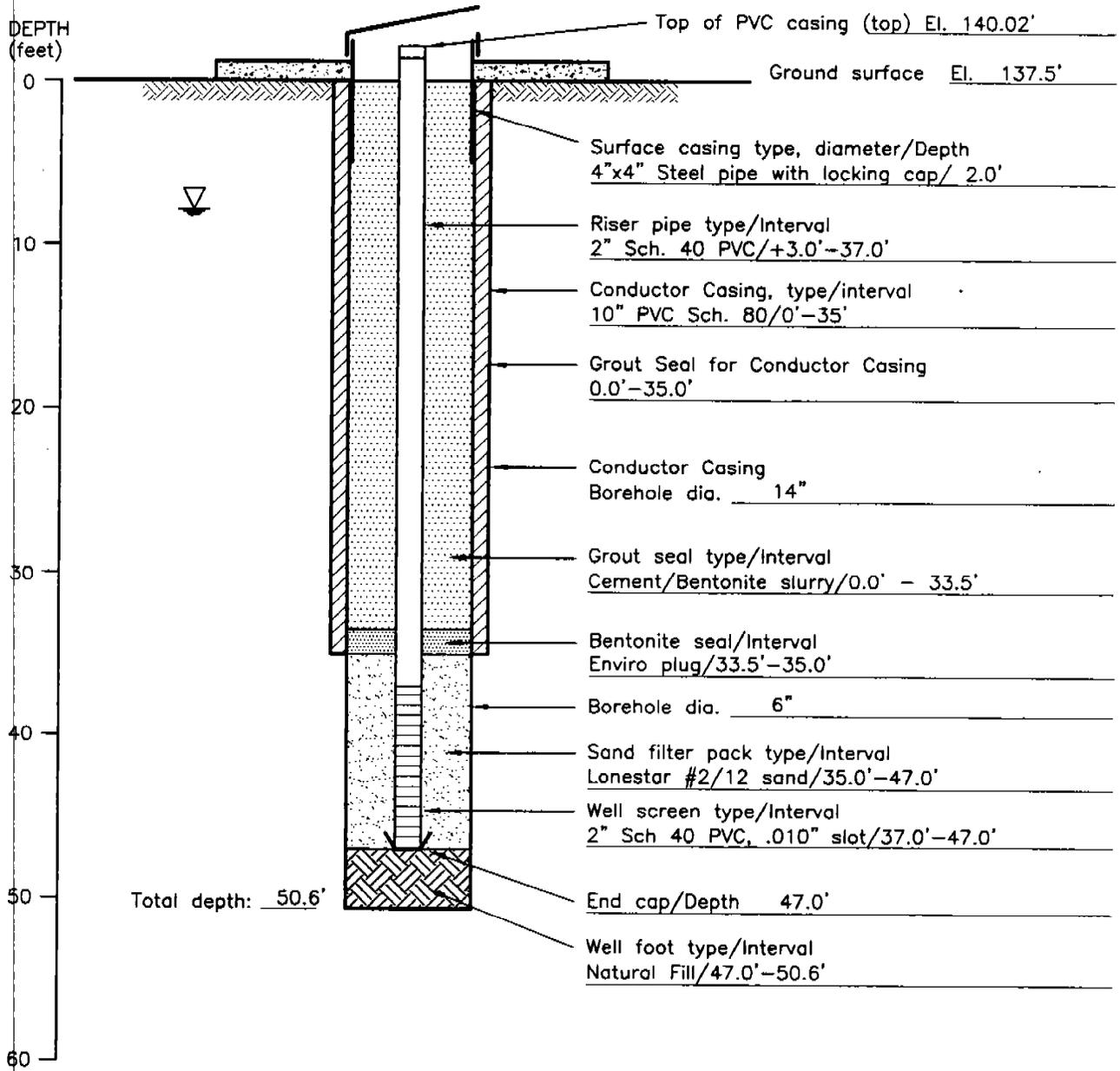


Note: All depths and depth intervals measured from ground surface

Groundwater measured @ 9.16' top (05/03/00)

Monitoring Well Construction Log – Above Ground

PROJECT NAME: Tourtelot Cleanup Project	PROJECT NO: 39901	DATE: 04/11/00
DRILLING AGENCY: All Terrain	BOREHOLE NO. MW-4A	WELL ID: MW-4A
DRILLER: Mike Johnson	DATE STARTED: 04/06/00	BOREHOLE DIAMETER: 8"
DRILLING EQUIPMENT: CME 650	DATE FINISHED: 04/11/00	DEPTH TO WATER:
DRILLING METHOD: HSA / Mud Rotary	LOGGED BY: R. Heidrick	CHECKED BY: A. Buangan
NOTE: FOR DETAILS OF DRILLING AND LITHOLOGIC DESCRIPTION SEE TEST BORING LOG		

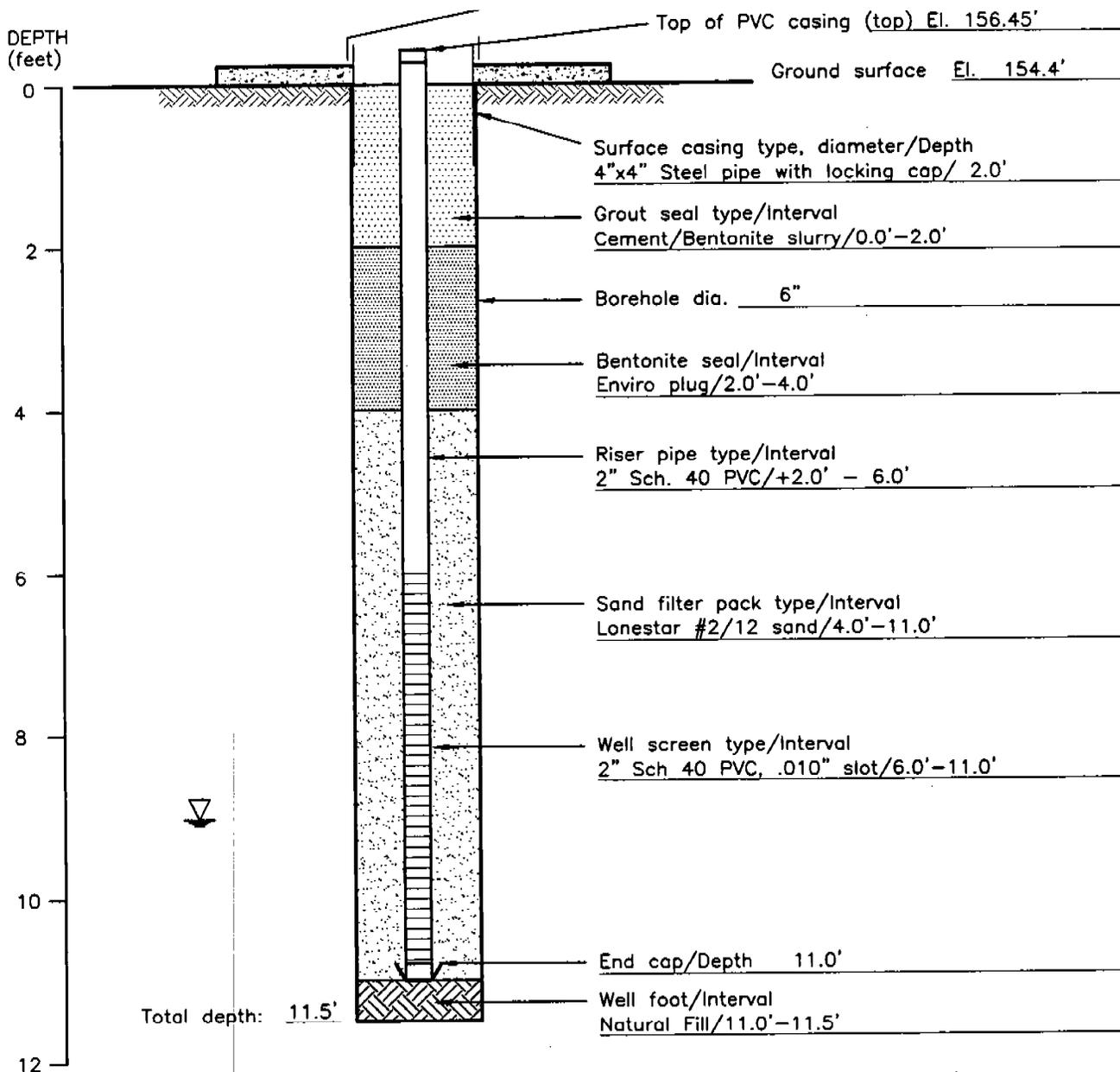


Note: All depths and depth intervals measured from ground surface

Groundwater measured @ 9.55' top (05/03/00)

Monitoring Well Construction Log - Above Ground

PROJECT NAME: Tourtlot Cleanup Project	PROJECT NO: 39901	DATE:
DRILLING AGENCY: Clear Heart	BOREHOLE NO. MW5	WELL ID: MW-5
DRILLER: Chris Herrel	DATE STARTED: 2/24/00	BOREHOLE DIAMETER:
DRILLING EQUIPMENT: Morooka MST-600	DATE FINISHED: 2/24/00	DEPTH TO WATER:
DRILLING METHOD: HSA	LOGGED BY: R. Burzinski	CHECKED BY: A. Buangan
NOTE: FOR DETAILS OF DRILLING AND LITHOLOGIC DESCRIPTION SEE TEST BORING LOG		

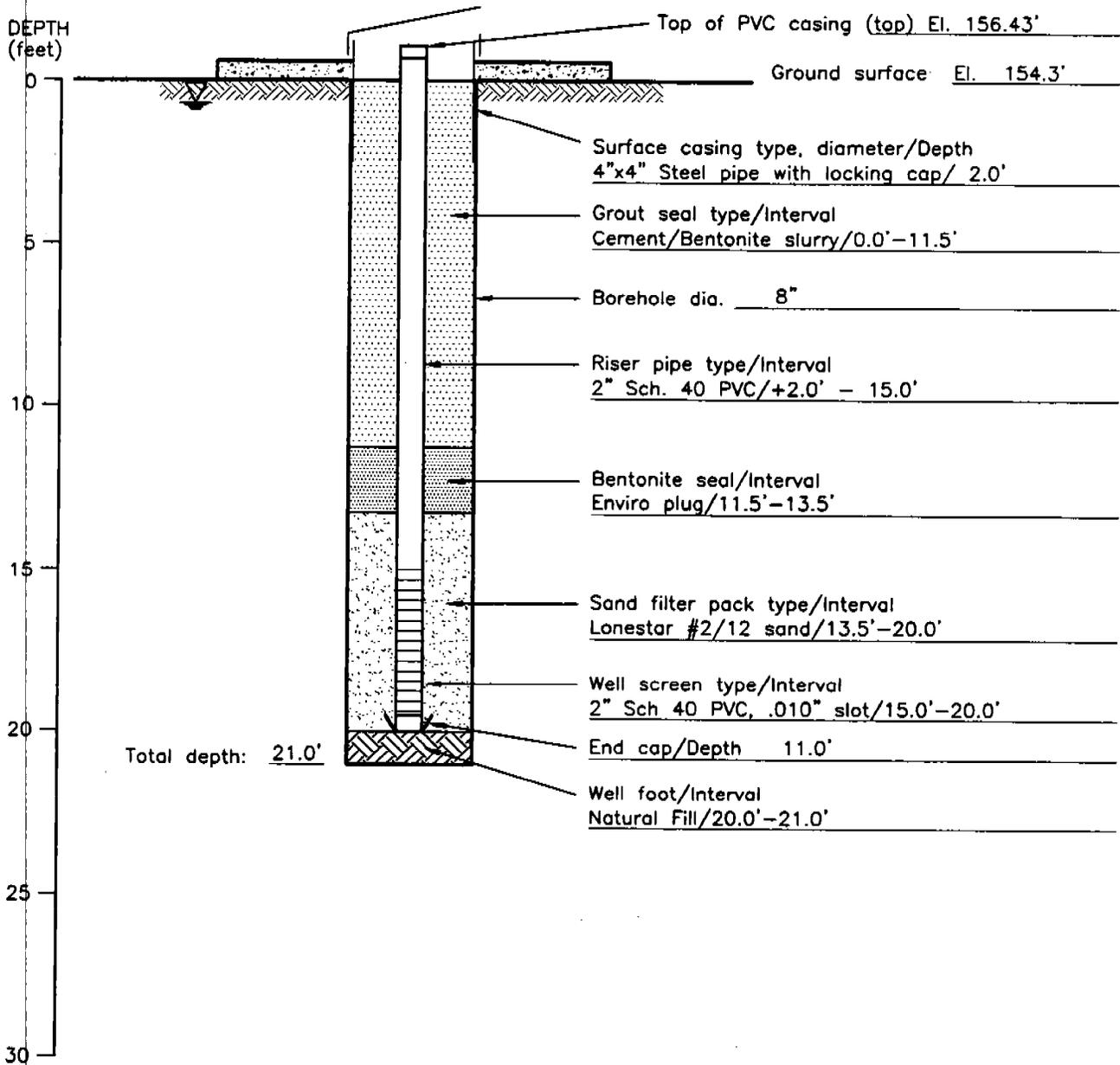


Note: All depths and depth intervals measured from ground surface

Groundwater measured @ 10.96' top (05/03/00)

Monitoring Well Construction Log - Above Ground

PROJECT NAME: Tourtelot Cleanup Project	PROJECT NO: 39901	DATE:
DRILLING AGENCY: All Terrain	BOREHOLE NO. MW6	WELL ID: MW-6
DRILLER: Rich Lighter	DATE STARTED: 4/5/00	BOREHOLE DIAMETER: 8"
DRILLING EQUIPMENT: CME 550	DATE FINISHED: 4/5/00	DEPTH TO WATER:
DRILLING METHOD: HSA	LOGGED BY: R. Heidrick	CHECKED BY: A. Buangan
NOTE: FOR DETAILS OF DRILLING AND LITHOLOGIC DESCRIPTION SEE TEST BORING LOG		

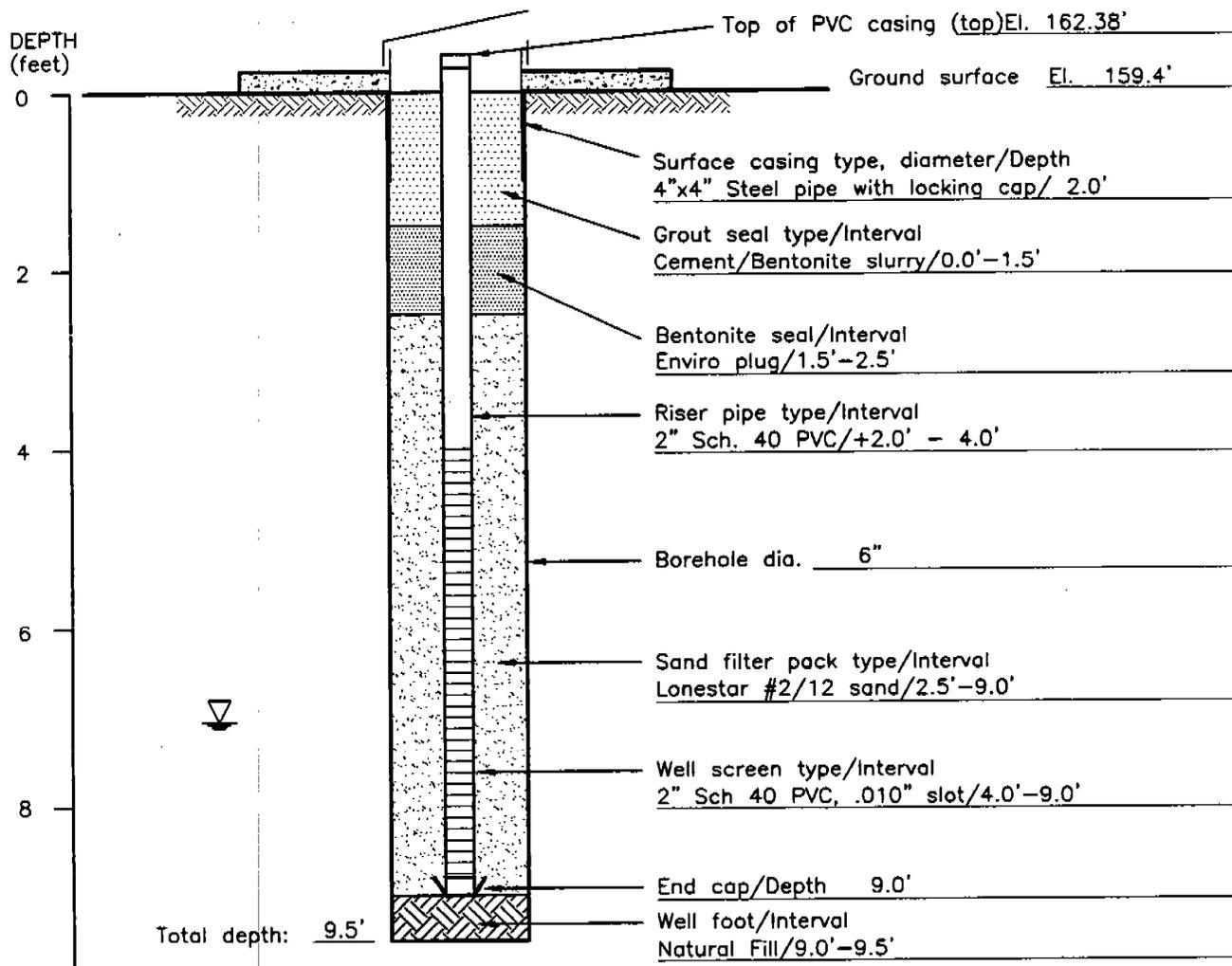


Note: All depths and depth intervals measured from ground surface

▽ Groundwater measured @ 2.71' top (05/03/00)

Monitoring Well Construction Log - Above Ground

PROJECT NAME: Tourtlot Cleanup Project	PROJECT NO: 39901	DATE:
DRILLING AGENCY: Clear Heart	BOREHOLE NO. MW7	WELL ID: MW-7
DRILLER: Chris Herrel	DATE STARTED: 2/24/00	BOREHOLE DIAMETER: 6"
DRILLING EQUIPMENT: Morooka MST-600	DATE FINISHED: 2/25/00	DEPTH TO WATER:
DRILLING METHOD: HSA	LOGGED BY: R. Goldberg	CHECKED BY: A. Buangan
NOTE: FOR DETAILS OF DRILLING AND LITHOLOGIC DESCRIPTION SEE TEST BORING LOG		

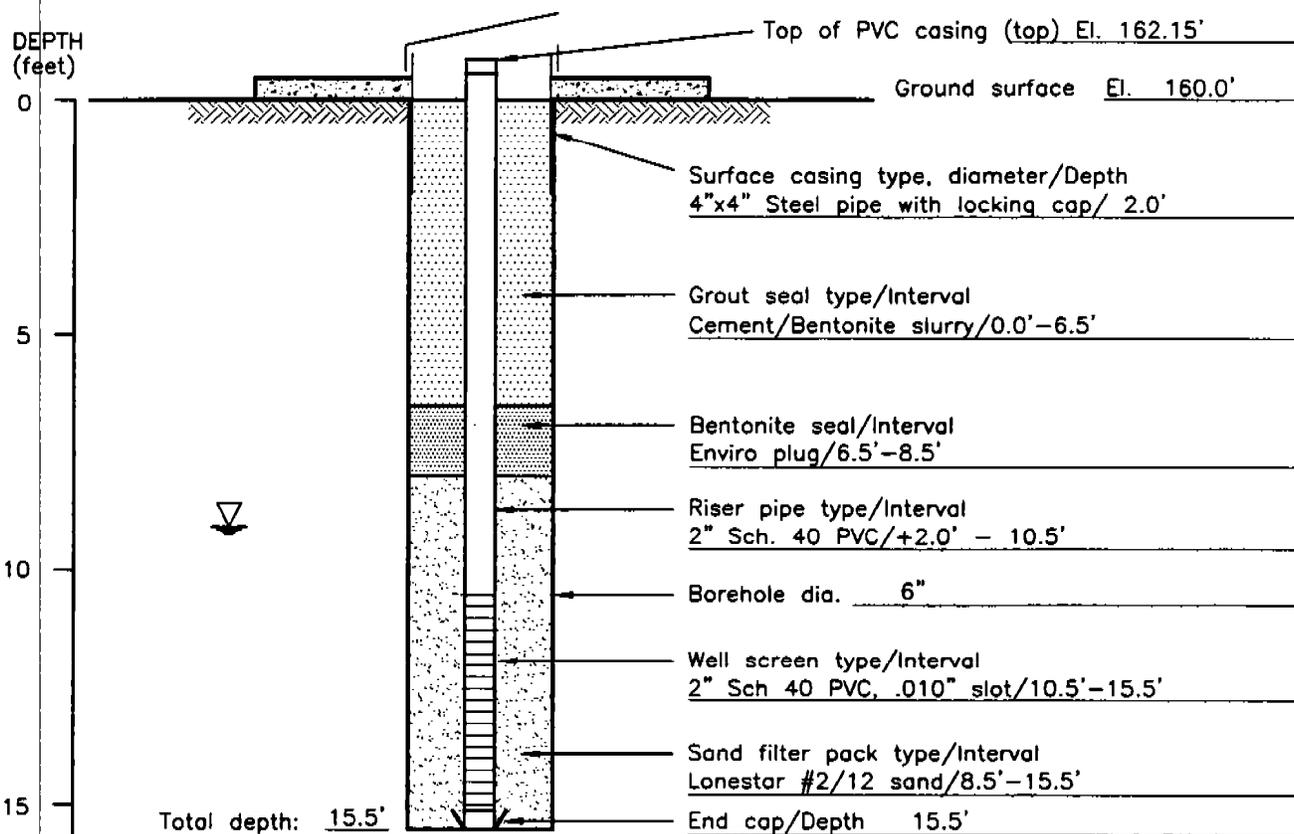


Note: All depths and depth intervals measured from ground surface

Groundwater measured @ 10.05' top (05/03/00)

Monitoring Well Construction Log – Above Ground

PROJECT NAME: Tourtelot Cleanup Project	PROJECT NO: 39901	DATE:
DRILLING AGENCY: Clear Heart	BOREHOLE NO. MW8	WELL ID: MW-8
DRILLER: Chris Herrel	DATE STARTED: 2/24/00	BOREHOLE DIAMETER: 6"
DRILLING EQUIPMENT: Morooka MST-600	DATE FINISHED: 2/25/00	DEPTH TO WATER:
DRILLING METHOD: HSA	LOGGED BY: R. Goldberg	CHECKED BY: A. Buangan
NOTE: FOR DETAILS OF DRILLING AND LITHOLOGIC DESCRIPTION SEE TEST BORING LOG		

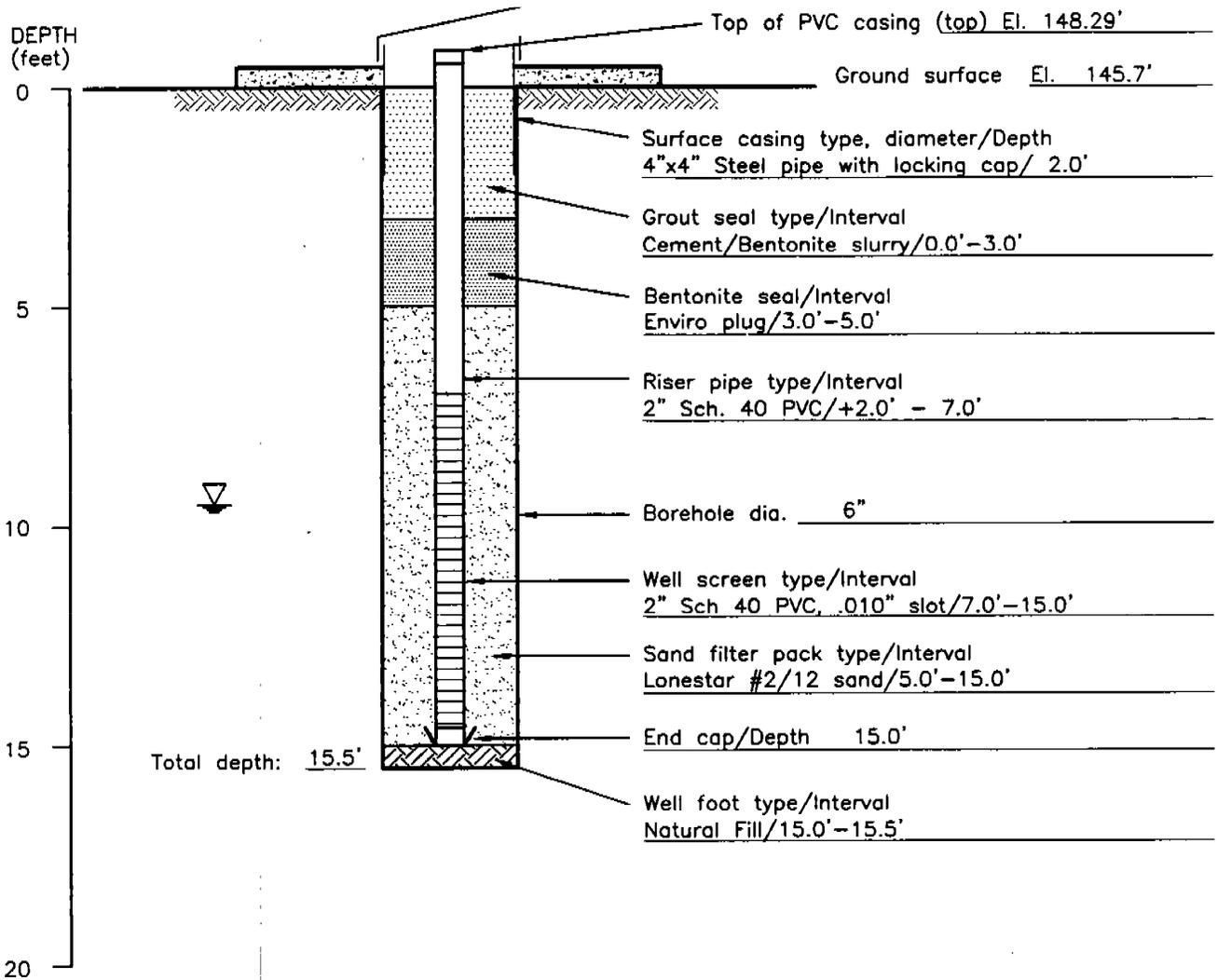


Note: All depths and depth intervals measured from ground surface

Groundwater measured @ 9.66' top (05/03/00)

Monitoring Well Construction Log - Above Ground

PROJECT NAME: Tourtelot Cleanup Project	PROJECT NO: 39901	DATE:
DRILLING AGENCY: Clear Heart	BOREHOLE NO. MW9	WELL ID: MW-9
DRILLER: Chris Herrel	DATE STARTED: 2/25/00	BOREHOLE DIAMETER: 6"
DRILLING EQUIPMENT: Morooka MST-600	DATE FINISHED: 2/25/00	DEPTH TO WATER:
DRILLING METHOD: HSA	LOGGED BY: R. Goldberg	CHECKED BY: A. Buangan
NOTE: FOR DETAILS OF DRILLING AND LITHOLOGIC DESCRIPTION SEE TEST BORING LOG		

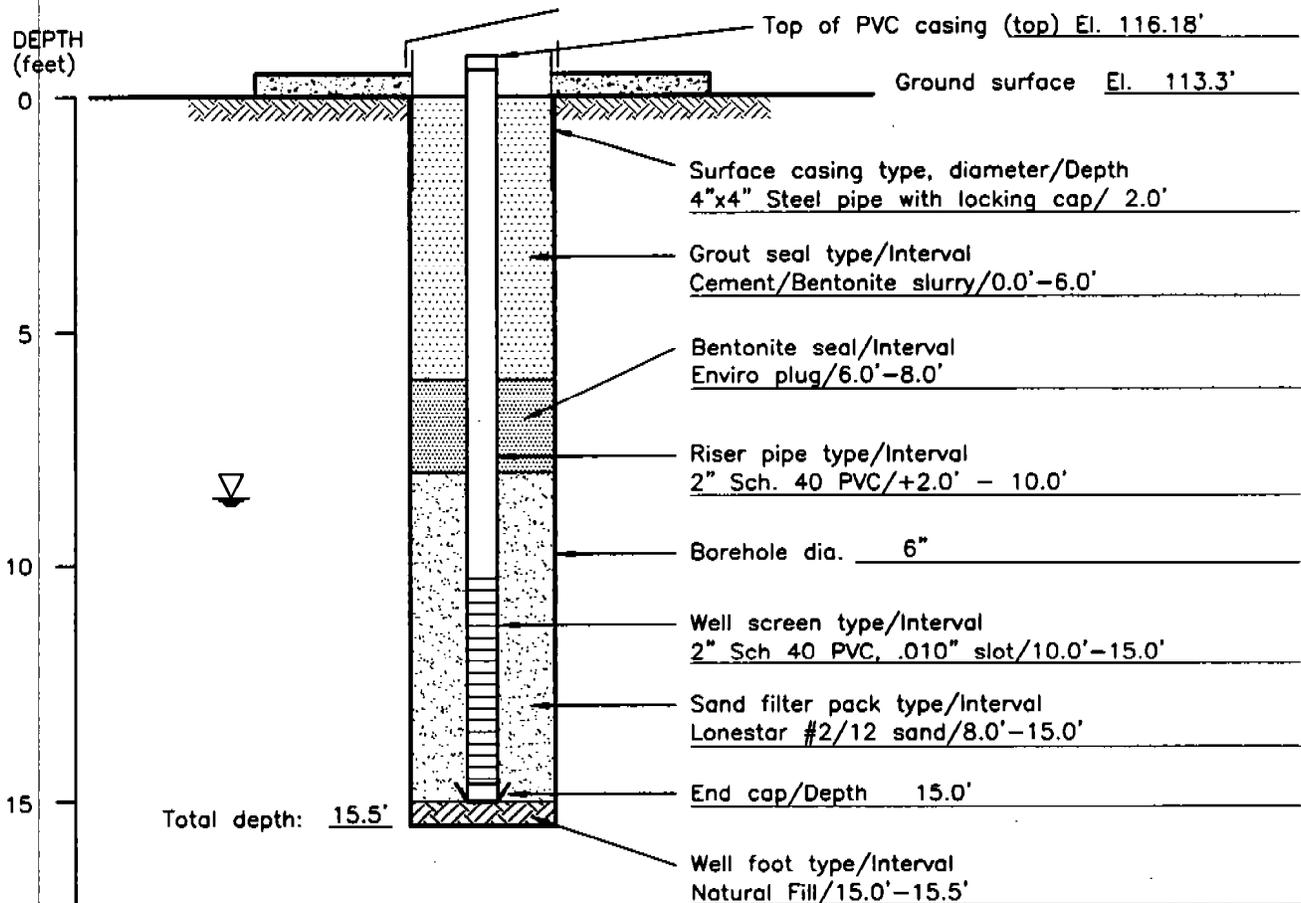


Note: All depths and depth intervals measured from ground surface

▽ Groundwater measured @ 11.8' top (05/03/00)

Monitoring Well Construction Log – Above Ground

PROJECT NAME: Tourtelot Cleanup Project	PROJECT NO: 39901	DATE:
DRILLING AGENCY: Clear Heart	BOREHOLE NO. MW10	WELL ID: MW-10
DRILLER: Chris Herrel	DATE STARTED: 3/28/00	BOREHOLE DIAMETER: 6"
DRILLING EQUIPMENT: Mooroka MST-600	DATE FINISHED: 3/28/00	DEPTH TO WATER:
DRILLING METHOD: HSA	LOGGED BY: R. Heidrick	CHECKED BY: A. Buangan
NOTE: FOR DETAILS OF DRILLING AND LITHOLOGIC DESCRIPTION SEE TEST BORING LOG		

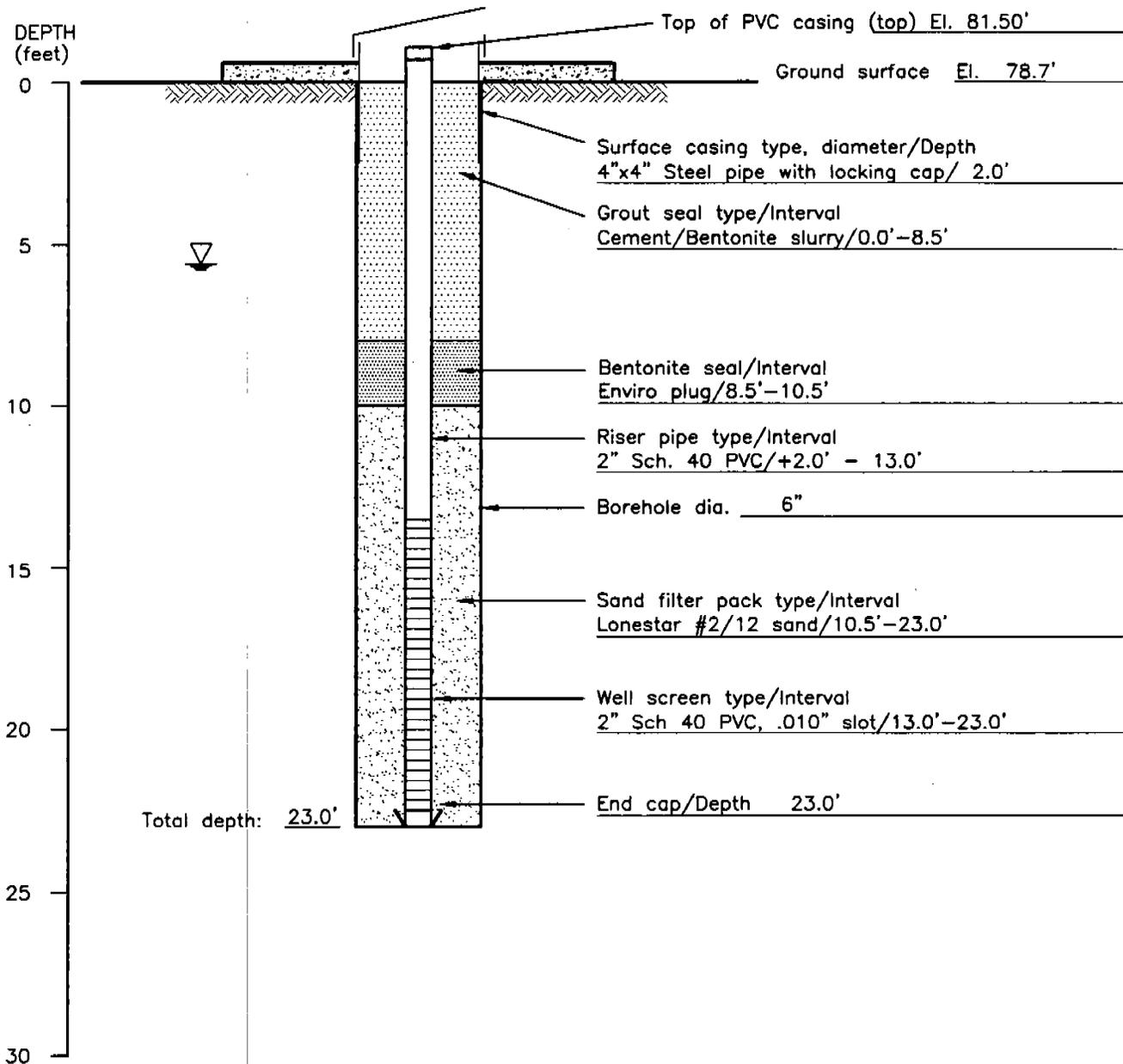


Note: All depths and depth intervals measured from ground surface

▽ Groundwater measured @ 8.54' top (05/03/00)

Monitoring Well Construction Log – Above Ground

PROJECT NAME: Tourtlot Cleanup Project	PROJECT NO: 39901	DATE:
DRILLING AGENCY: Clear Heart	BOREHOLE NO. MW11	WELL ID: MW-11
DRILLER: Chris Herrel	DATE STARTED: 3/27/00	BOREHOLE DIAMETER: 6"
DRILLING EQUIPMENT: Morooka MST-600	DATE FINISHED: 3/29/00	DEPTH TO WATER:
DRILLING METHOD: HSA	LOGGED BY: R. Goldberg	CHECKED BY: A. Buangan
NOTE: FOR DETAILS OF DRILLING AND LITHOLOGIC DESCRIPTION SEE TEST BORING LOG		

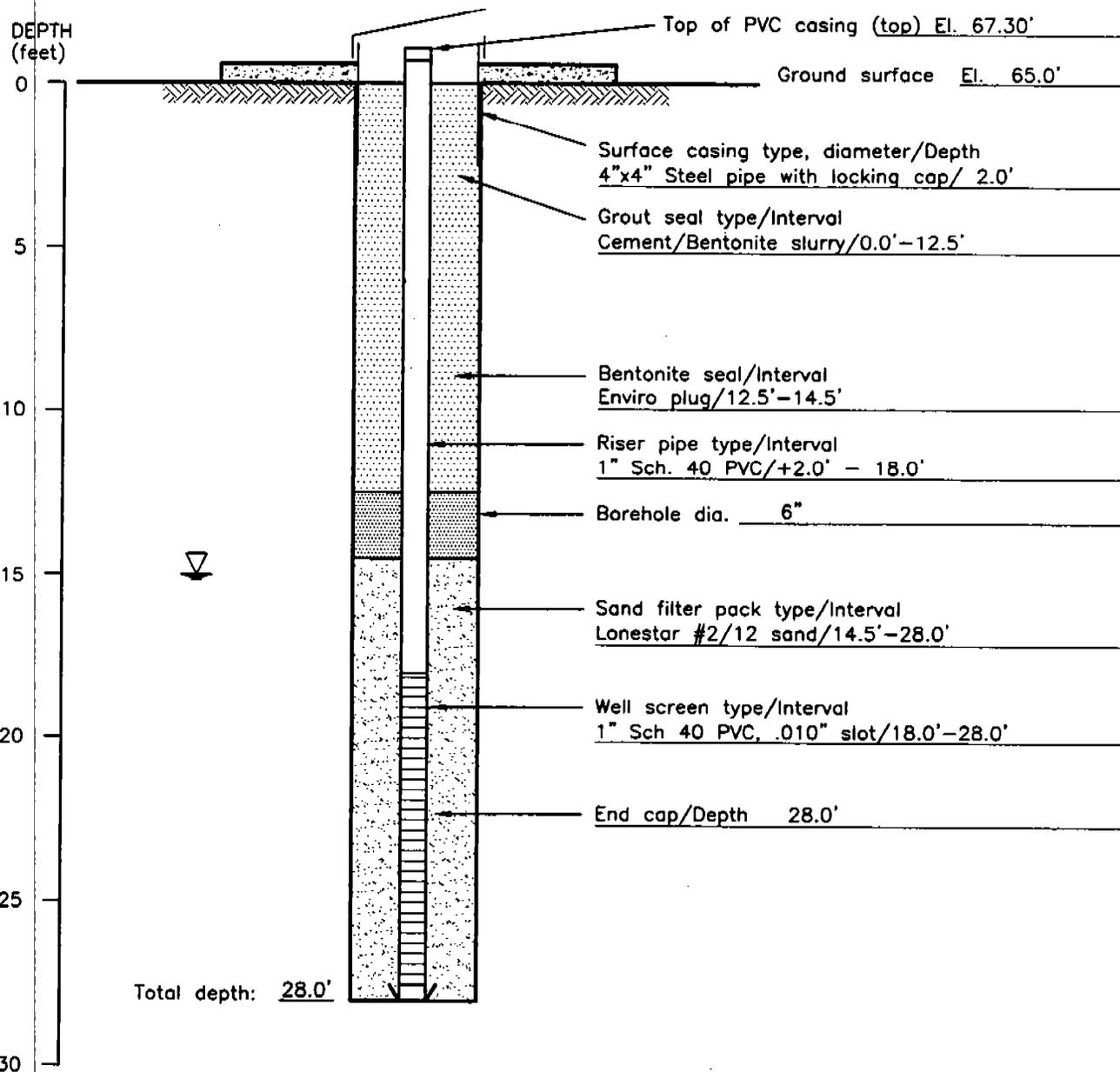


Note: All depths and depth intervals measured from ground surface

▽ Groundwater measured @ 9.62' top (05/03/00)

Monitoring Well Construction Log – Above Ground

PROJECT NAME: Tourtelot Cleanup Project	PROJECT NO: 39901	DATE:
DRILLING AGENCY: Clear Heart	BOREHOLE NO. TW-12	WELL ID: MW-12
DRILLER: Chris Herrel	DATE STARTED: 12/18/99	BOREHOLE DIAMETER: 6"
DRILLING EQUIPMENT: Morooka MST-600	DATE FINISHED: 12/18/99	DEPTH TO WATER:
DRILLING METHOD: HSA	LOGGED BY: A. B. Storm	CHECKED BY: A. Buangan
NOTE: FOR DETAILS OF DRILLING AND LITHOLOGIC DESCRIPTION SEE TEST BORING LOG		



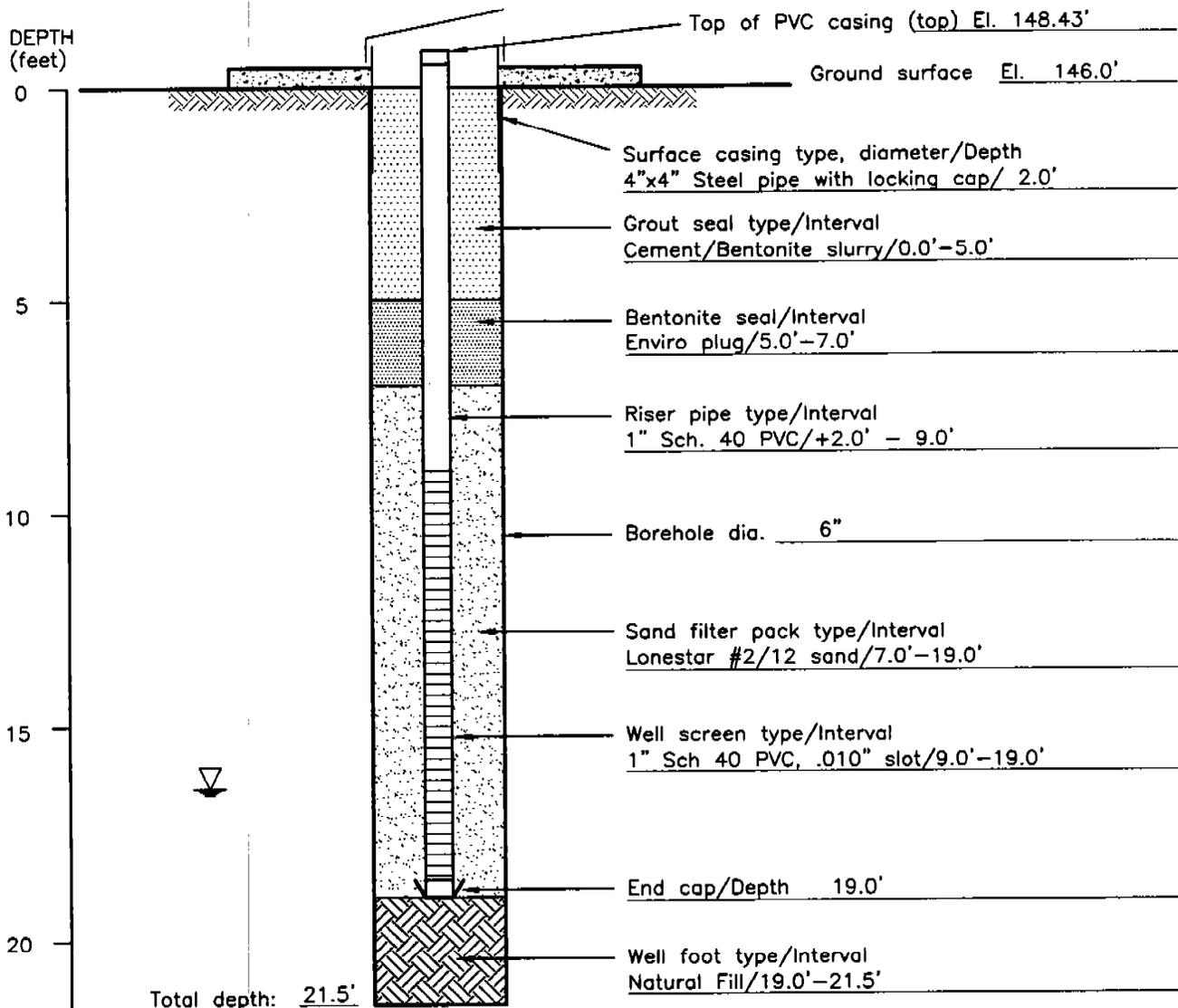
Note: All depths and depth intervals measured from ground surface

Groundwater measured @ 17.33' top (05/03/00)

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Monitoring Well Construction Log - Above Ground

PROJECT NAME: Tourtelot Cleanup Project	PROJECT NO: 39901	DATE:
DRILLING AGENCY: Clear Heart	BOREHOLE NO. MW-13	WELL ID: MW-13
DRILLER: Chris Herrel	DATE STARTED: 12/18/99	BOREHOLE DIAMETER: 6"
DRILLING EQUIPMENT: Morooka MST-600	DATE FINISHED: 12/18/99	DEPTH TO WATER:
DRILLING METHOD: HSA	LOGGED BY: R. Heidrick	CHECKED BY: A. Buangan
NOTE: FOR DETAILS OF DRILLING AND LITHOLOGIC DESCRIPTION SEE TEST BORING LOG		

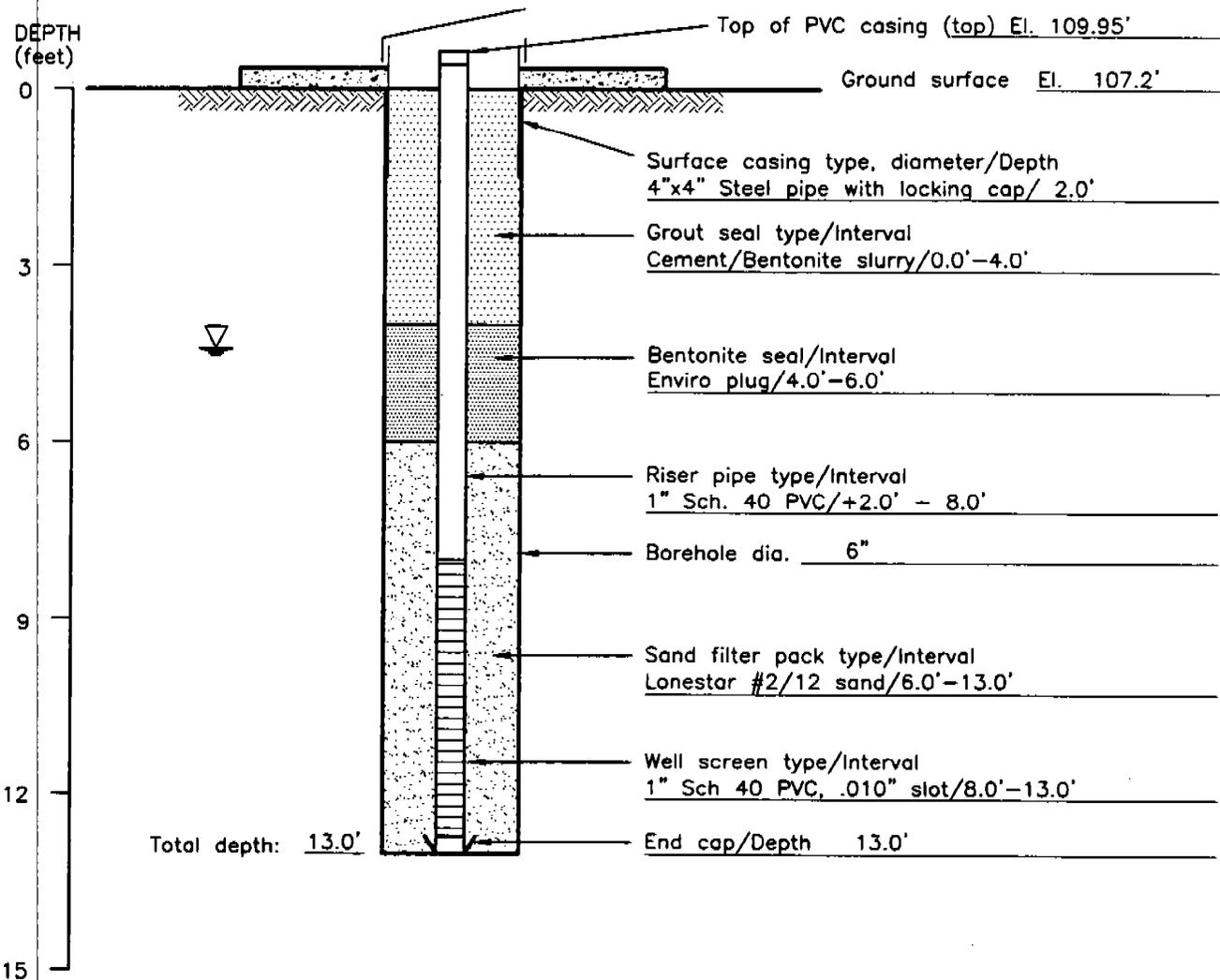


Note: All depths and depth intervals measured from ground surface

Groundwater measured @ 18.44' top (05/03/00)

Monitoring Well Construction Log – Above Ground

PROJECT NAME: Tourtelot Cleanup Project	PROJECT NO: 39901	DATE:
DRILLING AGENCY: Clear Heart	BOREHOLE NO. MW-14	WELL ID: MW-14
DRILLER: Chris Herrel	DATE STARTED: 3/29/00	BOREHOLE DIAMETER: 6"
DRILLING EQUIPMENT: Morooka MST-600	DATE FINISHED: 3/29/00	DEPTH TO WATER:
DRILLING METHOD: HSA	LOGGED BY: R. Heidrick	CHECKED BY: A. Buangan
NOTE: FOR DETAILS OF DRILLING AND LITHOLOGIC DESCRIPTION SEE TEST BORING LOG		

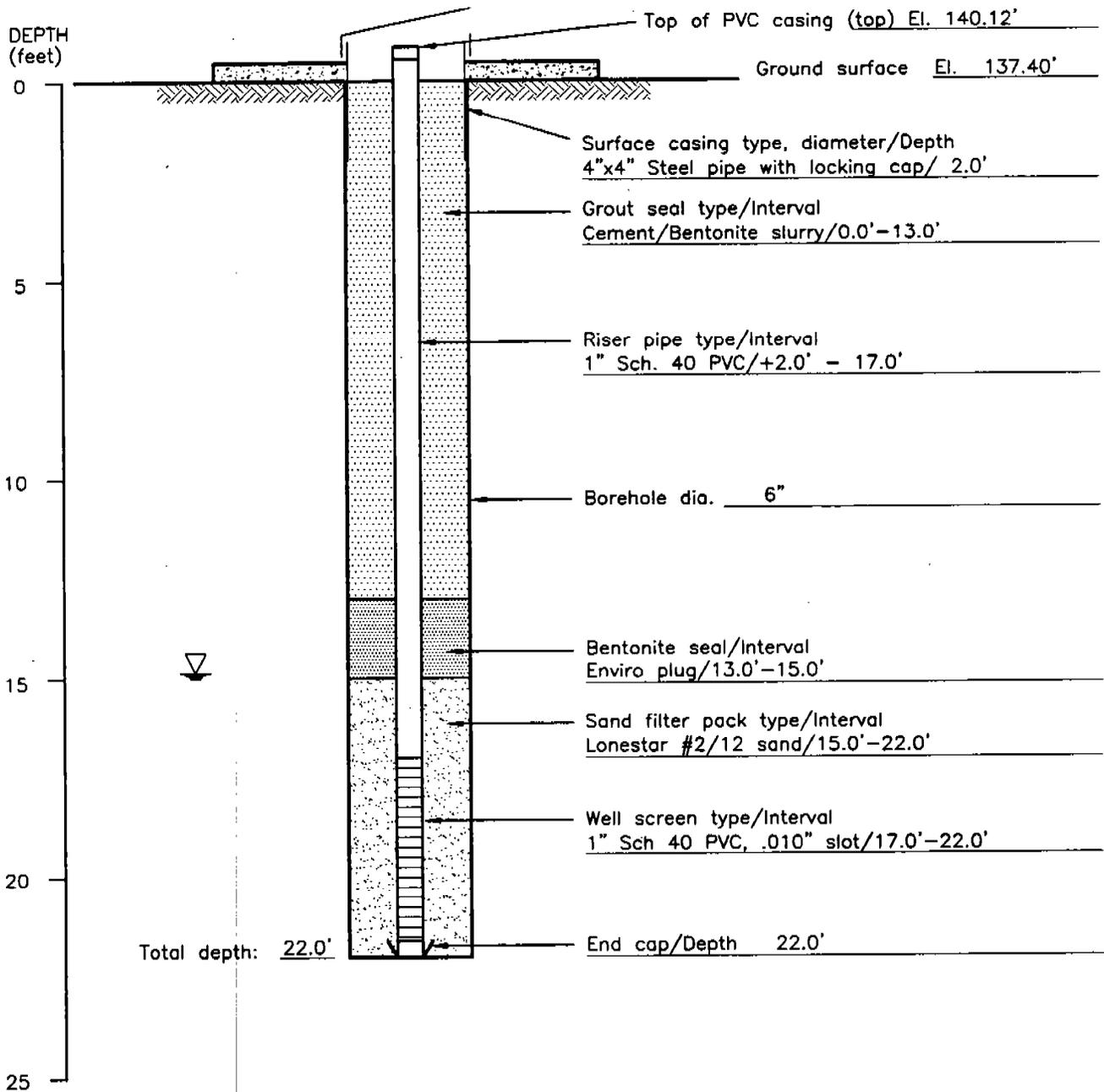


Note: All depths and depth intervals measured from ground surface

Groundwater measured @ 7.08' top (05/03/00)

Monitoring Well Construction Log - Above Ground

PROJECT NAME: Tourtlot Cleanup Project	PROJECT NO: 39901	DATE:
DRILLING AGENCY: Clear Heart	BOREHOLE NO. MW-15	WELL ID: MW-15
DRILLER: Chris Herrel	DATE STARTED: 3/30/00	BOREHOLE DIAMETER: 6"
DRILLING EQUIPMENT: Morooka MST-600	DATE FINISHED: 3/30/00	DEPTH TO WATER:
DRILLING METHOD: HSA	LOGGED BY: R. Heidrick	CHECKED BY: A. Buangan
NOTE: FOR DETAILS OF DRILLING AND LITHOLOGIC DESCRIPTION SEE TEST BORING LOG		



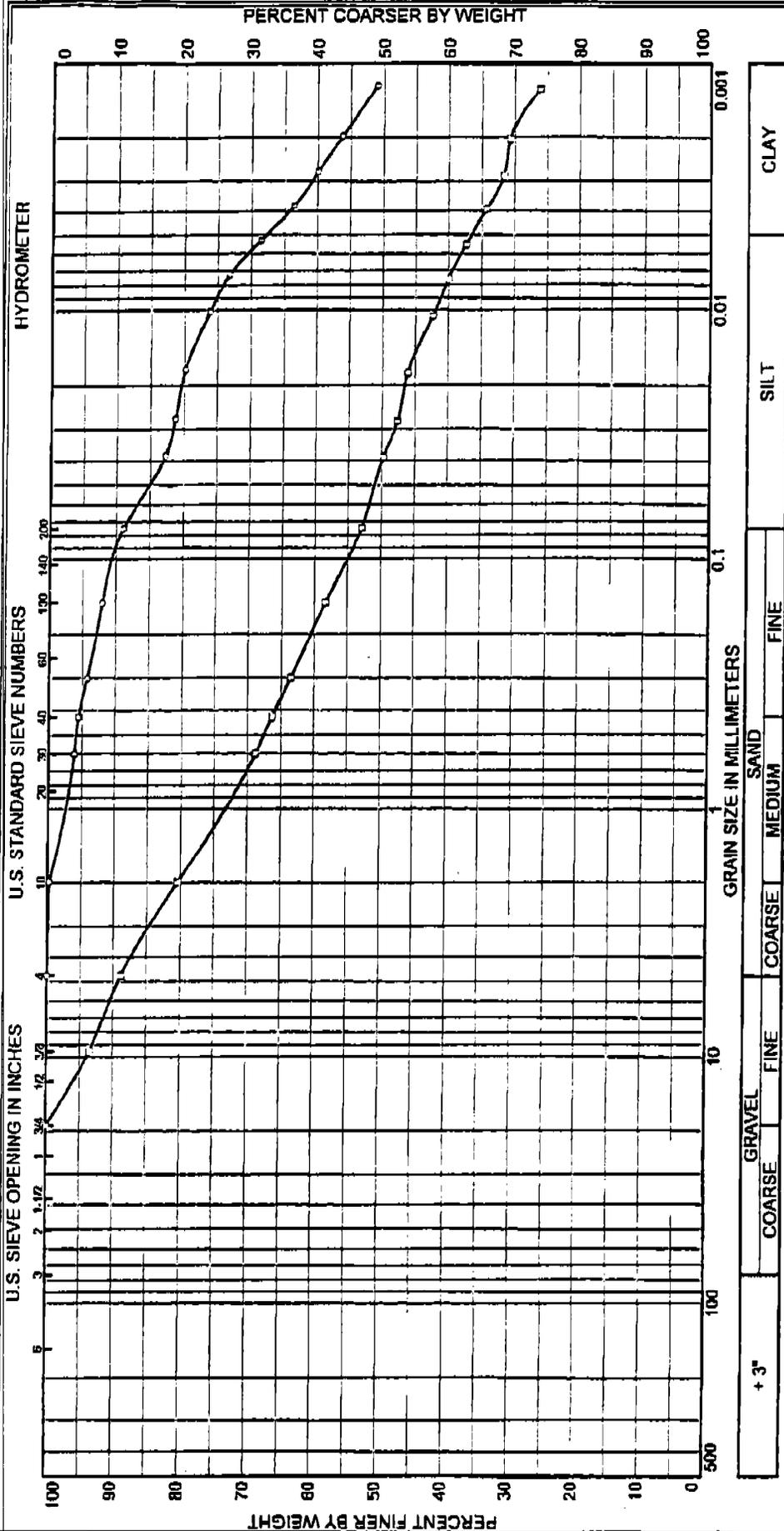
Note: All depths and depth intervals measured from ground surface

Groundwater measured @ 17.60' top (05/03/00)

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ATTACHMENT C-5

**PARTICLE SIZE DISTRIBUTION
TEST REPORT**



GRAIN SIZE DISTRIBUTION TEST DATA

Project: 35734

Project Number: 020-094

Client: Earth Tech

Sample Data

Source: TW-1/B

Sample No.:

Elev. or Depth:

Sample Length (in./cm.):

Location:

Description: brown CLAY w/sand

Mechanical Analysis Data

Initial

Dry sample and tare= 92.80

Tare = 0.00

Dry sample weight = 92.80

Sample split on number 10 sieve

Split sample data:

Sample and tare = 51.40 Tare = .00 Sample weight = 51.40

Cumulative weight retained tare= .00

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.20	99.8
# 30	1.90	96.1
# 40	2.20	95.5
# 50	2.90	94.2
# 100	4.00	92.0
# 200	5.60	88.9

Hydrometer Analysis Data

Separation sieve is #10

Percent -#10 based upon complete sample= 99.8

Weight of hydrometer sample: 51.4

Hygroscopic moisture correction:

Moist weight & tare = 29.70

Dry weight & tare = 28.71

Tare = 11.20

Hygroscopic moisture= 5.7 %

Calculated biased weight= 48.75

Table of composite correction values:

Temp, deg C: 14.0 16.0 18.0 20.0 22.0

Comp. corr: -5.0 -5.6 -5.2 -4.9 -4.5

Meniscus correction only=

Specific gravity of solids= 2.75

Specific gravity correction factor= 0.978

Hydrometer type: 152H

Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rn	Eff. depth	Diameter mm	Percent finer
1.00	19.0	49.0	44.0	0.0134	49.0	8.3	0.0386	88.2
2.00	19.0	48.0	43.0	0.0134	48.0	8.4	0.0275	86.2
5.00	19.0	47.5	42.5	0.0134	47.5	8.5	0.0175	85.2
15.00	19.0	45.5	40.5	0.0134	45.5	8.8	0.0103	81.2
30.00	19.0	44.0	39.0	0.0134	44.0	9.1	0.0074	78.1
60.00	19.0	41.5	36.5	0.0134	41.5	9.5	0.0053	73.1
120.00	19.0	38.8	33.8	0.0134	38.8	9.9	0.0039	67.7
240.00	18.5	37.0	31.9	0.0135	37.0	10.2	0.0028	64.0
480.00	18.5	35.0	29.9	0.0135	35.0	10.6	0.0020	59.9
1401.00	15.5	32.5	27.0	0.0140	32.5	11.0	0.0012	54.3

Fractional Components

Gravel/Sand based on #4

Sand/Fines based on #200

% + 3" = % GRAVEL =
 % SAND = 11.1 (% coarse = 0.2 % medium = 4.3 % fine = 6.6)
 % SILT = 17.0 % CLAY = 71.9

D₈₅ = 0.02 D₆₀ = 0.00

GRAIN SIZE DISTRIBUTION TEST DATA

Project: 35734

Project Number: 020-094

Client: Earth Tech

Sample Data

Source: TW-2/B

Sample No.:

Elev. or Depth:

Sample Length (in./cm.):

Location:

Description: brown mixed with dark brown sandy CLAY w/trace gravel

Mechanical Analysis Data

Initial

Dry sample and tare= 321.80

Tare = 0.00

Dry sample weight = 321.80

Sample split on number 10 sieve

Split sample data:

Sample and tare = 65.77 Tare = .00 Sample weight = 65.77

Cumulative weight retained tare= .00

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
3/4 inch	0.00	100.0
3/8 inch	20.90	93.5
# 4	36.10	88.8
# 10	63.20	80.4
# 30	9.50	68.8
# 40	11.50	66.3
# 50	13.80	63.5
# 100	18.10	58.3
# 200	22.50	52.9

Hydrometer Analysis Data

Separation sieve is #10

Percent -#10 based upon complete sample= 80.4

Weight of hydrometer sample: 65.77

Hygroscopic moisture correction:

Moist weight & tare = 31.10

Dry weight & tare = 30.13

Tare = 11.46

Hygroscopic moisture= 5.2 %

Calculated biased weight= 77.76

Table of composite correction values:

Temp, deg C: 14.0 16.0 18.0 20.0 22.0

Comp. corr: -5.0 -5.6 -5.2 -4.9 -4.5

Meniscus correction only=

Specific gravity of solids= 2.8

Specific gravity correction factor= 0.969

Hydrometer type: 152H

Effective depth L= 16.294964 - 0.164 x Rm

COOPER TESTING LABORATORY

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.00	19.0	46.0	41.0	0.0132	46.0	8.8	0.0391	51.0
2.00	19.0	45.3	40.2	0.0132	45.3	8.9	0.0279	50.1
5.00	19.0	44.0	39.0	0.0132	44.0	9.1	0.0178	48.5
15.00	19.0	40.8	35.7	0.0132	40.8	9.6	0.0106	44.5
30.00	19.0	38.8	33.7	0.0132	38.8	9.9	0.0076	42.0
60.00	19.0	36.5	31.5	0.0132	36.5	10.3	0.0055	39.2
120.00	19.0	34.0	29.0	0.0132	34.0	10.7	0.0040	36.1
240.00	18.5	31.8	26.7	0.0133	31.8	11.1	0.0029	33.2
480.00	18.5	31.0	25.9	0.0133	31.0	11.2	0.0020	32.2
1401.00	15.5	27.5	22.0	0.0138	27.5	11.8	0.0013	27.5

Fractional Components

Gravel/Sand based on #4

Sand/Fines based on #200

% + 3" = % GRAVEL = 11.2 (% coarse = % fine = 11.2)

% SAND = 35.9 (% coarse = 8.4 % medium = 14.1 % fine = 13.4)

% SILT = 14.5 % CLAY = 38.4

D85= 3.10 D60= 0.19 D50= 0.03

D30= 0.00

ATTACHMENT C-6

**WELL PURGING AND SAMPLE COLLECTION FORMS
REMEDIAL INVESTIGATION**



A **TRICO** INTERNATIONAL LTD. COMPANY

Project No.: _____ Well No. **TW-12** Site: TowneLoft CleanUp

Purging Method: Pumped Bailed Other: _____
 Pump Type: Peristaltic Bailer Type: PVC Small Dia (100s)

Weather Conditions: Clear - warm
 Volume Calculations: 26.4 - 17.40 x .0408 = .367

(D.T.B. - D.T.W. x vol./ft. = Gals./well vol.)

(Gals./well vol. X $\frac{3}{1}$ = Total Volume to be removed) Gals./well vol.: 0.367 x 3 = 1.01 gallons

Time	Depth to Water (D.T.W.)	Depth to Bottom (D.T.B.)	Volume Removed (gal.)	pH	Cond.	Temp.	Color	Odor Y/N	Turbidity
11:45	17.40'	26.4	0	8.51	850	18.6			> 1000
11:55			0.25	8.26	600	18.5			> 1000
12:00			.50	8.26	1100	18.5			> 1000
12:05			0.75	8.26	600	18.5			> 1000
12:10			1.00	8.26	600	18.5			> 1000
12:15	17.94'		1.20	8.26	600	18.5			> 1000
Sample Readings									

Comments: Sampled TW-12 at 12:30pm.
check well w/ Gastech when opening
reading = 0% LEL Methane
Dup taken for filtered Metals
at 1300 - TW-12/A

Inside Diameter	vol./ft.
1"	0.04
1.25"	0.06
2"	0.16
4"	0.65

Field Blank Taken Time: _____
 Well Duplicate No.: TW-12A-1300
 Signature: ARS JW
 Date: 12 122 99

Hnu/PPM	LEL%	O ₂ %	H ₂ S/PPM	CO/PPM
	0.70			

ATTACHMENT C-7

**WELL DEVELOPMENT FORMS
DATA GAPS INVESTIGATION**

Well Development (Must Have Well Construction Diagrams)



Well No. MW-1

Date: 04 10 00
 (Mon.) Tues. Weds. Thurs. Fri.

Site: TOURTELOT

Weather: Sunny 75°

Project No.: 39901

Development: Pumped Bailed

Other: _____

Pump Type: 21.8 1.824

Bailer Type: _____

Volume Calculation: (25.7 - 10.4) x 0.16 = 2.46 gal x 10 = 24.6 gal 18.24 gal

(D.T.B - D.T.W. x vol./ft. = PVC/well volume) + (N* x H* Annulus vol./ft.) = Total well Volume

* (Wells that cannot be purged dry, 10x's the Total Well Volume must be purged)

(Wells that can be purged dry, slowly removing water, without surging until dry)

Time	Depth to Water (D.T.W.)	Depth to Bottom (D.T.B.)	Volume Removed (gal.)	PH	Cond.	Temp.	Color	Odor Y/N	Turbidity
1513	10.36	21.80	1.9	7.37	1400	18.6°C	light brown	N	170.2
1521			3.8	7.30	1375	18.4°C	med brown	N	95.0
1526			5.7	7.33	1375	18.7°C	med brown	N	171.8
1534			7.6	7.30	1325	19.2°C	light brown	N	164.6
1542			9.5	7.30	1350	18.5°C	light brown	N	165.9
1552			11.4	7.28	1275	18.6	light brown	N	169.2
1600			13.3	7.32	1325	19.1	light brown	N	161.1
1603			15.2	7.31	1200	19.7	light brown	N	110.9
1605			17.1	7.31	1200	19.5	light brown	N	160.3
			19.0	7.32	1200	19.7	light brown	N	158.6

Comments: _____

- *N = porosity of filter pack
- *H = length of filter pack or length of saturated filter pack (water level within screen length)
- * = A 30-minute surge and purge before the 10x's the Total Well Volume

Annulus	vol./ft.
4"	0.42
6"	1.24
8"	2.38
10"	3.85

Inside Diameter	vol./ft.
1"	0.04
1.25"	0.06
2"	0.16
4"	0.65

Signature: Chad Dickey

HNU./PP	LEL/%	O ₂ /%	H ₂ S/PPM	CO/PPM

Well Development (Must Have Well Construction Diagrams)



Well No. MW-2

Date: 4/10/00
 (Mon, Tues, Weds, Thurs, Fri)

Site: TOURTELOT

Weather: Sunny 70°

Project No.: 39901

Development: Pumped Bailed

Other: _____

Pump Type: 2170

Bailer Type: Disposable Polyethylene

Volume Calculation: ~~22.35 - 9.2~~ (22.35 - 10.55) x 0.16 = 1.80 gal x 10 = 18.0 gal

(D.T.B - D.T.W. x vol./ft. = PVC/well volume) + (N * x H * Annulus vol./ft.) = Total well Volume

* (Wells that cannot be purged dry, 10x's the Total Well Volume must be purged)

(Wells that can be purged dry, slowly removing water, without surging until dry)

Time	Depth to Water (D.T.W.)	Depth to Bottom (D.T.B.)	Volume Removed (gal.)	PH	µmhos Cond.	°C Temp.	Color	Odor Y/N	Turbidity
1005	10.55	22.35	2	7.31	925	15.7	clear	N	15.92
1015			4	7.32	1110	16.9	Slightly Cloudy	N	91.6
1025			6	7.33	1000	17.0	Slightly brown	N	broke
1040			8	7.49	875	17.1	cloudy brown	N	-
1050			10	7.44	825	17.0	cloudy brown	N	-
1105			12	7.39	790	16.8	cloudy lt. brown	N	-
1125			14	7.31	800	16.8	cloudy + lt. brown	N	-
1250			16	7.32	875	16.0	cloudy	N	-
1300			19	7.36	825	17.0	cloudy slight brown	N	-

Comments: Turbidity broke/would not read. Believe that numbers were < 200

- *N = porosity of filter pack
- *H = length of filter pack or length of saturated filter pack (water level within screen length)
- * = A 30-minute surge and purge before the 10x's the Total Well Volume

Annulus	vol./ft.
4"	0.42
6"	1.24
8"	2.38
10"	3.85

Inside Diameter	vol./ft.
1"	0.04
1.25"	0.06
2"	0.16
4"	0.65

Signature: Ronald Haddley

HNU./PP	LEL/%	O ₂ /%	H ₂ S/PPM	CO/PPM

Well Development (Must Have Well Construction Diagrams)



A TUCO INTERNATIONAL LTD. COMPANY

Well No. MW-3 TW-3

Date: 04 / 14 / 00
 Mon. Tues. Weds. Thurs. Fri.

Site: TOURTELOT

Weather: Cloudy 54°

Project No.: 39901

Development: Pumped Bailed

Other: _____

Pump Type: _____

Bailer Type: Disoside PVC

Volume Calculation: (34.3 - 9.2) x 0.04 = 1.00 gal x 10 = 10 gal

(D.T.B - D.T.W. x vol./ft. = PVC/well volume) + (N* x H* Annulus vol./ft.) = Total well Volume

* (Wells that cannot be purged dry, 10x's the Total Well Volume must be purged)

(Wells that can be purged dry, slowly removing water, without surging until dry)

Time	Depth to Water (D.T.W.)	Depth to Bottom (D.T.B.)	Volume Removed (gal.)	PH	Cond.	Temp.	Color	Odor Y/N	Turbidity
0930	8.39	33.02	1.0 gal	7.51	1000	16.3°C	slightly cloudy	N	167.5
0943			2.0 gal	7.43	925	16.2°C	slightly cloudy	N	152.3
1510			3.0 gal	7.35	1000	18.0	slightly cloudy	N	60.6
1535			4.0	7.36	975	17.8	slightly cloudy	N	77.5
7555			5.0	7.38	925	17.9	slightly cloudy	N	67.1
1015			6.0	7.35	1000	18.0	slightly cloudy	N	72.2
11035			7.0	7.39	1000	17.7	slightly cloudy	N	75.3
1408			8.0	7.23	1000	16.6	clear	N	61.6
1425			9.0	7.22	1000	16.9°C	clear	N	58.9
1436			10.0	7.24	1000	17.0°C	clear	N	60.2

Comments: _____

- *N = porosity of filter pack
- *H = length of filter pack or length of saturated filter pack (water level within screen length)
- * = A 30-minute surge and purge before the 10x's the Total Well Volume

Annulus	vol./ft.
4"	0.42
6"	1.24
8"	2.38
10"	3.85

Inside Diameter	vol./ft.
1"	0.04
1.25"	0.06
2"	0.16
4"	0.65

Signature: Chad Pickey

HNU./PP	LEL/%	O ₂ /%	H ₂ S/PPM	CO/PPM

Well Development (Must Have Well Construction Diagrams)

EARTH TECH

A ~~UNION~~ INTERNATIONAL LTD. COMPANY

Well No. MW-4A 3A

Date: 04 17 00
 Mon. Tues. Weds. Thurs. Fri.

AA Tourtelot
 Weather: Cloudy 55°F
 Development: Pumped Bailed
 Pump Type: _____
 Volume Calculation: (55.02 - 3.67)

Project No.: 39901
 Other: _____
 Bailer Type: Disposable

(D.T.B. - D.T.W. x vol./ft. = PVC/well volume) + (N* x H* Annulus vol./ft.) = Total well Volume

* (Wells that cannot be purged dry, 10x's the Total Well Volume must be purged)

(Wells that can be purged dry, slowly removing water, without surging until dry)

Time	Depth to Water (D.T.W.)	Depth to Bottom (D.T.B.)	Volume Removed (gal.)	PH	Cond.	Temp.	Color	Odor Y/N	Turbidity
1530			28 8	11.27	1025	27.8	hazy cloudy sandy fines	N	294
1545			16	12.28	2700	19.0	sandy fines	N	167
1605			28	12.14	2050	19.6	fluid "	N	174
1625			36	12.09	1750	19.1	less sandy	N	162
1647			47	12.02	2800	25.1	little sandy	N	116
1503			58	12.21	2000	19.4°C	"	N	94.2
1557			69	12.09	1600	19.4°C	slightly sandy	N	109.4

Comments: _____

- *N = porosity of filter pack
- *H = length of filter pack or length of saturated filter pack (water level within screen length)
- * = A 30-minute surge and purge before the 10x's the Total Well Volume

Annulus	vol./ft.	Inside Diameter	vol./ft.
4"	0.42	1"	0.04
6"	1.24	1.25"	0.06
8"	2.38	2"	0.16
10"	3.85	4"	0.65

Signature: _____

HNU./PP	LEL/%	O ₂ %	H ₂ S/PPM	CO/PPM

Well Development (Must Have Well Construction Diagrams)



A **TYCO** INTERNATIONAL LTD. COMPANY

Well No. MW-3B

Date: 4/21/00
 Mon. Tues. Weds. Thurs. Fri.

Site: TCUP

Weather: Clear warm

Project No.: 39901

Development: Pumped Bailed

Other: Bailed with CME-650 drill rig using

Pump Type: _____

Bailer Type: 1 1/2" x 7' steel wireline bailer and disposable

Volume Calculation: 55'-0" x 1.24 = 68 gal.

(D.T.B - D.T.W. x vol./ft. = PVC/well volume) + (N* x H* Annulus vol./ft.) = Total well Volume

* (Wells that cannot be purged dry, 10x's the Total Well Volume must be purged)

(Wells that can be purged dry, slowly removing water, without surging until dry)

Time	Depth to Water (D.T.W.)	Depth to Bottom (D.T.B.)	Volume Removed (gal.)	PH	Cond.	Temp.	Color	Odor Y/N	Turbidity
1420	0'	55'	6	9.04	500	22.4	gray	N	6.60
1440	18.0'		13	8.23	600	19.6	" "	N	28.6
1500	23.2'		21	8.04	700	19.0	↓	N	332
1538	23.4'		32	7.60	800	19.1		N	196
4/24 0945	5.84'		40	7.37	790	18.9	Slightly cloudy	N	58.8
0955			4746	7.33	750	19.2		N	32.7
1020			52	7.15	775	18.5	↓	N	17.3
1030			58	7.17	775	18.7	clear	N	15.1
1045			64	7.20	790	19.0		N	18.1
1100			70	7.19	790	19.2	↓	N	16.3

Comments: Due to slight bend in casing, deviation hole only reached 3.4'. Terminated developing on 4/21 @ 1540.

- *N = porosity of filter pack
- *H = length of filter pack or length of saturated filter pack (water level within screen length)
- * = A 30-minute surge and purge before the 10x's the Total Well Volume

Annulus	vol./ft.
4"	0.42
6"	1.24
8"	2.38
10"	3.85

Inside Diameter	vol./ft.
1"	0.04
1.25"	0.06
2"	0.16
4"	0.65

Signature: Rich Hindrich 4/21

HNU./PP	LEL/%	O ₂ /%	H ₂ S/PPM	CO/PPM

Well Development (Must Have Well Construction Diagrams)



A TYCO INTERNATIONAL LTD. COMPANY

Well No. MW-4 TW-4

Date: 4, 12, 00
Mon. Tues. Weds Thurs. Fri.

Site: TOURTELOT

Weather: Sunny 70° - intermittent showers Project No.: 39901

Development: Pumped Bailed Other: _____
Pump Type: (28.8 - 8.18) x 0.04 = 0.825 Bailer Type: = 8.25 Disposable PVC Bailer

Volume Calculation: (29.65 - 8.25) x 0.04 = 0.856 gal x 10 = 8.56 gal

(D.T.B - D.T.W. x vol./ft. = PVC/well volume) + (N* x H* Annulus vol./ft.) = Total well Volume

- * (Wells that cannot be purged dry, 10x's the Total Well Volume must be purged)
- (Wells that can be purged dry, slowly removing water, without surging until dry)

Time	Depth to Water (D.T.W.)	Depth to Bottom (D.T.B.)	Volume Removed (gal.)	PH	Cond.	Temp.	Color	Odor Y/N	Turbidity
<u>7/12 1646</u>			<u>0.8</u>	<u>7.24</u>	<u>900</u>	<u>16.8</u>			<u>—</u>
<u>1659</u>			<u>1.6</u>	<u>7.19</u>	<u>875</u>	<u>17.6</u>			<u>—</u>
<u>1730</u>			<u>2.5</u>	<u>7.19</u>	<u>900</u>	<u>17.4</u>			
<u>4/13 1030</u>			<u>3.5</u>	<u>7.11</u>	<u>900</u>	<u>17.7</u>	<u>cc slightly cloudy</u>	<u>N</u>	<u>740</u>
<u>1050</u>			<u>4.5</u>	<u>7.12</u>	<u>950</u>	<u>17.8</u>	<u>1.8 cc brown</u>	<u>N</u>	<u>358</u>
<u>1110</u>			<u>5.5</u>	<u>7.24</u>	<u>975</u>	<u>17.8</u>	<u>1.8 cc brown</u>	<u>N</u>	<u>322</u>
<u>1555</u>			<u>6.5</u>	<u>7.12</u>	<u>1000</u>	<u>17.7</u>	<u>slightly cloudy</u>	<u>N</u>	<u>95.6</u>
<u>1610</u>			<u>7.5</u>	<u>7.10</u>	<u>1000</u>	<u>17.9</u>	<u>slightly cloudy</u>	<u>N</u>	<u>81.7</u>
<u>1630</u>			<u>8.5</u>	<u>7.13</u>	<u>900</u>	<u>17.0</u>	<u>slightly cloudy</u>	<u>N</u>	<u>84.0</u>

14 0823

Comments: _____

- *N = porosity of filter pack
- *H = length of filter pack or length of saturated filter pack (water level within screen length)
- * = A 30-minute surge and purge before the 10x's the Total Well Volume

Annulus	vol./ft.
4"	0.42
6"	1.24
8"	2.38
10"	3.85

Inside Diameter	vol./ft.
1"	0.04
1.25"	0.06
2"	0.16
4"	0.65

Signature: Chad Dickey

HNU./PP	LEL/%	O ₂ /%	H ₂ S/PPM	CO/PPM

Well Development (Must Have Well Construction Diagrams)

EARTH TECH

A TEXACO INTERNATIONAL LTD. COMPANY

Well No. MW-4A

Date: 4/12/00
 Mon. Tues. Weds Thurs. Fri.

Site: North Valley

Weather: Cloudy 70° Windy

Project No.: 39901

Development: Pumped Bailed

Other: _____

Pump Type: _____

Bailer Type: Disposable

Volume Calculation: $(50.35) - 8.10 = 42.25 \times 0.16 = 6.76 \times 10 \text{ well vol.} = 67.6$

(D.T.B - D.T.W. x vol./ft. = PVC/well volume) + (N* x H* Annulus vol./ft.) = Total well Volume

- * (Wells that cannot be purged dry, 10x's the Total Well Volume must be purged)
- (Wells that can be purged dry, slowly removing water, without surging until dry)

Time	Depth to Water (D.T.W.)	Depth to Bottom (D.T.B.)	Volume Removed (gal.)	PH	µMHC'S Cond.	°C Temp.	Color	Odor Y/N	Turbidity
1540	8.10	50.35	6						
1605			10	8.62	500	26.4	Brownish gray	N	—
1627			12	8.44	800	19.3	Brownish gray	N	—
1641			18	8.53	500	19.1	same	N	—
1709			24	8.49	575	19.1	same	N	—
0930			30	8.71	700	26.3	slightly cloudy	N	64.0
1005			36	8.58	650	19.9	same	N	128.2
1010			42	8.55	650	19.5	slightly cloudy	N	180.0
1035			48	8.55	600	20.2	brown gray	N	360
1052			54	8.45	675	19.2	dark gray	N	598
1113	48.69		60	8.52	700	19.5	dark gray	N	625

Comments: _____

- *N = porosity of filter pack
- *H = length of filter pack or length of saturated filter pack (water level within screen length)
- * = A 30-minute surge and purge before the 10x's the Total Well Volume

Annulus	vol./ft.	Inside Diameter	vol./ft.
4"	0.42	1"	0.04
6"	1.24	1.25"	0.06
8"	2.38	2"	0.16
10"	3.85	4"	0.65

HNU./PP	LEL/%	O ₂ /%	H ₂ S/PPM	CO/PPM

Signature: _____

Well Development (Must Have Well Construction Diagrams)



Well No. MW-5

Date: 04 / 12 / 00
 Mon. Tues. Weds Thurs. Fri.

Site: TOURTELOT

Weather: partly cloudy / raining

Project No.: 39901

Development: Pumped Bailed

Other: _____

Pump Type: _____ (13.70 - 12.20)

Bailer Type: Diaphragm

Volume Calculation: 13.65 + (24.75 - 18.2) x 0.16 = 1.048 gal x 10 = 10.48 gal
 (D.T.B - D.T.W. x vol./ft. = PVC/well volume) + (N* x H* Annulus vol./ft.) = Total well Volume 2.50 gal

- * (Wells that cannot be purged dry, 10x's the Total Well Volume must be purged)
- (Wells that can be purged dry, slowly removing water, without surging until dry)

4/3

Time	Depth to Water (D.T.W.)	Depth to Bottom (D.T.B.)	Volume Removed (gal.)	PH	Cond.	Temp.	Color	Odor Y/N	Turbidity
0852	13.20	13.70	.25	7.42	1800	16.0°C	no clear	N	-
0903			.50	7.43	1650	16.3°C	slightly cloudy	N	-
1705			1.0	8.49	1700	19.1	light brown	N	-
1625			1.25	7.36	1750	17.4	cloudy	N	86.5
1650			1.5	7.43	1500	17.1	cloudy	N	323

Comments: Very little water must come back every day to develop water

- *N = porosity of filter pack
- *H = length of filter pack or length of saturated filter pack (water level within screen length)
- * = A 30-minute surge and purge before the 10x's the Total Well Volume

Annulus	vol./ft.
4"	0.42
6"	1.24
8"	2.38
10"	3.85

Inside Diameter	vol./ft.
1"	0.04
1.25"	0.06
2"	0.16
4"	0.65

Signature: Rachel Halden

HNU./PP	LEL/%	O ₂ /%	H ₂ S/PPM	CO/PPM	

Well Development (Must Have Well Construction Diagrams)



A **tyco** INTERNATIONAL LTD. COMPANY

Well No. MW-6

Date: 04 12 00
 Mon. Tues. Weds. Thurs. Fri.

Site: TOURTELST

Weather: Ptly Sunny 70°

Project No.: 39901

Development: Pumped Bailed

Other: _____

Pump Type: _____

Bailer Type: disposable

Volume Calculation: $(21.9 - 2.123) = 19.77 * .16 = 3.08 * 10 = 30.8$

(D.T.B - D.T.W. x vol./ft. = PVC/well volume) + (N* x H* Annulus vol./ft.) = Total well Volume

* (Wells that cannot be purged dry, 10x's the Total Well Volume must be purged)

(Wells that can be purged dry, slowly removing water, without surging until dry)

Time	Depth to Water (D.T.W.)	Depth to Bottom (D.T.B.)	Volume Removed (gal.)	PH	Cond.	Temp.	Color	Odor Y/N	Turbidity
0900	5.63	21.90		7.24		15.8			
0920			3	7.20	1225	16.5	brown	N	broke
0935			6	7.17	1200	18.1	light brown	N	—
0938			9	7.26	1150	17.7	brown	N	—
0944			12	7.25	1100 1075	17.5	med brown	N	—
0955			15	7.33	1075	17.6	med brown	N	—
1003			18	7.23	1000	17.5	light brown	N	—
1247			21	7.22	1100	18.7	slightly cloudy	N	—
1255			24	7.16	1050	22.1	light brown	N	—
1303			27	7.16	1075	19.3	light brown	N	—
1308			30	7.17	1100	18.4	brown	N	—

Comments: _____

- *N = porosity of filter pack
- *H = length of filter pack or length of saturated filter pack (water level within screen length)
- * = A 30-minute surge and purge before the 10x's the Total Well Volume

Annulus	vol./ft.	Inside Diameter	vol./ft.
4"	0.42	1"	0.04
6"	1.24	1.25"	0.06
8"	2.38	2"	0.16
10"	3.85	4"	0.65

Signature: _____

HNU./PP	LEL/%	O ₂ /%	H ₂ S/PPM	CO/PPM	

Well Development (Must Have Well Construction Diagrams)



Well No. MW-7

Date: 4/5/00
 Mon. Tues. Weds Thurs. Fri.

Site: TOURTELOT

Weather: Partly cloudy

Project No.: 39901

Development: Pumped Bailed

Other: _____

Pump Type: 11.77

Bailer Type: Disposable teflon

Volume Calculation: $(12.55 - 9.88) \times 0.16 = 0.3952 \text{ gal} \times 10 = 3.95 \text{ gal}$
 $0.3024 \text{ gal} \times 10 = 3.02 \text{ gal}$
 (D.T.B - D.T.W. x vol./ft. = PVC/well volume) + (N* x H* Annulus vol./ft.) = Total well Volume

- * (Wells that cannot be purged dry, 10x's the Total Well Volume must be purged)
- (Wells that can be purged dry, slowly removing water, without surging until dry)

1/5/00
1/6/00
1/10/00

Time	Depth to Water (D.T.W.)	Depth to Bottom (D.T.B.)	Volume Removed (gal.)	PH	Cond.	Temp. °C	Color	Odor Y/N	Turbidity
1104			0.5	7.06	5500	16.2°C	slightly cloudy	N	23.3
1107			1.5	7.18	5500 2775	16.0°C	" "	N	17.9
1339			2.0	7.14	2700	19.6°C	slightly cloudy	N	18.1
1051			2.3	6.82	5500	16.2°C	slightly cloudy	N	7.75
1055			2.6	6.94	5550	16.1°C	slightly cloudy	N	11.2
1525			3.1	7.19	5500	17.1	slightly cloudy	N	28.7

Comments: Recharge on well is very slow, need time to finish well development. Finish

- *N = porosity of filter pack
- *H = length of filter pack or length of saturated filter pack (water level within screen length)
- * = A 30-minute surge and purge before the 10x's the Total Well Volume

Annulus	vol./ft.
4"	0.42
6"	1.24
8"	2.38
10"	3.85

Inside Diameter	vol./ft.
1"	0.04
1.25"	0.06
2"	0.16
4"	0.65

Signature: Chad P. Key

HNU./PP	LEL/%	O ₂ /%	H ₂ S/PPM	CO/PPM

Well Development (Must Have Well Construction Diagrams)



A **TYCO** INTERNATIONAL LTD. COMPANY

Well No. MW-8

Date: 04 105 00
 Mon. Tues. Weds Thurs. Fri.

Site: TOURTELOT

Weather: partly Sunny 65-70 °F

Project No.: 37701

Development: Pumped Bailed

Other: _____

Pump Type: 18.3 L44

Bailer Type: Disposable tellon

Volume Calculation: $(47.0 - 9.3) \times 0.16 = 1.328 \text{ gal} \times 10 = 13.28 \text{ gal}$
17.4 gal

(D.T.B - D.T.W. x vol./ft. = PVC/well volume) + (N* x H* Annulus vol./ft.) = Total well Volume

* (Wells that cannot be purged dry, 10x's the Total Well Volume must be purged)

(Wells that can be purged dry, slowly removing water, without surging until dry)

Time	Depth to Water (D.T.W.)	Depth to Bottom (D.T.B.)	Volume Removed (gal.)	PH	Cond.	Temp.	Color	Odor Y/N	Turbidity
1430			1.5	7.19	750	17.6	light brown	N	165.4
1437			3.0	7.21	780	16.8	med. brown	N	32.4
1458			4.5	7.16	1500	17.3	med brown	N	107.6
1508			6.0	7.15	1500	17.5	med brown	N	174.2
1520			7.5	7.18	1490	16.7	med brown	N	85.3
1530			9.0	7.14	1485	17.3	med. brown	N	82.8
1540			10.5	7.11	1490	16.5	med. brown	N	92.6
1550			12.0	7.20	1500	16.9	med. brown	N	60.4
1602			13.5	7.26	1500	17.3	med brown	N	80.2

Comments: Recharge on well was good,

- *N = porosity of filter pack
- *H = length of filter pack or length of saturated filter pack (water level within screen length)
- * = A 30-minute surge and purge before the 10x's the Total Well Volume

Annulus	vol./ft.
4"	0.42
6"	1.24
8"	2.38
10"	3.85

Inside Diameter	vol./ft.
1"	0.04
1.25"	0.06
2"	0.16
4"	0.65

Signature: Chad Pickey

HNU./PP	LEL/%	O ₂ /%	H ₂ S/PPM	CO/PPM

Well Development (Must Have Well Construction Diagrams)



A **TYCO** INTERNATIONAL LTD. COMPANY

Well No. MW-8 - cont'd

Date: 04 / 05 / 00
 Mon. Tues. (Weds) Thurs. Fri.

Site: Tourtelot

Weather: partly Sunny 65-70°F

Project No.: 39901

Development: Pumped Bailed

Other: _____

Pump Type: 18.3

Bailer Type: _____

Volume Calculation: (18.3-9.3) x 6.16 = 1.44 x 10 = 14.4 gal

(D.T.B - D.T.W. x vol./ft. = PVC/well volume) + (N* x H* Annulus vol./ft.) = Total well Volume

* (Wells that cannot be purged dry, 10x's the Total Well Volume must be purged)

(Wells that can be purged dry, slowly removing water, without surging until dry)

Time	Depth to Water (D.T.W.)	Depth to Bottom (D.T.B.)	Volume Removed (gal.)	PH	Cond.	Temp.	Color	Odor Y/N	Turbidity
1614			15.0	7.21	1490	16.9	med-brown	N	121.7

Comments: _____

- *N = porosity of filter pack
- *H = length of filter pack or length of saturated filter pack (water level within screen length)
- * = A 30-minute surge and purge before the 10x's the Total Well Volume

Annulus	vol./ft.
4"	0.42
6"	1.24
8"	2.38
10"	3.85

Inside Diameter	vol./ft.
1"	0.04
1.25"	0.06
2"	0.16
4"	0.65

Signature: Chad P. Jacey

HNU./PP	LEL/%	O ₂ %	H ₂ S/PPM	CO/PPM

Well Development (Must Have Well Construction Diagrams)



A TUCO INTERNATIONAL LTD. COMPANY

Well No. MW-9

Date: 04 106 00
 Mon. Tues. Weds. Thurs. Fri.

Site: TOURTELOT

Weather: partly sunny 60-65°F

Project No.: 3901

Development: Pumped Bailed

Other: _____

Pump Type: 17.7

Bailer Type: 0.8528

Volume Calculation: $(18.05 - 12.37) \times 0.16 = 0.908 \text{ gal} \times 10 = 9.08 \text{ gal}$ 8.53 gal

$(D.T.B - D.T.W. \times \text{vol./ft.} = \text{PVC/well volume}) + (N \times H \times \text{Annulus vol./ft.}) = \text{Total well Volume}$

- * (Wells that cannot be purged dry, 10x's the Total Well Volume must be purged)
- (Wells that can be purged dry, slowly removing water, without surging until dry)

Time	Depth to Water (D.T.W.)	Depth to Bottom (D.T.B.)	Volume Removed (gal.)	PH	Cond.	Temp.	Color	Odor Y/N	Turbidity
1110	17.80 11.62	17.80	1.0 gal	6.92	1500	17.7	slightly brown	N	160.7
1135			2.0 gal	7.02	1500	16.3	med. brown	N	37.4
1205			3.0 gal	7.05	1325	16.6	brown	N	0.21
1315			4.0 gal	7.01	1300	16.5	med brown	N	55.6
1402			5.0 gal	6.92	1325	16.5	med brown	N	14.3
1412			6.0 gal	7.04	1300	16.5	med brown	N	06.4
1418			7.0 gal	7.04	1300	16.3	med brown	N	38.6
1425			8.0 gal	7.01	1300	17.1	med brown	N	43.1
1435			9.0 gal	7.07	1300	16.7	med brown	N	31.6
1441			10.0 gal	7.06	1300	17.0	med brown	N	54.5

Comments: _____

- *N = porosity of filter pack
- *H = length of filter pack or length of saturated filter pack (water level within screen length)
- * = A 30-minute surge and purge before the 10x's the Total Well Volume

Annulus	vol./ft.	Inside Diameter	vol./ft.
4"	0.42	1"	0.04
6"	1.24	1.25"	0.06
8"	2.38	2"	0.16
10"	3.85	4"	0.65

Signature: Chad Dickey

HNU./PP	LEL/%	O ₂ /%	H ₂ S/PPM	CO/PPM

Well Development (Must Have Well Construction Diagrams)



A tyco INTERNATIONAL LTD. COMPANY

Well No. MW-10

Date: 04 / 13 / 00
 Mon. Tues. Weds. Thurs. Fri.

Site: TOURTELOT

Weather: partly cloudy 55°

Project No.: 39901

Development: Pumped Bailed 1.9 gal Other: _____

Pump Type: (17.82 - 5.68) x 0.16 = 1.9 gal Bailer Type: 19.42

Volume Calculation: (18.45 - 11.1) x 0.16 = 1.176 gal x 10 = 11.76 gal + 0.56 gal

(D.T.B - D.T.W. x vol./ft. = PVC/well volume) + (N x H x Annulus vol./ft.) = Total well Volume

* (Wells that cannot be purged dry, 10x's the Total Well Volume must be purged)

(Wells that can be purged dry, slowly removing water, without surging until dry)

Time	Depth to Water (D.T.W.)	Depth to Bottom (D.T.B.)	Volume Removed (gal.)	PH	COND	Temp.	Color	Odor Y/N	Turbidity
1440			2	7.14	1575	17.0	light brown	N	122.2
1444 ⁰⁰			4	7.08	1600	17.6	med brown	N	663
1449	17.82		6	7.30	1600	17.1	med to dk brown	N	0.41
117/00 1116			8	7.22	1500	16.2	light brown	N	163.6
1120			10	7.19	1475	16.3	med brown	N	336
119/00 0845			12	7.03	1300	15.0	light brown	N	126.6
0850			14	7.10	1300	16.1	med brown	N	662
0857			16	7.36	1350	16.2	med to dk brown	N	9.6
120/00 1005			18	6.96	1400	16.4	light brown	N	320
1015			20	6.88	1400	16.4	dark brown	N	15.6

Comments: _____

- *N = porosity of filter pack
- *H = length of filter pack or length of saturated filter pack (water level within screen length)
- * = A 30-minute surge and purge before the 10x's the Total Well Volume

Annulus	vol./ft.	Inside Diameter	vol./ft.
4"	0.42	1"	0.04
6"	1.24	1.25"	0.06
8"	2.38	2"	0.16
10"	3.85	4"	0.65

Signature: Ronald Malley

HNU./PP	LEL/%	O ₂ /%	H ₂ S/PPM	CO/PPM

Well Development (Must Have Well Construction Diagrams)



Well No. MW-11

Date: 4/19/00
 Mon. Tues. Weds Thurs. Fri.

Site: TOURTELOT

Weather: Pt Sunny 65°

Project No.: 39901

Development: Pumped Bailed

Other: _____

Pump Type: 25.75 2.632 Bailer Type: Disposable

Volume Calculation: (25.75 - 9.3) x 0.16 = 2.648 gal x 10 = 26.48 gal 26.32 gal

(D.T.B - D.T.W. x vol./ft. = PVC/well volume) + (N* x H* Annulus vol./ft.) = Total well Volume

- * (Wells that cannot be purged dry, 10x's the Total Well Volume must be purged)
- (Wells that can be purged dry, slowly removing water, without surging until dry)

Time	Depth to Water (D.T.W.)	Depth to Bottom (D.T.B.)	Volume Removed (gal.)	PH	Cond.	Temp.	Color	Odor Y/N	Turbidity
1105			2.5	7.23	1000	14.3	light brown	N	10416
1115			5.0	7.23	1000	14.8	med brown	N	79.2
1125			7.5	7.28	1000	15.4	med brown	N	48.1
1130			10.0	7.27	1000	15.0	med brown	N	278
11405			12.5	7.16	1000	15.5	med brown	N	1001
11412			15.0	7.17	1000	15.2	med brown	N	762
11417			17.5	7.20	1000	15.4	med brown	N	552
11421			20.0	7.21	1000	15.5	med brown	N	842
11430			22.5	7.19	1000	15.5	light brown	N	1012
11435			26.0	7.21	1000	15.7	light brown	N	1090

Comments: _____

- *N = porosity of filter pack
- *H = length of filter pack or length of saturated filter pack (water level within screen length)
- * = A 30-minute surge and purge before the 10x's the Total Well Volume

Annulus	vol./ft.
4"	0.42
6"	1.24
8"	2.38
10"	3.85

Inside Diameter	vol./ft.
1"	0.04
1.25"	0.06
2"	0.16
4"	0.65

Signature: Rachel Adell

HNU./PP	LEL/%	O ₂ %	H ₂ S/PPM	CO/PPM

Well Development (Must Have Well Construction Diagrams)



A **tyco** INTERNATIONAL LTD. COMPANY

Well No. AW-12 TW -12

Date: 4.19.00
 Mon. Tues. Weds Thurs. Fri.

Site: TOURTELOT

Weather: Sunny 70°

Project No.: 39901

Development: Pumped Bailed

Other: _____

Pump Type: 28.5" 0.48

Bailer Type: Disposable

Volume Calculation: (30.1 - 16.5) x 0.04 = 0.54 gal x 10 = 5.4 gal 4.8 gal

(D.T.B - D.T.W. x vol./ft. = PVC/well volume) + (N* x H* Annulus vol./ft.) = Total well Volume

- * (Wells that cannot be purged dry, 10x's the Total Well Volume must be purged)
- (Wells that can be purged dry, slowly removing water, without surging until dry)

Time	Depth to Water (D.T.W.)	Depth to Bottom (D.T.B.)	Volume Removed (gal.)	PH	Cond.	°C Temp.	Color	Odor Y/N	Turbidity
1515			0.75	7.16	1000	18.0	light brown	N	123
1530			1.5	7.26	900	17.7	light brown	N	145
1550			2.25	7.35	900	17.8	light brown	N	98.0
1620			3.00	7.36	925	17.7	light brown	N	71.5
1640			4.00	7.19	900	17.9	light brown	N	135
1700			5.00	7.47	925	18.9	light brown	N	273

Comments: _____

- *N = porosity of filter pack
- *H = length of filter pack or length of saturated filter pack (water level within screen length)
- * = A 30-minute surge and purge before the 10x's the Total Well Volume

Annulus	vol./ft.
4"	0.42
6"	1.24
8"	2.38
10"	3.85

Inside Diameter	vol./ft.
1"	0.04
1.25"	0.06
2"	0.16
4"	0.65

Signature: Rachel Hedley

HNU./PP	LEL/%	O ₂ /%	H ₂ S/PPM	CO/PPM

Well Development (Must Have Well Construction Diagrams)



A **tyco** INTERNATIONAL LTD. COMPANY

Well No. MW-13

Date: 4 / 10 / 00
 Mon. Tues. Weds. Thurs. Fri.

Site: TOURTELOT

Weather: Sunny 70°

Project No.: 39901

Development: Pumped Bailed

Other: _____

Pump Type: 21.25 17.82

Bailer Type: Polyethylene disposable

Volume Calculation: (23.1 - 16.1) x 0.16 = 1.12 gal x 10 = 11.2 gal 5.49 gallons

(D.T.B - D.T.W. x vol./ft. = PVC/well volume) + (N* x H* Annulus vol./ft.) = Total well Volume

* (Wells that cannot be purged dry, 10x's the Total Well Volume must be purged)

(Wells that can be purged dry, slowly removing water, without surging until dry)

Time	Depth to Water (D.T.W.)	Depth to Bottom (D.T.B.)	Volume Removed (gal.)	PH	Cond.	Temp.	Color	Odor Y/N	Turbidity
4:1340	17.82	21.25							
1350			1	7.35	1750	18.9	cloudy	N	71.1
1410			2	7.44	1850	21.1	cloudy	N	160.5
1645			3	7.60	1625	20.1	cloudy	N	44.8
4:11 1540			4	7.27	1175	19.2	cloudy	N	broke
1550			5.5	7.44	1200	19.3	cloudy	N	-

Comments: _____

- *N = porosity of filter pack
- *H = length of filter pack or length of saturated filter pack (water level within screen length)
- * = A 30-minute surge and purge before the 10x's the Total Well Volume

Annulus	vol./ft.
4"	0.42
6"	1.24
8"	2.38
10"	3.85

Inside Diameter	vol./ft.
1"	0.04
1.25"	0.06
2"	0.16
4"	0.65

Signature: Rachel Goldberg

HNU./PP	LEL/%	O ₂ %	H ₂ S/PPM	CO/PPM

Well Development (Must Have Well Construction Diagrams)



Well No. MW-14

Date: 04 10 00
 Mon. Tues. Weds. Thurs. Fri.

Site: TOURTELDT

Weather: Sunny 70°

Project No.: 37901

Development: Pumped Bailed

Other: _____

Pump Type: _____

Bailer Type: _____

Volume Calculation: $(15.9 - 10.3) \times 0.16 = 0.90 \text{ gal}$ $\times 10 = 9.0 \text{ gal}$
 $(D.T.B - D.T.W. \times \text{vol./ft.} = \text{PVC/well volume}) + (N \times H \times \text{Annulus vol./ft.}) = \text{Total well Volume}$
 $1.24 \text{ gal} \times 10 = 12.4 \text{ gal}$

* (Wells that cannot be purged dry, 10x's the Total Well Volume must be purged)
 (Wells that can be purged dry, slowly removing water, without surging until dry)

Time	Depth to Water (D.T.W.)	Depth to Bottom (D.T.B.)	Volume Removed (gal.)	PH	Cond.	Temp.	Color	Odor Y/N	Turbidity
1015	8.10	16.02	1.25	7.30	1275	16.6°C	clear	N	39.2
1023			2.50	7.33	1250	17.0°C	slightly cloudy	N	-
1036			3.75	7.28	1300	17.5°C	med. brown	N	-
1043			5.00	7.46	1100	16.9°C	med. brown	N	-
1123			6.25	7.34	725	16.7°C	light brown	N	-
1310			7.50	7.05	675	18.0	light brown	N	-
1313			7.75 ^{TRG} 8.75	7.27	700	16.3	light brown	N	-
1325			10.00	7.51	775	17.5	light brown	N	-
1425			11.25	7.36	700	18.0	slightly cloudy	N	126.8
1545			12.5	7.28	775	20.7	slightly cloudy	N	43.1

Comments: Turbidity would not read on lower depths

- *N = porosity of filter pack
- *H = length of filter pack or length of saturated filter pack (water level within screen length)
- * = A 30-minute surge and purge before the 10x's the Total Well Volume

Annulus	vol./ft.
4"	0.42
6"	1.24
8"	2.38
10"	3.85

Inside Diameter	vol./ft.
1"	0.04
1.25"	0.06
2"	0.16
4"	0.65

Signature: Chad Dickey

HNU./PP	LEL/%	O ₂ /%	H ₂ S/PPM	CO/PPM

Well Development (Must Have Well Construction Diagrams)



A **TYCO** INTERNATIONAL LTD. COMPANY

Well No. **MW-15**

Date: **04 / 10 / 00**
 Mon. Tues. Weds. Thurs. Fri.

Site: **TOURTELOT**

Weather: **Sunny 75°**

Project No.: **39901**

Development: Pumped Bailed

Other: _____

Pump Type: _____

Bailer Type: _____

Volume Calculation: $(24.55 - 18.2) \times 0.16 = 1.016 \text{ gal} \times 10 = 10.16 \text{ gal}$

(D.T.B - D.T.W. x vol./ft. = PVC/well volume) + (N* x H* Annulus vol./ft.) = Total well Volume

* (Wells that cannot be purged dry, 10x's the Total Well Volume must be purged)

(Wells that can be purged dry, slowly removing water, without surging until dry)

1/10/00

1/11/00

Time	Depth to Water (D.T.W.)	Depth to Bottom (D.T.B.)	Volume Removed (gal.)	PH	Cond.	Temp.	Color	Odor Y/N	Turbidity
1340	24.17.90	24.20	1.1 gal	7.52	1075	18.0°C	muddy	N	150.1
1349			2.2 gal	7.35	600	18.7°C	brown	N	0.23
1445			3.3 gal	7.21	1100	18.7°C	slightly cloudy	N	162.0
1453			4.4 gal	7.30	1000	20.1°C	med. brown	N	95.2
1529			5.5 gal	7.35	1100	18.7°C	slightly cloudy	N	103.2
1639			6.6 gal	7.28	1050	18.3°C	light brown	N	86.1
1540			7.7 gal	7.27	1000	19.5°C	slightly cloudy	N	-
1545			8.8 gal	7.23	1050	18.5°C	med. brown	N	-
1600			9.9 gal	7.24	1100	19.2°C	med brown	N	-
1602			11.0 gal	7.23	1075	19.5°C	light brown	N	-

Comments: _____

- *N = porosity of filter pack
- *H = length of filter pack or length of saturated filter pack (water level within screen length)
- * = A 30-minute surge and purge before the 10x's the Total Well Volume

Annulus	vol./ft.	Inside Diameter	vol./ft.
4"	0.42	1"	0.04
6"	1.24	1.25"	0.06
8"	2.38	2"	0.16
10"	3.85	4"	0.65

Signature: Chad P. Key

HNU./PP	LEL/%	O ₂ /%	H ₂ S/PPM	CO/PPM

ATTACHMENT C-8

**TNT EnSys® SOIL TEST SYSTEM
USER'S GUIDE**

TNT EnSys[®] SOIL TEST SYSTEM

RAPID FIELD SCREEN

User's Guide

IMPORTANT NOTICE

The range of this test is between 1 and 30 ppm TNT/TNB/DNT. The relative standard deviation is 8%. The least detectable concentration is 0.7 ppm (TNT).

This test system should be used only under the supervision of a technically qualified individual who is capable of understanding any potential health and environmental risks of this product as identified in the product literature. The components must only be used for the analysis of soil samples for the presence of TNT. After use, the kits must be disposed of in accordance with applicable federal and local regulations.

PHASE 1 TEST PREPARATION

READ ALL INSTRUCTIONS BEFORE PROCEEDING WITH THE TEST

ITEMS INCLUDED IN TEST KIT

- | | | |
|--|---|---|
| <input type="checkbox"/> 2 Cuvette stopper plugs | <input type="checkbox"/> 20 Extraction jars | <input type="checkbox"/> 1 TNT control ampule |
| <input type="checkbox"/> 1 Ampule cracker | <input type="checkbox"/> 1 Bulb pipette | <input type="checkbox"/> 20 - 30cc syringes |
| <input type="checkbox"/> 20 Syringe filters | <input type="checkbox"/> 1 Developer solution | <input type="checkbox"/> 20 Weigh boats |
| <input type="checkbox"/> 20 Wooden spatulas | <input type="checkbox"/> 1 - 50ml. graduated conical tube | |

ITEMS NOT INCLUDED IN TEST KIT

- | | | |
|--|--|--|
| <input type="checkbox"/> 2 matched HACH cuvettes | <input type="checkbox"/> Acetone | <input type="checkbox"/> Waste container |
| <input type="checkbox"/> Paper towels | <input type="checkbox"/> Hach DR/2000 or DR/2010 | <input type="checkbox"/> Balance |
| <input type="checkbox"/> Disposable gloves | <input type="checkbox"/> Calculator | |

READ BEFORE PROCEEDING

- For some matrices, air drying the soil samples may result in better TNT recovery or more reproducible data.
- A slightly modified protocol should be used if the primary analyte of concern is DNT. Please refer to the modification outlined on page 6.
- It is recommended that a control be run each day. See page 8 for instructions.
- SDI's EnSys® TNT Soil Test System is designed for use with either of Hach models DR/2000 or the newer DR/2010 spectrophotometers. Protocols for use of both instruments are provided in this User's Guide. Ensure the instrument protocol followed is appropriate for the instrument being used.
- The Hach DR/2000 is designed to turn off after a few minutes of inactivity. Press the "READ/ENTER" key every few minutes to prevent DR/2000 from turning off. If DR/2000 turns off, use Reference cuvette to rezero. Newer DR/2000 models and the DR/2010 have an override "constant on" feature that allows the machine to run indefinitely. Refer to the Instrument Operation: Spectrophotometer Setup section of the HACH DR/2000 or DR/2010 User's manuals.

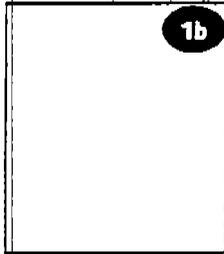
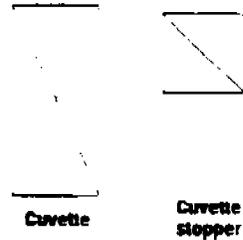
If you are using the TNT test in conjunction with the RDX test it is important to save your sample extracts. They will be used in the RDX test. Remember to cap the extracts tightly after use. An RDX kit without extraction set-ups can be purchased specifically for this purpose.

PHASE 1 TEST PREPARATION

READ ALL INSTRUCTIONS BEFORE PROCEEDING WITH THE TEST

CLEAN CUVETTES

- 1a Fill 2 Hach matched cuvettes with approximately 5 mL water.
- 1b Cap each with cuvette stopper plug and, holding plug in place, shake vigorously for 3 seconds.
- 1c Empty into waste container.
- 1d Fill cuvettes with approximately 5 mL acetone.
- 1e Cap each with cuvette stopper plug and, holding plug in place, shake vigorously for 3 seconds.
- 1f Empty into waste container.
- 1g Repeat acetone wash (steps 1d - 1f).
- 1h Wipe outside of cuvette with paper towels. Take care to especially clean the side labeled "25 mL" and the side opposite.



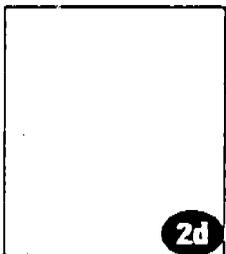
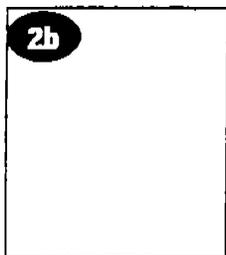
PHASE 1 TEST PREPARATION

READ ALL INSTRUCTIONS BEFORE PROCEEDING WITH THE TEST

READ BEFORE PROCEEDING

- Designate a "Reference" and "Sample" cuvette.

SPECTROPHOTOMETER PREPARATION



2a1 Turn on Hach DR/2000. The instrument will read "SELF-TEST" followed by "Method?". Select Method "0" and press the "READ/ENTER" key.

or

2a2 Turn on the Hach DR/2010. The instrument will read "Self-Test V.xx", then "Enter Program #". Press the [Shift] key (do not hold) and then the [ABS/8] key. Note: Select Program # "0" may also be used to select absorbance mode on the DR/2010.

2b Rotate the wavelength dial until the small display shows: 540 nm.

2c Fill both cuvettes with acetone to the 25 mL line.

2d Insert "Reference" cuvette into cell holder on Hach DR/2000 or DR/2010 with side marked "25 mL" on the right.

2e1 Close light shield of the DR/2000 and press "CLEAR/ZERO" key to establish the reference. The display will read "WAIT" and then "0.000 Abs."

or

2e2 Close the light shield of the DR/2010 and press the [ZERO] key. The display will read "Zeroing..." then "0.000 Abs."

2f Remove the "Reference" cuvette and place the "Sample" cuvette in the cell holder.

2g1 On the DR/2000, press the "READ/ENTER" key and record the absorbance on the worksheet as "Abs_{background}".

or

2g2 On the DR/2010, press the [READ] key and record the absorbance on the worksheet as "Abs_{background}".

2h If reading is greater than 0.002 in magnitude (+ or -), clean cuvettes and redo steps 2a - 2g.

2i Empty acetone from "Sample" cuvette into waste container.



Cuvette

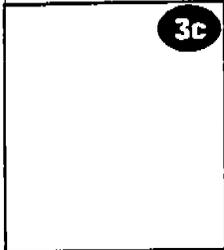
PHASE 2 SAMPLE EXTRACTION & PREPARATION

READ ALL INSTRUCTIONS BEFORE PROCEEDING WITH THE TEST

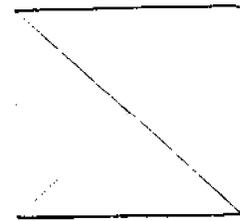
READ BEFORE PROCEEDING

- Sample should be mixed to ensure a homogeneous sample.

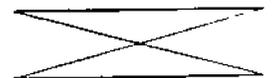
WEIGH SAMPLE



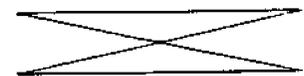
- Place an unused weigh boat on pan balance.
- Press ON/MEMORY button on pan balance. Balance will beep and display 0.0.
- Weigh out 10 \pm 0.1 grams of soil.
- If balance turns off prior to completing weighing, use empty weigh boat to retare, then continue.



Weigh Boat

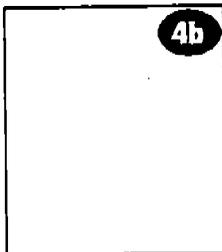


Pan balance



Wooden spatula

EXTRACT TNT



- Measure 50 mL acetone in the 50mL graduated conical tube.
 - Pour acetone into an extraction jar.
 - Using wooden spatula, transfer 10 grams of soil from weigh boat into extraction jar.
 - Recap extraction jar tightly and shake vigorously for three minutes.
 - Allow to settle for five minutes.
- Repeat steps 3a - 4e for each sample to be tested.

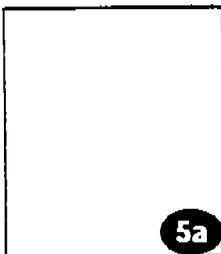


50mL
Graduated
Conical
Tube



Extraction
jar

FILTER SAMPLE



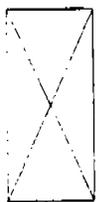
- Place tip of 30 cc syringe into liquid above the sediment layer in the extraction jar and draw up 25 mL of the sample.
- Screw the syringe filter onto the end of the syringe.
- Press the plunger firmly and dispense the sample into the "Sample" cuvette.



30 cc
syringe



Syringe
filter

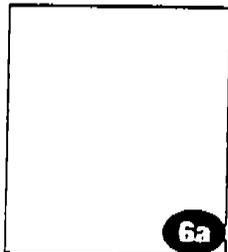


Cuvette

PHASE 3 SAMPLE ANALYSIS

READ ALL INSTRUCTIONS BEFORE PROCEEDING WITH THE TEST

READ SAMPLE



- 6a Place the "Sample" cuvette in the cell holder.
- 6b Press the "READ/ENTER" key and record the absorbance on the worksheet as "Abs_{initial}".
- 6c Remove the "Sample" cuvette from the cell holder.
- 6d Add 1 drop of Developer Solution.
- 6e Cap the "Sample" cuvette and shake vigorously for 3 seconds.



Cuvette

DNT Analysis Note:

For analysis of samples containing DNT, and/or where DNT concentration is of concern, samples must be allowed to develop for 10 minutes before reading sample absorbance. This will not effect color development for other nitroaromatics.

- 6f Remove the cuvette stopper and place the "Sample" cuvette in the cell holder.
- 6g Press the "READ/ENTER" key and record the absorbance on the worksheet as "Abs_{sample}".
- 6h Clean cuvette between samples using procedure in steps 1a - 1h.

PHASE 4 INTERPRETATION

READ ALL INSTRUCTIONS BEFORE PROCEEDING WITH THE TEST

INTERPRETATION OF RESULTS

- 7a Multiply the "Abs_{initial}" value for each sample by 4. Enter these values on the worksheet.
- 7b Subtract this value from the "Abs_{sample}" values for each sample and record on the worksheet.
- 7c Divide the adjusted sample value by 0.0323 and record on the worksheet. This value is the TNT concentration of the sample in parts per million.

$$\text{TNT (ppm)} = \frac{\text{Abs}_{\text{sample}} - (\text{Abs}_{\text{initial}} \times 4)}{0.0323}$$

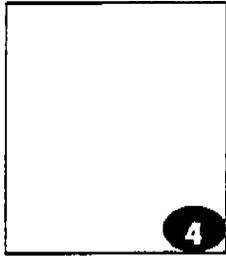
Note: For sample concentrations greater than 30ppm the sample extract should be diluted with acetone and reanalyzed. Remember to multiply the result by the dilution factor in order to determine the correct concentration.

CONTROL (QA/QC) CHECK

READ ALL INSTRUCTIONS BEFORE PROCEEDING WITH THE TEST

- The TNT control is optional, but it is recommended that it be run daily.

PREPARE CONTROL



- 1 Measure 50 mL acetone in the 50mL graduated conical tube.
- 2 Pour into extraction jar.
- 3 Open TNT control ampule by slipping ampule cracker over top, and then breaking tip at scored neck.
- 4 Transfer entire contents of TNT control ampule into extraction jar using bulb pipette.
- 5 Cap extraction jar and shake vigorously for 3 seconds.



50mL
Graduated
Conical
Tube



TNT control



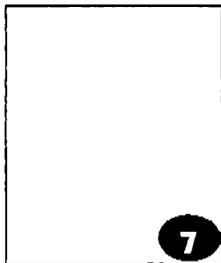
Ampule
cracker



Extraction
jar

Bulb pipette

ANALYZE THE CONTROL

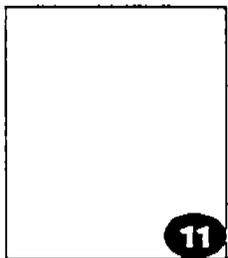
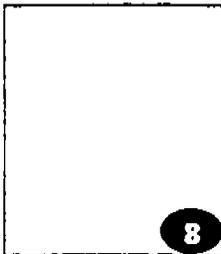


- 7 Place tip of 30 cc syringe in extraction jar and draw up 25 mL.
- 8 Attach syringe filter and dispense into "Sample" cuvette.
- 9 Add 1 drop of developer solution.
- 10 Cap the cuvette and shake vigorously for 3 seconds.
- 11 Remove the cuvette stopper and place in the cell holder.
- 12 Press "READ/ENTER" key and record the absorbance on the worksheet as "Abs_{control}".

Absorbance must be between 0.307 - 0.373 for the test to be in control.

If test is not in control, clean "Sample" cuvette, and then redo steps 7-12 using the remaining liquid from the extraction jar.

- 13 If test is in control clean "Sample" cuvette before proceeding with samples.



30 cc
syringe



Syringe
filter



Cuvette



Cuvette
stopper



Developer
solution

QUALITY CONTROL

READ ALL INSTRUCTIONS BEFORE PROCEEDING WITH THE TEST

System Description

Each SDI EnSys[®] TNT Soil Test System contains enough material to perform twenty complete tests. The TNT Soil Test is divided into four phases. The instructions and notes should be reviewed before proceeding with the test.

Hotline Assistance

If you need assistance or are missing necessary Test System materials, call toll free: 1-800-544-8881.

Validation Information

Product claims are based on validation studies carried out under controlled conditions. Data has been collected in accordance with valid statistical methods and the product has undergone quality control tests of each manufactured lot.

Strategic Diagnostics Inc. does not guarantee that the results with the TNT Soil Test System will always agree with instrument-based analytical laboratory methods. All analytical methods, both field and laboratory, need to be subject to the appropriate quality control procedures.

How It Works

Controls, Samples, and color-change reagents are added to cuvettes. The concentration of TNT in an unknown Sample is determined by evaluating how much color is developed.

Quality Control

Standard precautions for maintaining quality control:

- Do not use reagents or components from one Test System with reagents or components from another Test System.
- Do not use the Test System after its expiration date.
- The sample must be analyzed immediately after adding the Developer Solution.
- Results may not be valid if DR/2000 reading for Control is outside of the range of 0.307 - 0.373.

Storage and Handling Precautions

- Wear protective gloves and eye wear.
- Store kit at room temperature and out of direct sunlight (less than 80°F).
- If acetone comes into contact with eyes, wash thoroughly with cold water and seek immediate medical attention.
- Operate test at temperatures greater than 4° C/40° F and less than 39° C/100° F.
- After use, dispose of kit components in accordance with applicable federal and local regulations.

**ON-SITE QUALITY CONTROL/QUALITY ASSURANCE
RECOMMENDATIONS
SDI EnSys® TEST SYSTEM**

Please read the following before proceeding with field testing.

SAMPLING

The result of your screening test is only as valid as the sample that was analyzed. Samples should be homogenized thoroughly to ensure that the 10 grams you remove for field testing is representative of the sample as a whole. All other applicable sample handling procedures should be followed as well.

PRIOR TO TESTING SAMPLES

Carefully follow the instructions in the User's Guide included with every test kit. This is the key element in obtaining accurate results. In addition, store your unused test kits at room temperature and do not use them past their expiration date (see label on each test kit).

INTERNAL TEST QC

One control is provided with each Kit to provide internal test system quality control. Test runs resulting in a number that falls outside of the specified range should be repeated to ensure valid conclusions.

QA/QC

The validity of field test results can be substantially enhanced by employing a modest, but effective QA/QC plan. SDI recommends that you structure your QA/QC plan with the elements detailed below. These have been developed based on the data quality principles established by the U.S. Environmental Protection Agency.

- A. **Sample Documentation**
 - 1. Location, depth
 - 2. Time and date of collection and field analysis
- B. **Field analysis documentation** - provide raw data, calibration, any calculations, and final results of field analysis for all samples screened (including QC samples)
- C. **Method calibration** - this is an integral part of SDI tests; a TNT control analysis should be performed daily (see the instructions in the User's Guide)
- D. **Method blank** - field analyze fresh acetone
- E. **Site-specific matrix background field analysis** - collect and field analyze uncontaminated sample from site matrix to document matrix effect
- F. **Duplicate sample field analysis** - field analyze duplicate sample to document method repeatability; at least one of every 20 samples should be analyzed in duplicate
- G. **Confirmation of field analysis** - provide confirmation of the quantitation of the analyte via an EPA-approved method different from the field method on at least 10% of the samples; provide chain of custody and documentation such as gas chromatograms, mass spectra, etc.
- H. **Performance evaluation sample field analysis (optional, but strongly recommended)** - field analyze performance evaluation sample daily to document method/operator performance
- I. **Matrix spike field analysis (optional)** - field analyze matrix spike to document matrix effect on analyte measurement

FURTHER QUESTIONS?

SDI's Technical Support personnel are always prepared to discuss your quality needs to help you meet your data quality objectives. Call 1-(800) 544-8881.

TNT SOIL TEST - ABBREVIATED PROCEDURE

STEP	P R O C E D U R E
1	<ul style="list-style-type: none"> • Clean cuvettes • Zero the spectrophotometer at 540 nm
2	<ul style="list-style-type: none"> • Add 10 g soil and 50 ml acetone to extraction jar • Shake 3 minutes, let settle • Draw up 25 mL extract, filter into cuvette
3	<ul style="list-style-type: none"> • Read Abs_{initial}, record • Add 1 drop developer solution, shake • Read Abs_{sample}, record
4	<ul style="list-style-type: none"> • Multiply Abs_{initial} by 4 • Subtract from Abs_{sample} • Divide by 0.0323 • TNT (ppm) = $\frac{\text{Abs}_{\text{sample}} - (\text{Abs}_{\text{initial}} \times 4)}{0.0323}$

ATTACHMENT C-9
WATER LEVEL MEASUREMENTS



A **tyco** INTERNATIONAL LTD COMPANY

PROJECT NO. 39901

SITE Tourtelot Cleanup Project

Well Number	Elevation Of Top Of Pipe	Depth To Water	Water Elevation	Depth To Bottom	Well Integrity				Comments
					Locked	Capped	Cracked	Obstruct	
MW-4 (TW-4)		9.16			✓				
MW-4A		9.55			✓				
MW-3B		5.97				✓			
MW-3		8.10				✓			
MW-3A		3.89				✓			
MW-14		7.08			✓				
MW-2		5.82			✓				
MW-15		17.60			✓				
MW-13		18.44			✓				
MW-1		10.43			✓				
MW-7		10.05			✓				
MW-8		9.66			✓				
MW-9		11.80			✓				
MW-5		10.96			✓				
MW-6		2.71				✓			
MW-10		8.54			✓				
MW-11		9.62			✓				
MW-12		17.33			✓				

Description Of Site _____

Soil Conditions Dry

Weather Clear, windy Temperature 70

Entered On Computer _____ Signature Rich Heidrick Date 5/3/00

APPENDIX D Field Permeability Testing

Falling head slug tests were performed at wells MW-2, MW-3B, MW4A, MW-6, MW-10, and MW-11 to estimate aquifer parameters in the alluvial and bedrock water-bearing zones at the Project Site. The tests determined the hydraulic conductivity of the geologic materials in which the wells were screened. Parameters derived from these tests aid in the development of analytic and conceptual groundwater models for the Project Site. Wells were selected based on well diameter (2 inches) and sufficient depth of water (greater than 7 feet) to allow for accurate testing. All the tests were conducted as described below.

The falling head slug tests were performed by lowering a solid displacement object (i.e., a 6-foot long, 1.75-inch outer diameter, sand-filled PVC bailer) down the well bore of the well being tested. As the water in the well casing was displaced, a rise in water level occurred in the well. The water level slowly recovered to its original static water level. Recovery data were collected by self-contained, factory-calibrated, data-logging pressure transducers called Troll® 8000s. The recovery measurements were analyzed using a standard hydrogeologic aquifer testing software package called AQTESOLV® for Windows®. Static water levels in the wells were measured before performing the falling head slug tests using a water-level sounder. Because of the very small annular space between the displacement object and the well casing, the pressure transducer/data logger had to be attached to the top of the displacement object instead of being placed at a depth below the object in the well. The Trolls® were programmed to start recording water levels when they first became submerged. All tests recovered in excess of 99 percent of the initial water level change.

The hydraulic conductivity of the aquifer test interval was calculated using the data downloaded from the Trolls® data loggers. The data files were pre-processed to adjust the data to the reference level taken upon termination of each test.

The hydraulic conductivity was calculated using the AQTESOLV® for Windows® software package. The data were analyzed using two methods specifically designed for use with unconfined aquifers. The first of these is a solution developed by Hvorslev (1951):

$$K = \frac{R^2}{2L(t_2 - t_1)} \ln \frac{(L)}{R} \ln \frac{(Ht_1)}{Ht_2}$$

where: K = hydraulic conductivity (cm/s)
 R = well casing radius (cm)
 L = length of filter pack interval (cm)
 t₁ = time 1 on falling limb of curve
 t₂ = time 2 on falling limb of curve
 Ht₁ = water level at time t₁
 Ht₂ = water level at time t₂;

or by Bouwer and Rice (Bouwer and Rice, 1976; Bouwer, 1989)

$$K = \frac{37.4 r_c^2 \ln(R_e/r_w) \ln(Y_o/Y_t)}{L_e t}$$

where: K = hydraulic conductivity in gallons per day per square foot (gpd/ft²)
 r_c = radius of well casing, in inches (in)
 R_e = effective radial distance over which the change in water level is dissipated in inches (in)
 r_w = radius of borehole in inches (in)

- Y_0 = change in water level, at time zero projected back from straight-line portion of curve, in feet (ft)
- Y_t = change in water level, in feet, on straight-line portion of curve at time, t in minutes (min), and
- L_e = height of screened section of well through which groundwater enters in feet (ft).

Two methods were utilized as a crosscheck on the results. There was good agreement between the hydraulic conductivity values determined independently by the two methods as discussed in Chapter 4.0 of this document.

The plotted field data with the fitted curves used to determine hydraulic conductivity are provided in Attachment D-1 of this appendix. Information adjacent to the plots provides parameters utilized in the analysis of the field data.

REFERENCES

- Bouwer, H. and R. C. Rice, 1976. *A Slug Test Method for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells*, Water Resources Research, Vol. 12, No. 3, pp. 423-428.
- Bouwer, H., 1989. *The Bouwer and Rice Slug Test—an Update*, Ground Water, Vol. 27, No. 3, pp. 304-309.
- Hvorslev, M. J., 1951. *Drawdown Test to Determine Effective Radius of Artesian Well*, Trans. Amer. Soc. of Civil Engrs., Vol. 112, Paper 2321, pp. 1047-1064.

ATTACHMENT D-1
DISPLACEMENT CURVES

WELL TEST ANALYSIS

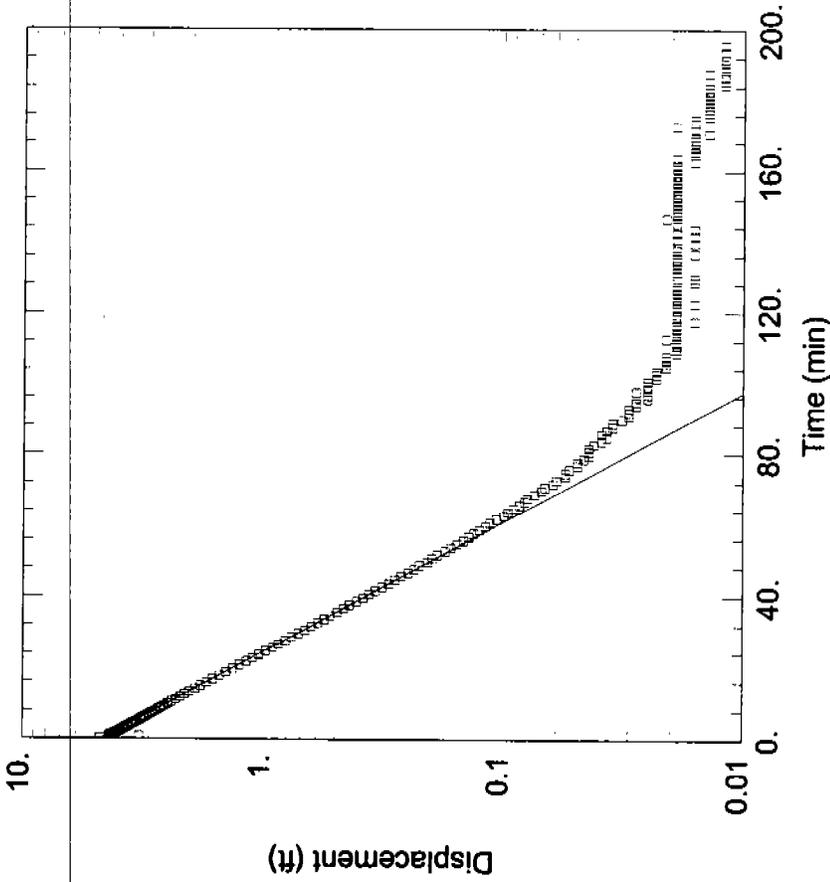
Data Set: C:\NATE\MW02_H.AQT
Date: 09/01/00 Time: 12:51:42

PROJECT INFORMATION

Company: Earth Tech
Client: Granite
Project: 39901
Test Location: Tourtelot Property
Test Well: MW-2
Test Date: 8/23/00

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
 $K = 0.4936 \text{ ft/day}$
 $y_0 = 4.755 \text{ ft}$



AQUIFER DATA

Anisotropy Ratio (K_z/K_r): 1.

Saturated Thickness: 5. ft

WELL DATA

Water Column Height: 12.35 ft
Wellbore Radius: 0.25 ft
Gravel Pack Porosity: 0.2

Initial Displacement: 4.755 ft
Casing Radius: 0.0833 ft
Screen Length: 5. ft

WELL TEST ANALYSIS

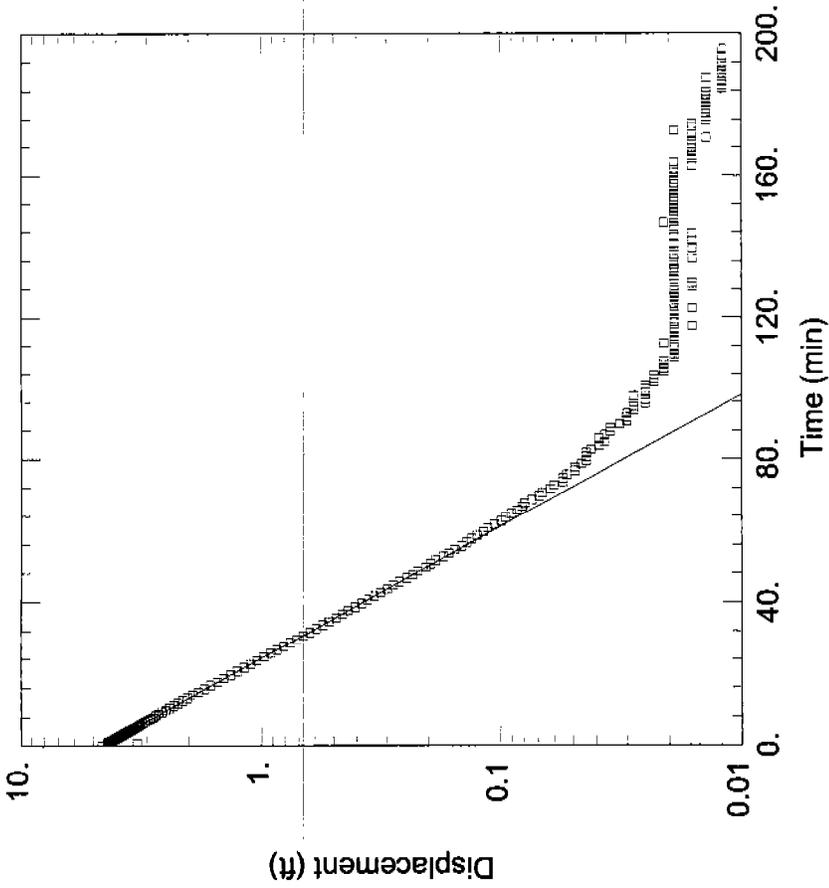
Data Set: C:\NATE\MW02_BR.AQT
Date: 09/01/00 Time: 12:27:42

PROJECT INFORMATION

Company: Earth Tech
Client: Granite
Project: 39901
Test Location: Tourtelot Property
Test Well: MW-2
Test Date: 8/23/00

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.4454 ft/day
y0 = 4.61 ft



AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 4.61 ft
Casing Radius: 0.0833 ft
Screen Length: 5. ft
Water Column Height: 12.35 ft
Wellbore Radius: 0.25 ft
Gravel Pack Porosity: 0.2

WELL TEST ANALYSIS

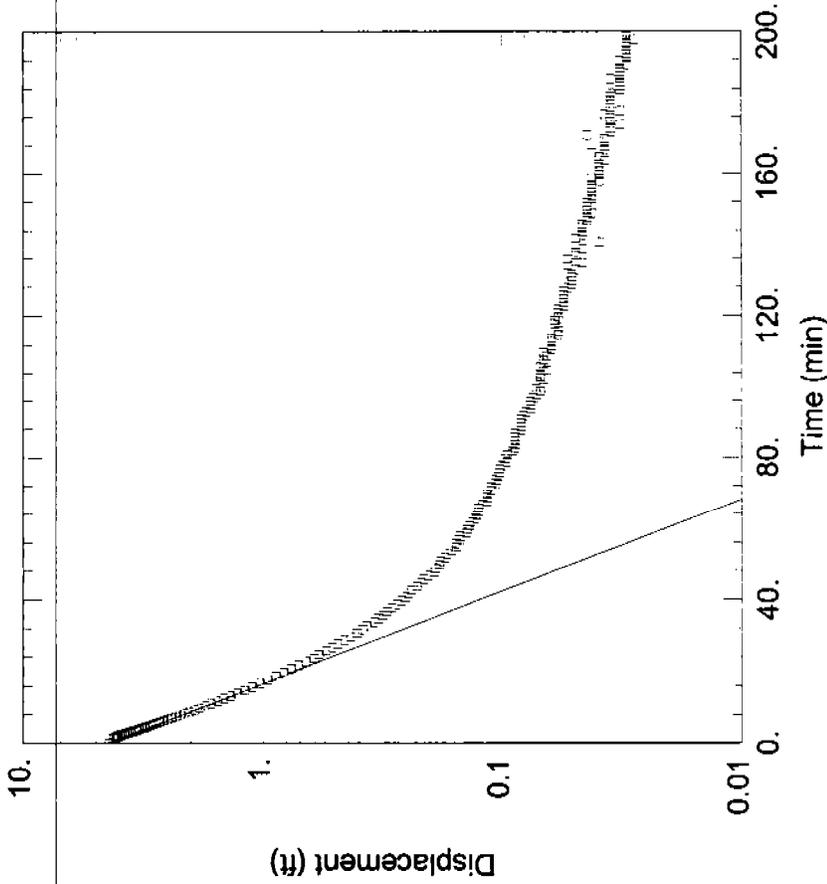
Data Set: C:\NATE\MW03B_H.AQT
Date: 09/06/00 Time: 11:30:36

PROJECT INFORMATION

Company: Earth Tech
Client: Granite
Project: 39901
Test Location: Tourtelot Property
Test Well: MW-3B
Test Date: 8/23/00

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 0.6005 ft/day
y0 = 4.448 ft



AQUIFER DATA

Saturated Thickness: 10. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 4.4 ft
Casing Radius: 0.08333 ft
Screen Length: 10. ft
Water Column Height: 36.7 ft
Wellbore Radius: 0.33 ft
Gravel Pack Porosity: 0.2

WELL TEST ANALYSIS

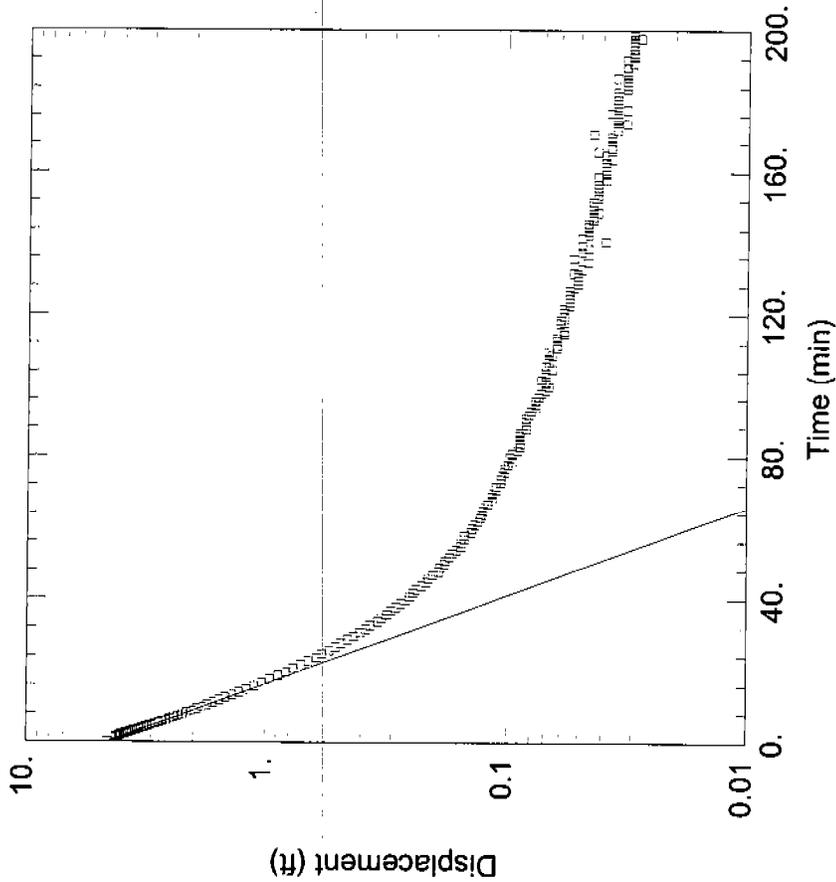
Data Set: C:\NATE\MW03B_BR.AQT
Date: 09/06/00 Time: 11:30:59

PROJECT INFORMATION

Company: Earth Tech
Client: Granite
Project: 39901
Test Location: Tourtelot Property
Test Well: MW-3B
Test Date: 8/23/00

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.6144 ft/day
y0 = 4.608 ft



AQUIFER DATA

Saturated Thickness: 10. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 4.608 ft
Casing Radius: 0.08333 ft
Screen Length: 10. ft
Water Column Height: 36.7 ft
Wellbore Radius: 0.33 ft
Gravel Pack Porosity: 0.2

WELL TEST ANALYSIS

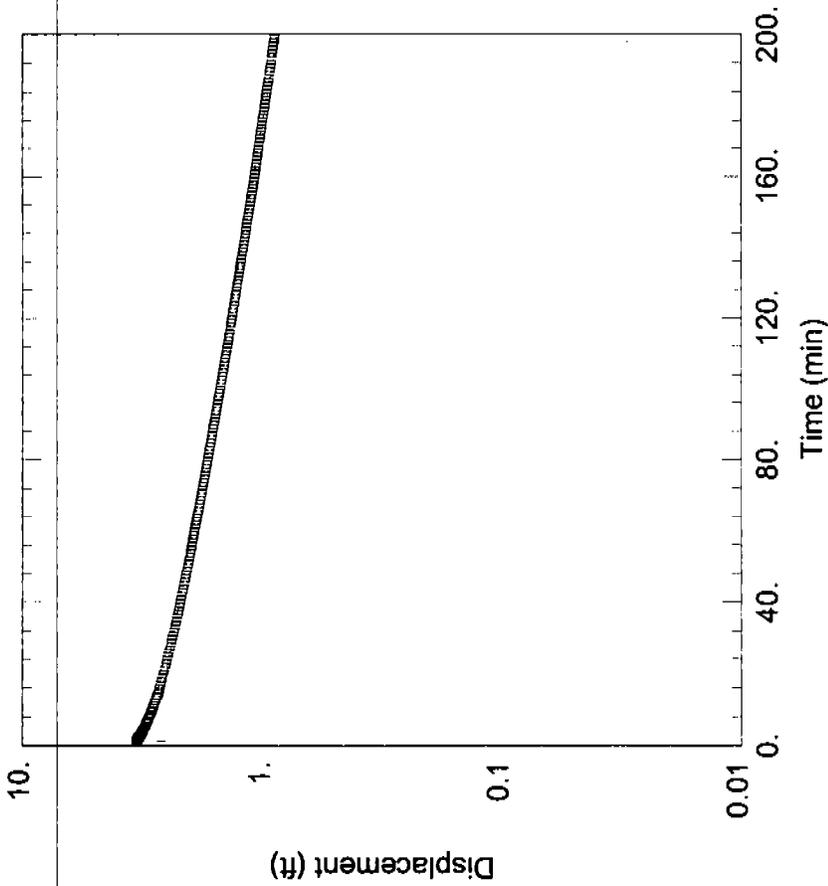
Data Set: C:\NATE\MW4A_H.AQT
Date: 09/06/00 Time: 11:35:21

PROJECT INFORMATION

Company: Earth Tech
Client: Granite
Project: 39901
Test Location: Tourtelot Property
Test Well: MW-4A
Test Date: 8/24/00

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 0.04023 ft/day
y0 = 2.834 ft



AQUIFER DATA

Saturated Thickness: 10. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 2.661 ft
Casing Radius: 0.08333 ft
Screen Length: 10. ft
Water Column Height: 32.3 ft
Wellbore Radius: 0.3333 ft
Gravel Pack Porosity: 0.2

WELL TEST ANALYSIS

Data Set: C:\NATE\MW4A_BR.AQT
Date: 09/06/00
Time: 11:35:16

PROJECT INFORMATION

Company: Earth Tech
Client: Granite
Project: 39901
Test Location: Tourtelot Property
Test Well: MW-4A
Test Date: 8/24/00

SOLUTION

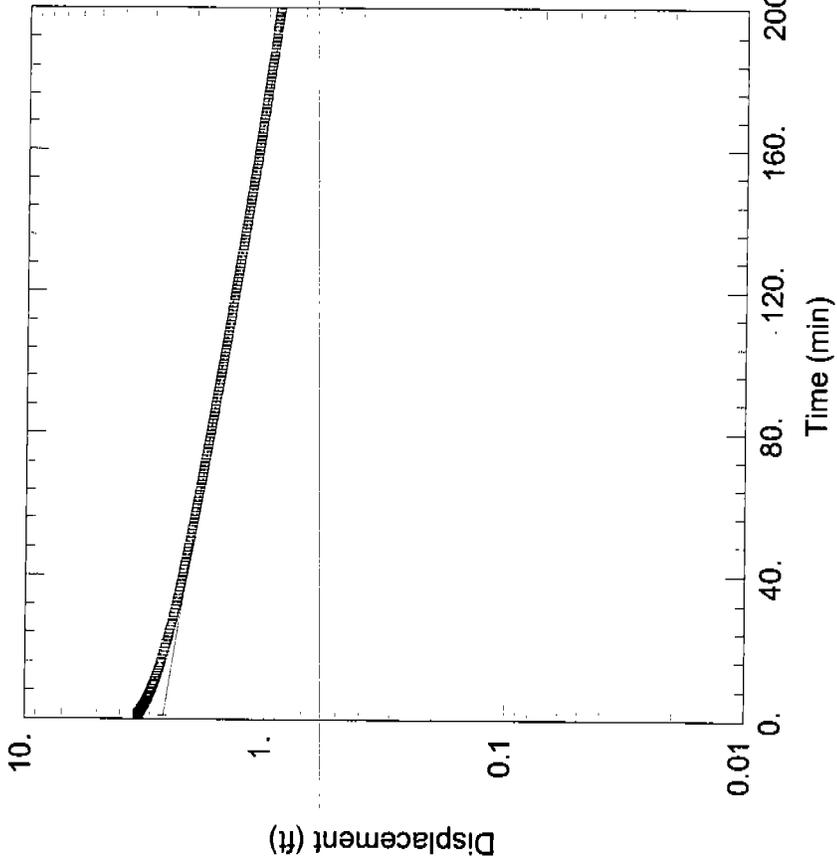
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.03645 ft/day
y0 = 2.661 ft

AQUIFER DATA

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Water Column Height: 32.3 ft
Wellbore Radius: 0.3333 ft
Gravel Pack Porosity: 0.2



Saturated Thickness: 10. ft

Initial Displacement: 2.661 ft
Casing Radius: 0.08333 ft
Screen Length: 10. ft

WELL TEST ANALYSIS

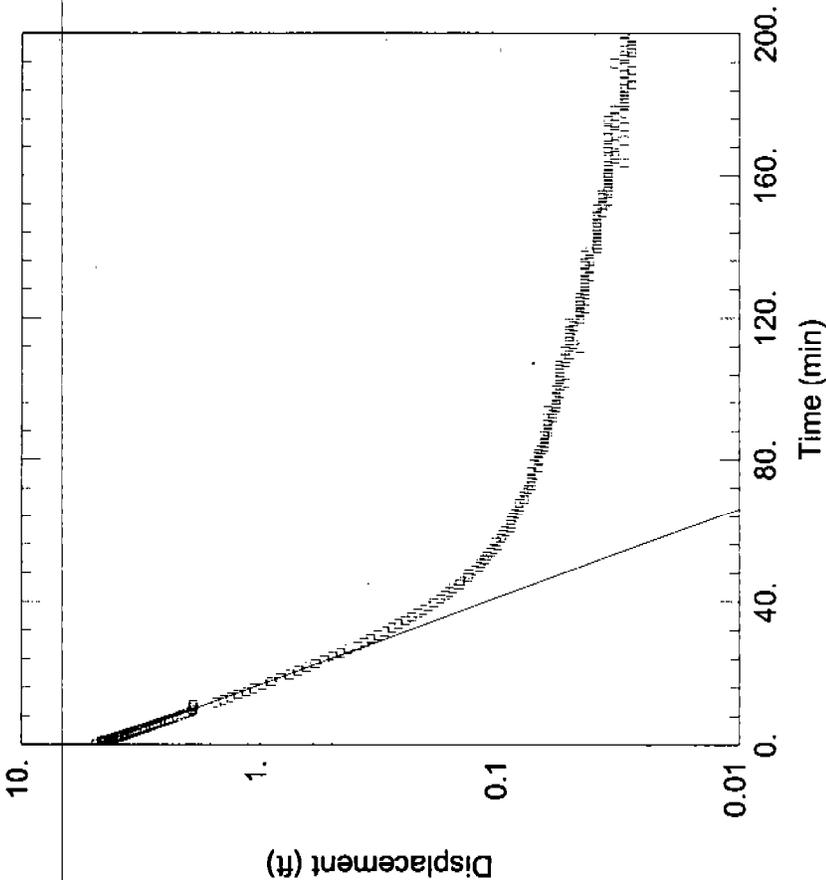
Data Set: C:\NATE\MW06_H.AQT
Date: 09/06/00 Time: 11:32:37

PROJECT INFORMATION

Company: Earth Tech
Client: Granite
Project: 39901
Test Location: Tourtelot Property
Test Well: MW-6
Test Date: 8/23/00

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
 $K = 1.016 \text{ ft/day}$
 $y0 = 4.852 \text{ ft}$



AQUIFER DATA

Anisotropy Ratio (Kz/Kr): 1.

Saturated Thickness: 5. ft

WELL DATA

Initial Displacement: 4.852 ft
Casing Radius: 0.08333 ft
Screen Length: 5. ft

Water Column Height: 7.84 ft
Wellbore Radius: 0.3333 ft
Gravel Pack Porosity: 0.2

WELL TEST ANALYSIS

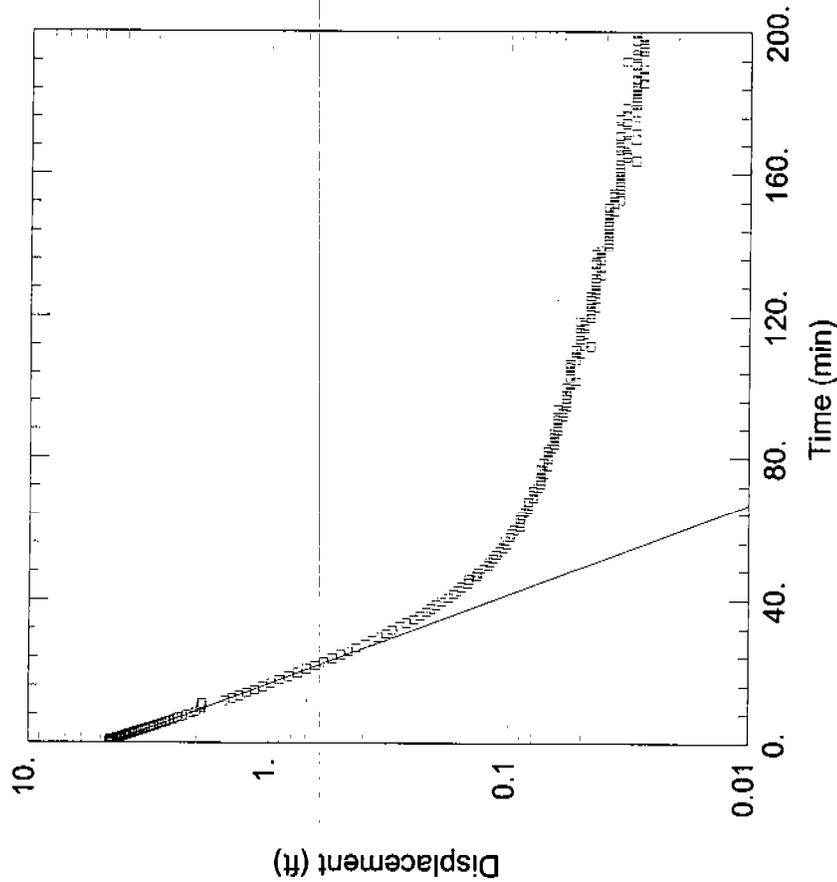
Data Set: C:\NATE\MW06_BR.AQT
Date: 09/06/00 Time: 11:33:14

PROJECT INFORMATION

Company: Earth Tech
Client: Granite
Project: 39901
Test Location: Tourtelot Property
Test Well: MW-6
Test Date: 8/23/00

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.819 ft/day
y0 = 4.594 ft



AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 4.594 ft
Casing Radius: 0.08333 ft
Screen Length: 5. ft
Water Column Height: 7.84 ft
Wellbore Radius: 0.3333 ft
Gravel Pack Porosity: 0.2

WELL TEST ANALYSIS

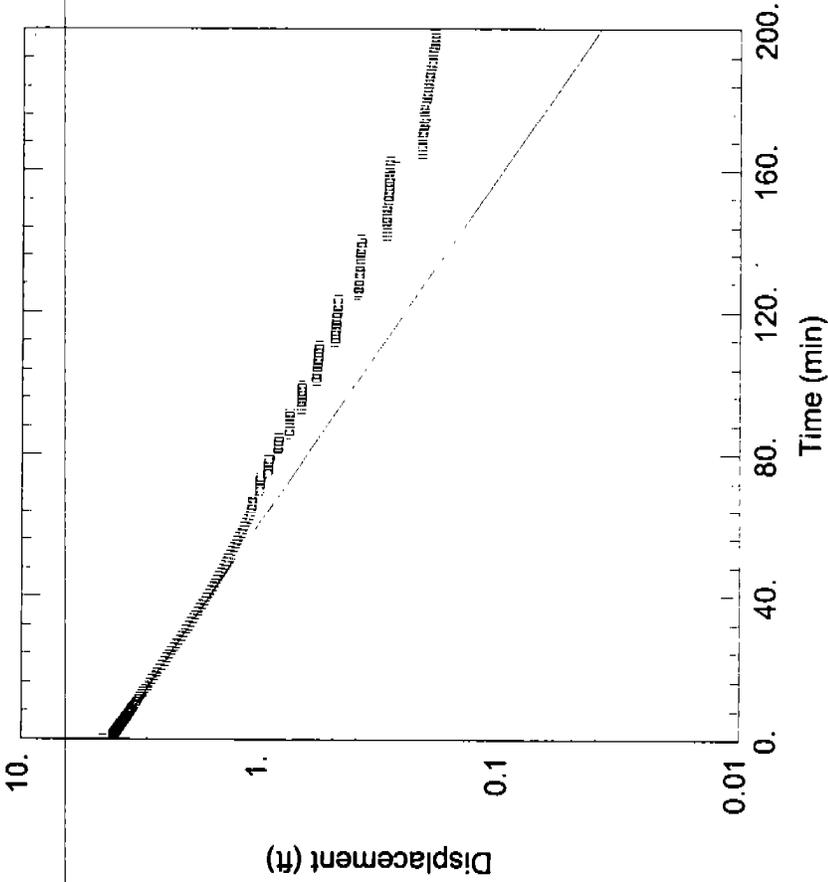
Data Set: C:\NATE\MW10_H.AQT
Date: 09/06/00 Time: 11:34:19

PROJECT INFORMATION

Company: Earth Tech
Client: Granite
Project: 39901
Test Location: Tourtelot Property
Test Well: MW-10
Test Date: 8/23/00

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 0.183 ft/day
y0 = 4.208 ft



AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 4.59 ft
Casing Radius: 0.08333 ft
Screen Length: 5. ft
Water Column Height: 9.08 ft
Wellbore Radius: 0.25 ft
Gravel Pack Porosity: 0.2

WELL TEST ANALYSIS

Data Set: C:\NATE\MW10_BR.AQT
Date: 09/06/00 Time: 11:33:59

PROJECT INFORMATION

Company: Earth Tech
Client: Granite
Project: 39901
Test Location: Tourtelot Property
Test Well: MW-10
Test Date: 8/23/00

SOLUTION

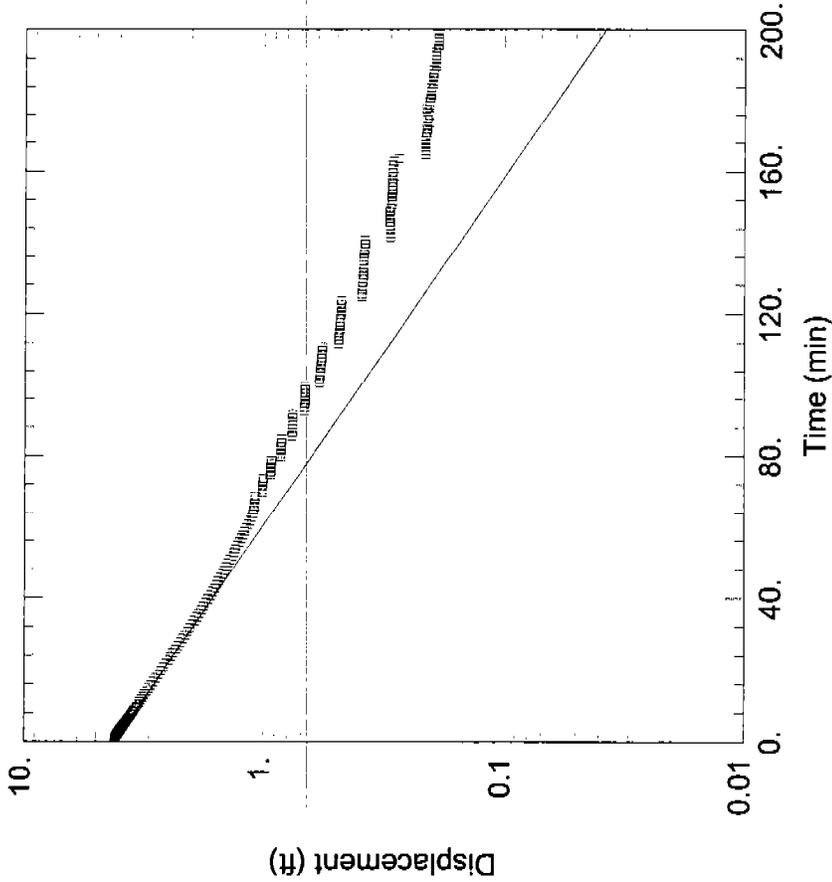
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.1572 ft/day
y0 = 4.168 ft

AQUIFER DATA

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Water Column Height: 9.08 ft
Wellbore Radius: 0.25 ft
Gravel Pack Porosity: 0.2



Saturated Thickness: 5. ft

Initial Displacement: 4.168 ft
Casing Radius: 0.08333 ft
Screen Length: 5. ft

WELL TEST ANALYSIS

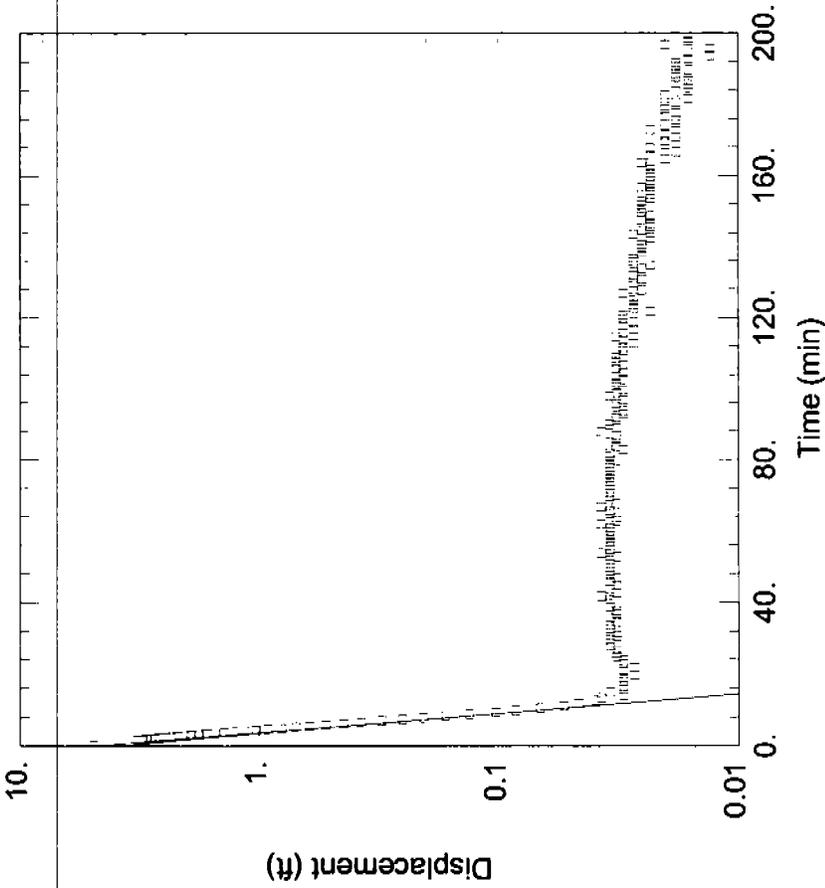
Data Set: C:\NATE\MW11_H.AQT
Date: 09/06/00 Time: 11:35:00

PROJECT INFORMATION

Company: Earth Tech
Client: Granite
Project: 39901
Test Location: Tourtelot Property
Test Well: MW-11
Test Date: 8/23/00

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 2.047 ft/day
y0 = 4.847 ft



AQUIFER DATA

Saturated Thickness: 10. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 4.927 ft
Casing Radius: 0.083 ft
Screen Length: 10. ft
Water Column Height: 12.25 ft
Wellbore Radius: 0.25 ft
Gravel Pack Porosity: 0.2