



**PROJECT:** Midland City Transp. District  
**CLIENT:** Midland City

**Monitoring Well No.**

**GW-15**

**Project No.** 1416-005

<b>LOCATION:</b>		<b>ELEVATION:</b>	
15' So. STA 3		4278.5 assumed	
<b>DRILLER:</b>		<b>DATE DRILLED:</b>	<b>LOGGED BY:</b>
RXY Drilling		2/12/91	APL
<b>DRILL RIG:</b>		<b>DEPTH TO WATER&gt;</b>	<b>FIRST:</b>
CME 750		29	33

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Elevation/ Depth (Ft)	Odor	PID Reading	Sample Number	Sample Recovery (in/in)	Blow Count	Graphic Log	Soil Classification	SOIL DESCRIPTION	WELL CONSTRUCTION
0								<u>CLAY:</u> Tan, silty sandy, stiff, moist	
4275			B-1	24			CL	.... grades to tan-gray, silty, iron oxide staining, medium stiff, moist.	
5				24					
4270									
10	None	0.0	B-2	18	34		SM	<u>SILTY SAND:</u> Tan, silty, fine, dense, slightly moist	
4265				18				.... trace of silty gravel	
15	Slight	0.0	B-3	16	30				
4260				18					
20	Strong	0.0	B-4	18	25		SC	.... grades to reddish tan sand, clayey, with occasional sandy clay lenses, medium dense, slightly moist.	
4255				18					
25	Strong	0.0	B-5	18	13				
4250				18					
30	Moder.	0.0	B-6	18	7		CL	<u>CLAY:</u> Light gray, silty, medium stiff, very moist.	
4245				18					
35	Slight	0.0	B-7	18	24		CL	.... grades to light gray sandy clay, stiff, wet.	
				18					

Southwest corner of building 4  
 Shaded arrow denotes the depth at which the borehole caved

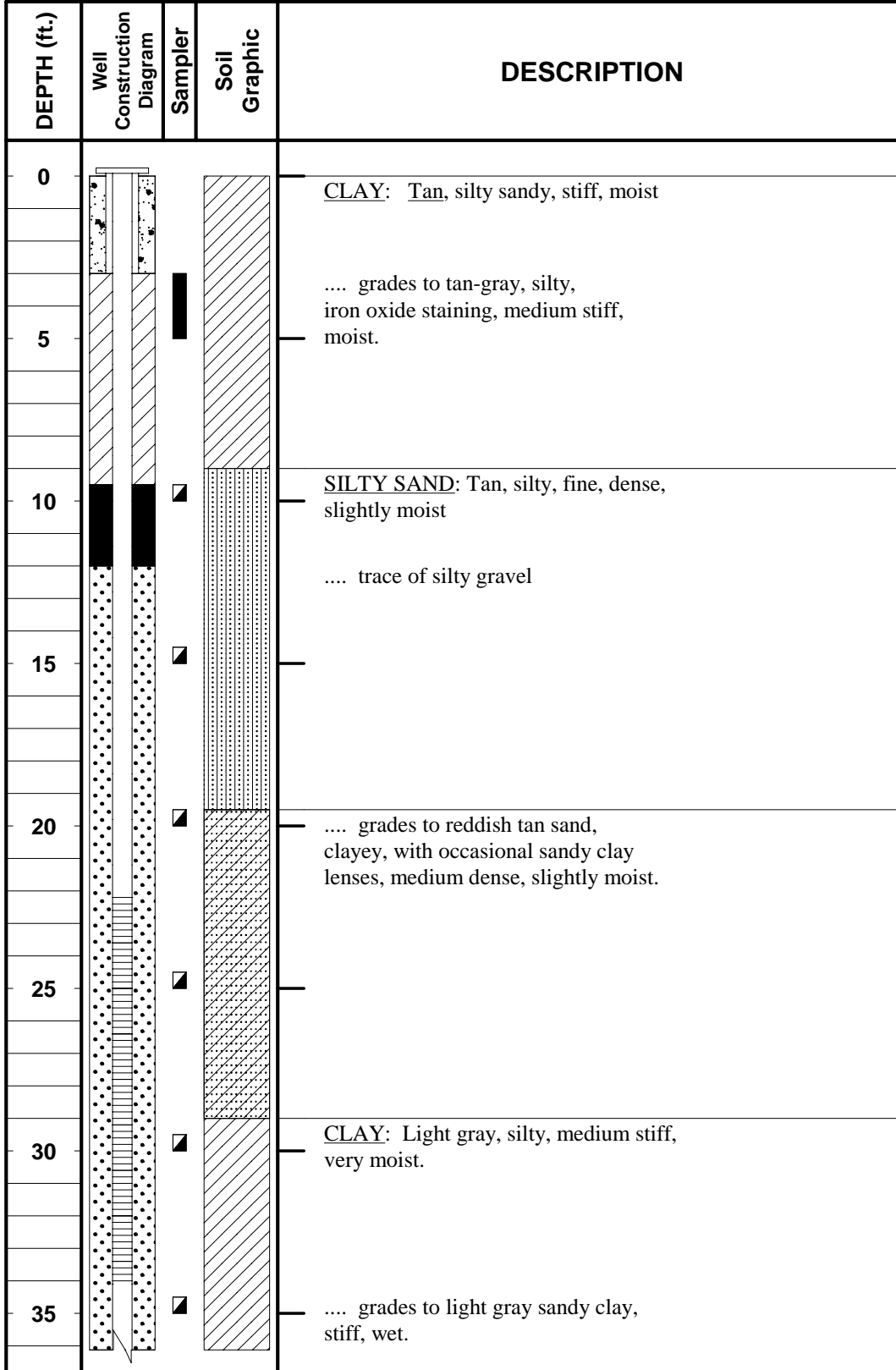
**ALV ENGINEERS**

Figure  
 Page 1 of 2

# MONITORING WELL LOG

WELL NO. GW-15

PROJECT: <u>Midland City Transp. District</u>	PROJECT NO.: <u>1416-005</u>
LOCATION: <u>15' So. STA 3</u>	ELEVATION: <u>4278.5 assumed</u>
DRILLER: <u>RXY Drilling</u> DATE DRILLED: <u>2/12/91</u>	DATE COMPLETED: <u>2/14/91</u>
WATER DEPTH: <u>29</u> INSPECTOR: <u>R.A.R.</u>	COMPLETION DEPTH: <u>41 feet</u>



## PROTECTIVE

**COVER TYPE:** locking  
Master lock #1834

## GROUT:

Type: cement/bentonite  
Quantity: 18 bags  
Total Depth: 3 feet

## BACKFILL:

Type: cuttings  
Top Depth: 3  
Bottom Depth: 9.5

## CASING:

Diameter: 4 in.  
Length: 3  
Stick Up: 3 in.

## SEAL

Type: Bentonite Pellets  
Quantity: 25 lbs.  
Top Depth: 9.5  
Bottom Depth: 12

## SCREEN

Type: PVC  
Diameter: 2 in.  
Slot Size: .01 in.  
Top Depth: 22.2  
Bottom Depth: 34.1

## COMMENTS

Southwest corner of building 4. Shaded arrow denotes the depth at which the bore hole caved.



# TEST PIT LOG

**Test Pit No.: 1**

PROJECT <p style="text-align: center;">BERTHOUD NATIONAL AIRPORT</p>	PROJECT NO. <p style="text-align: center;">401.23.92</p>
CLIENT <p style="text-align: center;">Berthoud Airport Authority</p>	DATE <p style="text-align: center;">04-07-91</p>
LOCATION <p style="text-align: center;">E 6,910 N 16,500</p>	ELEV. <p style="text-align: center;">662.4</p>
EXCAVATION METHOD <p style="text-align: center;">Hand-held Auger</p>	LOGGER <p style="text-align: center;">R. Grimes</p>
DEPTH TO - Water: 12      When checked: at completion      Caving: 13	

ELEVATION/ DEPTH	SOIL SYMBOLS AND SAMPLERS			USCS	DESCRIPTION	DENSITY pcf	MOISTURE %
	GRAPHIC	BULK	DRIVEN				
0				OL	Topsoil with organics, grassed, clayey, root zone		
660				CL	approximately 6 inches Clay	125	21
5				SC	Variable mixed clay silt and sand		23
655				SC	grading to very clayey		13.4
10				SC	Sand, gravel, & cobbles		16.2
650							
15					Weathered siltstone bedrock		
645							
20							
640							
25							
635							

Notes: *Pit located at corner of building 1*  
*Depth of water listed at 24-hour check*  
*Arrow notes depth to caving*

# ALV ENGINEERS

<b>DRILL LOG</b>	PROJECT		PROJECT NO.		BORING NO.
	Windy Gap		609-52		<b>GW 15</b>
SITE		BEGUN	COMPLETED	HOLE SIZE	ANGLE FROM HORIZ.
Left corner, proposed bldg. #7		10-5-91	10-6-91	6 7/8	90 deg.
COORDINATES		DEPTH GROUND WATER AT FIRST CHECK		24 hours	GROUND ELEVATION
E: 10931, N: 20391		14 ft.		16 ft.	6225.1 MSL
DRILLER		CORE RECOVERY (%)	# SAMPLES	# CORE BOXES	DEPTH TOP OF ROCK
Ernie's Drilling		75%	5	2	35 ft.
DRILL MAKE AND MODEL		LOGGED BY:			DEPTH BOTTOM OF HOLE
CP-8		R. Grimes			43.2

SAMPLE DATA					REMARKS: NOTES ON WATER LOSSES AND LEVELS, CAVING, AND DRILLING CONDITIONS CASING DEPTH	STRATA ELEVATION/ DEPTH	DEPTH	GRAPHIC LOG	DESCRIPTION
SAMPLE TYPE AND DIAMETER	SAMPLE NO.	SAMPLE LENGTH	SAMPLE RECOVERY	N-VALUE/ RQD (%)					
6 7/8" Tri-Cone	S-1	18	18	14	Using Drilling Mud		0		Sandy Silt, Black, Topsoil, Wet, Low Plasticity
					Very Hard Drilling				
	S-2	18	18	17	Good Water Return		5		Sand, Brown, Medium to Coarse Grained, Micaceous with Gravel and Cobbles
NX Open Tube Sample	S-3	18	18	23	4" Casing to 10' Very Hard Drilling		10		Sand, Brown, Micaceous, Medium Grained. Sand, Very Coarse Grained Brown, with Gravel and Cobbles, No Fines, Micaceous
					Good Return				
					Smoother		15		Sand, Medium Grained, Brown, Micaceous, Minor Gravel.
					Smooth Drilling				
					NX Casing to 19'		20		Sand, Brown, Medium to Fine Grained, Minor Fines and Gravel, Angular. Coarse Grained
	S-4	18	16	50/6"					
NX Wire Line	RUN#1	66	60	0%	NX Casing to 22' Hard Drilling		25		Fine Grained
					NX Casing to 25'				
	RUN#2	18	4	0%			30		Clay, Brown, Weathered Shale, Plastic, Stiff
	RUN#3	36	25	0%					
					Drive		35		Mottled Gray-Green, Brown
	RUN#4	24	24	71%					
	RUN#5	26.4	22	55%					Claystone, Gray Green, Moderately Indurated Sandy to clayey



# LOG OF TEST CORING

## CORING NO. GW-24

**PROJECT:** Proposed city landfill  
**CLIENT:** City of Newmont, CO  
**LOCATION:** 5' SE of STA 032  
**DRILLER:** PCR Drilling  
**DRILLING METHOD:** 5-inch diameter steel casing

**PROJECT NO.:** 10431-103a  
**DATE:** October 21, 1991  
**ELEVATION:** 3200 ft. MSL  
**LOGGED BY:** R. Grimes

**DEPTH TO WATER >** 3.1 when checked on: 10-21-91

ELEVATION/ DEPTH	GRAPHIC LOG	DESCRIPTION	CORE RUN	REC (%)	RQD (%)					FRACTURES PER FOOT	HARDNESS				WEATHERING				
					0	25	50	75	100		VS	S	H	VH	EH	Fr	SW	MW	HW
3200	0	Fill: Fine crushed rock (to 8 inches) & sand, grey brown, trace of slag.								0									
		Pebbly Sandstone: brown								0									
		Sandstone: fine grained, grey brown								2									
		- becoming light grey	1	100						3									
3195	5									4									
										5									
										12									
										99+									
3190	10	- darker in color with traces of shale laminae								10									
			2	95						2									
										5									
										8									
3185	15									2									
										2									
			3	82						1									
										1									
										2									
3180	20	- still dark, no shale evident								0									
										0									
										5									
										6									
										2									
3175	25									15									
										20									
										14									
			4	5						16									
										20									
										30									
3170	30									75									
										80									
										90									
										99+									

Remarks line number 1  
 Remarks line number 2

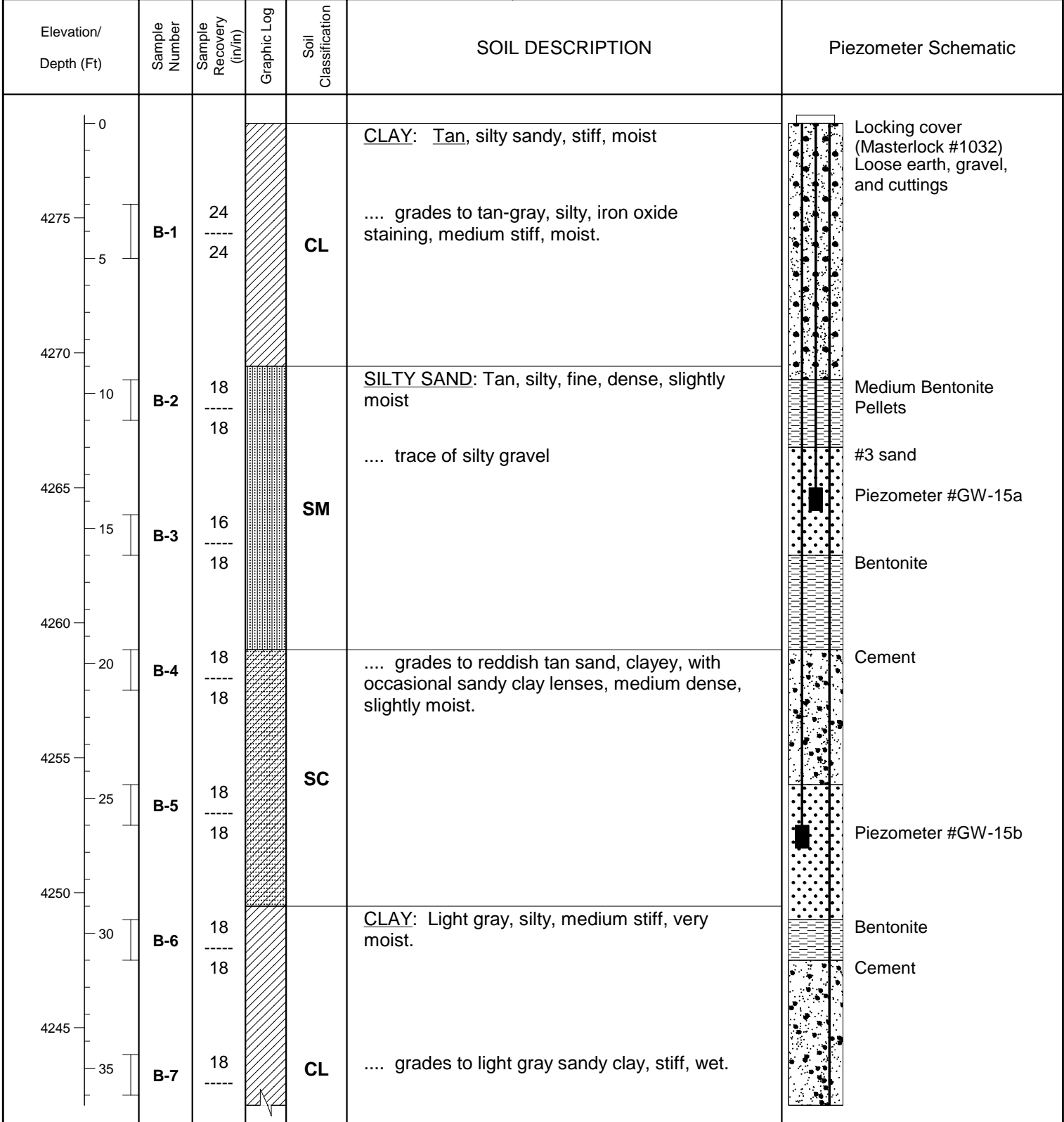
**PROJECT:** Midland City Transp. District  
**CLIENT:** Midland City

**Monitoring Well No.**  
**Project No.** 1416-005

**GW-15**

LOCATION: 15' So. STA 3		ELEVATION: 4278.5 assumed	
DRILLER: RXY Drilling		DATE DRILLED: 2/12/91	LOGGED BY: APL
DRILL RIG: CME 750	DEPTH TO WATER >	FIRST: 29	COMPL.: 33

This information pertains only to this boring and should not be interpreted as being indicative of the site.



Southwest corner of building 4  
 Shaded arrow denotes the depth at which the borehole caved

ALV ENGINEERS

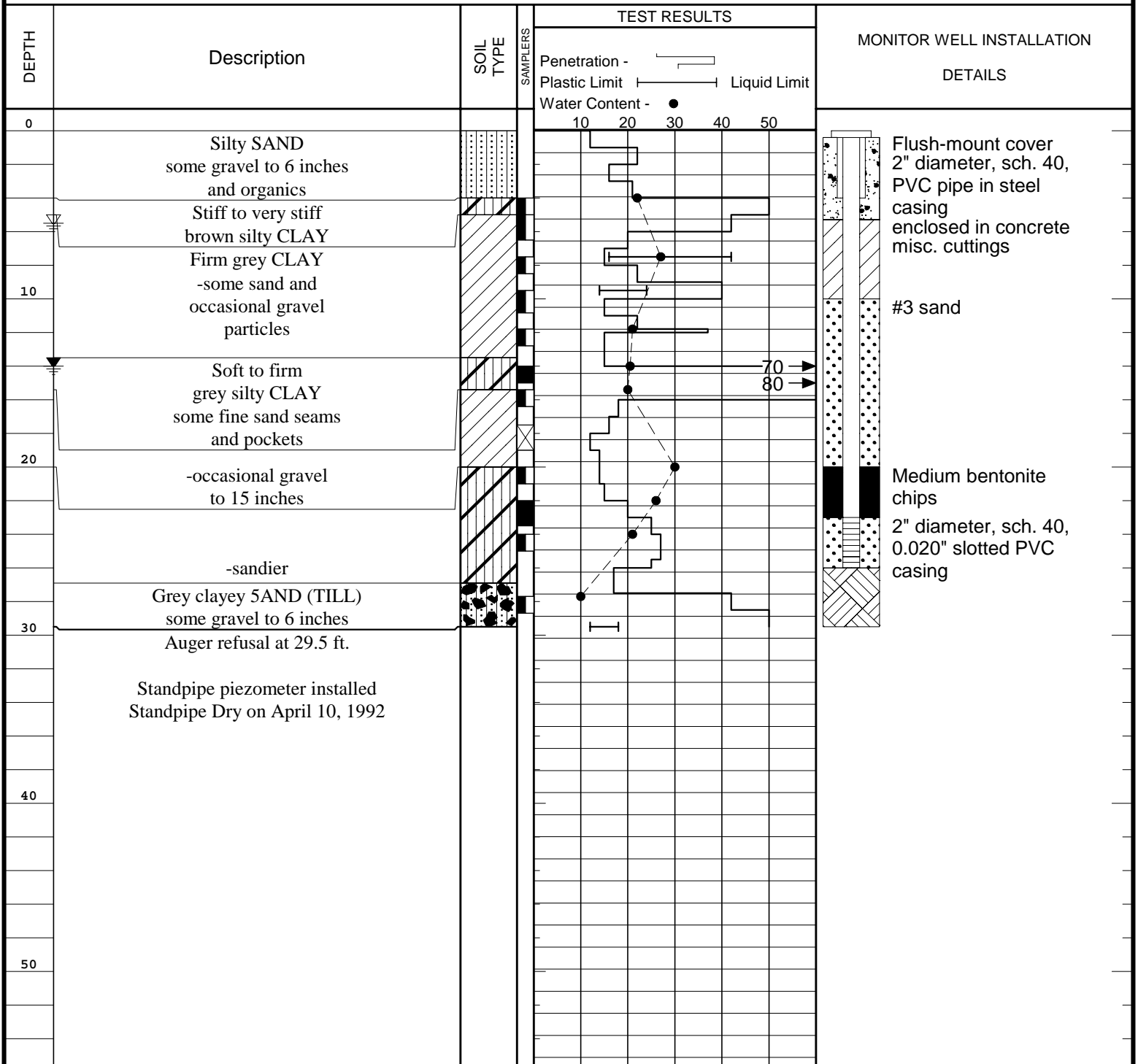
# DRILL HOLE LOG

## BORING NO.: 91-1

**PROJECT:** Dallas Road Shoreline  
**CLIENT:** CITY OF VICTORIA  
**LOCATION:** See Drawing No. 14-12-441  
**DRILLER:** PCR Drilling  
**DRILLING METHOD:** 5-inch diameter steel casing  
**DEPTH TO WATER > INITIAL:** 5.5

**PROJECT NO.:** 10431-103a  
**DATE:** April 10, 1991  
**ELEVATION:** 1898 ft. assumed  
**LOGGED BY:** Mr. A.G. Wood

**AT COMPLETION:** 14



Southwest corner of building 4  
 Shaded ground water symbol denotes depth of water 24 hours after completion

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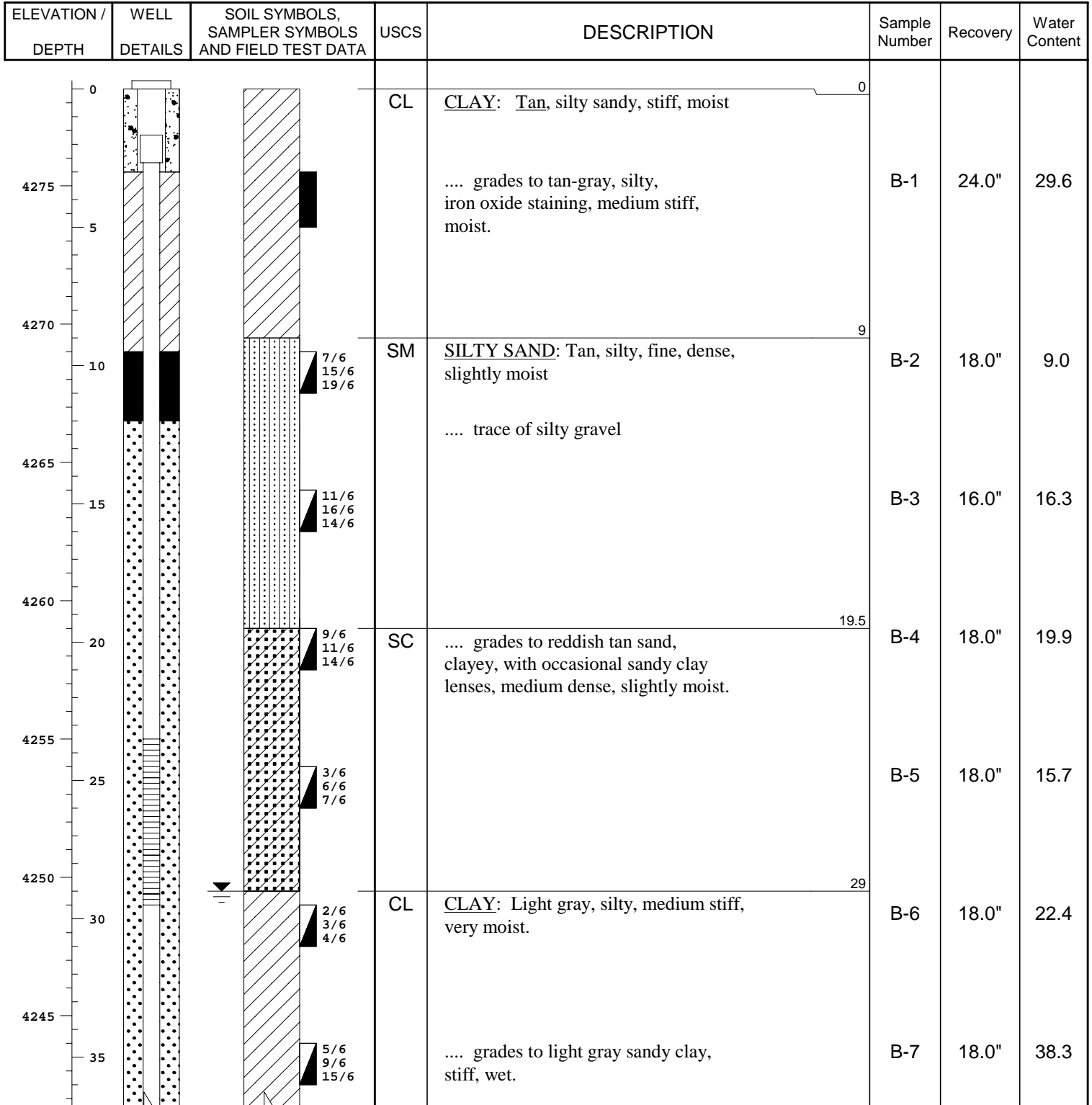
# DRILL HOLE LOG

## DRILL HOLE NO.: GW-15

**PROJECT:** Midland City Transp. District  
**CLIENT/OWNER:** Midland City  
**HOLE LOCATION:** 15' So. STA 3  
**DRILLER:** RXY Drilling  
**DRILL RIG:** CME 750  
**DEPTH TO WATER:** 29

**PROJECT NO.:** 1416-005  
**DATE:** 2/12/91  
**TOC ELEV.:**  
**GS ELEV.:** 4278.5  
**LOGGED BY:** APL  
**HOLE NO.:** GW-15

**HOLE DIAMETER:** 7 3/4"



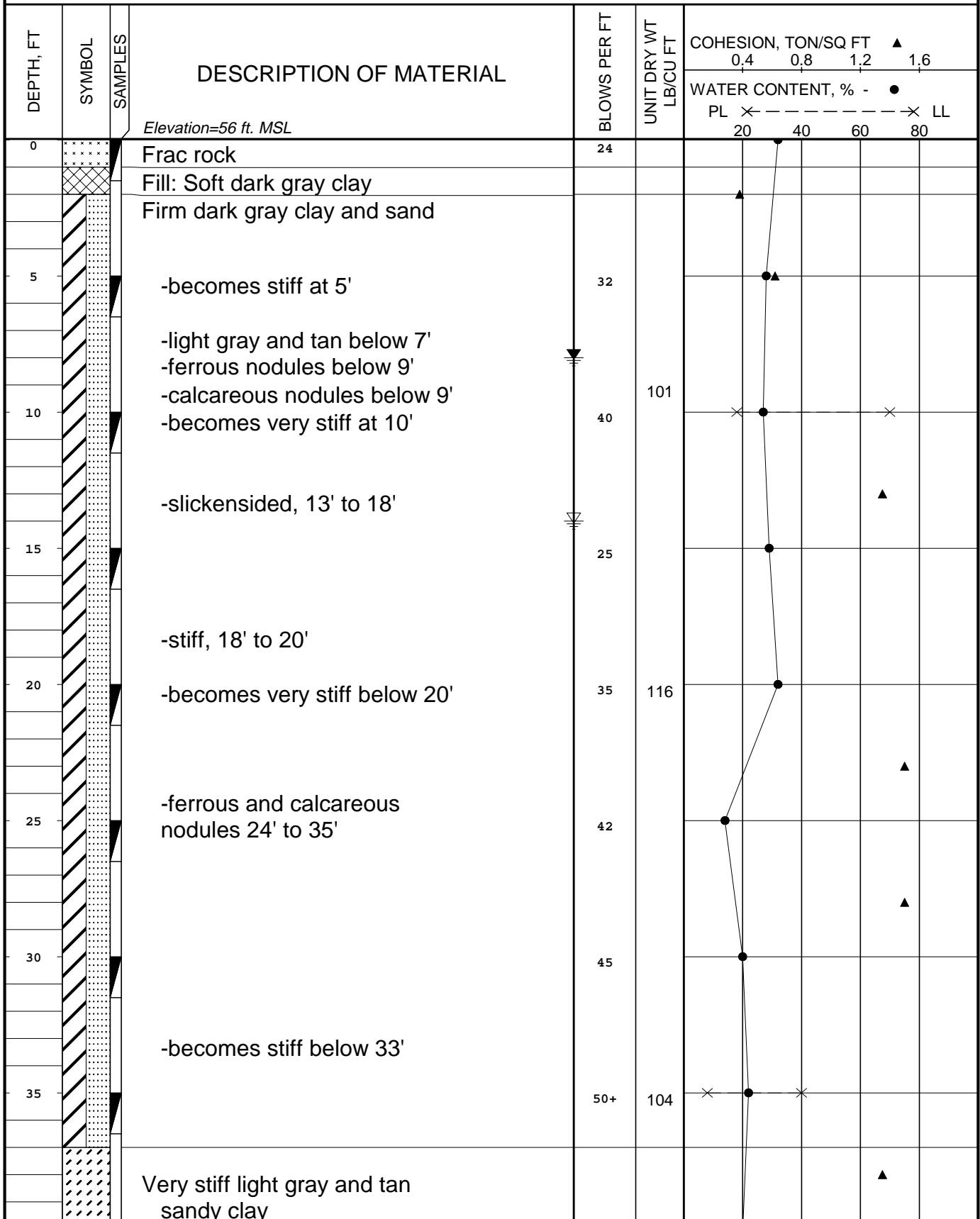
**FIGURE NO.**

# LOG OF BORING NO.1

WTC CENTER  
MIDLAND, KANSAS

Type: 3" thin-wall-tube & 2" split barrel

Location: See Plate 1



COMPLETION DEPTH: 50  
DATE: Dec. 12, 1990

DEPTH TO WATER > INITIAL: 14 ft  
FINAL: 8 ft



# ROCK CORE LOG

PROJECT: LJ Ent. Landfill  
 LOCATION: Macon County, CO  
 ELEVATION: 4230.3 DATUM: Assumed

CORING NO.:

**4A**

PROJECT NO.: RSY-123a.4

CONTRACTOR: Ernie's Drilling  
 DATE STARTED: 9-17-91 AT: 7:15 AM  
 ORIENTATION: VERTICAL:  INCLINED:   
 COORDS. N: 48000 E: 21920





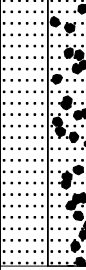
DRILL TYPE: ROTARY CME 75, NX  
 DATE FINISH: 9-18-91 AT: 10:45 AM  
 BEARING: ----  
 LOGGER: ERK

DEPTH	ROCK TYPE	DESCRIPTION	CORE RUN AND RECOVERY	DISCONTINUITIES				WEATHERING			REMARKS												
				RQD (PERCENT)			FRACTURES PER FOOT	DEFECT DESCRIPTION	FR	SW		MW	HW	XW									
				0	25	50									75	100							
10	BASALT	dark green, hard, fine grained slight to moderate alteration	3/3.5 =86%											3	Highly fractured (10'-11')						4 inch casing to 7.5 feet. Smooth drilling.		
														12								Hard drilling. Very hard drilling.	
				1.8/2 =90%		*										13							
																8							
15	GRANITE	6" sand w/ trace clay weathered, coarse grained	1.7/2.5 =68%		*									64+	3 joint sets: 1 parallel to core, 1 normal, and 1 15 deg. inclined.						Intermittent drill rod chatter		
														64+									
				5.8/6 =97%		*										8							
																6							
																6							
																10							
			brownish gray to brown 17'-22'													6							Very hard drilling.
																12							
																4							
																4							
20			7.5/8 =94%		*									4							Hard drilling.		
														4									
		gray, some weathering												12							Drilling smooth.		
														12									
25														30							picked up joint set at 30 deg.		
														60									
														60									
														64+							very fractured; fractures are smooth		
30																							
35																							
40																							
45																							

# LOG OF TEST PIT OR AUGER HOLE

FOR BORROW AND FOUNDATION INVESTIGATIONS

Feature Auger hole example Project \_\_\_\_\_ Area Designation Borrow Area L-4  
 Hole No. AH-455 Coordinates N. 16,500 E. 6,910 Ground Elevation 669.8 Approx. Dimensions 24-inch-dia.  
 Depth to Water Level 21.9 Method of Excavation Auger hole Date April 5-12, 1991 Logged by A.L. Giest

CLASSIFICATION SYMBOL		DEPTH (FEET)	SIZE AND TYPE OF SAMPLE TAKEN	CLASSIFICATION AND DESCRIPTION OF MATERIAL	PERCENTAGE OF COBBLES AND BOULDERS				
					VOLUME OF HOLE SAMPLED (CUBIC FEET)	WEIGHT OF 3 TO 5-INCH SAMPLED (LBS)	PERCENTAGE BY VOLUME OF 3 TO 5-INCH	PERCENTAGE BY VOLUME OF PLUS 5-INCH	
LETTER	GRAPHIC								
ML		0'	75-lb. sack	0'-2' SILT, slightly organic with some alfalfa and weed roots; nonplastic; small amount of fine sand; dark brown; dry.	6	0	0	0	
CL		2'	175-lb. sack	2'-8.5' Lean CLAY, medium plasticity, high dry strength; approx. 25% sand and gravel to 3/4-inch size; most of gravel is shale; brown; dry.	18	0	0	0	
		8.5'		8.5'-16; Micaceous SILT, moderate amount of very fine sand, noticeable mica flakes; very slight plasticity; tan; dry.	21	0	0	0	
ML-MH			200-lb. sack	16'-18' SILT, similar to material 8.5-16 feet, but contains about 20% shaly gravel to 1-inch size; red; dry.	6	0	0	0	
		16'	90-lb. sack	18'-25; GRAVEL-SAND MIXTURE WITH COBBLES, well graded; approx. 50% gravel and 50% sand, mostly hard, sub-rounded; approx. 9% cobbles, by volume to 8-inch maximum size; very small amount of nonplastic fines; black; dry above water table; river terrace gravel.	21	640	19.1	9	
ML		16'		STOPPED BY HARD MATERIAL.					
GW-SW		18'							
		4/12/91							

REMARKS: Inplace density test at 8'; dry density 89.4 pcf, water content 8.9 percent.  
 Bulk specific gravity of cobbles and boulders: 2.55 by displacement.

# GEOLOGIC LOG OF BOREHOLE NO. B-23

PROJECT: Berthoud Int'l Airport

PROJECT NO.: 01-2351P-RC

LOCATION: Berthoud, CO.

INSPECTOR: A. Layne

DRILLING EQUIPMENT/METHOD: CME 55 Rotary Drill Rig. Hollow stem auger in soil. Diamond core bot w/ triple tube core barrel in rock. Core drilling w/water and bentonite additive.

DATE HOLE STARTED: 14-Jul-01

FINISHED: 15-Jul-01

GROUND ELEV: 4312

BOREHOLE DIP: Vertical

BEARING: NA

CASING DEPTH: 7.5 ft

OVERBURDEN THICKNESS: 6.2 ft

WATER DEPTH: 13.4 ft

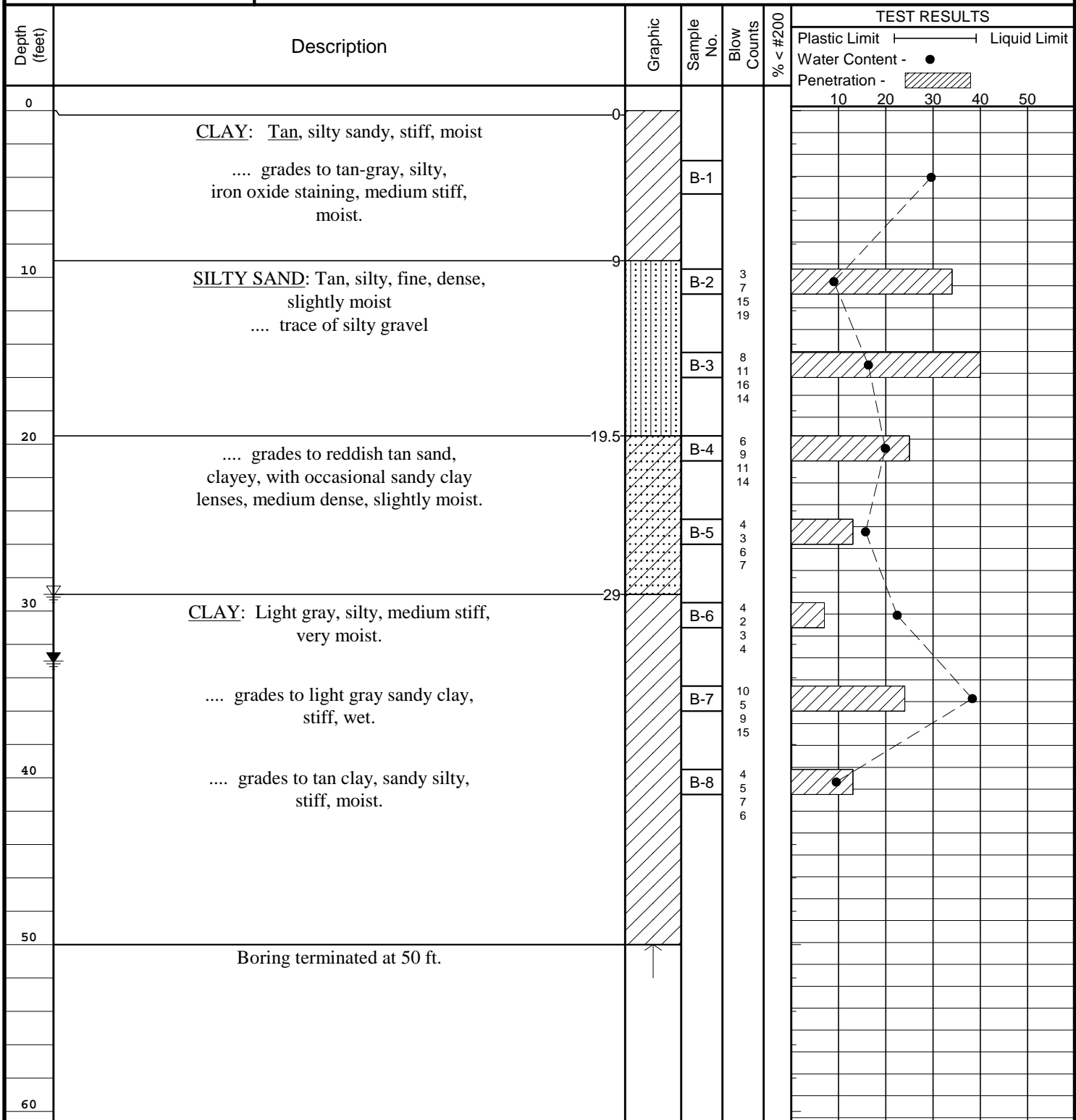
TOTAL DEPTH: 24 ft

ELEVATION/ DEPTH	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CORE RUN	CORE REC (%)	DISCONTINUITY DATA			ROCK HARDNESS				ROCK WEATHERING									
					RQD (%)	FRACTURE SPACING	DEFECT DESCRIPTION	1	2	3	4	1	2	3	4						
0		<b>SILTY SAND:</b> Lt. brown; moist; nonplastic; med dense to dense; residual soil.																			
4310																					
5																					
4305																					
10		<b>BIOTITE GNEISS:</b> med brown to lt gray; well-developed foliation; strong mineral banding w/ alternating biotite and feldspar/quartz-rich bands; coarse-grained phaneritic texture.	1	30	10	1.5"	In general, 3 joint sets at 45°, 45°, and 90° from vertical.														
4300						3.0"															
15			2	46	25	0.5"	Pulverized shear zone with clay gouge zone from 14.0-15.2 ft depth														
4295						6.0"															
20		<b>MUSCOVITE SCHIST:</b> silver gray; well-developed schistosity; phaneritic texture; weakly-developed felsic and mafic mineral layering; occasional segregated pods of quartz.	3	60	45	5.0"	Pulverized shear zone with clay gouge zone from 22.3-23.0 ft depth.														
4290			4	85	72	0.5"															
25						1.0"															
4285																					
30																					
4280																					

# LOG OF BORING No. GW-15

**PROJECT:** Midland City Transp. District **PROJECT NO.:** 1416-005  
**CLIENT:** Midland City  
**PROJECT LOCATION:** \_\_\_\_\_  
**LOCATION:** 15' So. STA 3 **ELEVATION:** 4278.5 assumed  
**DRILLER:** RXY Drilling **LOGGED BY:** APL  
**DRILLING METHOD:** \_\_\_\_\_ **DATE:** 2/12/91  
**DEPTH TO - WATER> INITIAL:**  $\nabla$  29 **AFTER 24 HOURS:**  $\nabla$  33 **CAVING>** C

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Southwest corner of building 4  
 Shaded arrow denotes the depth at which the borehole caved