Appendix C

Boring Logs

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-1

PROJECT LOCATION Mead, Washington
PROJECT NUMBER 0907194.000
LOCATION Northing:304888.19 Easting:2524577.95
OVA EQUIPMENT
GROUND ELEVATION 2221.75 ft **HOLE DIAMETER** 6"
TOP OF CASING ELEVATION **HOLE DEPTH** 80.0 ft
▽ **FIRST ENCOUNTERED WATER** 72.0 ft / Elev 2149.8 ft
▼ **STABILIZED WATER** 68.7 ft / Elev 2153.1 ft
LOGGED BY Kevin Knesek, ARCADIS **DATE** 5/12/10

DRILLING CONTRACTOR Environmental West Exploration
DRILLING METHOD Air Rotary
STAMP (IF APPLICABLE) AND/OR NOTES

Supervising Geologist: Steve Reed - Exponent

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
		ML		3.0	Cream and brown, clayey SILT, moist. Trace clay clasts.	2218.8	
5		ML		10.0	Light brown, soft SILT. Dry.	2211.8	5
10		ML		15.0	Light brown SILT with trace to some clay.	2206.8	10
15		SM		16.0	Reddish brown, fine SAND with silt.	2205.8	15
20		ML			Brown to reddish brown, soft SILT with trace clay. Silt is mica rich, and dry to slightly moist.		20

(Continued Next Page)

COMMENTS

APPROVED BY: **DATE:**

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-1

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
		ML			Brown to reddish brown, soft SILT with trace clay. Silt is mica rich, and dry to slightly moist. *(continued)*		
25				25.0		2196.8	25
		ML			Light brown, clayey SILT. Slightly moist.		
				28.5		2193.3	
					Reddish brown, soft SILT. Dry.		
30							30
		ML					
				34.0		2187.8	
					Light brown, soft SILT with trace fine sand. Dry.		
35							35
		ML					
				39.0		2182.8	
					Light brown, clayey SILT. Slightly moist.		
40							40
		ML					
45				45.0		2176.8	45
		CL			Light brown, silty CLAY. Moist.		
50							50

(Continued Next Page)

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-1

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
		CL			Light brown, silty CLAY. Moist. *(continued)*		
				52.0		2169.8	
		ML			Light brown, clayey SILT. Moist.		
				53.0		2168.8	
55		CL			Light brown to grayish light brown, silty, mica rich CLAY. Moist.		55
60				61.0		2160.8	60
		CL			Light grayish brown CLAY with some silt. Moist. Harder drilling.		
65							65
70					▼		70
				72.0	▽	2149.8	
		ML			Dark brown, clayey, mica rich SILT. Moist to wet.		
75							75
80				80.0		2141.8	80

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-2

PROJECT LOCATION Mead, Washington
PROJECT NUMBER 0907194.000
LOCATION Northing:305123.51 Easting:2524879.67
OVA EQUIPMENT
GROUND ELEVATION 2264.55 ft **HOLE DIAMETER** 6"
TOP OF CASING ELEVATION **HOLE DEPTH** 80.0 ft
▽ **FIRST ENCOUNTERED WATER** 75.0 ft / Elev 2189.6 ft
▼ **STABILIZED WATER** 75.7 ft / Elev 2188.9 ft
LOGGED BY Kevin Knesek, ARCADIS **DATE** 5/11/10

DRILLING CONTRACTOR Environmental West Exploration
DRILLING METHOD Air Rotary
STAMP (IF APPLICABLE) AND/OR NOTES

Supervising Geologist: Steve Reed - Exponent

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
		ML		1.5	Dark brown SILT with trace clay. Moist.	2263.1	
5		ML		6.0	Brown clayey SILT with trace basalt gravel. Dry.	2258.6	5
		GM		9.0	Silty, fine to course, angular to subangular basalt GRAVEL with trace latah gravel. Dry. Silt decreases with depth.	2255.6	
10		GP		15.0	Fine to course, angular to subangular, vesicular, basalt GRAVEL with trace silt. Dry.	2249.6	10
15		GM		16.5	Silty basalt GRAVEL. Dry.	2248.1	15
		GP			Angular to subangular, fine to course, basalt GRAVEL with intermittent silty and clayey basalt gravel. (Boulders)		
20							20

(Continued Next Page)

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-2

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
25		GP			Angular to subangular, fine to course, basalt GRAVEL with intermittent silty and clayey basalt gravel. (Boulders) *(continued)*		25
30				33.0		2231.6	30
35					Basalt. Cuttings mostly angular and course. Hard Drilling. Intermittent silt/clay strata. Dry from 33' bgs to 75'bgs. Moist to wet from 75'bgs to 78.5' bgs, then dry.		35
40							40
45							45
50							50

(Continued Next Page)

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-2

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
55					Basalt. Cuttings mostly angular and course. Hard Drilling. Intermittent silt/clay strata. Dry from 33' bgs to 75'bgs. Moist to wet from 75'bgs to 78.5' bgs, then dry. *(continued)*		55
60							60
65							65
70							70
75				▽ ▼			75
80				80.0		2184.6	80

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-3

PROJECT LOCATION Mead, Washington
PROJECT NUMBER 0907194.000
LOCATION Northing:305866.78 Easting:2523800.69
OVA EQUIPMENT
GROUND ELEVATION 2180.61 ft **HOLE DIAMETER** 6"
TOP OF CASING ELEVATION **HOLE DEPTH** 69.0 ft
▽ **FIRST ENCOUNTERED WATER** 60.0 ft / Elev 2120.6 ft
▼ **STABILIZED WATER** 55.6 ft / Elev 2125.0 ft
LOGGED BY Kevin Knesek, ARCADIS **DATE** 5/11/10

DRILLING CONTRACTOR Environmental West Exploration
DRILLING METHOD Air Rotary
STAMP (IF APPLICABLE) AND/OR NOTES
Supervising Geologist: Steve Reed - Exponent

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
		GM			Silty, angular to subangular basalt GRAVEL. Moist.		
5				5.0		2175.6	5
				6.0	Basalt Boulder	2174.6	
		ML			Reddish brown SILT with trace clay and course, angular latah gravel. Slightly moist.		
10				10.0		2170.6	10
		CL			Bluish gray and reddish brown silty CLAY. Slightly moist. (Saprolite?) Becomes clayey SILT at 13' bgs.		
15				14.5		2166.1	15
		ML			Light brown, soft SILT with trace to some angular to mostly subangular basalt gravel. Dry. Trace to some fine to medium sand from 17' bgs to 17.5' bgs.		
20							20

(Continued Next Page)

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-3

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
		ML			Light brown, soft SILT with trace to some angular to mostly subangular basalt gravel. Dry. Trace to some fine to medium sand from 17' bgs to 17.5' bgs. *(continued)*		
				23.0		2157.6	
25		ML			Gravelly SILT. Gravel is mostly course, angular to subangular basalt. Dry.		25
30				30.5		2150.1	30
					Brown SILT with fine sand. Dry to slightly moist.		
35		ML					35
40				40.0		2140.6	40
		SP			Fine to medium SAND with silt and fine to course basalt gravel.		
45				45.0		2135.6	45
		GP			Subangular to subrounded, course to fine basalt GRAVEL with some to trace silt.		
				48.0		2132.6	
50					Basalt with intermittent interbeds of silt, clay and fine sand. Moist beginning at 55' bgs.		50

(Continued Next Page)

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-3

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
					Basalt with intermittent interbeds of silt, clay and fine sand. Moist beginning at 55' bgs. *(continued)*		
55				▼			55
60				▽			60
65							65
				69.0		2111.6	

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-4

PROJECT LOCATION Mead, Washington
PROJECT NUMBER 0907194.000
LOCATION Northing:305152.23 Easting:2524141.14
OVA EQUIPMENT
GROUND ELEVATION 2170.69 ft **HOLE DIAMETER** 6"
TOP OF CASING ELEVATION **HOLE DEPTH** 50.0 ft
▽ **FIRST ENCOUNTERED WATER** 50.0 ft / Elev 2120.7 ft
▼ **STABILIZED WATER** 47.7 ft / Elev 2123.0 ft
LOGGED BY Kevin Knesek, ARCADIS **DATE** 5/11/10

DRILLING CONTRACTOR Environmental West Exploration
DRILLING METHOD Air Rotary
STAMP (IF APPLICABLE) AND/OR NOTES

Supervising Geologist: Steve Reed - Exponent

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
		GM			Silty basalt GRAVEL. Moist.		
5				7.0		2163.7	5
		ML			Brown SILT with fine sand and trace basalt gravel. Slightly moist.		
10				10.0		2160.7	10
		GM			Silty basalt GRAVEL. Dry.		
				12.0		2158.7	
		ML			Brown SILT with fine sand. Dry.		
				14.0		2156.7	
15		GP			Basalt boulders with intermittent silt strata in between. Silt strata slightly moist, otherwise dry. Basalt cuttings are angular to subangular, fine to course, and vesicular.		15
20							20

(Continued Next Page)

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-4

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
25		GP			Basalt boulders with intermittent silt strata in between. Silt strata slightly moist, otherwise dry. Basalt cuttings are angular to subangular, fine to course, and vesicular. *(continued)*		25
30							30
35				37.0		2133.7	35
40					Basalt.		40
45							45
50				50.07		2120.7	50

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-5

PROJECT LOCATION Mead, Washington
PROJECT NUMBER 0907194.000
LOCATION Northing:305216.84 Easting:2525077.77
OVA EQUIPMENT
GROUND ELEVATION 2289.56 ft **HOLE DIAMETER** 6"
TOP OF CASING ELEVATION **HOLE DEPTH** 103.0 ft
▽ **FIRST ENCOUNTERED WATER** 100.0 ft / Elev 2189.6 ft
▼ **STABILIZED WATER** 99.1 ft / Elev 2190.5 ft
LOGGED BY Kevin Knesek, ARCADIS **DATE** 5/10/10

DRILLING CONTRACTOR Environmental West Exploration
DRILLING METHOD Air Rotary
STAMP (IF APPLICABLE) AND/OR NOTES

Supervising Geologist: Steve Reed - Exponent

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
				ML		1.0	Brown gravelly SILT. Dry.	2288.6	
5				GM		7.5	Course to fine, angular to subangular, silty basalt GRAVEL. Dry. Percent silt content variable from increasing to decreasing at approximately 1' intervals.	2282.1	5
10				GP		9.5	Fine to course, angular to subrounded basalt GRAVEL with silt. Dry.	2280.1	10
15				GM			Fine to course, angular to subangular, silty, vesicular basalt GRAVEL. Dry.		15
20									20

(Continued Next Page)

COMMENTS

APPROVED BY: **DATE:**

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-5

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION .	ELEVATIONS (feet)	DEPTH (feet)
				GM		21.0	Fine to course, angular to subangular, silty, vesicular basalt GRAVEL. Dry. *(continued)*	2268.6	
				GP			Fine to course, angular to subangular, highly vesicular basalt GRAVEL with trace to some silt. Basalt boulder from 41.5' to 43'.		
25									25
30									30
35									35
40									40
45						45.0		2244.6	45
				ML			Brown SILT with trace to some gravel. Moist. Trace clay from 49' to 50'.		
50						50.0		2239.6	50

(Continued Next Page)

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-5

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
				GP		54.0	Fine basalt GRAVEL with trace to some moist silt.	2235.6	
55				GM		55.0	Silty basalt GRAVEL. Moist.	2234.6	55
60				ML		64.5	Brown, clayey SILT with trace to some gravel. Gravel is mixture of garnet+quartz bearing plutonic lithology to ingenous basalt. From 58' to 61', gravels are mostly mica and quartz bearing. From 61' to 64.5', gravels are strictly basalt.	2225.1	60
65				GP		69.0	Mostly course, some fine basalt GRAVEL, trace silt. Dry. Possible boulder.	2220.6	65
70				GM		77.0	Fine to course basalt GRAVEL with intermittent increasing to decreasing percent silt content. Trace plutonic gravel at 73.5'. Slightly moist to dry.	2212.6	70
75				GM			Fine to course basalt GRAVEL with reddish brown silt and fine sand, trace plutonic gravel. Moist.		75
80									80

(Continued Next Page)

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-5

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
				GM		81.0		2208.6	
				GP			Fine to course basalt GRAVEL with brown silt. Dry.		
85						85.0		2204.6	85
				GM			Fine to course silty basalt GRAVEL. Slightly moist. Gravel become mostly fine from 86' to 87'. Some angular latah gravel from 93' to 94'.		
90									90
						94.0		2195.6	
95				ML			Bluish cream and rusty orange-red clayey SILT. Rusty orange red sediment in swirl pattern within the bluish gray (saprolite?). Dry, then becomes moist at 97'.		95
	SS BH-5 d 95		42-6 50-3						
						98.5		2191.1	
100				ML			Brown, soft, mica rich SILT with trace fine to medium sand. Wet at 100'.		100
						103.0		2186.6	

COMMENTS

APPROVED BY: _____ **DATE:** _____

BORING+WELL 2006 HEGLAR KRONQUIST.GPJ LFR SEPT 2006.GDT 7/21/10

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-6

PROJECT LOCATION Mead, Washington
PROJECT NUMBER 0907194.000
LOCATION Northing:303751.83 Easting:2524105.04
OVA EQUIPMENT
GROUND ELEVATION 2098.41 ft **HOLE DIAMETER** 6"
TOP OF CASING ELEVATION **HOLE DEPTH** 60.0 ft
▽ **FIRST ENCOUNTERED WATER** 60.0 ft / Elev 2038.4 ft
▼ **STABILIZED WATER** 57.0 ft / Elev 2041.4 ft
LOGGED BY Kevin Knesek, ARCADIS **DATE** 5/12/10

DRILLING CONTRACTOR Environmental West Exploration
DRILLING METHOD Air Rotary
STAMP (IF APPLICABLE) AND/OR NOTES

Supervising Geologist: Steve Reed - Exponent

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
		ML		1.5	Brown clayey SILT with subrounded basalt and quartz monzonite gravel. Dry.	2096.9	
		ML		4.0	Brown, soft SILT with trace basalt gravel. Dry.	2094.4	
5		GM		10.0	Subangular to subrounded, silty basalt GRAVEL. Dry.	2088.4	5
10		CL		12.0	Cream silty CLAY. Moist.	2086.4	10
		ML		14.0	Cream clayey SILT. Moist.	2084.4	
15		ML		15.0	Brown to reddish brown, soft SILT with trace clay. Dry.	2083.4	15
		ML		16.5	Light brown clayey SILT. Moist.	2081.9	
		ML		18.0	Brown to light brown soft SILT. Moist.	2080.4	
20		ML			Brown to light brown clayey SILT. Moist.		20

(Continued Next Page)

COMMENTS

APPROVED BY: **DATE:**

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-6

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
		ML		21.0	Brown to light brown clayey SILT. Moist. *(continued)*	2077.4	
25		CL			Light brown to brown silty CLAY. Moist. Becomes mica rich at 23'.		25
30							30
35				35.0		2063.4	35
		ML			Brown clayey SILT. Moist.		
40				41.0		2057.4	40
		CL			Brown, silty, mica rich CLAY. Becomes moist to wet at approximately 55'.		
45							45
50							50

(Continued Next Page)

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-6

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION .	ELEVATIONS (feet)	DEPTH (feet)
55		CL			Brown, silty, mica rich CLAY. Becomes moist to wet at approximately 55'. *(continued)*		55
60				60.0 ▽		2038.4	60

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-7

PROJECT LOCATION Mead, Washington
PROJECT NUMBER 0907194.000
LOCATION Northing:306552.73 Easting:2523076.91
OVA EQUIPMENT
GROUND ELEVATION 2073.21 ft **HOLE DIAMETER** 6"
TOP OF CASING ELEVATION **HOLE DEPTH** 60.0 ft
FIRST ENCOUNTERED WATER ---
STABILIZED WATER 43.6 ft / Elev 2029.6 ft
LOGGED BY Kevin Knesek, ARCADIS **DATE** 5/13/10

DRILLING CONTRACTOR Environmental West Exploration
DRILLING METHOD Air Rotary
STAMP (IF APPLICABLE) AND/OR NOTES
Supervising Geologist: Steve Reed - Exponent

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
				ML		7.0	Dark brown SILT with trace clay, some fine, angular to subrounded quartz monzonite gravel. Moist.	2066.2	
5				SP		9.0	Brown, fine to medium SAND, trace silt. Wet.	2064.2	5
10				GP		12.0	Angular to subrounded basalt and quartz monzonite GRAVEL with medium to fine sand. Wet.	2061.2	10
15				ML			Gravelly SILT with fine to medium sand. Gravels are fine and subangular. Decreasing moisture with depth.		15
20									20

(Continued Next Page)

COMMENTS

APPROVED BY: **DATE:**

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-7

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
				ML		21.0		2052.2	
				SP			Brown, fine SAND with silt, trace clay, trace fine gravel. Moist. Increasing clay content with depth.		
25						25.0		2048.2	25
				ML		27.0	Brown SILT with clay, some to trace fine to medium sand. Some bluish gray clay clasts.	2046.2	
				SP			Medium SAND with fine sand and silt, some rounded, fine quartz monzonite, mica rich gravel. Increasing silt and gravel content with depth.		
30						30.0		2043.2	30
				SP		33.0	Reddish brown, fine to medium SAND with silt. Moist to wet.	2040.2	
				ML		35.0	SILT with clay and fine gravel.	2038.2	
35									35
				CL		39.0	Light brown, silty CLAY with fine to medium sand and fine gravel. Dry.	2034.2	
40				CL		41.0	Cream CLAY with reddish brown fine sand and mica rich silt. Dry.	2032.2	40
				CL		42.0	Cream, silty, mica rich CLAY. Dry.	2031.2	
				ML			Reddish brown, soft SILT with trace to some clay and trace fine, subrounded quartz monzonite gravel. Moist. ▼		
45									45
				ML		48.0		2025.2	
50				ML			Reddish brown SILT with fine to medium sand and fine rounded to subrounded quartz monzonite gravel. (Weathered Bedrock). Slightly moist. Wet at approximately 59' bgs.		50

(Continued Next Page)

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-7

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION .	ELEVATIONS (feet)	DEPTH (feet)
55				ML			Reddish brown SILT with fine to medium sand and fine rounded to subrounded quartz monzonite gravel. (Weathered Bedrock). Slightly moist. Wet at approximately 59' bgs. *(continued)*		55
60									60
	SS BH-7 d 60		16 12			60.5		2012.7	
						61.5	Quartz monzonite	2011.7	

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-8 North

PROJECT LOCATION Mead, Washington
PROJECT NUMBER 0907194.000
LOCATION Northing:306786.94 Easting:2523641.03
OVA EQUIPMENT
GROUND ELEVATION 2226.78 ft **HOLE DIAMETER** 6"
TOP OF CASING ELEVATION **HOLE DEPTH** 35.0 ft
FIRST ENCOUNTERED WATER ---
STABILIZED WATER ---
LOGGED BY Kevin Knesek, ARCADIS **DATE** 5/5/10

DRILLING CONTRACTOR Environmental West Exploration
DRILLING METHOD Air Rotary
STAMP (IF APPLICABLE) AND/OR NOTES

Supervising Geologist: Steve Reed - Exponent

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
					See log BH-8 South		
5							5
10							10
15							15
20							20

(Continued Next Page)

COMMENTS

APPROVED BY: **DATE:**

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-8 North

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
					See log BH-8 South *(continued)*		
				23.0		2203.8	
25		SP			Light brown, fine to medium SAND, some silt. Dry. Increasing silt with depth.		25
				27.0		2199.8	
30					Basalt. Cuttings are mostly course with trace fine. Intermittent silt until 34' bgs, then no silt.		30
35				35.0		2191.8	35

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-8 South

PROJECT LOCATION Mead, Washington
PROJECT NUMBER 0907194.000
LOCATION Northing:306777.19 Easting:2523644.00
OVA EQUIPMENT
GROUND ELEVATION 2227.14 ft **HOLE DIAMETER** 6"
TOP OF CASING ELEVATION **HOLE DEPTH** 34.0 ft
FIRST ENCOUNTERED WATER ---
STABILIZED WATER ---
LOGGED BY Kevin Knesek, ARCADIS **DATE** 5/5/10

DRILLING CONTRACTOR Environmental West Exploration
DRILLING METHOD Air Rotary
STAMP (IF APPLICABLE) AND/OR NOTES
Supervising Geologist: Steve Reed - Exponent

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
		SP			Brown, fine to medium SAND, trace silt, some fine to course gravel. Moist. Incresing silt with depth.		
5				5.0		2222.1	5
		ML			Brown to light brown SILT with fine sand and trace fine, angular to subangular gravel. Moist.		
				9.0		2218.1	
10		GP			Fine to course, angular to subangular baslat GRAVEL with some medium sand. Increasing sand content with depth.		10
				14.0		2213.1	
15		SP			Brown, medium to fine SAND, trace silt. Increasing silt content with depth.		15
				18.0		2209.1	
		ML			Brown to light brown SILT with fine sand. Dry.		
20							20

(Continued Next Page)

COMMENTS

APPROVED BY: **DATE:**

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-8 South

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
		ML			Brown to light brown SILT with fine sand. Dry. *(continued)*		
				22.0		2205.1	
		SP			Gravelly fine SAND with silt. Gravel are angular to subangular basalt.		
				24.0		2203.1	
25					Basalt.		25
30							30
				34.0		2193.1	

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-9

PROJECT LOCATION Mead, Washington
PROJECT NUMBER 0907194.000
LOCATION Northing:304678.05 Easting:2523477.20
OVA EQUIPMENT
GROUND ELEVATION 2065.65 ft **HOLE DIAMETER** 6"
TOP OF CASING ELEVATION **HOLE DEPTH** 20.0 ft
▽ **FIRST ENCOUNTERED WATER** 0.5 ft / Elev 2065.2 ft
▼ **STABILIZED WATER** 5.7 ft / Elev 2060.0 ft
LOGGED BY Kevin Knesek, ARCADIS **DATE** 5/7/10

DRILLING CONTRACTOR Environmental West Exploration
DRILLING METHOD Air Rotary
STAMP (IF APPLICABLE) AND/OR NOTES

Supervising Geologist: Steve Reed - Exponent

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION .	ELEVATIONS (feet)	DEPTH (feet)
						▽	Brown, soft SILT with fine sand and clay. Becomes light grayish brown at 5' bgs. Intermittent increasing and decreasing clay content. Moist to wet at 12' bgs.		
2.5									2.5
5.0				ML		▼			5.0
7.5									7.5
10.0									10.0

(Continued Next Page)

COMMENTS

APPROVED BY: **DATE:**

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-9

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION .	ELEVATIONS (feet)	DEPTH (feet)
12.5							Brown, soft SILT with fine sand and clay. Becomes light grayish brown at 5' bgs. Intermittent increasing and decreasing clay content. Moist to wet at 12' bgs. *(continued)*		12.5
15.0				ML					15.0
17.5									17.5
20.0						20.0		2045.7	20.0
	SS BH-9 d 20		16 50	ML		21.5	Very stiff to hard, brown clayey SILT with red, swirling silt bands and mica (saprolite?)	2044.2	

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-10

PROJECT LOCATION Mead, Washington
PROJECT NUMBER 0907194.000
LOCATION Northing:305242.03 Easting:2524703.30
OVA EQUIPMENT
GROUND ELEVATION 2238.78 ft **HOLE DIAMETER** 6"
TOP OF CASING ELEVATION **HOLE DEPTH** 55.0 ft
FIRST ENCOUNTERED WATER ---
STABILIZED WATER 45.0 ft / Elev 2193.8 ft
LOGGED BY Kevin Knesek, ARCADIS **DATE** 5/6/10

DRILLING CONTRACTOR Environmental West Exploration
DRILLING METHOD Air Rotary
STAMP (IF APPLICABLE) AND/OR NOTES

Supervising Geologist: Steve Reed - Exponent

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
				SP		2.0	Dark brown fine SAND with silt and gravel. Moist.	2236.8	
				SP		4.0	Grayish brown, fine gravelly SAND.	2234.8	
5				GP		10.0	Fine to course, angular to subangular, vesicular basalt GRAVEL, trace fines.	2228.8	5
10				ML		12.0	Dark brown SILT with fine sand. Slightly moist.	2226.8	10
15							Angular to subangular basalt cuttings with intermittent increasing and decreasing silt content. Dry. Becomes moist at 49' bgs.		15
20									20

(Continued Next Page)

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-10

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
							Angular to subangular basalt cuttings with intermittent increasing and decreasing silt content. Dry. Becomes moist at 49' bgs. *(continued)*		
25									25
30									30
35									35
40									40
45						▼			45
50						50.0		2188.8	50

(Continued Next Page)

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-10

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION .	ELEVATIONS (feet)	DEPTH (feet)
	SS BH-10 d 50		50 50	SP			Gravelly, silty fine SAND. Wet.		
						53.0		2185.8	
				GP			Fine to course, silty basalt GRAVEL. Very hard drilling at 55' bgs.		
55						55.0		2183.8	55

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-11

PROJECT LOCATION Mead, Washington
PROJECT NUMBER 0907194.000
LOCATION Northing:303812.46 Easting:2524478.96
OVA EQUIPMENT
GROUND ELEVATION 2182.95 ft **HOLE DIAMETER** 6"
TOP OF CASING ELEVATION **HOLE DEPTH** 68.0 ft
▽ **FIRST ENCOUNTERED WATER** 65.0 ft / Elev 2118.0 ft
▼ **STABILIZED WATER** 62.0 ft / Elev 2121.0 ft
LOGGED BY Kevin Knesek, ARCADIS **DATE** 5/7/10

DRILLING CONTRACTOR Environmental West Exploration
DRILLING METHOD Air Rotary
STAMP (IF APPLICABLE) AND/OR NOTES

Supervising Geologist: Steve Reed - Exponent

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
		ML			Brown SILT with fine sand and course, angular basalt gravel. Slightly moist. Decreasing gravel content with depth.		
5				7.0		2176.0	5
		ML			Brown, soft, mica rich SILT with fine sand. Slightly moist at 12' bgs.		
10				13.0		2170.0	10
		GP			Angular to subangular, fine to course, vesicular, basalt GRAVEL with intermittent increasing and decreasing sand and silt content. Dry to slightly moist.		
15							15
20							20

(Continued Next Page)

COMMENTS

APPROVED BY: **DATE:**

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-11

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
25		GP			Angular to subangular, fine to course, vesicular, basalt GRAVEL with intermittent increasing and decreasing sand and silt content. Dry to slightly moist. *(continued)*		25
30							30
35							35
40							40
45							45
50							50

(Continued Next Page)

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-11

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
55		GP			Angular to subangular, fine to course, vesicular, basalt GRAVEL with intermittent increasing and decreasing sand and silt content. Dry to slightly moist. *(continued)*		55
				56.0		2127.0	
60					Basalt. Very Hard Drilling. Cuttings are angular, non-vesicular. Becomes moist to wet at 65' bgs, then dry at 66' bgs.		60
65							65
				68.0		2115.0	

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-12

PROJECT LOCATION Mead, Washington
PROJECT NUMBER 0907194.000
LOCATION Northing:304186.20 Easting:2524808.80
OVA EQUIPMENT
GROUND ELEVATION 2202.22 ft **HOLE DIAMETER** 6"
TOP OF CASING ELEVATION **HOLE DEPTH** 95.0 ft
FIRST ENCOUNTERED WATER ---
STABILIZED WATER 77.0 ft / Elev 2125.2 ft
LOGGED BY Kevin Knesek, ARCADIS **DATE** 5/5/10

DRILLING CONTRACTOR Environmental West Exploration
DRILLING METHOD Air Rotary
STAMP (IF APPLICABLE) AND/OR NOTES

Supervising Geologist: Steve Reed - Exponent

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
					Basalt with trace silt. Dry.		
5				6.0		2196.2	5
		SP			Light brown, fine to course SAND with silt. Dry.		
10				9.5		2192.7	10
					Basalt with intermittent increasing and decreasing sand and silt.		
15							15
20							20

(Continued Next Page)

COMMENTS

APPROVED BY: **DATE:**

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-12

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
25				25.0	Basalt with intermittent increasing and decreasing sand and silt. *(continued)*	2177.2	25
		ML		28.0	Light brown to brown SILT. Dry.	2174.2	
30					Basalt (boulders?) with intermittent increasing and decreasing sand and silt. Very hard drilling at 46' bgs and 83' bgs. Sand and silt strata moist after 50' bgs.		30
35							35
40							40
45							45
50							50

(Continued Next Page)

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-12

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
					Basalt (boulders?) with intermittent increasing and decreasing sand and silt. Very hard drilling at 46' bgs and 83' bgs. Sand and silt strata moist after 50' bgs. *(continued)*		
55							55
60							60
65							65
70							70
75							75
80							80

(Continued Next Page)

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-12

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
85					Basalt (boulders?) with intermittent increasing and decreasing sand and silt. Very hard drilling at 46' bgs and 83' bgs. Sand and silt strata moist after 50' bgs. *(continued)*		85
				87.0		2115.2	
90		CL			Bluish gray CLAY with some silt. Moist to wet. Becomes SILT with clay at depth.		90
95				95.0		2107.2	95

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-13

PROJECT LOCATION Mead, Washington
PROJECT NUMBER 0907194.000
LOCATION Northing:306433.85 Easting:2523802.09
OVA EQUIPMENT
GROUND ELEVATION 2224.52 ft **HOLE DIAMETER** 6"
TOP OF CASING ELEVATION **HOLE DEPTH** 74.0 ft
▽ **FIRST ENCOUNTERED WATER** 70.0 ft / Elev 2154.5 ft
▼ **STABILIZED WATER** 67.8 ft / Elev 2156.7 ft
LOGGED BY Kevin Knesek, ARCADIS **DATE** 5/4/10

DRILLING CONTRACTOR Environmental West Exploration
DRILLING METHOD Air Rotary
STAMP (IF APPLICABLE) AND/OR NOTES

Supervising Geologist: Steve Reed - Exponent

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION .	ELEVATIONS (feet)	DEPTH (feet)
							Brown to light brown, silty fine SAND with some angular basalt gravel.		
5									5
				SP					
10									10
15						15.0		2209.5	15
							Brown to light brown SILT with angular to subangular basalt gravel.		
				ML					
20									20

(Continued Next Page)

COMMENTS

APPROVED BY: **DATE:**

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-13

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
				ML			Brown to light brown SILT with angular to subangular basalt gravel. *(continued)*		
25						25.0		2199.5	25
				ML		26.5	Brown to light brown SILT.	2198.0	
30				ML			Brown to light brown, gravelly SILT.		30
35						35.0		2189.5	35
				ML		40.0	Light brown SILT with trace fine sand. Moist.	2184.5	
40									40
				ML			Brown SILT with fine sand, trace gravel. Moist.		
45									45
50									50

(Continued Next Page)

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-13

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
55				ML			Brown SILT with fine sand, trace gravel. Moist. *(continued)*		55
60						62.0		2162.5	60
65						68.0	Basalt (boulder?).	2156.5	65
70				ML		70.0	Brown to light brown SILT. Moist.	2154.5	70
	SS BH-13 d 70		37 100	SP		74.0	Brown, fine to medium silty SAND. Wet. Increasing gravel with depth.	2150.5	

COMMENTS

APPROVED BY: _____ **DATE:** _____

BORING+WELL 2006 HEGLAR KRONQUIST.GPJ LFR SEPT 2006.GDT 7/21/10

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-15

PROJECT LOCATION Mead, Washington
PROJECT NUMBER 0907194.000
LOCATION Northing:305183.91 Easting:2524429.70
OVA EQUIPMENT
GROUND ELEVATION 2215.61 ft **HOLE DIAMETER** 6"
TOP OF CASING ELEVATION **HOLE DEPTH** 73.0 ft
▽ **FIRST ENCOUNTERED WATER** 70.0 ft / Elev 2145.6 ft
▼ **STABILIZED WATER** 66.9 ft / Elev 2148.7 ft
LOGGED BY Kevin Knesek, ARCADIS **DATE** 5/13/10

DRILLING CONTRACTOR Environmental West Exploration
DRILLING METHOD Air Rotary
STAMP (IF APPLICABLE) AND/OR NOTES

Supervising Geologist: Steve Reed - Exponent

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
		GP		2.0	Angular to subangular, silty basalt GRAVEL.	2213.6	
5		ML		5.0	Light brown clayey SILT with angular basalt gravel. Moist.	2210.6	5
10		ML			Light brown SILT with some to trace clay. Dry. Intermittent increasing and decreasing clay content. Moist at 15' bgs.		10
15							15
				18.0		2197.6	
20		ML			Light brown to brown SILT with some fine sand. Mica rich. Moist. Increasing sand with depth.		20

(Continued Next Page)

COMMENTS

APPROVED BY: **DATE:**

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-15

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
25		ML			Light brown to brown SILT with some fine sand. Mica rich. Moist. Increasing sand with depth. *(continued)*		25
30				31.0		2184.6	30
		ML		34.0	Brown to grayish brown clayey SILT with fine sand. Moist.	2181.6	
35		CL			Brown to grayish brown silty CLAY. Moist. Becomes dark brown at 58' bgs.		35
40							40
45							45
50							50

(Continued Next Page)

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER BH-15

DEPTH (feet)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
55		CL			Brown to grayish brown silty CLAY. Moist. Becomes dark brown at 58' bgs. *(continued)*		55
60				61.0		2154.6	60
65		ML			Dark brown clayey SILT. Moist. Wet at 70' bgs.		65
70				73.0		2142.6	70

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER D-1

PROJECT LOCATION Mead, Washington
PROJECT NUMBER 0907194.000
LOCATION Northing:305426.28 Easting:2524706.59
OVA EQUIPMENT
GROUND ELEVATION 2253.34 ft **HOLE DIAMETER** 6"
TOP OF CASING ELEVATION **HOLE DEPTH** 28.0 ft
FIRST ENCOUNTERED WATER ---
STABILIZED WATER ---
LOGGED BY Kevin Knesek, ARCADIS **DATE** 5/18/10

DRILLING CONTRACTOR Environmental West Exploration
DRILLING METHOD Air Rotary
STAMP (IF APPLICABLE) AND/OR NOTES

Supervising Geologist: Steve Reed - Exponent

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
2.5				SP			Brown to tan, fine SAND with silt. (Cap)		2.5
5.0						5.0		2248.3	5.0
7.5							Dross. Cutting are gray, fine to medium silty sand and clay sized sediment with strong ammonia odor. Slightly moist at 10' bgs.		7.5
10.0									10.0

(Continued Next Page)

COMMENTS

APPROVED BY: **DATE:**

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER D-1

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION .	ELEVATIONS (feet)	DEPTH (feet)
	SS D-1 d 10		12 7 5				Dross. Cutting are gray, fine to medium silty sand and clay sized sediment with strong ammonia odor. Slightly moist at 10' bgs. *(continued)*		
12.5	SS D-1 d 11.5		20 14 12						12.5
15.0									15.0
17.5									17.5
20.0						20.0		2233.3	20.0
							Basalt (boulder?)		
22.5									22.5
25.0									25.0

(Continued Next Page)

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER D-1

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION .	ELEVATIONS (feet)	DEPTH (feet)
27.5						28.0	Basalt (boulder?) *(continued)*	2225.3	27.5

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER D-2

PROJECT LOCATION Mead, Washington
PROJECT NUMBER 0907194.000
LOCATION Northing:305429.29 Easting:2524771.51
OVA EQUIPMENT
GROUND ELEVATION 2258.47 ft **HOLE DIAMETER** 6"
TOP OF CASING ELEVATION **HOLE DEPTH** 50.0 ft
FIRST ENCOUNTERED WATER ---
STABILIZED WATER ---
LOGGED BY Kevin Knesek, ARCADIS **DATE** 5/19/10

DRILLING CONTRACTOR Environmental West Exploration
DRILLING METHOD Air Rotary
STAMP (IF APPLICABLE) AND/OR NOTES

Supervising Geologist: Steve Reed - Exponent

Ammonia 180 ppm at 30' bgs, 0 ppm at 40' bgs.

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
5				SP		7.0	Brown to tan, fine SAND with silt and fine gravel. Trace to some clay. Moist.	2251.5	5
10				ML			Brown, clayey SILT with trace fine gravel and fine sand. Moist		10
15	SS D-2 d 15		17 50						15
20						20.0		2238.5	20

(Continued Next Page)

COMMENTS

APPROVED BY: **DATE:**

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER D-2

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
25				GP			Course, vesicular, subangular to subrounded, basalt GRAVEL. Strong ammonia odor to approximately 38'bgs.		25
30									30
35									35
						38.0		2220.5	
				GP		39.0	Basalt GRAVEL with reddish brown silt. Slightly moist.	2219.5	
40				GP			Mostly angular with some rounded, vesicular basalt GRAVEL. Trace areas of moisture.		40
45						45.0		2213.5	45
50						50.0	Basalt. Hard drilling. Trace areas of moisture.	2208.5	50

COMMENTS

APPROVED BY: _____ **DATE:** _____

BORING+WELL 2006 HEGLAR KRONQUIST.GPJ LFR SEPT 2006.GDT 7/21/10

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER D-3

PROJECT LOCATION Mead, Washington
PROJECT NUMBER 0907194.000
LOCATION Northing:305528.96 Easting:2524662.27
OVA EQUIPMENT
GROUND ELEVATION 2248.81 ft **HOLE DIAMETER** 6"
TOP OF CASING ELEVATION **HOLE DEPTH** 33.0 ft
FIRST ENCOUNTERED WATER ---
STABILIZED WATER ---
LOGGED BY Kevin Knesek, ARCADIS **DATE** 5/19/10

DRILLING CONTRACTOR Environmental West Exploration
DRILLING METHOD Air Rotary
STAMP (IF APPLICABLE) AND/OR NOTES

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
5				SP			Light brown to brown, fine to medium SAND with trace silt. Trace to some gray colored material at 7' bgs.		5
10						12.0		2236.8	10
15	SS D-3 d 15		50				Dross. From 12' bgs to 15.5' bgs, dross presents as fine to medium sand and silt sized particles. From 15.5' bgs to 25' bgs, dross presents as lithic with cuttings of angular, white, light gray and gray gravel. Very hard drilling in lithic material. Dry.		15
20									20

(Continued Next Page)

COMMENTS

APPROVED BY: **DATE:**

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER D-3

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
	SS D-3 d 20		100				Dross. From 12' bgs to 15.5' bgs, dross presents as fine to medium sand and silt sized particles. From 15.5' bgs to 25' bgs, dross presents as lithic with cuttings of angular, white, light gray and gray gravel. Very hard drilling in lithic material. Dry. *(continued)*		
25						26.0		2222.8	25
							Dross. Fine to medium, gray, sand and silt sized cuttings. Trace pink colored material. Dry.		
30						31.0		2217.8	30
							Pinkish red Dross, very hard drilling. Most of the cuttings are thin, platey pieces of metallic material. Dry.		
						33.0		2215.8	

COMMENTS

APPROVED BY: _____ **DATE:** _____

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

BORING NUMBER D-4

PROJECT LOCATION Mead, Washington
PROJECT NUMBER 0907194.000
LOCATION Northing:305485.74 Easting:2524649.82
OVA EQUIPMENT
GROUND ELEVATION 2248.07 ft **HOLE DIAMETER** 6"
TOP OF CASING ELEVATION **HOLE DEPTH** 45.0 ft
FIRST ENCOUNTERED WATER ---
STABILIZED WATER ---
LOGGED BY Kevin Knesek, ARCADIS **DATE** 5/19/10

DRILLING CONTRACTOR Environmental West Exploration
DRILLING METHOD Air Rotary
STAMP (IF APPLICABLE) AND/OR NOTES

Supervising Geologist: Steve Reed-Exponent

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
				SP		0	Dark brown, fine to medium silty SAND (cap). Dry.		
5									5
						8.0		2240.1	
							Dross. Presents as medium to fine, gray with trace pink, sand sized particles with trace dross gravel. Dry.		
10									10
15									15
	D-4 d 15		100						
20						20.0		2228.1	20

(Continued Next Page)

COMMENTS

APPROVED BY: **DATE:**

BORING+WELL 2006 HEGLAR KRONQUIST.GPJ LFR SEPT 2006.GDT 7/21/10

PROJECT NAME Heglar Kronquist
CLIENT Kaiser

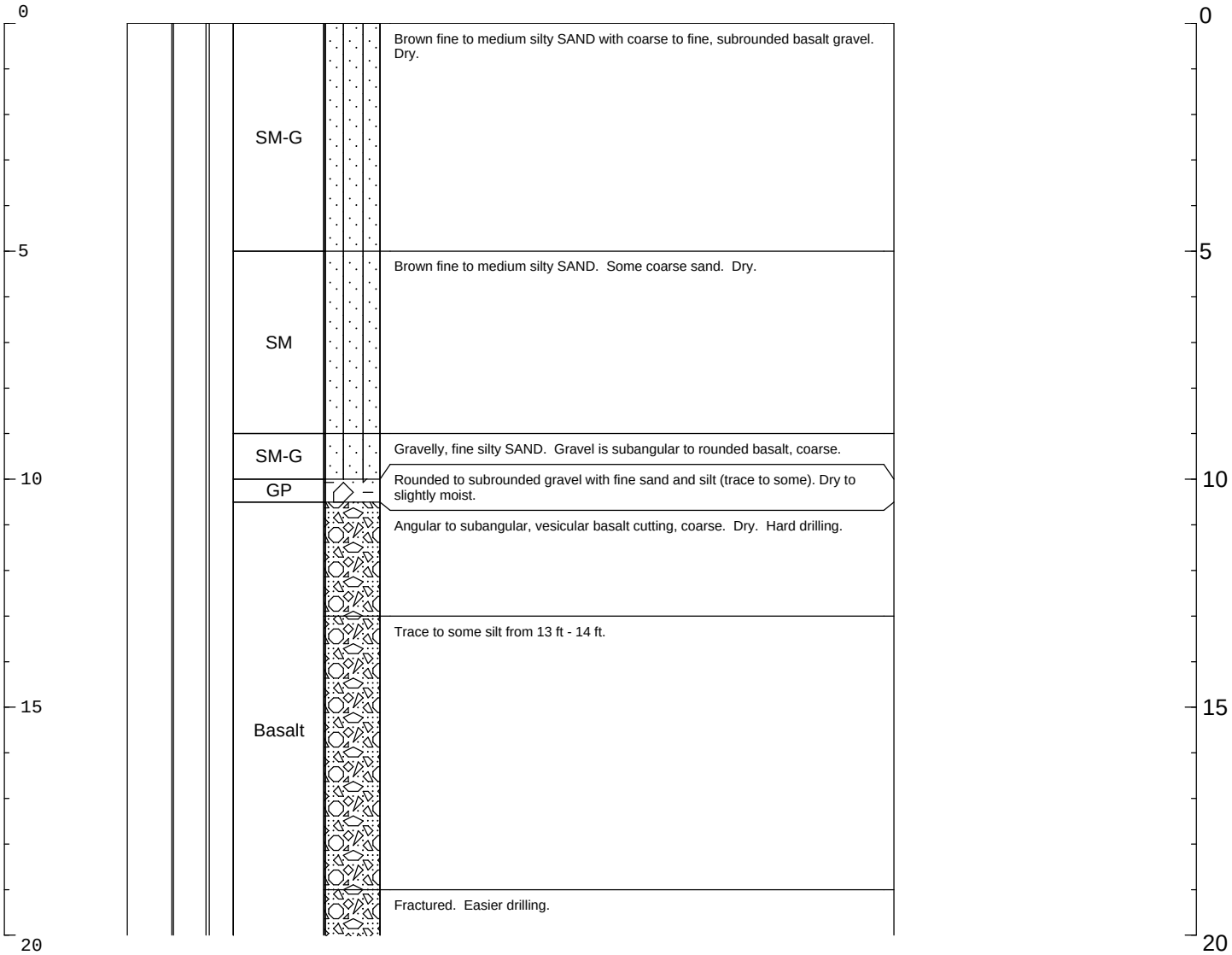
BORING NUMBER D-4

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS (feet)	LITHOLOGIC DESCRIPTION	ELEVATIONS (feet)	DEPTH (feet)
25							Lithic dross material. Cuttings are light gray in color with trace metallic flakes. Dry.		25
30						32.0		2216.1	30
35						35.0	Dross. Presents as gray, fine sand and silt sized particles. Dry.	2213.1	35
40	D-4 d 35		73 33 30			43.0	Lithic, light gray to gray dross. Very hard drilling. Some basalt gravel intermingled at approximately 40' bgs. Dry.	2205.1	40
45				GP		45.0	Silty, rounded to subrounded basalt GRAVEL.	2203.1	45

COMMENTS

APPROVED BY: _____ **DATE:** _____

Date Start/Finish: 9/14/2010 **Drilling Company:** Environmental West Exploration **Driller's Name:** Randy Wilder **Drilling Method:** Air Rotary, 6" Tubex **Bit Size:** **Auger Size:** **Rig Type:** **Sampling Method:**	**Northing** NA **Easting** NA **Casing Elevation:** Abandoned **Borehole Depth:** 75 ft. **Surface Elevation:** NA **Logged By:** Kevin Knesek **Supervising Geologist:** Steve Reed	**Well ID:** MW-2a **Client:** Kaiser Aluminum & Chemical Corporation LLC **Location:** Mead, WA



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Date Start/Finish: 9/14/2010 **Drilling Company:** Environmental West Exploration **Driller's Name:** Randy Wilder **Drilling Method:** Air Rotary, 6" Tubex **Bit Size:** **Auger Size:** **Rig Type:** **Sampling Method:**	**Northing** NA **Easting** NA **Casing Elevation:** Abandoned **Borehole Depth:** 75 ft. **Surface Elevation:** NA **Logged By:** Kevin Knesek **Supervising Geologist:** Steve Reed	**Well ID:** MW-2a **Client:** Kaiser Aluminum & Chemical Corporation LLC **Location:** Mead, WA

DEPTH	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	USCS	Geologic Column	Lithologic Description	Well Construction
20							
				CL		Cream, silty CLAY with coarse angular basalt. Slightly moist.	
25				ML		Light brown to cream SILT with clay. Trace angular basalt gravel. Coarse gravel. Dry.	
				SM		Light brown to brown SILT with fine to medium sand. Trace angular coarse basalt gravel. Dry.	
30				SP-G		Gravelly fine to medium SAND with silt. Gravels are subrounded and coarse, basalt. Trace cream colored clay. Trace fine grantic gravel. Slightly moist.	
				GP		Basalt gravel, coarse, subangular.	
				Basalt		Coarse, angular basalt cuttings. Dry. Hard drilling.	
35				GP-S		Brown, fine silty GRAVEL. Gravels mostly Coarse. Subangular basalt. Dry. Gravels decrease with depth. Increasing sand.	
				SP		Reddish brown fine to medium sand SAND. Some subangular basalt gravel. Dry.	
40							

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Date Start/Finish: 9/14/2010 **Drilling Company:** Environmental West Exploration **Driller's Name:** Randy Wilder **Drilling Method:** Air Rotary, 6" Tubex **Bit Size:** **Auger Size:** **Rig Type:** **Sampling Method:**	**Northing** NA **Easting** NA **Casing Elevation:** Abandoned **Borehole Depth:** 75 ft. **Surface Elevation:** NA **Logged By:** Kevin Knesek **Supervising Geologist:** Steve Reed	**Well ID:** MW-2a **Client:** Kaiser Aluminum & Chemical Corporation LLC **Location:** Mead, WA

DEPTH	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	USCS	Geologic Column	Lithologic Description	Well Construction
40							
45				SP-L		Gravelly fine to medium SAND with some silt. Dry.	
				GP-S		Sandy basalt GRAVEL. Gravels coarse, subrounded to subangular. Dry. Trace silt	
50				GP		Coarse vesicular basalt GRAVEL. Moist.	
55				GP-S		Sandy coarse to fine basalt GRAVEL. Slightly moist.	
				SP-G		Gravelly fine SAND with silt. Moist.	
60							

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Date Start/Finish: 9/14/2010 **Drilling Company:** Environmental West Exploration **Driller's Name:** Randy Wilder **Drilling Method:** Air Rotary, 6" Tubex **Bit Size:** **Auger Size:** **Rig Type:** **Sampling Method:**	**Northing** NA **Easting** NA **Casing Elevation:** Abandoned **Borehole Depth:** 75 ft. **Surface Elevation:** NA **Logged By:** Kevin Knesek **Supervising Geologist:** Steve Reed	**Well ID:** MW-2a **Client:** Kaiser Aluminum & Chemical Corporation LLC **Location:** Mead, WA

DEPTH	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	USCS	Geologic Column	Lithologic Description	Well Construction
60				CL		Cream and reddish brown silty CLAY. Trace fine basalt gravel. Moist.	
				ML		Brown SILT with fine sand. Trace clay. Dry.	
65				ML		Light brown clayey SILT. Dry.	
				ML		Soft brown mica rich SILT with fine sand. Moist.	
70				ML		Brown SILT with reddish brown clay. Some fine sand. Trace subrounded Latah gravel. Becomes, dark brown, clayey silt at 71 ft. Mica rich. Moist.	
75							

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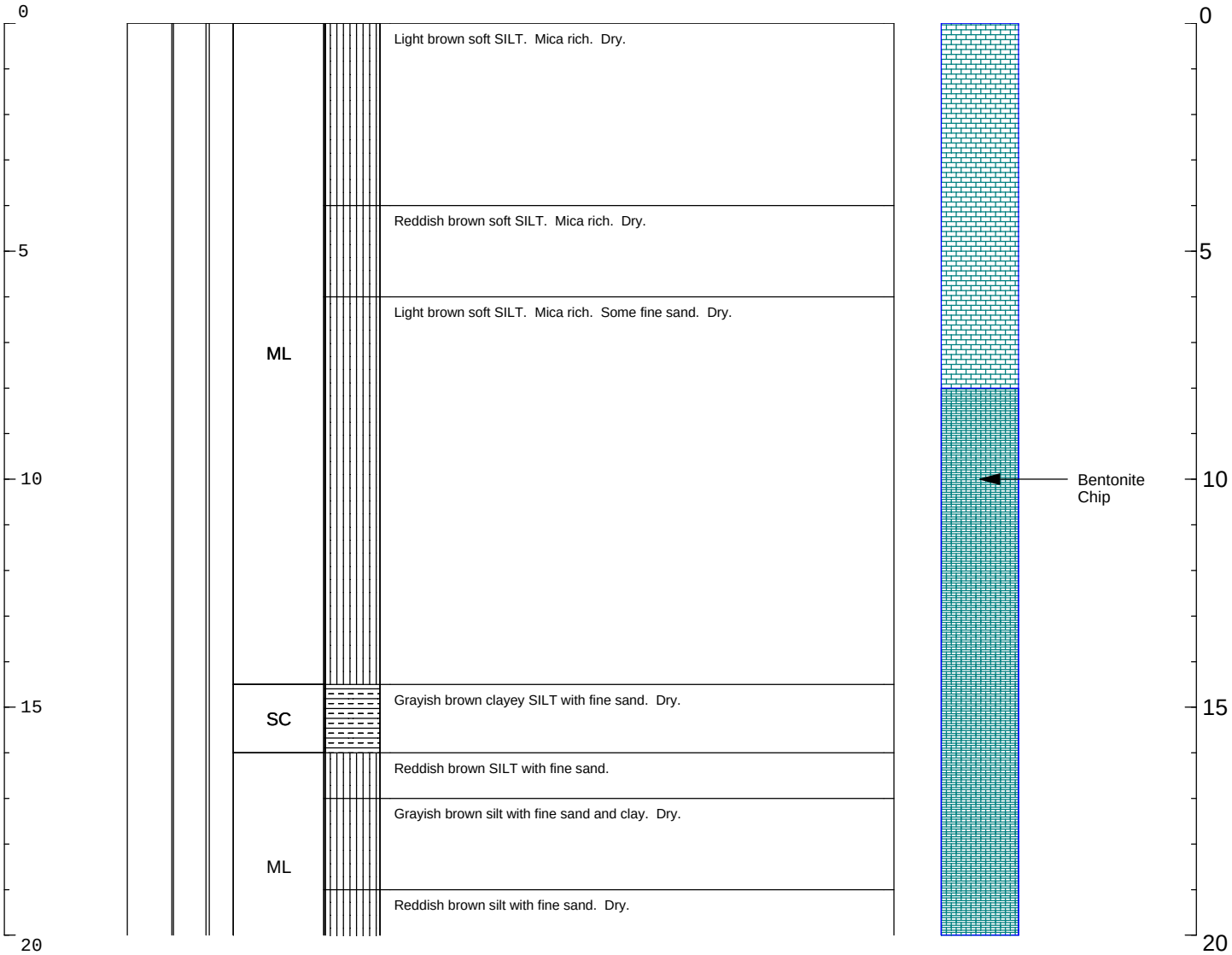
Date Start/Finish: 9/20/2010 **Drilling Company:** Environmental West Exploration **Driller's Name:** Randy Wilder **Drilling Method:** Air Rotary, 6" Tubex **Bit Size:** **Auger Size:** **Rig Type:** **Sampling Method:**	**Northing** 305,075.76' **Easting** 2,524,489.78' **Casing Elevation:** NA **Borehole Depth:** 150ft. **Surface Elevation:** 2,213.53 ft **Logged By:** Kevin Knesek **Supervising Geologist:** Steve Reed	**Well ID:** Test Hole **Client:** Kaiser Aluminum & Chemical Corporation LLC **Location:** Mead, WA



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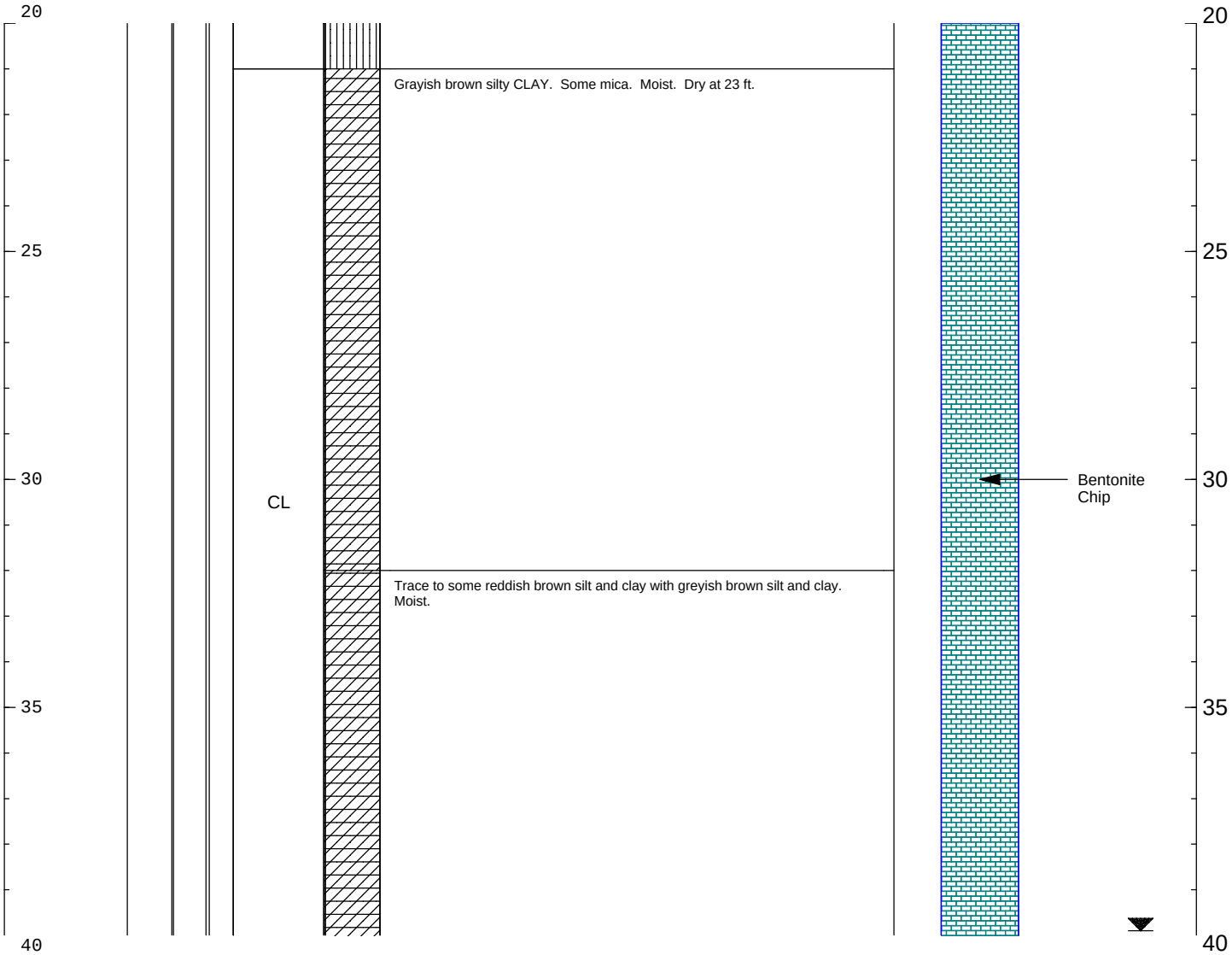
DEPTH	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	USCS	Geologic Column	Lithologic Description	Well Construction



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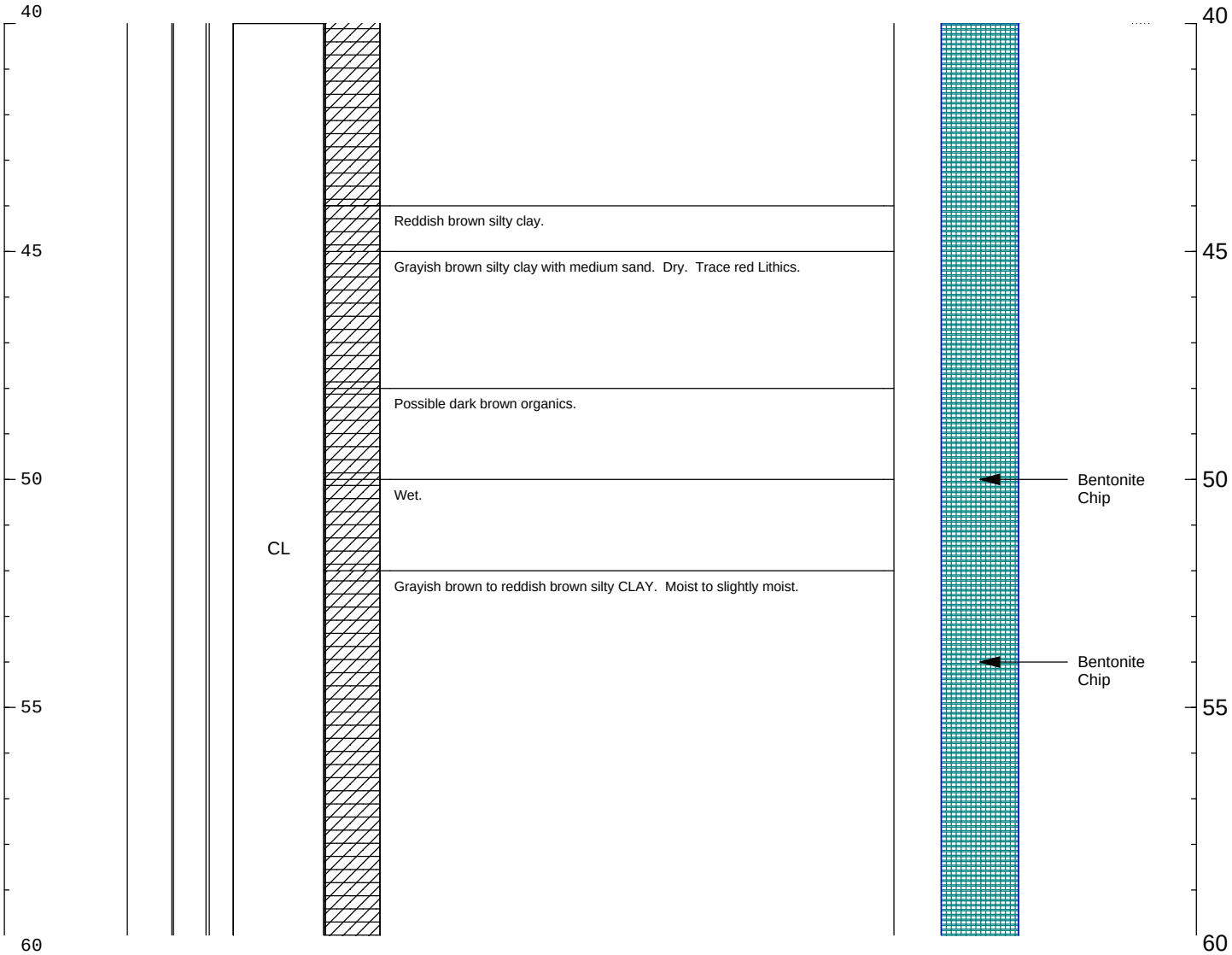
Date Start/Finish: 9/20/2010 **Drilling Company:** Environmental West Exploration **Driller's Name:** Randy Wilder **Drilling Method:** Air Rotary, 6" Tubex **Bit Size:** **Auger Size:** **Rig Type:** **Sampling Method:**	**Northing** 305,075.76' **Easting** 2,524,489.78' **Casing Elevation:** NA **Borehole Depth:** 150ft. **Surface Elevation:** 2,213.53 ft **Logged By:** Kevin Knesek **Supervising Geologist:** Steve Reed	**Well ID:** Test Hole **Client:** Kaiser Aluminum & Chemical Corporation LLC **Location:** Mead, WA



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Date Start/Finish: 9/20/2010
Drilling Company: Environmental West Exploration
Driller's Name: Randy Wilder
Drilling Method: Air Rotary, 6" Tubex
Bit Size:
Auger Size:
Rig Type:
Sampling Method:

Northing 305,075.76'
Easting 2,524,489.78'
Casing Elevation: NA

Borehole Depth: 150ft.
Surface Elevation: 2,213.53 ft

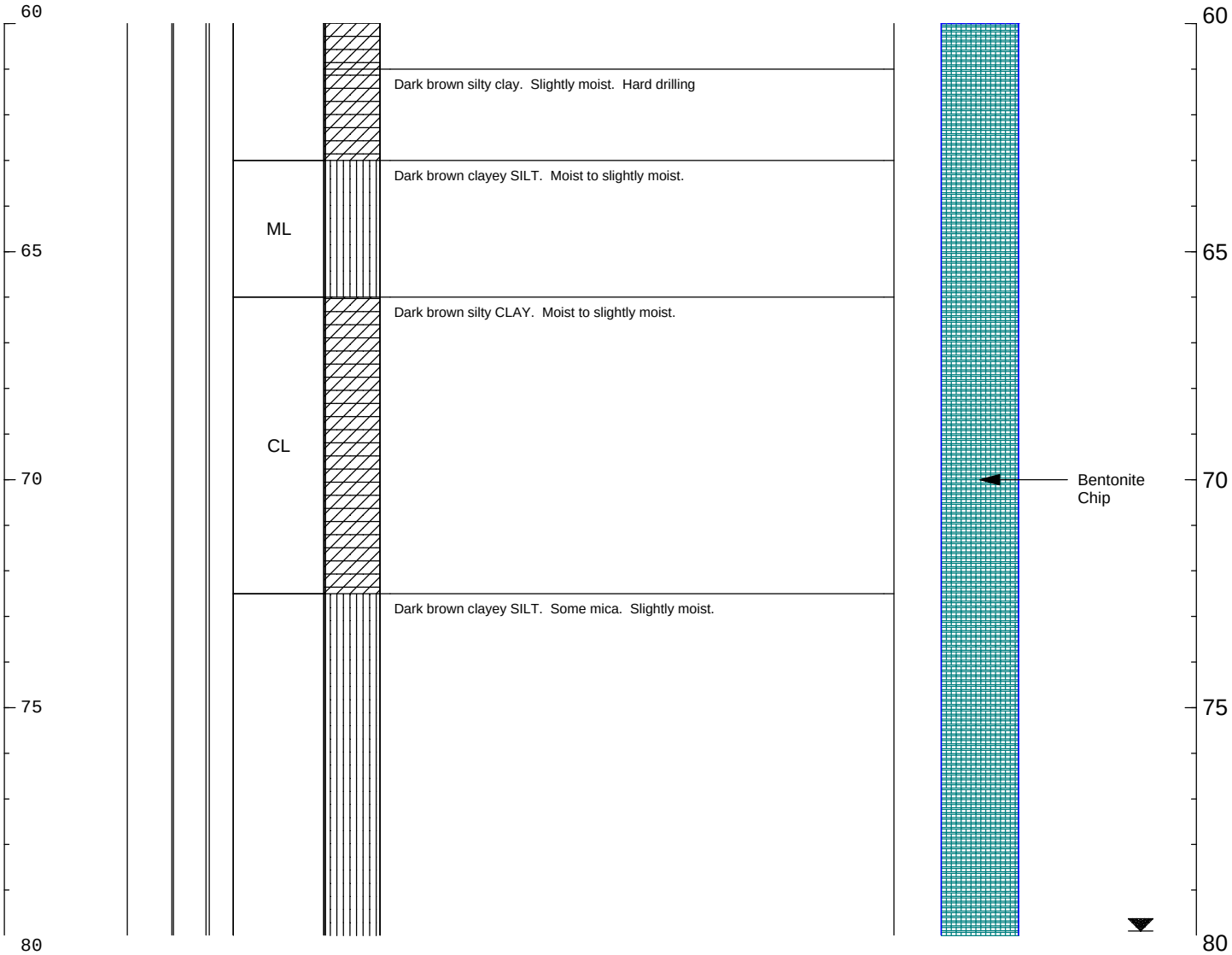
Logged By: Kevin Knesek
Supervising Geologist: Steve Reed

Well ID: Test Hole

Client: Kaiser Aluminum & Chemical Corporation LLC

Location: Mead, WA

DEPTH	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	USCS	Geologic Column	Lithologic Description	Well Construction



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Bit Size:
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Sampling Method:

Northing 305,075.76'
Easting 2,524,489.78'
Casing Elevation: NA

Borehole Depth: 150ft.
Surface Elevation: 2,213.53 ft

Logged By: Kevin Knesek
Supervising Geologist: Steve Reed

Well ID: Test Hole

Client: Kaiser Aluminum & Chemical Corporation LLC

Location: Mead, WA

DEPTH	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	USCS	Geologic Column	Lithologic Description	Well Construction
80						Brown clayey silt. Wet. Muddy.	
85						Slightly moist to dry.	
90				ML			
95							
100							

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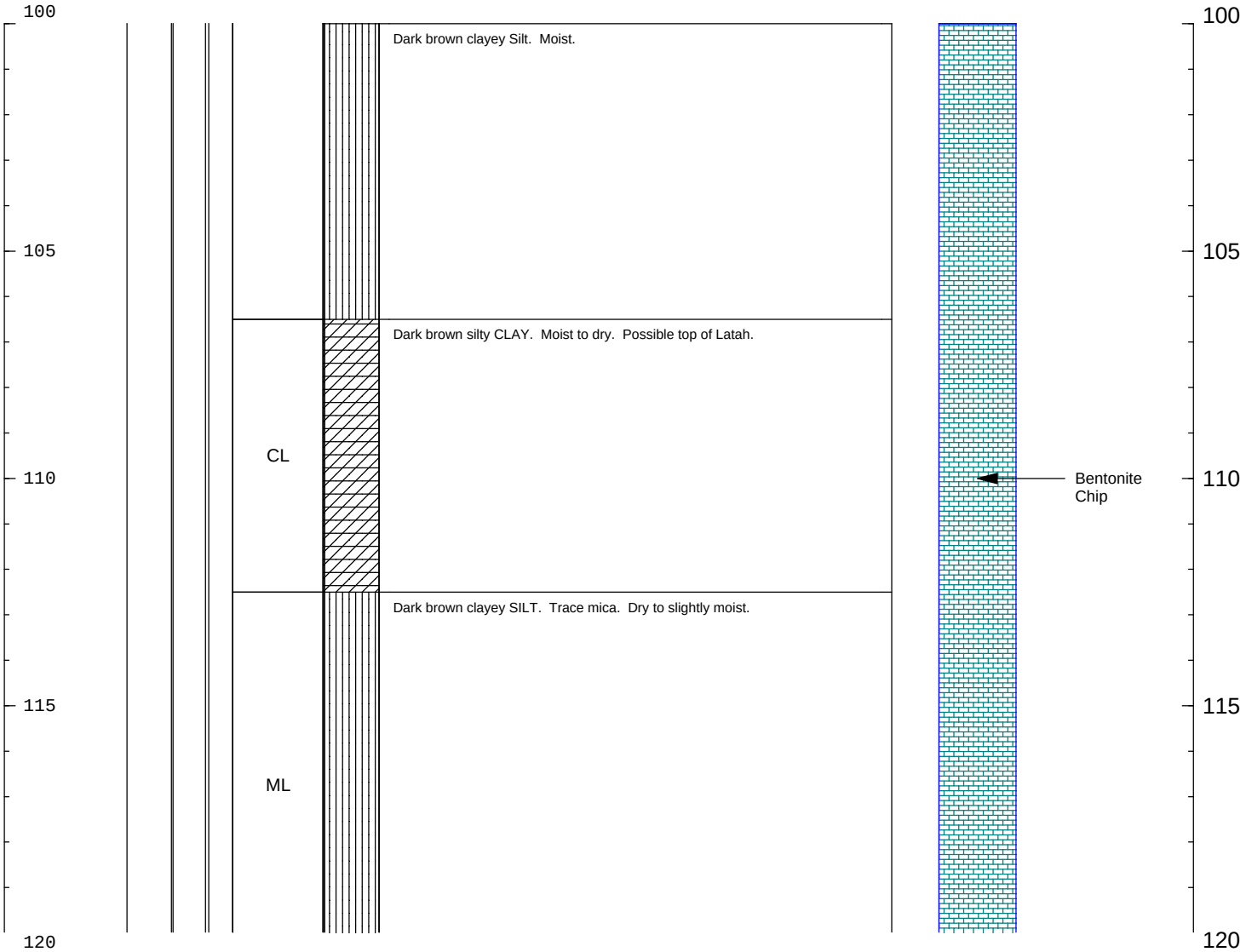

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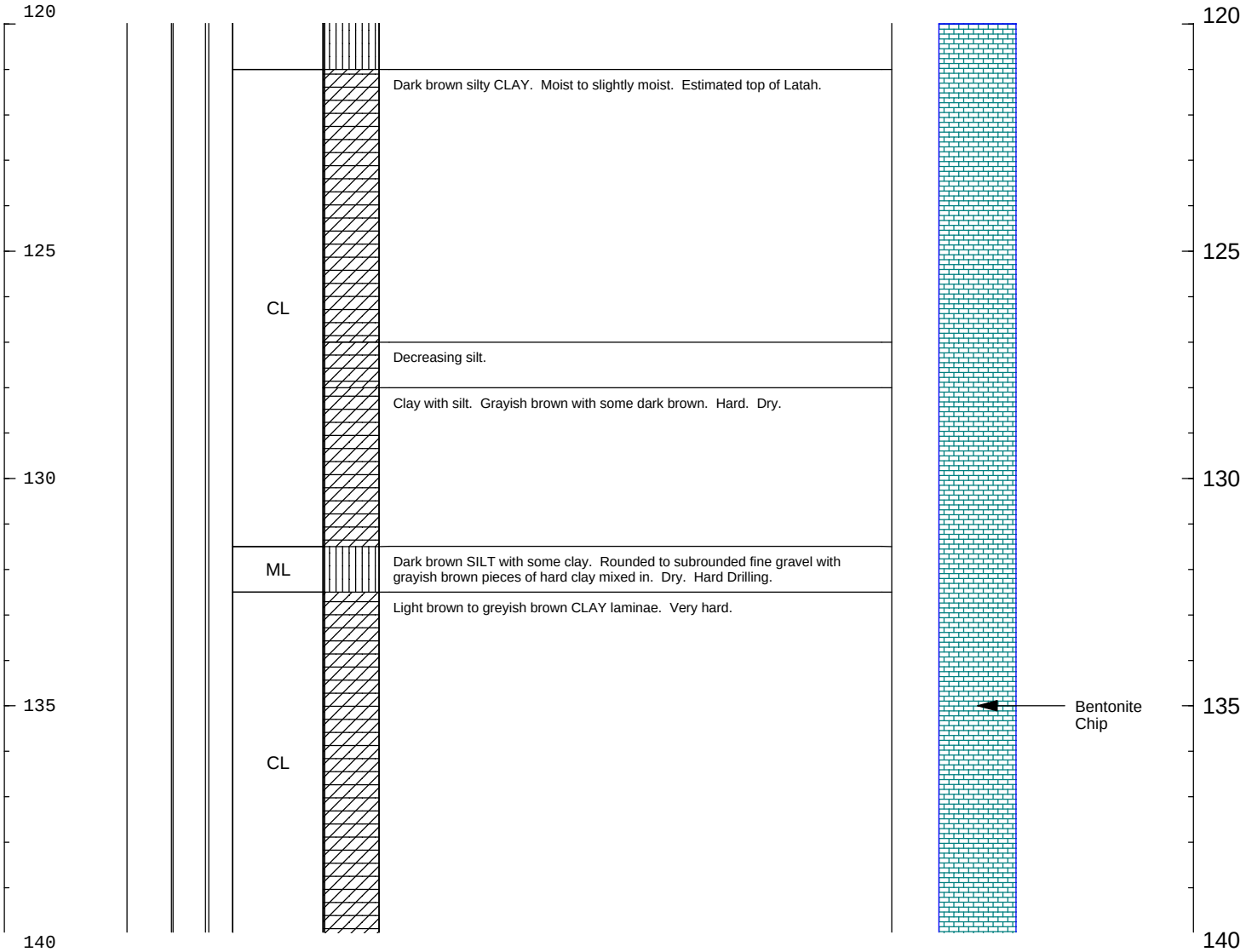

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DEPTH	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	USCS	Geologic Column	Lithologic Description	Well Construction
140							
				CL		Light to dark grayish brown clay with some silt. Like soap stone. Hard. Dry.	
145						Becomes dark brown. Trace wood fragments.	
						Becomes dark to slightly reddish dark brown. Silt. Dry.	
150							

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