ATTACHMENT A

Soil Boring Logs and Piezometer Completion Diagrams

LEGEND

LITHOLOGIC SYMBOL	LITHOLOGIC DESCRIPTION
	GW - Well Graded GRAVEL
	GP - Pooly Graded GRAVEL
	GM - Silty GRAVEL
	GC - Clayey GRAVEL
	GW-GM - Well Graded GRAVEL with Silt and Sand
	GM/GC - Borderline Classification for Silty/Clayey GRAVEL
	SW - Well Graded SAND
	SP - Poorly Graded SAND
	SM - Silty SAND
	SC - Clayey SAND
	ML - SILT, LL <50
	CL - CLAY, LL <50
	OL - ORANIC SILT/CLAY, LL <50
	MH - SILT, LL >50
	CH - CLAY, LL >50
	OH - ORANIC SILT/CLAY, LL >50
	PT - PEAT, HUMUS, SWAMP SOILS
	BR_x - BEDROCK

WELL SYMBOL	WELL SYMBOL DESCRIPTION
	STEEL MONUMENT - Above Ground Surface Stick-Up Completion
	CASING 2" SCH. 40 PVC - for monitor wells 4" SCH. 80 PVC - for aquifer test wells
	SCREEN 0.020 inch - for monitor wells 0.040 inch - for aquifer test wells
	FILTER SAND: No. 8 x 12 or No. 10 x 20
	3/8 BENTONITE HOLE PLUG
	PVC END CAP
	STAINLESS STEEL CENTRALIZERS
	GROUNDWATER LEVEL
	NATIVE FORMATION (i.e., slough)

Abbreviations:
ags = above ground surface
bgs = below ground surface
btc = below top of casing

SOIL BORING/PIEZOMETER LOG

CH2MHILL

BORING NO: **BH-SF-E-PZ-01**

PROJECT NO: **364471**

START DATE: 7/7/2008

PROJECT NAME: OU2/OU3 Direct Push Investigation

END DATE: 7/7/2008

LOCATION: Kellogg at intersection of Legion Avenue and Bunker Avenue

LOGGER: Tracy Grant

DRILLING CONTRACTOR: EPA ESAT

DRILLING EQUIPMENT: Geoprobe Model 6000

TOC ELEVATION: 2300.45

BORING DIAMETER: 3.0"

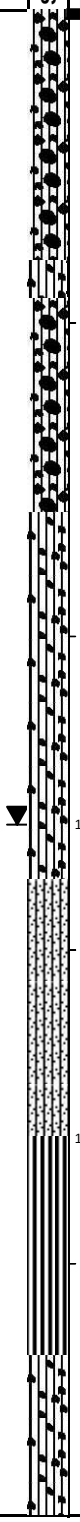
GROUND ELEVATION: 2300.78

TOTAL DEPTH: 17.8'

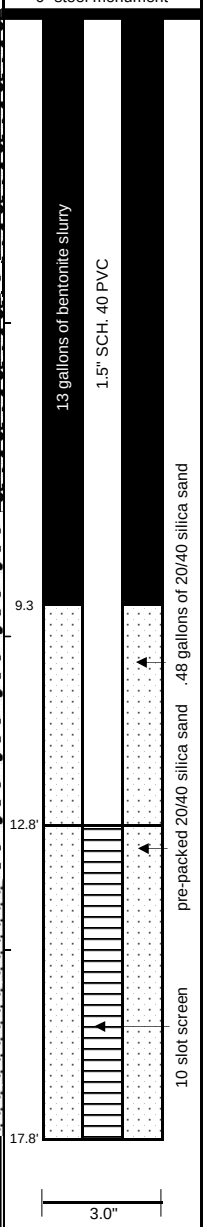
SWL: ~13.0

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0 4	68%	0.0-1.0' GW-GM: gravel and sand backfill, grey, dry, 0.5", angular, well graded 1.0'-2.7' GW-GM: gravel with sand and silt, round to subangular, gravel from 0.5-1.0", well graded, dark brown, damp	begin drill= 9:50 BH-SF-E-PZ-01-1.0-2.7 at 9:55 Cd - 26.5 mg/kg Pb - 10,500 mg/kg Zn - 5,440 mg/kg
	Core-2	4 8	45%	4.0'-4.6' GM: gravel with silt and clay, dark brown, moist to wet, round to subangular, gravel from 0.5" to 1.0", mottled clay, well graded 4.6'-5.8' GW-GM: gravel with sand, fine to medium sand, subangular gravel, brown, dry, well graded	BH-SF-E-PZ-01-4.0-5.9 at 10:00 Cd - 7.5 mg/kg Pb - 3,810 mg/kg Zn - 1,060 mg/kg
	Core-3	8 12	73%	8.0'-10.9' GM: gravel with interbedded layers of sand, moist, dark brown, gravel is rounded to subangular	BH-SF-E-PZ-01-8.0-9.5 at 10:05 Cd - 3.7 mg/kg Pb - 31.7 mg/kg Zn - 202 mg/kg BH-SF-E-PZ-01-9.5-10.9 at 10:10 Cd - 4.4 mg/kg Pb - 55.8 mg/kg Zn - 248 mg/kg
	Core-4	12 16	68%	12.0'-13.8' GM: gravel with medium sand, 2' area bluish color, the rest dark brown, moist, gravel is round 1.0", to subangular 0.5", well graded 13.8'-14.7' SM: fine sand with silt, poorly graded, brown, wet	BH-SF-E-PZ-01-12.0-13.0 at 10:15 Cd - 5.6 mg/kg Pb - 94.4 mg/kg Zn - 370 mg/kg BH-SF-E-PZ-01-13.0-14.7 at 10:20 Cd - 2.6 mg/kg Pb - 36.3 mg/kg Zn - 304 mg/kg
	Core-5	16 20	100%	16.0'-18.0' SM: fine sand with silt, poorly graded, wet 18.0'-20.0' MH: silt with clay, wet, poorly graded, increased elasticity with depth	BH-SF-E-PZ-01-16.0-18.0 at 10:50 Cd - 2.3 mg/kg Pb - 44.7 mg/kg Zn - 376 mg/kg BH-SF-E-PZ-01-18.0-20.0 at 10:55 Cd - 2.1 mg/kg Pb - 41.5 mg/kg Zn - 360 mg/kg
	Core-6	20 24	78%	20.0'-21.5' MH: silt with clay, same as above 21.5'-23.1' GM: gravel with sand, rounded to subangular, gravel from 0.5-2.0", well graded, moist	BH-SF-E-PZ-01-20.0-22.0 at 11:00 Cd - 2.4 mg/kg Pb - 42.8 mg/kg Zn - 326 mg/kg BH-SF-E-PZ-01-22.0-24.0 at 11:05 Cd - 2.2 mg/kg Pb - 26.6 mg/kg Zn - 244 mg/kg

Soil Profile



Well Construction



SOIL BORING/PIEZOMETER LOG

CH2MHILL

BORING NO: **BH-SF-E-PZ-02**

PROJECT NO: **364471**

START DATE: 8/1/2008

PROJECT NAME: OU2/OU3 Direct Push Investigation

END DATE: 8/1/2008

LOCATION:

LOGGER: Tracy Grant

DRILLING CONTRACTOR: EPA ESAT

DRILLING EQUIPMENT: Geoprobe Model 6000

TOC ELEVATION:

BORING DIAMETER: 3.0"

GROUND ELEVATION:

TOTAL DEPTH: 17.8'

SWL:

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other	Soil Profile	Well Construction
1	Core-1	0 4	60%	0.0-.7' SW: fine sand with gravel to 0.5", well graded, gray 0.7'-2.4' SW: same as above with increased medium sand, dark brown, loose	Multiple borings attempted on 7/7/2008 and 8/1/2008. Drilling advanced to 23' bgs. No wet soils encountered		
5	Core-2	4 8	45%	4.0'-5.8' SW: medium to coarse sand, dark brown to black, slag?, subangular coarse gravel from 1.0-2.0", well graded, dry to damp, trace geen/gray clay deposits	3 holes dug and filled with bentonite chips		
10	Core-3	8 12	45%	8.0'-9.2' GW-GM: fine to medium sand with gravel, rounded to subangular gravel from 1.0-2.0", light gray trace bluish clay deposits 9.2'-10.8' GW-GM: medium to coarse sand gravel, trace sand, orange/brown to dark brown with green/ gray subangular gravel from 1.0-2.0", dry			
15	Core-4	12 16	58%	12.0'-14.3' SW: fine to medium sand, light brown to dark brown, trace red and blue green, well graded, dry, trace rounded gravel from 1.0-2.0"			
20	Core-5	16 20	85%	16.0'-17.2' GW-GM: gravel with medium to coarse sand, well graded, moist to wet, subangular gravel 1.-1.5" 17.2'-19.4' CL-ML: silt and clay confining layer, wet, poorly graded, brown			2.75 bags bentonite slurry 23'

SOIL BORING/PIEZOMETER LOG

CH2MHILL

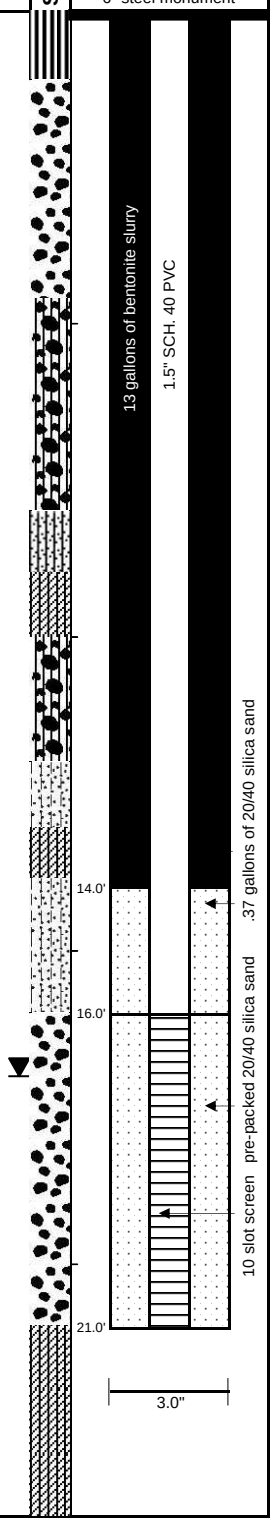
BORING NO: **BH-SF-E-PZ-03**
PROJECT NO: **364471**
PROJECT NAME: OU2/OU3 Direct Push Investigation
LOCATION:
DRILLING CONTRACTOR: EPA ESAT
TOC ELEVATION: 2300.63
GROUND ELEVATION: 2300.98

START DATE: 7/10/2008
END DATE: 7/10/2008
LOGGER: Tracy Grant
DRILLING EQUIPMENT: Geoprobe Model 6000
BORING DIAMETER: 3.0"
TOTAL DEPTH: 21.0'
SWL: ~17.0

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0 4	58%	0.0-1.1' MH: silt with fine sand, dry, trace angular gravel from 0.2-1.1", brown to red brown 1.1'-2.3' GW: gravel with trace sand and silt, angular gravel to 1.0", gray to light brown, dry, well graded	begin drill= 10:00 BH-SF-E-PZ-03-0.0-2.3 at 10:05 Cd - 6.5 mg/kg Pb - 2,310 mg/kg Zn - 1,010 mg/kg
	Core-2	4 8	63%	4.0'-4.6' GW: gravel, same as above 4.6'-6.5' GW-GM: gravel with fine sand, dark brown-red, angular gravel to 0.2", dry, grades to medium sand at 6' bgs	BH-SF-E-PZ-03-4.0-5.0 at 10:10 Cd - 12.2 mg/kg Pb - 8,880 mg/kg Zn - 2,490 mg/kg BH-SF-E-PZ-03-5.0-6.5 at 10:15 Cd - 74.9 mg/kg Pb - 13,300 mg/kg Zn - 11,400 mg/kg
	Core-3	8 12	63%	8.0'-9.0' SM: medium to fine sand with trace silt, red, poorly graded, moist 9.0'-10.0' MH-CL: silt/clay, dark brown, moist, elastic 10.0'-10.5' GW-GM: gravel to medium sand, dry, angular gravel to 0.2", light brown to brown, well graded	BH-SF-E-PZ-03-8.0-9.0 at 10:20 Cd - 33.1 mg/kg Pb - 67,800 mg/kg Zn - 7,020 mg/kg BH-SF-E-PZ-03-9.0-10.5 at 10:25 Cd - 20.1 mg/kg Pb - 5,170 mg/kg Zn - 1,180 mg/kg
	Core-4	12 16	53%	12.0'-13.1' SW-SM: medium sand with gravel, light brown, subangular gravel to 0.5", trace fines, dry 13.1'-13.7' MH-CL: silt/clay, dark brown, moist, interbedded gravel layer, red/brown, trace fine sand 13.7'-14.1' SW-SM: same as 12.0-13.1' above	BH-SF-E-PZ-03-12.0-14.1 at 10:30 Cd - 14.3 mg/kg Pb - 36 mg/kg Zn - 542 mg/kg
	Core-5	16 20	58%	16.0'-18.3' GW: gravel with trace fine sand, subangular gravel to 0.5", well graded, wet	BH-SF-E-PZ-03-16.0-18.0 at 10:35 Cd - 12.2 mg/kg Pb - 53.3 mg/kg Zn - 801 mg/kg
	Core-6	20 24	80%	20.0'-21.0' GW: gravel with trace fines, angular from 1.0-1.5", wet, brown gravel 21.0'-23.2' CL-MH: clay/silt, wet, brown drill ends=11:00	BH-SF-E-PZ-03-20.0-22.0 at 10:40 Cd - 6.2 mg/kg Pb - 59.8 mg/kg Zn - 1,490 mg/kg BH-SF-E-PZ-03-22.0-23.2 at 10:45 Cd - 5.4 mg/kg Pb - 54 mg/kg Zn - 1,350 mg/kg

Soil Profile

Well Construction

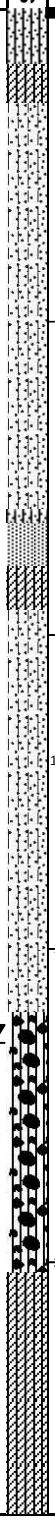


SOIL BORING/PIEZOMETER LOG

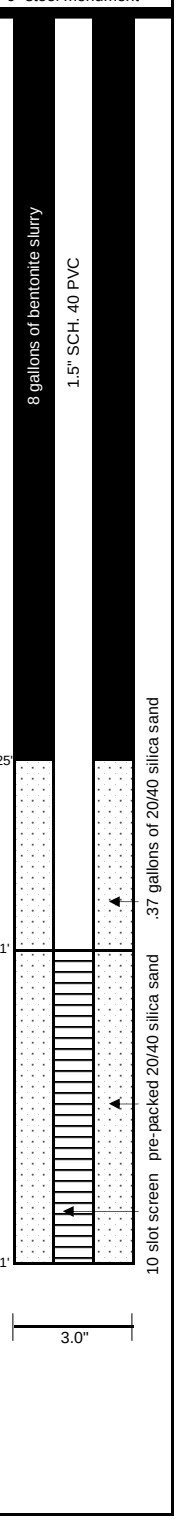
BORING NO: **BH-SF-E-PZ-04**
PROJECT NO: **364471**
PROJECT NAME: OU2/OU3 Direct Push Investigation
LOCATION:
DRILLING CONTRACTOR: EPA ESAT
DRILLING EQUIPMENT: Geoprobe Model 6000
TOC ELEVATION: 2300.53
BORING DIAMETER: 3.0"
GROUND ELEVATION: 2300.87
TOTAL DEPTH: 21.0'
START DATE: 7/31/2008
END DATE: 7/31/2008
LOGGER: Tracy Grant
SWL: ~16.5

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0	83%	begin drill= 7:30 0.0-0.9' SM: fine sand with silt, light brown, trace gravel, light brown, dry, well graded 0.9'-1.5' ML-CL: silt/clay, red/brown, dry 1.5-3.3" SW-SM: fine sand with gravel, rounded to subangular gravel to 1.0", dark brown, well graded	BH-SF-E-PZ-04-0.0-1.5 at 7:35 Cd - 0.34 mg/kg Pb - 226 mg/kg Zn - 73 mg/kg BH-SF-E-PZ-04-1.5-3.3 at 7:40 Cd - 39.3 mg/kg Pb - 11,800 mg/kg Zn - 5,180 mg/kg
		4			
	Core-2	4	55%	4.0'-6.2' SW-SM: medium sand with gravel, dark brown, rounded to subangular gravel to 0.5", moist, well graded	BH-SF-E-PZ-04-4.0-6.2 at 7:45 Cd - 23.7 mg/kg Pb - 7,350 mg/kg Zn - 2,710 mg/kg
		8			
	Core-3	8	63%	8.0'-8.2' SM: fine sand, reddish, poorly graded, moist 8.2'-8.9' SW: coarse sand with gravel, rounded gravel to 0.5", dark brown, well graded, moist 8.9'-9.6' ML-CL: silt/clay, moist, dark brown 9.6-10.5 SW-SM: fine to medium sand, well graded, trace subangular gravel	BH-SF-E-PZ-04-8.0-10.5 at 7:50 Cd - 43.4 mg/kg Pb - 2,590 mg/kg Zn - 3,610 mg/kg
		12			
	Core-4	12	70%	12.0'-14.8' SW-SM: medium to fine sand with gravel, subangular gravel from 0.5-1.0", reddish brown to brown, well graded, dry	BH-SF-E-PZ-04-12.0-13.5 at 7:55 Cd - 10.8 mg/kg Pb - 193 mg/kg Zn - 1,030 mg/kg BH-SF-E-PZ-04-13.5-14.8 at 8:00 Cd - 6.4 mg/kg Pb - 26.9 mg/kg Zn - 588 mg/kg
		16			
	Core-5	16	60%	16.0'-18.4' GW-GM: gravel and medium sand, rounded to subangular gravel to 0.5", well graded, brown; wet at 16.5' bgs	BH-SF-E-PZ-04-16.0-18.4 at 8:05 Cd - 7.1 mg/kg Pb - 119 mg/kg Zn - 669 mg/kg
		20			
	Core-6	20	83%	20.0'-20.2' GW-GM: same as above 20.2 CL-ML: clay/silt, confining layer, brown	BH-SF-E-PZ-04-20.0-21.5 at 8:10 Cd - 5.8 mg/kg Pb - 40.6 mg/kg Zn - 1,540 mg/kg BH-SF-E-PZ-04-21.5-23.3 at 8:15 Cd - 5.2 mg/kg Pb - 43 mg/kg Zn - 1,220 mg/kg
		24		drill done=8:15	

Soil Profile



Well Construction



SOIL BORING/PIEZOMETER LOG

CH2MHILL

BORING NO: **BH-SF-E-PZ-05**

PROJECT NO: **364471**

PROJECT NAME: OU2/OU3 Direct Push Investigation

LOCATION: NW corner of Shoshone Medical Center parking

DRILLING CONTRACTOR: EPA ESAT

DRILLING EQUIPMENT: Geoprobe Model 6000

TOC ELEVATION: 2291.36

BORING DIAMETER: 3.0"

GROUND ELEVATION: 2291.74

TOTAL DEPTH: 18.3'

START DATE: 7/10/2008

END DATE: 7/10/2008

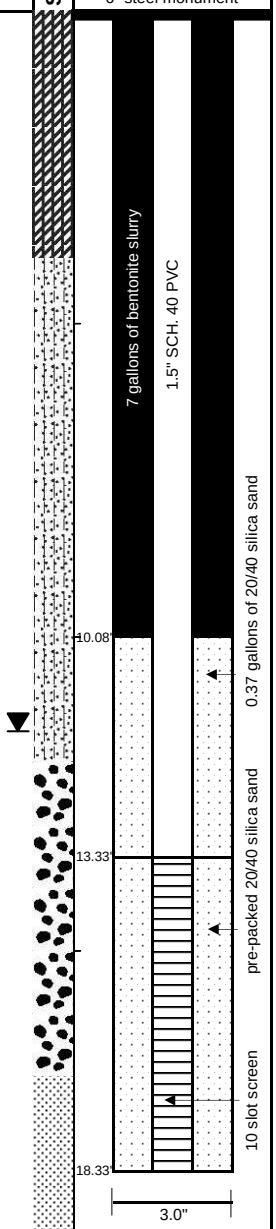
LOGGER: Tracy Grant

SWL: ~11.5

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0 4	50%	0.0-2.0' MH-CH: silt/clay, reddish brown, hard, dry from 0.0-1.0 feet bgs, moist thereafter, angular gravel to 0.5", topsoil with organic material from 0.0-0.2 feet bgs	Begin drilling at 7:30 BH-SF-E-PZ-05-0.0-2.0 at 7:45 Cd - 10.8 mg/kg Pb - 577 mg/kg Zn - 735 mg/kg
	Core-2	4 8	68%	4.0'-6.7' SW-SM: medium sand with silt and gravel, dark brown to black, subangular gravel to 1.2", dry to damp, well graded	BH-SF-E-PZ-05-4.0-5.0 at 7:50 Cd - 14.9 mg/kg Pb - 8,590 mg/kg Zn - 5,580 mg/kg BH-SF-E-PZ-05-5.0-6.7 at 7:55 Cd - 33.1 mg/kg Pb - 6,680 mg/kg Zn - 3,780 mg/kg
	Core-3	8 12	50%	8.0'-10.0' SW-SM: same as above, reddish brown, rounded gravel (0.1-2.0") layer at 9.1-9.2 feet bgs, rounded gravel at 9.3 feet bgs	BH-SF-E-PZ-05-8.0-10.0 at 8:00 Cd - 14.3 mg/kg Pb - 4,080 mg/kg Zn - 1,530 mg/kg
	Core-4	12 16	63%	12.0'-12.5' GW: gravel with fine sand, gravel 1.0-2.0", wet, well graded, brown	BH-SF-E-PZ-05-12.0-12.5 at 8:05 Cd - 10.9 mg/kg Pb - 197 mg/kg Zn - 968 mg/kg
	Core-5	16 20	50%	16.0'-17.0' GW: gravel with sand, angular gravel from 1.0-2.0", well graded, wet, brown 17.0'-18.0' SP: medium sand with trace gravel, poorly graded, wet, brown	BH-SF-E-PZ-05-16.0-18.0 at 8:10 Cd - 1.3 mg/kg Pb - 44.7 mg/kg Zn - 263 mg/kg

Soil Profile

Well Construction



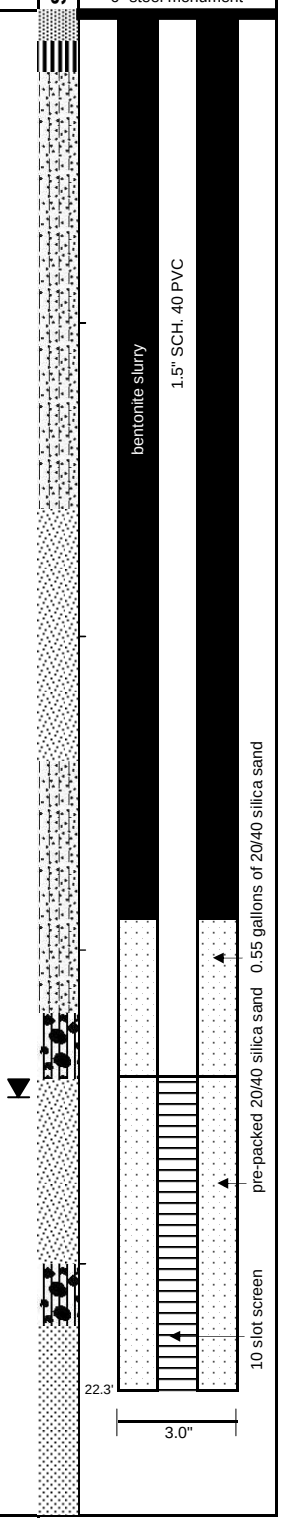
SOIL BORING/PIEZOMETER LOG

BORING NO: **BH-SF-E-PZ-06**
PROJECT NO: **364471**
PROJECT NAME: OU2/OU3 Direct Push Investigation
LOCATION: Kellogg, between SFCDR and I-90
DRILLING CONTRACTOR: EPA ESAT
DRILLING EQUIPMENT: Geoprobe Model 6000
TOC ELEVATION: 2296.39
BORING DIAMETER: 3.0"
GROUND ELEVATION: 2296.64
TOTAL DEPTH: 22.3'
START DATE: 7/31/2008
END DATE: 7/31/2008
LOGGER: Tracy Grant
SWL: ~17.4

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
1, 2, 3, 4	Core-1	0 4	73%	0.0-0.5' SW: fine sand with trace gravel, well graded, dry 0.5'-1.0' MH-CH: silt/clay, red, hard 1.0'-2.9' SW-SM: medium to fine sand with gravel, subangular gravel to 1.0", well graded, dark brown,	BH-SF-E-PZ-06-0.0-1.5 at 11:35 Cd - 10.1 mg/kg Pb - 3,160 mg/kg Zn - 1,410 mg/kg BH-SF-E-PZ-06-1.5-2.9 at 11:40 Cd - 34.7 mg/kg Pb - 8,830 mg/kg Zn - 5,010 mg/kg
4, 5, 6, 7, 8	Core-2	4 8	63%	4.0'-6.5' SW-SM: interbedded layers of silty sand and medium sand with gravel, red/orange to dark brown, poorly graded, subangular gravel to 0.5", dry	BH-SF-E-PZ-06-4.0-5.5 at 11:45 Cd - 30.7 mg/kg Pb - 12,200 mg/kg Zn - 5,190 mg/kg
8, 9, 10, 11, 12	Core-3	8 12	60%	8.0'-10.4' SW: medium sand with gravel, subangular gravel to 0.5", reddish/brown to grey, well graded, dry	BH-SF-E-PZ-06-8.0-10.40 at 11:50 Cd - 46.3 mg/kg Pb - 9,480 mg/kg Zn - 5,180 mg/kg
12, 13, 14, 15, 16	Core-4	12 16	43%	12.0'-13.7' SM-SW: medium sand with gravel, same as above, damp, mottling	BH-SF-E-PZ-06-12.0-13.7 at 11:55 Cd - 16.2 mg/kg Pb - 7,630 mg/kg Zn - 2,860 mg/kg
16, 17, 18, 19, 20	Core-5	16 20	55%	16.0'-17.0' GW: gravel, subangular from 1.0-2.0" 17.0'-18.2' SW: coarse sand with gravel, well graded wet at 17.4', reddish brown	BH-SF-E-PZ-06-16.0-18.2 at 12:00 Cd - 9.1 mg/kg Pb - 418 mg/kg Zn - 1,080 mg/kg
20, 21, 22, 23, 24	Core-6	20 24	58%	20.0'-21.0' GW-GM: gravel with silt and sand, wet, subangular gravel to 0.2", brown, well graded 21.0'-22.2' SP: fine sand, trace silt, poorly graded, brown	BH-SF-E-PZ-06-20.0-22.2 at 13:50 Cd - 5.4 mg/kg Pb - 33.2 mg/kg Zn - 845 mg/kg

Soil Profile

Well Construction



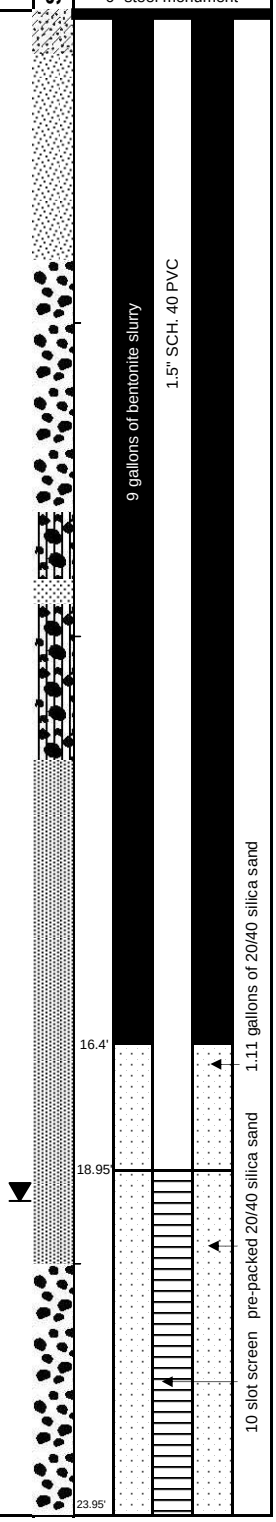
SOIL BORING/PIEZOMETER LOG

BORING NO: **BH-SF-E-PZ-08**
PROJECT NO: **364471**
PROJECT NAME: OU2/OU3 Direct Push Investigation
LOCATION: Kellogg, between SFCDR and I-90
DRILLING CONTRACTOR: EPA ESAT
DRILLING EQUIPMENT: Geoprobe Model 6000
TOC ELEVATION: 2294.18
BORING DIAMETER: 3.0"
GROUND ELEVATION: 2294.44
TOTAL DEPTH: 23.93'
START DATE: 8/5/2008
END DATE: 8/5/2008
LOGGER: Tracy Grant
SWL: ~19.0

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
1, 2, 3, 4	Core-1	0 4	48%	0.0-0.7' SW-SC: fine sand with gravel and trace clay, angular gravel to 0.2", light brown sand, brown clay 0.7'-1.9' SW: fine sand with gravel, light brown to dar brown, angular gravel to 0.2", well graded, dry	Drilling begins at 8:00 BH-SF-E-PZ-08-0.0-1.9 at 8:15 Cd - 16.9 mg/kg Pb - 4,160 mg/kg Zn - 3,040 mg/kg
4, 5, 6, 7, 8	Core-2	4 8	30%	4.0'-5.2' GW: gravel with medium sand, brown, grave to 0.1", damp to dry, well graded	BH-SF-E-PZ-08-4.0-5.2 at 8:25 Cd - 20.1 mg/kg Pb - 7,690 mg/kg Zn - 4,320 mg/kg
8, 9, 10, 11, 12	Core-3	8 12	48%	8.0'-9.1' GW-GM: gravel with coarse sand and silt, black, angular and rounded gravel to 2.0", well graded, moist to wet 9.1'-9.5' SP: fine sand, poorly graded, reddish brown, wet 9.5'-9.9' GW-GM: gravel with coarse sand and silt, gravel from 1.0-2.0"	BH-SF-E-PZ-08-8.0-9.2 at 8:30 Cd - 24.6 mg/kg Pb - 4,880 mg/kg Zn - 4,120 mg/kg
12, 13, 14, 15, 16	Core-4	12 16	68%	12.0'-14.7' SW: medium to coarse sand with gravel, angular gravel from 0.2-1.0", brown to green to reddish brown, dry, well graded	BH-SF-E-PZ-08-12.0-13.3 at 9:00 Cd - 34 mg/kg Pb - 11,200 mg/kg Zn - 4,210 mg/kg BH-SF-E-PZ-08-13.3-14.7 at 9:05 Cd - 14 mg/kg Pb - 4,900 mg/kg Zn - 2,200 mg/kg
16, 17, 18, 19, 20	Core-5	16 20	50%	16.0'-18.0' SW: coarse sand with gravel 1.0-2.0", subangular gravel from 1.0-2.0", moist, dark brown, well graded	BH-SF-E-PZ-08-16.0-18.0 at 9:20 Cd - 11.5 mg/kg Pb - 6,870 mg/kg Zn - 2,140 mg/kg
20, 21, 22, 23, 24	Core-6	20 24	35%	20.0'-21.4' GW: gravel with fine to medium sand, subangular gravel form 1.0-2.0", wet, reddish brown, trace gray clay at 20.0 feet bgs, well graded	BH-SF-E-PZ-08-20.0-21.4 at 9:40 Cd - 6.2 mg/kg Pb - 52 mg/kg Zn - 639 mg/kg

Soil Profile

Well Construction



CH2MHILL

SOIL BORING/PIEZOMETER LOG

BORING NO: **BH-SF-E-PZ-08**

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other	Soil Profile	Well Construction
24	Core-7	24	43%	24.0'-24.2' SW-SC: medium sand with clay (gray), well graded, wet 24.2'-25.7' SP-SM: fine sand with silt, trace clay, poorly graded, brown, wet	BH-SF-E-PZ-08-24.0-25.7 at 10:00 Cd - 2.5 mg/kg Pb - 40.5 mg/kg Zn - 741 mg/kg		3.0"
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SOIL BORING/PIEZOMETER LOG

CH2MHILL

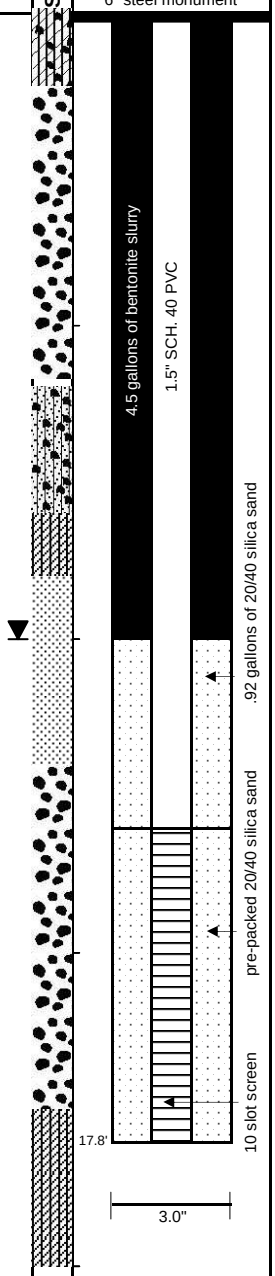
BORING NO: **BH-SF-E-PZ-09**
PROJECT NO: **364471**
PROJECT NAME: OU2/OU3 Direct Push Investigation
LOCATION: Kellogg, north corner of Silver Mountain Resort parking
DRILLING CONTRACTOR: EPA ESAT
DRILLING EQUIPMENT: Geoprobe Model 6000
TOC ELEVATION: 2283.08
BORING DIAMETER: 3.0"
GROUND ELEVATION: 2283.39
TOTAL DEPTH: 17.8'
START DATE: 8/1/2008
END DATE: 8/1/2008
LOGGER: Tracy Grant
SWL: ~10.0

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0 4	55%	0.0-1.3' GM-GC: silt/clay gravel with silt/clay, stiff, dark brown to orange brown, angular gravel to 0.5", well graded 1.3'-2.2' GW: gravel with sand, well graded, gray, dry to moist	BH-SF-E-PZ-09-0.0-1.0 at 11:00 Cd - 0.52 mg/kg Pb - 145 mg/kg Zn - 127 mg/kg BH-SF-E-PZ-09-1.0-2.2 at 11:05 Cd - 5.6 mg/kg Pb - 2,940 mg/kg Zn - 988 mg/kg
	Core-2	4 8	80%	4.0'-5.8' GW: gravel with fine to medium sand, dark brown to orange brown, subangular gravel to 1.0", well graded, moist 5.8'-6.0': wood debris, moist 6.0'-7.2' SP-SM: fine sand with silt, poorly graded, dark brown to orange to black, moist	BH-SF-E-PZ-09-4.0-5.5 at 11:10 Cd - 6.1 mg/kg Pb - 5,360 mg/kg Zn - 1,090 mg/kg BH-SF-E-PZ-09-5.5-7.2 at 11:15 Cd - 131 mg/kg Pb - 26,700 mg/kg Zn - 5,380 mg/kg
	Core-3	8 12	70%	8.0'-9.0' ML-CL: silt/clay, dark brown to gray, poorly graded, moist 9.0'-10.0' SP: medium sand with trace gravel, poorly graded, brown with some gray, rounded to subangula gravel from 1.0-2.0", moist 10.0'-10.8' SP: coarse sand, reddish brown, poorly graded, wet	BH-SF-E-PZ-09-8.0-9.5 at 11:20 Cd - 1.7 mg/kg Pb - 257 mg/kg Zn - 947 mg/kg BH-SF-E-PZ-09-9.5-10.8 at 11:25 Cd - 51.1 mg/kg Pb - 1,620 mg/kg Zn - 3,980 mg/kg
	Core-4	12 16	55%	12.0'-14.2' GW: gravel with coarse sand, subangular gravel from 1.0-2.0", well graded, wet, red-orange to brown, trace fine sand, well graded	BH-SF-E-PZ-09-13.0-14.2 at 11:35 Cd - 0.22 mg/kg Pb - 271 mg/kg Zn - 132 mg/kg
	Core-5	16 20	43%	16.0'-17.5' GW: gravel with coarse sand, same as above 17.5'-18.7' ML-CL: silt /clay, confining layer	BH-SF-E-PZ-09-16.0-17.5 at 11:40 Cd - 2.1 mg/kg Pb - 96.8 mg/kg Zn - 452 mg/kg BH-SF-E-PZ-09-17.5-18.7 at 11:45 Cd - 0.72 mg/kg Pb - 8.2 mg/kg Zn - 215 mg/kg

Depth (ft): 1, 2, 3, 4, **5**, 6, 7, 8, 9, **10**, 11, 12, 13, 14, **15**, 16, 17, 18, 19, **20**, 21, 22, 23, 24

Soil Profile

Well Construction



SOIL BORING/PIEZOMETER LOG

CH2MHILL

BORING NO: **BH-SF-E-PZ-10**

PROJECT NO: **364471**

START DATE: 7/2/2008

PROJECT NAME: OU2/OU3 Direct Push Investigation

END DATE: 7/2/2008

LOCATION: Kellogg, eastern corner of Silver Mountain Resort parking

LOGGER: Tracy Grant

DRILLING CONTRACTOR: EPA ESAT

DRILLING EQUIPMENT: Geoprobe Model 6000

TOC ELEVATION: 2288.15

BORING DIAMETER: 3.0"

GROUND ELEVATION: 2288.57

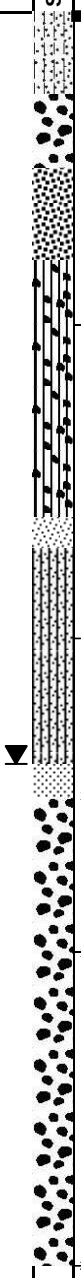
TOTAL DEPTH: 20.0'

SWL: ~12.0

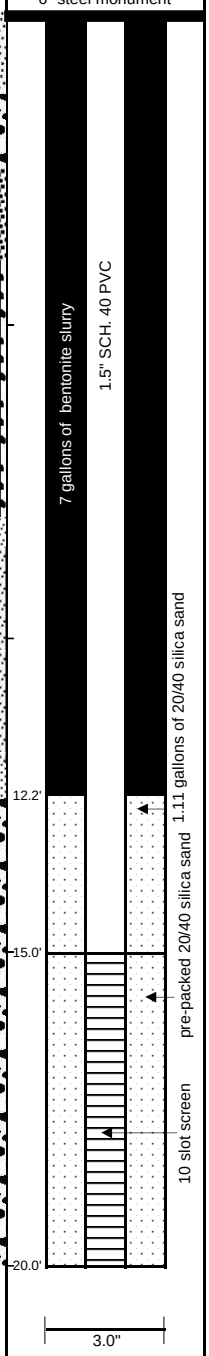
Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0 4	65%	drill begins 13:23 0.0-1.3' SW-SM: fine sand with silt, and gravel (30%) well graded, subangular gravel, brown, damp 1.3'-2.5' GW: gravel, dry, angular, well graded, increased sand content with depth, brown to black 2.5'-2.6' GP: gravel, gray, poorly graded, subangular	BH-SF-E-PZ-010-0.0-1.0 at 13:30 Cd - 21.4 mg/kg Pb - 4,040 mg/kg Zn - 2,460 mg/kg BH-SF-E-PZ-10-1.0-2.6 at 13:35 Cd - 15.1 mg/kg Pb - 3,350 mg/kg Zn - 2,330 mg/kg
	Core-2	4 8	48%	4.0'-5.9' GM: gravel with silt and sand, subangular gravel from 0.2-1.0", orange to dark brown, dry, well graded	BH-SF-E-PZ-10-4.0-5.9 at 13:40 Cd - 106 mg/kg Pb - 23,500 mg/kg Zn - 23,000 mg/kg
	Core-3	8 12	33%	8.0'-8.6' SW: coarse to fine sand, wood debris, trace gravel, well graded, dry, brown 8.6'-9.3' SP-SM: fine sand with silt, reddish brown, damp, poorly graded	BH-SF-E-PZ-10-8.0-9.3 at 13:45 Cd - 29.5 mg/kg Pb - 32,000 mg/kg Zn - 4,770 mg/kg
	Core-4	12 16	60%	12.0'-12.5' SP: coarse sand, poorly graded, brown, wet 12.5'-14.4' GW: gravel with sand, trace silt, subangular to coarse gravel from 0.5-1.0", brown, wet	BH-SF-E-PZ-10-12.0-14.4 at 13:50 Cd - 16 mg/kg Pb - 9,430 mg/kg Zn - 4,320 mg/kg
	Core-5	16 20	70%	16.0'-18.8' GW: gravel with sand, subangular gravel from 1.0-2.0", wet, well graded	BH-SF-E-PZ-10-16.0-18.8 at 13:55 Cd - 4.5 mg/kg Pb - 754 mg/kg Zn - 517 mg/kg

Depth (ft): 1, 2, 3, 4, **5**, 6, 7, 8, 9, **10**, 11, 12, 13, 14, **15**, 16, 17, 18, 19, **20**, 21, 22, 23, 24

Soil Profile



Well Construction



SOIL BORING/PIEZOMETER LOG

CH2MHILL

BORING NO: **BH-SF-E-PZ-11**

PROJECT NO: **364471**

START DATE: 7/3/2008

PROJECT NAME: OU2/OU3 Direct Push Investigation

END DATE: 7/3/2008

LOCATION: Trail of the Coeur d'Alenes, east of CTP

LOGGER: Tracy Grant

DRILLING CONTRACTOR: EPA ESAT

DRILLING EQUIPMENT: Geoprobe Model 6000

TOC ELEVATION: 2281.54

BORING DIAMETER: 3.0"

GROUND ELEVATION: 2281.9

TOTAL DEPTH: 16.0'

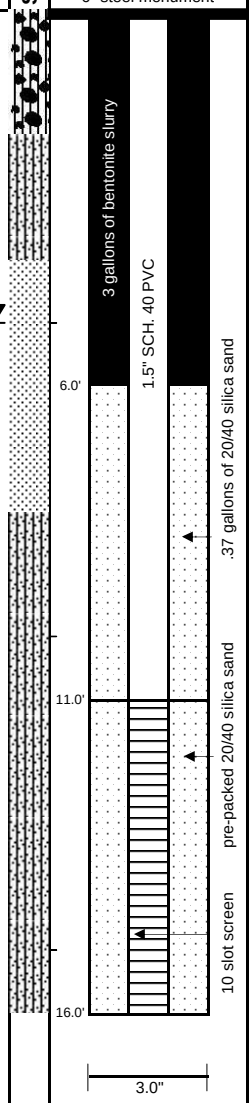
SWL: ~5.0

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0	65%	begin drill= 10:10 0.0-2.0' GW-GM: gravel with silt and fine sand, dry, angular to subangular gravel, well graded, dark brown to light brown 2.0'-2.6' SM: fine sand, wet, brown	BH-SF-E-PZ-11-0.0-1.5 at 10:15 Cd - 271 mg/kg Pb - 14,200 mg/kg Zn - 12,200 mg/kg BH-SF-E-PZ-11-1.5-2.6 at 10:20 Cd - 39.4 mg/kg Pb - 20,300 mg/kg Zn - 7,550 mg/kg
		4			
	Core-2	4	93%	4.0'-7.7' SP: fine sand, poorly graded, wet, brown	BH-SF-E-PZ-11-4.0-6.0 at 10:25 Cd - 9.6 mg/kg Pb - 48 mg/kg Zn - 1,100 mg/kg BH-SF-E-PZ-11-6.0-7.7 at 10:30 Cd - 8.2 mg/kg Pb - 40.3 mg/kg Zn - 222 mg/kg
		8			
	Core-3	8	100%	8.0'-12.0' SM: fine sand with silt, increased silt content below 9 feet bgs, elastic, wet, light brown, poorly graded	BH-SF-E-PZ-11-8.0-10.0 at 10:35 Cd - 0.56 mg/kg Pb - 41 mg/kg Zn - 163 mg/kg BH-SF-E-PZ-11-10.0-12.0 at 10:40 Cd - 0.14 mg/kg Pb - 42.5 mg/kg Zn - 183 mg/kg
		12			
	Core-4	12	100%	12.0'-16.0' SM: fine sand with silt, wet, light brown, poorly graded	BH-SF-E-PZ-11-12.0-14.0 at 10:45 Cd - 0.13 mg/kg Pb - 44.7 mg/kg Zn - 135 mg/kg BH-SF-E-PZ-11-14.0-16.0 at 10:50 Cd - 0.72 mg/kg Pb - 41.1 mg/kg Zn - 134 mg/kg
		16			

Depth (ft): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24

Soil Profile

Well Construction

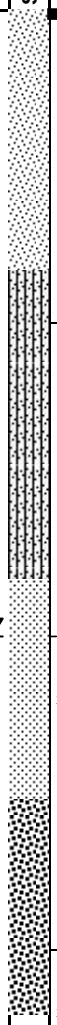


SOIL BORING/PIEZOMETER LOG

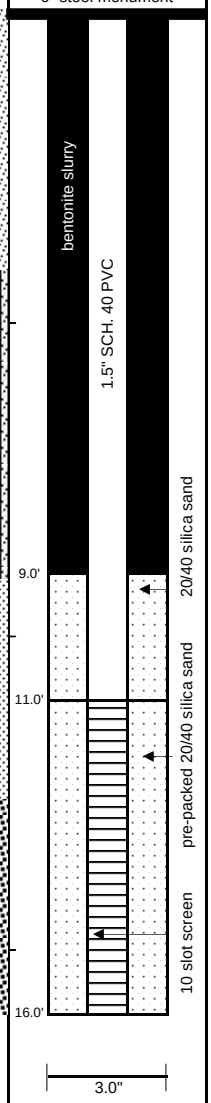
BORING NO: **BH-SF-E-PZ-12**
PROJECT NO: **364471**
PROJECT NAME: OU2/OU3 Direct Push Investigation
LOCATION: South of Bunker Creek near BH-BC-0003
DRILLING CONTRACTOR: EPA ESAT
DRILLING EQUIPMENT: Geoprobe Model 6000
TOC ELEVATION: 2279.81
BORING DIAMETER: 3.0"
GROUND ELEVATION: 2280.16
TOTAL DEPTH: 16.0'
START DATE: 7/3/2008
END DATE: 7/3/2008
LOGGER: Tracy Grant
SWL: ~10.0

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0	70%	Begin drilling at 13:15 0.0-2.8' SW: fine sand with gravel, trace silt, subangular gravel to 0.5", dry, red to brown, well graded	BH-SF-E-PZ-12-0.0-1.5 at 13:20 Cd - 14.8 mg/kg Pb - 11,100 mg/kg Zn - 3,900 mg/kg BH-SF-E-PZ-12-1.5-2.8 at 13:25 Cd - 20.6 mg/kg Pb - 16,600 mg/kg Zn - 4,750 mg/kg
		4			
	Core-2	4	28%	4.0'-5.1' SM: fine sand with silt and gravel, increased silt content from 4.0-4.5 feet bgs, damp	BH-SF-E-PZ-12-4.0-5.1 at 13:30 Cd - 1.6 mg/kg Pb - 6,200 mg/kg Zn - 852 mg/kg
		8			
	Core-3	8	65%	8.0'-9.1' SM: silty fine sand, poorly graded, wet, orange 9.1'-10.6' SP: coarse sand with gravel, poorly graded, subangular gravel to 0.5", reddish brown, wet, trace black elastic clay	BH-SF-E-PZ-12-8.0-9.0 at 13:35 Cd - 49.3 mg/kg Pb - 132,000 mg/kg Zn - 17,600 mg/kg BH-SF-E-PZ-12-9.0-10.6 at 13:40 Cd - 51.1 mg/kg Pb - 61,800 mg/kg Zn - 18,100 mg/kg
		12			
	Core-4	12	65%	12.0'-12.6' SP: coarse sand with gravel, poorly graded, wet, subangular gravel 12.6'-14.6' GP: gravel with sand, subangular gravel from 1.0-2.0", well graded, wet, brown	BH-SF-E-PZ-12-12.0-14.5 at 13:45 Cd - 27.3 mg/kg Pb - 60,900 mg/kg Zn - 9,700 mg/kg
		16			drill ends= 13:50

Soil Profile



Well Construction



SOIL BORING/PIEZOMETER LOG

BORING NO: **BH-SF-E-PZ-13**

PROJECT NO: **364471**

START DATE: 7/7/2008

PROJECT NAME: OU2/OU3 Direct Push Investigation

END DATE: 7/7/2008

LOCATION: North of McKinley Avenue, west of Portal Gulch

LOGGER: Tracy Grant

DRILLING CONTRACTOR: EPA ESAT

DRILLING EQUIPMENT: Geoprobe Model 6000

TOC ELEVATION: 2306.46

BORING DIAMETER: 3.0"

GROUND ELEVATION: 2304.33

TOTAL DEPTH: 27.7'

SWL: ~21.0

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0	63%	begin drill at 15:15 0.0-2.5' GW-GM: gravel with silt and fine sand, trace clay (blue) deposits, angular gravel from 0.2-0.5", we graded, dry to 2.0 feet bgs, damp thereafter	BH-SF-W-PZ-13-0.0-1.0 at 15:20 Cd - 0.55 mg/kg Pb - 42.9 mg/kg Zn - 100 mg/kg BH-SF-W-PZ-13-1.0-2.5 at 15:25 Cd - 2.5 mg/kg Pb - 2,370 mg/kg Zn - 827 mg/kg
		4			
	Core-2	4	55%	4.0'-5.0' GW-GM: gravel with silt and fine sand, same as above, moist, clay layer 5.0'-6.2' GW: gravel with medium sand, well graded, brown, angular gravel to 0.5"	BH-SF-W-PZ-13-4.0-6.2 at 15:30 Cd - 25.5 mg/kg Pb - 39,100 mg/kg Zn - 6,170 mg/kg
		8			
	Core-3	8	78%	8.0'-11.1' GW-GM: gravel with silt and sand, mottled clay deposits, angular gravel from 1.0-2.0", brown to tan, dry	BH-SF-W-PZ-13-8.0-9.5 at 15:35 Cd - 2.7 mg/kg Pb - 808 mg/kg Zn - 921 mg/kg BH-SF-W-PZ-13-9.5-11.1 at 15:40 Cd - 0.53 mg/kg Pb - 49.1 mg/kg Zn - 79.7 mg/kg
		12			
	Core-4	12	65%	12.0'-14.6' GW-GM: gravel with silt and medium/coarse sand, angular gravel to 0.5", mottled clay deposits, grades from wet to dry, brown, well graded	BH-SF-W-PZ-13-12.0-13.0 at 15:45 Cd - 2 mg/kg Pb - 1,210 mg/kg Zn - 585 mg/kg BH-SF-W-PZ-13-13.0-14.6 at 15:50 Cd - 0.53 mg/kg Pb - 78.1 mg/kg Zn - 76.4 mg/kg
		16			
	Core-5	16	68%	16.0'-18.7' GW: gravel with medium sand, subangula gravel from 1.0-2.0", green to brown, moist, well graded	BH-SF-W-PZ-13-16.0-17.0 at 15:55 Cd - 3.2 mg/kg Pb - 1,820 mg/kg Zn - 808 mg/kg BH-SF-W-PZ-13-17.0-18.7 at 16:00 Cd - 1.2 mg/kg Pb - 795 mg/kg Zn - 353 mg/kg
		20			
	Core-6	20	60%	20.0'-22.4' GW: gravel with coarse sand, subangular to rounded gravel, moist to wet, orange/red to green/blue	Apparent petroleum odor
		24			

Soil Profile

Well Construction

Flush mount
6" steel monument

24 gallons of bentonite slurry

1.5" SCH. 40 PVC

CH2MHILL

SOIL BORING/PIEZOMETER LOG

BORING NO: **BH-SF-E-PZ-13**

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
24	Core-7	24	83%	24.0'-25.0' GW: gravel with coarse sand, 0.5", black, wet, well graded	smells like diesel
25				25.0'-27.3' SP: coarse sand, poorly graded, wet, brown	
26					BH-SF-W-PZ-13-25.0-27.3 at 16:15
27					Cd - 0.66 mg/kg Pb - 35.1 mg/kg
28		28			Zn - 50 mg/kg
	Core-8	28	100%	28.0'-30.0' SP: medium sand, wet, brown, poorly graded	BH-SF-W-PZ-13-28.0-30.0 at 16:20
29				30.0'-32.0' SP: fine sand, trace silt, wet, brown	Cd - 0.64 mg/kg Pb - 28.8 mg/kg
30					Zn - 54.2 mg/kg BH-SF-W-PZ-13-30.0-32.0 at 16:25
31					Cd - 0.67 mg/kg Pb - 44.6 mg/kg
32		32		drill ends= 16:30	Zn - 49.5 mg/kg
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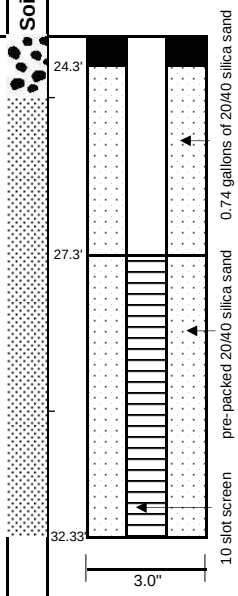
Soil Profile

Well Construction



SOIL BORING/PIEZOMETER LOG

CH2MHILL

BORING NO: **BH-SF-E-PZ-14**

PROJECT NO: **364471**

START DATE: 6/20/2008

PROJECT NAME: OU2/OU3 Direct Push Investigation

END DATE: 6/20/2008

LOCATION: South of Bunker Creek near BH-BC-0004

LOGGER: Tracy Grant

DRILLING CONTRACTOR: EPA ESAT

DRILLING EQUIPMENT: Geoprobe Model 6000

TOC ELEVATION: 2278.2

BORING DIAMETER: 3.0"

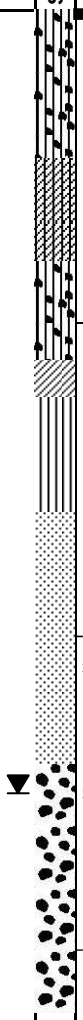
GROUND ELEVATION: 2276.22

TOTAL DEPTH: 18.0'

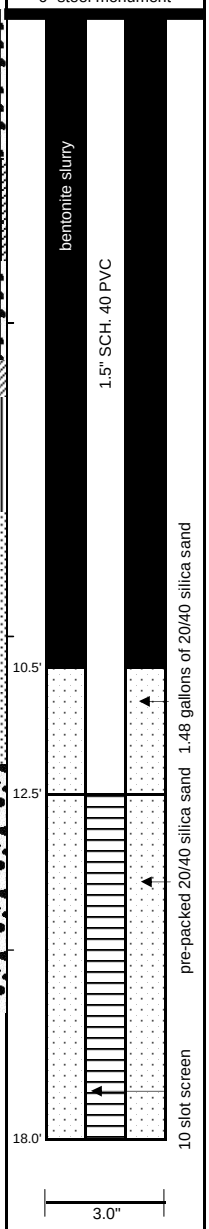
SWL: ~12.5

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0	85%	Begin drilling at 13:15 0.0-2.4' GW-GM: gravel with fine sand and silt, brown, semiangular gravel to 1.5", dry 2.4'-3.4' ML-CL: silt/clay with sand, dark brown to red dry	BH-SF-E-PZ-14-0.0-1.7 at 13:20 Cd - 15 mg/kg Pb - 4,070 mg/kg Zn - 2,800 mg/kg BH-SF-E-PZ-12-1.7-3.4 at 13:25 Cd - 1.3 mg/kg Pb - 298 mg/kg Zn - 467 mg/kg
		4			
	Core-2	4	68%	4.0'-5.6' GW-GM: gravel with sand and silt, dry, gravel to 1.5" 5.6'-6.2' CL: clay, mottled, elastic, iron oxide to dark brown, moist 6.2'-6.7' ML: silt, dark brown to red	BH-SF-E-PZ-14-4.0-5.5 at 13:30 Cd - 20.6 mg/kg Pb - 7,210 mg/kg Zn - 2,330 mg/kg BH-SF-E-PZ-14-5.5-6.7 at 13:35 Cd - 21.2 mg/kg Pb - 11,400 mg/kg Zn - 6,270 mg/kg
		8			
	Core-3	8	75%	8.0'-11.0' SP: medium sand, trace gravel, poorly graded, moist, red, subangular gravel to 0.5"	BH-SF-E-PZ-14-8.0-9.5 at 13:40 Cd - 62.9 mg/kg Pb - 48,300 mg/kg Zn - 16,900 mg/kg BH-SF-E-PZ-14-9.5-11.0 at 13:45 Cd - 59.9 mg/kg Pb - 76,000 mg/kg Zn - 16,500 mg/kg
		12			
	Core-4	12	73%	12.0'-14.9' GW: gravel, trace fines, gravel subangular from 0.5-1.5", reddish brown, damp to 12.5', wet therafter	BH-SF-E-PZ-14-12.0-13.5 at 13:55 Cd - 20.7 mg/kg Pb - 39,700 mg/kg Zn - 5,420 mg/kg BH-SF-E-PZ-14-13.5-14.9 at 14:00 Cd - 5.1 mg/kg Pb - 9,880 mg/kg Zn - 1,660 mg/kg
		16			

Soil Profile



Well Construction



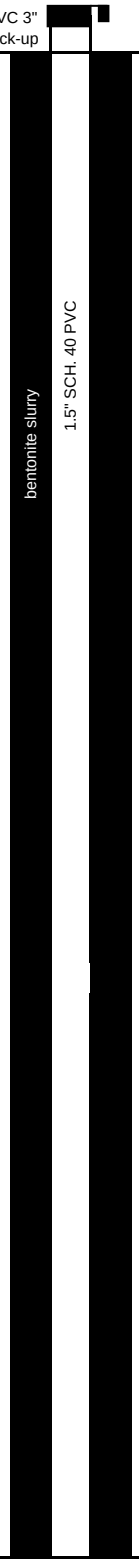
SOIL BORING/PIEZOMETER LOG

BORING NO: **BH-SF-E-PZ-15**
PROJECT NO: **364471**
PROJECT NAME: OU2/OU3 Direct Push Investigation
LOCATION: North of McKinley Avenue, west of Railroad Gulch
DRILLING CONTRACTOR: EPA ESAT
DRILLING EQUIPMENT: Geoprobe Model 6000
TOC ELEVATION: 2297.55
BORING DIAMETER: 3.0"
GROUND ELEVATION: 2298.00
TOTAL DEPTH: 36.0'
SWL: ~26.0
START DATE: 7/2/2008
END DATE: 7/2/2008
LOGGER: Tracy Grant

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0	80%	Begin drilling at 7:30 0.0-1.0' GW-GM: gravel with silt and fine sand, subangular to 0.5", dark brown, dry, well graded 1.0'-3.2' ML: silt with fine sand, moist at 2.0', light brown	BH-SF-W-PZ-15-0.0-1.5 at 7:40 ms/msd Cd - 25.3 mg/kg Pb - 6,380 mg/kg Zn - 4,130 mg/kg BH-SF-W-PZ-15-1.5-3.2 at 7:45 Cd - 1.1 mg/kg Pb - 18.9 mg/kg Zn - 344 mg/kg
		4			
	Core-2	4	93%	4.0'-5.6' ML: silt with fine sand, same as above 5.6'-7.7' GW: gravel with fine to medium sand, angular gravel to 0.5", dry, well graded	BH-SF-W-PZ-15-4.0-5.5 at 7:50 Cd - 0.15 mg/kg Pb - 46.6 mg/kg Zn - 104 mg/kg BH-SF-W-PZ-15-5.5-7.7 at 7:55 Cd - 0.12 mg/kg Pb - 42.8 mg/kg Zn - 91.8 mg/kg
		8			
	Core-3	8	65%	8.0'-10.6' GW: gravel with fine to medium sand, brown, dry, well graded, angular gravel to 0.5"	BH-SF-W-PZ-15-8.0-9.5 at 8:00 Cd - 0.53 mg/kg Pb - 26.3 mg/kg Zn - 54 mg/kg BH-SF-W-PZ-15-9.5-10.6 at 8:05 Cd - 0.12 mg/kg Pb - 62.7 mg/kg Zn - 76.8 mg/kg
		12			
	Core-4	12	73%	12.0'-14.9' GW: gravel with fine, medium, and coarse sand, increased coarse sand with depth, brown to orange, well graded, angular gravel to 0.5"	BH-SF-W-PZ-15-12.0-13.5 at 8:10 Cd - 0.1 mg/kg Pb - 24.2 mg/kg Zn - 65.1 mg/kg BH-SF-W-PZ-15-13.5-14.9 at 8:15 Cd - 0.48 mg/kg Pb - 23.1 mg/kg Zn - 96.5 mg/kg
		16			
	Core-5	16	70%	16.0'-18.0' GW: gravel with medium to coarse sand, well graded, grades with increased sand content, angular gravel 18.0'-18.8' SP: medium to coarse sand, moist, poorly graded	BH-SF-W-PZ-15-16.0-17.5 at 8:20 Cd - 0.18 mg/kg Pb - 22 mg/kg Zn - 82.6 mg/kg BH-SF-W-PZ-15-17.5-18.8 at 8:25 Cd - 6.3 mg/kg Pb - 33.9 mg/kg Zn - 221 mg/kg
		20			
	Core-6	20	100%	20.0'-24.0' SP: medium to coarse sand, wet, poorly graded	BH-SF-W-PZ-15-20.0-22.0 at 8:30 Cd - 5.5 mg/kg Pb - 45.3 mg/kg Zn - 294 mg/kg BH-SF-W-PZ-15-22.0-24.0 at 8:35 Cd - 8.2 mg/kg Pb - 40.2 mg/kg Zn - 293 mg/kg
		24			

Soil Profile

Well Construction



CH2MHILL

SOIL BORING/PIEZOMETER LOG

BORING NO: **BH-SF-E-PZ-15**

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
24	Core-7	24	95%	24.0'-28.0' SP-SM: fine sand with silt, wet at 26 feet bgs, poorly graded, brown	BH-SF-W-PZ-15-24.0-26.0 at 8:40 Cd - 6.8 mg/kg Pb - 41.6 mg/kg Zn - 342 mg/kg BH-SF-W-PZ-15-26.0-27.8 at 8:45 Cd - 2 mg/kg Pb - 40.5 mg/kg Zn - 260 mg/kg
25					
26					
27					
28		28			
28	Core-8	28	100%	28.0'-30.0' SP-SM: fine sand with silt, wet, poorly graded 30.0-32.0' MH: silt with fine sand, trace clay, wet	BH-SF-W-PZ-15-28.0-30.0 at 8:50 Cd - 1.6 mg/kg Pb - 39 mg/kg Zn - 210 mg/kg BH-SF-W-PZ-15-30.0-32.0 at 8:55 Cd - 0.37 mg/kg Pb - 53.9 mg/kg Zn - 186 mg/kg
29					
30					
31					
32		32			
32	Core-9	32	100%	32.0'-36.0' SP: fine sand, wet, poorly graded	BH-SF-W-PZ-15-32.0-34.0 at 9:00 Cd - 0.13 mg/kg Pb - 44.7 mg/kg Zn - 52.6 mg/kg BH-SF-W-PZ-15-34.0-36.0 at 9:05 Cd - 0.09 mg/kg Pb - 48.5 mg/kg Zn - 66.9 mg/kg
33					
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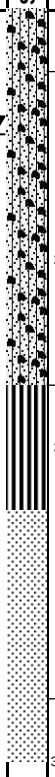
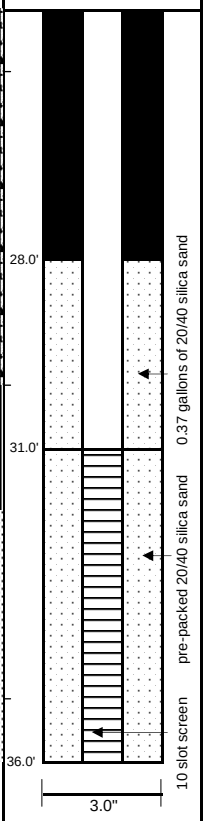
Soil Profile



Well Construction



SOIL BORING/PIEZOMETER LOG

CH2MHILL

BORING NO: **BH-SF-E-PZ-16**

PROJECT NO: **364471**

START DATE: 6/20/2008

PROJECT NAME: OU2/OU3 Direct Push Investigation

END DATE: 6/20/2008

LOCATION: Between Bunker Creek and CIA

LOGGER: Tracy Grant

DRILLING CONTRACTOR: EPA ESAT

DRILLING EQUIPMENT: Geoprobe Model 6000

TOC ELEVATION: 2271.69

BORING DIAMETER: 3.0"

GROUND ELEVATION: 2269.64

TOTAL DEPTH: 16'

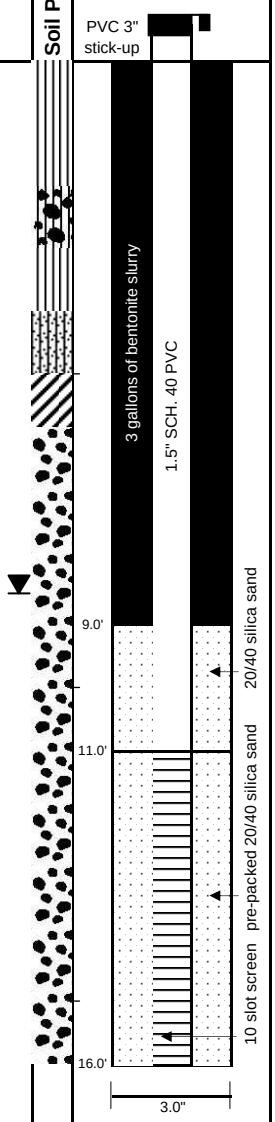
SWL: ~8.5

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0	90%	Drilling begins at 10:40 0.0-0.4' ML: silt with fine sand, brown, poorly graded 0.4'-2.0' ML: silt with fine sand, trace subangular gravel to 0.5", red to brown 2.0'-3.0' GW-GM: gravel with fine sand and silt, light brown, dry, well graded 3.0-3.6' ML: silt with fine sand, dark brown, trace red clay deposits	BH-SF-E-PZ-16-0.0-2.0 at 11:00 Cd - 23.2 mg/kg Pb - 7,610 mg/kg Zn - 3,930 mg/kg BH-SF-E-PZ-16-2.0-3.6 at 11:05 Cd - 20.7 mg/kg Pb - 4,660 mg/kg Zn - 4,030 mg/kg
		4			
	Core-2	4	73%	4.0'-5.0' SM: fine sand with silt, reddish to blue/gray, damp 5.0'-5.8' CH: clay, blue/gray, moist, elastic 5.8'-6.9' GW: gravel, trace sand, brown, wet, angular gravel from 1.0-1.5"	BH-SF-E-PZ-16-4.0-5.9 at 11:10 Cd - 164 mg/kg Pb - 30,500 mg/kg Zn - 23,400 mg/kg BH-SF-E-PZ-16-5.9-6.9 at 11:15 Cd - 3.9 mg/kg Pb - 1,190 mg/kg Zn - 571 mg/kg
		8			
	Core-3	8	60%	8.0'-10.4' GW: gravel, trace sand and silt, brown, angular gravel from 0.1-1.5", wet, well graded	BH-SF-E-PZ-16-8.0-9.2 at 11:20 Cd - 2.2 mg/kg Pb - 35.3 mg/kg Zn - 247 mg/kg BH-SF-E-PZ-16-9.2-10.4 at 11:25 Cd - 3.4 mg/kg Pb - 46.2 mg/kg Zn - 619 mg/kg
		12			
	Core-4	12	60%	12.0'-14.4' GW: gravel, same as above	BH-SF-E-PZ-16-12.0-13.2 at 11:30 Cd - 2.5 mg/kg Pb - 35.6 mg/kg Zn - 484 mg/kg BH-SF-E-PZ-16-13.2-14.4 at 11:35 Cd - 3.6 mg/kg Pb - 34.3 mg/kg Zn - 222 mg/kg
		16			

Depth (ft): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24

Soil Profile

Well Construction



SOIL BORING/PIEZOMETER LOG

CH2MHILL

BORING NO: **BH-SF-E-PZ-17**

PROJECT NO: **364471**

START DATE: 7/8/2008

PROJECT NAME: OU2/OU3 Direct Push Investigation

END DATE: 7/8/2008

LOCATION: South of Bunker Creek, co-located with BH-SF-E-0410-U

LOGGER: Tracy Grant

DRILLING CONTRACTOR: EPA ESAT

DRILLING EQUIPMENT: Geoprobe Model 6000

TOC ELEVATION: 2265.56

BORING DIAMETER: 3.0"

GROUND ELEVATION: 2265.93

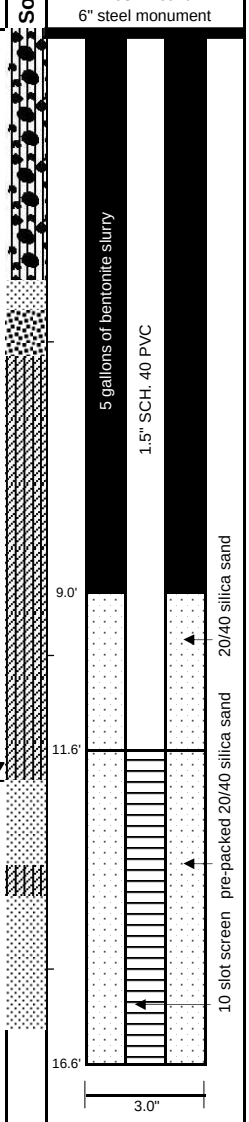
TOTAL DEPTH: 16.6'

SWL: ~12.0

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0 4	65%	0.0-2.6' GW-GM: gravel with silt, trace clay, dry to 2.6 feet bgs, damp thereafter, dark brown, angular gravel from 0.5-1.0", well graded	BH-SF-E-PZ-17-0.5-2.6 at 14:10 Cd - 54.5 mg/kg Pb - 12,300 mg/kg Zn - 4,560 mg/kg
	Core-2	4 8	48%	4.0'-4.5' SP: fine sand with gravel, dry, subangular, gravel, reddish brown 4.5'-5.2' GP: gravel, fill?, gray, dry, poorly graded to 1.0" 5.2'-5.9' ML-CL: silt/clay, dark brown to reddish brown, damp	BH-SF-E-PZ-17-4.0-5.9 at 14:15 Cd - 37.5 mg/kg Pb - 6,960 mg/kg Zn - 3,580 mg/kg
	Core-3	8 12	0%	No recovery	NA
	Core-4	12 16	60%	12.0'-13.4' SP: coarse sand with gravel, subangular gravel to 0.5", wet, brown 13.4'-13.8' ML-CL: silt/clay, dark to light brown, wet 13.8'-14.4' SP: coarse sand with gravel, subangular gravel to 0.5", wet, brown	BH-SF-E-PZ-17-12.0-13.5 at 14:35 Cd - 1.2 mg/kg Pb - 71.2 mg/kg Zn - 319 mg/kg BH-SF-E-PZ-17-13.5-14.4 at 14:40 Cd - 1 mg/kg Pb - 36 mg/kg Zn - 264 mg/kg

Soil Profile

Well Construction



SOIL BORING/PIEZOMETER LOG

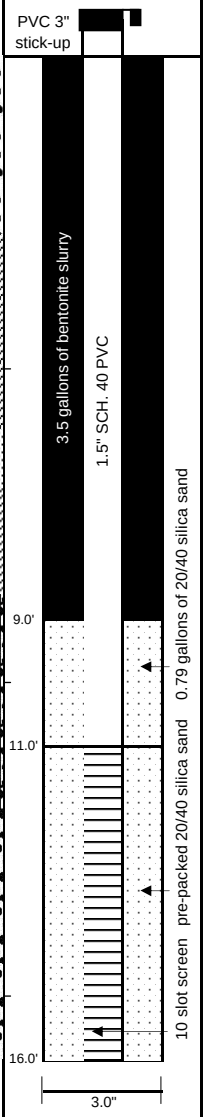
CH2MHILL

BORING NO: **BH-SF-E-PZ-18**
PROJECT NO: **364471**
PROJECT NAME: OU2/OU3 Direct Push Investigation
LOCATION: North side of Bunker Creek near mouth of Magnet Gulch
DRILLING CONTRACTOR: EPA ESAT
DRILLING EQUIPMENT: Geoprobe Model 6000
TOC ELEVATION: 2260.92
BORING DIAMETER: 3.0"
GROUND ELEVATION: 2258.95
TOTAL DEPTH: 16'
START DATE: 6/20/2008
END DATE: 6/20/2008
LOGGER: Tracy Grant
SWL: ~10.0

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0 4	78%	Begin drilling at 8:30 0.0-0.6' GW-GM: gravel with silt and sand, gray, dry, angular, well graded 0.6'-2.9' GW-GM: gravel with silt and sand, dark brown to reddish brown, rounded gravel greater than 1.0", approximately 30% sand/silt 2.9'-3.1' ML-CL: silt/clay, dark brown, dry, poorly graded	BH-SF-E-PZ-18-0.6-2.0 at 8:40 Cd - 11.5 mg/kg Pb - 4,140 mg/kg Zn - 2,830 mg/kg BH-SF-E-PZ-18-2.0-3.1 at 8:45 Cd - 18 mg/kg Pb - 3,850 mg/kg Zn - 1,900 mg/kg
	Core-2	4 8	85%	4.0'-6.0' ML-CL: silt/clay, dark brown, poorly graded, moist 6.0'-6.9' SP: fine to coarse sand, reddish brown, moist, poorly graded 6.9'-7.4' CL: clay, blue/ gray, wet	BH-SF-E-PZ-18-4.0-6.0 at 8:50 (FD-5 at Cd - 75.2 mg/kg Pb - 12,900 mg/kg Zn - 4,580 mg/kg BH-SF-E-PZ-18-6.0-7.4 at 8:55 Cd - 44.5 mg/kg Pb - 18,400 mg/kg Zn - 9,780 mg/kg
	Core-3	8 12	70%	8.0'-8.6' CL: clay, light brown, wet 8.6'-10.8' GW-GM: gravel with coarse sand, reddish brown, wet, rounded gravel, well graded	BH-SF-E-PZ-18-8.0-9.4 at 9:00 Cd - 21.9 mg/kg Pb - 7,450 mg/kg Zn - 1,990 mg/kg BH-SF-E-PZ-18-9.4-10.8 at 9:05 Cd - 10.3 mg/kg Pb - 74.9 mg/kg Zn - 516 mg/kg
	Core-4	12 16	63%	12.0'-14.5' GW: gravel, trace fines, wet, well graded, rounded gravel from 0.1-1.5"	BH-SF-E-PZ-18-12.0-13.2 at 9:10 Cd - 7 mg/kg Pb - 42 mg/kg Zn - 348 mg/kg BH-SF-E-PZ-18-13.2-14.5 at 9:15 Cd - 4.5 mg/kg Pb - 23.5 mg/kg Zn - 267 mg/kg

Soil Profile

Well Construction

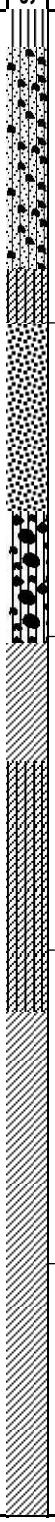


SOIL BORING/PIEZOMETER LOG

BORING NO: **BH-SF-E-PZ-19**
PROJECT NO: **364471**
PROJECT NAME: OU2/OU3 Direct Push Investigation
LOCATION: McKinley Avenue below SCA
DRILLING CONTRACTOR: EPA ESAT
DRILLING EQUIPMENT: Geoprobe Model 6000
TOC ELEVATION: NA
BORING DIAMETER: 3.0"
GROUND ELEVATION: NA
TOTAL DEPTH: 28'
SWL: NA
START DATE: 6/24/2008
END DATE: 6/24/2008
LOGGER: Tracy Grant

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
1, 2, 3, 4	Core-1	0 4	70%	0.0-0.6' ML: silt with sand, trace rounded gravel to 0.3" 0.6'-2.8' SP-SM: fine sand with silt, light brown, dry, poorly graded	Begin drilling at 8:10 BH-SF-E-PZ-19-0.0-1.5 at 8:15 BH-SF-E-PZ-19-1.5-2.8 at 8:20
4, 5, 6, 7, 8	Core-2	4 8	43%	4.0'-4.2' SP-SM: fine sand with silt, light brown, dry, poorly graded 4.2'-5.0' ML-CL: silt/clay, light brown, moist 5.0'-5.7' GP: gravel with fine sand, light brown, dry, angular gravel from 0.1-0.2", well graded	BH-SF-E-PZ-19-4.0-5.7 at 8:25
8, 9, 10, 11, 12	Core-3	8 12	60%	8.0'-10.1' GW-GM: gravel with silt and fine sand, light brown, damp, subangular gravel to 1.0", well graded 10.1'-10.4' CL: clay, brown	BH-SF-E-PZ-19-8.0-9.0 at 8:30 BH-SF-E-PZ-19-9.0-10.4 at 8:35
12, 13, 14, 15, 16	Core-4	12 16	98%	12.0'-15.9' ML-CL: silt/clay, brown, uniform, damp to dry, stiff, trace angular gravel to 0.2"	BH-SF-E-PZ-19-12.0-14.0 at 8:40 BH-SF-E-PZ-19-14.0-15.9 at 8:45
16, 17, 18, 19, 20	Core-5	16 20	100%	16.0'-20.0' CL: clay, trace silt, stiff	BH-SF-E-PZ-19-16.0-18.0 at 8:50 BH-SF-E-PZ-19-18.0-20.0 at 8:55
20, 21, 22, 23, 24	Core-6	20 24	90%	20.0'-23.6' CL: clay, trace silt, light brown to reddish, stiff	BH-SF-E-PZ-19-20.0-22.0 at 9:00 BH-SF-E-PZ-19-22.0-23.6 at 9:05

Soil Profile



Well Construction

CH2MHILL

SOIL BORING/PIEZOMETER LOG

BORING NO: **BH-SF-E-PZ-19**

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other	Soil Profile	Well Construction
24	Core-7	24	100%	24.0'-25.4' SW-SM: fine sand with silt, light brown to gray, moist, poorly graded 25.4'-27.3' MH: silt with fine sand, trace clay, brown to gray layers, moist, elastic 27.3'-28.0' GW-GM: gravel with silt and sand, subangular gravel to 0.5", moist, well graded			
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28		28		ABANDONED			3.0"
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SOIL BORING/PIEZOMETER LOG

CH2MHILL

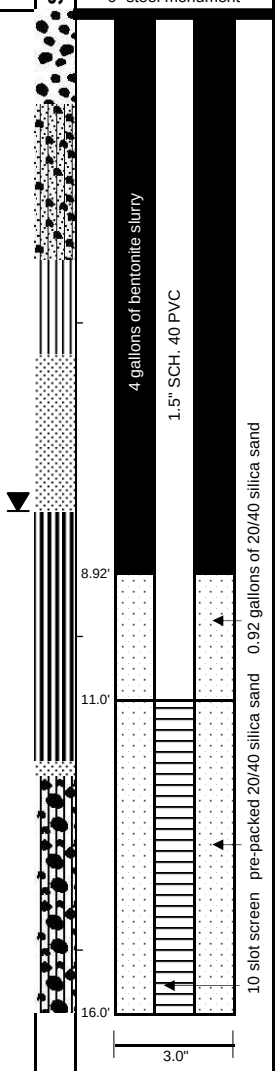
BORING NO: **BH-SF-E-PZ-20**
PROJECT NO: **364471**
PROJECT NAME: OU2/OU3 Direct Push Investigation
LOCATION: South of Bunker Creek, co-located with BH-SF-E-0427-U
DRILLING CONTRACTOR: EPA ESAT
DRILLING EQUIPMENT: Geoprobe Model 6000
TOC ELEVATION: 2255.98
BORING DIAMETER: 3.0"
GROUND ELEVATION: 2256.29
TOTAL DEPTH: 16'
START DATE: 7/3/2008
END DATE: 7/3/2008
LOGGER: Tracy Grant
SWL: ~8.0

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0 4	78%	Begin drilling at 7:35 0.0-0.5' GW: gravel with sand, dry, angular gravel from 0.25-0.5", well graded 0.5'-1.5' GW: gravel with sand, same as above, grades to black 1.5'-3.1' SP-SM: fine sand with silt, brown, moist, poorly graded	BH-SF-E-PZ-20-0.0-1.5 at 7:40 Cd - 10.9 mg/kg Pb - 4,280 mg/kg Zn - 41,000 mg/kg BH-SF-E-PZ-20-1.5-3.1 at 7:45 Cd - 53.9 mg/kg Pb - 3,310 mg/kg Zn - 1,880 mg/kg
	Core-2	4 8	68%	4.0'-5.5' ML: silt with with fine sand, trace clay, brown moist, trace rounded gravel 5.5'-6.7' SP: fine sand, trace clay, mottled, moist,	BH-SF-E-PZ-20-4.0-5.5 at 7:50 Cd - 105 mg/kg Pb - 6,920 mg/kg Zn - 4,090 mg/kg BH-SF-E-PZ-20-5.5-7.7 at 7:55 Cd - 142 mg/kg Pb - 15,500 mg/kg Zn - 9,870 mg/kg
	Core-3	8 12	75%	8.0'-11.0' MH: silt with fine sand, trace gravel and clay, dark grayish brown, top wet from 8.0-9.0 feet bgs, moist thereafter	BH-SF-E-PZ-20-8.0-9.5 at 8:00 Cd - 188 mg/kg Pb - 16,900 mg/kg Zn - 15,000 mg/kg BH-SF-E-PZ-20-9.5-11.0 at 8:05 Cd - 29.3 mg/kg Pb - 104 mg/kg Zn - 1,710 mg/kg
	Core-4	12 16	65%	12.0'-12.2' SP: coarse sand, wet, poorly graded 12.2'-14.6' GW-GM: gravel with silt, light brown, wet, subangular gravel from 0.2-1.0", well graded	BH-SF-E-PZ-20-12.0-13.0 at 8:10 Cd - 11.4 mg/kg Pb - 240 mg/kg Zn - 991 mg/kg BH-SF-E-PZ-20-13.0-14.6 at 8:15 Cd - 6 mg/kg Pb - 143 mg/kg Zn - 358 mg/kg

Depth (ft): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24

Soil Profile

Well Construction

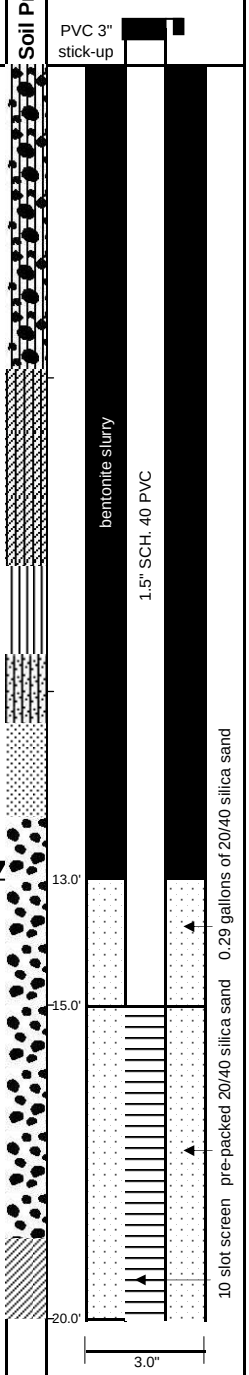


SOIL BORING/PIEZOMETER LOG

BORING NO: **BH-SF-E-PZ-21**
PROJECT NO: **364471**
PROJECT NAME: OU2/OU3 Direct Push Investigation
LOCATION: South of Bunker Creek near slag pile
DRILLING CONTRACTOR: EPA ESAT
DRILLING EQUIPMENT: Geoprobe Model 6000
TOC ELEVATION: 2252.61
BORING DIAMETER: 3.0"
GROUND ELEVATION: 2250.56
TOTAL DEPTH: 20'
SWL: ~13.0
START DATE: 6/18/2008
END DATE: 6/18/2008
LOGGER: Tracy Grant

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0	65%	Begin drilling at 10:05 0.0-2.6' GW-GM: gravel with silt and sand, dark brown, dry, angular to subangular gravel to 0.1-1.5", very loose, well graded	BH-SF-E-PZ-21-0.0-1.3 at 10:10 Cd - 26 mg/kg Pb - 10,100 mg/kg Zn - 11,000 mg/kg BH-SF-E-PZ-21-1.3-2.6 at 10:15 Cd - 59.7 mg/kg Pb - 17,300 mg/kg Zn - 10,200 mg/kg
		4			
	Core-2	4	58%	4.0'-4.8' GW-GM: gravel with silt and sand, same as above, grades to moist 4.8'-6.3' ML/CL: silt/clay, wood debris, red to gray, wet	BH-SF-E-PZ-21-4.0-4.8 at 10:20 Cd - 45.8 mg/kg Pb - 16,700 mg/kg Zn - 6,940 mg/kg BH-SF-E-PZ-21-4.8-6.3 at 10:25 Cd - 89.9 mg/kg Pb - 8,680 mg/kg Zn - 5,010 mg/kg
		8			
	Core-3	8	73%	8.0'-8.7' ML: silt with sand, dark brown, wet, trace clay 8.7'-9.4' ML: silt with increased clay content, black 9.4'-10.5' SM: silty sand, black, wet 10.5'-10.7' SP: medium sand, iron oxide staining, moist, poorly graded	BH-SF-E-PZ-21-8.0-9.7 at 10:30 Cd - 7.5 mg/kg Pb - 214 mg/kg Zn - 1,790 mg/kg BH-SF-E-PZ-21-9.7-10.9 at 10:35 Cd - 6.1 mg/kg Pb - 64.8 mg/kg Zn - 264 mg/kg
		12			
	Core-4	12	60%	12.0'-14.4' GW: gravel with sand, red to brown, loose rounded to angular gravel from 0.1-1.5", well graded	BH-SF-E-PZ-21-12.0-13.0 at 10:40 Cd - 1.5 mg/kg Pb - 195 mg/kg Zn - 320 mg/kg BH-SF-E-PZ-21-13.0-14.4 at 10:45 Cd - 4.8 mg/kg Pb - 59.8 mg/kg Zn - 331 mg/kg
		16			
	Core-5	16	68%	16.0'-18.7' GW: gravel with sand, same as above, we 18.6'-18.7' CL: clay confining unit	BH-SF-E-PZ-21-16.0-17.5 at 10:50 Cd - 7 mg/kg Pb - 108 mg/kg Zn - 330 mg/kg BH-SF-E-PZ-21-17.5-18.7 at 10:55 Cd - 9.5 mg/kg Pb - 25.3 mg/kg Zn - 29.5 mg/kg
		20			Drilling ends at 11:00

Soil Profile



SOIL BORING/PIEZOMETER LOG

CH2MHILL

BORING NO: **BH-SF-E-PZ-22**

PROJECT NO: **364471**

START DATE: 6/17/2008

PROJECT NAME: OU2/OU3 Direct Push Investigation

END DATE: 6/17/2008

LOCATION: North of Bunker Creek near slag pile

LOGGER: T. Grant/S. Hicks

DRILLING CONTRACTOR: EPA ESAT

DRILLING EQUIPMENT: Geoprobe Model 6000

TOC ELEVATION: 2250.41

BORING DIAMETER: 3.0"

GROUND ELEVATION: 2248.27

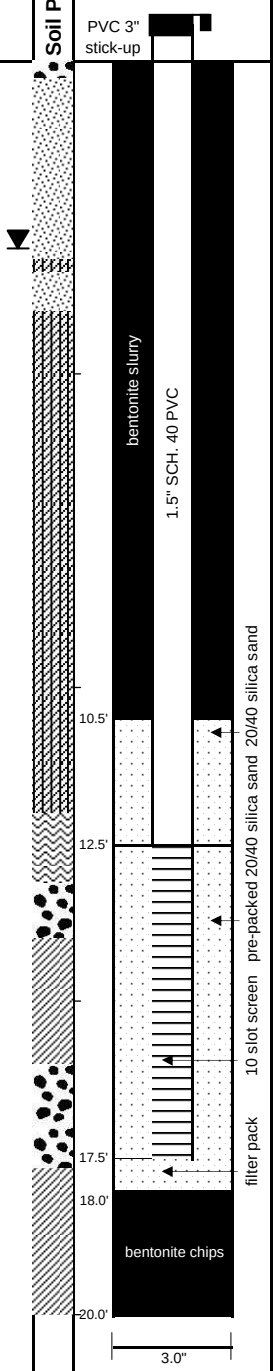
TOTAL DEPTH: 20'

SWL: ~3.0

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0	75%	Begin drilling at 15:30 0.0-0.3' GW: gravel with sand, brown to gray, dry, angular gravel to 1.0" 0.3'-3.2' SW: medium sand, black, dry, medium, well graded, slag 3.2'-3.4' ML-CL: clay/silt, flotation tailings?, blueish gray, wet 3.4'-4.0' SW: sand, red, wood debris	BH-SF-E-PZ-22-0.3-2.0 at 15:35 Cd - 25.1 mg/kg Pb - 143 mg/kg Zn - 37,700 mg/kg BH-SF-E-PZ-22-2.0-3.0 at 15:40 Cd - 19.9 mg/kg Pb - 277 mg/kg
		4		Surface gravel not samples	Zn - 34,800 mg/kg
	Core-2	4	80%	4.0'-7.2' ML-CL: silt/clay, flotation tailings,? blueish gray, wet	BH-SF-E-PZ-22-4.0-5.5 at 15:50 Cd - 35.1 mg/kg Pb - 5,200 mg/kg Zn - 12,700 mg/kg BH-SF-E-PZ-22-5.5-7.2 at 15:55 Cd - 155 mg/kg Pb - 88,000 mg/kg
		8			Zn - 29,600 mg/kg
	Core-3	8	75%	8.0'-11.0' ML-CL: silt/clay, black, wet, well graded	BH-SF-E-PZ-22-8.0-9.5 at 16:00 Cd - 2.1 mg/kg Pb - 162 mg/kg Zn - 549 mg/kg BH-SF-E-PZ-22-9.5-11.0 at 16:05 Cd - 0.11 mg/kg Pb - 74.5 mg/kg
		12			Zn - 109 mg/kg
	Core-4	12	68%	12.0'-13.2' OH: high organics, dark brown, moist, increased silt/clay content with depth 13.2'-14.0' GW: gravel, tan, wet, angular to subangular to1 .0", well graded 14.0'-14.7' CL: clay with trace coarse angular gravel, wet, friable	BH-SF-E-PZ-22-12.0-13.3 at 16:10 Cd - 5.9 mg/kg Pb - 550 mg/kg Zn - 3,850 mg/kg BH-SF-E-PZ-22-13.3-14.7 at 16:15 Cd - 3.9 mg/kg Pb - 88.1 mg/kg
		16			Zn - 1,800 mg/kg
	Core-5	16	70%	16.0'-17.7' GW: gravel, wet, angular to subangular from 0.1-1.0" 17.7'-18.8' CL: clay, brown, confining layer	BH-SF-E-PZ-22-16.0-17.5 at 16:20 Cd - 1.5 mg/kg Pb - 37.1 mg/kg Zn - 317 mg/kg BH-SF-E-PZ-22-17.5-18.8 at 16:25 Cd - 0.63 mg/kg Pb - 42.5 mg/kg
		20			Zn - 225 mg/kg Drilling ends at 16:50

Soil Profile

Well Construction



SOIL BORING/PIEZOMETER LOG

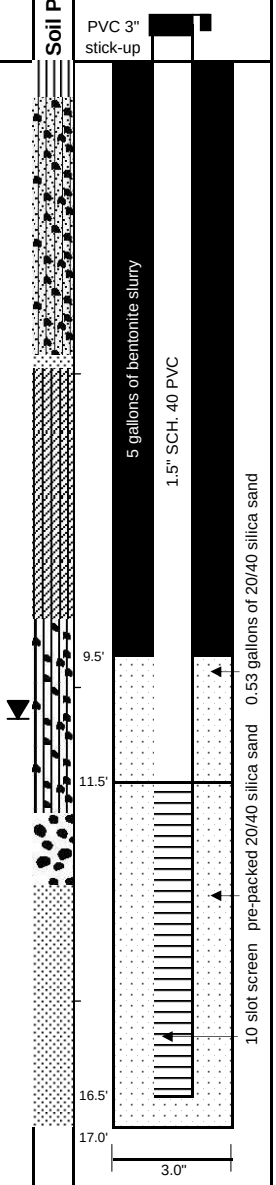
CH2MHILL

BORING NO: **BH-SF-E-PZ-23**
PROJECT NO: **364471**
PROJECT NAME: OU2/OU3 Direct Push Investigation
LOCATION: Between CIA and I-90
DRILLING CONTRACTOR: EPA ESAT
DRILLING EQUIPMENT: Geoprobe Model 6000
TOC ELEVATION: 2260.50
BORING DIAMETER: 3.0"
GROUND ELEVATION: 2258.41
TOTAL DEPTH: 17'
START DATE: 6/19/2008
END DATE: 6/19/2008
LOGGER: Tracy Grant
SWL: ~10.5

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0 4	90%	Drilling begins at 10:45 0.0-0.6' ML: silt with sand, brown 0.6'-3.6' SP-SM: fine sand with silt, trace gravel, brown to red, dry, poorly graded	BH-SF-E-PZ-23-0.6-2.0 at 10:45 Cd - 14 mg/kg Pb - 3,260 mg/kg Zn - 4,060 mg/kg BH-SF-E-PZ-23-2.0-3.6 at 10:50 Cd - 12.8 mg/kg Pb - 3,040 mg/kg Zn - 3,880 mg/kg
	Core-2	4 8	95%	4.0'-4.7' SP-SM: same as above, no gravel 4.7'-4.9' SP: medium sand, black, slag 4.9'-6.7' ML-CL: silt/clay, dark brown to gray, dry, stiff 6.7'-7.8' ML-CL: silt/clay, brown to red, stiff	BH-SF-E-PZ-23-4.0-5.0 at 10:55 Cd - 14 mg/kg Pb - 2,880 mg/kg Zn - 7,320 mg/kg BH-SF-E-PZ-23-5.0-7.8 at 11:00 Cd - 31 mg/kg Pb - 805 mg/kg Zn - 1,150 mg/kg
	Core-3	8 12	73%	8.0'-8.9' ML-CL: same as above 8.9'-10.9' GM: silty gravel with sand, gray to blueish color, sand and silt >30%, wet beginning at 10.5', angular to subangular gravel to 1.0"	BH-SF-E-PZ-23-8.0-9.0 at 11:05 Cd - 8 mg/kg Pb - 342 mg/kg Zn - 1,130 mg/kg BH-SF-E-PZ-23-9.0-10.9 at 11:10 Cd - 7.7 mg/kg Pb - 33 mg/kg Zn -698 mg/kg
	Core-4	12 16	55%	12.0'-13.2' GW: gravel with coarse sand, trac fine sand, brown to gray, angular to subangular gravel, well graded 13.2'-14.2' SP: coarse sand, gray, wet, trace medium sand, poorly graded	BH-SF-E-PZ-23-12.0-13.0 at 11:15 Cd - 21.2 mg/kg Pb - 33.8 mg/kg Zn - 1,080 mg/kg BH-SF-E-PZ-23-13.0-14.2 at 11:20 Cd - 26.6 mg/kg Pb - 20.7 mg/kg Zn - 879 mg/kg Drilling ends at 11:30

Soil Profile

Well Construction



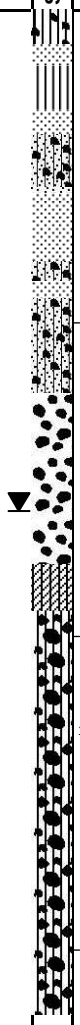
SOIL BORING/PIEZOMETER LOG

CH2MHILL

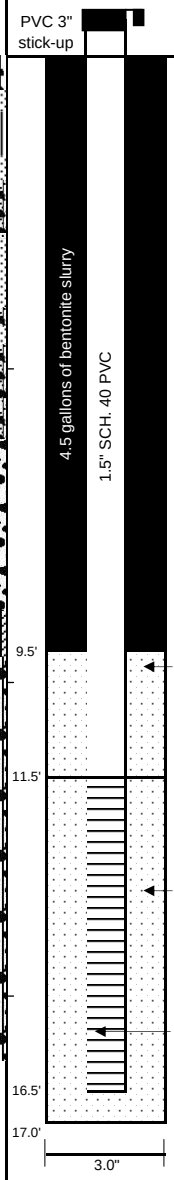
BORING NO: **BH-SF-E-PZ-24**
PROJECT NO: **364471**
PROJECT NAME: OU2/OU3 Direct Push Investigation
LOCATION: Northwest of CIA next to I-90
DRILLING CONTRACTOR: EPA ESAT
DRILLING EQUIPMENT: Geoprobe Model 6000
TOC ELEVATION: 2255.35
BORING DIAMETER: 3.0"
GROUND ELEVATION: 2253.26
TOTAL DEPTH: 17'
SWL: ~8.0
START DATE: 6/19/2008
END DATE: 6/19/2008
LOGGER: Tracy Grant

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0 4	80%	Drilling begins at 8:00 0.0-0.6' GM: silty gravel with sand, dark brown, rounded gravel, well graded 0.6'-0.9' SP: medium sand, black, dry, poorly graded, slag 0.9'-1.6' ML: silt with sand, light brown to reddish, dry 1.6'-2.0' SP: medium sand, black, dry, poorly graded, slag 2.0'-2.8' SP-SM: fine sand with silt, trace subangular gravel up to 0.5" 2.8'-2.9' SP: medium sand, black, dry, poorly graded, slag 2.9'-3.2' SP: fine sand, reddish, poorly graded	BH-SF-E-PZ-24-0.0-1.5 at 8:15 Cd - 23.5 mg/kg Pb - 4,790 mg/kg Zn - 13,400 mg/kg BH-SF-E-PZ-24-1.5-3.2 at 8:20 Cd - 18.6 mg/kg Pb - 2,830 mg/kg Zn - 22,100 mg/kg
	Core-2	4 8	80%	4.0'-4.4' SP-SM: fine sand with silt, reddish to blue, dry, poorly graded 4.4'-4.6' SP: coarse sand, black, close to slag consistency 4.6'-6.2' SP-SM: fine sand with silt, increased blueish solor, dry, trace gravel 6.2'-7.2' GW: gravel, subangular to 1.0", trace sand, brown, dry, well graded	BH-SF-E-PZ-24-4.0-5.5 at 8:30 Cd - 18.8 mg/kg Pb - 13,600 mg/kg Zn - 5,330 mg/kg BH-SF-E-PZ-24-5.5-7.2 at 8:35 Cd - 15.8 mg/kg Pb - 305 mg/kg Zn - 485 mg/kg
	Core-3	8 12	55%	8.0'-8.7' GW: gravel with medium sand, trace fines, wet, round gravel, well graded 8.7'-9.6' CL-ML: clay/silt, trace gravel, red to brown 9.6'-10.2' GW-GM: gravel with silt and sand, gravel up to 1.25", wet, well graded	BH-SF-E-PZ-24-8.0-9.0 at 8:40 Cd - 12.4 mg/kg Pb - 337 mg/kg Zn - 1,460 mg/kg BH-SF-E-PZ-24-9.0-10.2 at 8:45 Cd - 4.4 mg/kg Pb - 47.1 mg/kg Zn - 349 mg/kg
	Core-4	12 16	63%	12.0'-14.5' GW-GM: gravel with silt and sand, brown, light native material, wet, angular to subangular gravel from 0.25-1.25", loose, wet, well graded	BH-SF-E-PZ-24-12.0-13.2 at 8:50 Cd - 6.7 mg/kg Pb - 42.9 mg/kg Zn - 385 mg/kg BH-SF-E-PZ-24-13.2-14.5 at 8:55 Cd - 2.9 mg/kg Pb - 63.4 mg/kg Zn - 756 mg/kg Drilling ends at 11:30

Soil Profile



Well Construction



SOIL BORING/PIEZOMETER LOG

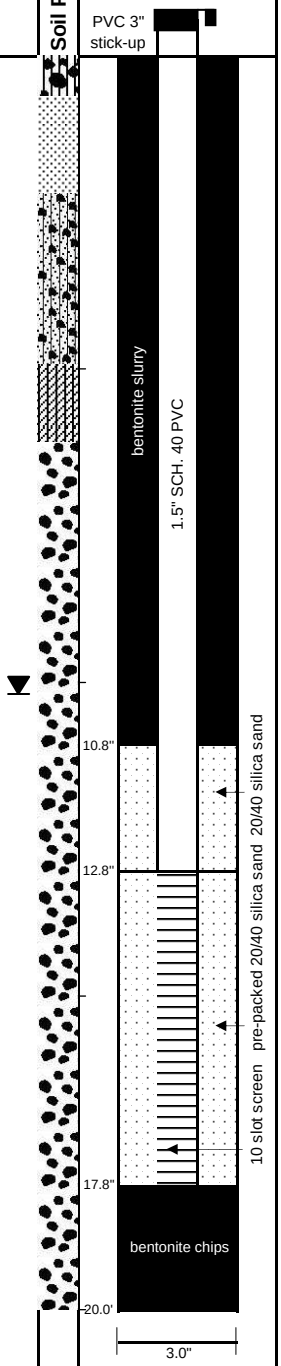
CH2MHILL

BORING NO: **BH-SF-E-PZ-25**
PROJECT NO: **364471**
PROJECT NAME: OU2/OU3 Direct Push Investigation
LOCATION: North of Slag Pile area, south of I-90
DRILLING CONTRACTOR: EPA ESAT
DRILLING EQUIPMENT: Geoprobe Model 6000
TOC ELEVATION: 2250.81
BORING DIAMETER: 3.0"
GROUND ELEVATION: 2248.75
TOTAL DEPTH: 20'
START DATE: 6/18/2008
END DATE: 6/18/2008
LOGGER: Tracy Grant
SWL: ~10.2

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0 4	83%	drill begins at 13:30 not used for lab analysis 0.0-0.7' GW-GM: gravel with silt, brown, dry, subangular to round gravel, increased clay content with depth 0.7'-2.2' SP: medium sand, black, dry, poorly graded 2.2'-3.3' SP-SM: fine sand with silt, black to red, moist, poorly graded	BH-SF-E-PZ-25-1.0-2.2 at 13:45 Cd - 29.1 mg/kg Pb - 1,140 mg/kg Zn - 27,400 mg/kg BH-SF-E-PZ-25-2.2-3.3 at 13:50 Cd - 20.8 mg/kg Pb - 17,900 mg/kg Zn - 8,730 mg/kg
	Core-2	4 8	73%	4.0'-4.9' SP-SM: same as above, increased moisture content 4.9'-6.1' ML-CL: silt/clay, wood debris, black to orange, wet 6.1'-6.9' GW: gravel with sand, angular, dry, up to 1.0", well graded	BH-SF-E-PZ-25-4.0-5.2 at 13:55 Cd - 34.9 mg/kg Pb - 37,000 mg/kg Zn - 8,040 mg/kg BH-SF-E-PZ-25-5.2-6.9 at 14:00 Cd - 16.4 mg/kg Pb - 9,190 mg/kg Zn - 2,210 mg/kg
	Core-3	8 12	58%	8.0'-10.3' GW: gravel with sand, light brown to gray/white, dry, subangular to rounded gravel up to 1.0", well graded	BH-SF-E-PZ-25-8.0-9.0 at 14:05 Cd - 3.6 mg/kg Pb - 360 mg/kg Zn - 547 mg/kg BH-SF-E-PZ-25-9.0-10.3 at 14:10 Cd - 2.3 mg/kg Pb - 24.2 mg/kg Zn - 468 mg/kg
	Core-4	12 16	65%	12.0'-14.6' GW: gravel with sand, brown, wet, subangular to round gravel to 0.25", well graded	BH-SF-E-PZ-25-12.0-13.5 at 14:15 Cd - 3.4 mg/kg Pb - 65.8 mg/kg Zn - 488 mg/kg BH-SF-E-PZ-25-13.5-14.6 at 14:20 Cd - 2.7 mg/kg Pb - 231 mg/kg Zn - 603 mg/kg
	Core-5	16 20	68%	16.0'-18.7' GW: gravel with sand, same as above	BH-SF-E-PZ-25-16.0-17.3 at 14:30 Cd - 2.8 mg/kg Pb - 147 mg/kg Zn - 960 mg/kg BH-SF-E-PZ-25-17.3-18.7 at 14:35 Cd - 2 mg/kg Pb - 25.7 mg/kg Zn - 1,160 mg/kg

Soil Profile

Well Construction



SOIL BORING/PIEZOMETER LOG

CH2MHILL

BORING NO: **BH-SF-E-PZ-26A**

PROJECT NO: **364471**

PROJECT NAME: OU2/OU3 Direct Push Investigation

LOCATION: Lower east side of Bunker Creek

DRILLING CONTRACTOR: EPA ESAT

DRILLING EQUIPMENT: Geoprobe Model 6000

TOC ELEVATION: 2248.55

BORING DIAMETER: 3.0"

GROUND ELEVATION: 2246.81

TOTAL DEPTH: 21.49'

START DATE: 6/17/2008

END DATE: 6/17/2008

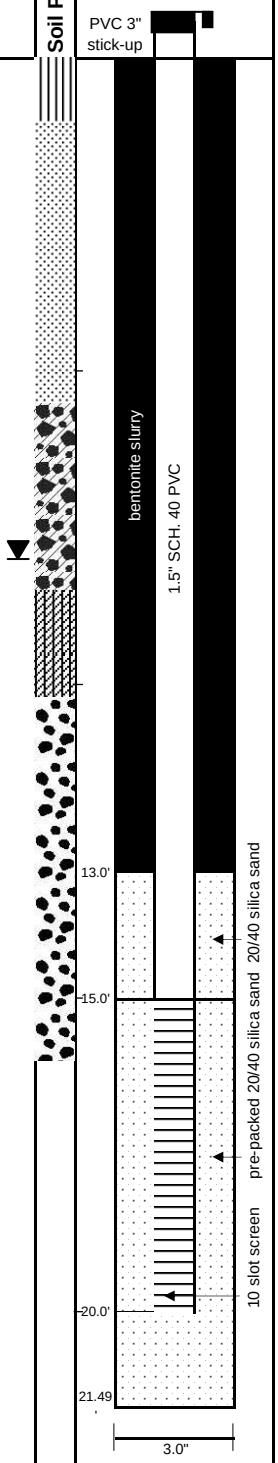
LOGGER: Tracy Grant

SWL: ~8.0

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0 4	63%	Drill begins at 10:20 0.0-1.0' ML: silt with gravel, brown, dry, angular grav up to 1.5" 1.0'-2.5' SP: medium sand, black, poorly graded, slag	BH-SF-E-PZ-26-0.0-1.0 at 10:25 Cd - 23.7 mg/kg Pb - 2,270 mg/kg Zn - 25,400 mg/kg BH-SF-E-PZ-26-1.0-2.5 at 10:30 Cd - 9.4 mg/kg Pb - 88.5 mg/kg Zn - 37,900 mg/kg
	Core-2	4 8	75%	4.0'-5.5' SP: medium sand, black, poorly graded, slag 5.5'-7.0' GW-GC: gravel with clay/silt, angular gravel to 1.0", iron oxide stained, moist, well graded, jig tailings?	BH-SF-E-PZ-26-4.0-5.5 at 10:40 Cd - 8.4 mg/kg Pb - 132 mg/kg Zn - 45,200 mg/kg BH-SF-E-PZ-26-5.5-7.0 at 10:45 Cd - 16.3 mg/kg Pb - 19,700 mg/kg Zn - 5,230 mg/kg
	Core-3	8 12	68%	8.0'-8.5' GW-GC: gravel with clay/silt, same as above 8.5'-10.3' ML/CL: silt/clay, black, moist to wet, slimes? 10.3'-10.7' GW: gravel, brown, wet, angular to rounded up to 1.5", well graded	BH-SF-E-PZ-26-8.0-9.0 at 10:50 Cd - 44 mg/kg Pb - 16,300 mg/kg Zn - 11,200 mg/kg BH-SF-E-PZ-26-9.0-10.7 at 10:55 Cd - 3.4 mg/kg Pb - 2,280 mg/kg Zn - 1,570 mg/kg
	Core-4	12 16	55%	12.0'-14.2' GW: gravel, brown, wet, sand to silt <15%, angular gravel up to 1.0", well graded	BH-SF-E-PZ-26-12.0-14.2 at 11:00 Cd - 3.8 mg/kg Pb - 46.2 mg/kg Zn - 376 mg/kg

Soil Profile

Well Construction



SOIL BORING/PIEZOMETER LOG

CH2MHILL

BORING NO: **BH-SF-E-PZ-26B**

PROJECT NO: **364471**

START DATE: 7/21/2008

PROJECT NAME: OU2/OU3 Direct Push Investigation

END DATE: 7/21/2008

LOCATION: Lower east side of Bunker Creek

LOGGER: Tracy Grant

DRILLING CONTRACTOR: EPA ESAT

DRILLING EQUIPMENT: Geoprobe Model 6000

TOC ELEVATION: 2249.73

BORING DIAMETER: 3.0"

GROUND ELEVATION: 2247.68

TOTAL DEPTH: 21.49'

SWL: ~8.0

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
1					Piezometer BH-SF-E-PZ-26B was installed to replace piezometer BH-SF-E-PZ-26. No soil samples were collected at this location since it was installed adjacent to BH-SF-E-PZ-26.
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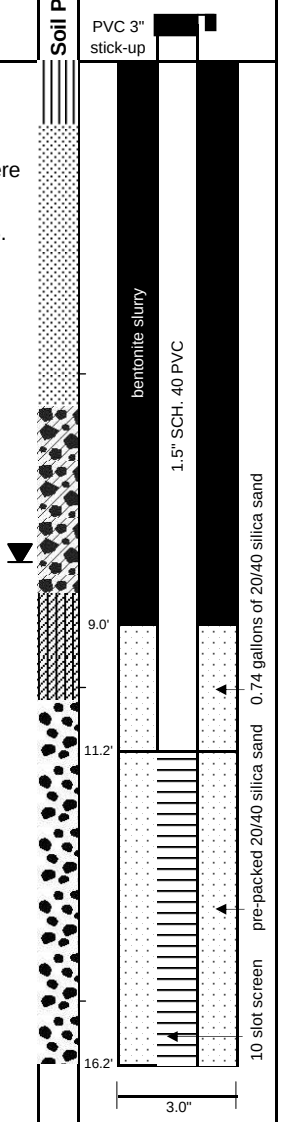
Soil Profile

Well Construction



SOIL BORING/PIEZOMETER LOG

CH2MHILL

BORING NO: **BH-SF-E-PZ-27**

PROJECT NO: **364471**

START DATE: 6/23/2008

PROJECT NAME: OU2/OU3 Direct Push Investigation

END DATE: 6/23/2008

LOCATION: East of Government Gulch, north of McKinley Avenue

LOGGER: Tracy Grant

DRILLING CONTRACTOR: EPA ESAT

DRILLING EQUIPMENT: Geoprobe Model 6000

TOC ELEVATION: 2245.45

BORING DIAMETER: 3.0"

GROUND ELEVATION: 2245.62

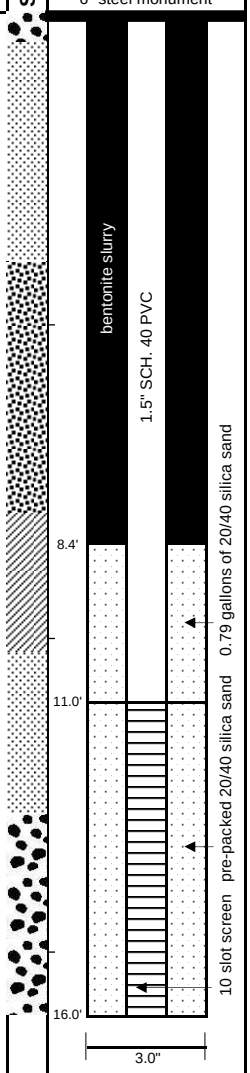
TOTAL DEPTH: 16'

SWL: ~4.0

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0 4	50%	0.0-0.5' GW: gravel, angular to subangular to 0.5-1.0, gray, dry, well graded 0.5'-2.0' SP: fine sand, dark brown, trace gravel and silt, poorly graded	Drilling begins at 10:15 BH-SF-E-PZ-27-0.5-2.0 at 10:20 Cd - 50.3 mg/kg Pb - 8,520 mg/kg Zn - 5,900 mg/kg
	Core-2	4 8	48%	4.0'-5.9' GP: gravel, red/orange, wet, angular to subangular gravel from 0.25-0.5", trace fine sand, poorly sorted	BH-SF-E-PZ-27-4.0-5.9 at 10:25 Cd - 28.5 mg/kg Pb - 18,600 mg/kg Zn - 5,940 mg/kg
	Core-3	8 12	80%	8.0'-10.2' CL: clay, trace silt, gray, moist to wet, elastic, 0.2' area of black silt (tailings?) 10.2'-11.2' SP: medium to fine sand, gray, poorly graded	BH-SF-E-PZ-27-8.0-9.5 at 10:30 Cd - 22.8 mg/kg Pb - 9,560 mg/kg Zn - 3,930 mg/kg BH-SF-E-PZ-27-9.5-11.2 at 10:35 Cd - 0.84 mg/kg Pb - 81.2 mg/kg Zn - 957 mg/kg
	Core-4	12 16	65%	12.0'-12.7' SP: coarse sand, gray, wet, subangular to rounded gravel to 0.5", some organic debris, poorly graded 12.7'-14.6' GW: gravel, gray to brown, wet, trace sand, subangular, well graded	BH-SF-E-PZ-27-12.0-13.0 at 10:40 Cd - 10.7 mg/kg Pb - 188 mg/kg Zn - 306 mg/kg BH-SF-E-PZ-27-13.0-14.6 at 10:45 Cd - 1.6 mg/kg Pb - 173 mg/kg Zn - 146 mg/kg Drilling ends at 11:00

Soil Profile

Well Construction

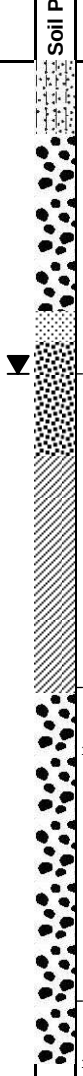


SOIL BORING/PIEZOMETER LOG

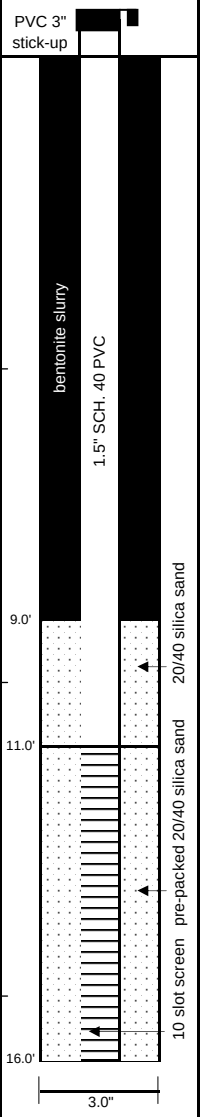
BORING NO: **BH-SF-E-PZ-28**
PROJECT NO: **364471**
PROJECT NAME: OU2/OU3 Direct Push Investigation
LOCATION: West of Government Gulch, north of McKinley Avenue
DRILLING CONTRACTOR: EPA ESAT
DRILLING EQUIPMENT: Geoprobe Model 6000
TOC ELEVATION: 2247.46
BORING DIAMETER: 3.0"
GROUND ELEVATION: 2245.19
TOTAL DEPTH: 16'
START DATE: 6/23/2008
END DATE: 6/23/2008
LOGGER: Tracy Grant
SWL: ~5.0

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description (soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading)	Comments (drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other)
	Core-1	0	65%	Drilling begins at 13:30 0.0-1.2' SW-SM: fine sand with silt and gravel, angular gravel to 0.5", light brown, dry, well graded 1.2'-2.6' GW: gravel with fine sand, dark brown, dry, gravel subangular to rounded, well graded	BH-SF-E-PZ-28-0.0-1.5 at 13:35 Cd - 24.2 mg/kg Pb - 4,310 mg/kg Zn - 3,320 mg/kg BH-SF-E-PZ-28-1.5-2.6 at 13:40 Cd - 73.6 mg/kg Pb - 13,300 mg/kg Zn - 11,200 mg/kg
		4			
	Core-2	4	63%	4.0'-4.5' SP: medium to coarse sand, dark brown, wet, trace silt/fine sand, poorly graded 4.5'-6.3' GP: gravel, wet, red to dark brown, trace fines, angular gravel from 0.1" to 0.5" , poorly graded 6.3'-6.5' CL: clay	BH-SF-E-PZ-28-4.0-5.0 at 13:45 Cd - 51.2 mg/kg Pb - 12,800 mg/kg Zn - 8,770 mg/kg BH-SF-E-PZ-28-5.0-6.5 at 13:50 Cd - 24.6 mg/kg Pb - 24,700 mg/kg Zn - 3,800 mg/kg
		8			
	Core-3	8	75%	8.0'-10.1' CL: clay, gray, moist, hard, elastic, single layer (0.1') gray, loose fine sand 10.1'-11.0' GW: gravel, gray, well graded, rounded from 0.2" to 1.0", trace fine sand and silt	BH-SF-E-PZ-28-8.0-9.5 at 13:55 Cd - 7.9 mg/kg Pb - 3,280 mg/kg Zn - 1,810 mg/kg BH-SF-E-PZ-28-9.5-11.3 at 14:00 Cd - 0.41 mg/kg Pb - 290 mg/kg Zn - 215 mg/kg
		12			
	Core-4	12	63%	12.0'-14.5' GW: gravel, gray, rounded up to 2", trace fines, wet, well graded	BH-SF-E-PZ-28-12.0-13.0 at 14:05 Cd - 2.9 mg/kg Pb - 874 mg/kg Zn - 360 mg/kg BH-SF-E-PZ-28-13.0-14.5 at 14:10 Cd - 2.1 mg/kg Pb - 147 mg/kg Zn - 194 mg/kg
		16			Drilling ends at 14:15

Soil Profile



Well Construction



SOIL BORING/PIEZOMETER LOG

CH2MHILL

BORING NO: **BH-SF-E-PZ-29**

PROJECT NO: **364471**

START DATE: 7/1/2008

PROJECT NAME: OU2/OU3 Direct Push Investigation

END DATE: 7/1/2008

LOCATION: Lower Government Gulch near Enyeart Lumber

LOGGER: Tracy Grant

DRILLING CONTRACTOR: EPA ESAT

DRILLING EQUIPMENT: Geoprobe Model 6000

TOC ELEVATION: 2243.58

BORING DIAMETER: 3.0"

GROUND ELEVATION: 2241.57

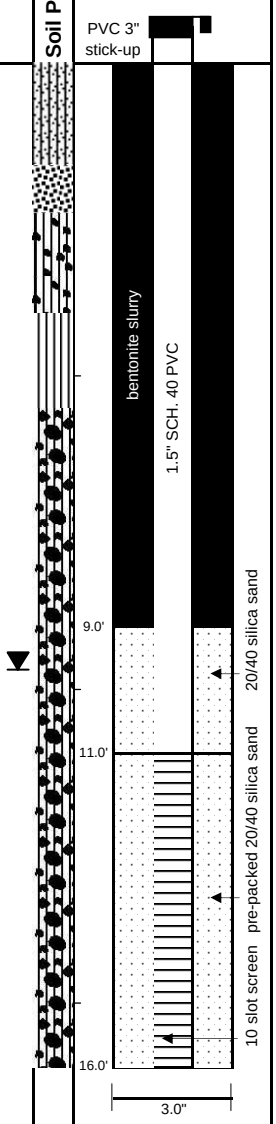
TOTAL DEPTH: 16'

SWL: ~9.7

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0	75%	Drilling begins at 14:10 0.0-1.7' SM: fine sand with gravel, light brown to orange, dry, angular to subangular gravel from 0.5" to 1.0", well graded 1.7'-2.4' GP: gravel, white, dry, angular, poorly graded 2.4'-3.0' GM: gravel with silt and sand, dark brown, angular gravel to 0.5", well graded	BH-SF-E-PZ-29-0.0-1.5 at 14:15 Cd - 0.92 mg/kg Pb - 214 mg/kg Zn - 165 mg/kg BH-SF-E-PZ-29-1.5-3.0 at 14:20 Cd - 6.7 mg/kg Pb - 4,190 mg/kg Zn - 1,340 mg/kg
		4			
	Core-2	4	78%	4.0'-5.5' ML: silt with fine sand, increased clay with depth, dark brown, damp 5.5'-7.1' GW-GM: gravel with medium sand, dark brown, moist, angular gravel from 0.5" to 1.0", well graded	BH-SF-E-PZ-29-4.0-5.5 at 14:25 Cd - 17.5 mg/kg Pb - 467 mg/kg Zn - 383 mg/kg BH-SF-E-PZ-29-5.5-7.1 at 14:30 Cd - 19.9 mg/kg Pb - 64 mg/kg Zn - 300 mg/kg
		8			
	Core-3	8	68%	8.0'-10.7' GW-GM: gravel with silt and sand, orange to dark brown, dry until 9.7, wet thereafter, subangular to rounded gravel from 0.2" to 1.5", well graded	BH-SF-E-PZ-29-8.0-9.0 at 14:40 Cd - 16.6 mg/kg Pb - 54.9 mg/kg Zn - 258 mg/kg BH-SF-E-PZ-29-9.0-10.7 at 14:45 Cd - 30.1 mg/kg Pb - 33.5 mg/kg Zn - 334 mg/kg
		12			
	Core-4	12	63%	12.0'-14.5' GW-GM: gravel with silt and sand, same as above	BH-SF-E-PZ-29-12.0-13.0 at 14:50 Cd - 18.9 mg/kg Pb - 35.9 mg/kg Zn - 337 mg/kg BH-SF-E-PZ-29-13.0-14.5 at 14:55 Cd - 25.6 mg/kg Pb - 41.7 mg/kg Zn - 353 mg/kg
		16			
					Drilling ends at 15:00

Soil Profile

Well Construction



SOIL BORING/PIEZOMETER LOG

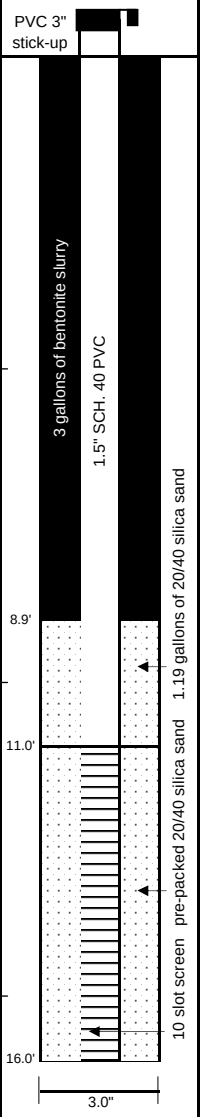
CH2MHILL

BORING NO: **BH-SF-E-PZ-30**
PROJECT NO: **364471**
PROJECT NAME: OU2/OU3 Direct Push Investigation
LOCATION: Lower east side of Government Gulch
DRILLING CONTRACTOR: EPA ESAT
DRILLING EQUIPMENT: Geoprobe Model 6000
TOC ELEVATION: 2245.06
BORING DIAMETER: 3.0"
GROUND ELEVATION: 2242.97
TOTAL DEPTH: 16'
START DATE: 7/1/2008
END DATE: 7/1/2008
LOGGER: Tracy Grant
SWL: ~9.8

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0 4	70%	0.0-1.7' SW: fine sand with gravel, light brown to orange, dry, angular to subangular gravel from 0.5" to 1.0", well graded 1.7'-2.4' GP: gravel, white, dry, angular and flat, poorly graded 2.4'-3.0' GM: silty gravel with sand, dark brown,	Drilling begins at 10:00 BH-SF-E-PZ-30-0.5-2.8 at 10:10 Cd - 7.6 mg/kg Pb - 11,400 mg/kg Zn - 3,550 mg/kg
	Core-2	4 8	83%	4.0'-5.5' MH: silt with fine sand, increased clay with depth, dark brown, damp 5.5'-7.1' GW: gravel with medium sand, dark brown, moist, angular gravel from 0.5" to 1.0", well graded	BH-SF-E-PZ-30-4.0-5.5 at 10:15 Cd - 27.3 mg/kg Pb - 9,600 mg/kg Zn - 3,790 mg/kg BH-SF-E-PZ-30-5.5-7.3 at 10:20 Cd - 48.1 mg/kg Pb - 121 mg/kg Zn - 2780 mg/kg
	Core-3	8 12	73%	8.0'-10.7' GM: gravel with silt and sand, orange to dark brown, dry until 9.7, wet thereafter, subangular to rounded from 0.2" to 1.5", well graded	BH-SF-E-PZ-30-8.0-9.7 at 10:25 Cd - 7.7 mg/kg Pb - 369 mg/kg Zn - 1,730 mg/kg BH-SF-E-PZ-30-9.7-10.9 at 10:30 Cd - 10.3 mg/kg Pb - 57.1 mg/kg Zn - 279 mg/kg
	Core-4	12 16	55%	12.0'-14.5' GM: gravel with silt and sand, same as above	BH-SF-E-PZ-30-12.0-14.2 at 10:35 Cd - 23.9 mg/kg Pb - 34.8 mg/kg Zn - 317 mg/kg

Soil Profile

Well Construction



SOIL BORING/PIEZOMETER LOG

CH2MHILL

BORING NO: **BH-SF-E-PZ-31**

PROJECT NO: **364471**

START DATE: 6/23/2008

PROJECT NAME: OU2/OU3 Direct Push Investigation

END DATE: 6/23/2008

LOCATION: Lower east side of Government Gulch, south of I-90

LOGGER: Tracy Grant

DRILLING CONTRACTOR: EPA ESAT

DRILLING EQUIPMENT: Geoprobe Model 6000

TOC ELEVATION: 2241.11

BORING DIAMETER: 3.0"

GROUND ELEVATION: 2239.00

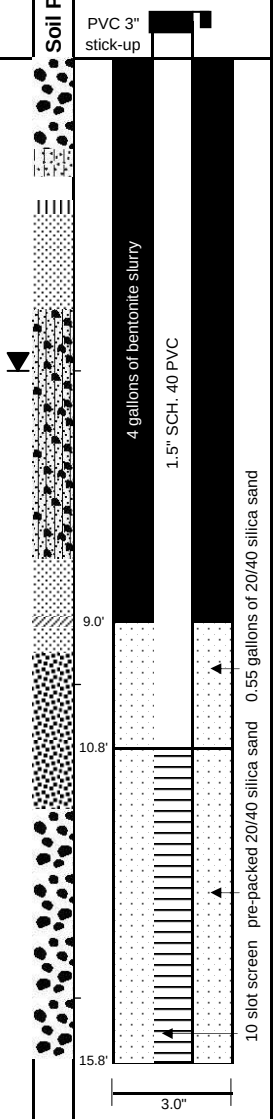
TOTAL DEPTH: 15.8'

SWL: ~5.0

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0 4	73%	Drilling begins at 8:20 0.0-1.5' GW: gravel with fine sand, light brown, dry,subangular to round gravel, well graded 1.5'-1.9' SW-SM: fine sand to silt, dark brown to black, damp, trace gravel 1.9'-2.3': wood debris 2.3'-2.5' ML: silt, red to orange, deposits of blueish clay 2.5'-2.9' SP: medium sand with gravel, dark brown, damp, rounded gravel to 0.5"	BH-SF-E-PZ-31-0.0-1.5 at 8:25 Cd - 4.5 mg/kg Pb - 931 mg/kg Zn - 478 mg/kg BH-SF-E-PZ-31-1.5-2.9 at 8:30 Cd - 20.6 mg/kg Pb - 19,600 mg/kg Zn - 3,570 mg/kg
	Core-2	4 8	75%	4.0'-7.0' SP-SM: medium sand with gravel, reddish, rounded gravel, wet at 5.0', poorly graded	BH-SF-E-PZ-31-4.0-5.5 at 8:35 Cd - 39.8 mg/kg Pb - 33,300 mg/kg Zn - 9,110 mg/kg BH-SF-E-PZ-31-5.5-7.0 at 8:40 Cd - 17.9 mg/kg Pb - 16,800 mg/kg Zn - 4,980 mg/kg
	Core-3	8 12	50%	8.0'-8.9' SP: coarse sand, brown, wet, poorly graded 8.9'-9.1' CL: clay, gray, wet 9.1'-9.5' SP: coarse sand, gray, wet 9.5'-10.0' GP: gravel, white to gray, subangular to 2.0", poorly graded	BH-SF-E-PZ-31-8.0-9.0 at 8:45 Cd - 31.7 mg/kg Pb - 12,700 mg/kg Zn - 4,270 mg/kg BH-SF-E-PZ-31-9.0-10.0 at 8:50 Cd - 65.7 mg/kg Pb - 3,950 mg/kg Zn - 1,850 mg/kg
	Core-4	12 16	33%	12.0'-13.3' GW: gravel, dark brown, wet, subangular to rounded from 1.5" to 2.0", trace sand and fines, well graded	BH-SF-E-PZ-31-12.0-13.3 at 8:55 Cd - 48.5 mg/kg Pb - 332 mg/kg Zn - 685 mg/kg

Soil Profile

Well Construction



SOIL BORING/PIEZOMETER LOG

CH2MHILL

BORING NO: **BH-SF-E-PZ-32**

PROJECT NO: **364471**

PROJECT NAME: OU2/OU3 Direct Push Investigation

LOCATION: Lower west side of Government Gulch, south of I-90

DRILLING CONTRACTOR: EPA ESAT

DRILLING EQUIPMENT: Geoprobe Model 6000

TOC ELEVATION: 2241.2

BORING DIAMETER: 3.0"

GROUND ELEVATION: 2239.15

TOTAL DEPTH: 16.2'

START DATE: 6/19/2008

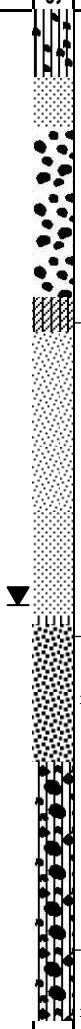
END DATE: 6/19/2008

LOGGER: Tracy Grant

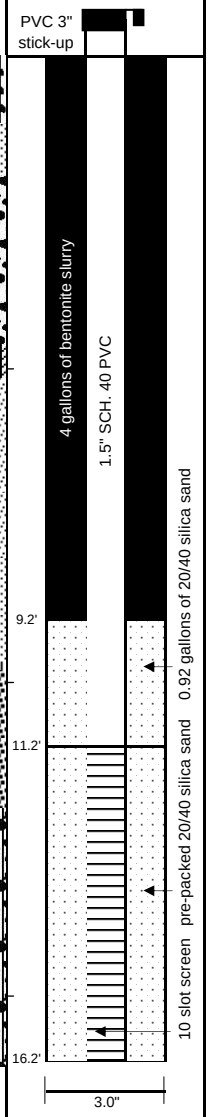
SWL: ~9.5

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description (soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading)	Comments (drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other)
	Core-1	0	65%	Drilling begins at 14:00 0.0-1.1' GM: silty gravel with sand, light brown, dry, angular to subangular gravel from 0.25"-1.0", >30% silt/sand 1.1'-1.9' SP: fine sand, dark brown with trace orange damp, trace gravel, poorly graded 1.9'-2.6' GW: gravel with sand, dark brown, >30% sand, subangular to rounded gravel, well graded	BH-SF-E-PZ-32-0.0-1.0 at 14:05 Cd - 2.8 mg/kg Pb - 757 mg/kg Zn - 309 mg/kg BH-SF-E-PZ-32-1.0-2.6 at 14:10 Cd - 18.7 mg/kg Pb - 17,700 mg/kg Zn - 4,900 mg/kg
		4			
	Core-2	4	60%	4.0'-4.6' GW: gravel with medium sand, heavy iron oxide staining, dry, well graded, rounded gravel 4.6'-5.2' CL-ML: clay/silt, dark brown, moist 5.2'-6.4' SW: medium sand with gravel, subangular to angular gravel, dark brown to light brown, dry, well graded	BH-SF-E-PZ-32-4.0-4.9 at 14:15 Cd - 22.3 mg/kg Pb - 14,300 mg/kg Zn - 2,670 mg/kg BH-SF-E-PZ-32-4.9-6.4 at 14:20 Cd - 28.5 mg/kg Pb - 545 mg/kg Zn - 554 mg/kg
		8			
	Core-3	8	58%	8.0'-9.7' SP: medium sand with gravel, interbedded layers, subangular gravel to 1.0", dark brown, moist, poorly graded 9.7'-9.8' ML: silt, wet 9.8'-10.3' GP: gravel, 0.2-0.5", subangular from 0.2" to 0.5", trace fines, dark brown to black, wet, poorly graded	BH-SF-E-PZ-32-8.0-9.5 at 14:25 Cd - 34.4 mg/kg Pb - 96.7 mg/kg Zn - 421 mg/kg BH-SF-E-PZ-32-9.5-10.3 at 14:30 Cd - 10.8 mg/kg Pb - 166 mg/kg Zn - 323 mg/kg
		12			
	Core-4	12	60%	12.0'-14.4' GW-GM: gravel with silt, orange to brown wet, angular gravel from 0.1" to 1.5", well graded	BH-SF-E-PZ-32-12.0-13.2 at 14:35 Cd - 11 mg/kg Pb - 280 mg/kg Zn - 149 mg/kg BH-SF-E-PZ-32-13.2-14.4 at 14:40 Cd - 11.9 mg/kg Pb - 32.8 mg/kg Zn - 231 mg/kg
		16			

Soil Profile



Well Construction

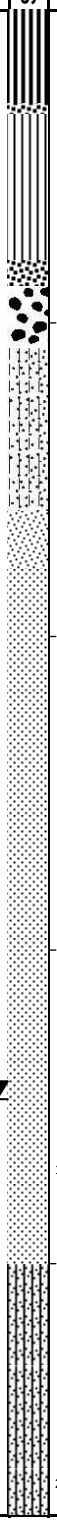


SOIL BORING/PIEZOMETER LOG

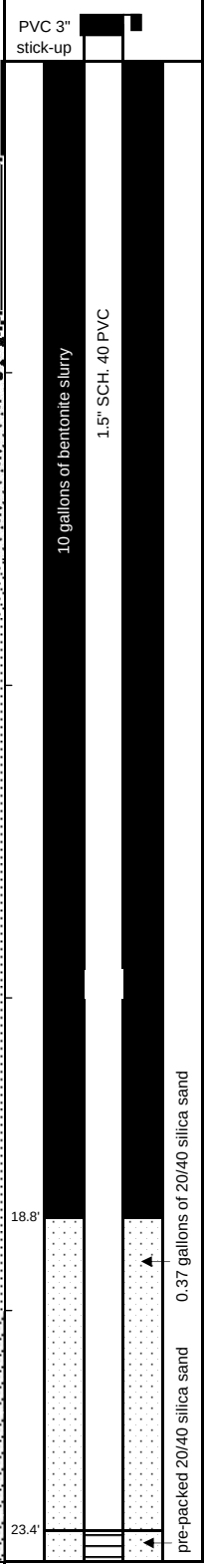
BORING NO: **BH-SF-W-PZ-01**
PROJECT NO: **364471**
START DATE: 7/8/2008
PROJECT NAME: OU2/OU3 Direct Push Investigation
END DATE: 7/8/2008
LOCATION: Page Ponds
LOGGER: Tracy Grant
DRILLING CONTRACTOR: EPA ESAT
DRILLING EQUIPMENT: Geoprobe Model 6000
TOC ELEVATION: 2236.24
BORING DIAMETER: 3.0"
GROUND ELEVATION: 2234.20
TOTAL DEPTH: 28.4'
SWL: ~16.2

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing vapor tests, odor, other
1, 2, 3, 4	Core-1	0 4	45%	0-0.4' MH: silt, light brown, dry, trace gravel, rounded, well graded 0.4'-1.5' MH: silt with angular gravel, reddish brown, trace fine sand 1.5'-1.7' GP: gravel with fine sand, poorly graded, hwite 1.7'-2.6' ML: silt with trace clay, red, moist, trace fine gravel	begin drill at 10:10 BH-SF-W-PZ-01-0.5-2.5 at 10:15 Cd - 19.5 mg/kg Pb - 10,200 mg/kg Zn - 3,100 mg/kg
4, 5, 6, 7, 8	Core-2	4 8	45%	4.0'-4.4' GP: gravel, black, rounded to sub-angular to 0.5", poorly graded, dry 4.4'-5.4' GW: gravel, sub-angular, white to brown, well graded 5.4'-5.8' SW-SM: medium sand with gravel, black to brown, sub-angular gravel to 0.5", dry, well graded	BH-SF-W-PZ-01-4.0-5.8 at 10:20 Cd - 3.8 mg/kg Pb - 1,080 mg/kg Zn - 1,160 mg/kg
8, 9, 10, 11, 12	Core-3	8 12	43%	8.0'-8.9' SW: fine sand with gravel, subangular gravel to 0.5", dark brown, increased silt content, damp 8.9'-9.7' SP: fine sand, reddish-brown, poorly graded, moist to wet	BH-SF-W-PZ-01-8.0-9.7 at 10:25 Cd - 22.8 mg/kg Pb - 4,210 mg/kg Zn - 3,270 mg/kg
12, 13, 14, 15, 16	Core-4	12 16	100%	12.0'-15.0' SP: fine sand, poorly graded, moist, 0.1' of green clay layer 15.0'-16.0' SP: medium sand, poorly graded, moist, black, slag?	BH-SF-W-PZ-01-12.0-15.0 at 10:30 Cd - 25.1 mg/kg Pb - 3,390 mg/kg Zn - 2,940 mg/kg BH-SF-W-PZ-01-15.0-16.0 at 10:35 Cd - 4.9 mg/kg Pb - 127 mg/kg Zn - 32,700 mg/kg
16, 17, 18, 19, 20	Core-5	16 20	75%	16.0'-16.2' SP: same as above 16.2'-19.0' SP: fine sand, increased silt content, wet, poorly graded, light reddish brown	BH-SF-W-PZ-01-16.0-17.5 at 10:40 Cd - 16.7 mg/kg Pb - 2,960 mg/kg Zn - 2,530 mg/kg BH-SF-W-PZ-01-17.5-19.0 at 10:45 Cd - 33.3 mg/kg Pb - 4,160 mg/kg Zn - 4,170 mg/kg
20, 21, 22, 23, 24	Core-6	20 24	70%	20.0'-22.8' SP-SM: fine sand with silt, poorly graded, brown to grayish green, wet	BH-SF-W-PZ-01-20.0-21.0 at 10:50 Cd - 27.7 mg/kg Pb - 3,370 mg/kg Zn - 4,440 mg/kg BH-SF-W-PZ-01-21.0-22.8 at 10:55 Cd - 12.9 mg/kg Pb - 2,800 mg/kg Zn - 2,030 mg/kg

Soil Profile



Well Construction



CH2MHILL

SOIL BORING/PIEZOMETER LOG

BORING NO: **BH-SF-W-PZ-01**

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing vapor tests, odor, other	Soil Profile	Well Construction
24	Core-7	24	93%	24.0'-27.7' MH: silt with trace clay, wet, gray, trace fine sand	BH-SF-W-PZ-01-24.0-26.5 at 11:00 Cd - 28.6 mg/kg Pb - 3,220 mg/kg Zn - 5,160 mg/kg BH-SF-W-PZ-01-26.5-27.7 at 10:55 Cd - 14.3 mg/kg Pb - 3,520 mg/kg Zn - 2,410 mg/kg		
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		28					
28							28.4'
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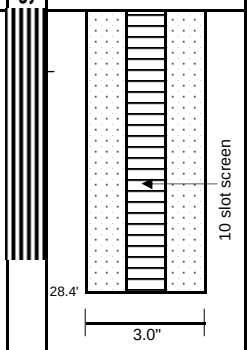


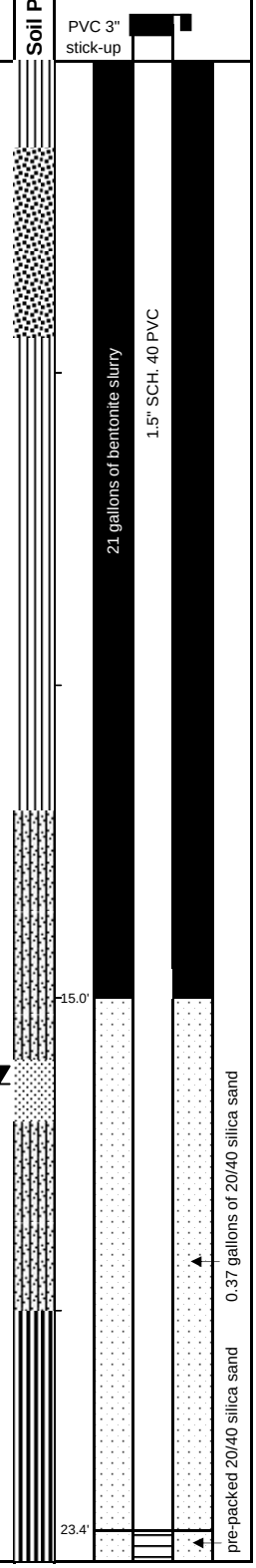
SOIL BORING/PIEZOMETER LOG

BORING NO: **BH-SF-W-PZ-02**
PROJECT NO: **364471**
PROJECT NAME: OU2/OU3 Direct Push Investigation
LOCATION: Page Ponds
DRILLING CONTRACTOR: EPA ESAT
DRILLING EQUIPMENT: Geoprobe Model 6000
TOC ELEVATION: 2236.61
BORING DIAMETER: 3.0"
GROUND ELEVATION: 2234.54
TOTAL DEPTH: 28.4'
SWL: ~16.0
START DATE: 7/8/2008
END DATE: 7/8/2008
LOGGER: Tracy Grant

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
1, 2, 3, 4	Core-1	0 4	43%	0.0-1.3' ML: silt with fine sand, red, trace 0.2" angular gravel, well graded 1.3'-1.7' GP: gravel, 0.5-1.0", angular, poorly graded, dry	BH-SF-W-PZ-02-0.0-1.7 at 14:40 Cd - 15.4 mg/kg Pb - 9,620 mg/kg Zn - 4,010 mg/kg
5, 6, 7, 8	Core-2	4 8	25%	4.0'-4.4' GP: gravel, dry, 1.0-1.5", sub-angular, poorly graded, light brown 4.4'-5.0' ML: silt with fine sand, trace gravel, red/brown, dry, lens of red clay	BH-SF-W-PZ-02-4.0-5.0 at 14:44 Cd - 5.1 mg/kg Pb - 6,510 mg/kg Zn - 1,590 mg/kg
9, 10, 11, 12	Core-3	8 12	18%	8.0'-8.7' ML: silt, same as above, trace gravel, grades to moist	BH-SF-W-PZ-02-8.0-8.7 at 14:50 Cd - 18.5 mg/kg Pb - 19,500 mg/kg Zn - 4,520 mg/kg
13, 14, 15, 16	Core-4	12 16	73%	12.0'-14.9' SM: fine sand, moist to wet, red to light brown, poorly graded, gray/green color in tip of core	BH-SF-W-PZ-02-12.0-13.5 at 14:55 Cd - 25.6 mg/kg Pb - 4,080 mg/kg Zn - 3,200 mg/kg BH-SF-W-PZ-02-13.5-14.9 at 15:00 Cd - 24.3 mg/kg Pb - 4,120 mg/kg Zn - 4,440 mg/kg
17, 18, 19, 20	Core-5	16 20	88%	16.0'-16.2' SP: fine sand, moist, same as above 16.2'-17.0' SP: medium sand, black, poorly graded slag? 17.0'-19.5' SM: silty sand, bluish gray, trace clay deposits, wet	BH-SF-W-PZ-02-16.0-17.5 at 15:05 Cd - 9.4 mg/kg Pb - 1,800 mg/kg Zn - 17,000 mg/kg BH-SF-W-PZ-02-17.5-19.5 at 15:10 Cd - 36.1 mg/kg Pb - 3,650 mg/kg Zn - 4,050 mg/kg
21, 22, 23, 24	Core-6	20 24	58%	20.0'-22.3' MH: silt, trace clay, gray to brown, wet, poorly graded	BH-SF-W-PZ-02-20.0-22.3 at 15:15 Cd - 27.8 mg/kg Pb - 3,280 mg/kg Zn - 4,290 mg/kg

Soil Profile

Well Construction



CH2MHILL

SOIL BORING/PIEZOMETER LOG

BORING NO: **BH-SF-W-PZ-02**

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other	Soil Profile	Well Construction
24	Core-7	24	100%	24.0'-28.0' MH: silt with fine sand, trace clay, gray, wet	BH-SF-W-PZ-02-24.0-26.0 at 15:20 Cd - 13.1 mg/kg Pb - 2,690 mg/kg Zn - 2,670 mg/kg BH-SF-W-PZ-02-26.0-28.0 at 15:25 Cd - 13.7 mg/kg Pb - 2,680 mg/kg Zn - 2,460 mg/kg		
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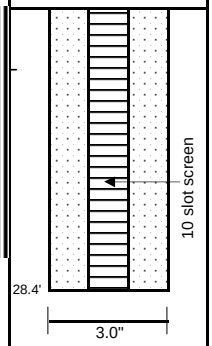


SOIL BORING/PIEZOMETER LOG

CH2MHILL

BORING NO: **BH-SF-W-PZ-03**

PROJECT NO: **364471**

START DATE: 7/9/2008

PROJECT NAME: OU2/OU3 Direct Push Investigation

END DATE: 7/9/2008

LOCATION: Northwest of Page Ponds

LOGGER: Tracy Grant

DRILLING CONTRACTOR: EPA ESAT

DRILLING EQUIPMENT: Geoprobe Model 6000

TOC ELEVATION: 2197.39

BORING DIAMETER: 3.0"

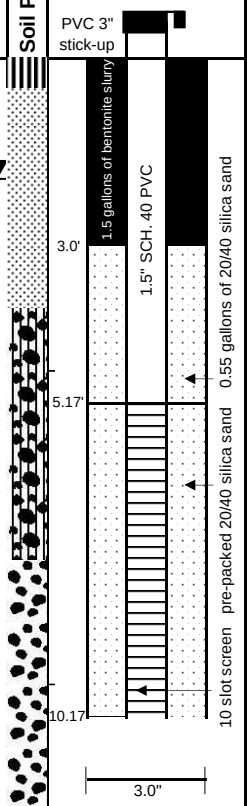
GROUND ELEVATION: 2195.35

TOTAL DEPTH: 10.17"

SWL: ~2.0

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0 4	50%	0.0-0.5' MH: silt, trace clay, trace angular gravel to 0.1", well graded, brown 0.5'-2.0' SP: coarse sand, trace 0.5" gravel, sub-angular, wet	Drillilng begins at 7:05 BH-SF-PZ-W-03-0.0-2.0 at 7:50 Cd - 2.4 mg/kg Pb - 30.1 mg/kg Zn - 552 mg/kg
	Core-2	4 8	35%	4.0'-5.4' GW-GM: gravel with silt and sand, angular gravel to 0.5", wet, reddish brown, well graded	BH-SF-PZ-W-03-4.0-5.4 at 7:55 Cd - 3.7 mg/kg Pb - 16 mg/kg Zn - 832 mg/kg
	Core-3	8 12	58%	8.0'-10.3' GW: gravel with trace coarse sand and fines, rounded to 0.5", brown, wet, well graded	BH-SF-PZ-W-03-8.0-10.3 at 8:00 Cd - 2.7 mg/kg Pb - 30.2 mg/kg Zn - 712 mg/kg Drilling ends at 8:05

Soil Profile



SOIL BORING/PIEZOMETER LOG

CH2MHILL

BORING NO: **BH-SF-W-PZ-04**

PROJECT NO: **364471**

START DATE: 7/21/2008

PROJECT NAME: OU2/OU3 Direct Push Investigation

END DATE: 7/21/2008

LOCATION: Smelterville Flats

LOGGER: Tracy Grant

DRILLING CONTRACTOR: EPA ESAT

DRILLING EQUIPMENT: Geoprobe Model 6000

TOC ELEVATION: 2198.91

BORING DIAMETER: 3.0"

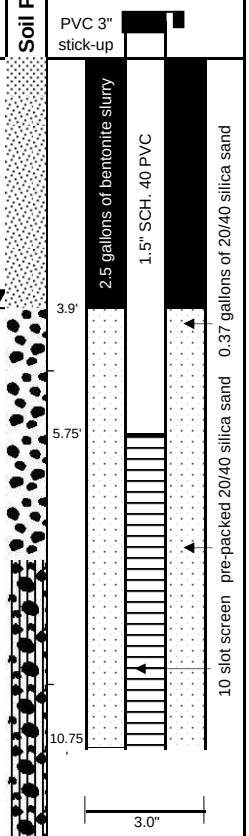
GROUND ELEVATION: 2196.85

TOTAL DEPTH: 10.75'

SWL: ~4.0

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0 4	55%	0.0-0.6' SP: fine sand, brown, dry, poorly graded 0.6'-2.2' SW: medium sand with round to subangular gravel to 0.5-1.0", dark brown to light brown, trace red, well graded	Drilling begins at 15:05 BH-SF-W-PZ-04-0.0-2.2 at 15:10 Cd - 10.8 mg/kg Pb - 2,690 mg/kg Zn - 1,690 mg/kg
	Core-2	4 8	48%	4.0'-5.4' GW: gravel with coarse sand, gravel subangular to 1.0", wet, well graded, uniformly brown trace deposits of bluish clay	BH-SF-W-PZ-04-4.0-5.4 at 15:15 Cd - 43.8 mg/kg Pb - 3,770 mg/kg Zn - 2,360 mg/kg
	Core-3	8 12	50%	8.0'-10.0' GW-GM: gravel with coarse sand, gravel subangular to 0.5", wet, well graded	BH-SF-W-PZ-04-8.0-10.0 at 15:20 Cd - 1.4 mg/kg Pb - 43.6 mg/kg Zn - 260 mg/kg
	Core-4	12 16	70%	12.0'-14.8' GW-GM: same as above	BH-SF-W-PZ-04-12.0-14.8 at 15:25 Cd - 1.7 mg/kg Pb - 22.6 mg/kg Zn - 249 mg/kg

Soil Profile



SOIL BORING/PIEZOMETER LOG

CH2MHILL

BORING NO: **BH-SF-W-PZ-05**

PROJECT NO: **364471**

START DATE: 7/10/2008

PROJECT NAME: OU2/OU3 Direct Push Investigation

END DATE: 7/10/2008

LOCATION: Smelterville Flats

LOGGER: Tracy Grant

DRILLING CONTRACTOR: EPA ESAT

DRILLING EQUIPMENT: Geoprobe Model 6000

TOC ELEVATION: 2197.42

BORING DIAMETER: 3.0"

GROUND ELEVATION: 2195.35

TOTAL DEPTH: 10'

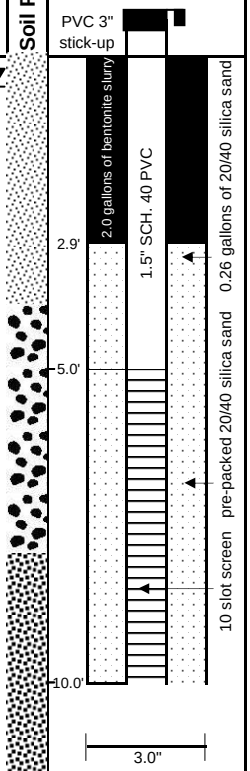
SWL: ~0.5

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0 4	50%	0.0-2.0' SW: fine sand, trace subangular gravel from 0.5-1.0", dark brown, wet at 0.5', well graded	Begin drilling at 13.50 BH-SF-W-PZ-05-0.0-2.0 at 13:55 Cd - 8.4 mg/kg Pb - 3,410 mg/kg Zn - 1,910 mg/kg
	Core-2	4 8	45%	4.0'-5.8' GW: gravel with coarse sand, subangular, wet, well graded	BH-SF-W-PZ-05-4.0-5.9 at 14:00 Cd - 11.4 mg/kg Pb - 2,340 mg/kg Zn - 1,660 mg/kg
	Core-3	8 12	23%	8.0'-8.9' GP: gravel with trace fines, gravel to 2", wet grades with increased coarse sand from 8.5-8.9', poorly graded	BH-SF-W-PZ-05-8.0-8.9 at 14:05 Cd - 1.7 mg/kg Pb - 39.3 mg/kg Zn - 532 mg/kg END DRILL AT 14:10

Depth (ft): 1, 2, 3, 4, **5**, 6, 7, 8, 9, **10**, 11, 12, 13, 14, **15**, 16, 17, 18, 19, **20**, 21, 22, 23, 24

Soil Profile

Well Construction



SOIL BORING/PIEZOMETER LOG

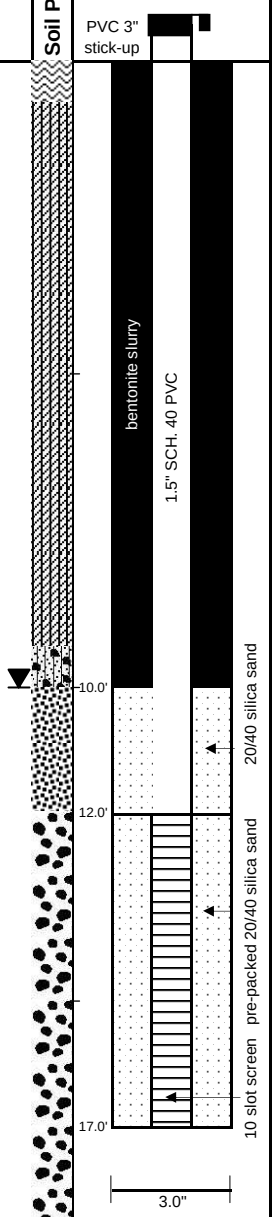
CH2MHILL

BORING NO: **BH-SF-W-PZ-06**
PROJECT NO: **364471**
PROJECT NAME: OU2/OU3 Direct Push Investigation
LOCATION: Between West Page Swamp and I-90
DRILLING CONTRACTOR: EPA ESAT
DRILLING EQUIPMENT: Geoprobe Model 6000
TOC ELEVATION: 2196.23
BORING DIAMETER: 3.0"
GROUND ELEVATION: 2194.12
TOTAL DEPTH: 17'
SWL: ~10.0
START DATE: 7/9/2008
END DATE: 7/9/2008
LOGGER: Tracy Grant

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0 4	73%	0.0-0.6' OL-OH: organic soil with sand, trace silt, dark brown 0.6'-2.9' ML-CL: silt/clay, hard, red, damp to dry, subangular to rounded gravel from 0.5-1.0"	Begin drilling at 09:20 BH-SF-W-PZ-06-0.5-2.9 at 9:25 Cd - 0.56 mg/kg Pb - 55.4 mg/kg Zn - 36.3 mg/kg
	Core-2	4 8	45%	4.0'-5.8' ML-CL: clay/silt with gravel, damp, red, angular gravel to 0.1"	BH-SF-W-PZ-06-4.0-5.8 at 9:30 Cd - 0.59 mg/kg Pb - 89.4 mg/kg Zn - 55.2 mg/kg
	Core-3	8 12	60%	8.0'-8.1' ML-CL: same as above 8.1'-9.4' ML-CL: clay/silt, grey/green, poorly graded, moist to wet 9.4'-10.0' SP-SM: fine sand with silt, trace clay, dark grey, wet, poorly graded 10.0'-10.4' GP: gravel with medium sand, 0.5-1.0", sub-angular gravel from 0.5-1.0", wet, poorly graded	BH-SF-W-PZ-06-8.0-10.4 at 9:35 Cd - 2.8 mg/kg Pb - 40.8 mg/kg Zn - 489 mg/kg
	Core-4	12 16	48%	12.0'-13.9' GW: gravel with medium sand, grades with decreasing sand content, wet, brown, well graded, sub-angular gravel from 0.5-1.0"	BH-SF-W-PZ-06-12.0-13.9 at 9:40 Cd - 3.0 mg/kg Pb - 24 mg/kg Zn - 389 mg/kg
	Core-5	16 20	50%	16.0'-18.0' GW: gravel with coarse sand, subangular gravel from 0.5-1.0", wet	BH-SF-W-PZ-06-16.0-18.0 at 9:45 Cd - 0.56 mg/kg Pb - 33 mg/kg Zn - 223 mg/kg Drilling complete at 10:00

Soil Profile

Well Construction



SOIL BORING/PIEZOMETER LOG

CH2MHILL

BORING NO: **BH-SF-W-PZ-07**

PROJECT NO: **364471**

START DATE: 7/9/2008

PROJECT NAME: OU2/OU3 Direct Push Investigation

END DATE: 7/9/2008

LOCATION: Between West Page Swamp and I-90

LOGGER: Tracy Grant

DRILLING CONTRACTOR: EPA ESAT

DRILLING EQUIPMENT: Geoprobe Model 6000

TOC ELEVATION: 2194.00

BORING DIAMETER: 3.0"

GROUND ELEVATION: 2191.78

TOTAL DEPTH: 10'

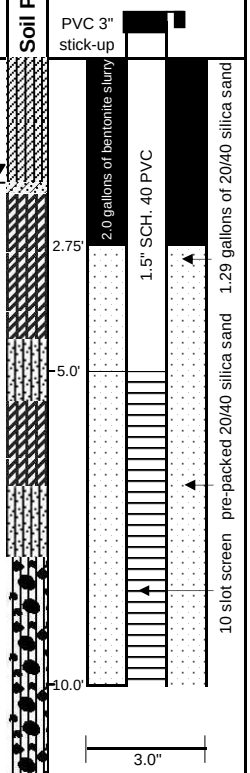
SWL: ~2.0

Depth (ft)	Sample ID	Interval (ft)	Recovery (%)	Soil Description soil name, USCS group symbol, color, moisture, density or consistency, structure, mineralogy, grain size and grading	Comments drilling rate, drilling fluid loss, depth of casing, vapor tests, odor, other
	Core-1	0 4	70%	0.0-2.0' ML-CL: silt/clay with gravel, hard, red, dry, round, 1.0", well sorted 2.0'-2.1' SC: fine sand, gray, damp, trace clay deposits 2.1'-2.8' MH-CH: silt/clay with rounded gravel to 0.2", wet, red to brown, well graded	begin drill at 11:55 BH-SF-W-PZ-07-0.5-2.5 at 11:20 Cd - 0.18 mg/kg Pb - 69.7 mg/kg Zn - 105 mg/kg
	Core-2	4 8	83%	4.0'-4.5' MH-CH: same as above 4.5'-5.5' SM: fine sand with trace silt, black, poorly sorted 5.5'-6.8' MH-CH: silt/clay, black, poorly sorted 6.8'-7.3' SM: fine sand, black, poorly sorted, wet, grades with increased silt and clay	BH-SF-W-PZ-07-4.0-5.5 at 11:25 Cd - 57.7 mg/kg Pb - 5,890 mg/kg Zn - 5,790 mg/kg BH-SF-W-PZ-07-5.5-7.3 at 11:30 Cd - 167 mg/kg Pb - 59,000 mg/kg Zn - 28,500 mg/kg
	Core-3	8 10	35%	8.0'-9.4' GW-GM: gravel with trace coarse sand, 0.5" angular to subangular, wet, gray to brown, well grade	BH-SF-W-PZ-07-8.0-9.4 at 11:35 Cd - 4.4 mg/kg Pb - 104 mg/kg Zn - 2,510 mg/kg drill ends =11:45

Depth (ft): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24

Soil Profile

Well Construction



ATTACHMENT B

Piezometer Development Logs

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160	BH-SF-E-PZ-01	SHEET 1 OF 1

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 DEVELOPMENT PIEZOMETERS LOCATION:
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 12.80 START: END: LOGGER: GM
BOTTOM; 17.63
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
12:34	INITIAL	12.80	251.3	14.47	6.18	225.3	CLEAR
12:36	0.3 GAL	DRY	145.9	14.21	6.18	227.0	CLEAR
12:43	SURGED	14.69	2518.4	18.01	6.30	224.5	BROWN / W SILT
12:44	0.3 GAL	DRY	2518.4	15.01	6.32	221.6	BROWN / W SILT
12:57	SURGED	13.59	2518.2	15.95	6.34	221.4	BROWN / W SILT
13:01	0.25 GAL	DRY	2518.2	14.92	6.30	222.3	BROWN / W SILT
13:18	SURGED	13.09	2518.6	15.44	6.27	222.5	BROWN / W SILT
13:20	0.3 GAL	DRY	2518.6	15.00	6.26	222.4	BROWN / W SILT
13:33	SURGED	14.08	2518.4	15.25	6.36	218.3	BROWN / W SILT
13:37	0.3 GAL	DRY	1895.2	14.55	6.29	220.8	BROWN W/ LITTLE SILT
13:49	SURGED	14.09	2518.4	18.05	6.41	220.4	BROWN W/ SILT
13:52	0.4 GAL	DRY	2518.4	14.72	6.30	221.2	BROWN W/ SILT
14:05	SURGED	13.97	2518.6	16.87	6.38	218.2	BROWN W/ SILT
14:08	0.3 GAL	DRY	2253.8	14.52	6.31	221.6	BROWN W/ LITTLE SILT
14:19	SURGED	14.00	2518.4	17.21	6.37	220.2	BROWN W/ SILT
14:22	0.3 GAL	DRY	2518.4	14.92	6.33	221.5	BROWN W/ LITTLE SILT
14:29	SURGED	14.74	2518.4	16.11	6.40	220.3	BROWN W/ SILT
14:31	0.3 GAL	DRY	2042.9	14.93	6.35	222.5	BROWN
14:41	SURGED	14.12	2518.2	15.32	6.37	221.6	BROWN W/ SILT
14:44	0.2 GAL	DRY	2173.4	15.13	6.32	222.9	BROWN
14:52	SURGED	14.29	2518.2	17.95	6.35	222.0	BROWN W/ SILT
14:55	0.2 GAL	DRY	2127.8	14.85	6.35	222.4	BROWN
15:03	SURGED	14.62	2518.4	16.82	6.38	221.7	BROWN W/ SILT
15:05	0.2 GAL	DRY	2288.8	14.79	6.35	222.9	BROWN

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 8-5-08	BH-SF-E-PZ-3	SHEET 1 OF 2

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer development
LOCATION: NW corner of Yokes + the river
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 16.72' START: 7:35 END: 12:30 LOGGER: JM, CG
Bottom: 20.66'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (~~µmhos/cm~~ µS/cm)	Remarks (color, odor, sheen, sediment, etc.)
8:15	Initial	16.70	1094.2	14.43	7.25	146.2	Brown w/ silt
8:20	2.5 gal	17.51	472.3	14.14	7.25	129.0	Brown tint
8:37	SURGE	~~17.76~~ 16.76	-0.5	17.34	7.39	167.2	Brown w/silt
8:42	2 GAL	16.79	2722.7	14.34	7.30	131.0	Brown w/silt
8:47	3 1/2 GAL	16.82	2424.1	14.30	7.28	130.3	BROWN w/SILT
8:52	5 GAL	16.82	1908.1	14.34	7.28	129.3	BROWN Tint
8:57	6 1/2 GAL	16.77	766.3	14.36	7.29	128.1	BROWN Tint
9:02	7 3/4 GAL	16.77	217.5	14.38	7.28	127.6	Mostly Clear.
9:13	SURGE	16.74	23.9	15.48	7.39	135.9	BROWN w/SILT
9:18	2 GAL	16.76	1600.9	14.40	7.33	126.1	BROWN Tint
9:23	4 GAL	16.76	441.1	14.43	7.29	126.5	BROWN Tint
9:28	6 GAL	16.76	143.6	14.42	7.29	161.5	Mostly Clear
9:40	SURGE	16.74	24.1	17.44	7.41	139.0	BROWN w/SILT
9:47	2 GAL	16.76	1267.5	14.50	7.34	126.3	BROWN Tint
9:52	3 GAL	16.74	401.7	14.58	7.32	126.4	BROWN Tint
9:57	5 GAL	~~16.75~~ ~~14.55~~	1050.2	14.52	7.32	128.0	BROWN Tint
10:03	7 GAL	16.74	79.9	14.61	7.32	127.0	CLEAR
10:16	SURGE	16.74	732.9	21.58	7.44	131.8	BROWN w/SILT
10:21	1 1/2 GAL	16.75	640.6	14.95	7.43	126.3	BROWN TINT
10:28	2 1/2 GAL	16.74	291.5	14.99	7.40	126.5	Mostly clear
10:33	3 1/2 GAL	16.73	150.6	14.90	7.39	127.4	Mostly Clear
10:38	4.5 gal	16.74	75.2	14.97	7.38	127.1	Clear
10:49	SURGE	16.72	394.6	17.74	7.52	135.5	BROWN w/SILT
10:54	1.5 gal	16.74	1888.6	14.97	7.48	126.6	Brown tint
10:59	2 1/2 GAL	16.74	263.1	14.93	7.41	126.9	Mostly CLEAR
11:08	5 GAL	16.74	91.2	15.03	7.42	126.8	Mostly CLEAR
11:14	6 GAL	16.73	158.5	15.03	7.42	127.0	CLEAR

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	SHEET 2 OF 2
4160 8-5-08	BH-SF-E-PZ-3	

PIEZOMETER DEVELOPMENT LOG

PROJECT: 042 Piezometer Development LOCATION: NW Corner Yokes + the River

DEVELOPMENT CONTRACTOR:

DEVELOPMENT METHOD AND EQUIPMENT USED:

START WATER LEVELS: 16.72' START: 7:35 END: 12:30 LOGGER: JKM, CG

MAXIMUM DRAWDOWN DURING PUMPING:

RANGE AND AVERAGE DISCHARGE RATE:

TOTAL QUANTITY OF WATER DISCHARGED:

DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (~~µmhos/cm~~) µS/cm	Remarks (color, odor, sheen, sediment, etc.)
11:25	SURGE	16.73	824.3	18.39	7.56	131.0	BROWN W/SILT
11:29	1 gal	16.74	2783.3	15.21	7.52	127.2	Brown w/silt
11:34	2.5 gal	16.74	292.4	15.10	7.46	127.0	mostly clear
11:39	3½ GAL	16.73	246.7	15.72	7.45	127.6	Mostly Clear
11:44	5 GAL	16.74	74.9	15.29	7.43	127.4	CLEAR
11:56	SURGE	16.73	1979.7	25.45	7.42	136.8	Brown w/silt
12:01	1 gal	16.73	2643.4	16.10	7.46	127.7	Brown tint
12:06	2 gal	16.75	265.6	16.05	7.41	125.3	Brown tint
12:11	3 GAL	16.73	250.8	15.72	7.38	127.5	BROWN TINT
12:17	3.5 gal	16.74	166.5	16.21	7.35	127.4	mostly clear
12:23	4½ GAL	16.74	230.3	15.76	7.37	127.3	CLEAR
12:28	5½ GAL	16.74	40.7	15.74	7.37	126.9	CLEAR

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 8-20-08	BHSF-E-PZ-~~06~~ 04	SHEET 1 OF 1

PIEZOMETER DEVELOPMENT LOG

PROJECT: 042 Piezometer Development
LOCATION: W. end of N. levee road b/w river + I-90 exit, across from Yokes
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 16.15' START: 6:37 END: 11:00 LOGGER: CG
Bottom: 19.80'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(umhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
7:30	Initial	16.13	275.8	15.21	6.53	184.3	Brown
7:35	2 gal	16.14	23.3	14.26	6.55	178.7	clear
7:50	SURGE	16.17	82.3	14.48	6.61	189.1	Brown w/silt
7:55	3 gal	16.17	987.1	14.33	6.63	179.4	Brown
8:00	5.5 gal	16.18	139.5	14.32	6.65	178.5	mostly clear
8:13	SURGE	16.18	168	14.53	6.64	191.5	Brown w/silt
8:18	4 gal	16.22	106.7	14.34	6.62	179.9	Brown tint
8:23	7 gal	16.22	47.5	14.33	6.63	179.8	Clear
8:34	SURGE	16.18	435.2	14.64	6.71	183.5	Brown w/silt
8:39	3.5 gal	16.20	244.7	14.36	6.64	180.0	Brown tint
8:44	6.5 gal	16.19	34.5	14.35	6.63	180.1	Clear
8:55	SURGE	16.18	1080.6	14.72	6.64	195.9	Brown w/silt
9:00	3.5 gal	16.24	410.2	14.42	6.60	181.8	Brown tint
9:05	7 gal	16.21	99.0	14.38	6.60	180.4	mostly clear
9:10	10 gal	16.21	33.0	14.37	6.61	180.4	clear
9:23	SURGE	16.18	223.8	14.80	6.61	192.7	Brown w/silt
9:28	4 gal.	16.21	139.7	14.42	6.59	181.2	mostly clear
9:33	3.5 gal	16.20	157.4	14.38	6.62	180.0	mostly clear
9:38	10.5 gal	16.19	49.6	14.37	6.61	179.8	clear
10:05	SURGE	16.17	1768.1	14.93	6.72	187.4	Brown w/silt
10:10	3.5 gal	16.22	62.5	14.44	6.61	180.6	clear
10:15	6 gal	16.22	25.2	14.43	6.61	180.5	clear
10:26	SURGE	16.18	1187.2	14.91	6.69	186.9	Brown w/silt
10:31	3 gal	16.22	172.5	14.45	6.61	180.5	mostly clear
10:36	6 gal	16.22	35.4	14.43	6.61	180.0	Clear

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160	BH-SF-E-PZ-5	SHEET 1 OF 1

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 PIEZOMETER DEVEL. LOCATION:
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 14.59' START: 10:12 END: 12:31 LOGGER: GM
BOTTOM: 17.63'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
10:32	INITIAL	14.59	159.8	12.46	6.13	160.6	CLEAR
10:33	0.8 GAL	DRY	598.9	12.19	5.95	166.8	CLEAR
10:38	SURGED	14.60	2518.2	12.60	5.94	157.6	BROWN W/SILT
10:39	0.4 GAL	DRY	2320.3	12.36	5.90	169.3	BROWN
10:43	SURGED	14.59	2518.5	13.35	6.00	161.7	BROWN W/SILT
10:45	0.7 GAL	DRY	2518.5	12.38	5.99	163.7	BROWN
10:49	1 ~~0.3~~ GAL	DRY	851.1	12.10	5.93	169.8	MILKY
10:55	SURGED	14.59	2518.2	12.80	6.04	158.6	BROWN W/SILT
10:57	0.7 GAL	14.86	1762.1	12.47	6.02	156.1	BROWN
11:00	1.5 GAL	14.92	222.7	12.18	5.91	163.5	CLEAR
11:03	2.8 GAL	14.95	51.5	12.15	5.89	159.5	CLEAR
11:05	3.3 GAL	14.95	29.8	12.14	5.90	157.8	CLEAR
11:10	SURGED	14.59	2518.3	13.49	5.96	160.9	BROWN W/SILT
11:15	1.7 GAL	14.78	292.0	12.25	5.88	159.7	CLEAR/MILKY
11:20	3.1 GAL	14.78	31.5	12.22	5.91	155.7	CLEAR
11:25	SURGED	14.60	2518.3	13.17	5.95	150.6	BROWN W/SILT
11:30	1.7 GAL	14.82	276.5	12.22	5.85	154.8	CLEAR
11:35	3 GAL	14.83	27.6	12.21	5.86	150.8	CLEAR
11:40	SURGED	14.60	2434.1	14.49	5.92	151.3	BROWN W/SILT
11:43	1.2 GAL	DRY	842.7	13.02	5.90	152.8	MILKY
11:49	SURGED	14.60	2518.2	13.67	5.88	151.9	BROWN W/SILT
11:52	0.8 GAL	DRY	2131.4	13.06	5.78	156.1	LIGHT BROWN
11:58	SURGED	14.60	2518.2	14.01	5.90	150.5	BROWN W/SILT
12:03	1.1 GAL	14.78	227.4	12.52	5.89	152.7	CLEAR
12:08	2.6 GAL	14.78	33.4	12.22	6.88	151.3	CLEAR

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 8/19/08	BH·SF·E·PZ·06	SHEET 1 OF 1

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development
LOCATION: On N. levee road btwn river + I-90, across from Silver Mt. resort
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 17.52' START: 13:09 END: 15:48 LOGGER: CG
Bottom: 21.75'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
13:36	Initial	17.53'	2518.2	17.98	6.68	~~16.5~~ 165.2	Brown w/silt
13:41	2 gal	17.59	875.5	14.67	6.46	159.8	Brown tint
13:46	4 gal	17.57	118.1	14.66	6.42	159.6	mostly clear
14:03	Surge	17.53	0.9	21.29	6.47	162.6	Brown w/silt
14:08	1.5 gal	17.55	996.6	14.79	6.45	159.4	Brown tint
14:13	3 gal	17.55	350.1	14.68	6.45	159.3	Brown tint
14:18	4 gal	17.56	70.4	14.79	6.43	159.2	mostly clear
14:38	SURGE	17.52	2518.2	21.93	6.56	150.0	Brown w/silt
14:43	1 gal	17.54	78.5	15.27	6.51	159.4	mostly clear
14:48	2 gal	17.53	140.8	15.17	6.44	159.1	clear
14:53	3 gal	17.54	60.3	15.41	6.43	159.1	clear
15:07	SURGE	17.51	2090.7	14.98	6.61	159.5	Brown w/silt
15:12	3 gal	17.57	48.7	14.42	6.46	159.2	clear
15:17	5 gal	17.57	226.9	14.46	6.52	158.9	clear
15:30	SURGE	17.51	2518.2	19.53	6.50	160.1	Brown w/silt
15:35	2 gal	17.57	181.7	14.26	6.46	159.2	mostly clear
15:41	4 gal	17.56	62.3	14.34	6.48	159.0	clear
15:45	6 gal	17.57	11.6	14.37	6.45	158.0	clear

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 8-11-08	BH-SF-E-PZ-8	SHEET 1 OF 3

PIEZOMETER DEVELOPMENT LOG

PROJECT OU2 Piez. Development
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 16.24' START: 11:30 END: 12:32 LOGGER: CG
8/19/08
Bottom: 23.76'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

LOCATION: W. end of N. dyke road btwn. river + I-90, across from highschool

µS/cm

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~	Remarks (color, odor, sheen, sediment, etc.)
11:36	Initial	16.21'	2518.1	20.01	6.58	205.2	Brown w/silt, thick
11:41	1 gal.	16.34'	324.5	15.61	6.83	160.7	Brown tint
11:57	SURGE	16.37	2518.1	20.53	6.62	162.6	Brown w/silt, thick
12:03	1.5 gal	16.70	1273.8	16.11	6.62	170.3	Brown w/silt
12:08	4 gal	16.85	1434.8	15.89	6.71	162.6	Brown tint
12:13	6 gal	16.69	612.9	15.99	6.93	160.6	Brown tint
12:18	8 gal	16.24	280.6	15.87	6.42	161.9	
12:50	SURGE	16.34	2518.1	20.06	6.53	166.4	Brown w/silt, thick
12:55	1.5 gal	16.50	913.2	16.19	6.47	201.6	Brown w/silt, thick
13:00	3 gal	16.45	2179.3	16.08	6.49	192.6	Brown w/silt
13:05	4 gal	16.37	836.2	16.23	6.35	179.1	Brown tint
13:10	5.5 gal	16.29	505.4	16.34	6.32	171.3	Brown tint
13:15	7 gal	16.28	331.6	16.03	6.29	167.8	Brown tint
13:20	8 gal	16.27	354.3	15.98	6.27	168.8	mostly clear
13:35	SURGE	16.31	2518.4	23.89	6.54	163.2	Brown w/silt, thick
13:40	1 gal	16.30	61.8	17.47	6.41	191.1	Brown w/silt, thick
13:45	1.5 gal	16.26	2518.2	16.78	6.35	179.7	Brown w/silt, thick
13:50	3 gal	16.28	2235.7	15.91	6.36	173.8	Brown w/silt
13:55	4 gal	16.27	373.4	15.85	6.34	166.2	Brown tint
14:00	5.5 gal	16.27	~~329.8~~ 529.8	15.53	6.28	166.3	Brown tint
14:05	7 gal	16.27	138.8	15.85	6.27	165.5	Brown tint
14:16	SURGE	16.28	~~2518.4~~	20.89	6.49	162.0	Brown w/silt
14:21	1.5 gal	16.26	2518.4	16.29	6.33	169.9	Brown w/silt
14:27	3 gal	16.25	141.3	16.21	6.31	167.6	Brown w/silt

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 8-11-08	BH-SF-E-PZ-8	SHEET 12 OF 13

PIEZOMETER DEVELOPMENT LOG

PROJECT OU2 Piez. Development
LOCATION: W. end of N Levee road btwn. river + I-90, across from high school
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 16.24' START: 11:30' END: 12:32 8/19/08 LOGGER: CG
Bottom: 23.76'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
14:32	4 gal	16.26	1526	16.30	6.28	164.6	Brown
14:38	5.5 gal	16.24	412.6	16.14	6.28	165.0	Brown
14:43	6.5 gal	16.25	460.6	16.30	6.29	161.1	Brown
14:48	7.5 gal	16.23	481.3	16.25	6.26	160.7	Brown tint
15:07 CG 8/19	SURGE	16.26	2518.2	20.40	6.51	161.2	Brown w/ silt
15:12	1.5 gal	16.25	2518.4	16.14	6.40	166.7	Brown w/ silt
15:17	3 gal	16.24	1825.8	16.31	6.33	165.6	Brown
15:22	4 gal	16.26	2518.4	15.73	6.30	164.5	Brown w/ silt
15:28	6 gal	16.24	288.8	16.16	6.33	159.7	Brown tint
15:41	SURGE	16.26	2019.5	21.99	6.50	158.7	Brown w/silt
15:46	1.5 gal	16.26	2518.2	16.32	6.29	166.1	Brown w/silt
15:52	2 gal	16.28	2518.4	15.58	6.30	164.3	Brown w/silt
15:57	4 gal	16.24	820.4	15.71	6.29	162.0	Brown
16:03	6 gal	16.21	95.5	15.51	6.25	161.7	Brown tint
16:16	SURGE	16.23	2518.4	16.36	6.45	157.5	Brown w/silt
16:21	2.5 gal	16.27	2518.2	15.50	6.32	164.4	Brown w/silt
16:26	4 gal	16.23	920.7	15.92	6.30	164.0	Brown
16:31	5 gal	16.23	1178.3	16.61	6.30	164.9	Brown
16:36	6 gal	16.22	390.4	16.15	6.28	159.7	Brown tint
16:41	7 gal	16.23	844.7	16.04	6.25	160.6	Brown tint

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER
4160 8/19/08	BH-SF-E-P2-8 Continued SHEET 1/3 OF 1/3

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piez. Development
LOCATION: W. end of N. levee road btwn river + I-90, across from high school
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 16.24' START: 8/11/08 11:30 END: 8/19/08 12:32 LOGGER: CG
Bottom: 23.76'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (~~µmhos/cm~~ µS/cm)	Remarks (color, odor, sheen, sediment, etc.)
9:41	Initial	16.33'	99.6	15.51	6.32	173.2	Clear
9:46	2.5 gal	16.39	251	15.78	6.38	159.6	Clear
10:00	SURGE	16.36	2389.4	16.79	6.52	160.9	Brown w/silt
10:05	3 gal	16.39	1171.9	15.84	6.42	161.6	Brown
10:10	5.5 gal	16.39	1600.6	16.40	6.46	159.6	Brown tint
10:15	8 gal	16.38	209.2	15.64	6.33	158.9	mostly clear
10:20	10 gal	16.38	29.3	15.85	6.39	158.7	clear
10:38	SURGE	16.35	2051.4	16.56	6.49	157.6	Brown w/silt
10:43	2 gal	16.37	1418.0	15.94	6.41	159.3	Brown tint
10:49	4 gal	16.37	291.9	15.95	6.41	158.7	Brown tint
10:54	5.5 gal	16.37	117.1	16.14	6.44	157.9	Brown tint
10:59	7 gal	16.38	62.2	16.02	6.44	158.2	mostly clear
11:04	8.5 gal	16.36	33.1	15.89	6.38	158.1	clear
11:19	SURGE	16.34	2518.5	16.09	6.45	156.1	Brown w/silt
11:24	2.5 gal	16.37	1518.4	15.86	6.41	158.2	Brown
11:30	4 gal	16.36	325.5	16.22	6.43	158.5	Brown tint
11:35	6 gal	16.36	114.9	16.01	6.43	157.1	mostly clear
11:40	7 gal	16.36	61.7	16.02	6.40	157.0	mostly clear
11:45	8.5 gal	16.36	43.4	16.04	6.43	159.8	clear
12:06	SURGE	16.34	2518.3	15.88	6.59	155.2	Brown w/silt
12:12	4 gal	16.36	257.1	15.88	6.44	155.7	Brown tint
12:17	7 gal	16.36	61.8	15.73	6.35	156.9	Clear
12:22	9 gal	16.36	32.4	15.62	6.33	154.6	Clear

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160	BH-SF-E-PZ-09	SHEET 1 OF 1

PIEZOMETER DEVELOPMENT LOG

PROJECT: OUZ PIEZOMETER DEVELOP. LOCATION:
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 12.28' START 12:40 END: 15:07 LOGGER: GM
BOTTOM: 17.22'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED
DISPOSITION OF DISCHARGE WATER:

~~µ/~~ µS/cm

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~	Remarks (color, odor, sheen, sediment, etc.)
13:05	INITIAL	12.23	327.6	13.90	5.99	354.7	MILKY
13:08	1 GAL	12.26	39.5	13.21	5.86	351.5	CLEAR
13:13	SURGED	12.29	2518.4	15.36	5.68	355.2	BROWN W/SILT (DARK)
13:18	2 GAL	12.33	257.7	13.49	5.65	397.1	MILKY
13:21	3.6 GAL	12.33	41.5	13.42	5.64	393.1	CLEAR
13:26	SURGED	12.28	2518.2	14.73	5.66	352.0	BROWN W/SILT (DARK)
13:31	2 GAL	12.32	509.9	13.44	5.64	382.8	MILKY
13:36	4 GAL	12.32	50.7	13.38	5.61	384.2	CLEAR
13:41	SURGED	12.28	2518.2	13.78	5.63	380.5	BROWN W/SILT (DARK
13:46	2 GAL	12.32	391.9	13.51	5.64	385.1	MILKY
13:51	4.5 GAL	12.32	36.2	13.43	5.62	384.9	CLEAR
13:57	SURGED	12.28	2518.4	14.91	5.65	346.7	BROWN W/SILT (DARK)
14:02	2 GAL	12.30	406.2	13.40	5.62	367.6	LIGHT BROWN
14:07	4.6 GAL	12.31	144.2	13.32	5.61	372.6	CLEAR
14:12	7.5 GAL	12.31	27.3	13.28	5.60	367.9	CLEAR
14:20	SURGED	12.28	2518.2	15.29	5.67	346.9	BROWN W/SILT (DARK)
14:25	1.9 GAL	12.29	208.9	13.33	5.64	364.0	MILKY
14:30	4 GAL	12.29	37.1	13.20	5.61	364.8	CLEAR
14:35	SURGED	12.28	2518.2	16.30	5.59	359.0	BROWN W/SILT (DARK)
14:40	2.5 GAL	12.30	410.4	13.32	5.62	367.4	MILKY
14:45	4.6 GAL	12.30	45.4	13.34	5.61	368.7	CLEAR

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160	BH-SF-E-PZ-10	SHEET 1 OF 1

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 PIEZOMETER DEVEL
LOCATION:
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 16.58' START: 8:29 END: 9:51 LOGGER: GM
BOTTOM: 19.43'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
8:58	INITIAL	16.58	920.7	11.24	5.74	421.7	CLEAR/LIGHT BROWN
9:00	2 GAL	16.63	55.2	10.86	5.47	408.5	CLEAR
9:07	SURGED	16.59	2518.4	11.51	5.55	485.3	BROWN W/SILT
9:12	2.8 GAL	16.68	80.7	10.95	5.46	368.8	CLEAR
9:14	3.5 GAL	16.70	81.0	10.93	5.49	364.8	CLEAR
9:19	SURGED	16.60	2353.8	11.77	5.53	436.1	BROWN W/SILT
9:24	2.7 GAL	16.65	107.2	11.01	5.38	366.1	CLEAR
9:26	3.5 GAL	16.66	34.7	10.97	5.38	361.5	CLEAR
9:31	SURGED	16.59	2467.0	11.61	5.48	407.2	BROWN W/SILT
9:36	2 GAL	16.69	105.9	11.05	5.49	363.5	CLEAR
9:38	3.5 GAL	16.69	28.9	11.04	5.39	359.4	CLEAR

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160	BH-SF-E-PZ-11	SHEET 1 OF 3

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 DEVELOPMENT PIEZOMETERS LOCATION:
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 9.29' START: 8:11 END: 15:27 LOGGER: GM
BOTTOM: 15.74'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
9:25	INITIAL	9.29	231.9	12.70	6.60	255.3	CLEAR
9:27	0.3 GAL	14.31	43.5	13.98	6.19	247.3	CLEAR
9:34	SURGED	14.71	2198.7	13.71	5.95	270.0	BROWN W/SILT
9:38	0.7 GAL	DRY	2518.6	13.16	5.85	214.2	LIGHT BROWN
9:45	SURGED	11.18	2518.4	13.53	6.04	271.3	BROWN W/SILT
9:48	0.8 GAL	DRY	1982.2	13.22	5.89	272.5	LIGHT BROWN
9:57	SURGED	11.22	2139.8	13.70	6.15	268.7	BROWN W/SILT
10:00	0.6 GAL	DRY	2098.7	13.51	5.90	268.1	LIGHT BROWN
10:16	SURGED	10.87	2175.8	14.24	6.17	271.3	BROWN W/SILT
10:19	0.6 GAL	DRY	1820.6	13.73	6.02	276.4	LIGHT BROWN
10:31	SURGED	10.22	2518.2	14.19	6.09	268.5	BROWN W/SILT
10:36	0.5 GAL	15.01	1069.2	13.97	5.86	279.9	LIGHT BROWN
10:45	SURGED	11.58	2518.2	15.05	5.91	269.0	BROWN W/SILT
10:50	0.8 GAL	DRY	1591.3	13.94	5.82	267.0	LIGHT BROWN
11:00	SURGED	10.87	2518.2	14.28	5.95	266.4	BROWN W/SILT
11:05	0.7 GAL	15.41	2263.9	14.31	5.82	272.2	LIGHT BROWN
11:08	0.2 GAL	DRY	1421.8	14.03	5.86	265.8	MILKY
11:16	SURGED	11.38	2518.4	14.33	6.02	258.9	BROWN W/SILT
11:18	0.5 GAL	DRY	2109.9	14.33	5.97	261.6	LIGHT BROWN
11:29	SURGED	11.05	2518.2	14.75	6.03	261.8	BROWN W/SILT
11:33	0.5 GAL	DRY	2090.7	14.32	5.96	263.7	LIGHT BROWN
11:43	SURGED	11.28	2455.6	15.22	6.36	260.6	BROWN W/SILT
11:46	0.5 GAL	DRY	2173.4	14.64	6.06	265.9	LIGHT BROWN
11:54	SURGED	10.05	2518.4	15.78	6.20	262.8	BROWN W/SILT
11:58	0.7 GAL	DRY	1206.2	14.39	6.00	264.7	LIGHT BROWN
12:10	SURGED	10.49	2518.4	15.53	6.06	262.4	BROWN W/SILT
12:15	1 GAL	DRY	1062.8	13.98	5.93	259.7	MILKY

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160	BH-SF-E-PZ-11	SHEET 2 OF 3

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 PIEZOMETER DEVELOPMENT LOCATION:
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 9.29' START: 8:11 END: 15:27 LOGGER: GM
BOTTOM: 15.74'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
12:25	SURGED	11.17	2518.2	14.99	6.06	268.6	BROWN W/SILT
12:30	0.8 GAL	15.08	2016.4	14.32	5.93	256.4	LIGHT BROWN
12:32	1 GAL	DRY	1624.3	14.06	6.02	259.7	MILKY
12:37	SURGED	11.98	2518.4	16.97	6.27	252.5	BROWN W/SILT
12:41	1 GAL	DRY	2055.1	14.07	6.01	254.8	LIGHT BROWN
12:47	SURGED	11.92	2518.2	18.72	5.99	256.3	BROWN W/SILT
12:52	1 GAL	DRY	982.1	14.87	5.99	260.6	MILKY
13:00	SURGED	11.42	2293.8	16.06	6.19	251.9	BROWN/W SILT
13:03	0.6 GAL	DRY	2518.4	15.11	6.06	251.7	LIGHT BROWN
13:07	SURGED	11.83	2312.6	16.70	6.32	248.9	BROWN W/SILT
13:09	0.6 GAL	DRY	1999.6	14.97	6.04	260.9	LIGHT BROWN
13:15	SURGED	11:88	2518.4	18.03	6.22	256.0	BROWN W/SILT
13:19	0.8 GAL	DRY	821.1	14.23	6.08	252.2	MILKY
13:24	SURGED	11.72	2518.4	18.66	6.10	298.9	BROWN W/SILT
13:29	0.8 GAL	15.07	323.7	15.39	6.00	255.9	CLEAR
13:31	1 GAL	DRY	291.2	14.63	5.82	253.0	CLEAR
13:36	SURGED	11.20	2518.4	17.21	6.08	249.7	BROWN W/SILT
13:41	0.8 GAL	15.20	243.4	14.79	5.99	257.1	CLEAR
13:43	1.2 GAL	DRY	207.1	14.23	5.87	253.8	CLEAR
13:49	SURGED	11.00	2518.4	16.49	6.11	250.4	BROWN W/LITTLE SILT
13:54	0.7 GAL	14.92	400.1	15.08	6.00	261.3	MILKY/CLEAR
13:57	1 GAL	14.06	262.8	14.43	5.89	253.6	CLEAR
14:05	SURGED	10.82	2444.5	17.24	5.91	252.4	BROWN/W LITTLE SILT
14:10	0.7 GAL	14.91	337.1	15.11	5.85	260.9	CLEAR
14:14	1.4 GAL	14.54	184.2	14.79	5.82	252.1	CLEAR

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160	BH-SF-E-PZ-11	SHEET 3 OF 3

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 PIEZOMETER DEVELOPMENT LOCATION:
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 9.29' START: 8:11 END: 15:27 LOGGER: GM
BOTTOM: 15.74'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (~~µmhos/cm~~) µS/cm	Remarks (color, odor, sheen, sediment, etc.)
14:21	SURGED	11.08	2518.2	17.20	5.89	251.0	BROWN W/LITTLE SILT
14:25	0.7 GAL	DRY	458.7	14.00	5.89	253.6	CLEAR
14:31	SURGED	10.77	2518.2	16.09	6.08	250.3	BROWN W/LITTLE SILT
14:36	0.9 GAL	15.22	259.0	14.51	5.90	261.6	CLEAR
14:39	1.5 GAL	DRY	198.5	14.48	5.82	255.6	CLEAR
14:45	SURGED	10.90	2217.8	17.46	5.92	254.0	BROWN
14:50	0.9 GAL	14.26	409.2	15.05	5.85	255.9	CLEAR
14:55	1.2 GAL	15.01	76.7	14.63	5.76	256.7	CLEAR
14:59	1.6 GAL	15.07	51.6	14.82	5.81	252.7	CLEAR
15:00	1.7 GAL	15.08	28.5	14.79	5.83	252.8	CLEAR

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 9/3/08	BH-SF-E-PZ-12	SHEET 1 OF 1

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 PIEZOMETER DEVELOPMENT
LOCATION: ON BIKE PATH, SE OF WASTE TREAT. PLANT. S. OF WELL E-0301-U
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 10.58 START: 8:07 END: 11:42 LOGGER: GM
BOTTOM 15.78'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (~~µmhos/cm~~ µS/cm)	Remarks (color, odor, sheen, sediment, etc.)
8:50	INITIAL	10.58	716.7	14.42	5.89	485.9	BROWN
8:58	3 GAL	10.58	38.5	13.74	5.84	485.5	CLEAR
9:07	SURGE	10.60	418.5	14.80	5.84	522.6	BROWN/W SILT
9:12	2 GAL	10.60	379.4	14.32	5.86	512.8	LIGHT BROWN
9:15	3 GAL	10.59	62.3	14.23	5.86	511.2	CLEAR
9:23	SURGE	10.61	1627.8	14.60	5.89	488.0	BROWN W/SILT
9:28	2 GAL	10.60	649.2	14.24	5.87	514.1	LIGHT BROWN
9:31	3.5 GAL	10.61	87.1	14.20	5.86	513.5	CLEAR
9:38	SURGE	10.61	478.3	15.04	5.91	486.8	BROWN W/SILT
9:43	1.5 GAL	10.61	737.1	14.14	5.87	501.5	LIGHT BROWN
9:46	3 GAL	10.61	70.9	14.18	5.87	503.3	CLEAR
9:53	SURGED	10.60	380.7	14.98	5.93	484.9	BROWN W/SILT
9:58	2 GAL	10.61	632.0	14.46	5.87	497.0	LIGHT BROWN
10:02	3 GAL	10.61	66.6	14.17	5.86	500.7	CLEAR
10:10	SURGED	10.59	1321.7	15.04	5.92	487.3	BROWN ~~W/SILT~~ W/LITTLE SILT
10:15	2 GAL	10.60	261.1	14.12	5.87	492.4	MOSTLY CLEAR
10:17	2.5 GAL	10.59	70.7	14.13	5.87	493.6	CLEAR
10:30	SURGED	10.59	2518.5	14.68	5.88	484.8	BROWN ~~W/SILT~~ W/LITTLE SILT
10:35	2 GAL	10.60	91.4	14.14	5.87	489.0	CLEAR
10:36	2.5 GAL	10.60	38.6	14.17	5.87	491.2	CLEAR
10:44	SURGED	10.59	2409.1	14.70	5.89	470.1	BROWN ~~W/SILT~~ W/LITTLE SILT
10:49	1.5 GAL	10.60	234.0	14.12	5.88	485.5	CLEAR
10:53	3 GAL	10.60	41.3	14.12	5.87	487.7	CLEAR
11:00	SURGED	10.60	2439.2	14.74	5.91	478.4	BROWN
11:05	1.5 GAL	10.60	232.2	14.16	5.87	483.7	CLEAR
11:09	2.5 GAL	10.60	48.3	14.21	5.86	485.7	CLEAR
11:17	SURGED	10.60	1991.8	14.79	5.90	477.5	BROWN
11:22	1.5 GAL	10.60	194.1	14.14	5.88	482.2	CLEAR
11:26	2.5 GAL	10.60	35.7	14.17	5.87	483.3	CLEAR

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER
4160	BH-SF-E-PZ-13 SHEET 1 OF 1

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 PIEZOMETER DEVELOPMENT LOCATION:
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 25.65' START 12:45 END: 16:46 LOGGER: GM
BOTTOM: 34.12'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (~~µmhos/cm~~ µS/cm)	Remarks (color, odor, sheen, sediment, etc.)
14:30	INITIAL	25.65	2518.4	20.91	6.24	1048	BROWN
14:35	0.2 GAL	26.75	185.2	17.40	6.19	1049	GAL ~~[illegible]~~ BROWN
14:40	0.3 GAL	26.75	605.4	16.75	6.16	1054	BROWN
14:45	0.4 GAL	26.80	1595.0	16.81	6.17	1071	BROWN
14:50	0.5 GAL	26.80	1677.2	16.66	6.14	1077	BROWN LIGHT
14:55	1 ~~0.8~~ GAL	26.80	1286.3	16.93	6.17	1079	MILKY
15:03	SURGED	25.74	2518.2	17.04	6.18	1048	BROWN
15:08	0.1 GAL	25.80	2518.2	17.53	6.04	1051	BROWN
15:13	0.3 GAL	28.13	2518.2	15.41	6.17	1052	BROWN
15:18	0.5 GAL	26.80	2518.2	15.82	6.09	1044	LIGHT BROWN
15:23	0.8 GAL	27.42	2518.4	16.57	6.18	1073	LIGHT BROWN
15:28	1.2 GAL	28.02	1475.1	16.22	6.15	1074	LIGHT BROWN
15:33	1.5 GAL	28.62	1003.9	16.52	6.10	1078	MILKY
15:38	SURGED	26.42	2518.4	17.54	6.10	1068	BROWN
15:43	0.3 GAL	27.92	2518.4	13.28	6.07	1064	~~LIGHT~~ BROWN
15:48	0.5 GAL	27.82	2518.4	14.28	6.08	1059	BROWN
15:53	0.7 GAL	28.11	1922.2	13.59	6.18	1078	LIGHT BROWN
15:58	0.8 GAL	28.20	1017.8	13.97	6.15	1066	MILKY
16:03	1 GAL	27.70	831.7	14.21	6.14	1084	MILKY
16:08	SURGED	26.37	2518.4	12.96	6.13	1060	BROWN
16:13	0.2 GAL	27.87	2518.4	14.31	6.11	1051	BROWN
16:18	0.4 GAL	28.32	1107.3	13.89	6.09	1069	LIGHT BROWN
16:23	0.8 GAL	28.07	703.1	12.97	6.07	1077	MILKY

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 07-07-08	BH-SF-E-PZ-14	SHEET 1 OF 1

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU 2 Piezometer development
LOCATION: S. Bunker Cr. across from BH-SF-E-0320-U
DEVELOPMENT CONTRACTOR: TerraGraphics
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 10.03' TOC START: 13:05 END: LOGGER:
bottom = 19.89'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

10.3

uS/cm

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~	Remarks (color, odor, sheen, sediment, etc.)
13:05	Int	10.3	63.7	21.09	5.63	1484	clear
13:21	1	10.68	370.0	12.77	5.70	1381	muddy
13:30	2 1/2	10.3	776.1	11.44	5.66	1426	slightly brown
13:36	6		222.2	11.30	5.63	1413	
13:46	12	10.29	76.4	11.55	5.59	1433	clear
* 14:10	18	11.30	15.6	11.16	5.55	1423	clear
14:15	20	10.94	30.5	11.31	5.54	1417	clear
Speed 4 * 14:22	27	11.52	12.6	11.10	5.53	1422	clear

* Cut speed on pump from 4 to 2

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 07-08-08	BH·SF·E·PZ·14	SHEET 1 OF 2

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development LOCATION: S. Bunker Creek across from BH. SF. E. 0320.U
DEVELOPMENT CONTRACTOR: TG
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 10.35 START: 9:48 END: 15:00 LOGGER:
bottom 19.89
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (~~µmhos/cm~~) µS/cm	Remarks (color, odor, sheen, sediment, etc.)
9:48	Int Surged	10.83	567.7	14.03	5.67	1.629	Clear
10:06	4 gal		196.9	11.49	5.41	5.555	Muddy + Murkey Brown
10:15	8 gal	11.68	56.0	11.52	4.20	4.5484	clear
10:21	10 gal	~~11.49~~	~~896.7~~ 33	11.49	4.38	4.778	clear
10:29	12 gal- intake & out	turned pump off to check put Hose hooked up wrong			Troll –		Clear - & Surged
10:46	2 gal	10.64	321.3	11.43	5.59	1462	brown + murkey
10:53	5 gal	10.60	189.2	11.30	5.55	1465	Slighty brown
10:58	7 gal	10.60	123.0	11.38	5.56	1469	Clear
11:02	10 gal		76.2	11:32	5.55	1474	clear
11:07	13 gal	10.60	48.5	11.34	5.54	1469	clear
11:16	Surged on the ~~#13~~ bottom	11.13	1271.11	12:09	5.65	1321	muddy + murkey Med. Brown
11:20	2 gal	11.07	446.1	11.52	5.58	1345	Slightly Brown
11:26	5 gal	11.20	323.6	11.49	5.70	1341	" "
11:39	9 gal	11.20	127.1	11.47	5.65	1346	" "
11:40	11 gal	11.~~20~~ 18	47.2	11.46	5.68	1354	almost clear
11:50	Surged on bottom	10.75	732.4	11.96	5.63	1327	brown + murkey
11:55	3 gal	10.95	~~1160~~ 387.3	11.50	5.60	1369	Light Brown
12:00	5 gal	10.93	267.4	11.49	5.63	1372	slightly Brown
12:10	10 gal	10.93	100.1	11.46	5.63	1361	" "
12:14	12 gal	10.93	52.6	11.44	5.61	1359	Clear
12:16	13 gal	10.93	42.6	11.46	5.65	1358	clear
	Surged						brown + murkey
12:24	Bottom	10.39	928.3	12.26	5.64	1368	
12:29	2 gal	10.44	433.9	11.48	5.60	1449	slightly Brown

Rain & Diane stopped by

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 07-08-08	BH-SF-E-PZ-14	SHEET 2 OF 2

PIEZOMETER DEVELOPMENT LOG

PROJECT:
LOCATION:
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: START: END: LOGGER:

MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Cont.

µS/cm

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (~~µmhos/cm~~)	Remarks (color, odor, sheen, sediment, etc.)
12:34	5gal	10.44	247.5	11.52	5.56	1451	Slightly Brown
12:40	9 gal	10.44	110.3	11.48	5.56	1450	" "
12:50	13gal	10.46	46.9	11.49	5.56	1444	Clear
13:00	Surged Bottom	10.45	392.0	12.07	5.65	1336	Murkey But starting to clear
13:06	3gal	10.55	395.6	11.55	5.57	1342	Slightly Brown
13:10	5gal	10.55	251.6	11.60	5.58	1354	" "
13:20	10 gal	10.55	959	11.56	5.55	1366	" "
13:27	13gal	10.55	50.8	11.60	5.55	1368	clear
13:35	Surged Bottom	10.39	537.5	12.40	5.61	1323	murkey Brown
13:41	3gal	10.48	262.6	11.65	5.55	1423	Slightly Brown
13:45	5gal	10.48	164.2	11.62	5.54	1422	" "
13:55	10 gal	10.48	49.4	11.53	5.54	1429	clear
14:05	Surged Bottom	10.40	258.4	12.41	5.60	1336	murkey Brown
14:11	4 gal	10.48	235.4	11.64	5.55	1411	Slightly Brown
14:24	10 gal	10.48	60.8	11.55	5.56	1426	clear
14:28	12gal	10.48	44.4	11.54	5.54	1423	clear
14:35	Surged Bottom	10.48	605.8	12.02	5.60	1387	murkey Brown
14:45	5 gal	10.48	192.3	11.62	5.60	1414	clear
14:55	10 gal	10.48	48.7	11.56	5.55	1414	Clear

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 9/19/08	BH-SF-EPZ-15	SHEET 1 OF 1

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development LOCATION:
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: START END: LOGGER: GM
Total Depth: 35.69' TOC
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED
DISPOSITION OF DISCHARGE WATER:

	Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
9/19/08		Unable to draw water using peristaltic pump. The depth of the well/piezometer is to great for the pump to work effectively, even with the use of a check valve.						
9/29/08		Purged piezometer using bailers, parameters were recorded at time of sampling						
9/30/08		—	28.87	—	12.96	6.05	494.5	Parameters collected while sampling.

CH2MHILL

PROJECT NUMBER 7/09/08 :4160

PIEZOMETER NUMBER BH·SF·E·PZ·16 SHEET 1 OF 1

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development LOCATION: Bunker Creek
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 7.60 START: 10:30 END: 13:35 LOGGER:

MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:
DTB 17.84

µS/cm

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~	Remarks (color, odor, sheen, sediment, etc.)
10:55	Int. surged	7.60	565.5	10.20	5.19	718.5	Muddy + Murkey Brown
11:15	4 gal	7.62	204.9	10.12	5.14	716.3	Slightly Brown
11:19	5 gal	7.62	64.5	10.04	5.13	714.3	clear
11:26	10 gal	7.62	45.2	10.66	5.13	705.4	clear
11:45	surged 5 gal	7.64	126.1	10.10	5.10	~~7.14~~ 714.2 (VP)	slightly Brown
11:50	10 gal	7.64	49.3	10.56	5.10	709.2	slightly Brown
12:00	surged Bottom	7.63	404.4	10.17	5.09	715.3	Muddy + Murkey Brown
12:05	5 gal	7.65	124.8	10.11	5.09	714.3	Slightly Brown
12:10	10 gal	7.63	50.8	10.10	5.09	714.4	Slightly Brown
12:15	Surged Bottom	7.62	837.7	10.66	5.09	715.6	murkey Brown
12:20	5 gal	7.65	89.6	10.09	5.08	713.6	Slightly Brown
12:25	10 gal	7.65	49.3	10.11	5.08	713.7	clear
12:35	Surged Bottom	7.64	835.4	10.72	5.09	714.2	Murkey Brown/clearing
12:40	5 gal	7.65	83.3	10.01	5.07	713.8	Clear
12:45	10 gal	7.65	39.8	10.01	5.06	713.7	Clear
13:05	Surged Bottom	7.65	459.7	10.37	5.05	722.9	Slightly Brown
13:10	5 gal	7.65	45.9	10.03	5.05	715.0	clear
13:20	Surged Bottom	7.65	288.5	10.20	5.07	713.1	Clear
13:25	5 gal	7.65	42.5	10.07	5.06	712.6	clear
13:31	Surged Bottom	7.65	236.2	10.19	5.06	712.9	clear
13:35	5 gal	7.65	43.1	10.07	5.06	713.6	Clear

JB/3-8

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160	BH-SF-E-PZ-17	SHEET 1 OF 2

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 PIEZOMETER DEVELOPMENT
LOCATION: ON BIKE PATH, S. OF CIA DIKE ALONG BUNKER CREEK. → S. OF BUNKER CR. ACROSS FROM E-0410-U
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 9.18' START: 13:44 END: 13:21 LOGGER: GM
BOTTOM: 15.67'
MAXIMUM DRAWDOWN DURING PUMPING: 9/4 9/5
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

* TOTAL PUMPING/SURGE TIME: ~~[illegible]~~ 5h 38MIN

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/CM	Remarks (color, odor, sheen, sediment, etc.)
14:02	INITIAL	9.18	1382.8	13.85	5.57	783.2	BROWN W/LITTLE SILT
14:07	2 GAL	10.35	1278.9	13.53	5.77	771.4	LIGHT BROWN
14:12	4.5 GAL	10.27	391.1	13.42	5.62	776.7	MILKY
14:17	6 GAL	10.22	152.6	13.31	5.60	782.1	CLEAR
14:24	SURGED	10.20	2346.7	14.33	5.60	757.4	DARK BROWN W/SILT
14:29	~~[illegible]~~ 1.5 GAL	DRY	2058.2	13.16	5.70	775.3	BROWN
14:37	SURGED	11.29	2210.0	15.86	5.68	775.8	DARK BROWN W/SILT
14:41	1 GAL	DRY	1750.1	13.26	5.69	775.2	BROWN
14:55	SURGE	10.00	2086.4	14.78	5.64	773.3	BROWN W/SILT
15:00	0.8 GAL	15.21	1827.6	13.89	5.77	782.9	BROWN
15:03	1 GAL	DRY	2484.6	13.74	5.75	776.7	BROWN
15:19	SURGED	11.25	2045.8	15.08	5.71	783.1	BROWN W/SILT
15:24	1 GAL	15.32	1748.5	13.88	5.73	782.7	LIGHT BROWN
8:41	INITIAL	9.19	98.3	12.58	5.61	860.4	CLEAR
8:45	1 GAL	DRY	85.3	11.99	5.87	866.1	CLEAR
9:00	SURGED	9.42	949.4	12.16	5.78	858.9	BROWN W/LITTLE SILT
9:03	1 GAL	DRY	2347.7	12.24	5.67	865.3	BROWN W/SILT
9:22	SURGED	9.39	2408.6	12.31	5.64	861.9	BROWN W/SILT
9:24	0.5 GAL	DRY	2267.1	12.29	5.62	852.6	BROWN
9:41	SURGED	9.52	2052.7	12.35	5.70	856.1	BROWN W/SILT
9:44	0.5 GAL	DRY	2477.8	12.30	5.56	851.6	BROWN
10:02	SURGED	11:38	2469.3	12.35	5.69	851.0	BROWN W/SILT
10:05	0.5 GAL	DRY	2485.4	12.40	5.64	856.3	BROWN
10:24	SURGED	9:48	2473.1	12.50	5.71	850.6	BROWN W/SILT

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160	BH-SF-E-PZ-17	SHEET 2 OF 2

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 PIEZOMETER DEVELOPMENT
LOCATION: ON BIKE PATH, S. OF CIA PILE ALONG BUNKER CREEK → S. OF BUNKER CR. ACROSS FROM E-0410-U
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 9.18' START: 13:44 9/4 END 13:21 9/5 LOGGER: GM
BOTTOM: 15.67'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
10:27	0.5 GAL	DRY	1981.3	12.40	5.65	728.7	BROWN
10:44	SURGED	9.47	2445.4	12.64	5.77	849.7	BROWN W/LITTLE SILT
10:47	0.5 GAL	DRY	2248.8	12.34	5.64	852.0	BROWN
11:04	SURGED	9.53	2430.7	12.61	5.71	852.9	BROWN
11:07	0.5 GAL	DRY	1682.1	12.57	5.62	847.5	MILKY
11:25	SURGED	9.45	2264.6	12.72	5.64	848.9	BROWN.
11:28	0.5 GAL	DRY	2068.5	12.67	5.68	857.8	MILKY
11:30	SURGED	11.44	2518.4	12.86	5.75	844.2	BROWN W/SILT
11:39	0.5 GAL	DRY	1718.7	12.59	5.64	850.8	BROWN
11:46	SURGED	11.79	2518.6	13.08	5.74	839.1	BROWN W/SILT
11:50	0.5 GAL	DRY	1988.7	13.04	5.67	840.8	MILKY
11:57	SURGED	11.87	2402.8	13.14	5.74	836.0	BROWN W/SILT
11:59	0.5 GAL	DRY	2109.2	13.22	5.60	842.8	BROWN
12:10	SURGED	10.74	2518.3	13.25	5.81	883.3	BROWN W/SILT
12:15	0.5 GAL	DRY	1017.4	13.01	5.65	842.0	LIGHT BROWN
12:25	SURGED	11.02	2518.4	13.36	5.73	835.7	BROWN W/SILT
12:30	0.5 GAL	DRY	1024.8	13.35	5.57	843.7	MILKY
12:37	SURGED	11.13	2453.3	13.36	5.68	838.4	BROWN W/SILT
12:42	1 GAL	15.52	926.2	13.05	5.53	847.3	MILKY
12:45	0.5 GAL	DRY	477.7	13.15	5.68	845.4	MILKY/CLEAR
12:52	SURGED	11.98	2518.3	13.62	5.88	842.1	BROWN W/SILT
12:57	0.5 GAL	15.04	1048.0	13.44	5.65	847.5	MILKY
13:01	1 GAL	DRY	304.9	13.73	5.54	851.9	CLEAR
13:08	SURGED	11.51	2288.7	13.50	5.62	851.7	BROWN W/SILT
13:12	0.5 GAL	DRY	1169.6	12.98	5.62	845.7	MILKY
13:18	SURGED	11.77	2125.8	13.18	5.71	847.8	BROWN W LITTLE SILT
13:21	0.5 GAL	DRY	1004.2	13.57	5.95	847.5	MILKY/CLEAR

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 07.09.08	BH.SF.E.P2.18	SHEET 1 OF 2

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 piezometer Development LOCATION: Bunker Creek
DEVELOPMENT CONTRACTOR: TG
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 8.06 START: 14:00 END: LOGGER:

MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED
DISPOSITION OF DISCHARGE WATER:

DTB ~~15.88 TB~~
17.88

µS/cm

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~	Remarks (color, odor, sheen, sediment, etc.)
14:17	Int		1206.1	10.65	5.76	857.8	murkey
14:29	Surged Bottom	8.45	to murkey for peristaltic pump more surging				
14:53	2 gal	13.52	pumped down letting it recharge 1500 going back				
to office will start tomorrow -							
07-10-08 ~~9:10~~ DTW 8.12							
9:08	Int		1843.1	13.42	5.81	891.1	- checked pump out discharge hose value plugged
9:50	Surged Bottom	8.16	992.8	10.39	5.78	889.5	murkey Brown
9:55	5 gal	9.46	111.1	10.00	5.76	885.5	Slightly Brown
10:00	10 gal	9.46	73.4	9.99	5.74	884.7	" "
10:05	15 gal	9.50	49.7	10.06	5.74	883.0	clear
10:15	Surged Bottom	8.29	1191.7	10.81	5.76	884.2	murkey + Brown
10:20	5 gal	12.88	21.8	10.24	5.75	885.1	Clear
10:29	Surged Bottom	8.18	387.4	10.72	5.76	877.4	Murkey Brown
10:35	5 gal	10.70	77.5	10.23	5.74	885.6	clear
10:40	10 gal	10.74	43.4	10.19	5.74	884.9	clear
10:50	Surged Bottom	8.18	587.3	10.61	5.75	885.1	murkey
10:55	5 gal.	9.61	195.6	10.25	5.73	885.2	Clear
11:00	10 gal	9.60	109.5	10.21	5.74	884.0	clear
11:05	15 gal	9.60	48.7	10.20	5.74	883.0	clear
11:25	Surged Bottom	8.18	436.6	11.14	5.75	876.3	murkey
11:35	5 gal	8.33	267.2	9.99	5.71	875.4	Slightly Brown - value plugged
11:40	10 gal	8.33	99.8	9.97	5.70	876.5	" "
11:45	15 gal	8.33	49.2	9.97	5.70	876.4	Clear
11:50	Surged bottom	8.18	746.7	10.24	5.71	879.0	murkey Brown
12:00	5 gal.	8.31	165.8	10.11	5.70	875.4	Slightly Brown
12:05	10 gal	8.30	93.3	10.08	5.70	874.6	Clear
	15 gal	8.30	50.6	10.06	5.70	874.0	clear

CH2MHILL

PROJECT NUMBER 4160 07-10-08 | PIEZOMETER NUMBER BH-SF-E-P2-18 | SHEET 2 OF 2

PIEZOMETER DEVELOPMENT LOG

PROJECT:
LOCATION:
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: START: END: LOGGER:

Cont.

MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
12:10	Surged Bottom	8.15	751.1	10.93	5.72	872.1	Murkey
12:15	5 gal	8.30	173.3	10.07	5.71	876.5	Slightly Brown
12:23	10 gal	8.29	70.4	10.06	5.70	876.4	" "
12:30	15 gal	8.29	80.6	10.04	5.70	875.9	clear
12:35	20 gal	8.28	46.6	10.04	5.70	876.0	clear
12:40	Surged Bottom	8.14	587.4	10.43	5.71	879.6	Murkey
12:45	5 gal	8.28	132.5	10.00	5.70	876.6	Slightly Brown
12:52	10 gal	8.26	69.9	9.98	5.72	875.9	" "
13:00	15 gal	8.25	53.2	9.96	5.70	874.2	clear
13:05	Surged Bottom	8.14	1124.7	10.34	5.69	880.8	Murkey Brown
13:10	5 gal	8.23	95.2	9.95	5.71	875.9	Slightly Brown
13:16	10 gal	8.22	68.7	9.90	5.73	870.6	
13:24	15 gal	8.22	37.8	9.88	5.71	871.9	clear
13:35	Surged Bottom	8.14		9.88	5.71	871.9	Light Murk
13:40	5 gal	8.25	88.0	9.99	5.69	877.9	Slightly Brown
13:45	10 gal	8.23	48.8	9.99	5.69	877.0	clear
13:52	Surged Bottom	8.13	661.3	10.21	5.69	878.3	Light Murk
13:57	5 gal	8.24	80.4	9.98	5.69	875.0	clear
14:02	10 gal	8.23	48.9	9.93	5.71	876.2	clear
14:14	Surged Bottom	8.14	633.3	10.02	5.71	878.4	Light Murk
14:19	5 gal	8.22	81.1	9.96	5.70	871.8	clear
	10 gal	8.22	48.0	9.96	5.68	871.8	clear

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160	BH-SF-E-PZ-20	SHEET 1 OF 2

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 DEVELOPMENT PIEZOMETERS
LOCATION: ON BIKE PATH, S. OF CIA PILE ALONG BUNKER CREEK. S. OF BUNKER CR. ACROSS FROM E-0427-0
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 9.28' START: 8:19 END: 13:19 LOGGER: GM
BOTTOM: 15.32'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
8:51	INITIAL	9.28	1076.7	13.89	5.76	1619	BROWN/W SILT
8:55	2 GAL	9.28	57.3	13.71	5.67	1639	CLEAR
9:03	SURGED	9.41	638.9	14.02	5.84	1468	BROWN W/SILT
9:08	2 GAL	9.41	2443.0	13.82	5.72	1617	BROWN
9:13	4 GAL	9.41	1586.2	13.81	5.69	1619	LIGHT BROWN
9:18	6.5 GAL	9.41	614.7	13.82	5.70	1622	CLEAR/BROWN
9:23	8.5 GAL	9.41	483.1	13.82	5.70	1619	MILKY
9:28	11 GAL	9.41	221.7	13.82	5.72	1619	CLEAR
9:35	SURGED	9.35	2293.3	14.05	5.66	1590	BROWN W/SILT
9:40	2 GAL	9.39	1968.8	13.82	5.65	1618	BROWN
9:45	4.5 GAL	9.38	779.4	13.82	5.68	1618	CLEAR/BROWN
9:50	6.5 GAL	9.36	537.4	13.85	5.67	1617	MILKY
9:55	8.5 GAL	9.35	286.2	13.88	5.70	1614	CLEAR
10:01	SURGED	9.32	1645.9	14.15	5.69	1603	BROWN W/SILT
10:06	2 GAL	9.35	992.4	13.91	5.72	1618	LIGHT BROWN
10:11	4 GAL	9.34	493.8	13.90	5.72	1618	MILKY
10:16	6.5 GAL	9.34	257.8	13.92	5.72	1614	CLEAR
10:21	8.5 GAL	9.34	188.8	13.95	5.65	1616	CLEAR
10:26	10.5 GAL	9.34	89.9	13.97	5.70	1614	CLEAR
10:34	SURGED	9.31	1801.6	14.32	5.67	1618	BROWN W/SILT
10:39	2.5 GAL	9.34	611.6	13.95	5.66	1620	MILKY
10:44	4 GAL	9.34	349.3	13.97	5.71	1617	MILKY
10:49	6 GAL	9.34	163.7	14.01	5.71	1616	CLEAR
10:54	8 GAL	9.34	91.1	13.99	5.67	1617	CLEAR
11:00	SURGED	9.31	1926.5	14.13	5.67	1623	BROWN ~~w/silt~~ W/LITTLE SILT
11:05	2 GAL	9.34	504.6	13.98	5.69	1625	MILKY
11:10	4 GAL	9.34	234.8	14.01	5.65	1623	CLEAR
11:15	6 GAL	9.34	153.2	14.03	5.65	1619	CLEAR
11:20	8 GAL	9.34	66.1	14.04	5.73	1619	CLEAR

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160	BH-SF-E-PZ-20	SHEET 2 OF 2

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 PIEZOMETER DEVELOPMENT
LOCATION: ON BIKE PATH, S. OF CLA PILE ALONG BUNKER CR. → S. OF BUNKER CR. ACROSS FROM E-0427-U
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 9.28' START: 8:19 END: 13:19 LOGGER: GM
BOTTOM: 15.32'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
11:28	SURGED	9.31	2319.7	14.32	5.65	1623	BROWN
11:33	2 GAL	9.34	388.5	14.06	5.70	1624	MILKY
11:38	4 GAL	9.34	210.0	14.06	5.74	1622	CLEAR
11:43	5.5 GAL	9.33	120.8	14.06	5.70	1620	CLEAR
11:48	7.5 GAL	9.32	62.2	14.05	5.73	1619	CLEAR
11:55	SURGED	9.30	1525.7	14.32	5.73	1626	BROWN
12:00	2 GAL	9.33	340.4	14.07	5.70	1624	MILKY
12:05	4 GAL	9.33	155.8	14.12	5.67	1620	CLEAR
12:10	5.5 GAL	9.32	91.7	14.12	5.67	1619	CLEAR
12:15	7.5 GAL	9.32	53.1	14.08	5.63	1615	CLEAR
12:21	SURGED	9.29	1413.6	15.14	5.73	1625	BROWN
12:26	2 GAL	9.32	323.4	14.20	5.66	1622	CLEAR
12:31	4.5 GAL	9.32	148.2	14.19	5.64	1620	CLEAR
12:36	6 GAL	9.32	79.8	14.22	5.64	1617	CLEAR
12:41	7.5 GAL	9.32	42.1	14.17	5.71	1617	CLEAR
12:47	SURGED	9.29	1159.2	15.35	5.67	1631	LIGHT BROWN
12:52	2 GAL	9.32	307.7	14.19	5.66	1618	CLEAR
12:57	4 GAL	9.32	92.8	14.20	5.74	1620	CLEAR
13:02	6 GAL	9.31	61.9	14.26	5.66	1617	CLEAR
13:07	7 GAL	9.31	43.7	14.28	5.71	1620	CLEAR

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 07.14.08	BH.SF.E.PZ.21	SHEET 1 OF 2

PIEZOMETER DEVELOPMENT LOG

PROJECT OU2 Piezometer Development LOCATION: S. Bunker Creek across from Decon Station
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 14.57 START 9:45 END 14.39 LOGGER:
Bottom - 21.79
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
10:45	INT surged	14.65	304.2	10.39	5.35	1448	Murky Brown
10:54	5 gal	14.60	41.5	10.31	5.32	1407	Clear
11:16	surged Bottom	14.59	274.4	10.74	5.31	1445	Murky Brown
11:25	5 gal	14.64	65.2	10.51	5.29	1421	Clear
11:29	1 gal	14.64	26.5	10.46	5.28	1420	Clear
11:36	surged Bottom	14.62	703.2	10.54	5.30	1422	~~Lite~~ Murky Brown
11:49	5 GAL	14.64	87.0	10.51	5.30	1416	CLEAR
11:55	2 GAL	14.64	43.6	10.52	5.30	1419	CLEAR
12:01	SURGED BOTT. ~~5 GAL~~	14.66	83.1	10.52	5.30	1420	CLEAR
12:16	5 GAL	14.65	66.6	10.61	5.28	1422	CLEAR
12:19	1 GAL	14.63	47.0	10.60	5.29	1422	CLEAR
12:26	SURGED BOTTOM	14.63	811.7	11.04	5.40	1426	MURKY BROWN
12:40	5 GAL	14.65	111.7	10.68	5.29	1426	CLEAR
12:46	2 GAL	14.60	41.5	10.68	5.28	1429	CLEAR
12:53	SURGED BOTTOM	14.59	958.2	11.22	5.34	1438	MURKY BROWN
13:06	5 GAL	14.64	84.8	10.80	5.24	1449	CLEAR
13:09	1 GAL	14.63	43.5	10.83	5.24	1447	CLEAR
13:17	SURGED BOTTOM	14.60	427.0	11.40	5.38	1421	MURKY BROWN
13:32	5GAL	14.59	83.7	10.83	5.23	1441	CLEAR
13:36	1 GAL	14.59	29.2	10.87	5.22	1440	CLEAR
13:42	SURGED BOTTOM	14.63	852.7	11.17	5.29	1431	MURKY BROWN
14:00	5 GAL	14.63	42.6	10.91	5.21	1441	CLEAR
14:07	SURGED BOTTOM	14.62	160.3	11.81	5.37	1409	MURKY BROWN
14:28	5 GAL	14.56	97.6	11.15	5.19	1442	CLEAR Rugged Reader froze up

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 07.14.08	BH.SF.E.PZ 21	SHEET 2 OF 2

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development LOCATION: S. Bunker Creek across from Decon Station
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 14.57 START: 9:45 END: 14:39 LOGGER:
Bottom - 21.99
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
	1 GAL	14.59	NA	NA	NA	NA	CLEAR
	Bottom	14.59	No Reg	NA	NA	NA	CLEAR
							Rugged Reader Froze Up!

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER
4160 07.15.08	BH.SF.E.PZ.22 SHEET 1 OF 1

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development LOCATION: N. Bunker Creek across from Decon Station
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 12.05 START: 7:30 END: 12:20 LOGGER:
Bottom 19.29
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (~~µmhos/cm~~ µS/cm)	Remarks (color, odor, sheen, sediment, etc.)
8:15	Int. surged	12.21	634.8	10.31	6.49	1106	BLACK
8:25	3 GAL	16.68	37.9	10.14	6.07	1684	CLEAR
8:34	SURGED BOTTOM	12.95	19.7	10.87	6.52	1585	BLACK → (FIRST HIT -0.1 NTU)
* 8:39	1.5 GAL	16.70	232.8	11.34	6.64	1621	NO WATER, STOP FOR RECHARGE
8:54	SURGED BOTTOM	12.70	0.1	10.89	6.67	1507	BLACK → ~0.3 NTU
9:23	5 GAL	16.98	3.9	10.72	6.34	1656	CLEAR
9:30	SURGED BOTTOM	12.66	0.2	11.17	6.53	1607	BLACK
9:45	3 GAL	14.80	8.5	10.88	6.26	1722	CLEAR
9:53	SURGED BOTTOM	12.66	0.4	11.04	6.50	1647	BLACK
10:02	2 GAL	15.25	28.4	10.51	6.16	1724	LIGHT GREY
10:09	SURGED BOTTOM	12.65	0.8	11.14	6.42	1673	BLACK
10:22	3 GAL	15.18	8.5	10.54	6.07	1734	CLEAR
10:30	SURGED BOTTOM	12.66	0.5	11.51	6.31	1682	BLACK
10:42	2 GAL	14.18	9.7	10.62	6.08	1730	CLEAR
10:49	SURGED BOTTOM	12.58	65.2	11.08	6.34	1666	BLACK
11:02	3.5 gal	~~45.9~~ UP 14.94	45.9	10.55	6.00	1733	CLEAR - pulled tubing up 1 ft.
11:22	SURGED BOTTOM	12.38	370.5	11.09	6.30	1718	BLACK
11:36	3 GAL	14.34	45.5	10.58	6.03	1737	CLEAR
11:45	SURGED BOTTOM	12.58	274.1	11.20	6.33	1697	BLACK
11:58	3.5 GAL	14.13	43.2	10.69	6.02	1734	CLEAR
12:02	SURGED BOTTOM	12.56	482.7	11.19	6.32	1711	BLACK
12:17	3.5 GAL	13.95	47.8	10.71	5.99	1728	CLEAR

* NOTE: NTU'S AT INITIAL READINGS WERE BETWEEN -0.3 AND 0.5 FOR FIRST 1 GAL. OF PUMPING AFTER 1 GAL NTU'S BEGAN TO INCREASE SLOWLY, ALTHOUGH IT WAS ~~THE~~ OBVIOUS THAT THE WATER WAS BEGENING TO CLEAR. NTU'S PEAKED @ THE 2 GAL MARK (AROUND 70 NTU) WHERE THEY BEGAN SLOWLY FALLING.

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 7/22/08	BH-SF-E-PZ-23	SHEET 1 OF ~~1~~ 2

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development
LOCATION: I-90, North side CIA
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 13.20' Bottom: 18.87'
START: 7/22 15:05
END: 7/23 10:29
LOGGER: CG, AR
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
15:11	Initial	13.20'	1709.2	13.00	5.93	1341	Brown w/ Silt + PVC shavings
15:17	1 gal.	13.24	176.0	10.66	5.84	1384	Clear w/ brown tint
15:22	2.5 gal	13.30	64.7	10.66	5.81	1377	slight brown tint, clear
15:27	3 gal	13.21	68.7	10.75	5.84	1382	clear
15:30	3 gal	13.21	36.9	10.81	5.85	1381	clear
15:38	SURGE	13.30	2031.5	12.31	5.96	1271	Brown w/ silt
15:46	1 gal	13.20	364.5	11.51	5.85	1378	Brown w/ silt
15:52	2 gal	13.32	1632.7	10.64	5.78	1386	Brown w/ silt
15:57	3.5 gal	13.46	1566.0	10.44	5.76	1382	slight brown
16:02	6 gal	13.43	45.4	10.35	5.73	1391	Clear
7:22	SURGE	13.30	1592.8	10.91	5.76	1295	Brown w/ silt
7:29	2 gal	13.30	1126.8	10.28	5.73	1389	slight brown tint
7:35	4 gal	13.32	189.4	10.23	5.71	1391	mostly clear
7:41	6 gal	13.34	87.1	10.21	5.70	1389	mostly clear
7:46	8 gal	13.31	40.3	10.20	5.70	1388	mostly clear
7:54	SURGE	13.33	1481.9	10.51	5.85	1357	Brown w/ silt
8:01	1.5 gal	13.28	2305.2	10.36	5.75	1387	slight brown
8:06	2.5 gal	13.24	1153.2	10.34	5.72	1387	slight brown
8:11	4 gal	13.28	258.7	10.32	5.72	1389	mostly clear
8:16	5 gal	13.21	70.5	10.32	5.71	1388	mostly clear
8:21	7 gal	13.20	48.5	10.35	5.71	1388	clear

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 7-23-08	BH-SF-E-PZ-23	SHEET 2 OF 2

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development LOCATION: I-90, North side CIA
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED: ~~7/23~~ 7/22 ~~7/24~~ 7/23
START WATER LEVELS: START: 15:05 END: 10:29 LOGGER: CG, AR

MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
8:34	SURGE	13.31	1415.6	10.66	5.90	1348	Brown w/ silt
8:39	2 gal	13.20	1075.9	10.32	5.74	1387	mostly clear
8:44	3.5 gal	13.20	438.7	10.34	5.72	1388	mostly clear
8:49	4.5 gal	13.19	231.7	10.36	5.71	1387	mostly clear
8:54	5.5 gal	13.18	207.6	10.38	5.71	1387	clear
9:00	7 gal	13.18	105.9	10.42	5.71	1387	clear
9:05	8 gal	13.18	45.9	10.48	5.70	1386	Clear
9:14	SURGE	13.28	891.8	11.07	5.84	1358	Brown w/ silt
9:19	1 gal	13.27	1922.9	10.45	5.75	1386	Slight brown
9:24	2.5 gal	13.19	397.2	10.37	5.72	1387	mostly clear
9:29	4 gal	13.17	79.4	10.35	5.72	1388	mostly clear
9:34	5.5 gal	13.17	48.3	10.37	5.71	1388	clear
9:42	SURGE	13.31	751.1	11.07	6.04	1335	Brown w/ silt
9:47	1.5 gal	13.23	1639.8	10.37	5.75	1384	slight brown
9:52	3.5 gal	13.22	212.0	10.33	5.86	1386	mostly clear
9:57	6.5 gal	13.20	44.5	10.29	5.72	1387	clear
10:07	SURGE	13.27	2572.1	11.12	5.96	1354	Brown w/ silt
10:14	1 gal	13.23	1077.5	10.57	5.85	1374	Brown
10:19	2.5 gal	13.19	417.9	10.33	5.74	1386	mostly clear w/ brown tint
10:24	5.0 gal	13.19	60.3	10.31	5.72	1388	clear
10:29	7.0 gal	13.14	38.3	10.30	5.72	1390	Clear

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 7-22-08	BH-SF-E-PZ-24	SHEET 1 OF 2

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development LOCATION: I-90, West of CIA
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 13.06' START: 8:35 END: LOGGER: CG, AR
Bottom: 18.67'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
8:45	Initial	13.00	929.8	12.39	6.17	1317	Brown w/silt + PVC shavings
8:52	2gal	13.13	377.1	11.13	6.08	1156	Clear
8:56	3.5gal	13.15	36.8	11.21	6.01	1152	Clear
9:06	SURGE	13.71	443.8	13.20	6.32	1118	Brown w/silt
9:12	1gal.	14.28	1743.2	13.59	6.44	1187	Brown w/silt
9:18	2.5gal	14.01	117.0	11.22	5.98	1141	Clear
9:23	4.5gal	13.96	76.1	11.19	5.94	1130	Clear
9:26	5.5	13.91	46.1	11.20	5.94	1101	Clear
9:38	Surge	13.08	425.1	11.94	6.04	890.7	Brown w/silt
9:43	2gal	13.09	777.3	11.28	5.94	997.1	Clear
9:48	4.5gal	13.11	95.3	11.24	5.94	1012	Clear
9:53	6.5gal	13.05	45.5	11.21	5.93	1123	Clear
10:10	SURGE	13.10	301.7	12.08	6.03	1146	Brown w/silt
10:15	3.5gal	13.15	401.9	11.32	5.94	1049	Clear
* 10:23	7.0gal	13.13					
12:35	SURGE	13.13	3170	12.93	6.04	1131	Brown w/silt
12:45	2gal	13.13	2511.9	11.27	6.02	1150	Slight brown
12:50	4.5gal	13.10	289.1	11.20	5.97	1140	Clear
12:55	7gal	13.10	439.7	11.15	5.95	1141	Clear
13:00	8gal	13.10	50.6	11.16	5.95	1139	Clear
13:05	9.5gal	13.10	35.7	11.14	5.93	1137	Clear

on phone w/ on-site to fix Probe

*Turbidity meter giving inconsistent reading at start of purge

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 7-22-08	BH-SF-E-PZ-24	SHEET 1 2 OF 1 2

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development LOCATION: I-90, West of CIA
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 13.06' START: 8:35 END: 14:55 LOGGER: CG, AR
Bottom 18:67'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
13:12	SURGE	13.1	999.7	11.93	6.10	1112	Brown, w/silt
13:19	1.5gal	13.02	2387.5	11.29	5.98	1143	Brown tint
13:26	4.5gal	13.03	189.0	11.22	5.93	1138	Clear
13:31	6.0gal	13.00	129.0	11.19	5.91	1137	Clear
13:36	7.5gal	13.00	48.4	11.17	5.91	1135	Clear
13:46	SURGE	13.09	1808	12.50	6.15	1097	Brown w/silt
13:51	2gal	13.00	1896.1	11.81	5.95	1140	slight brown
13:57	3.5gal	13.01	273.5	11.26	5.92	1137	clear
14:02	5.5gal	13.01	117.1	11.25	5.90	1137	Clear
14:07	7.0gal	13.00	74.6	11.24	5.89	1136	clear
Screen × froze reset reader 14:13	10.5gal	12.97	67.2	11.23	5.89	1135	Clear
14:26	SURGE	13.09	15638	12.82	5.94	1100	Brown w/silt
14:31	1.5gal	13.00	2002.1	11.28	5.94	1132	Brown tint
14:36	3gal	13.00	292.5	11.25	5.90	1133	Clear - slight brown tint
14:42	5gal	12.99	119.3	11.22	5.89	1133	Clear
14:47	7.0gal	13.00	73.3	11.21	5.91	1133	Clear
14:53	9gal	13.00	45.1	11.21	5.89	1132	Clear

* NTU readings start out low, it take ~1gal for NTU readings to be comparitive to water clarity.

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 7-21-08	BH-SF-E-PZ-25	SHEET 1 OF 1

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development LOCATION: I-90, West of CIA
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: Bottom: 19.70' START: 9:30 END: 14:08 LOGGER:
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
9:30	Int. (2 gal)	14.85	1286.7	10.16	6.17	1072	Brown
* 10:09	Surge Bottom	16.58	123.7	13.08	6.55	1106	Brown - went dry @ 10:12 1st recharge
10:28	0.5 gal	14.90					
10:36	Surge bottom	14.86	17.4	14.16	6.62	1042	Brown visible silt.
10:44	1.5 gal	14.80	2254	10.18	6.28	1051	Slight brown
10:49	2.5 gal		600.2	9.95	6.09	1040	Clear brown tint
10:54	3 gal	14.80	43.1	9.92	6.03	1037	Clear brown tint
11:03	SURGE	14.87	2296.1	11.57	6.31	1025	Brown, visible silt
11:10	2 gal	15.90	142.0	9.86	6.06	1038	Clear w/ brown tint
11:17	4 gal	15.01	23.3	9.94	6.01	1035	Clear, slight brown tint
11:27	SURGE	14.80	1777.8	14.24	6.23	1006	Brown w/ silt
11:33	1.5 gal	15.72	224.0	10.65	6.10	1041	Clear, slight brown tint
11:41	2.5 gal	14.95	35.6	10.77	6.03	1035	Clear w/ faint tint
11:53	SURGE	14.85	1866.5	17.96	6.36	1009	Brown w/ silt
12:00	.5 gal	14.85	1079.6	12.06	6.05	1036	Clear w/ tint, low flow
* See Log book pg 5+6							
12:51	Surge	14.88	1363.2	12:28	6.31	1029	Brown w/ silt
12:57	1 gal.	14.94	1656.7	10.94	6.16	1041	Clear w/ brown tint
13:04	2 gal.	14.85	213.2	10.76	6.07	1040	Clear w/ slight brown tint
13:12	3 gal	14.86	43.2	10.79	6.05	1037	mostly clear
13:22	SURGE	14.83	~~857.5~~ 2572.9	25.01	6.49	1020	Brown + silty
13:34	.5 gal	14.85	2512.5	13.17	6.17	1036	Brown
13:51	4 gal	14.86	41.5	10.39	5.99	1031	

Pump stopped - *

* NTU started out very low - 4 NTU.

* 12:07 Stopped pump due to flow issue w/ pump. Called Cole-parmer - appears to be tubing wear - issue resolved.

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 * 07.15.08	BH-SF-E-PZ-26 A	SHEET 1 OF 1

07.16.08

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development
LOCATION: N. Bunker Creek N.E. of ~~CH2MHill~~ Army Corp. Offices
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: Bottom - 21.40
START: 12:35
END: 13:14
LOGGER:
Ref. Log book pg. 445
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

	Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
	12:50	INT.	13.69	1380.1	9.30	5.98	1359	BROWN
*	Dropped a Length of PVC pipe down well, Retrieved pvc 7/16/08							
7/16/08	8:08	Int. SURGED	13.74	110.2	9.06	5.91	1539	CLEAR
	8:17	BOTTOM	13.75	184.9	9.25	5.76	1468	BROWN
	8:30	5 GAL SURGED	13.75	48.1	8.61	5.61	1543	CLEAR
	8:38	BOTTOM	13.79	597.8	9.00	5.70	1510	BROWN
	8:53	5 GAL SURGED	13.75	48.4	8.71	5.59	1544	CLEAR
	9:01	BOTTOM	13.76	458.9	9.36	5.67	1526	BROWN
	9:17	5 GAL SURGED	13.75	47.7	8.77	5.59	1542	CLEAR
	9:23	BOTTOM	13.76	167.5	9.68	5.67	1488	BROWN
	9:40	5 GAL SURGED	13.74	43.3	8.81	5.59	1540	CLEAR
	9:47	BOTTOM	13.75	358.7	9.91	5.65	1511	BROWN
	10:04	4.5 GAL SURGED	13.75	44.2	8.91	5.59	1539	CLEAR
	10:12	BOTTOM	13.80	309.7	10.27	5.68	1492	BROWN
	10:34	4 GAL SURGED	13.75	46.4	9.25	5.60	1535	CLEAR
	10:43	BOTTOM	13.76	762.3	9.27	5.62	1538	BROWN
	11:01	3 GAL SURGED	13.74	42.2	9.31	5.60	1541	CLEAR
	11:07	BOTTOM	13.76	396.8	10.46	5.66	1515	BROWN
	11:25	3 GAL	13.76	47.6	9.22	5.59	1539	CLEAR

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160	BH-SF-E-PZ-26-B	SHEET 1 OF 2

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 PIEZOMETER DEVELOPMENT
LOCATION: MOUTH OF BUNKER CR. NEXT TO PZ-26A
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 15.62' START: END: LOGGER: GM
BOTTOM: 17.96'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(umhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
9:09	INITIAL	15.62	2365.7	10.38	6.38	745.9	BROWN W/SILT
9:11	0.2 GAL	DRY	2518.6	10.85	6.01	1157	BROWN W/SILT
9:20	SURGED	15.75	2518.3	10.95	6.04	1531	BROWN W/SILT
9:21	0.2 GAL	DRY	2478.4	11.04	6.10	1561	BROWN W/SILT
9:30	SURGED	15.66	2518.6	11.49	6.08	1517	BROWN W/SILT
9:32	0.2 GAL	DRY	2518.3	10.73	6.07	1538	BROWN W/SILT
9:40	SURGED	15.67	2518.3	10.84	6.02	1124	BROWN W/SILT
9:42	0.3 GAL	DRY	2518.3	11.96	5.93	1587	BROWN W/SILT
9:49	SURGED	15.66	2518.6	11.92	6.00	1524	BROWN W/SILT
9:51	0.3 GAL	DRY	2518.3	11.66	5.86	1243	BROWN W/SILT
10:01	SURGED	15.65	2518.6	12.72	5.83	1516	BROWN W/SILT
10:03	0.2 GAL	DRY	2518.6	11.88	5.85	1557	BROWN W/SILT
10:16	SURGED	15.66	2518.6	12.70	5.82	1561	BROWN W/SILT
10:18	0.2 GAL	DRY	2518.6	12.10	5.84	1572	BROWN W/SILT
10:28	SURGED	15.65	2518.6	14.03	5.86	1690	BROWN W/SILT
10:30	0.2 GAL	DRY	2518.3	11.21	5.78	1581	BROWN W/SILT
10:42	SURGED	15.64	2518.4	13.01	5.75	1589	BROWN W/SILT
10:45	0.3 GAL	DRY	2518.4	12.49	5.86	1610	BROWN W/SILT
10:58	SURGED	15.03	2518.5	13.20	5.69	1680	BROWN W/SILT
11:01	0.3 GAL	DRY	2518.5	11.33	5.70	1597	BROWN W/SILT
11:16	SURGED	15.63	2518.5	13.47	5.75	1619	BROWN W/SILT
11:20	0.3 GAL	DRY	2518.2	11.54	5.65	1626	BROWN ~~W/SILT~~
11:26	SURGED	15.63	2518.6	12.27	5.71	1611	BROWN W/SILT
11:31	0.2 GAL	DRY	2518.4	11.77	5.68	1636	BROWN
11:37	SURGED	15.64	2518.4	12.62	5.70	1606	BROWN W/SILT
11:39	0.2 GAL	DRY	2518.2	11.58	5.68	1595	BROWN
11:52	SURGED	15.64	2518.4	13.09	5.71	1599	BROWN W/SILT
11:54	0.3 GAL	DRY	2518.4	11.70	5.63	1673	BROWN
11:59	SURGED	15.64	2518.4	13.47	5.68	1609	BROWN W/SILT
12:01	0.3 GAL	DRY	2518.4	11.11	5.64	1627	BROWN
12:08	SURGED	15.64	2518.4	13.74	5.63	1615	BROWN W/SILT
12:13	1 GAL	~~DRY~~ 16.79	1636.1	11.29	5.68	1611	BROWN

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER
4160	BH-SF-E-PZ-26-B SHEET 2 OF 2

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 PIEZOMETER DEVELOPMENT LOCATION: MOUTH OF BUNKER CR. NEXT TO PZ 26-A
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 15.62' START: 8:21 END: 14:24 LOGGER: GM
BOTTOM: 17.96'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (µS/cm) (µmhos/cm)	Remarks (color, odor, sheen, sediment, etc.)
12:16	1.3 GAL	16.70	211.0	11.42	5.73	1632	CLEAR
12:18	1.8 GAL	16.69	72.0	11.29	5.64	1632	CLEAR
12:24	SURGED	15.63	2518.4	13.74	5.81	1605	BROWN W/SILT
12:29	0.6 GAL	DRY	2013.7	11.23	5.75	1618	MILKY
12:36	SURGED	15.63	2516.4	13.21	5.63	1599	BROWN W/SILT
12:40	0.5 GAL	17.17	784.7	11.62	5.61	1651	MILKY
12:43	1.2 GAL	16.85	130.1	11.33	5.69	1632	CLEAR
12:45	1.5 GAL	16.79	54.2	11.26	5.60	1632	CLEAR
12:51	SURGED	15.63	2468.9	14.39	5.77	1606	BROWN W/SILT
12:56	0.6 GAL	16.52	1824.1	12.90	5.74	1637	LIGHT BROWN
13:02	SURGED	15.63	1693.6	12.12	5.80	1624	BROWN W/SILT
13:07	0.7 GAL	16.97	392.4	11.30	5.68	1634	MILKY/CLEAR
13:12	1.5 GAL	16.80	53.0	11.12	5.73	1632	CLEAR
13:21	SURGED	15.61	2473.2	12.94	5.66	1610	BROWN W/SILT
13:26	1 GAL	15.88	1011.7	11.37	5.62	1632	MILKY
13:31	2 GAL	15.80	44.2	11.21	5.71	1632	CLEAR
13:42	SURGED	15.61	2325.9	12.36	5.70	1645	BROWN W/SILT
13:47	1 GAL	16.04	218.9	11.42	5.68	1633	CLEAR
13:52	2 GAL	15.92	19.6	11.23	5.72	1632	CLEAR
13:58	SURGED	15.61	2265.2	12.12	5.64	1635	BROWN/W SILT
14:03	1 GAL	15.79	307.3	11.41	5.68	1633	CLEAR
14:08	2 GAL	15.75	23.7	11.35	5.63	1633	CLEAR

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160	BH-SF-E-PZ-27	SHEET 1 OF 1

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 PIEZOMETER DEVELOPMENT LOCATION:
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 11.55' START: 7:52 END: 10:50 LOGGER: GM
BOTTOM: 15.35'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
9:21 ← 9:22	INITIAL	11.55	2471.3	11.90	6.46	417.4	MILKY/LIGHT BROWN
9:23	1.2 GAL	11.62	162.7	11.73	5.96	317.5	CLEAR
9:26	3.5 GAL	11.62	44.8	11.70	5.88	310.2	CLEAR
9:31	SURGED	11.62	2518.4	11.80	5.86	290.9	BROWN W/SILT
9:33	1 GAL	11.62	2172.9	11.82	5.83	317.7	LIGHT BROWN
9:36	2.9 GAL	11.68	375.8	11.82	5.84	327.6	CLEAR
9:41	6 GAL	11.69	57.0	11.82	5.80	328.3	CLEAR
9:48	SURGED	11.63	2518.4	12.02	5.85	304.6	BROWN W/SILT
9:53	4 GAL	11.68	307.2	11.84	5.83	320.8	CLEAR
9:58	7 GAL	11.69	76.2	11.85	5.79	324.4	CLEAR
10:04	SURGED	11.59	2518.6	12.92	5.84	326.7	BROWN W/SILT
10:09	4.5 GAL	11.68	47.2	13.11	5.84	326.4	CLEAR
10:16	SURGED	11.58	2518.6	14.09	5.87	326.9	BROWN W/SILT
10:21	4.5 GAL	11.66	238.9	11.87	5.81	322.7	MILKY
10:26	7.5 GAL	11.68	33.9	11.87	5.82	328.1	CLEAR
10:31	SURGED	11.59	2407.4	14.01	5.77	328.8	BROWN W/SILT
10:36	3.8 GAL	11.68	225.4	11.89	5.81	330.3	MILKY
10:41	7 GAL	11.68	24.3	11.86	5.80	326.9	CLEAR

CG 7/22

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 8-6-08	BH-SF-E-PZ-~~27~~ 28	SHEET 1 OF ~~1~~2

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development
LOCATION: SE corner of lumber yard, next to Grat. Gulch + bike path
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 13.99' START: 8:22 END: 12:10 LOGGER: CG
Bottom: 17.82'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

	Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
*	8:45	Initial	14.14'	1868.3	11.53	7.49	324.7	Brown w/silt
	8:58	SURGE	14.22'	-0.3	16.13	7.40	269.1	Brown w/silt, thick
	9:16	SURGE	14.11'	-0.5	18.39	7.01	241.6	Brown w/silt, thick
	9:21	1.5 gal	14.54'	2782.8	10.53	6.84	215.3	Brown w/silt
	9:26	2.5 gal	14.58'	962.2	10.35	6.75	210.4	Tan tint
	9:31	4 gal	14.23'	271.6	10.37	6.69	209.2	Mostly clear
	9:43	SURGE	14.11	-0.1	15.02	6.77	222.5	Brown w/silt, thick
	9:48	1.5 gal	14.30	2326.5	10.61	6.63	208.0	Brown tint
	9:53	3.5 gal	14.33	548.0	10.43	6.55	205.5	Brown tint
	10:04	SURGE	14.08	-0.1	14.92	6.60	218.8	Brown w/silt
	10:09	2.5 gal	14.27	1222.2	10.30	6.52	204.1	Brown tint
	10:15	5 gal	14.23	1203.9	10.19	6.47	204.0	Brown tint
	10:20	7 gal	14.21'	79.1	10.10	6.43	203.3	Mostly clear
	10:32	SURGE	14.07	3.1	13.38	6.56	218.5	Brown w/silt
	10:37	2.5 gal	14.21	1207.1	10.25	6.48	203.6	Brown tint
	10:43	5 gal	14.18'	245.1	10.24	6.46	202.7	Brown tint
	10:49	8 gal	14.18'	71.8	10.37	6.45	202.4	mostly clear
	10:54	10 gal	14.14'	32.6	10.22	6.46	202.5	clear
	11:07	SURGE	14.06'	8.6	13.45	6.61	220.5	Brown w/silt
	11:12	2.5 gal	14.18	1113.5	10.47	6.51	203.0	Brown tint
	11:18	5 gal	14.15	313.6	10.59	6.46	201.8	mostly clear
	11:24	7 gal	14.18'	85.1	10.65	6.44	201.5	clear
	11:29	9 gal	14.16	30.0	10.39	6.42	201.3	Clear

* Well went dry on 1st purge very quickly, before purging <1 gal. Same on 2nd purge

CG 9/22

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 8-6-08	BH-SF-E-PZ-~~27~~28	SHEET 2 OF 2

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer development
LOCATION: SE corner of lumber yard at Gravel Gulch + bike path
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 13.99' START: 8:22 END: 12:10 LOGGER: CG
Bottom: 17.82
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (~~µmhos/cm~~ µS/cm)	Remarks (color, odor, sheen, sediment, etc.)
11:45	SURGE	14.06	15.6	13.10	6.59	214.3	Brown w/ silt
11:50	2.5 gal	14.14	870.6	10.58	6.48	204.9	Mostly clear
11:56	4 gal	14.14	252.6	10.65	6.44	203.7	Mostly clear
12:01	6 gal	14.14	85.4	10.69	6.43	204.0	clear
12:06	7.5 gal	14.14	35.4	10.38	6.43	204.0	clear

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 7-30-08	BH-SF-E-PZ-29	SHEET 1 ~~1~~ 2 OF ~~1~~ 2

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development
LOCATION: NE corner of lumber yard along gent. gulch
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 12.63' START: 6:45 END: 12:50 LOGGER: JM, CG

Bottom:

MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (~~µmhos/cm~~ µS/cm)	Remarks (color, odor, sheen, sediment, etc.)
7:35	INITIAL	12.63	1694.7	15.44	7.09	717.4	Brown w/Silt AND DEBRIS
7:40	1 GAL	12.98	403.6	11.61	7.66	743.6	MOSTLY CLEAR
7:48	Surge	12.85	1.3	13.42	7.87	717.2	BROWN w/ Silt
7:53	2 GAL	12.92	2782.2	11.73	7.47	773.3	BROWN w/ SILT
7:58	4 GAL	12.92	361.6	11.61	7.16	777.8	BROWN Tint
8:08	Surge	12.73	1.8	13.94	6.98	732.7	BROWN w/SILT
8:13	1 GAL	12.73	2078.6	11.86	6.93	753.0	BROWN w/ Silt
8:18	2 GAL	12.72	1378.4	11.68	6.88	767.2	Brown tint
8:23	4 GAL	12.71	232.3	11.62	6.81	769.6	MOSTLY clear
8:32	SURGE	12.76	1.1	13.45	6.90	767.3	BROWN W/SILT
8:37	1 1/2 GAL	12.73	2787.2	11.74	6.85	770.1	BROWN Tint
8:42	3 GAL	12.73	460.1	11.68	6.83	775.8	Mostly clear
8:47	4 1/2 GAL	12.72	260.3	11.73	6.88	775.6	Mostly clear
8:57	Surge	12.70	32.0	13.76	6.79	751.6	Brown w/silt
9:03	2 1/2 GAL	12.72	1543.7	11.74	6.74	772.0	BROWN TINT
9:08	4 1/2 GAL	12.72	329.9	11.61	6.70	788.6	Mostly Clear
9:11	7 1/2 GAL	12.72	87.9	11.65	6.66	800.4	Clear
9:19	Surge	12.73	9.2	13.54	6.64	793.8	Brown w/silt
9:24	1 1/2 GAL	~~12.89~~ 12.71	2782.5	11.92	6.64	768.5	Brown Tint
9:29	2 1/2 GAL	12.68	1908.5	11.93	6.62	767.5	BROWN Tint
9:34	3 1/2 GAL	12.69	373.1	11.84	6.61	766.9	BROWN Tint
9:39	5 1/2 GAL	12.70	266.4	11.79	6.62	770.7	MOSTLY clear
9:44	7 1/2 GAL	12.69	99.6	11.74	6.61	776.8	CLEAR
9:57	SURGE	12.69	224.9	14.02	6.67	767.8	Brown w/silt
10:00	3 GAL	12.72	652.1	11.67	6.62	763.4	BROWN TINT

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 7-30-08	BH-SF-E-PZ-29	SHEET 2 OF 2

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development
LOCATION: NE corner of lumber yard along gart. gulch
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 12.63' START: 6:45 END: 12:50 LOGGER: JM, CG

MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
10:05	5 gal	12.69	2161.9	11.74	6.59	781.9	Brown tint
10:10	6 1/2 gal	12.69	1000.0	11.79	6.58	768.1	Mostly clear
10:15	8 GAL	12.69	36.7	11.82	6.57	759.0	CLEAR
10:23	Surge	12.69	42.0	14.97	6.62	830.8	BROWN w/SILT
10:28	2 GAL	12.69	2782.5	12.15	6.63	752.9	BROWN TINT
10:33	3 GAL	12.69	1176.2	11.98	6.61	768.8	Mostly clear
10:38	4 1/2 GAL	12.70	517.2	11.88	6.60	766.7	CLEAR
10:43	5 1/2 GAL	12.69	367.4	11.82	6.58	762.4	CLEAR
10:51	SURGE	12.70	231.1	12.75	6.65	762.2	Brown w/silt
10:56	2 1/2 gal	12.71	387.7	11.73	6.61	769.1	Mostly clear
11:01	4 1/2 gal	12.70	62.2	11.91	6.58	763.8	Clear
11:06	5 1/2 gal	12.69	35.4	11.96	6.56	755.2	Clear
11:13	Surge	12.69	121.4	15.25	6.70	848.1	Brown w/silt
11:18	2 GAL	12.71	2787.2	12.15	6.71	763.8	Brown Tint
11:24	4 1/2 GAL	12.71	168.4	11.87	6.66	766.9	Mostly Clear
11:29	6 1/2 GAL	12.70	44.2	11.79	6.63	770.9	CLEAR
11:35	9 1/2 GAL	12.69	22.4	11.82	6.60	769.1	Clear
11:48	SURGE	12.67	558.1	16.67	6.70	780.1	Brown w/silt
11:53	2 GAL	12.68	976.1	12.08	6.68	739.6	Brown Tint
11:58	4 1/2 gal	12.68	71.4	12.02	6.62	727.7	Clear
12:03	6 GAL	12.68	133.5	12.05	6.60	753.6	Clear
12:08	7 1/2 GAL	12.68	37.0	12.05	6.59	749.8	CLEAR
12:19	SURGE	12.68	237.9	15.46	6.73	855.2	Brown w/silt
12:24	2 GAL	12.69	815.9	12.31	6.73	760.9	Brown Tint
12:29	3 GAL	12.69	122.3	12.23	6.72	749.4	CLEAR
12:34	5 GAL	12.66	30.5	12.92	6.68	731.5	CLEAR

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 7-28-08 / 7-29-08	BH-SF-E-PZ-3D	SHEET 1 OF 3

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development
LOCATION: East side Coal Gulch across from Lumber yard + I-90
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 13.81' Bottom: 18.00' 7/29=13.91'
START: 13:40
END: 12:15 7/29
LOGGER: JM, CG
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
14:18	Initial	13.95	1753.7	12.76	7.48	1229	Brown/rusty w/silt
14:30	Surge	13.96	-0.4	16.86	7.03	1175	Brown w/silt
14:35 ~~14:30~~ *	DRY	17.45	757.1	13.14	7.13	1174	Brown w/silt
7/29 7:42	SURGE(2)	14.01	17.9	11.87	7.06	1163	Brown w/silt
8:00	SURGE	13.86	-0.2	13.24	7.05	1026	Brown w/silt
8:05	1 GAL	17.47	8.3	12.30	6.91	1095	BROWN w/SILT
8:10	1.3 gal	17.40	2731.8	12.26	6.84	950	Brown tint
8:15	1.5 gal	17.20	1593.8	12.27	6.80	834.9	BROWN tint
8:20	2 GAL	16.97	847.4	12.39	6.74	794.6	BROWN tint
8:25	2.5 GAL	16.82	462.2	12.41	6.70	786.7	BROWN tint
8:38	SURGE	13.89	7.4	14.33	6.71	796.7	Brown w/silt
8:43	1/2 GAL	15.34	157.4	12.72	6.69	851.2	BROWN w/silt
8:48	1 GAL	15.38	859.2	12.35	6.62	887.3	BROWN tint
8:53	2 gal	15.31	72.1	12.40	6.61	848.5	Mostly clear
9:03	Surge	13.88	1734.9	15.08	6.57	838.9	BROWN w/silt
9:08	0.5 gal	15.30	1040.7	12.87	6.60	817.4	Brown w/silt
9:14	1.5 gal	14.97	353.1	12.61	6.55	824.2	Brown tint
9:19	2. GAL	14.94	113.7	12.70	6.54	158.7	Mostly clear
9:28	SURGE	13.88	2782.7	15.65	6.51	842.7	Brown w/silt

* Quit for day, resume 7-29
- Initial turb. readings inaccurate due to high silt content of water, vent clay almost immediately

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	SHEET	OF
4160 7-29-08	BH-SF-E-PZ-30	2	3

Continued

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development
LOCATION: East side Gart. Gulch, across from lumber yard + I-90
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 13.81'/13.91' START: 7-28 13:40 7-29 7:30 END: 12:15 7/29 LOGGER: JM, CG
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (~~µmhos/cm~~ µS/cm)	Remarks (color, odor, sheen, sediment, etc.)
9:33	~~14.70~~ 1 GAL (KM)	14.70	2108.4	12.73	6.55	875.2	Brown w/Silt
9:38	1 1/2 gal	14.93	2787.7	12.35	6.52	937.8	Brown Tint
9:43	2 GAL	14.90	99.7	~~6.50~~ 12.29 (KM)	6.50	884.8	Mostly Clear
9:51	Surge	13.90	61.2	16.69	6.56	932.9	Brown w/Silt
9:56	1 GAL	14.63	2714.9	12.75	6.55	886.1	Brown Tint
10:01	1 1/2 gal.	15.44	2782.8	12.56	6.53	792.6	Brown w/ Silt
10:06	2 GAL	15.08	2783.3	12.24	6.51	1042	Brown Tint
10:11	3 GAL	15.16	83.6	12.38	6.50	910.3	Mostly Clear
10:20	Surge	13.83	42.5	14.88	6.61	966.8	Brown w/ Silt
10:25	1 gal	14.52	2238.5	12.57	6.53	952.9	Brown tint, dark
10:30	2 gal	14.34	349.6	12.80	6.51	752.9	Mostly clear
10:36	2 1/4 gal	14.31	62.8	12.76	6.50	813.8	Clear
10:42	SURGE	13.83	57.0	17.11	6.56	996.9	Brown w/silt
10:47	0.5 gal	14.05	1522.2	13.57	6.55	940.3	Brown w/ silt
10:53	1 1/2 gal	14.44	2425.7	12.68	6.53	743.6	Brown Tint
10:58	2 GAL	14.33	259.9	12.55	6.49	894.3	Mostly Clear
11:06	Surge	13.88	933.6	20.78	6.48	968.7	Brown w/Silt
11:11	1 GAL	14.23	1777.7	12.87	6.51	894.1	Brown Tint
11:16	1 1/2 gal.	14.27	489.5	12.34	6.49	1088	Mostly Clear
11:21	2 GAL	14.31	208.7	12.15	6.49	1076	CLEAR
11:28	SURGE	13.90	2563.5	16.27	6.55	1089	Brown w/Silt
11:33	1 GAL	14.63	2782.9	12.90	6.53	830	Brown Tint

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 7-29-08	BH-SF-E-PZ-30	SHEET 3 OF 3

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development LOCATION: East Side Gout. Gulch, across from Lumber yard + I-90
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 13.81'/13.91' START: 7-28 13:40 END: 12:15 LOGGER: JKM, CG
7-29 7:30 7-29-08
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (~~µmhos/cm~~) µS/cm	Remarks (color, odor, sheen, sediment, etc.)
11:38	2 gal	14.36	154.8	12.33	6.50	930.7	Mostly Clear
11:43	3 gal	14.33	31.9	12.35	6.49	914.8	CLEAR
11:50	Surge	13.85	26720	20.39	6.46	1.634	BROWN W/SILT
11:55	1 GAL	14.14	2782.9	12.66	6.52	1098	BROWN Tint
12:00	2 GAL	14.13	169.7	12.57	6.49	1142	Mostly Clear
12:05	2½ gal	14.15	361.2	13.13	6.47	715.8	Mostly Clear
12:10	3½ gal	14.19	68.4	12.03	6.47	1210	Clear
12:15	4½ gal	14.18	45.7	12.28	6.46	975.4	Clear

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 7-23-08	BH-SF-E-PZ-31	SHEET 1 OF ~~12~~ 3

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development LOCATION: Gout. Gulch + I-90
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 14.11' START: 11:35 END: 16:22 LOGGER: CG, AR
Bottom: 17.48'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
11:40	Initial	14.11'	2473.6	11.58	5.95	218.5	Brown w/sediment
11:42	1.5 gal	14.37	21.0	11.04	5.83	262.9	Clear
11:51	SURGE	16.5	1142.5	11.85	5.89	243.9	Red-brown w/Sediment
12:00	1 gal (~DRY)	17.6	1901.5	11.48	5.81	257.3	light brown (Dry)
12:05	1 gal (recharge)	14.42	1192.0	13.00	5.97	266.0	light brown (Recharged)
12:10	1.5 gal	16.19	142.0	11.79	5.87	246.0	light brown
x 12:15	2 gal (Dry)	17.1	357.6	11.45	5.81	263.2	light brown (Dry)
~~12:25~~ 12:32	SURGE	14.14	603.0	11.95	5.94	268.1	Brown w/ sediment (Recharged)
12:~~13~~ 37	1.5 gal	14.23	217.5	11.35	5.76	265.2	light brown
12:~~15~~ 42	3.0 gal	14.16	47.0	11.17	5.69	275.5	clear
12:56	SURGE	14.12					

Screen froze on Rugged reader

* Rebooted Rugged reader after screen froze
12:56 compaired TG Troll 9000 w/ Rental Troll 9500 NTU on TG Troll ~~fluctuated~~ changes rapidly - Rental is stable. Switched to Troll 9500 recorded parameters on Seperate sheet.

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 7-23-08	BH-SF-E-PZ-31	SHEET 12 OF 13

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development LOCATION: Gov't Gulch & I-90
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 14.11' START: 11:35 END: 16:22 LOGGER: CG, AR
Bottom 17.48'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Using Troll 9500 after SURGE at 12:56

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (~~µmhos/cm~~ µS/cm)	Remarks (color, odor, sheen, sediment, etc.)
13:04	0.5 gal	14.16	2782.3 (FTU)	11.28	6.85	231.9	Brown
~~13:09~~							
13:14	2.5 gal	14.11					Slight brown
13:27	3 gal	14.13	317.7	12:02	6.76	222.5	Slight brown
13:32	3.5 gal	14.13	72.1	13.37	6.68	228.9	Clear
13:36	4 gal	14.12	47.6	13.89	6.66	233.7	Clear
13:43	surge	14.11	2782.7	11.67	6.76	237.6	Brown w/ sediment
13:55	2 gal	14.10	177.0	11.41	6.73	238.8	Clear
14:00	4 gal	14.12	29.3	11.42	6.72	238.8	Clear
14:07	SURGE	14.11	1178.3	12.41	6.68	263.6	Brown w/ silt
14:12	1.5 gal	14.12	179.2	11.79	6.69	233.8	slight brown
14:17	2.5 gal	14.10	43.4	11.64	6.68	241.8	Clear
14:27	SURGE	14.11	2782.7	13.91	6.63	276.3	Brown w/ silt
14:32	1.5 gal	14.13	152.2	11.62	6.65	243.3	mostly clear.
14:37	2 gal	14.13	133.4	11.89	6.62	241.0	Clear
14:41	3.0 gal	14.13	38.1	11.72	6.60	243.7	Clear
14:48	SURGE	14.13	2782.7	15.79	6.56	286.0	Brown w/ silt
14:56	1.5 gal	14.17	223.0	11.25	6.64	229.4	slight brown
15:01	3.5 gal	14.17	45.5	10.99	6.62	240.6	Clear
15:09	Surge	14.11	2486.0	12.10	6.62	254.7	Brown

working on converting to NTU from FTU. (13:50) tubing problems

13:14 problem w/ flex tubing | 13:54 replaced flex tubing 3rd piece of tubing for PZ-3)

13:27 fixed tubing, changed units on Rugged reader - resumed pumping

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 7/23/08	BH-SF-E-PZ-31	SHEET 13 OF 13

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development LOCATION: Gov't gulch & I-90
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 14.11' START: 11:35 END: 16:22 LOGGER: CG, AR
Bottom 17.48'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

µS/cm

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (~~µmhos/cm~~)	Remarks (color, odor, sheen, sediment, etc.)
15:14	3 gal	14.09	107.8	11.10	6.62	240.1	clear, slight tint
15:19	5 gal	14.08	41.4	11.00	6.61	244.7	clear
15:31	SURGE	14.11	1634.1	12.59	6.86	257.2	Brown w/silt
15:36	1.5 gal	14.08	433.9	11.72	6.94	232.9	mostly clear
15:41	3 gal	14.08	156.6	11.58	6.79	230.70	mostly clear
15:46	4 gal	14.08	48.7	11.48	6.73	236.5	mostly clear
15:55	SURGE	14.05	2158.9	11.87	7.25	245.9	Brown w/silt
15:59	2 gal	14.20	251.3	11.15	7.73	236.7	mostly clear
16:04	5 gal	14.09	39.3	11.25	7.34	242.9	clear
16:11	SURGE	14.04	1600.0	13.42	7.14	258.2	Brown w/ silt
16:16	2 gal	14.13	1290.8	11.56	7.14	230.8	mostly clear
16:22	4.5 gal	14.12	37.6	11.40	7.23	234.9	clear

* Conductivity units on TROLL 9500 is "Actual," not "Specific"

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 7/24/08	BH-SF-E-PZ-32	SHEET 1 OF 3

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development LOCATION: Grout. Gulch, I-90, Lumber Yard
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 14.13' START: 7:25 END: 12:22 LOGGER: CG, AR
Bottom 17.95
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
7:53 ~~7:55~~	Initial	~~14.15~~ 15.56	1808.9	10.35	6.94	268.1 (AC)	Brown w/silt
7:58	1.5gal	15.94	770.7	9.90	7.47	259.7 (AC)	Brown
8:03	2.5gal	15.78	85.3	9.90	6.83	* 365.2 (SC)	clear
8:08	4 gal	15.66	47.3	9.92	6.68	365.0	Clear
8:18	SURGE	14.27	-0.7	11.38	6.74	371.8	Brown/red, lots of silt, Thick/viscous
8:23	1 gal.	16.62	1877.0	10.56	6.61	363.4	Brown, lots of silt, slow recharge
8:28	2 gal	16.37	2782.4	10.43	6.58	360.5	Brown w/ silt
8:33	2.5gal	16.76	2242.4	10.26	6.53	358.8	Brown
8:38	3 gal	16.46	424.7	10.29	6.51	357.9	Slight brown tint
8:43	4 gal	16.34	217.9	10.30	6.55	355.8	mostly clear
8:48	4.5gal	16.12	93.0	10.44	6.50	356.0	mostly clear
8:53	5 gal	16.46	282.7	10.38	6.49	355.3	mostly clear
8:57	5.5gal	16.34	64.9	10.37	6.93	356.3	clear
9:07	SURGE	14.24	2106.6	13.04	7.02	364.3	Brown, thick w/sediment
9:12	1 gal	15.15	1788.3	10.78	6.88	358.1	Brown, thick w/sediment
9:17	2 gal	15.10	2632.1	10.76	6.79	359.0	Brown w/ Sediment
9:22	2.5gal	15.08	952.8	10.56	6.75	356.9	Brown
9:27	3 gal.	15.05	397.6	10.59	6.71	353.9	Slight brown tint
9:33	4gal	15.01	188.2	10.56	6.69	355.8	mostly clear
9:38	5 gal	15.01	120.6	10.78	6.67	355.2	mostly clear
9:43	6 gal.	14.97	64.5	10.64	6.66	356.7	clear

* Changed units of conductivity on Rugged reader from "Actual.." to "Specific..."

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 7-23-08	BH-SF-E-PZ-32	SHEET ~~1~~ 2 OF ~~1~~ 3

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development LOCATION: Gort. Gulch, I-90, Lumber Yard
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 14.13' START: 7:25 END: 12:22 LOGGER: CG, AR
Bottom: 17.95'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
9:51	SURGE	14.21	2785.4	11.73	6.67	369.1	Brown, Thick w/ sediment
9:56	1 gal	14.20	2782.5	10.37	6.66	354.4	Brown w/ sediment
10:01	2 gal	14.18	753.9	10.37	6.63	353.4	Brown
10:06	3.5 gal	14.14	525.5	10.32	6.61	355.7	mostly clear
10:11	5 gal	14.16	111.1	10.32	6.60	352.6	mostly clear
10:16	5.5 gal	14.16	245.6	10.64	6.57	353.5	mostly clear w/ brown tint
10:21	7.0 gal	14.16	159.9	10.76	6.57	354.1	mostly clear
10:26	7.5 gal	14.16	156.6	10.36	6.57	352.7	mostly clear
10:31	8.5 gal	14.16	52.0	10.38	6.55	351.2	clear
10:41	SURGE	14.20	2782.5	11.59	6.62	362.8	Brown w/ silt, thick
10:46	1 gal	14.22	2782.8	10.43	6.57	357.8	Brown w/ thick silt
10:51	2.5 gal	14.20	2031.9	10.35	6.54	357.1	Brown
10:56	4 gal	14.17	215.7	10.30	6.54	~~256.~~ CG 355.4	Brown tint
11:01	6 gal	14.16	151.6	10.28	6.54	353.0	Mostly clear
11:06	7 gal	14.17	92.3	10.31	6.54	355.0	mostly clear
11:11	7.5 gal	14.18	373.3	10.55	6.54	355.3	slightly brown
11:16	8.5 gal	14.16	58.8	10.36	6.53	354.4	mostly clear

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 723-08	BH-SF-E-PZ-32	SHEET 3 OF 1 3

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 Piezometer Development LOCATION: Goat Gulch, I-90, lumber yard
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 14.13' START: 7:25 END: 12:22 LOGGER: CG, AR
Bottom: 17.95'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (~~µmhos/cm~~ µS/cm)	Remarks (color, odor, sheen, sediment, etc.)
11:27	SURGE	14.16	1857.9	12.17	6.66	362.4	Brown, w/thick sediment.
11:32	1.5 gal	14.20	1848.4	10.23	6.59	351.3	Brown
11:37	3.5 gal	14.18	161.9	10.23	6.56	354.0	Slight brown - clear
11:42	5.5 gal	14.17	122.5	10.34	6.60	355.0	Mostly clear
11:47	7.5 gal	14.18	57.0	10.19	6.60	353.4	mostly clear
11:55	Surge	14.15	2630.5	12.79	6.68	358.2	Brown w/ thick sediment
12:00	1 gal	14.17	2576.7	10.65	6.64	354.7	Brown w/ sediment
12:05	1.5 gal	14.18	2090.1	10.66	6.61	354.2	Brown
12:10	3 gal	14.19	374.0	10.56	6.58	353.2	Slight brown
12:15	4 gal	14.19	228.1	10.21	6.57	352.7	Mostly clear
12:20	6 gal	14.18	46.9	10.43	6.55	351.3	clear

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 9-19-08	BH-W-PZ-1 -SF	SHEET 1 OF 1

PIEZOMETER DEVELOPMENT LOG

PROJECT 042 Piezometer Development LOCATION: NW corner of Page Pond
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 18.98 START 13:40 END: 14:45 LOGGER: CG
Bottom 30.01'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
13:45	SURGE	18.98'	2959.0	32.66	7.84	470	Gray/Brown w/silt
13:50	1 gal	26.08	2959.0	20.98	7.99	445	Gray w/silt
13:55	1.5 gal	26.34	1087.0	20.02	8.07	449	Gray tint
14:02	SURGE	22.50	2959.0	24.44	8.13	460	Gray w/silt
14:07	1 gal	26.82	2959.0	20.16	8.11	458	Gray tint
14:12	2 gal	28.03	657.0	21.16	7.95	458	Gray tint
14:20	SURGE	22.85	2959.0	27.98	7.98	455	Gray w/silt
14:25	1 gal.	26.30	2959.0	22.40	8.22	448	Gray tint
14:30	1.5 gal.	25.95	290.3	24.54	7.94	434	clear

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160 9-19-08	BH-W-PZ-2 -SF	SHEET 1 OF 1

PIEZOMETER DEVELOPMENT LOG

PROJECT OU2 Piezometer Development LOCATION: SW corner of Page Pond
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 16.74' START 10:19 END: 11:02 LOGGER: CG
Bottom: 30.05'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ mS/cm	Remarks (color, odor, sheen, sediment, etc.)
10:18	SURGE	16.74	2959.0	17.65	6.57	395	Gray w/silt
10:23	0.5 gal	19.31	2954.0	17.00	7.78	338	Gray w/silt
10:28	~1 gal	20.51	2959.0	14.01	7.74	287	Gray tint
10:37	SURGE	25.20	2487.0	15.09	0.43	288	Gray tint
10:45	SURGE	21.66	2959.0	16.00	8.10	289	Gray w/silt
10:50	1.5 gal	27.81	2737.0	13.87	7.78	289	Gray
10:55	2 gal	27.80	764.0	14.76	7.19	294	Gray tint

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160	BH-SF-W-PZ-03	SHEET 1 OF 1

PIEZOMETER DEVELOPMENT LOG

PROJECT: OUZ PIEZOMETER DEVELOPMENT LOCATION:
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 5.08 START: 16:36 9/18 END: 9:20 9/19 LOGGER: GM
BOTTOM: 11.85'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED
DISPOSITION OF DISCHARGE WATER:

* TOTAL TIME = 3H 21 MIN

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (~~µmhos/cm~~) µS/cm	Remarks (color, odor, sheen, sediment, etc.)
16:50	INITIAL	5.08	2518.2	16.19	6.22	551.0	BROWN W/SILT
16:52	2 GAL	5.19	72.4	14.61	6.08	552.3	CLEAR
16:56	SURGED	5.17	2518.4	16.07	6.09	511.9	BROWN W/SILT
16:59 ~~17:01~~	1 GAL	DRY	2262.9	16.02	6.09	514.7	BROWN
17:02	SURGED	7.65	2518.4	16.14	6.24	522.3	BROWN W/SILT
17:04	1 GAL	DRY	2518.4	15.91	6.22	530.1	BROWN W/SILT
17:08	SURGED	8.13	2518.4	17.52	6.28	529.7	BROWN W/SILT
17:10	0.7GAL	DRY	2518.4	15.88	6.24	531.8	BROWN
17:14	SURGED	8.19	2518.4	17.51	6.22	530.9	BROWN W/SILT
17:16	0.6GAL	DRY	2518.4	15.66	6.21	532.4	BROWN
17:20	SURGED	8.02	2518.4	15.99	6.21	537.0	BROWN W/SILT
17:22	0.5GAL	DRY	2518.4	15.88	6.19	535.2	BROWN
17:26	SURGED	7.29	2518.4	16.03	6.23	531.9	BROWN W/SILT
17:27	0.2GAL	DRY	2518.2	15.52	6.15	535.0	BROWN
17:33	SURGED	6.98	2518.2	15.90	6.22	530.4	BROWN W/SILT
17:34	0.2GAL	DRY	2518.2	15.43	6.14	532.6	BROWN
17:42	SURGED	6.61	2518.4	15.98	6.20	530.4	BROWN W/SILT
17:43	0.2GAL	DRY	2518.5	15.50	6.14	529.7	BROWN
17:50	SURGED	6.87	2518.4	15.99	6.17	526.6	BROWN W/SILT
17:51	0.2GAL	DRY	2518.4	15.42	6.11	528.4	BROWN
8:30	SURGED	5.02	2518.2	14.78	6.13	509.5	BROWN W/SILT
8:35	2.8 GAL	5.27	699.8	14.81	6.00	541.6	LIGHT BROWN
8:40	5 GAL	5.27	195.9	14.80	5.96	541.9	CLEARISH
8:45	7 GAL	5.27	53.7	14.81	5.93	542.1	CLEAR
8:51	SURGED	5.08	2487.2	14.91	5.92	526.7	BROWN W/SILT
8:56	2.5GAL	5.71	781.1	15.35	5.91	522.4	LIGHT BROWN
9:01 ~~8:61~~	5 GAL	5.73	119.5	15.34	5.88	521.6	CLEAR
9:06	7.5GAL	5.73	38.7	15.27	5.91	522.3	CLEAR

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160	BH-SF-W-PZ-04	SHEET 1 OF 1

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 PIEZOMETER DEVELOPMENT LOCATION:
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 5.86' START 10:00 END: 11:17 LOGGER: GM
BOTTOM: 12.75
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
10:12	INITIAL	5.86'	90.7	14.91	6.03	465.0	CLEAR
10:14	0.5 GAL	5.88'	59.2	14.58	5.72	468.0	CLEAR
10:20	SURGED	5.88	2518.5	14.75	5.55	464.4	BROWN W/SILT
10:25	2.5 GAL	5.89	295.4	14.65	5.56	474.5	CLEARISH
10:30	4.5 GAL	5.89	60.5	14.64	5.57	477.1	CLEAR
10:32	5.0 GAL	5.89	41.7	14.60	5.58	473.9	CLEAR
10:40	SURGED	5.89	2017.9	14.94	5.57	467.2	BROWN W/SILT
10:45	2.5 GAL	5.89	194.0	14.70	5.55	476.8	CLEAR
10:50	5 GAL	5.89	54.1	14.70	5.56	478.2	CLEAR
10:56	SURGED	5.88	2366.8	14.92	5.53	466.8	BROWN W/SILT (LITTLE SILT)
11:01	2 GAL	5.89	286.8	14.74	5.53	476.5	CLEAR
11:06	5 GAL	5.89	49.5	14.72	5.55	478.4	CLEAR

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160	BH-SF-W-PZ-05	SHEET 1 OF 1

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 PIEZOMETER DEVELOPMENT LOCATION:
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 6.07' START: 11:20 END: 12:18 LOGGER: GM
BOTTOM: 11.44'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
11:31	INITIAL	6.07	146.9	13.44	6.01	973.2	CLEAR
11:33	1 GAL	6.08	44.8	12.66	6.02	981.1	CLEAR
11:39	SURGED	6.08	2518.2	12.92	6.04	961.9	BROWN W/SILT
11:44	3 GAL	6.08	197.8	12.51	6.00	965.1	CLEAR
11:49	5 GAL	6.08	31.6	12.48	6.00	964.7	CLEAR
12:00	SURGED	6.07	2197.9	12.93	6.01	959.2	BROWN
12:05	2.5 GAL	6.08	166.1	12.61	5.99	961.4	CLEAR
12:10	5 GAL	6.08	30.8	12.59	6.00	963.4	CLEAR

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160	BH-SF-W-PZ-06	SHEET 1 OF 1

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 DEVELOPMENT PIEZOMETERS LOCATION:
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 6.70' START 14:19 END 16:33 LOGGER: GM
BOTTOM: 19.78'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
14:25	INITIAL	6.70	39.4	15.52	6.17	297.3	CLEAR
14:27	1 GAL	6.82	24.4	15.42	6.15	303.6	CLEAR
14:34	SURGED	8.06	2322.1	15.98	6.02	294.8	BROWN W/SILT
14:37	1.2 GAL	15.68	564.7	15.90	6.06	297.0	CLEAR
14:39	2.2 GAL	16.54	75.0	15.54	6.05	294.4	CLEAR
14:45	SURGED	8.01	2518.4	17.11	6.07	295.7	BROWN W/SILT
14:50	1.3 GAL	14.15	809.2	15.65	6.02	295.1	LIGHT BROWN
14:55	2.7 GAL	16.13	54.9	15.58	6.05	296.5	CLEAR
15:00	SURGED	6.73	2518.2	15.79	5.95	300.5	BROWN W/SILT
15:05	1.1 GAL	6.93	1367.1	15.18	5.92	302.7	LIGHT BROWN
15:10	2.5 GAL	6.95	369.2	15.12	5.89	304.4	CLEAR
15:15	4 GAL	6.92	204.2	15.04	5.88	304.9	CLEAR
15:20	5.2 GAL	6.92	80.4	15.01	5.90	304.4	CLEAR
15:25	SURGED	6.92	2518.4	16.94	5.95	306.9	BROWN W/SILT
15:30	1.4 GAL	12.32	862.9	15.54	5.96	298.3	LIGHT BROWN
15:35	2 GAL	12.79	97.6	15.39	5.95	297.4	CLEAR
15:41	SURGED	6.73	2518.2	16.69	5.96	301.8	BROWN W/SILT
15:46	1.6 GAL	6.85	1450.6	15.19	5.89	302.6	LIGHT BROWN
15:51	3.5 GAL	6.84	361.2	15.05	5.88	302.3	CLEAR
15:56	4.5 GAL	6.84	198.8	15.04	5.89	304.0	CLEAR
16:01	5.8 GAL	6.86	87.2	14.86	5.86	305.7	CLEAR
16:06	SURGED	6.72	2444.7	15.82	5.92	307.3	BROWN W/SILT
16:11	1.8 GAL	6.80	774.5	15.25	5.95	295.4	LIGHT BROWN
16:16	3.9 GAL	6.79	338.1	15.21	5.93	295.4	CLEAR
16:21	6 GAL	6.79	187.2	15.19	5.93	296.8	CLEAR
16:26	8 GAL	6.79	92.4	15.17	5.92	297.7	CLEAR

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160	BH-SF-W-PZ-07	SHEET 1 OF 2

PIEZOMETER DEVELOPMENT LOG

PROJECT: OU2 PIEZOMETER DEVELOPMENT LOCATION:
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 5.16' START 10:09 END 14:16 LOGGER: GM
BOTTOM: 12.01'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (~~µmhos/cm~~ µS/cm)	Remarks (color, odor, sheen, sediment, etc.)
10:34	INITIAL	5.16	140.3	17.33	6.26	386.9	CLEAR
10:38	2 GAL	DRY	310.1	16.97	6.32	371.2	MILKY/CLEAR
10:46	SURGED	6.02	2518.4	17.34	6.22	375.9	DARK ~~[illegible]~~ GREY
10:48	0.7 GAL	DRY	2286.7	17.40	6.28	378.2	GREY
10:57	SURGED	6.09	2518.4	17.89	6.44	372.5	DARK GRAY
10:59	0.5 GAL	DRY	1735.8	17.14	6.33	373.1	GREY
11:07	SURGED	6.10	2021.9	17.64	6.38	370.0	DARK GREY
11:10	0.6 GAL	DRY	1872.7	17.36	6.30	369.9	LIGHT GREY
11:18	SURGED	6.14	1902.1	17.61	6.29	367.3	DARK GREY
11:21	0.5 GAL	DRY	1289.2	17.34	6.27	367.4	LIGHT GREY
11:32	SURGED	5.97	1879.8	17.81	6.28	368.1	DARK GREY
11:36	0.5 GAL	DRY	1207.6	17.77	6.24	372.4	LIGHT GREY
11:45	SURGED	6.14	2006.9	18.17	6.29	366.4	DARK GREAY
11:50	0.5 GAL	10.33	1642.7	17.98	6.29	366.7	LIGHT GREY
11:54	1.2 GAL	DRY	542.1	17.72	6.25	368.2	MILKY
12:02	SURGED	6.16	2518.2	18.66	6.28	359.5	DARK GREY
12:07	0.8 GAL	10.53	1824.4	18.17	6.29	370.1	MILKY
12:09	1.83 GAL	DRY	889.1	18.23	6.30	368.2	MOSTLY CLEAR
12:18	SURGED	6.04	1706.1	19.15	6.31	360.9	DARK GREY
12:23	0.4 GAL	8.87	1602.7	19.50	6.30	376.7	GREY
12:27	0.8 GAL	DRY	917.9	18.21	6.28	368.9	LIGHT GREY/MILKY
12:36	SURGED	6.08	2021.3	18.72	6.34	360.4	DARK GREY
12:41	0.6 GAL	10.60	1741.1	18.60	6.26	379.2	MILKY
12:44	1.5 GAL	DRY	1072.4	18.36	6.28	368.6	MILKY/CLEARISH
12:50	SURGED	5.80	2401.3	19.33	6.26	361.5	DARK GREY
12:55	0.8 GAL	10.42	2021.6	18.53	6.28	372.6	GREY
12:57	1.2 GAL	DRY	744.8	18.22	6.29	368.5	LIGHT GREY
13:04	SURGED	5.20	1179.2	19.36	6.23	362.2	DARK GREY
13:09	0.6 GAL	5.39	1727.8	17.76	6.24	354.0	LIGHT GREY
13:14	1.2 GAL	5.39	1419.7	17.61	6.21	353.7	MILKY
13:19	2 GAL	5.39	619.2	17.44	6.19	352.9	CLEAR/MILKY
13:24	3 GAL	5.39	589.7	17.40	6.20	351.6	CLEAR/MILKY

CH2MHILL

PROJECT NUMBER	PIEZOMETER NUMBER	
4160	BH-SF-W-PZ-07	SHEET 2 OF 2

PIEZOMETER DEVELOPMENT LOG

PROJECT: OUC PIEZOMETER DEVELOPMENT LOCATION:
DEVELOPMENT CONTRACTOR:
DEVELOPMENT METHOD AND EQUIPMENT USED:
START WATER LEVELS: 5.16' START 10:09 END 14:16 LOGGER: GM
BOTTOM: 12.01'
MAXIMUM DRAWDOWN DURING PUMPING:
RANGE AND AVERAGE DISCHARGE RATE:
TOTAL QUANTITY OF WATER DISCHARGED:
DISPOSITION OF DISCHARGE WATER:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity ~~(µmhos/cm)~~ µS/cm	Remarks (color, odor, sheen, sediment, etc.)
13:29	4.5 GAL	5.40	332.8	17.29	6.18	351.6	CLEARISH
13:34	SURGED	5.20	1113.7	18.05	6.17	351.9	DARK GREY
13:39	1.2 GAL	5.36	1297.4	17.43	6.16	352.1	MILKY
13:44	2.3 GAL	5.36	738.3	17.29	6.16	350.7	CLEAR
13:49	3.7 GAL	5.36	397.8	17.32	6.13	351.6	CLEAR
13:54	4.5 GAL	5.36	191.5	17.29	6.16	351.2	CLEAR
13:59	5.8 GAL	5.36	106.4	17.26	6.16	351.3	CLEAR
14:04	6.5 GAL	5.36	78.9	17.24	6.17	350.2	CLEAR

ATTACHMENT C

Analytical Results for Total Metals

Attachment C
Analytical Results for Total Metals
OU2 Direct Push Field Investigation

Parameter:				ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER	IRON	LEAD	MAGNESIUM	MANGANESE	MERCURY	NICKEL	POTASSIUM	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC
Units:				MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
Station	**Sample Date**	**Depth**	**QA Type**																							
BH-SF-E-PZ-01	07/07/2008	1 - 2.7	N1	3,200 J	50 J	50	452 J	0.23 J	27 J	540 UJ	4.4 J	7.7 J	427	88,100	10,500	1,250	10,300 J	4.7 J	7.9 J	496 J	2.9 UJ	57 J	84 J	2.7 R	5.8 J	5,440
BH-SF-E-PZ-01	07/07/2008	4 - 5.9	N1	4,600 J	8.9 J	19	243 J	0.26 UJ	7.5 J	500 UJ	7.6 J	5.2 J	82	22,900	3,810	1,660	1,850 J	2.1 J	7.0 J	643 J	4.0 UJ	11 J	59 J	2.8 R	6.1 J	1,060
BH-SF-E-PZ-01	07/07/2008	8 - 9.5	N1	2,610 J	0.67 J	15	44 J	0.20 UJ	3.7 J	183 UJ	2.8 J	1.7 J	13	12,200	32	597	875 J	0.11 UJ	6.4 J	416 J	3.9 UJ	0.32 J	47 J	2.8 R	3.8 J	202
BH-SF-E-PZ-01	07/07/2008	9.5 - 11	N1	4,830 J	0.88 J	14	77 J	0.30 UJ	4.4 J	276 UJ	6.4 J	3.0 J	15	20,600	56	1,810	749 J	0.11 UJ	7.3 J	617 J	3.7 UJ	0.14 J	47 J	2.7 R	6.0 J	248
BH-SF-E-PZ-01	07/07/2008	12 - 13	N1	4,770 J	0.93 J	17	80 J	0.22 UJ	5.6 J	274 UJ	5.7 J	3.4 J	19	26,100	94	1,920	2,700 J	0.11 UJ	6.2 J	548 J	3.9 UJ	0.41 J	551 U	2.8 R	5.5 J	370
BH-SF-E-PZ-01	07/07/2008	13 - 15	N1	3,850 J	0.83 J	11	48 J	0.21 UJ	2.6 J	258 UJ	3.8 J	3.9 J	16	11,200	36	1,350	668 J	0.13 UJ	6.8 J	502 J	4.6 UJ	1.3 UJ	650 U	3.3 R	5.6 J	304
BH-SF-E-PZ-01	07/07/2008	16 - 18	N1	6,120 J	0.89 J	12	59 J	0.34 J	2.3 J	375 UJ	5.2 J	5.7 J	23	15,000	45	2,010	714 J	0.13 UJ	11 J	762 J	4.9 UJ	1.4 UJ	68 J	3.5 R	8.7 J	376
BH-SF-E-PZ-01	07/07/2008	18 - 20	N1	8,460 J	8.3 R	11	96 J	0.40 J	2.1 J	583 UJ	6.8 J	6.8 J	25	17,400	42	2,690	707 J	0.14 UJ	12 J	1,060 J	4.9 UJ	1.4 UJ	89 J	3.5 R	12 J	360
BH-SF-E-PZ-01	07/07/2008	20 - 22	N1	8,120 J	8.2 R	10	117 J	0.39 J	2.4 J	545 UJ	6.4 J	6.1 J	22	16,500	43	2,370	785 J	0.14 UJ	12 J	1,100 J	4.8 UJ	1.4 UJ	73 J	3.4 R	12 J	326
BH-SF-E-PZ-01	07/07/2008	22 - 24	N1	3,520 J	0.97 J	8.3	70 J	0.23 J	2.2 J	536 UJ	4.1 J	2.2 J	16	15,300	27	1,470	531 J	0.075 UJ	6.7 J	488 J	3.8 UJ	1.1 UJ	61 J	2.7 R	6.0 J	244
BH-SF-E-PZ-03	07/10/2008	0 - 2.3	N1	8,490	10 J	39	106	0.31 J	6.5	2,120	7.3	13	73	39,400	2,310	3,000	2,420	1.6 J	18	1,180	3.7 U	5.6	52 J	1.6 J	10 J	1,010
BH-SF-E-PZ-03	07/10/2008	4 - 5	N1	4,710	26 J	45	110	0.20 J	12	820 J	5.8	13	131 J	61,400	8,880	1,770	5,680	2.3 J	12	687 J	3.8 U	25	38 J	2.7 U	5.3 UJ	2,490
BH-SF-E-PZ-03	07/10/2008	5 - 6.5	N1	2,490	66 J	49	166	0.16 J	75	1,650	6.1	15	376 J	113,000	13,300	3,390	11,600	16 J	12	547 J	3.8 U	43	21 J	2.7 U	4.0 UJ	11,400
BH-SF-E-PZ-03	07/10/2008	5 - 6.5	FD1	2,200	59 J	58	91	0.13 J	54	809 J	4.6	12	256 J	94,900	38,400	1,820	8,840	7.6 J	8.7	614 J	3.8 U	65	17 J	2.7 U	3.3 J	7,980
BH-SF-E-PZ-03	07/10/2008	8 - 9	N1	3,040	226 J	79	472	0.27 J	33	1,230 J	4.6	5.5 J	696 J	118,000	67,800	2,810	6,940	29 J	5.9 J	671 J	5.0 U	176	31 J	1.1 J	4.2 J	7,020
BH-SF-E-PZ-03	07/10/2008	8 - 9	FD1	2,650	178 J	69	383	0.21 J	43	1,360	4.6	6.2 J	651 J	124,000	48,000	3,220	8,580	29 J	4.3 J	587 J	4.7 U	135	27 J	3.4 U	3.8 J	7,840
BH-SF-E-PZ-03	07/10/2008	9 - 11	N1	7,440	25 J	20	143	0.39 J	20	593 J	6.9	8.2 J	69 J	24,500	5,170	2,290	1,310	4.5 J	6.2 J	685 J	4.7 U	17	28 J	3.4 U	9.3 J	1,180
BH-SF-E-PZ-03	07/10/2008	9 - 11	FD1	12,300	30 J	31	257	0.60 J	44	839 J	11	15 J	96 J	32,300	7,760	2,710	3,180	1.4 J	9.1 J	1,040 J	5.2 U	29	45 J	3.7 U	15	2,050
BH-SF-E-PZ-03	07/10/2008	12 - 14	N1	5,240	1.2 J	4.4	65	0.34 J	14	562 J	5.1	3.3 J	13 J	9,360	36	2,040	308	0.067 U	5.1 J	542 J	4.3 U	1.2 U	16 J	3.0 U	6.4 J	542
BH-SF-E-PZ-03	07/10/2008	16 - 18	N1	2,970	2.1 J	9.7	67	0.20 J	12	465 J	4.9	4.3 J	13 J	16,100	53	1,420	1,320	0.049 U	5.4 J	485 J	3.8 U	0.14 J	15 J	2.7 U	4.0 J	801
BH-SF-E-PZ-03	07/10/2008	20 - 22	N1	6,380	2.7 J	13	86	0.38 J	6.2	928 J	6.5	8.7 J	23 J	20,100	60	2,350	795	0.070 U	10 J	826 J	4.9 U	1.4 U	25 J	3.5 U	11 J	1,490
BH-SF-E-PZ-03	07/10/2008	22 - 23	N1	7,290	1.9 J	12	124	0.45 J	5.4	968 J	6.5	9.1 J	25 J	21,200	54	2,780	780	0.069 U	11	1,060 J	4.9 U	1.4 U	30 J	3.5 U	13 J	1,350
BH-SF-E-PZ-03	07/10/2008	22 - 23	FD1	6,430	1.9 J	12	82	0.38 J	5.4	826 J	6.0	8.7 J	23 J	17,800	56	2,290	693	0.064 UJ	9.7 J	973 J	0.80 UJ	1.3 UJ	28 J	0.72 J	10 J	1,290
BH-SF-E-PZ-04	07/31/2008	0 - 1.5	N1	6,280	2.7 J	6.3 J	92	0.42 UJ	0.34 UJ	3,060	9.7	4.8 J	31	13,700	226 J	1,860	808	0.15 J	5.6 UJ	967 J	3.7 UJ	0.45 UJ	36 J	2.6 U	18	73
BH-SF-E-PZ-04	07/31/2008	1.5 - 3.3	N1	2,720	31 J	79 J	136	0.23 UJ	39	1,600	4.2	11	169	72,500	11,800 J	1,290	7,100	11 J	9.6	622 J	3.7 UJ	30 J	20 J	1.3 UJ	4.1 UJ	5,180
BH-SF-E-PZ-04	07/31/2008	4 - 6.2	N1	2,300	32 J	50 J	114	0.19 UJ	24	1,240	3.3	11 J	269	96,500	7,350 J	2,880	9,890	12 J	6.9 UJ	576 J	3.7 UJ	22 J	18 J	1.1 UJ	3.1 UJ	2,710
BH-SF-E-PZ-04	07/31/2008	8 - 11	N1	5,640	10 J	33 J	203	0.38 UJ	43	936 J	6.3	19	80	38,600	2,590 J	2,050	4,330	2.4 J	9.3 UJ	771 J	4.1 UJ	7.8 J	25 J	2.9 U	7.4 UJ	3,610
BH-SF-E-PZ-04	07/31/2008	12 - 14	N1	4,530	2.6 J	17 J	60	0.28 UJ	11	518 J	6.8	5.9 J	18	19,600	193 J	2,230	618	0.31 J	10	622 J	3.8 UJ	0.50 UJ	18 J	2.7 U	7.3 UJ	1,030
BH-SF-E-PZ-04	07/31/2008	13.5 - 15	N1	3,410	1.6 J	15 J	42 J	0.25 UJ	6.4	387 J	3.7	4.6 J	11	15,300	27 J	1,600	361	0.021 J	6.0 UJ	743 J	3.7 UJ	1.1 UJ	21 J	2.6 U	5.4 UJ	588
BH-SF-E-PZ-04	07/31/2008	16 - 18	N1	3,060	3.2 J	11 J	55	0.23 UJ	7.1	417 J	4.3	7.1 J	16	21,100	119 J	1,270	973	0.13 J	8.4 UJ	550 J	3.9 UJ	0.25 UJ	21 J	2.8 U	4.3 UJ	669
BH-SF-E-PZ-04	07/31/2008	20 - 22	N1	7,280	2.0 J	16 J	110	0.44 UJ	5.8	853 J	6.6	8.2 J	27	19,300	41 J	2,500	905	0.036 J	12	1,130 J	5.1 UJ	1.4 UJ	30 J	3.6 U	12 UJ	1,540
BH-SF-E-PZ-04	07/31/2008	21.5 - 23	N1	7,440	1.8 J	15 J	125	0.46 UJ	5.2	868 J	6.5	8.8 J	25	20,000	43 J	2,590	884	0.035 J	12	1,210 J	5.0 UJ	1.4 UJ	34 J	3.5 U	12 UJ	1,220
BH-SF-E-PZ-05	07/10/2008	0 - 2	N1	9,880	3.9 J	38	132	0.43 UJ	11	2,150	18	18	55 J	29,300	577	4,190	1,020	0.44 J	15	879 J	3.9 U	1.1 J	100 J	2.8 U	16	735
BH-SF-E-PZ-05	07/10/2008	0.5 - 2	FD1	2,560	30 J	111	154	0.15 J	18	585 J	5.9	12	163 J	86,900	6,020	1,210	8,840	1.7 J	5.8 J	567 J	3.8 U	20	21 J	2.7 U	4.0 UJ	5,330
BH-SF-E-PZ-05	07/10/2008	4 - 5	N1	2,190	38 J	125	259	0.15 UJ	15	293 J	5.7	12	191 J	109,000	8,590	1,120	11,200	8.1 J	6.1 J	482 J	3.8 U	30	14 J	2.7 U	3.1 UJ	5,580
BH-SF-E-PZ-05	07/10/2008	5 - 6.7	N1	2,170	42 J	73	69	0.15 UJ	33	588 J	8.7	9.9 J	165 J	78,400	6,680	1,820	8,410	2.7 J	8.1 J	477 J	3.7 U	28	17 J	2.7 U	3.7 UJ	3,780
BH-SF-E-PZ-05	07/10/2008	8 - 10	N1	2,860	19 J	39	80	0.17 J	14	603 J	4.6	8.4 J	118 J	48,300	4,080	2,030	4,540	3.1	7.8 J	698 J	3.7 U	11 J	21 J	2.1 J	3.4 J	1,530
BH-SF-E-PZ-05	07/10/2008	8 - 10	FD1	2,190	49 J	74	61	0.19 J	38	794 J	5.7	11 J	198 J	83,300	9,770	1,670	8,920	5.0 J	9.2 J	605 J	4.2 U	32	18 J	3.0 U	3.8 UJ	4,320
BH-SF-E-PZ-05	07/10/2008	12 - 13	N1	3,980	2.5 J	14	122	0.24 UJ	11	552 J	8.3	4.0 J	24 J	19,800	197	1,430	1,640	0.095 U	8.5 J	511 J	3.9 U	0.56 J	22 J	2.8 U	4.7 UJ	968
BH-SF-E-PZ-05	07/10/2008	12 - 14	FD1	4,970	0.70 J	4.2	66	0.28 J	12	413 J	5.4	3.2 J	15 J	9,800	31	2,030	251	0.076 U	4.9 J	517 J	4.1 U	0.040 J	15 J	2.9 U	5.5 J	494
BH-SF-E-PZ-05	07/10/2008	16 - 18	N1	3,210	1.7 J	11	49 UJ	0.23 J	1.3	457 J	3.9	5.5 J	16 J	14,000	45	1,690	423	0.066 U	6.1 J	446 J	0.69 J	1.3 U	15 J	3.3 U	6.1 UJ	263
BH-SF-E-PZ-05	07/10/2008	16 - 18	FD1	4,140	1.8 J	12	69	0.25 J	1.6	450 J	5.1	5.2 J	17 J	16,700	43	1,710	466	0.16 J	7.5 J	610 J	4.2 U	1.2 U	19 J	3.0 U	6.1 UJ	322
BH-SF-E-PZ-05	07/10/2008	16 - 18	FD1	3,190	1.9 J	8.3	71	0.20 J	11	612 J	5.1	4.0 J	13 J	14,000	80	1,180	1,380	0.087 UJ	5.5 J	813 J	3.8 U	0.18 J	25 J	0.65 J	3.7 J	727
BH-SF-E-PZ-06	07/31/2008	0 - 1.5	N1	3,940	11 J	31 J	94	0.32 UJ	10	1,410	5.6	6.9 J	63	36,900	3,160 J	1,080	4,150	2.0 J	5.0 J	828 J	3.6 UJ	9.0 J	17 J	2.6 U	10 UJ	1,410
BH-SF-E-PZ-06	07/31/2008	1.5 - 2.9	N1	3,450	32 J	70 J	160	0.50 UJ	35	792 J	7.4	16	318	98,500	8,830 J	1,820	9,630	6.4 J	16	801 J	3.7 UJ	28 J	22 J	2.6 U	4.9 UJ	5,010
BH-SF-E-PZ-06	07/31/2008	4 - 5.5	N1	2,160	39 J	79 J	186	0.18 UJ	31	2,780	4.1	11 J	244	109,000	12,200 J	2,910	11,800	9.5 J	13	560 J	3.8 UJ	31 J	19 J	0.53 UJ	2.5 UJ	5,190
BH-SF-E-PZ-06	07/31/2008	8 - 10	N1	3,050	39 J	60 J	125	0.22 UJ	46	1,780	5.1	11	240	117,000	9,480 J	4,360	11,600	7.8 J	7.4 J	740 J	3.7 UJ	26 J	42 J	0.72 UJ	4.1 UJ	5,180
BH-SF-E-PZ-06	07/31/2008	12 - 14	N1	2,260	34 J	59 J	152	0.18 UJ	16	1,470	4.4	11	133	95,600	7,630 J	3,500	10,400	5.0 J	7.8 UJ	563 J	3.7 UJ	20 J	22 J	1.9 UJ	5.6 UJ	2,860
BH-SF-E-PZ-06	07/31/2008	16 - 18	N1	6,170	2.4 J	18 J	98	0.31 UJ	9.1	421 J	7.3	5.8 J	24	23,800	418 J	2,780	1,820	0.24 J	11	807 J	3.8 UJ	0.87 UJ	22 J	2.7 U	6.5 UJ	1,080
BH-SF-E-PZ-06	07/31/2008	20 - 22	N1	3,950	1.2 J	9.8 J	68	0.29 UJ	5.4	479 J	4.5	5.4 J	18	13,900	33 J	1,480	841	0.027 J	8.2 UJ	806 J	4.7 UJ	1.3 UJ	20 J	3.3 U	6.7 UJ	845
BH-SF-E-PZ-06	07/31/2008	20 - 22	FD1	3,780	1.5 J	11 J	65	0.30 UJ	4.4	456 J	4.5	5.1 J	20	14,500	30 J	1,510	726	0.032 J	7.8 UJ	790 J	4.6 UJ	1.3 UJ	20 J	3.3 U	6.9 UJ	724
BH-SF-E-PZ-08	08/05/2008	0 - 1.9	N1	2,890	20 J	37 J	104 J	0.22 J	17 J	1,500	5.3	6.5 J	134 J	54,800	4,160	1,260	5,970 J	3.5	7.4	735 J	3.9 U	18	137 J	2.8 U	5.7	3,040
BH-SF-E-PZ-08	08/05/2008	4 - 5.2	N1	2,430	30 J	39 J	108 J	0.17 J	20 J	1,030	4.9	6.4 J	129 J	71,700	7,690	2,230	8,820 J	6.1	7.3	936 J	4.1 U	23	152 J	2.9 U	6.7	4,320
BH-SF-E-PZ-08	08/05/2008	8 - 9.2	N1	3,160	24 J	46 J	305 J	0.35 UJ	25 J	3,350	16	7.9 J	175 J	58,400	4,880	1,940	4,790 J	5.5	14	530 J	4.0 U	17	305 J	2.8 U	8.5	4,120
BH-SF-E-PZ-08	08/05/2008	12 - 13	N1	2,350	31 J	56 J	83 J	0.20 UJ	34 J	2,830	8.9	7.3 J	172 J	104,000	11,200	3,580	12,200 J	7.3	10	743 J	6.6	25	163 J	2.6 U	5.8	4,210
BH-SF-E-PZ-08	08/05/2008	13.3 - 15	N1	2,740	17 J	29 J	75 J	0.16 UJ	14 J	1,390	76	5.9 J	111 J	67,500	4,900	2,860	7,650 J	4.0	9.9	549 J	3.6 U	11	108 J	2.6 U	11	2,200
BH-SF-E-PZ-08	08/05/2008	16 - 18	N1	3,060	19 J	21 J	54 J	0.20 UJ	12 J	537	13	7.0 J	79 J	38,600	6,870	1,780	3,770 J	2.6	8.4	586 J	3.7 U	23	96 J	2.7 U	5.3 J	2,140
BH-SF-E-PZ-08	08/05/2008	20 - 21	N1	3,850	0.94 J	15 J	79 J	0.18 UJ	6.2 J	301 UJ	5.9	4.7 J	17 J	15,400	52	1,490	1,130 J	0.11 U	6.0	420 J	3.9 U	0.31 J	63 J	2.8 U	6.8	639
BH-SF-E-PZ-08	08/05/2008	24 - 26	N1	5,130	7.8 UJ	8.2 J	72 J	0.29 UJ	2.5 J	623 UJ	5.7	5.5 J	19 J	13,700	41	1,660	613 J	0.043 J	8.6	656 J	4.5 U	1.3 U	102 J	3.2 U	8.9	741
BH-SF-E-PZ-09	08/01/2008	0 - 1	N1	834	87 J	186 J	46	0.25 UJ	0.52 U	5,240	2.7	8.1 J	208	58,900	145 J	2,310	4,790	0.41 J	8.6	613 J	3.6 UJ	39 J	20 J	2.6 U	0.65 UJ	127
BH-SF-E-PZ-09	08/01/2008	0 - 1	FD1	842 J	79 J	146	50	0.18 J	0.49 UJ	4,010	2.5 J	7.2 J	182 J	49,000 J	466 J	1,640 J	4,070 J	0.83	7.3 UJ	557 J	3.7 R	33 J	16 J	2.6 UJ	0.56 J	163
BH-SF-E-PZ-09	08/01/2008	1 - 2.2	N1	1,720 J	37 J	104	70	0.19 J	5.6	1,640	3.9 J	6.8 J	136 J	52,000 J	2,940 J	1,470 J	4,230 J	2.1	6.5 J	475 J	3.8 R	21 J	27 J	2.7 UJ	2.7 J	988
BH-SF-E-PZ-09	08/01/2008	1 - 2.2	FD1	346 J	18 J	26	12 J	0.040 J	0.39 UJ	267 UJ	0.71 J	1.3 J	36 J	11,400 J	171 J	291 J	958 J	1.3	1.7 UJ	142 J	3.7 R	5.6 J	4.2 J	2.6 UJ	0.25 J	78
BH-SF-E-PZ-09	08/01/2008	4 - 5.5	N1	3,330	23 J	115 J	72	0.24 UJ	6.1	2,780	11	6.0 J	93	52,100	5,360 J	2,260	4,070	1.8 J	9.7	1,030 J	3.7 UJ	16 J	37 J	0.66 UJ	8.3 UJ	1,090
BH-SF-E-PZ-09	08/01/2008	4 - 5.5	FD1	3,680 J	18 J	50	74	0.22 J	6.9	3,120	12 J	5.8 J	84 J	33,200 J	1,810 J	1,990 J	2,390 J	1.2	8.2 UJ	973 J	3.7 R	11 J	56 J	2.7 UJ	8.4 J	1,150
BH-SF-E-PZ-09	08/01/2008	5.5 - 7.2	N1	1,470 J	59 J	64	65	0.070 J	131	3,730	8.3 J	4.3 J	114 J	259,000 J	26,700 J	10,100 J	27,100 J	5.3	4.7 U	364 J	4.1 R	35 J	55 J	2.9 UJ	0.58 J	5,380
BH-SF-E-PZ-09	08/01/2008	5.5 - 7.2	FD1	1,970 J	48 J	71	66	0.13 J	46	1,460	4.6 J	4.9 J	146 J	116,000 J	16,100 J	3,690 J	11,900 J	4.5	7.1 UJ	449 J	3.9 R	36 J	29 J	2.8 UJ	1.8 UJ	4,980
BH-SF-E-PZ-09	08/01/2008	8 - 9.5	N1	3,410 J	1.4 J	11	47 J	0.20 J	1.7	342 UJ	4.1 J	5.5 J	8.9 J	11,300 J	257 J	1,590 J	494 J	0.080 J	5.3 J	522 J	4.3 R	0.17 J	15 J	3.1 UJ	4.9 J	947
BH-SF-E-PZ-09	08/01/2008	8 - 9.5	FD1	5,270 J	1.0 J	5.1	90	0.34 J	16	598 UJ	5.4 J	4.6 J	12 J	7,540 J	90 J	1,710 J	233 J	0.047 J	11	617 J	0.86 J	0.060 J	22 J	2.9 UJ	6.5 UJ	3,660
BH-SF-E-PZ-09	08/01/2008	9.5 - 11	N1	1,490 J	8.8 J	5.6	35 J	0.10 J	51	199 UJ	1.8 J	0.95 J	13 J	3,160 J	1,620 J	405 J	220 J	2.7	2.5 J	246 J	0.76 J	3.4 J	9.4 J	3.4 UJ	2.0 J	3,980
BH-SF-E-PZ-09	08/01/2008	9.5 - 11	FD1	8,260 J	28 J	19	159	0.46 J	193	979 UJ	8.3 J	4.8 J	77 J	16,700 J	9,600 J	2,270 J	1,150 J	1.8	13	881 J	4.8 R	21 J	38 J	3.4 UJ	10 UJ	16,000
BH-SF-E-PZ-09	08/01/2008	13 - 14	N1	561 J	0.70 J	3.5	12 J	0.030 J	0.22 UJ	52 UJ	0.93 J	0.42 J	2.1 J	3,960 J	271 J	281 J	122 J	0.017 U	0.71 UJ	136 J	3.9 R	0.070 J	4.2 J	2.8 UJ	0.99 J	132

Analytical Results for Total Metals

OU2 Direct Push Field Investigation

Parameter:				ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER	IRON	LEAD	MAGNESIUM	MANGANESE	MERCURY	NICKEL	POTASSIUM	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC
Units:				MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
Station	Sample Date	Depth	QA Type																							
BH-SF-E-PZ-09	08/01/2008	13 - 14	FD1	2,150 J	2.0 J	12	47	0.18 J	1.8	197 UJ	4.5 J	3.2 J	10 J	16,600 J	898 J	988 J	666 J	0.028 J	4.2 UJ	428 J	3.9 R	0.10 J	12 J	2.8 UJ	3.9 UJ	491
BH-SF-E-PZ-09	08/01/2008	16 - 18	N1	2,710 J	0.97 J	8.3	54	0.12 J	2.1	311 UJ	4.2 J	3.8 J	7.3 J	12,400 J	97 J	1,570 J	331 J	0.044 J	4.0 UJ	379 J	0.65 J	0.14 J	13 J	2.7 UJ	3.5 J	452
BH-SF-E-PZ-09	08/01/2008	16 - 18	FD1	1,960 J	0.95 J	9.3	84	0.12 J	2.8	246 UJ	13 J	5.4 J	6.9 J	11,500 J	149 J	772 J	536 J	0.035 J	4.0 UJ	416 J	4.1 R	0.030 J	13 J	2.9 UJ	3.8 UJ	369
BH-SF-E-PZ-09	08/01/2008	17.5 - 19	N1	1,450 J	0.95 J	1.2 J	22 J	0.080 J	0.72 UJ	108 UJ	1.5 J	1.4 J	4.3 J	3,670 J	8.2 J	456 J	99 J	0.14 U	1.9 UJ	358 J	4.9 R	0.030 J	7.8 J	3.5 UJ	2.5 J	215
BH-SF-E-PZ-09	08/01/2008	17.5 - 19	FD1	4,890 J	1.3 J	7.3	74	0.31 J	3.2	413 UJ	5.7 J	9.2 J	19 J	15,400 J	36 J	1,740 J	546 J	0.14 U	8.8 UJ	836 J	4.7 R	1.4 UJ	20 J	3.4 UJ	10 UJ	778
BH-SF-E-PZ-10	07/02/2008	0 - 0	FD1	4,220	67	65	97	0.29 J	29 J	5,370	5.4	4.3 UJ	207 J	95,500	24,600 J	3,670	7,660	6.7	5.1 U	967 J	4.4 UJ	63	61 UJ	0.51 J	5.8 UJ	5,030 J
BH-SF-E-PZ-10	07/02/2008	0 - 1	N1	5,960	29	46	172	0.33 UJ	21 J	6,370	15	14	167 J	47,800	4,040 J	2,450	3,330	3.1	6.3 UJ	1,120	3.8 UJ	13	104 UJ	2.7 U	21	2,460 J
BH-SF-E-PZ-10	07/02/2008	1 - 2.6	N1	6,610	35	96	212	0.37 UJ	15 J	1,840	13	14	189 J	64,100	3,350 J	3,030	4,800	3.4	5.1 UJ	1,390	3.9 UJ	19	61 UJ	2.8 U	24	2,330 J
BH-SF-E-PZ-10	07/02/2008	4 - 5.9	N1	2,550	120	70	77	0.17 UJ	106 J	1,950	4.9	9.6 UJ	451 J	96,800	23,500 J	2,690	8,330	7.7	4.4 U	767 J	3.8 UJ	58	39 UJ	2.7 U	7.1 UJ	23,000 J
BH-SF-E-PZ-10	07/02/2008	8 - 9.3	N1	4,540	88	55	129	0.36 J	30 J	5,500	6.4	3.9 UJ	300 J	99,700	32,000 J	3,760	6,750	7.2	5.4 U	1,060 J	4.8 UJ	76	63 UJ	3.4 U	6.4 UJ	4,770 J
BH-SF-E-PZ-10	07/02/2008	12 - 14	N1	2,570	31	38	36 UJ	0.20 J	16 J	1,020 J	3.6	2.8 UJ	73 J	72,200	9,430 J	2,710	5,730	1.9	4.6 U	577 J	4.0 UJ	18	35 UJ	2.9 U	3.2 UJ	4,320 J
BH-SF-E-PZ-10	07/02/2008	16 - 19	N1	3,230	10 J	8.5	50	0.20 J	4.5 J	460 J	4.3	3.6 UJ	13 J	15,600	754 J	1,040 UJ	935	0.96	1.7 J	741 J	4.0 UJ	7.0	37 UJ	2.8 U	4.1 UJ	517 J
BH-SF-E-PZ-11	07/03/2008	0 - 1.5	N1	13,500	68 J	290	266	1.1	271 J	4,400	19	5.1 U	293	148,000	14,200	16,000	15,800	2.2	24	2,190 J	13 J	111	310 J	2.5 UJ	26	12,200
BH-SF-E-PZ-11	07/03/2008	1.5 - 2.6	N1	2,650	47 J	35	34	0.28 UJ	39 J	460 UJ	4.0	2.4 J	64	101,000	20,300	2,170	11,500	1.2	6.1	355 J	2.6 J	34	87 J	2.9 UJ	6.6	7,550
BH-SF-E-PZ-11	07/03/2008	4 - 6	N1	4,810	0.84 J	10	53	0.27 J	9.6 J	231 UJ	5.0	5.8 J	19	14,300	48	1,550	811	0.13 U	8.7	437 J	4.5 UJ	1.3 U	62 J	3.2 UJ	8.7	1,100
BH-SF-E-PZ-11	07/03/2008	6 - 7.7	N1	3,570	0.81 J	11	39	0.23 J	8.2 J	291 UJ	4.0	12	17	13,500	40	1,390	692	0.13 U	7.8	361 J	4.7 UJ	1.3 U	58 J	3.3 UJ	7.0	222
BH-SF-E-PZ-11	07/03/2008	6 - 7.7	FD1	3,180	1.1 UJ	15	29	0.24 UJ	6.4 J	321 UJ	3.8	11	16	14,100	37	1,380	551	0.13 U	6.9	326 J	4.5 UJ	1.3 U	56 J	3.2 UJ	6.4	182
BH-SF-E-PZ-11	07/03/2008	8 - 10	N1	3,690	8.3 UJ	6.3	31	0.22 J	0.56 J	364 UJ	3.9	1.8 J	16	11,700	41	1,370	82	0.14 U	5.8	392 J	4.8 UJ	1.4 U	690 U	3.4 UJ	7.2	163
BH-SF-E-PZ-11	07/03/2008	10 - 12	N1	5,050	1.1 UJ	8.6	51	0.31 UJ	0.14 J	496 UJ	4.8	4.7 UJ	22	17,100	43	1,840	160	0.088 UJ	8.0	571 J	5.0 UJ	1.4 U	81 J	3.6 UJ	9.6	183
BH-SF-E-PZ-11	07/03/2008	12 - 14	N1	3,470	0.77 UJ	5.7	40	0.22 UJ	0.13 J	389 UJ	4.3	5.0 UJ	16	11,900	45	1,430	117	0.13 U	6.6	386 J	4.4 UJ	1.3 U	57 J	3.1 UJ	7.2	135
BH-SF-E-PZ-11	07/03/2008	14 - 16	N1	3,500	0.82 UJ	7.6	42	0.23 UJ	0.72 UJ	355 UJ	4.1	5.2 UJ	15	12,900	41	1,310	112	0.14 U	6.6	406 J	5.0 UJ	1.4 U	718 U	3.6 UJ	8.2	134
BH-SF-E-PZ-12	07/03/2008	0 - 1.5	N1	1,190	49 J	64	52	0.16 UJ	15 J	2,230	3.9	2.2 J	137	102,000	11,100	3,340	9,970	3.2	4.9	319 J	2.0 J	22	103 J	2.6 UJ	2.9 J	3,900
BH-SF-E-PZ-12	07/03/2008	1.5 - 2.8	N1	2,250	173 J	176	67	0.26 J	21 J	4,960	4.1	3.5 J	193	135,000	16,600	5,090	16,500	2.5	7.6	365 J	3.9 J	33	107 J	2.6 UJ	5.1 J	4,750
BH-SF-E-PZ-12	07/03/2008	4 - 5.1	N1	4,900	10 J	23	77	0.32 UJ	1.6 J	1,490	7.4	3.3 UJ	39	33,300	6,200	1,900	2,430	0.73	6.2	528 J	3.8 UJ	15	62 J	2.7 UJ	13	852
BH-SF-E-PZ-12	07/03/2008	8 - 9	N1	1,040 J	195 J	177	82 J	0.26 UJ	49 J	1,300	3.0 J	2.2 J	399	153,000	132,000	3,400	11,700 J	6.0 J	5.3 J	301 J	4.1 UJ	138 J	581 U	2.9 R	2.4 J	17,600
BH-SF-E-PZ-12	07/03/2008	9 - 11	N1	1,340 J	311 J	119	19 J	0.23 UJ	51 J	2,150	2.9 J	5.7 UJ	148	213,000	61,800	7,090	20,200 J	1.5 J	4.1 UJ	247 J	4.0 UJ	85 J	569 U	2.8 R	2.5 J	18,100
BH-SF-E-PZ-12	07/03/2008	12 - 15	N1	991 J	247 J	110	12 J	0.23 UJ	27 J	2,000	2.7 J	5.2 UJ	135	202,000	60,900	7,050	20,800 J	1.2 J	3.2 UJ	184 J	3.6 UJ	88 J	521 U	2.6 R	1.2 J	9,700
BH-SF-E-PZ-13	07/07/2008	0 - 1	N1	5,560 J	6.5 R	7.5	52 J	0.30 J	0.55 U	721	8.3 J	12 J	45	26,700	43	976	583 J	0.10 UJ	17 J	1,120 J	3.8 UJ	1.1 UJ	65 J	2.7 R	21 J	100
BH-SF-E-PZ-13	07/07/2008	1 - 2.5	N1	5,750 J	3.8 J	19	58 J	0.32 J	2.5 J	792	7.2 J	7.6 J	66	28,100	2,370	982	518 J	1.3 J	13 J	1,020 J	3.8 UJ	6.0 J	46 J	2.7 R	26 J	827
BH-SF-E-PZ-13	07/07/2008	4 - 6.2	N1	5,200 J	81 J	216	104 J	0.30 J	26 J	2,300	11 J	6.5 J	589	47,000	39,100	1,660	1,970 J	9.5 J	9.0 J	697 J	4.1 UJ	99 J	50 J	2.9 R	12 J	6,170
BH-SF-E-PZ-13	07/07/2008	8 - 9.5	N1	3,950 J	3.0 J	45	111 J	0.24 J	2.7 J	6,740	5.5 J	5.4 J	31	26,200	808	1,900	3,050 J	0.10 UJ	9.0 J	637 J	3.8 UJ	2.1 J	70 J	2.7 R	6.7 J	921
BH-SF-E-PZ-13	07/07/2008	9.5 - 11	N1	3,470 J	0.90 J	8.5	68 J	0.20 J	0.53 U	540	4.4 J	2.8 J	17	13,200	49	1,580	393 J	0.11 UJ	7.0 J	604 J	3.7 UJ	0.16 J	57 J	2.6 R	4.4 J	80
BH-SF-E-PZ-13	07/07/2008	12 - 13	N1	2,350 J	5.0 J	16	79 J	0.16 J	2.0 J	474 UJ	4.3 J	1.8 J	38	11,600	1,210	1,200	539 J	0.39 J	5.9 J	413 J	3.6 UJ	3.9 J	520 U	2.6 R	2.9 J	585
BH-SF-E-PZ-13	07/07/2008	13 - 15	N1	3,520 J	1.1 J	13	68 J	0.23 J	0.53 U	481 UJ	5.0 J	2.6 J	18	15,500	78	1,550	408 J	0.11 UJ	6.7 J	504 J	3.7 UJ	0.23 J	50 J	2.6 R	4.7 J	76
BH-SF-E-PZ-13	07/07/2008	16 - 17	N1	2,590	7.3 J	21	46	0.22 J	3.2 J	442 J	5.7	1.7 J	50 J	14,900	1,820	1,060	315	0.33	5.7	340 J	3.6 UJ	5.4 J	45 J	2.6 U	3.5 J	808
BH-SF-E-PZ-13	07/07/2008	17 - 19	N1	2,400	3.8 UJ	14	66	0.17 J	1.2 J	353 UJ	5.8	3.2 J	26 J	11,700	795	906	457	0.13	6.5	423 J	4.1 UJ	2.4 J	69 J	2.9 U	3.5 J	353
BH-SF-E-PZ-13	07/07/2008	25 - 27	N1	5,130	0.75 UJ	11	69	0.22 J	0.66 UJ	276 UJ	4.0	3.1 J	16 J	13,200	35	1,320	158	0.14 U	6.9	350 J	4.6 UJ	1.3 UJ	93 J	3.3 U	7.1	50
BH-SF-E-PZ-13	07/07/2008	28 - 30	N1	6,520	7.7 UJ	13	73	0.24 J	0.64 UJ	341 UJ	4.8	3.2 J	18 J	15,100	29	1,560	805	0.13 U	8.8	408 J	4.5 UJ	1.3 UJ	90 J	3.2 U	8.4	54
BH-SF-E-PZ-13	07/07/2008	30 - 32	N1	6,630	0.85 UJ	14	63	0.27 J	0.67 UJ	431 UJ	6.0	4.8 J	17 J	13,300	45	1,400	782	0.14 U	7.8	522 J	4.7 UJ	1.3 UJ	84 J	3.4 U	11	50
BH-SF-E-PZ-14	06/20/2008	0 - 1.7	N1	3,420	13	55	112	0.27 UJ	15 J	3,340	7.0	8.6	137	28,100	4,070 J	1,220	1,850 J	1.6	8.4	1,080 J	3.7 U	11	62 J	5.8	5.3	2,800
BH-SF-E-PZ-14	06/20/2008	1.7 - 3.4	N1	4,010	1.4 J	6.2	78	0.23 UJ	1.3 J	3,030	8.5	5.5	45	11,700	298 J	1,860	549 J	0.13	9.0	860 J	3.5 U	0.67 J	95 J	1.8 J	16	467
BH-SF-E-PZ-14	06/20/2008	4 - 5.5	N1	4,200	236	157	140	0.44 UJ	21 J	1,180	8.9	12	412	41,300	7,210 J	631	1,980 J	1.7	11	539 J	3.8 U	19	117 J	8.6	9.0	2,330
BH-SF-E-PZ-14	06/20/2008	5.5 - 6.7	N1	4,520	30	504	304	0.34 UJ	21 J	704	7.6	5.3 J	923	132,000	11,400 J	1,360	6,240 J	26	13	719 J	4.8 U	30	685 UJ	29	5.6 J	6,270
BH-SF-E-PZ-14	06/20/2008	8 - 9.5	N1	508	199	155	13 J	0.27 UJ	63 J	2,960	2.7	0.76 J	429	272,000	48,300 J	8,630	27,400 J	5.8	6.6	100 J	3.8 U	89	547 UJ	67	5.5 U	16,900
BH-SF-E-PZ-14	06/20/2008	8 - 9.5	FD1	441	194	148 J	15 J	0.22 UJ	57	2,850	2.7	0.25 J	408	258,000	53,300	8,470	26,400	9.2	5.6	113 J	1.1 J	85	549 U	33	5.5 U	14,600 J
BH-SF-E-PZ-14	06/20/2008	9.5 - 11	N1	356	323	230	15 J	0.21 J	60 J	2,520	2.5	3.1 J	570	246,000	76,000 J	8,130	24,000 J	6.7	10	88 J	3.8 U	121	548 UJ	55	5.5 U	16,500
BH-SF-E-PZ-14	06/20/2008	12 - 14	N1	760	104	134	40	0.25 UJ	21 J	1,940	4.7	1.0 J	128	227,000	39,700 J	6,120	18,300 J	1.6	5.3	235 J	3.7 U	102	535 UJ	54	5.4 U	5,420
BH-SF-E-PZ-14	06/20/2008	13.5 - 15	N1	2,090	22	31	53	0.23 UJ	5.1 J	493 UJ	4.0	1.2 J	28	47,800	9,880 J	1,320	2,400 J	12	3.6 UJ	352 J	3.9 U	18	559 UJ	9.4	3.1 J	1,660
BH-SF-E-PZ-15	07/02/2008	0 - 0	FD1	5,800	2.2 J	14	72	0.34 UJ	7.9 J	419 J	5.5	6.1 UJ	26 J	18,700	45 J	1,620	675	0.045 J	6.5 UJ	645 J	4.5 UJ	0.040 UJ	26 UJ	3.2 U	11 UJ	333 J
BH-SF-E-PZ-15	07/02/2008	0 - 1.5	N1	10,100	15	75	155	0.48 UJ	25 J	992 J	9.6	8.4 J	84 J	58,300 J	6,380 J	3,850	4,850 J	1.4 J	7.4 J	1,300	4.1 UJ	13 J	44 J	2.9 U	18	4,130 J
BH-SF-E-PZ-15	07/02/2008	1.5 - 3.2	N1	10,200	0.89 J	8.6	63	0.51 UJ	1.1 J	805 J	13	11 J	20 J	20,100 J	19 J	4,620	465 J	0.018 UJ	9.1 J	2,210	4.3 UJ	1.2 UJ	53 J	3.0 U	25	344 J
BH-SF-E-PZ-15	07/02/2008	4 - 5.5	N1	13,300	0.99 J	16	78	0.76 UJ	0.15 J	1,090 J	14	11 J	35 J	27,500 J	47 J	4,490	631 J	0.049 J	14	1,920	4.3 UJ	0.080 UJ	79 J	3.1 U	27	104 J
BH-SF-E-PZ-15	07/02/2008	4 - 5.5	FD1	13,000	0.71 J	17	84	0.74 UJ	0.24 UJ	1,120 UJ	15	12	36 J	28,000 J	42 J	4,620	696 J	0.055 J	16	1,950	4.3 UJ	1.2 UJ	78 J	3.1 U	28	103 J
BH-SF-E-PZ-15	07/02/2008	5.5 - 7.7	N1	3,090	1.4 J	11	71	0.26 UJ	0.12 J	398 J	4.4	3.9 J	21 J	16,400 J	43 J	1,390	455 J	0.027 J	7.0 J	635 J	3.7 UJ	0.080 UJ	22 J	2.7 U	5.1 UJ	92 J
BH-SF-E-PZ-15	07/02/2008	5.5 - 7.7	FD1	3,160	0.97 J	13	55	0.31 UJ	0.34 UJ	387 UJ	4.9	3.7 J	21 J	20,200 J	47 J	1,300	566 J	0.021 J	8.0 UJ	669 J	3.7 UJ	0.17 J	23 J	2.7 U	5.4 UJ	104 J
BH-SF-E-PZ-15	07/02/2008	8 - 9.5	N1	2,240	1.2 J	9.5	59	0.19 UJ	0.53 UJ	340 J	7.0	2.5 J	14 J	11,100 J	26 J	836 UJ	471 J	0.021 J	4.0 J	668 J	3.7 UJ	0.080 UJ	23 J	2.6 U	3.4 UJ	54 J
BH-SF-E-PZ-15	07/02/2008	9.5 - 11	N1	2,560	1.1 J	8.2	86	0.21 UJ	0.12 J	375 J	4.4	3.4 J	16 J	12,700 J	63 J	1,210	571 J	0.032 J	4.9 J	580 J	3.8 UJ	0.17 UJ	20 J	2.7 U	3.7 UJ	77 J
BH-SF-E-PZ-15	07/02/2008	12 - 14	N1	3,200	1.2 J	12	71	0.27 UJ	0.10 J	408 J	5.5	3.5 J	23 J	17,100 J	24 J	1,220	414 J	0.069 J	5.9 J	546 J	3.7 UJ	0.13 UJ	26 J	2.7 U	5.3 UJ	65 J
BH-SF-E-PZ-15	07/02/2008	13.5 - 15	N1	3,250	0.82 J	7.8	70	0.22 UJ	0.48 J	499 J	4.9	3.4 J	20 J	14,600 J	23 J	1,770	401 J	0.022 J	6.0 J	558 J	3.8 UJ	0.070 UJ	26 J	2.7 U	4.2 UJ	97 J
BH-SF-E-PZ-15	07/02/2008	16 - 18	N1	3,000	1.3 J	11	53	0.27 UJ	0.18 J	446 J	4.6	3.4 J	19 J	15,700 J	22 J	1,670	330 J	0.016 UJ	6.0 J	654 J	3.8 UJ	0.050 UJ	22 J	2.7 U	4.3 UJ	83 J
BH-SF-E-PZ-15	07/02/2008	17.5 - 19	N1	2,920	1.4 J	10	42 J	0.27 UJ	6.3 J	325 J	4.7	14	19 J	15,500 J	34 J	1,460	815 J	0.028 J	8.1 J	642 J	3.9 UJ	0.10 UJ	15 J	2.8 U	5.8 UJ	221 J
BH-SF-E-PZ-15	07/02/2008	20 - 22	N1	5,140	1.8 J	12	76	0.35 UJ	5.5 J	392 UJ	4.8	6.3 J	22 J	16,700 J	45 J	1,490	741 J	0.052 J	8.8 UJ	764 J	4.6 UJ	0.15 J	16 J	3.3 U	8.9 UJ	294 J
BH-SF-E-PZ-15	07/02/2008	22 - 24	N1	6,010	1.4 J	12	68	0.37 UJ	8.2 J	437 UJ	5.6	6.4 J	22 J	18,400 J	40 J	1,680	639 J	0.87 J	9.2 UJ	843 J	4.6 UJ	0.11 J	18 J	3.3 U	9.9 UJ	293 J
BH-SF-E-PZ-15	07/02/2008	24 - 26	N1	5,470	1.8 J	12	73	0.35 UJ	6.8 J	344 UJ	4.9	5.8 J	21 J	17,700 J	42 J	1,560	681 J	0.046 J	8.9 UJ	796 J	4.5 UJ	0.14 J	17 J	3.2 U	9.4 UJ	342 J
BH-SF-E-PZ-15	07/02/2008	26 - 28	N1	3,350	1.7 J	9.4	54	0.29 UJ	2.0 J	308 UJ	4.3	6.3 J	18 J	15,000 J	41 J	1,390	519 J	0.027 J	7.3 UJ	883 J	4.7 UJ	1.3 UJ	17 J	3.4 U	8.0 UJ	260 J
BH-SF-E-PZ-15	07/02/2008	28 - 30	N1	3,080	1.5 J	12	52	0.29 UJ	1.6 J	287 UJ	4.4	5.9 J	17 J	15,300 J	39 J	1,320	598 J	0.025 J	7.3 UJ	848 J	4.4 UJ	1.2 UJ	16 J	3.1 U	7.3 UJ	210 J
BH-SF-E-PZ-15	07/02/2008	30 - 32	N1	6,040	1.5 J	8.2	59	0.41 UJ	0.37 UJ	743 UJ	6.3	9.8 J	24 J	18,600 J	54 J	2,110	970 J	0.021 UJ	11 UJ	1,140 J	5.0 UJ	0.11 J	23 J	3.6 U	13 UJ	186 J
BH-SF-E-PZ-15	07/02/2008	32 - 34	N1	3,710	1.4 J	7.7	51 J	0.29 UJ	0.13 UJ	458 UJ	5.0	6.5 J	19 J	14,200 J	45 J	1,430	437 J	0.027 J	8.6 UJ	863 J	4.7 UJ	1.4 UJ	19 J	3.4 U	8.5 UJ	53 J
BH-SF-E-PZ-15	07/02/2008	34 - 36	N1	5,520	1.6 J	7.6	77	0.40 UJ	0.090 UJ	731 UJ	5.5	9.1 J	25 J	18,100 J	49 J	2,090	875 J	0.043 J	13	1,120 J	5.0 UJ	0.10 J	26 J	3.6 U	11 UJ	67 J
BH-SF-E-PZ-16	06/20/2008	0 - 2	N1	5,360	19	252	149	0.37 UJ	23 J	1,750	11	8.1	187	78,000	7,610 J	2,180	4,510 J	4.8	8.4	912 J	3.8 U	25	545 UJ	16	7.7	3,930
BH-SF-E-PZ-16	06/20/2008	2 - 3.6	N1	1,130	13	128	84	0.33 UJ	21 J	1,700	3.9	6.6	79	67,400	4,660 J	1,290	6,270 J	4.4	6.7	502 J	4.0 U	11	577 UJ	14	0.79 J	4,030
BH-SF-E-PZ-16	06/20/2008	4 - 5.9	N1	2,070	93	126	340	0.41 UJ	164 J	2,480	4.3	6.2	334	205,000	30,500 J	6,670	22,100 J	17	10	557 J	4.4	80	607 UJ	40	6.1 U	23,400
BH-SF-E-PZ-16	06/20/2008	4 - 5.9	FD1	3,880	206	116 J	278	0.43 UJ	135	1,600	4.1	4.7 J	367	128,000	40,200	4,180	12,200	15	9.2	663 J	4.5	109	632 U	8.8	2.4 J	18,400 J

Analytical Results for Total Metals
OU2 Direct Push Field Investigation

Parameter:				ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER	IRON	LEAD	MAGNESIUM	MANGANESE	MERCURY	NICKEL	POTASSIUM	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC
Units:				MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
Station	Sample Date	Depth	QA Type																							
BH-SF-E-PZ-16	06/20/2008	5.9 - 6.9	N1	3,260	2.6 J	19	74	0.27 UJ	3.9 J	428 UJ	4.0	3.4 J	22	18,500	1,190 J	1,430	1,020 J	0.69	5.6	538 J	3.8 U	1.4	66 J	2.8	4.2 J	571
BH-SF-E-PZ-16	06/20/2008	8 - 9.2	N1	1,990	0.79 J	4.9	46	0.18 UJ	2.2 J	284 UJ	3.8	1.3 J	7.9	9,000	35 J	800	194 J	0.067 J	2.8 UJ	279 J	3.7 U	1.1 U	59 J	1.1 J	2.4 J	247
BH-SF-E-PZ-16	06/20/2008	9.2 - 10	N1	3,550	0.59 UJ	7.9	61	0.24 UJ	3.4 J	364 UJ	4.6	1.7 J	10	13,900	46 J	1,890	243 J	0.062 J	5.4	388 J	3.8 U	1.1 U	57 J	2.0 J	4.2 J	619
BH-SF-E-PZ-16	06/20/2008	12 - 13	N1	3,070	0.64 J	7.1	15 J	0.26 UJ	2.5 J	403 UJ	4.1	1.3 J	21	14,300	36 J	1,570	112 J	0.038 J	3.4 UJ	341 J	3.9 U	1.1 U	64 J	2.2 J	3.7 J	484
BH-SF-E-PZ-16	06/20/2008	13.2 - 14	N1	1,380	6.8 U	3.7	20 J	0.13 UJ	3.6 J	298 UJ	1.9	0.65 J	15	5,360	34 J	425 UJ	122 J	0.11 U	2.1 UJ	239 J	3.9 U	1.1 U	74 J	1.1 J	1.8 J	222
BH-SF-E-PZ-17	07/09/2008	0.5 - 2.6	N1	2,960	43	88 J	98	0.32 UJ	55	1,060	10	20	146	72,200	12,300	1,410	10,400	5.2	14	685 J	2.6 J	27	577 U	2.9 U	6.9	4,560
BH-SF-E-PZ-17	07/09/2008	4 - 5.9	N1	3,640	30	83 J	112	0.28 UJ	38	3,310	10	14	263	31,200	6,960	827	2,100	4.2	12	402 J	3.7 U	23	130 UJ	2.6 U	12	3,580
BH-SF-E-PZ-17	07/09/2008	12 - 14	N1	4,000	1.3 J	7.9 J	34	0.18 J	1.2 J	505 UJ	5.6	2.5 J	17	15,800	71	1,250	128	0.089 J	5.1	298 J	4.0 U	0.29 J	47 J	2.8 U	7.0	319 J
BH-SF-E-PZ-17	07/09/2008	13.5 - 14	N1	3,930	0.98 J	5.2 J	45	0.13 J	1.0 J	633	5.2	1.3 J	13	9,070	36	1,760	56	0.12 U	5.0	333 J	4.0 U	0.26 J	60 J	2.9 U	7.2	264 J
BH-SF-E-PZ-18	06/20/2008	0.6 - 2	N1	5,710	10	51	141	0.36 UJ	12 J	6,150	15	18	122	36,900	4,140 J	1,490	2,940 J	3.2	7.9	707 J	3.7 U	10	148 J	7.8	9.4	2,830
BH-SF-E-PZ-18	06/20/2008	2 - 3.1	N1	6,880	14	71	180	0.41 UJ	18 J	1,650	9.0	12	121	31,300	3,850 J	1,520	2,860 J	2.7	7.5	662 J	3.9 U	12	89 J	5.5	15	1,900
BH-SF-E-PZ-18	06/20/2008	4 - 6	N1	6,420	38	306 J	232	0.37 UJ	75	961	11	3.4 J	242	67,100	12,900	893	1,550	4.0	8.1	844 J	4.9 U	42	703 U	8.6	10	4,580 J
BH-SF-E-PZ-18	06/20/2008	4 - 6	FD1	8,810	38	308 J	275	0.43 UJ	9.4	903	8.5	4.1 J	221	50,800	7,960	1,280	575	3.8	10	821 J	4.7 U	30	70 J	5.8	14	2,720 J
BH-SF-E-PZ-18	06/20/2008	6 - 7.4	N1	2,620	35	144 J	280	0.39 UJ	45	2,410	4.2	3.3 J	186	195,000	18,400	5,830	19,400	8.1	9.1	681 J	3.1 J	40	623 U	18	6.2 U	9,780 J
BH-SF-E-PZ-18	06/20/2008	8 - 9.4	N1	8,430	8.5	46 J	108	0.43 UJ	22	1,060	6.9	4.7 J	42	39,400	7,450	2,020	1,260	0.52	8.1	660 J	4.5 U	12	73 J	4.0	9.2	1,990 J
BH-SF-E-PZ-18	06/20/2008	9.4 - 11	N1	5,050	1.0 UJ	31 J	48	0.38 UJ	10	1,120	5.0	6.9 J	23	21,300	75	1,810	208	0.068 J	5.7	496 J	4.1 U	1.2 U	69 J	0.63 J	6.3	516 J
BH-SF-E-PZ-18	06/20/2008	12 - 13	N1	3,240	1.1 UJ	17 J	21 J	0.34 UJ	7.0	867	4.2	2.6 J	17	18,000	42	807	89	0.038 J	4.4 UJ	390 J	4.1 U	1.2 U	70 J	1.7 UJ	7.5	348 J
BH-SF-E-PZ-18	06/20/2008	13.2 - 15	N1	3,250	0.96 UJ	9.6	22	0.20 UJ	4.5 J	948	5.0	1.7 J	13	8,840	24 J	1,330	182 J	0.036 J	4.9	317 J	3.8 U	1.1 U	69 J	1.3 J	4.8 J	267
BH-SF-E-PZ-20	07/03/2008	0 - 1.5	N1	3,450	24 J	89	786	0.27 J	11 J	20,200	1.9	76	342	40,800	4,280	2,080	3,120	0.59	8.8	1,160 J	3.6 UJ	4.6	4,530	2.6 UJ	6.3	41,000
BH-SF-E-PZ-20	07/03/2008	1.5 - 3.1	N1	9,850	15 J	70	260	0.48 J	54 J	2,730	11	13	158	25,300	3,310	1,370	1,330	3.6	10	702 J	4.2 UJ	13	134 J	3.0 UJ	21	1,880
BH-SF-E-PZ-20	07/03/2008	4 - 5.5	N1	12,000	48 J	148	260	0.64 J	105 J	1,690	13	5.6 J	284	36,500	6,920	2,440	1,020	10	15	1,340 J	0.82 J	38	131 J	3.3 UJ	26	4,090
BH-SF-E-PZ-20	07/03/2008	5.5 - 7.7	N1	2,550	32 J	77	522	0.33 UJ	142 J	2,350	5.9	5.7 UJ	234	150,000	15,500	4,090	17,700	5.5	11	670 J	3.8 J	32	119 J	3.1 UJ	6.3	9,870
BH-SF-E-PZ-20	07/03/2008	8 - 9.5	N1	6,420	23 J	88	183	0.51 UJ	188 J	3,590	8.7	14	239	120,000	16,900	5,240	16,200	1.9	18	1,620 J	4.2 J	33	141 J	3.4 UJ	11	15,000
BH-SF-E-PZ-20	07/03/2008	9.5 - 11	N1	5,740	1.0 J	5.9	117	0.27 J	29 J	1,010	5.4	1.9 J	14	7,410	104	1,850	84	0.047 U	7.9	475 J	5.1 UJ	0.26 J	98 J	3.6 UJ	7.7	1,710
BH-SF-E-PZ-20	07/03/2008	12 - 13	N1	3,270	1.7 J	16	34	0.23 J	11 J	1,370	3.9	1.7 J	14	12,100	240	1,130	137	0.074 UJ	4.9 J	298 J	4.6 UJ	0.21 J	71 J	3.3 UJ	4.6 J	991
BH-SF-E-PZ-20	07/03/2008	13 - 15	N1	2,980	0.95 J	14	20 J	0.17 J	6.0 J	757	2.8	1.1 J	8.9	12,300	143	1,060	90	0.11 U	2.9 J	199 J	3.8 UJ	1.1 U	61 J	2.7 UJ	3.3 J	358
BH-SF-E-PZ-21	06/18/2008	0 - 1.3	N1	9,950	18 J	49 J	452	0.44 J	26 J	35,000	47	53 J	465 J	124,000	10,100	3,610	9,260	3.9	1.9 J	2,550	3.7 UJ	18	768 J	2.6 U	21	11,000 J
BH-SF-E-PZ-21	06/18/2008	0 - 1.3	FD1	10,100	24 J	58 J	438	0.53 UJ	25 J	34,700	48	53	476	151,000	5,450 J	3,350	8,900	4.0 J	0.30 J	2,600	3.7 R	14	743 J	2.6 UJ	23	13,300
BH-SF-E-PZ-21	06/18/2008	1.3 - 2.6	N1	1,140	43 J	141 J	26 J	0.080 J	60 J	1,090	4.0	8.6 J	167 J	128,000	17,300	1,750	13,300	5.7	0.91 J	550 J	3.7 UJ	30	23 J	2.7 U	5.3 U	10,200 J
BH-SF-E-PZ-21	06/18/2008	4 - 4.8	N1	1,920	64 J	111 J	133	0.11 J	46 J	871 J	5.5	6.0 J	198 J	82,700	16,700	2,000	6,840	9.9	3.1 J	599 J	3.8 UJ	43	26 J	2.7 U	2.2 J	6,940 J
BH-SF-E-PZ-21	06/18/2008	4.8 - 6.3	N1	6,890	20 J	17 J	150	0.27 J	90 J	861 J	6.7	6.3 J	85 J	23,500	8,680	2,070	1,160	1.7	9.2 J	835 J	4.7 UJ	24	49 J	3.3 U	10 J	5,010 J
BH-SF-E-PZ-21	06/18/2008	8 - 9.7	N1	9,230	1.3 J	11 J	168	0.45 J	7.5 J	902 UJ	8.9	7.0 J	25 J	19,100	214	2,190	637	0.19	8.7 J	875 J	4.9 UJ	0.59 J	56 J	3.5 U	13 J	1,790 J
BH-SF-E-PZ-21	06/18/2008	9 - 9.7	FD1	7,840	1.4 J	11 J	144	0.46 UJ	7.7 J	772 UJ	8.1	7.0 J	22	17,200	138 J	2,080	491	0.13 J	7.4 J	926 J	4.8 R	0.47 UJ	35 J	3.4 UJ	11 UJ	2,140
BH-SF-E-PZ-21	06/18/2008	9.7 - 11	N1	6,320	0.52 J	5.1 J	99	0.25 J	6.1 J	497 UJ	6.1	2.4 J	13 J	10,400	65	2,000	201	0.064 J	5.0 J	712 J	4.5 UJ	0.14 J	43 J	3.2 U	7.7 J	264 J
BH-SF-E-PZ-21	06/18/2008	12 - 13	N1	3,830	1.1 J	8.5 J	73	0.14 J	1.5 J	318 J	9.9	2.1 J	11 J	18,900	195	1,440	296	0.13	3.6 J	794 J	3.8 UJ	0.36 J	49 J	2.7 U	5.0 J	320 J
BH-SF-E-PZ-21	06/18/2008	13 - 14	N1	2,820	0.86 J	10 J	70	0.10 J	4.8 J	423 J	5.5	2.1 J	9.0 J	17,700	60	1,010 UJ	287	0.076 J	3.4 J	706 J	3.8 UJ	0.18 J	42 J	2.7 U	4.0 J	331 J
BH-SF-E-PZ-21	06/18/2008	16 - 18	N1	2,730	1.3 J	13 J	72	0.090 J	7.0 J	454 J	7.9	1.8 J	9.9 J	16,000	108	825 UJ	194	0.13	3.3 J	742 J	3.9 UJ	0.33 J	62 J	2.8 U	3.2 J	330 J
BH-SF-E-PZ-21	06/18/2008	17.5 - 19	N1	3,520	1.2 J	15 J	46	0.13 J	9.5 J	491 J	5.1	1.8 J	13 J	17,400	25	1,170	204	0.15	3.6 J	577 J	3.9 UJ	0.14 J	31 J	2.8 U	4.5 J	295 J
BH-SF-E-PZ-22	06/17/2008	0.3 - 2	N1	28,800	16 J	0.48 J	1,140	1.2 J	25	113,000	136	108	890 J	273,000	143	7,130	17,300	0.74 J	4.2 U	7,490	3.6 UJ	1.6 UJ	2,730	2.6 UJ	59	37,700
BH-SF-E-PZ-22	06/17/2008	2 - 3	N1	28,000	15 J	5.3	1,340	1.2 J	20	110,000	129	108	734 J	252,000	277	7,240	17,400	0.60 J	4.3 U	7,080	3.8 UJ	1.9 UJ	2,390	2.7 UJ	58	34,800
BH-SF-E-PZ-22	06/17/2008	4 - 5.5	N1	9,570	81 J	120	533	0.54 UJ	35	32,600	46	39	386 J	146,000	5,200	3,930	10,900	1.2 J	4.2 UJ	1,820	4.3 UJ	20	502 J	3.1 UJ	24	12,700
BH-SF-E-PZ-22	06/17/2008	5.5 - 7.2	N1	3,810	358 J	112	323	0.51 UJ	155	4,480	6.4	18	747 J	169,000	88,000	6,500	16,800	14 J	5.9 UJ	1,030 J	4.3 UJ	191	43 J	3.0 UJ	3.3 UJ	29,600
BH-SF-E-PZ-22	06/17/2008	8 - 9.5	N1	7,820	2.5 J	7.6	136	0.46 UJ	2.1	1,370 UJ	8.6	6.5 J	24 J	18,700	162	2,080	821	0.17 J	9.1 UJ	965 J	5.1 UJ	0.52 UJ	50 J	3.6 UJ	12 UJ	549
BH-SF-E-PZ-22	06/17/2008	9.5 - 11	N1	8,480	2.1 J	10	189	0.52 UJ	0.11 J	2,820	9.3	4.1 J	26 J	16,500	75	2,280	728	0.11 UJ	8.4 UJ	963 J	6.7 UJ	0.29 UJ	59 J	4.8 UJ	15 UJ	109
BH-SF-E-PZ-22	06/17/2008	12 - 13	N1	8,370	5.6 J	14	205	0.46 UJ	5.9	11,000	20	17	93 J	36,400	550	2,480	2,070	0.70 J	12 UJ	1,170 J	5.4 UJ	1.5 UJ	199 J	3.9 UJ	14 UJ	3,850
BH-SF-E-PZ-22	06/17/2008	13.3 - 15	N1	10,900	1.4 J	4.8	174	0.59 UJ	3.9	2,150	10	4.1 J	22 J	11,800	88	2,490	151	0.098 UJ	13	993 J	5.2 UJ	0.20 UJ	49 J	3.7 UJ	13 UJ	1,800
BH-SF-E-PZ-22	06/17/2008	16 - 18	N1	2,420	1.4 J	14	42 UJ	0.18 UJ	1.5	428 UJ	4.2	3.3 J	20 J	21,700	37	897 UJ	195	0.13 J	4.6 UJ	480 J	3.9 UJ	0.20 UJ	20 J	2.8 UJ	5.0 UJ	317
BH-SF-E-PZ-22	06/17/2008	17.5 - 19	N1	8,640	1.7 J	13	145	0.54 UJ	0.63 J	1,340 UJ	8.5	8.3 J	25 J	24,000	43	2,870	900	0.15 J	12	1,850	4.7 UJ	0.11 UJ	70 J	3.4 UJ	15	225
BH-SF-E-PZ-23	06/19/2008	0.6 - 2	N1	2,640	15 J	153	211	0.27 UJ	14	7,440	19 J	41	129 J	115,000	3,260	1,820	8,930	2.9	11	710 J	4.3 R	8.8	159 J	1.7 UJ	4.2 UJ	4,060
BH-SF-E-PZ-23	06/19/2008	0.6 - 2	FD1	2,800	15 J	162	244	0.27 UJ	14	8,510	20	42	140 J	123,000	3,350	1,960	9,400	2.2	7.4 J	700 J	4.2 UJ	9.2	178 J	1.7 UJ	4.5 UJ	4,680
BH-SF-E-PZ-23	06/19/2008	2 - 3.6	N1	2,320	12 UJ	138	221	0.23 UJ	13	8,310	17	26	114 J	108,000	3,040	2,860	8,140	2.6	5.2 J	562 J	4.2 UJ	8.0	112 J	0.96 UJ	3.8 UJ	3,880
BH-SF-E-PZ-23	06/19/2008	4 - 5	N1	5,090	13 UJ	127	436	0.36 UJ	14	22,800	28	32	270 J	117,000	2,880	5,150	11,000	2.0	5.5 J	1,300	4.1 UJ	7.6	325 J	1.5 UJ	13	7,320
BH-SF-E-PZ-23	06/19/2008	5 - 7.8	N1	9,940	2.3 UJ	9.1	153	0.46 UJ	31	1,260	10	3.7 J	31 J	17,200	805	2,210	620	0.98	6.3 J	946 J	4.3 UJ	1.7 UJ	48 J	3.1 U	14	1,150
BH-SF-E-PZ-23	06/19/2008	5 - 7.8	FD1	8,520	7.1 J	12	161	0.50 UJ	16	2,100	7.8	5.0 J	56 J	22,200	2,150	2,080	1,350	0.35	6.4 J	1,010 J	4.5 UJ	6.0	48 J	3.2 U	12 UJ	1,780
BH-SF-E-PZ-23	06/19/2008	8 - 9	N1	7,110	2.0 UJ	18	137	0.40 UJ	8.0	2,580	9.4	6.4 J	38 J	22,200	342	2,120	1,360	0.19	5.8 J	939 J	4.1 UJ	0.93 UJ	61 J	2.9 U	11 UJ	1,130
BH-SF-E-PZ-23	06/19/2008	9 - 11	N1	4,620	1.2 UJ	7.9	61	0.27 UJ	7.7	930 UJ	8.3	2.1 J	27 J	16,600	33	1,500	112	0.25	3.6 J	781 J	3.8 UJ	0.18 UJ	36 J	2.7 U	17	698
BH-SF-E-PZ-23	06/19/2008	12 - 13	N1	7,670	1.6 J	12	44 J	0.43 UJ	21	2,360	9.4 J	2.7 J	36 J	17,800	34	1,970	137	0.33	7.1 J	847 J	4.0 R	0.090 UJ	37 J	2.9 U	35	1,080
BH-SF-E-PZ-23	06/19/2008	13 - 14	N1	5,770	1.3 UJ	1.4 J	28 UJ	0.28 UJ	27	1,690	7.4	2.0 J	39 J	11,200	21	2,090	90	0.32	5.8 J	746 J	4.0 UJ	0.040 UJ	28 J	2.8 U	26	879
BH-SF-E-PZ-24	06/19/2008	0 - 1.5	N1	17,000	14 J	31	720	0.80 UJ	24	61,500	86 J	89	519 J	154,000	4,790	5,500	11,000	4.3	4.4 U	3,950	3.9 R	14	1,400	2.8 U	31	13,400
BH-SF-E-PZ-24	06/19/2008	1.5 - 3.2	N1	16,200	9.7 J	36	971	0.88 UJ	19	63,200	91 J	148	619 J	165,000	2,830	5,960	13,000	5.2	1.8 J	4,050	3.9 R	10	1,040 J	2.8 U	30	22,100
BH-SF-E-PZ-24	06/19/2008	4 - 5.5	N1	4,080	59 J	107	575	0.30 UJ	19	8,990	19 J	22	513 J	147,000	13,600	4,010	13,300	11	7.1 J	1,040 J	4.2 R	46	151 J	3.0 U	8.7 UJ	5,330
BH-SF-E-PZ-24	06/19/2008	5.5 - 7.2	N1	6,090	2.8 J	8.0	130	0.28 UJ	16	831 J	5.9 J	10 J	20 J	17,200	305	1,630	2,980	0.52	5.1 J	924 J	4.4 R	1.4 UJ	24 J	3.1 U	7.7 UJ	485
BH-SF-E-PZ-24	06/19/2008	8 - 9	N1	6,190	2.1 J	24	130	0.47 UJ	12	3,790	11 J	17	43 J	41,800	337	1,860	2,040	1.8	5.2 J	942 J	4.0 R	0.92 UJ	74 J	2.9 U	14	1,460
BH-SF-E-PZ-24	06/19/2008	9 - 10	N1	6,520	0.75 J	20	89	0.33 UJ	4.4	806 J	5.8 J	3.0 J	16 J	21,100	47	1,590	187	0.26	4.5 J	883 J	4.2 R	0.070 UJ	25 J	3.0 U	8.0 UJ	349
BH-SF-E-PZ-24	06/19/2008	12 - 13	N1	3,400	0.90 J	8.2	41 J	0.23 UJ	6.7	826 J	5.0 J	1.8 J	15 J	12,300	43	1,110 J	61	0.31	3.8 J	708 J	4.0 R	0.060 UJ	21 J	2.8 U	5.1 UJ	385
BH-SF-E-PZ-24	06/19/2008	13.2 - 15	N1	4,590	1.3 J	8.9	47	0.28 UJ	2.9	320 J	7.4 J	2.4 J	20 J	18,100	63	1,740	95	0.14	5.2 J	778 J	4.0 R	1.1 U	20 J	2.9 U	5.7 UJ	756
BH-SF-E-PZ-25	06/18/2008	1 - 2.2	N1	28,900	14 J	33 J	2,010	1.1	29 J	116,000	174	329	1,040	247,000	1,140 J	9,410	14,400	1.2 J	19	6,740	3.7 R	5.2	3,080	3.4 J	49	27,400
BH-SF-E-PZ-25	06/18/2008	2.2 - 3.3	N1	2,280	44 J	147 J	588	0.25 UJ	21 J	1,150 UJ	5.3	8.0 J	365	192,000	17,900 J	1,600	12,800	21 J	5.1 U	587 J	4.5 R	43	26 J	1.5 J	3.9 UJ	8,730
BH-SF-E-PZ-25	06/18/2008	4 - 5.2	N1	5,600	118 J	67 J	672	0.37 UJ	35 J	12,200	24	43	654	153,000	37,000 J	4,070	10,900	16 J	1.2 J	1,260 J	4.5 R	97	325 J	1.2 J	8.5 UJ	8,040
BH-SF-E-PZ-25	06/18/2008	5.2 - 6.9	N1	7,240	28 J	21 J	178	0.41 UJ	16 J	1,140 UJ	7.0	16	100	31,200	9,190 J	1,800	1,970	3.7 J	5.3 J	1,000 J	4.8 R	28	32 J	3.4 UJ	10 UJ	2,210
BH-SF-E-PZ-25	06/18/2008	8 - 9	N1	2,940	2.5 J	12 J	58	0.24 UJ	3.6 J	676 UJ	6.0	11	17	19,000	360 J	1,190	1,430	0.11 J	4.3 J	655 J	3.7 R	0.74 UJ	28 J	2.6 UJ	4.7 UJ	547
BH-SF-E-PZ-25	06/18/2008	9 - 10	N1	2,850	0.92 J	8.5 J	39 UJ	0.18 UJ	2.3 J	199 UJ	6.3	13	9.0	14,500	24 J	1,400	898	0.037 J	3.9 J	555 J	3.7 R	0.10 UJ	15 J	1.0 J	3.9 UJ	468
BH-SF-E-PZ-25	06/18/2008	12 - 14	N1	2,900	0.99 J	8.9 J	53	0.20 UJ	3.4 J	436 J	4.4	3.5 J	8.8	14,300	66 J	1,300	644	0.11 J	4.0 J	614 J	4.1 R	0.18 UJ	17 J	2.9 UJ	4.9 UJ	488

Analytical Results for Total Metals
OU2 Direct Push Field Investigation

Parameter:				ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER	IRON	LEAD	MAGNESIUM	MANGANESE	MERCURY	NICKEL	POTASSIUM	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC
Units:				MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
Station	Sample Date	Depth	QA Type																							
BH-SF-E-PZ-25	06/18/2008	13.5 - 15	N1	2,270	1.3 J	21 J	88	0.21 UJ	2.7 J	262 J	3.7	3.7 J	13	21,000	231 J	707 J	740	0.67 J	2.9 J	389 J	3.9 R	0.50 UJ	13 J	3.8 J	3.2 UJ	603
BH-SF-E-PZ-25	06/18/2008	16 - 17	N1	3,410	1.5 J	15 J	46	0.28 UJ	2.8 J	505 J	7.4	4.3 J	30	26,600	147 J	1,310	180	0.15 J	7.1 J	539 J	3.9 R	0.40 UJ	21 J	2.8 UJ	5.2 UJ	960
BH-SF-E-PZ-25	06/18/2008	17.3 - 19	N1	3,800	1.2 J	9.3 J	27 UJ	0.24 UJ	2.0 J	434 UJ	6.5	2.7 J	20	21,600	26 J	1,490	93	0.046 J	5.8 J	548 J	4.0 R	0.070 UJ	18 J	2.9 UJ	7.2 UJ	1,160
BH-SF-E-PZ-26	06/17/2008	0 - 1	N1	23,600	39 J	31	1,040	1.1 UJ	24	83,100	120	112	796 J	213,000	2,270	6,610	13,100	4.3 J	4.2 U	5,600	3.7 UJ	10	1,960	2.7 UJ	49	25,400
BH-SF-E-PZ-26	06/17/2008	1 - 2.5	N1	29,400	25 J	1.4 J	1,560	1.3 J	9.4	115,000	179	127	845 J	264,000	89	8,310	16,900	0.89 J	4.2 U	7,390	3.7 UJ	0.88 UJ	2,250	2.6 UJ	64	37,900
BH-SF-E-PZ-26	06/17/2008	4 - 5.5	N1	27,600	28 J	1.9 J	1,390	1.2 J	8.4	112,000	136	107	791 J	272,000	132	7,620	17,000	0.70 J	4.2 U	7,110	3.7 UJ	0.99 UJ	4,010	2.6 UJ	61	45,200
BH-SF-E-PZ-26	06/17/2008	5.5 - 7	N1	2,250	79 J	65	79	0.19 UJ	16	940 UJ	3.4	4.9 UJ	259 J	105,000	19,700	1,950	7,740	0.32 J	4.4 U	589 J	3.9 UJ	37	27 J	2.8 UJ	2.7 UJ	5,230
BH-SF-E-PZ-26	06/17/2008	8 - 9	N1	3,680	90 J	36	209	0.26 UJ	44	9,860	17	16	388 J	98,400	16,300	2,330	7,680	2.1 J	1.2 J	872 J	3.9 UJ	48	215 J	2.8 UJ	6.3 UJ	11,200
BH-SF-E-PZ-26	06/17/2008	9 - 11	N1	7,270	8.5 J	13	104	0.42 UJ	3.4	2,340	8.0	3.3 UJ	30 J	18,700	2,280	2,000	933	1.8 J	7.1 J	798 J	5.0 UJ	6.8	43 J	3.6 UJ	10 UJ	1,570
BH-SF-E-PZ-26	06/17/2008	12 - 14	N1	2,690	1.2 J	8.8	58	0.16 UJ	3.8	420 UJ	3.3	2.2 UJ	15 J	16,200	46	785 J	339	0.072 UJ	3.8 J	455 J	3.9 UJ	0.15 UJ	23 J	2.8 UJ	3.5 UJ	376
BH-SF-E-PZ-27	06/23/2008	0.5 - 2	N1	4,540	26	73 J	295	0.33 J	50	6,170	11	15 J	253	54,000	8,520	2,020	7,820	6.9	9.5	838 J	4.1 U	25	74 J	6.8	9.1	5,900 J
BH-SF-E-PZ-27	06/23/2008	4 - 5.9	N1	966	23	56 J	88	0.21 J	29	945	3.0	3.6 J	82	84,200	18,600	1,190	6,800	2.6	4.6	241 J	3.8 U	25	544 U	9.4	0.61 J	5,940 J
BH-SF-E-PZ-27	06/23/2008	8 - 9.5	N1	11,900	23	22 J	221	0.45 J	23	1,230	8.9	3.1 J	102	18,900	9,560	2,770	1,400	6.7	9.5	986 J	5.0 U	29	718 U	1.4 J	7.2	3,930 J
BH-SF-E-PZ-27	06/23/2008	9.5 - 11	N1	10,000 J	8.4 UJ	1.5 J	175 J	0.40 UJ	0.84 J	973	7.7	1.3 J	17	6,390	81 J	2,270	245 J	0.14 U	7.2	615 J	4.9 U	1.4 U	81 J	3.5 U	6.0 J	957 J
BH-SF-E-PZ-27	06/23/2008	12 - 13	N1	5,610	7.5 U	0.90 J	68	0.13 J	11	628	6.2	0.53 J	103	4,220	188	1,920	47	0.13 U	5.3	401 J	4.4 U	1.3 U	72 J	3.1 U	3.0 J	306 J
BH-SF-E-PZ-27	06/23/2008	13 - 15	N1	4,080	0.59 UJ	4.8 J	37	0.090 J	1.6	323 J	9.5	0.89 J	16	6,980	173	1,390	69	0.11 U	4.0 UJ	517 J	3.8 U	0.26 J	63 J	2.7 U	3.5 J	146 J
BH-SF-E-PZ-28	06/23/2008	0 - 1.5	N1	2,540 J	47 J	74	125 J	0.32 UJ	24 J	13,900	8.6	15	215	60,300	4,310 J	5,840	6,290 J	2.9 J	9.4	712 J	3.7 U	25	109 J	8.8	4.8 J	3,320 J
BH-SF-E-PZ-28	06/23/2008	0 - 1.5	FD1	4,160 J	76 J	105	202 J	0.33 UJ	31 J	9,760	17	25	382	70,500	7,750 J	2,350	6,830 J	3.2 J	9.9	1,000 J	3.7 U	48	174 J	11	8.1	4,790 J
BH-SF-E-PZ-28	06/23/2008	1.5 - 2.6	N1	325 J	44 J	124	20 J	0.22 UJ	74 J	351 J	2.4	5.8	118	168,000	13,300 J	789	14,900 J	2.5 J	11	145 J	3.0 J	27	520 U	20	5.2 U	11,200 J
BH-SF-E-PZ-28	06/23/2008	1.5 - 2.6	FD1	373 J	42 J	98	31 J	0.19 UJ	88 J	329 J	2.5	4.0 J	118	128,000	18,100 J	717	13,100 J	4.5 J	6.8	217 J	2.6 J	26	521 U	15	5.2 U	12,700 J
BH-SF-E-PZ-28	06/23/2008	4 - 5	N1	403 J	23 J	45	34 J	0.25 UJ	51 J	448 J	2.6	3.5 J	66	146,000	12,800 J	1,120	14,700 J	4.4 J	4.8	229 J	3.0 J	19	551 U	17	5.5 U	8,770 J
BH-SF-E-PZ-28	06/23/2008	5 - 6.5	N1	1,710 J	51 J	41	36 J	0.22 UJ	25 J	2,100	2.9	1.8 J	223	153,000	24,700 J	4,620	18,200 J	3.8 J	3.9 UJ	256 J	3.0 J	47	576 U	19	5.8 U	3,800 J
BH-SF-E-PZ-28	06/23/2008	8 - 9.5	N1	23,000 J	2.3 UJ	6.0	350 J	0.57 UJ	7.9 J	1,690	14	2.4 J	30	14,200	3,280 J	2,630	1,080 J	0.37 J	13	1,280 J	5.8 U	6.3	134 J	1.4 J	10	1,810 J
BH-SF-E-PZ-28	06/23/2008	8 - 9.5	FD1	7,080 J	0.80 UJ	2.4	95 J	0.26 UJ	0.75 J	662	5.4	1.4 J	8.8	6,810	416 J	2,250	343 J	0.047 J	5.7	590 J	4.3 U	0.58 J	88 J	3.1 U	4.4 J	377 J
BH-SF-E-PZ-28	06/23/2008	9.5 - 11	N1	10,300 J	7.7 UJ	2.2	142 J	0.37 UJ	0.41 J	844	8.1	1.2 J	18	6,660	290 J	2,510	349 J	0.12 J	7.7	788 J	4.5 U	0.57 J	115 J	3.2 U	7.4	215 J
BH-SF-E-PZ-28	06/23/2008	12 - 13	N1	2,840 J	2.0 UJ	4.8	32 J	0.13 UJ	2.9 J	284 J	4.0	0.50 J	40	7,190	874 J	879	294 J	0.19 J	3.0 UJ	441 J	3.9 U	1.7	70 J	0.70 J	2.3 J	360 J
BH-SF-E-PZ-28	06/23/2008	13 - 15	N1	3,870 J	0.98 UJ	7.4	31 J	0.11 UJ	2.1 J	334 J	4.0	0.66 J	18	6,570	147 J	1,920	71 J	0.10 J	3.1 UJ	452 J	3.9 U	0.19 J	85 J	0.60 J	3.2 J	194 J
BH-SF-E-PZ-29	07/01/2008	0 - 1.5	N1	4,240	2.0 J	8.8	141	0.36 UJ	0.92 J	782 J	5.2	6.6 J	23 J	17,400	214	642 UJ	547	0.11	5.2 J	1,330	3.7 UJ	0.46 UJ	35 J	2.7 UJ	9.1 J	165
BH-SF-E-PZ-29	07/01/2008	1.5 - 3	N1	2,790	65 J	42	77	0.29 UJ	6.7	3,410	4.4	8.1 J	186 J	56,500	4,190	1,580	5,830	3.1	5.2 J	990 J	3.8 UJ	30	24 J	2.7 UJ	3.6 J	1,340
BH-SF-E-PZ-29	07/01/2008	4 - 5.5	N1	10,100	1.7 J	17	141	0.48 UJ	18	1,160 J	9.2	12 J	25 J	21,800	467	2,410	2,140	0.10 J	8.2 J	1,160 J	4.4 UJ	0.56 UJ	64 J	3.1 UJ	14 J	383
BH-SF-E-PZ-29	07/01/2008	5.5 - 7.1	N1	3,910	0.82 J	9.2	130	0.22 UJ	20	280 J	4.8	15	12 J	16,900	64	1,440	2,310	0.044 J	5.0 J	627 J	3.8 UJ	0.21 UJ	25 J	2.7 UJ	4.9 J	300
BH-SF-E-PZ-29	07/01/2008	8 - 9	N1	3,280	0.50 J	8.7	62	0.26 UJ	17	393 J	9.5	8.1 J	13 J	15,300	55	901 UJ	1,240	0.027 J	4.0 J	1,000 UJ	3.8 UJ	0.10 UJ	48 J	2.7 UJ	5.1 J	258
BH-SF-E-PZ-29	07/01/2008	9 - 11	N1	3,190	0.73 J	6.6	40 J	0.18 UJ	30	346 J	3.8	14	9.1 J	12,600	34	1,250	1,020	0.017 U	4.4 J	719 UJ	3.9 UJ	0.050 UJ	31 J	2.8 UJ	4.2 J	334
BH-SF-E-PZ-29	07/01/2008	12 - 13	N1	4,710	0.98 J	8.8	99	0.21 UJ	19	487 J	6.2	5.4 J	17 J	16,400	36	1,570	580	0.028 J	5.3 J	613 UJ	3.9 UJ	0.27 UJ	28 J	2.8 UJ	5.7 J	337
BH-SF-E-PZ-29	07/01/2008	13 - 15	N1	4,380	1.4 J	17	77	0.24 UJ	26	401 J	7.4	4.2 J	21 J	18,900	42	1,400	588	0.028 J	4.9 J	606 UJ	3.9 UJ	0.21 UJ	26 J	2.8 UJ	5.3 J	353
BH-SF-E-PZ-30	07/01/2008	0.5 - 2.8	N1	1,870	55 J	163	41 J	0.18 UJ	7.6	206 J	3.5	5.0 J	217 J	99,700	11,400	562 UJ	6,410	3.7	0.51 J	811 J	3.8 UJ	19	31 J	2.7 UJ	1.8 J	3,550
BH-SF-E-PZ-30	07/01/2008	4 - 5.5	N1	5,860	26 J	39	114	0.38 UJ	27	826 J	6.1	5.3 J	111 J	75,300	9,600	2,150	5,930	1.8	5.5 J	1,020 J	4.3 UJ	29	48 J	3.1 UJ	7.6 J	3,790
BH-SF-E-PZ-30	07/01/2008	5.5 - 7.3	N1	10,500	1.6 J	7.4	162	0.49 UJ	48	856 J	9.7	3.4 J	23 J	12,500	121	2,590	145	0.077 J	10 J	1,080 J	4.9 UJ	0.27 UJ	64 J	3.5 UJ	14 J	2,780
BH-SF-E-PZ-30	07/01/2008	8 - 9.7	N1	14,400	1.6 J	9.4	229	0.55 UJ	7.7	937 J	13	6.7 J	28 J	16,000	369	2,880	633	0.075 J	11	1,170 J	4.8 UJ	0.74 UJ	63 J	3.4 UJ	13 J	1,730
BH-SF-E-PZ-30	07/01/2008	9.7 - 11	N1	3,720	0.71 J	7.6	76	0.20 UJ	10	244 J	4.5	2.6 J	8.8 J	16,500	57	1,080 UJ	1,210	0.023 J	3.3 J	677 J	4.0 UJ	0.12 UJ	34 J	2.8 UJ	4.3 J	279
BH-SF-E-PZ-30	07/01/2008	12 - 14	N1	4,130	0.79 J	9.1	102	0.21 UJ	24	431 J	5.0	18	18 J	20,400	35	1,300	1,270	0.017 U	4.4 J	607 J	4.0 UJ	0.19 UJ	34 J	2.8 UJ	5.7 J	317
BH-SF-E-PZ-31	06/23/2008	0 - 1.5	N1	6,900	3.2 UJ	11 J	71	0.27 UJ	4.5	1,400	7.1	4.3 J	41	14,000	931	1,290	717	0.92	6.8	725 J	3.7 U	2.9	69 J	0.75 J	13	478 J
BH-SF-E-PZ-31	06/23/2008	1.5 - 2.9	N1	2,430	99	102 J	106	0.24 UJ	21	651	4.0	6.9 J	429	81,300	19,600	1,290	7,550	5.0	7.8	389 J	4.1 U	67	590 U	7.9	3.5 J	3,570 J
BH-SF-E-PZ-31	06/23/2008	4 - 5.5	N1	761	123	91 J	34	0.17 J	40	1,270	2.7	6.8 J	325	104,000	33,300	2,770	9,200	6.9	8.4	249 J	3.7 U	62	529 U	13	5.3 U	9,110 J
BH-SF-E-PZ-31	06/23/2008	5.5 - 7	N1	246	174	59 J	8.1 J	0.12 J	18	933	1.2 U	0.59 J	690	101,000	16,800	2,350	7,980	3.9	3.1 UJ	104 J	4.1 U	48	580 U	10	5.8 U	4,980 J
BH-SF-E-PZ-31	06/23/2008	8 - 9	N1	578	184	34 J	11 J	0.090 J	32	867	2.1	2.8 J	422	45,600	12,700	1,570	4,500	5.2	4.4 UJ	177 J	4.0 U	55	574 U	3.7	0.43 J	4,270 J
BH-SF-E-PZ-31	06/23/2008	9 - 10	N1	4,140	15	7.4 J	41	0.26 J	66	414 J	4.8	2.1 J	61	12,200	3,950	1,250	532	1.2	6.3	556 J	3.9 U	16	562 U	0.63 UJ	5.0 J	1,850 J
BH-SF-E-PZ-31	06/23/2008	12 - 13	N1	4,430	2.8 UJ	27 J	85	0.33 J	49	477 J	6.3	3.8 J	33	20,700	332	1,050	1,300	0.18	6.4	365 J	4.0 U	1.5	66 J	1.3 UJ	6.0	685 J
BH-SF-E-PZ-32	06/19/2008	0 - 1	N1	11,800	3.9 UJ	12	145	0.57 UJ	2.8	9,050	25	17	110 J	33,200	757	8,350	1,110	0.58	30	1,430	3.6 UJ	3.0	75 J	2.6 U	59	309
BH-SF-E-PZ-32	06/19/2008	1 - 2.6	N1	2,710	73 J	113	154	0.27 UJ	19	289 UJ	4.2	13	355 J	108,000	17,700	698 J	10,900	9.3	4.5 U	645 J	3.9 UJ	50	16 J	2.8 U	3.8 UJ	4,900
BH-SF-E-PZ-32	06/19/2008	4 - 4.9	N1	3,650	77 J	72	118	0.18 UJ	22	1,190	14	4.5 J	297 J	86,600	14,300	2,180	2,500	6.2	1.4 J	715 J	4.1 UJ	36	26 J	0.84 UJ	23	2,670
BH-SF-E-PZ-32	06/19/2008	4.9 - 6.4	N1	7,290	2.5 J	10	156	0.37 UJ	29	345 UJ	6.8	23	24 J	17,500	545	1,920	3,820	0.37	7.1 J	921 J	4.2 UJ	1.1 UJ	22 J	3.0 U	10 UJ	554
BH-SF-E-PZ-32	06/19/2008	8 - 9.5	N1	5,000	1.4 J	10	67	0.23 UJ	34	1,190	5.5	14	22 J	16,200	97	1,840	2,570	0.16	6.1 J	665 J	4.1 UJ	0.34 UJ	17 J	2.9 U	8.8 UJ	421
BH-SF-E-PZ-32	06/19/2008	9.5 - 10	N1	4,990	2.8 J	14	106	0.26 UJ	11	253 UJ	6.0	24	37 J	17,500	166	1,670	1,930	0.26	5.6 J	701 J	4.2 UJ	0.25 UJ	20 J	3.0 U	8.7 UJ	323
BH-SF-E-PZ-32	06/19/2008	12 - 13	N1	1,500	3.3 UJ	13	106	0.15 UJ	11	202 UJ	6.5	5.9 J	8.7 J	13,100	280	557 J	539	1.8	1.2 J	565 J	3.9 UJ	0.12 UJ	16 J	2.8 U	8.5 UJ	149
BH-SF-E-PZ-32	06/19/2008	13.2 - 14	N1	3,630	1.3 UJ	10	110	0.20 UJ	12	367 UJ	5.2	4.7 J	15 J	22,700	33	1,670	305	0.15	5.3 J	540 J	3.9 UJ	0.12 UJ	16 J	2.8 U	4.7 UJ	231
BH-SF-W-PZ-01	07/08/2008	0.5 - 2.5	N1	4,750	18 J	51	193	0.23 J	20 J	6,260	8.4	7.8	163 J	39,000	10,200	2,310	3,490	4.5	10	708 J	3.9 UJ	21 J	108 J	2.8 U	10	3,100
BH-SF-W-PZ-01	07/08/2008	4 - 5.8	N1	4,310	4.7 UJ	24	142	0.20 J	3.8 J	10,500	13	15	60 J	23,600	1,080	2,330	1,730	0.68	9.3	868 J	3.7 UJ	3.5 J	182 J	2.6 U	15	1,160
BH-SF-W-PZ-01	07/08/2008	8 - 9.7	N1	2,490	11 J	83	136	0.30 J	23 J	3,340	7.0	11	98 J	44,800	4,210	1,460	5,520	2.8	10	479 J	3.8 UJ	11 J	263 J	2.7 U	5.0 J	3,270
BH-SF-W-PZ-01	07/08/2008	12 - 15	N1	864	14 J	124	25	0.15 J	25 J	4,770	7.7	12	99 J	44,900	3,390	1,910	4,780	1.6	10	486 J	3.9 UJ	8.5 J	69 J	2.8 U	1.4 J	2,940
BH-SF-W-PZ-01	07/08/2008	15 - 16	N1	18,200	4.5 UJ	3.9	1,160	0.82 J	4.9 J	90,700	124	159	758 J	202,000	127	5,540	17,300	0.057 J	23	4,380 J	3.9 UJ	2.5 J	3,570	18	35	32,700
BH-SF-W-PZ-01	07/08/2008	16 - 18	N1	983	7.2 UJ	80	16 J	0.24 J	17 J	5,770	11	12	108 J	39,700	2,960	1,680	4,580	1.2	12	747 J	4.3 UJ	6.9 J	77 J	3.1 U	1.5 J	2,530
BH-SF-W-PZ-01	07/08/2008	17.5 - 19	N1	990	9.3 J	83	21 J	0.23 J	33 J	5,610	6.3	26	91 J	38,300	4,160	2,040	4,670	2.2	19	756 J	4.5 UJ	8.8 J	63 J	3.2 U	1.4 J	4,170
BH-SF-W-PZ-01	07/08/2008	20 - 21	N1	1,040	11 J	135	35	0.25 J	28 J	7,380	10	22	83 J	35,500	3,370	2,250	4,570	2.5	16	743 J	4.5 UJ	8.2 J	85 J	3.2 U	1.8 J	4,440
BH-SF-W-PZ-01	07/08/2008	21 - 23	N1	552	7.7 UJ	52	79	0.20 UJ	13 J	6,300	4.7	17	50 J	22,500	2,800	1,650	2,700	1.2	12	369 UJ	4.5 UJ	5.0 J	86 UJ	3.2 U	1.1 J	2,030
BH-SF-W-PZ-01	07/08/2008	24 - 27	N1	1,770	8.3 UJ	89	93	0.51 UJ	29 J	7,190	9.0	46	129 J	30,700	3,220	1,950	3,660	2.2	28	1,220 J	4.9 UJ	6.3 J	698 U	3.5 U	2.3 J	5,160
BH-SF-W-PZ-01	07/08/2008	26.5 - 28	N1	790	7.1 UJ	55	43	0.26 UJ	14 J	8,160	6.6	28	77 J	26,600	3,520	2,030	3,400	1.1	16	528 UJ	4.3 UJ	6.6 J	73 UJ	3.1 U	1.6 J	2,410
BH-SF-W-PZ-02	07/08/2008	0 - 1.7	N1	4,940	9.1 J	59	138	0.29 UJ	15 J	3,310	7.7	4.7 J	95 J	56,500	9,620	1,930	3,960	1.9	5.7	638 J	3.7 UJ	19 J	94 UJ	2.6 U	9.9	4,010
BH-SF-W-PZ-02	07/08/2008	4 - 5	N1	6,760	7.7 J	58	187	0.40 UJ	5.1 J	2,360	8.3	6.5	95 J	38,600	6,510	1,590	5,010	1.4	6.6	554 J	3.9 UJ	10 J	111 UJ	2.8 U	14	1,590
BH-SF-W-PZ-02	07/08/2008	8 - 8.7	N1	4,060	32 J	121	85	0.45 UJ	19 J	4,750	6.5	3.9 J	153 J	114,000	19,500	2,140	10,700	1.9	5.4	364 UJ	0.39 J	27 J	68 UJ	1.5 J	9.1	4,520
BH-SF-W-PZ-02	07/08/2008	12 - 14	N1	555	10 J	80	14 J	0.18 UJ	26 J	3,410	5.5	8.3	70 J	36,200	4,080	1,640	4,230	2.0	8.1	364 UJ	4.2 UJ	8.6 J	74 UJ	3.0 U	1.4 J	3,200
BH-SF-W-PZ-02	07/08/2008	13.5 - 15	N1	1,100	11	79 J	54	0.20 UJ	24	8,480	9.6	15	79	41,700	4,120	2,250	5,020	1.8	9.6	455 UJ	4.1 U	7.5	94 UJ	2.9 U	2.5 UJ	4,440
BH-SF-W-PZ-02	07/08/2008	16 - 18	N1	10,300	8.5	121 J	551	0.63	9.4	45,000	86	131	437	127,000	1,800	3,890	11,700	1.8	26	2,500 J	4.3 U	5.2	887	8.6	21	17,000

Analytical Results for Total Metals

OU2 Direct Push Field Investigation

Parameter:				ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER	IRON	LEAD	MAGNESIUM	MANGANESE	MERCURY	NICKEL	POTASSIUM	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC
Units:				MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
Station	**Sample Date**	**Depth**	**QA Type**																							
BH-SF-W-PZ-02	07/08/2008	17.5 - 20	N1	**870**	**10**	**101 J**	**14 J**	0.28 UJ	**36**	**4,320**	**11**	**29**	**105**	**44,000**	**3,650**	**2,090**	**5,280**	**2.6**	**20**	**676 J**	4.3 U	**8.2**	71 UJ	3.0 U	1.6 UJ	**4,050**
BH-SF-W-PZ-02	07/08/2008	20 - 23	N1	**1,070**	**14**	**144 J**	**132**	0.34 UJ	**28**	**6,780**	**10**	**26**	**94**	**37,600**	**3,280**	**2,200**	**4,780**	**2.1**	**19**	**846 J**	4.2 U	**7.3**	60 UJ	3.0 U	**1.6 J**	**4,290**
BH-SF-W-PZ-02	07/08/2008	24 - 26	N1	**691**	**8.4**	**57 J**	**54**	0.23 UJ	**13**	**6,440**	**7.2**	**31**	**71**	**24,000**	**2,690**	**1,690**	**3,150**	**0.80**	**17**	**527 J**	4.3 U	**4.9**	87 UJ	3.1 U	**1.4 J**	**2,670**
BH-SF-W-PZ-02	07/08/2008	26 - 28	N1	**761**	**8.9**	**75 J**	**34**	0.24 UJ	**14**	**7,620**	**7.5**	**32**	**78**	**26,500**	**2,680**	**1,930**	**3,370**	**1.0**	**20**	**564 J**	4.3 U	**5.2**	81 UJ	3.1 U	**1.6 J**	**2,460**
BH-SF-W-PZ-03	07/09/2008	0 - 2	N1	**2,260**	**0.93 J**	**7.2 J**	**41**	0.19 UJ	**2.4**	238 UJ	**3.3**	**2.1 J**	**6.6**	**13,700**	**30**	**1,040**	**239**	0.11 U	3.9 UJ	261 UJ	3.8 U	1.1 U	73 UJ	2.7 U	3.9 UJ	**552**
BH-SF-W-PZ-03	07/09/2008	4 - 5.4	N1	**3,750**	1.1 UJ	**11 J**	**28**	0.17 UJ	**3.7**	363 UJ	**5.1**	**2.8 J**	**11**	**20,600**	**16**	**1,670**	**185**	0.11 U	**4.9**	**358 J**	3.7 U	1.1 U	90 UJ	2.7 U	**5.1 J**	**832**
BH-SF-W-PZ-03	07/09/2008	8 - 10	N1	**3,990**	0.95 UJ	**4.6 J**	**49**	0.28 UJ	**2.7**	347 UJ	**4.9**	**3.6 J**	**18**	**15,900**	**30**	**1,600**	**66**	0.11 U	**8.3**	**388 J**	3.8 U	1.1 U	93 UJ	2.7 U	**5.7**	**712**
BH-SF-W-PZ-04	07/21/2008	0 - 2.2	N1	**3,020**	**14**	**79 J**	**70**	**0.21 J**	**11**	594 UJ	**5.5**	7.1 UJ	**82 J**	**47,300**	**2,690**	**1,480**	**3,600**	**1.4 J**	**7.9 J**	**558 J**	3.7 UJ	**6.5**	23 UJ	**0.62 J**	5.4 UJ	**1,690**
BH-SF-W-PZ-04	07/21/2008	4 - 5.4	N1	**2,650**	**25**	**117 J**	**50**	**0.19 J**	**44**	762 UJ	**4.6**	5.0 UJ	**74 J**	**62,600**	**3,770**	**2,690**	**4,700**	**1.3 J**	**7.0 J**	**589 J**	4.1 UJ	**11**	21 UJ	**0.60 J**	3.9 UJ	**2,360**
BH-SF-W-PZ-04	07/21/2008	8 - 10	N1	**2,000**	1.5 UJ	**11 J**	45 UJ	**0.18 J**	**1.4**	214 UJ	**2.8**	2.1 UJ	**14 J**	**14,900**	**44**	**704 J**	**93**	0.11 UJ	**4.4 J**	**503 J**	4.0 UJ	1.1 U	15 UJ	2.9 U	3.0 UJ	**260**
BH-SF-W-PZ-04	07/21/2008	12 - 15	N1	**3,350**	0.98 UJ	**10 J**	**71**	**0.19 J**	**1.7**	385 UJ	**3.9**	3.9 UJ	**9.9 J**	**15,000**	**23**	**1,430**	**149**	0.11 UJ	**4.5 J**	**601 J**	3.9 UJ	**0.020 J**	18 UJ	2.8 U	8.4 UJ	**249**
BH-SF-W-PZ-05	07/10/2008	0 - 2	N1	**2,310**	**20 J**	**115**	**62**	**0.14 J**	**8.4**	**318 J**	**3.9**	**5.7 J**	**88 J**	**70,400**	**3,410**	**1,080**	**5,870**	**2.3**	**6.3 J**	**602 J**	3.8 U	**12 J**	**16 J**	**3.0 J**	**3.5 J**	**1,910**
BH-SF-W-PZ-05	07/10/2008	4 - 5.8	N1	**1,930**	**71 J**	**99**	23 UJ	**0.16 J**	**11**	**2,140**	**3.4**	**4.6 J**	**147 J**	**81,600**	**2,340**	**3,060**	**7,620**	**1.3**	**6.1 J**	**446 J**	3.8 U	**13 J**	**25 J**	**3.5 J**	**1.8 J**	**1,660**
BH-SF-W-PZ-05	07/10/2008	8 - 8.9	N1	**3,590**	**1.1 J**	**11**	**58**	**0.18 J**	**1.7**	**356 J**	**4.2**	**2.2 J**	**8.7 J**	**13,700**	**39**	**2,120**	**73**	0.045 UJ	**4.9 J**	**648 J**	0.72 UJ	1.1 UJ	**17 J**	2.8 U	**3.7 J**	**532**
BH-SF-W-PZ-06	07/09/2008	0.5 - 2.9	N1	**9,710**	0.75 UJ	**9.1 J**	**110**	0.50 UJ	0.56 U	**828**	**7.6**	**6.5**	**18**	**16,700**	**55**	**676**	**1,120**	**0.042 J**	**7.3**	**503 J**	3.9 U	**0.27 J**	137 UJ	2.8 U	**21**	**36**
BH-SF-W-PZ-06	07/09/2008	4 - 5.8	N1	**11,300**	7.0 U	**12 J**	**87**	**0.64**	0.59 U	**814**	**8.0**	**6.6**	**22**	**20,500**	**89**	501 UJ	**825**	**0.16**	**8.0**	**557 J**	4.1 U	**0.34 J**	136 UJ	2.9 U	**24**	**55**
BH-SF-W-PZ-06	07/09/2008	8 - 10	N1	**6,540**	7.3 U	**4.1 J**	**80**	0.32 UJ	**2.8**	**904**	**6.4**	**3.2 J**	**16**	**8,190**	**41**	**1,960**	**112**	0.13 U	**7.2**	**474 J**	4.3 U	**0.30 J**	124 UJ	3.1 U	**8.6**	**489**
BH-SF-W-PZ-06	07/09/2008	12 - 14	N1	**3,530**	0.81 UJ	**7.5 J**	**35**	0.21 UJ	**3.0**	325 UJ	**4.3**	**7.1**	**9.9**	**10,600**	**24**	**1,390**	**246**	0.11 U	**5.9**	**316 J**	3.8 U	1.1 U	88 UJ	2.7 U	**5.0 J**	**389**
BH-SF-W-PZ-06	07/09/2008	16 - 18	N1	**3,030**	1.2 UJ	**14 J**	**23**	0.19 UJ	0.56 U	300 UJ	**4.2**	**2.5 J**	**13**	**17,900**	**33**	**1,070**	**108**	0.12 U	**6.5**	**298 J**	4.0 U	1.1 U	109 UJ	2.8 U	**4.4 J**	**223**
BH-SF-W-PZ-07	07/09/2008	0.5 - 2.5	N1	**8,500**	0.96 UJ	**11 J**	**141**	0.51 UJ	**0.18 J**	**666**	**6.7**	**11**	**20**	**17,100**	**70**	465 UJ	**1,470**	**0.051 J**	**7.4**	**589 J**	3.7 U	**0.15 J**	118 UJ	2.7 U	**17**	**105**
BH-SF-W-PZ-07	07/09/2008	4 - 5.5	N1	**8,350**	**20**	**25 J**	**174**	0.42 UJ	**58**	**2,100**	**7.8**	**3.4 J**	**51**	**15,100**	**5,890**	**2,300**	**870**	**0.11 J**	**9.4**	**586 J**	6.0 U	**9.0**	122 UJ	4.3 U	**10**	**5,790**
BH-SF-W-PZ-07	07/09/2008	5.5 - 7.3	N1	**3,250**	**170**	**89 J**	**448**	0.47 UJ	**167**	**3,710**	**5.2**	**11**	**633**	**137,000**	**59,000**	**5,140**	**15,700**	**20**	**14**	**749 J**	**2.2 J**	**135**	**2,940**	**1.7 J**	**5.2 J**	**28,500**
BH-SF-W-PZ-07	07/09/2008	8 - 9.4	N1	**2,180**	**1.2 J**	**7.4 J**	**22**	0.25 UJ	**4.4**	265 UJ	**3.8**	**4.8 J**	**12**	**11,500**	**104**	**613**	**140**	0.12 U	**8.7**	**255 J**	3.9 U	**0.25 J**	63 UJ	2.8 U	**4.7 J**	**2,510**

Notes:

QA Type: N1 = Normal samples, FD1 = Field Duplicate

Bold value = detection

J = The analyte was positively identified, the quantitation is estimation.

R = The data are unusable due to deficiencies in the ability to analyze the sample and meet QC criteria.

U - The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.