BOREHOLE LOG V-Site SWMU 16-029(x)

Field Support Facility Stake ID: VS16

Borehole ID: 16-609485 TA/FU: 16 Drill Depth From: 0ft To 20ft Page 1 of 1

Driller: Dave Stacmos - Precision Drilling Box: NA Start Date/Time: 3/1/10/1020 End Date/Time 3/1/10, 1200

Print Name

Drilling Equipment/Method: Delta Base Hollowstem Auger Drill Rig with 7 1/4" OD augers and 3 3/4" ID Continuous Sample Core barrels. Auger are 5' in length.

Sampling Equipment/Method: Core Barrel Samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
0' - 5'	54/60	0 NA	0.0 0.0	NA	0-2.0ft Silty sand, dark brown abundant pine needles 2-5ft Qbt 4 tuff. light gray fine ash matrix, <5% qtz phenocrysts and Fe staining, mod. welding		SM Qbt 4	1015 Begin potholing to 2.0ft refusal in tuff
5' - 10'	50/60	NA	0.0 0.0	NA	5-10ft SAA, increase in Fe staining to approx 50% @ 7-8ft rootlets at 7.0 ft, horizontal fracture zone, clay-filled			
10' - 15'	12/60	NA	0.0 ~~0.0~~ NA	NA	10-11.0 ft SAA, highly welded. 11.0 - 17.5 ft No Recovery		NR	Samples could not be collected at planned depths, NO recovery 11.4-17.5ft
15' - 20'	30/60	RE16-10-3792	NA 0.0	NA	17.5-20.0 ft Qbt 4 tuff light gray, fine ash matrix, ~5% qtz phenocrysts, hard dry TD @ 20.0ft		Qbt 4	RE16-10-3792 @ 1150, 17.5-20ft

Prepared By: Amy K Howard / Amy K Howard 3/1/10
Print Name/Signature Date

Checked By: Elizabeth Bickos / Elizabeth Bickos 7/6/10
Print Name/Signature Date

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BOREHOLE LOG V-Site SWMU 16-029(x)

Field Support Facility Stake ID: VS 30

Borehole ID: 116-609475 TA/FU: 116 Drill Depth From: 0ft To 20ft Page 1 of 1

Driller: Dave Stacnes - Precision Drilling Box: NA Start Date/Time: 3/1/2010, 1410 End Date/Time 3/1/2010, 1530

Print Name

Drilling Equipment/Method: Delta Base Hollowstem Auger Drill Rig with 7 1/4" OD augers and 3 3/4" ID Continuous Sample Core barrels. Augers are 5' in length.

Sampling Equipment/Method: Core Barrel Samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
							CL	
0' – 5'	30/30, 30/30	NA	0.0, 0.0	NA	0-2.5ft Silty Clay, dark brown to black, saturated, 1" dia pine root @ 2.0'. 2.5-5.0ft Qbt 4 tuff, reddish gray, fine ash matrix, mod welded, very friable.			1400 softhole to ground @ 2.5 ft
5' – 10'	57/60	NA RE16-10-3762	0.0, 0.0	NA	5-10ft SAA, grading to light gray @ 9.0ft, abundant horizontal clay filled fractures throughout iron oxide ~5%, qtz phenocrysts 5%, lithics few 2 1/2" dia.		Qbt 4	1500 Collected RE16-10-3762 and FD RE16-10-3796 (11.5-15.0ft)
10' – 15'	48/60	RE16-10-3796 + FD RE16-10-3796	0.0, 0.0	NA	10-15ft SAA, highly welded pumice-clay stringers, few large lithics 1" dia.			
15' – 20'	24/60	RE16-10-3763	NA, 0.0	NA	15-18ft No Recovery. 18-20ft Qbt 4 tuff, light gray, fine ash matrix, very hard, highly welded, dry. TD @ 20ft		NR, Qbt 4	1520 Collected RE16-10-3763 (18-20ft)

Prepared By: Amy K Howard / Amy K Howard 3/1/10
Print Name/Signature Date

Checked By: Elizabeth Birkos / Elizabeth Birkos 7/6/10
Print Name/Signature Date

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BOREHOLE LOG

Field Support Facility

V-Site
SWMU 16-029(4)
Stable ID: VS31

Borehole ID: 16-609476 TA/FU: 16 / Drill Depth From: 0ft To 20ft Page 1 of 1

Driller: Dave Stevens - Jacksin Box: NA Start Date/Time: 3/2/10, 1085 End Date/Time 3/2/10, 1115

Print Name

Drilling Equipment/Method: Delta Base Hollowstem Auger Drill Rig with 7 1/4" OD augers and 5ft long; 3 3/4" ID Continuous sample core barrels

Sampling Equipment/Method: Core barrel samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
					Snow cover ~ 1.5 ft			
0' – 5'	30/30	NA	0.0	NA	0-2.5 ft Silty Clay, dark brown, very moist, abundant rootlets.		CL	0940 - 1000 Hand augers to refusal @ 2.5 ft bgs
	18/30		0.0		2.5-4.0 ft Qbt 4 tuff. reddish gray grading to light gray. Fe staining ~ 3-5%, small quartz phenocrysts, dry. moderately welded.		Qbt 4	4.5-5.0 ft No Recovery (NR)
5' – 10'	57/60	NA	0.0	NA	4.5-5.0 ft No recovery		NR	
			0.0		5.0 - 10 ft SAA, reddish gray		Qbt 4	
10' – 15'	24/60	RE16-10-3765 (10-12ft)	0.0	NA	5-9 ft, light gray with dark brown pumice < 1" dia 9-10 ft.			1035 Collected Sample RE16-10-3765 (10-12 ft).
			0.0		10-12 ft SAA, light gray w/ brown sugary pumice. moist/strongly welded dry.			
			NA		12-15 ft No recovery		NR	
15' – 20'	28/60	RE16-10-3766 + FD RE16-10-3797	0.0	NA	15-18.0 ft Qbt 4 tuff. light gray, fine ash matrix, strongly welded, qtz phenocrysts < 2mm,		Qbt 4	1100 Collected samples RE16-10-3766 + FD RE16-10-3797 (15-18 ft)
			NA		18-20 ft No recovery. Top 20 ft		NR	

Prepared By: Amy K Housel / Amy K Housel 3/2/10
Print Name/Signature Date

Checked By: Elizabeth Bickos / Elizabeth Bickos 7/6/10
Print Name/Signature Date

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BOREHOLE LOG

Field Support Facility

V-Site, SWMU 16-029(x)
Stake ID: VS32

Borehole ID: 16-609473 TA/FU: 16 / Drill Depth From: 0ft To 20ft Page 1 of 1

Driller: Dave Starnes - Precision Box: NA Start Date/Time: 3/2/10, 1345 End Date/Time: 3/2/10, ~~1442~~ AKN 1440

Print Name

Drilling Equipment/Method: Delta Base Hollowstem Auger Drill Rig with 7 1/4" OD augers and 5ft long; 3 3/4" ID continuous sample core barrels

Sampling Equipment/Method: Core barrel samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
					Snow cover ~2 ft			CL - silty clay
0' - 5'	30/30 30/30	NA	0.0 0.0	NA	0-0.5 ft dark brown silty clay, very moist to wet, abundant roots 0.5-5 ft Qbt 4 tuff, reddish gray grading to light gray, fine ash matrix moderately welded, horizontal clay-filled fractures 3-4 ft, ~5% qtz phenocrysts Fe staining, small pumice <1/2" dia.		Qbt 4	1315-1345 Pothole w/ hand auger to refusal @ 2.5 ft bgs.
5' - 10'	48/60	NA	0.0 0.0	NA	5-9 ft SAA 9-10 ft No Recovery			
10' - 15'	24/60	RE16-10-3756 (11-13 ft)	0.0 0.0	NA	10-11 ft No Recovery 11-13 ft Qbt 4 tuff, light gray fine ash matrix, large sugary white pumice, abund. qtz phenocrysts. 13-15 ft No Recovery		NR Qbt 4 NR	1410 Collected RE16-10-3756 (11-13 ft)
15' - 20'	42/60	RE16-10-3757 (16.5'-18.5 ft)	0.0 NA	NA	15-18.5 ft Qbt 4 tuff, light gray fine ash matrix, strongly welded, abundant qtz phenocrysts 18.5-20 ft No Recovery TD @ 20 ft		Qbt 4 NR	1430 Collected RE16-10-3757 (16.5-18.5 ft)

Prepared By: Amy K Howard / Amy K Howard 3/2/10
Print Name/Signature Date

Checked By: Elizabeth Birkos / Elizabeth Birkos 7/6/10
Print Name/Signature Date

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BOREHOLE LOG

Field Support Facility

V-Site / SWMU 16-029(x)

Stake ID: VS33

Borehole ID: 16-609474 TA/FU: 16 / Drill Depth From: 0ft To 20ft Page 1 of 1

Driller: Dave Staunes - Precision Box: NA Start Date/Time: 3/2/10, 1510 End Date/Time to 1610

Print Name

Drilling Equipment/Method: Delta Base Hollowstem Auger Drill Rig with 7 1/4" OD augers and 5 ft long; 3 3/4" ID continuous sample core barrels

Sampling Equipment/Method: Core barrel samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
					Snow cover ~ 3 ft			
0' - 5'	24/30 24/30	NA	0.0 0.0	NA	0-2.0 ft silty clay, dk brown ~~0-0.5 ft 0.5-2.0 ft Qbt 4 tuff~~ AKS 3/2/10 abundant roots - pine tree & organic mat. 2.0-5.0 ft Qbt 4 tuff, light gray large pumice - white sugary, fine ash matrix, mod. welded, abundant qtz phenocrysts.		CL	1500, 3/2/16 Pothole to refusal @ 2.0 ft bgs
5' - 10'	42/60	NA	0.0 0.0	NA	5-10 ft SAA large pumice 1-1 1/2" dia, sugary white, fe staining <3% throughout		Qbt 4	
10' - 15'	36/60	RE16-10-3759	0.0 0.0	NA	10-13 ft SAA 13-15 ft No Recovery			11-13 ft Collected RE16-10-3759 @ 1545
15' - 20'	24/60	RE16-10-3760	0.0 0.0	NA	15-17 ft Qbt 4 tuff, light gray fine ash matrix, strongly welded pumice < 1/2" dia, abundant qtz phenocrysts. 17-20 ft No Recovery, TD @ 20.0 ft		NR Qbt 4 NR	15-17 ft Collected RE16-10-3760 @ 1550

Prepared By: Amy K Howard / Amy K Howard 3/2/10
Print Name/Signature Date

Checked By: Elizabeth Birkos / Elizabeth Birkos 7/6/10
Print Name/Signature Date

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BOREHOLE LOG V-Site SWMU 16-029(x)

Field Support Facility Stake ID: VS34

Borehole ID: 16-609477 TA/FU: 116 Drill Depth From: 0ft To 20ft Page 1 of 1

Driller: Dave Stacus - Precision Drilling Box: NA Start Date/Time: 3/3/10, 1320 End Date/Time 3/3/10, 1530

Print Name

Drilling Equipment/Method: Delta Bore Hollowstem Auger Drill Rig with 7 1/4" OD augers and 3 3/4" ID Continuous Sample Core barrels. Auger are 5' in Length.

Sampling Equipment/Method: Core Barrel Samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
					Snow Cover 5"			
0' - 5'	18/30, 30/30	NA	0.0, 0.0	NA	0-5ft Silty Clay, reddish brown, few rootlets, pine needles hard, high plasticity, dry.		CL	1300 Begin potholing borehole location. 6.0ft horizontal fracture w/ rootlets
5' - 10'	57/60	NA	0.0, 0.0	NA	5-10 Qbt 4 tuff, light gray, fine ash matrix, strongly welded hard, abundant qtz phenocrysts, small lithics, hard, dry		Qbt 4	6.5 ft 45° fracture 8.0ft 6" vertical fracture
10' - 15'	43/60	RE10-10-3768 & FD RE16-10-3778	0.0 X	NA	10-13.5 ft SAA, very hard Drill rig auger refusal at 13.5ft No recovery			Unable to collect bottom depth sample due to 0% recovery and auger refusal
15' - 20'	0/60	X	X	NA	13.5-20.0ft - No recovery, auger refusal. TD @ 20ft		NR	

Prepared By: Amy K Howard / Amy K Howard 3/3/10
Print Name/Signature Date

Checked By: Elizabeth Bickos / Elizabeth Bickos 7/6/10
Print Name/Signature Date

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BOREHOLE LOG

V-Site SWMU 16-029(x)

Field Support Facility

Stake ID: 35 V535 3/3/10

Borehole ID: 16-609478 TA/FU: 116 Drill Depth From: ~~0ft~~ To 20ft Page 1 of 1

Driller: Dave Stacnos - Precision Drilling Box: NA Start Date/Time: 3/3/10, 1020 End Date/Time 3/3/10, 1130

Print Name

Drilling Equipment/Method: Delta Boart Hollowstem Auger Drill Rig with 7 1/4" OD augers and 3 3/4" ID Continuous Sample Core barrels. Augers are 5' in length.

Sampling Equipment/Method: Core Barrel Samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
					Snow cover ~2ft			
0' – 5'	30/30, 30/30	NA	6.0, 0.0	NA	0-4.5 ft, clay, slightly silty, dark gray, roots and organic material throughout, upper 2.0ft frozen.		CH	0950 Pothole w/hand auger to refusal @ 2.5ft
5' – 10'	57/60	NA	0.0, 0.0	NA	4.5-10 ft Qbt 4 tuff, light gray fine ash matrix, large brown pumice large dacite fragments, abundant gte. phenocrysts. 2" ~~vertical~~ horizontal clay-filled fracture @ 6.0 ft.		Qbt 4	
10' – 15'	24/60	RE16-10-3771	0.0, 0.0	NA	10-12ft Qbt 4 tuff, white sugary pumice < 1/2" dia, few dacite frags < 1/2" dia, SAA. 12-15 ft No Recovery		NR	1100 Collected Sample RE16-10-3771 (10-12ft)
15' – 17.5'	24/60	RE16-10-3772	0.0, 0.0	NA	15-17.5ft SAA, strongly welded, no dacite fragments. 17.5-20ft No Recovery TD @ 20.0ft		Qbt 4	1120 Collected Sample RE16-10-3772 (15.5-17.5 ft)
							NR	

Prepared By: Amy K Howard / Amy K Howard 3/3/10

Print Name/Signature Date

Checked By: Elizabeth Birkos / Elizabeth Birkos 7/6/10

Print Name/Signature Date

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BOREHOLE LOG V-Site SWMU 16-029(x)

Field Support Facility Stake ID: VS36

x Moved

Borehole ID: 16-609480 TA/FU: 116 Drill Depth From: 0ft To 20ft Page 1 of 1

Driller: Dave Stacmo - Precision Drilling Box: NA Start Date/Time: 3/4/10, 1025 End Date/Time 3/4/10, 1120

Print Name

Drilling Equipment/Method: Delta Base Hollowstem Auger Drill Rig with 7 1/4" OD augers and 3 3/4" ID Continuous Sample Core barrels. Augers are 5' in length.

Sampling Equipment/Method: Core Barrel Samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
0' – 5'	27/30 12/30	NA	0.0 0.0	NA	0-2ft Dark brown silty clay, abundant organic material, fine roots, mod moist to wet, pine cones 2ft-5ft 3ft Qbt 4 tuff, light grey, moderately welded, crushed dry 5-6.3ft SAA, strongly welded small brown pumice, abundant glass phenocrysts. 6.3-10ft No Recovery 10-14.0ft Qbt 4 tuff, light grey, strongly welded hard, dry. 12.5-15ft No Recovery 15-18ft Qbt 4 tuff, SAA with large 2" dia sized white pumice, few dacite fragments. 18-20ft NR TD @ 20.0ft		CL Qbt 4	1010 Hand auger to refusal in tuff @ 2.75ft 3-5 ft Ø% recovery
5' – 10'	15/60	NA	0.0 0.0	NA			NR	1050 RE16-10-3777 & FD RE16-10-3799 (10-12ft)
10' – 15'	30/60	RE16-10-3777 & FD RE16-10-3799	0.0 0.0	NA			Qbt 4 NR	1115 RE16-10-3778 (16.5-18.0ft)
15' – 20'	36/60	RE16-10-3778	0.0 0.0	NA			Qbt 4 NR	

Prepared By: Amy K Howard / Amy K Howard 3/4/10
Print Name/Signature Date

Checked By: Elizabeth Bickos / Elizabeth Bickos 7/6/10
Print Name/Signature Date

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BOREHOLE LOG V-Site SWMU 16-029(x)

Field Support Facility Stake ID: V537

*Moved 10.4 ft east of original stake

Borehole ID: 16-609479 TA/FU: 16 Drill Depth From: 0ft To 20ft Page 1 of 1

Driller: Dave Stacnos - Precision Drilling Box: NA Start Date/Time: 3/4/10 / 0900 End Date/Time 3/4/10 / 1000

Print Name

Drilling Equipment/Method: Delta Boart Hollowstem Auger Drill Rig with 7 1/4" OD augers and 3 3/4" ID Continuous Sample Core barrels. Augers are 5' in length.

Sampling Equipment/Method: Core Barrel Samplers

Depth (Feet)	Recovery (feet per feet/%)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
					Grass Cover			3/3/10 1500 Pothole to refusal in Qbt 4 tuff @ 2.0 ft
0' – 5'	30/30, 30/30	NA	0.0, 0.0	NA	0-2.5 ft Qbt 4 tuff, reddish brown, mod welded, fine ash matrix 2.5-5.0 ft SAA w/ large brown pumice > 1/2" dia, abundant qtz phenocrysts mod. welded, dry		Qbt 4	3/4/10 Drill Borehole
5' – 10'	57/60	NA	0.0, 0.0	NA	5.0-10.0 ft SAA, no brown pumice, welding increasing with depth, grading to light gray			Two ft runs from 10-20 ft.
10' – 15'	30/60	REID-10-3774	0.0, 0.0	NA	10-12 ft SAA 12-15 ft No Recovery		NR	0935 Collected Sample REID-10-3774 (10-12 ft)
15' – 20'	12/60	REID-10-3775	0.0	NA	15-16 ft Qbt 4 tuff, light gray, strongly welded hard, dry, abundant qtz phenocrysts, 16-20 ft No Recovery		Qbt 4, NR	0950 Collected Sample REID-10-3775 15-16 ft TD @ 20 ft

Prepared By: Amy K Howard / Amy K Howard 3/4/10
Print Name/Signature Date

Checked By: Elizabeth Bickos / Elizabeth Bickos 7/6/10
Print Name/Signature Date

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BOREHOLE LOG V-Site SWMU 16-029x

Field Support Facility Stake ID: 1538

Borehole ID: 16-609481 TA/FU: 116 Drill Depth From: 0ft To 20ft Page 1 of 1

Driller: Dave Stacus - Precision Drilling Box: NA Start Date/Time: 3/17/10, 0920 End Date/Time: to 1020

Print Name

Drilling Equipment/Method: Delta Base Hollowstem Auger Drill Rig with 7 1/4" OD augers and 3 3/4" ID Continuous Sample Core barrels. Augers are 5' in length.

Sampling Equipment/Method: Core Barrel Samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
0' – 5'	30/60	NA	0.0 0.0 NA	NA	0-2.5 ft DK brown clayey silt, lightens w/ depth, abundant grass, pine needles, roots, very moist. 2.5-3.0 ft Qbt 4 tuff, light gray, large biotite phenocrysts, strongly welded, dry. 3-5 ft No Recovery (NR)		CL Qbt 4 NR	0900 Posthole to hand auger refusal @ 2.5 ft.
5' – 10'	48/60	NA	0.0 0.0 NA	NA	5-9 ft SAA, no brown phenocrysts, small <1/2" white pumice, very dry friable. 9-10 ft No Recovery		Qbt 4 NR	
10' – 15'	48/60	see notes	0.0 0.0	NA	10-14 ft Qbt 4 tuff, light gray, fine ash matrix, strongly welded, hard, dry. 14-15 ft NR		Qbt 4 NR	0955 Collected RE16-10-3780 + FD RE16-10-14028 (10-13ft) 1025 Collected RE16-10-3781 (16.5-18.5ft)
15' – 20'	48/60	see notes	0.0 0.0	NA	15-19 ft SAA 19-20 ft NR		Qbt 4 NR	TD @ 20ft

Prepared By: Amy K Howard / Amy K Howard 3/17/10
Print Name/Signature Date

Checked By: Elizabeth Bickos / Elizabeth Bickos 7/6/10
Print Name/Signature Date

Los Alamos Environmental Restoration Project

BOREHOLE LOG V-Site SWMU 16-029x

Field Support Facility Stake ID: VS39

Borehole ID: 16-609482 TA/FU: 116 Drill Depth From: Off To 20ft Page 1 of 1

Driller: Dave Stacmos - Precision Drilling Box: NA Start Date/Time: End Date/Time

Print Name 3/17/10, 1030 to 1355

Drilling Equipment/Method: Delta Base Hollowstem Auger Drill Rig with 7 1/4" OD augers and 3 3/4" ID Continuous Sample Core barrels. Augers are 5' in length.

Sampling Equipment/Method: Core Barrel Samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
					Grass Cover			
0' – 5'	56/60	NA	0.0 0.0	NA	0-2.5 ft Dark brown clay silt, some sand, roots/pine needles, very moist. 2.5-5.0ft Qbt 4 tuff, light gray fine ash matrix, 3.5-4.5ft 45° angle clay-filled fracture 1/2"	Thick	CL Qbt 4	1025 Potholed to 2.5ft refusal w/ hand auger
5' – 10'	58/60	NA	0.0 0.0	NA	5-9.8ft Qbt 4 tuff, light gray fine ash matrix, strongly welded lg brown pumice to 1" dia, hard, dry.		Qbt 4	9.8-10ft No Recovery (NR)
10' – 15'	24/60	see noted	0.0 NA	NA	10-12ft SAA, small whitish pumice <1/2", <2% Fe staining 12-15ft No Recovery		Qbt 4 NR	1320 Collected Sample RE-16-10-3783 (10-12ft)
15' – 20'	28/60	see noted	0.0 NA	NA	15-17ft SAA, highly welded very hard TD @ 20ft		Qbt 4 NR	1335 Collected sample RE16-10-3784 (15-17ft)

Prepared By: Amy K Howard / Amy K Howard 3/17/10
Print Name/Signature Date

Checked By: Elizabeth Birkos / Elizabeth Birkos 7/6/10
Print Name/Signature Date

Los Alamos Environmental Restoration Project

BOREHOLE LOG V-Site SWMU 16-009(x)

Field Support Facility Stake ID: VS40

Borehole ID: 16-009483 TA/FU: 1116 Drill Depth From: 0ft To 20 ft Page 1 of 1

Driller: Dave Stacus - Precision Drilling Box: NA Start Date/Time: 3/4/10, 1535 End Date/Time 3/4/10, 1620

Print Name

Drilling Equipment/Method: Delta Base Hollowstem Auger Drill Rig with 7 1/4" OD augers and 3 3/4" ID Continuous Sample Core barrels. Augers are 5' in length.

Sampling Equipment/Method: Core Barrel Samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
					grass / pine needles cover			
0' – 5'	36/36	NA	0.0	NA	0-3 ft silty clay, dark brown saturated abundant organic material		CL	1515 Hand auger to 3.0ft
	12/24		0.0		3-4 ft Qbt 4 tuff, light gray moderately welded fine ash matrix.		Qbt 4	
					4-5 ft No Recovery		NR	
5' – 10'	30/60	NA	0.0	NA	5-7.5ft Qbt 4 tuff, light gray strongly welded, hard, dry, abundant quartz phenocryst		Qbt 4	
			0.0		7.5-10ft No Recovery		NR	1607 Not enough sample to collect for pesticides
10' – 15'	36/60	Co RE16-10-3780	0.0	NA	10-13ft SAA, Qbt 4 tuff		Qbt 4	Collected RE16-10-3780
			0.0		13ft – 15ft No Recovery		NR	
15' – 20'	4/60	RE16-10-3781	3/4/10 NA	NA	4" recovery SAA 15.4 - 20ft		NR	No other samples collected, due to auger refusal.

Prepared By: Amy K Howard / Amy K Howard 3/4/10
Print Name/Signature Date

Checked By: Elizabeth Birkos / Elizabeth Birkos 7/6/10
Print Name/Signature Date

Los Alamos Environmental Restoration Project

BOREHOLE LOG V-Site SWMU 16-029(x)

Field Support Facility Stake ID: VS41

Borehole ID: 16-609484 TA/FU: 116 Drill Depth From: 0ft To 20ft Page 1 of 1

Driller: Dave Stacus - Precision Drilling Box: NA Start Date/Time: 3/4/10, 1410 End Date/Time 3/4/10, 1515

Print Name

Drilling Equipment/Method: Delta Boart Hollowstem Auger Drill Rig with 7 1/4" OD augers and 3 3/4" ID Continuous Sample Core barrels. Auger are 5' in length.

Sampling Equipment/Method: Core Barrel Samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
					Grass Cover / Pine Needles			
0' – 5'	36/36, 12/24	NA	0.0, 0.0	NA	0-3ft Clay, slightly silt, no sand dark brown, mod. plasticity, wet 3-4ft Qbt 4 tuff. light gray with brown pumice <1" dia. some qtz phenocysts, moderately welded 4-5ft No recovery		CH, Qbt 4, Qbt 4	1400 Hand auger to 3.0ft; 4.0-5.0ft No Recovery (NR)
5' – 10'	12/60	NA	0.0, 0.0	NA	5-6 ft Qbt 4 tuff. light gray strongly welded, fine ash matrix brown 1/2" pumice, phenocysts. 6-10ft No recovery		NR	
10' – 15'	18/60	RE16-10-3789	0.0, 0.0	NA	10-11.5 ft SAA, Qbt 4 11.5-15ft No Recovery		Qbt 4, NR	1435 Collected sample RE16-10-3789 (10-11.5ft)
15' – 20'	18/60	RE16-10-3790	0.0, 0.0	NA	15-17ft Qbt 4 tuff. light gray, strongly welded, fine ash matrix, abundant qtz phenocrysts, hard, dry. 17-20ft No Recovery		Qbt 4, NR	1500 ARU 3/4/10 1450 Collected sample RE16-10-3790 (15-17ft) TD@20ft

Prepared By: Amy K Howard / Amy K Howard 3/4/10
Print Name/Signature Date

Checked By: Elizabeth Bickos / Elizabeth Bickos 7/6/10
Print Name/Signature Date

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BOREHOLE LOG V-Site SWMU 16-029(x)

Field Support Facility Stake ID: VS42

Borehole ID: 16-609467 TA/FU: 116 Drill Depth From: 0ft To 20ft Page 1 of 1

Driller: Dave Stacmo - Precision Drilling Box: NA Start Date/Time: 3/5/10, 1100 End Date/Time 3/5/10, 1220

Print Name

Drilling Equipment/Method: Delta Boart Hollowstem Auger Drill Rig with 7 1/4" OD augers and 3 3/4" ID Continuous Sample Core barrels. Augers are 5' in length.

Sampling Equipment/Method: Core Barrel Samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
0'	24/24	NA	0.0	NA	0-2ft Dark brown silty clay wet, abundant rootlets (grass).		CL	Hand Auger to Refusal in Qbt 4 @2.0ft
5'	24/30		0.0		2-4ft Qbt 4 tuff, light gray moderately welded, large brown pumice, some quartz		Qbt 4	
5'	24/60	NA	0.0	NA	4-5ft No Recovery		NR	
10'			0.0		5-7ft SAA		Qbt 4	
					7-10ft No Recovery		NR	
10'	24/60	RE16-10-3738	0.0	NA	10-11ft No Recovery			1200 Collected RE16-10-3738
15'			0.0		11-13ft Qbt 4 tuff, light gray strongly welded, fine ash matrix hard, dry, qtz increasing w/ depth		Qbt 4	
					13-15ft No Recovery		NR	
15'	30/60	RE16-10-3739	0.0	NA	15-17.5ft Qbt 4 tuff, SAA		Qbt 4	1214 Collected RE16-10-3739
20'			NA		17.5-20.0ft No Recovery		NR	
					TD @ 20.0ft			

Prepared By: Amy K Howard / Amy K Howard 3/5/10

Print Name/Signature Date

Checked By: Elizabeth Birkos / Elizabeth Birkos 7/6/10

Print Name/Signature Date

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BOREHOLE LOG V-Site SWMU 16-029X

Field Support Facility Stake ID: VS43

Borehole ID: 16-609466 TA/FU: 116 Drill Depth From: 0ft To 20ft Page 1 of 1

Driller: Dave Starnes - Precision Drilling Box: NA Start Date/Time: ____ End Date/Time ____

Print Name 3/16/10, ~~1145~~ 1405 to 1500

Drilling Equipment/Method: Delta Base Hollowstem Auger Drill Rig with 7 1/4" OD augers and 3 3/4" ID continuous sample core barrels. Auger are 5' in length.

Sampling Equipment/Method: Core Barrel Samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
					Snow cover ~ 2 ft			* Stake ID VS43 moved 7'3" SW of original location
0' - 5'	55/60	NA	0.0 / 0.0	NA	0-2.5 ft silty clay, dk brown rootlets / grass, few pebbles. 2.5-4.5 ft Qbt 4 tuff, dark gray grading to light gray wet fine ash matrix, highly welded large brown pumice to 1" dia, ~5% qtz phenocrysts.		CL / Qbt 4	1145 Potholed to 2.5 ft refusal in Qbt 4
								4.5-5.0 ft No Recovery (NR)
5' - 10'	36/60	NA	0.0 / 0.0	NA	4.5-5.0 NR. 5-8 ft SAA, friable 7-8 ft. 8-10 ft NR		Qbt 4 / NR	
10' - 15'	34/60	see notes	0.0 / NA	NA	10-12 ft same as above, medium grey, very hard, white sugary pumice < 1/2". 12-15 ft NR		Qbt 4 / NR	1425 collected RE16-10-3736 (10-12 ft)
15' - 20'	36/60	see notes	0.0 / NA	NA	15-18 ft SAA, very hard pumice to 1" dia. 18-20 NR. TD @ 20 ft		Qbt 4 / NR	Collected 1455 RE16-10-3735 (16.5-18 ft)

Prepared By: Amy K Howard / Amy K Howard 3/16/10
Print Name/Signature Date

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Print Name/Signature Date

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BOREHOLE LOG V-Site SWMU 16-029(a)

Field Support Facility Stake ID: VS44

Borehole ID: 16-6007405 TA/FU: 116 Drill Depth From: 0ft To 20ft Page 1 of 1

Driller: Dave Stacus - Precision Drilling Box: NA Start Date/Time: 3/10/10 @ 1020 End Date/Time: to 1120

Print Name

Drilling Equipment/Method: Delta Boart Hollowstem Auger Drill Rig with 7 1/4" OD augers and 3 3/4" ID Continuous Sample Core barrels. Augers are 5' in length.

Sampling Equipment/Method: Core Barrel Samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
					Snow/ Cover ~6"			
0' – 5'	36/60	NA	0.0 NA	NA	0-3 ft Silty clay, dk brown, low plasticity, upper 6" saturated 3-5 ft No Recovery		CL NR	
5' – 10'	40/60	NA	0.0 0.0	NA	5-8.5 ft Qbt 4 tuff, light grey highly vitrified fine ash matrix large dk brown pumice to 1" dia hard, dry 8.5-10 ft No Recovery		Qbt 4 NR	
10' – 15'	31/60	see notes	0.0 NA	NA	10-12.6 ft Qbt 4 tuff, light grey fine ash matrix, very hard/welded small white sugary pumice, incr in qtz 12.6-15 ft NR		Qbt 4 NR	1045 Collected RE16-10-3732 (11-13 ft) 1105 Collected
15' – 20'	36/60	see notes	0.0 NA	NA	15-18 ft SAA, Qbt 4 tuff 18-20 ft No Recovery		Qbt 4	RE16-10-3733 (16.5-18ft) TD @ 20 ft bgs

Prepared By: Amy K Howard / Amy K Howard 3/10/10

Print Name/Signature Date

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BOREHOLE LOG V-Site SWMU 16-029X

Field Support Facility Stake ID: VS45

Borehole ID: 16-609461 TA/FU: 116 Drill Depth From: 0ft To 20ft Page 1 of 1

Driller: Dave Starnes - Precision Drilling Box: NA Start Date/Time: 3/15/10, 1435 to 1540 End Date/Time

Print Name

Drilling Equipment/Method: Delta Base Hollowstem Auger Drill Rig with 7 1/4" OD augers and 3 3/4" ID continuous sample core barrels. Auger are 5' in length.

Sampling Equipment/Method: Core Barrel Samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
0' - 5'	34/36 24/24	NA	NA 0.0	NA	0-2ft Clay, silty, some sand, dk brown grades to light reddish brown, abundant rootlets & organic matter. 2-5ft Qbt 4 tuff, strongly welded, large brown pumice, decreasing in size w/ depth. ~5% qtz phenocrysts fine ash matrix. 5-9.6ft SAA, very dry / friable 5-8ft, light gray.		CL	Previously potholed to 3.0ft bgs
5' - 10'	55/60	NA	0.0 0.0	NA			Qbt 4	
10' - 15'	36/60	see Notes	0.0 0.0	NA	10-13ft SAA, pumice - white, sugary, few dacite fragments 11-13ft. 13-15ft No Recovery		NR	1505 Collected Sample RE16-10-3720 & FD RE16-10-3801, (9.5-13.0ft) 1530 Collected RE16-10-3721 (16.5-19)
15 - 20'	48/60	see notes	0.0 0.0	NA	15-19ft Qbt 4 tuff, light gray SAA, very hard, strongly welded, large white sugary pumice, few small dacite		Qbt 4 NR	19-20ft No Recovery TD @ 20ft

Prepared By: Amy K Howard / Amy K Howard 3/15/10
Print Name/Signature Date

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BOREHOLE LOG — V-Site SWMU 16-029x

Field Support Facility — Stake ID: VS46

Borehole ID: 16-609462 TA/FU: 116 Drill Depth From: 0ft To 20ft Page 1 of 1

Driller: Dave Stacus - Precision Drilling Box: NA Start Date/Time: 3/15/10, 1545 End Date/Time: to 1645

Print Name

Drilling Equipment/Method: Delta Boss Hollowstem Auger Drill Rig with 7 1/4" OD augers and 3 3/4" ID Continuous Sample Core barrels. Augers are 5' in length.

Sampling Equipment/Method: Core Barrel Samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
0' – 5'	55/60	NA	0.0 0.0	NA	0-4.5ft Dark brown silty clay, clay decreases w/ depth, abundant rootlets and organic materials 4.5-5ft No Recovery		CL NR	
5' – 10'	50/60	NA	0.0 0.0	NA	5-10 ft Light gray Qbt 4 fine ash matrix, highly welded, hard, friable, ~5% qtz phenocrysts, very dry. 10-13ft SAA		↑ Qbt 4 ↓	1615 collected RE16-10-3723 (11.5-13.0ft)
10' – 15'	36/60	see notes	0.0 NA	NA	13-15ft No Recovery		NR	1630 collected RE16-10-3724 (16.5-18.0ft)
15' – 20'	36/60	see notes	0.0 NA	NA	15-18ft Qbt 4 tuff, light gray, fine ash matrix, very hard, highly welded, small white streaky pumice ~10% qtz phenocrysts. 18-20ft NR		Qbt 4 NR	TD @ 20ft

Prepared By: Amy K Howard / Amy K Howard 3/15/2010

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BOREHOLE LOG V-Site SWMU 16-029 x

Field Support Facility Stake ID: VS47

Borehole ID: 16-609463 TA/FU: 116 Drill Depth From: Off To 20ft Page 1 of 1

Driller: Dave Stacnos - Precision Drilling Box: NA Start Date/Time: End Date/Time

Print Name 3/16/10, 1520 to 1605

Drilling Equipment/Method: Delta Base Hollowstem Auger Drill Rig with 7 1/4" OD augers and 3 3/4" ID Continuous Sample Core barrels. Augers are 5' in length.

Sampling Equipment/Method: Core Barrel Samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
					Snow cover ~ 6"			
0' – 5'	55/60	NA	0.0 0.0	NA	0 – 4.6 ft Silt, clayey, little sand; reddish brown top 1.0ft very moist, dries with depth.		CL	4.6-5.0ft No Recovery (NR).
5' – 10'	48/60	NA	0.0 0.0	NA	5 – 9ft Qbt 4 tuff, 1.9ft gray, fine ash matrix, hard strongly welded, trace pumice 1/2 - 1" dia, 5% qtz phenocrysts		Qbt 4	NR 1545 Collected RE16-10-3726 (11.0-13.0ft)
10' – 15'	58/60	See notes	0.0 0.0	NA	10 – 14.8ft SAA, white pumice, rare Fe staining, rare lithic fragments, dry.. 14.8-15.0ft NR		Qbt 4	4.8-5.0ft NR 1600 Collected RE16-10-3727 (16.5-18ft)
15' – 20'	50/60	See notes	0.0 0.0	NA	15.0 – 19.6 ft SAA, strongly welded 19.6-20ft No recovery		Qbt 4	TD @ 20ft 19.6-20ft NR

Prepared By: Amy K Howard / Amy K Howard 3/16/10
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BOREHOLE LOG V-Site SWMU 16-029(x)

Field Support Facility Stake ID: V548

Borehole ID: 16-609468 TA/FU: 116 Drill Depth From: 0ft To 20ft Page 1 of 1

Driller: Dave Starnes - Precision Drilling Box: NA Start Date/Time: 3/5/10, 0940 End Date/Time 3/5/10, 1050

Print Name

Drilling Equipment/Method: DeHA Bore Hollowstem Auger Drill Rig with 7 1/4" OD augers and 3 3/4" ID continuous sample core barrels. Auger are 5' in length.

Sampling Equipment/Method: Core Barrel Samplers

Depth (Feet)	Recovery (feet per feet/%)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
					Grass / Pine needles cover			
0' - 5'	36/36 24/24	NA	0.0 0.0	NA	0-3ft Silty Clay, dark brown, frozen/wet. 3-4 SAA 4-5ft Qbt 4, light gray with Fe staining orange 10%, large brown pumice fragments, some quartz, highly weathered.		CL Qbt 4	0925 Hand auger to refusal @ 3.0ft
5' - 10'	30/60	NA	0.0 0.0	NA	5-7.5ft SAA 7.5-10ft No Recovery		NR	1015 RE16-10-3741 & FD RE16-10-3800 (11-14ft)
10' - 15'	48/60	RE16-10-3741 & FD RE16-10-3741	0.0 0.0	NA	10-11ft No Recovery 11-15ft Qbt 4 tuff, light gray, strongly welded, dry, hard, white sugary pumice abundant qtz phenocrysts.		NR Qbt 4	
15' - 20'	36/60	RE16-10-3742	0.0 0.0	NA	15-16.5ft No Recovery 16.5-20ft Qbt 4, SAA TD @ 20.0ft		NR Qbt 4	1040 Collected. RE16-10-3742.

Prepared By: Amy K Howard / Amy K Howard 3/5/10
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BOREHOLE LOG V-Site SWMU 16-029x

Field Support Facility Stake ID: VS49

Borehole ID: 16-609404 TA/FU: 116 Drill Depth From: 0ft To 20ft Page 1 of 1

Driller: Dave Stacmos - Precision Drilling Box: NA Start Date/Time: End Date/Time

Print Name 3/16/10, 0910 to 1015

Drilling Equipment/Method: Delta Boart Hollowstem Auger Drill Rig with 7 1/4" OD augers and 3 3/4" ID Continuous Sample Core barrels. Auger are 5' in length.

Sampling Equipment/Method: Core Barrel Samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
0' – 5'	40/60	NA	0.0 NA	NA	0-2.5 ft Brown silty clay, low plasticity, some sand & abundant rootlets/pine needles/pine cones 3-3.5ft 2.5-3.5 ft Qbt 4 tuff. light pinkish gray, fine ash matrix. large brown pumice to 2" dia. 3.5-5.0ft NR		CL NR	2.5-3.5ft Qbt 4 tuff
5' – 10'	36/60	NA	NA 0.0	NA	5-8ft Qbt 4 tuff. light gray, fine ash matrix, dry, crushed, ~5% qtz phenocrysts. 8-10ft NR		Qbt 4 NR	0945 Collected RE16-10-3728 & FD RE16-10-14027 (9.2ft-13.5ft)
10' – 15'	33/60	RE16-10-3728 & FD RE16-10-14027	0.0 NA	NA	10-13.5 ft SAA, highly welded hard, small white pumice increase in quartz phenocrysts 13.5-15ft No Recovery		Qbt 4 NR	1010 Collected RE16-10-3729 (16.5-18.0ft)
15' – 20'	36/60	See notes	0.0 NA	NA	15-18ft Qbt 4 tuff. light gray fine ash matrix strongly welded small white pumice, hard, dry 18-20ft NR		Qbt 4 NR	TD @ 20.0ft

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