Washington State Department of Transportation

Memorandum

July 25, 2006

TO: Jerry Roseburg
NC Region Materials
SW Region, MS Wenatchee

FROM: Tony M. Allen/Donald A. Williams
E&EP Geotechnical Division, MS 47365

SUBJECT: SR-28 XL-1217
East Wenatchee 31st to Hadley
Soils Information

Attached is additional soils information for the subject project. The information includes copies the edited test hole logs and laboratory test data for drilling requested where no formal report was written. In 2001, three test holes were requested for a proposed pond site investigation that was later abandoned. In 2004, six test holes were drilled for the proposed storm water facility in the vicinity of 27th Street.

If you have any questions regarding this memorandum, please contact Donald Williams at (360) 709-5457.

TMA:daw
DAW
Attachments

cc:

2001 - Proposed Detention Pond Site

Logs of Test Borings and Laboratory Test Data

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R048682

HOLE No. H-1-01

Job No. XL-1217 SR 28 Elevation 792.2 ft

Sheet 1 of 2

Project 31st to Hadley

Driller James Fetterly Lic# 2507

Site Address Proposed Drainage Pond Site

Inspector M. Mulhern

Start July 2, 2001 Completion July 2, 2001 Well ID# AFM-884

Equipment CME 850 w/ autohammer

Station SR28 127+95 Offset 170' LT Hole Dia (inches) HQ

Method Wet Rotary

Northing 492433.73 Easting 2101006.17 Latitude Longitude

County Douglas Subsection NW of NW Section 35 Range 20 E Township 23

Depth (ft)	Elevation (ft)	Profile	Field SPT (N) / Moisture Content / RQD (20 40 60 80)	Blows/6" (N) and/or RQD FF	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
	792.0			2 3 5 6 (8)		D-1		Poorly graded SAND, medium dense, light reddish brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
	791.0									
	790.0			5 5 6 7 (11)		D-2		Poorly graded SAND, medium dense, light grayish brown, moist, Homogeneous, no HCl reaction Length Recovered 2.0 ft, Length Retained 2.0 ft		
	789.0									
	788.0			3 5 5 6 (10)		D-3		Poorly graded SAND, medium dense, light grayish brown, moist, Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
5	787.0									
	786.0			4 5 6 6 (11)		D-4		Poorly graded SAND, medium dense, light grayish brown, moist, Stratified, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
	785.0									
	784.0							SILT from 7'10 - 8'		
	783.0			1 3 4 5 (7)		D-5	GS MC	SM, MC=20% Silty SAND, loose, light grayish brown, moist, Stratified, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
10	782.0									
	781.0			3 5 5 7 (10)		D-6		Poorly graded SAND, medium dense, light grayish brown, moist, Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft (sandy SILT from 11' - 11'5")		
	780.0									
	779.0									
	778.0			3 3 4 6 (7)		D-7		Poorly graded SAND, loose, light grayish brown, moist, Stratified, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
15	777.0							Silty SAND from 15'3" - 16'		
	776.0			1 1 2 2 (3)		D-8	GS MC	SM, MC=23% Silty SAND, loose, light grayish brown, moist, Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
	775.0									
	774.0									
	773.0			3 5		D-9		Poorly graded SAND, medium dense, light grayish brown, wet, Homogeneous, no HCl reaction		
20										

SOILA XL-1217 31ST TO HADLEY - INFILTRATION POND.GPJ SOIL.GDT 7/21/06,12:35:26 P7

Washington State
Department of Transportation

LOG OF TEST BORING

Start Card R048682

HOLE No. H-1-01

Job No. XL-1217 SR 28 Elevation 792.2 ft (241.5 m)

Sheet 2 of 2

Project 31st to Hadley

Driller James Fetterly Lic# 2507

◆ Field SPT (N)
✚ Moisture Content
▨ RQD

Depth (ft)	Elevation (ft)	Profile	Blows/6" (N) and/or RQD FF	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
			5 9 (10) 5 22 (22)		D-10		Length Recovered 1.5 ft, Length Retained 1.5 ft Poorly graded SAND, dense, light reddish brown, wet, Stratified, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
	770						SILTSTONE from 22.5' to 23'		
25		>>	29 50/4" (50/4")		D-11		SILTSTONE, fine grained, moderately weathered, strong rock, no HCl reaction. Discontinuities are moderately spaced and in fair condition, trace SAND, damp to moist Length Recovered 0.5 ft, Length Retained 0.5 ft		
	765	>>	42 50/4" (50/4")		D-12		SILTSTONE, fine grained, moderately weathered, strong rock, no HCl reaction. Discontinuities are moderately spaced and in fair condition, trace SAND, damp to moist Length Recovered 0.5 ft, Length Retained 0.5 ft		
30		>>	55/6" (55/6")		D-13		SANDSTONE, fine grained, moderately weathered, strong rock, no HCl reaction. Discontinuities are moderately spaced and in fair condition Length Recovered 0.5 ft, Length Retained 0.5 ft		
	760						End of test hole boring at 30 ft below ground elevation. This is a summary Log of Test Boring. Soil/Rock descriptions are derived from visual field identifications and laboratory test data.		
35	755						WATER LEVEL READINGS DATE / DEPTH / ELEVATION 08/02/2001 / -15.6 / 776.6 ft. 10/18/2001 / -15.9 / 776.3 ft. Note: Depth = Feet below ground elevation		
40	750								
45									

SOILA XL-1217 31ST TO HADLEY - INFILTRATION POND.GPJ SOIL.GDT 7/21/06 12:35:26 P7

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R048682

HOLE No. H-2-01

Sheet 1 of 2

Job No. XL-1217 SR 28 Elevation 795.6 ft

Project 31st to Hadley

Driller James Fetterly Lic# 2507

Site Address Proposed Drainage Pond Site

Inspector M. Mulhern

Start July 2, 2001 Completion July 2, 2001 Well ID# AFM-885

Equipment CME 850 w/ autohammer

Station SR28 126+50 Offset 91.6' LT Hole Dia (inches) HQ

Method Wet Rotary

Northing 492288.64 Easting 2101084.5 Latitude Longitude

County Douglas Subsection NW of NW Section 35 Range 20 E Township 23

Depth (ft)	Elevation (ft)	Profile	Field SPT (N) / Moisture Content / RQD (20 40 60 80)	Blows/6" (N) and/or RQD FF	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
	795.0			2 2 3 2 (5)		D-1		Poorly graded SAND, loose, reddish brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
	794.0			3 4 6 7 (10)		D-2		Poorly graded SAND, medium dense, light reddish brown, moist, Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
5	791.0			4 5 5 3 (10)		D-3		Poorly graded SAND, loose, light yellowish brown to reddish brown, moist, Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
	789.0			2 3 5 5 (8)		D-4		Sandy SILT to silty SAND, loose, light grayish brown, moist, Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
10	786.0			2 3 1 2 (4)		D-5		Sandy SILT, very loose, light grayish brown, moist, Stratified, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft (Fine grained SAND from 10' 8" - 11')		
	784.0			4 6 9 10 (15)		D-6		Sandy SILT, very dense, grayish brown, moist, Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
15	781.0			1 2 3 5 (5)		D-7		Silty SAND, to sandy SILT, loose, grayish brown, wet, Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
	779.0			8 16 20 10 (36)		D-8		Poorly graded GRAVEL with sand, subangular, dense, grayish brown, wet, Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
20	776.0		>>	10 18		D-9		Poorly graded SAND with gravel, very dense, light grayish brown, wet, Homogeneous, no HCl reaction		

Washington State
Department of Transportation

LOG OF TEST BORING

Start Card R048682

HOLE No. H-2-01

Job No. XL-1217 SR 28 Elevation 795.6 ft (242.5 m)

Sheet 2 of 2

Project 31st to Hadley

Driller James Fetterly Lic# 2507

◆ Field SPT (N)
✚ Moisture Content
▨ RQD

Depth (ft)	Elevation (ft)	Profile	Blows/6" (N) and/or RQD FF	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
	775		50/5" (68/5")				Length Recovered 1.0 ft, Length Retained 1.0 ft		
		>>◆	50/4" (50/4")		D-10		No Recovery		
			RQD 20 FF 2		C-11		SANDSTONE, fine grained, moderately weathered, strong rock, no HCl reaction. Discontinuities are moderately spaced and in fair condition, Percent Recovered 22.0%		
25	770		RQD 99 FF 1.6		C-12		SANDSTONE, fine grained, moderately weathered, strong rock, no HCl reaction. Discontinuities are moderately spaced and in fair condition, Percent Recovered 100.0%		
30	765						End of test hole boring at 30 ft below ground elevation.		
35	760								
40	755								
45									

This is a summary Log of Test Boring. Soil/Rock descriptions are derived from visual field identifications and laboratory test data.

WATER LEVEL READINGS

DATE	DEPTH	ELEVATION
08/02/2001	-13.3	782.3 ft.
10/18/2001	-10.7	784.9 ft.

Note: Depth = Feet below ground elevation

SOIL A XL-1217 31ST TO HADLEY - INFILTRATION POND.GPJ SOIL.GDT 7/21/06,12:35:30 P7

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R048682

HOLE No. H-3-01

Job No. XL-1217 SR 28 Elevation 787.6 ft

Sheet 1 of 2

Project 31st to Hadley

Driller James Fetterly Lic# 2507

Site Address Proposed Drainage Pond Site

Inspector M. Mulhern

Start August 3, 2001 Completion August 3, 2001 Well ID# AFM-886 Equipment CME 45 w/ autohammer

Station SR28 126+53 Offset 253' LT Hole Dia (inches) HQ Method Wet Rotary

Northing 492291.15 Easting 2100922.99 Latitude Longitude

County Douglas Subsection NW of NW Section 35 Range 20 E Township 23

Depth (ft)	Elevation (ft)	Profile	Field SPT (N) / Moisture Content / RQD (20 40 60 80)	Blows/6" (N) and/or RQD FF	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
	787.0			2 2 4 5 (6)		D-1		Poorly graded SAND with organics, loose, light yellowish brown, moist, Homogeneous, no HCl reaction Length Recovered 2.0 ft, Length Retained 2.0 ft		
	786.0			5 8 9 9 (17)		D-2		Poorly graded SAND, medium dense, light reddish brown, moist, Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
5	783.0			3 6 8 8 (14)		D-3		Poorly graded SAND, medium dense, light reddish brown, moist, Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
	781.0			1 6 8 9 (14)		D-4		Poorly graded SAND, medium dense, light reddish brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
10	778.0			2 2 18 50/5" (20)		D-5		Poorly graded SAND, very loose, light reddish brown, moist, Homogeneous, no HCl reaction Length Recovered 0.5 ft, Length Retained 0.5 ft		
	776.0		>>	50/6" (50/6")		D-6		Poorly graded SAND, very dense, light yellowish brown , moist, Homogeneous, no HCl reaction Length Recovered 0.3 ft, Length Retained 0.3 ft		
	775.0			RQD 20 FF 12		C-7		SANDSTONE, fine grained, moderately weathered, moderately weak rock, no HCl reaction. Discontinuities are moderately spaced and in fair condition, Percent Recovered 50.0%		
15	773.0			RQD 50 FF 3		C-8		SANDSTONE, fine grained, slightly weathered, moderately strong rock, no HCl reaction. Discontinuities are moderately spaced and in fair condition, fine to medium grain, moderately strong to moderately weak, Percent Recovered 80.0%		
20	768.0									

Washington State
Department of Transportation

LOG OF TEST BORING

Start Card R048682

HOLE No. H-3-01

Job No. XL-1217 SR 28 Elevation 787.6 ft (240.1 m)

Sheet 2 of 2

Project 31st to Hadley

Driller James Fetterly Lic# 2507

Depth (ft)	Elevation (ft)	Profile	Field SPT (N) / Moisture Content / RQD (20 40 60 80)	Blows/6" (N) and/or RQD FF	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
								End of test hole boring at 19.5 ft below ground elevation.		
								This is a summary Log of Test Boring. Soil/Rock descriptions are derived from visual field identifications and laboratory test data.		
	765							WATER LEVEL READINGS DATE / DEPTH / ELEVATION 08/03/2001 / -19.5 / 768.1 ft. 10/18/2001 / -14.5 / 773.1 ft.		
25								Note: Depth = Feet below ground elevation		
	760									
30										
	755									
35										
	750									
40										
	745									
45										

Job No. **XL-1217**
Hole No. **H-1-01**
Project **31st to Hadley**

Date **July 20, 2006**
Sheet **1** of **1**

Laboratory Summary

Washington State Department of Transportation

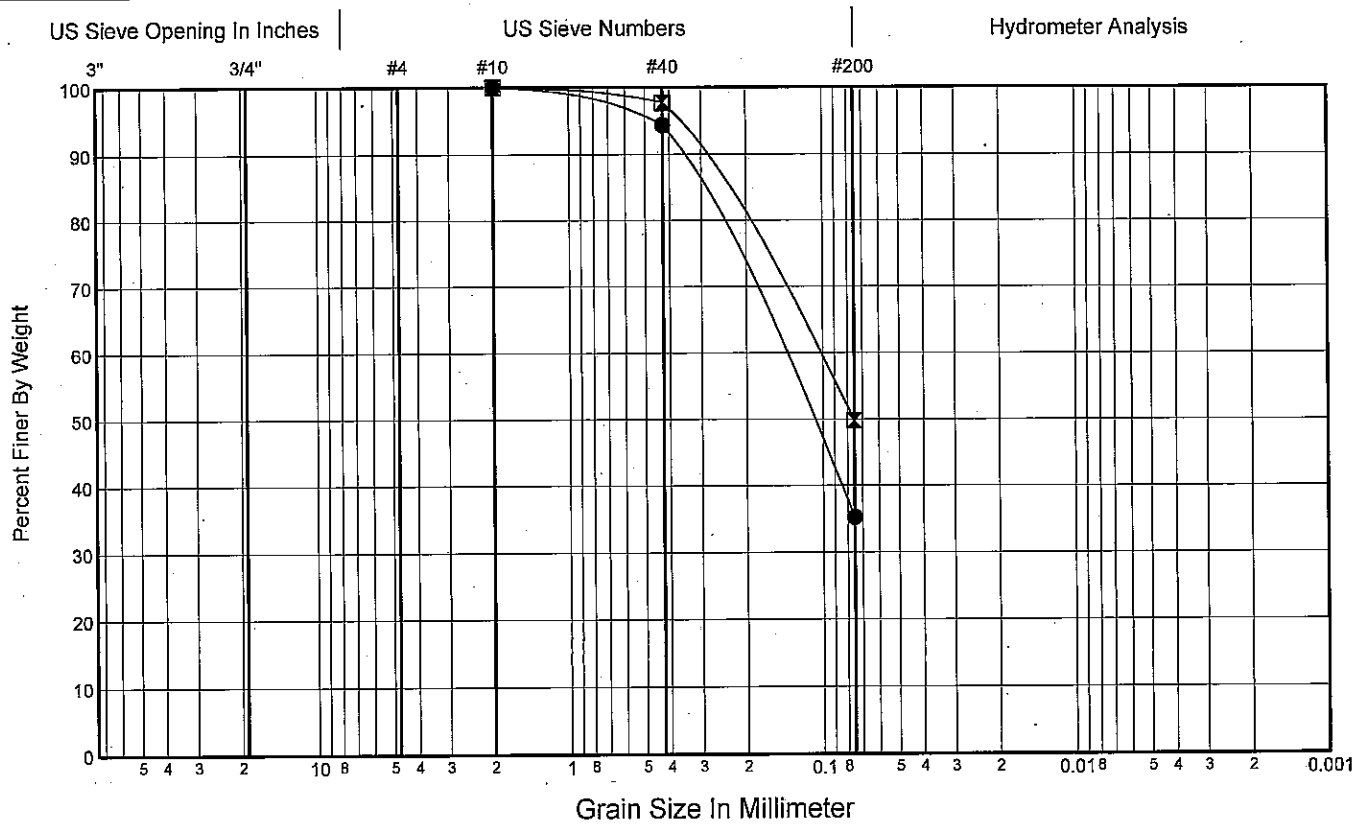
	Depth (ft)	Depth (m)	Sample No.	USCS	Color	Description	MC%	LL	PL	PI
●	9.0	2.74	D-5	SM	See Boring Log	SILTY SAND	20			
⊠	16.0	4.88	D-8	SM	See Boring Log	SILTY SAND	23			

GRADATION FRACTIONS

	%Gravel	%Sand	%Fines	Cc	Cu
●	0.0	64.8	35.2		
⊠	0.0	50.3	49.7		

GRADATION VALUES

	D60	D50	D30	D20	D10
●	0.155	0.12			
⊠	0.109	0.08			



2004 - Storm Water Facility

Logs of Test Borings

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R-65846

HOLE No. H-1-04

Sheet 1 of 2

Job No. XL-1217 SR 28 Elevation 649.9 ft

Project 31st to Hadley

Driller Joe Judd Lic# 2454

Site Address 22 nd. St. NW & NW Cascade Ave.

Inspector Dave Nelson

Start June 30, 2004 Completion July 1, 2004 Well ID# AHN-654

Equipment CME 850 w/ autohammer

Station 124+51 Offset 2904' LT Hole Dia (inches) 6" x 5.0 & 4" x 20.0

Method Wet Rotary

Northing 492092.63 Easting 2098271.76 Latitude Longitude

County Douglas Subsection SE 1/4 of SE 1/4 Section 34 Range 20 EWM Township 23

Depth (ft)	Elevation (ft)	Profile	Field SPT (N) / Moisture Content / RQD (20 40 60 80)	Blows/6" (N) and/or RQD FF	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
	649.0			2 2 2 (4)		D-1	GS MC	SM, MC=4% Silty SAND, loose, brown, dry, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft		
	648.0									
	647.0			4 2 4 (6)		D-2	GS MC	ML, MC=13% Sandy SILT, loose, brown, dry, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft		
	646.0									
5	645.0			8 10 11 (21)		D-3	GS MC	GP, MC=9% Poorly graded GRAVEL with sand, subrounded, medium dense, grey, dry, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft		
	644.0									
	643.0									
	642.0			13 16 29 (45)		D-4		Well graded GRAVEL with sand, subrounded, dense, grey, dry, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft		
	641.0									
10	640.0			26 8 8 (16)		D-5	GS MC	GP-GM, MC=10% Poorly graded GRAVEL with silt and sand, subrounded, medium dense, grey, dry, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft		
	639.0									
	638.0									
	637.0									
	636.0									
15	635.0			12 14 15 (29)		D-6		Well graded GRAVEL with sand, sub rounded, dense, grey, dry, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft		
	634.0									
	633.0									
	632.0									
	631.0									
20	630.0									

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R-65846

HOLE No. H-1-04

Job No. XL-1217 SR 28 Elevation 649.9 ft (198.1 m)

Sheet 2 of 2

Project 31st to Hadley Driller Joe Judd Lic# 2454

Depth (ft)	Elevation (ft)	Profile	Field SPT (N) / Moisture Content / RQD (20 40 60 80)	Blows/6" (N) and/or RQD FF	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
				15 20 43 (73)		D-7	GS MC	SP-SM, MC=11% Poorly graded SAND with silt and gravel, very dense, grey, dry, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft		
								End of test hole boring at 21.5 ft below ground elevation. This is a summary Log of Test Boring. Soil/Rock descriptions are derived from visual field identifications and laboratory test data. No ground water was encountered at time of drilling.		
25	625									
30	620									
35	615									
40	610									
45	605									

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R-65846

HOLE No. H-2-04

Sheet 1 of 1

Job No. XL-1217 SR 28 Elevation 654.7 ft

Project 31st to Hadley

Driller Joe Judd Lic# 2454

Site Address 22 nd. St. NW & NW Cascade Ave.

Inspector Dave Nelson

Start June 30, 2004 Completion June 30, 2004 Well ID# AHN-655 Equipment CME 850 w/ autohammer

Station 123+15 Offset 2966' LT Hole Dia (inches) 6" x 5.0 & 4" x 10.0 Method Wet Rotary

Northing 491956.56 Easting 2098209.53 Latitude Longitude

County Douglas Subsection SE 1/4 of SE 1/4 Section 34 Range 20 EWM Township 23

Depth (ft)	Elevation (ft)	Profile	Field SPT (N) / Moisture Content / RQD (20 40 60 80)	Blows/6" (N) and/or RQD FF	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
	654.0			2 2 2 (4)		D-1	GS MC AL	SM, MC=3% Silty SAND, loose, brown, dry, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft		
	653.0									
	652.0			3 6 7 (13)		D-2	GS MC AL	SM, MC=11% Silty SAND with gravel, medium dense, brown, dry, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft		
	651.0									
	650.0									
5	649.0			13 15 16 (31)		D-3		Well graded GRAVEL with sand, subrounded, dense, grey, dry, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft		
	648.0									
	647.0			10 12 13 (25)		D-4	GS MC	SP, MC=9% Poorly graded SAND with gravel, dense, grey, dry, Homogeneous, HCl reaction not tested Length Recovered 0.8 ft		
	646.0									
	645.0									
10	644.0			2 3 5 (8)		D-5		Well graded GRAVEL with sand, subrounded, loose, grey, dry, Homogeneous, HCl reaction not tested Length Recovered 0.8 ft		
	643.0							End of test hole boring at 11.5 ft below ground elevation.		
	642.0							This is a summary Log of Test Boring. Soil/Rock descriptions are derived from visual field identifications and laboratory test data.		
	641.0									
	640.0							No ground water was encountered at time of drilling.		
15	639.0									
	638.0									
	637.0									
	636.0									
20	635.0									

Washington State
Department of Transportation

LOG OF TEST BORING

Start Card R-65846

HOLE No. H-3-04

Sheet 1 of 1

Job No. XL-1217 SR 28 Elevation 649.7 ft

Project 31st to Hadley

Driller Joe Judd Lic# 2454

Site Address 22 nd. St. NW & NW Cascade Ave.

Inspector Dave Nelson

Start June 30, 2004 Completion June 30, 2004 Well ID# AHN-656 Equipment CME 850 w/ autohammer

Station 121+78 Offset 2810' LT Hole Dia (inches) 6" x 5.0 & 4" x 10.0 Method Wet Rotary

Northing 491818.85 Easting 2098365.38 Latitude Longitude

County Douglas Subsection SE 1/4 of SE 1/4 Section 34 Range 20 EWM Township 23

Depth (ft)	Elevation (ft)	Profile	Field SPT (N) / Moisture Content / RQD (20 40 60 80)	Blows/6" (N) and/or RQD FF	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
	649.0			3 4 6 (10)		D-1	GS MC	SM, MC=3% Silty SAND, loose, brown, dry, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft		
	648.0									
	647.0			11 13 16 (29)		D-2	GS MC	GP, MC=10% Poorly graded GRAVEL with sand, medium dense, grey, dry, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft		
	646.0									
	645.0									
5	644.0			16 21 13 (34)		D-3		Silty SAND with gravel, dense, grey, dry, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft		
	643.0									
	642.0			26 38 40 (78)		D-4	GS MC	GW, MC=6% Well graded GRAVEL with sand, subrounded, very dense, grey, dry, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft		
	641.0									
	640.0									
10	639.0			21 23 44 (67)		D-5		Well graded GRAVEL with sand, subrounded, very dense, grey, dry, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft		
	638.0							End of test hole boring at 11.5 ft below ground elevation.		
	637.0							This is a summary Log of Test Boring. Soil/Rock descriptions are derived from visual field identifications and laboratory test data.		
	636.0									
15	635.0							No ground water was encountered at the time of drilling.		
	634.0									
	633.0									
	632.0									
	631.0									
20	630.0									

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R-65846

HOLE No. H-4-04

Sheet 1 of 2

Job No. XL-1217 SR 28 Elevation 647.0 ft

Project 31st to Hadley

Driller Joe Judd Lic# 2454

Site Address 22 nd. St. NW & NW Cascade Ave.

Inspector Dave Nelson

Start June 29, 2004 Completion June 30, 2004 Well ID# AHN-657 Equipment CME 850 w/ autohammer

Station 119+66 Offset 2852' LT Hole Dia (inches) 6" x 5.0 & 4" x 20.0 Method Wet Rotary

Northing 491607.35 Easting 2098323.55 Latitude Longitude

County Douglas Subsection SE 1/4 of SE 1/4 Section 34 Range 20 EWM Township 23

Depth (ft)	Elevation (ft)	Profile	Field SPT (N) / Moisture Content / RQD (20 40 60 80)	Blows/6" (N) and/or RQD FF	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
	646.0			2 2 2 (4)		D-1	GS MC AL	SM, MC=16%, LL=25 Silty SAND with gravel, loose, brown, dry, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft		
	645.0									
	644.0			10 7 12 (19)		D-2	GS MC	GP, MC=5% Poorly graded GRAVEL with sand, subrounded, medium dense, brown, dry, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft		
	643.0									
5	642.0			3 12 24 (36)		D-3		Well graded GRAVEL with sand, subrounded, dense, brown, dry, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft		
	641.0									
	640.0									
	639.0			13 16 29 (45)		D-4	GS MC	GW, MC=8% Well graded GRAVEL with sand, subrounded, dense, grey, dry, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft		
	638.0									
10	637.0			11 11 16 (27)		D-5		Well graded GRAVEL with sand, subrounded, dense, grey, dry, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft		
	636.0									
	635.0									
	634.0									
	633.0									
15	632.0			12 17 18 (35)		D-6	GS MC	SP, MC=12% Poorly graded SAND with gravel, dense, grey, dry, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft		
	631.0									
	630.0									
	629.0									
	628.0									
20	627.0									

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R-65846

HOLE No. H-4-04

Job No. XL-1217 SR 28 Elevation 647.0 ft (197.2 m)

Sheet 2 of 2

Project 31st to Hadley

Driller Joe Judd Lic# 2454

Depth (ft)	Elevation (ft)	Profile	Field SPT (N) / Moisture Content / RQD (20 40 60 80)	Blows/6" (N) and/or RQD FF	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
				12 14 16 (30)		D-7		Well graded GRAVEL with sand, subrounded, dense, grey, dry, Homogeneous, HCl reaction not tested, Length Recovered 1.0 ft		
	625							End of test hole boring at 21.5 ft below ground elevation.		
								This is a summary Log of Test Boring. Soil/Rock descriptions are derived from visual field identifications and laboratory test data.		
25								Bailed hole to 19.7 after 30 minutes hole was dry with 20.0 of HQ in ground.		
	620									
30										
	615									
35										
	610									
40										
	605									
45										

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R-65848

HOLE No. H-5-04

Sheet 1 of 3

Job No. XL-1217 SR 28 Elevation 781.3 ft

Project 31st to Hadley

Driller Kerry Cooper Lic# 2552

Site Address Vicinity of SR-28 and 27th Street NE

Inspector Cleo Andrews

Start July 7, 2004 Completion July 7, 2004 Well ID# AHN-661 Equipment CME 45 w/ autohammer

Station 129+72 Offset 881' LT Hole Dia (inches) (HWT 4" ID x 12.0')(HQ 3" ID x 50.0') Method Wet Rotary

Northing 492611.02 Easting 2100295.7 Latitude Longitude

County Douglas Subsection NW 1/4 of the NW 1/4 Section 35 Range 20 EWM Township 23

Depth (ft)	Elevation (ft)	Profile	Field SPT (N) / Moisture Content / RQD (20 40 60 80)	Blows/6" (N) and/or RQD FF	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
	781.0							Well graded Gravel with sand		
	780.0									
	779.0									
	778.0									
	777.0									
5	776.0			16 13 5 (18)		D-1		Well graded SAND with gravel, medium dense, brown, wet, Homogeneous, HCl reaction not tested Length Recovered 0.5 ft, Length Retained 0.5 ft		
	775.0									
	774.0									
	773.0									
	772.0									
10	771.0			4 4 4 (8)		D-2		Well graded SAND with gravel, loose, grayish brown, wet, Homogeneous, HCl reaction not tested Length Recovered 0.2 ft, Length Retained 0.2 ft		
	770.0									
	769.0									
	768.0									
	767.0									
15	766.0			8 5 6 (11)		D-3	GS MC	SP, MC=13% Poorly graded SAND, medium dense, grayish brown, wet, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft, Length Retained 1.0 ft		
	765.0									
	764.0									
	763.0									
	762.0									
20										

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R-65848

HOLE No. H-5-04

Job No. XL-1217 SR 28 Elevation 781.3 ft (238.1 m)

Sheet 2 of 3

Project 31st to Hadley

Driller Kerry Cooper Lic# 2552

Depth (ft)	Elevation (ft)	Blows/6" (N) and/or RQD FF	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater
	760	6 7 10 (17)		D-4		Well graded SAND with gravel, medium dense, grayish brown, wet, Homogeneous, HCl reaction not tested Length Recovered 1.0 ft, Length Retained 1.0 ft	
25	755	8 8 11 (19)		D-5	GS MC	SP-SM, MC=18% Poorly graded SAND with silt, medium dense, grayish brown, wet, Homogeneous, HCl reaction not tested, (Note : Encountered some coarse gravel at 27.5 as indicated by drilling). Length Recovered 1.0 ft, Length Retained 1.0 ft	
30	750	12 23 13 (36)		D-6		Well graded SAND with gravel, dense, grayish brown, wet, Homogeneous, HCl reaction not tested, drilling fluid loss at 30.0' Length Recovered 1.0 ft, Length Retained 1.0 ft	
35	745	14 17 19 (36)		D-7	GS MC	SP-SM, MC=12% Poorly graded SAND with silt and gravel, dense, olive gray, wet, Stratified, HCl reaction not tested Length Recovered 1.5 ft, Length Retained 1.0 ft 10/13/2004	▽
		>> 9 14 50/5" (64/11")		D-8	GS MC	SP-SM, MC=16% Poorly graded SAND with silt, very dense, olive gray, wet, Stratified, HCl reaction not tested Length Recovered 1.4 ft, Length Retained 1.0 ft	
40	740	51 9 4 (13)		D-9	GS MC AL	CL, MC=37%, PI=15 Lean CLAY with sand, medium dense, olive gray, wet, laminated, drilling fluid return starting at 40.0'. Length Recovered 1.5 ft, Length Retained 1.0 ft 12/29/2004	▼
45		3 3 4 (7)		D-10	GS MC AL	ML, MC=44%, PI=11 SILT with sand, loose, olive gray, moist, laminated Length Recovered 1.5 ft, Length Retained 1.3 ft	

Profile: ◆ Field SPT (N) ✚ Moisture Content ▨ RQD (20 40 60 80)

Instrument

Washington State
Department of Transportation

LOG OF TEST BORING

Start Card R-65848

HOLE No. H-5-04

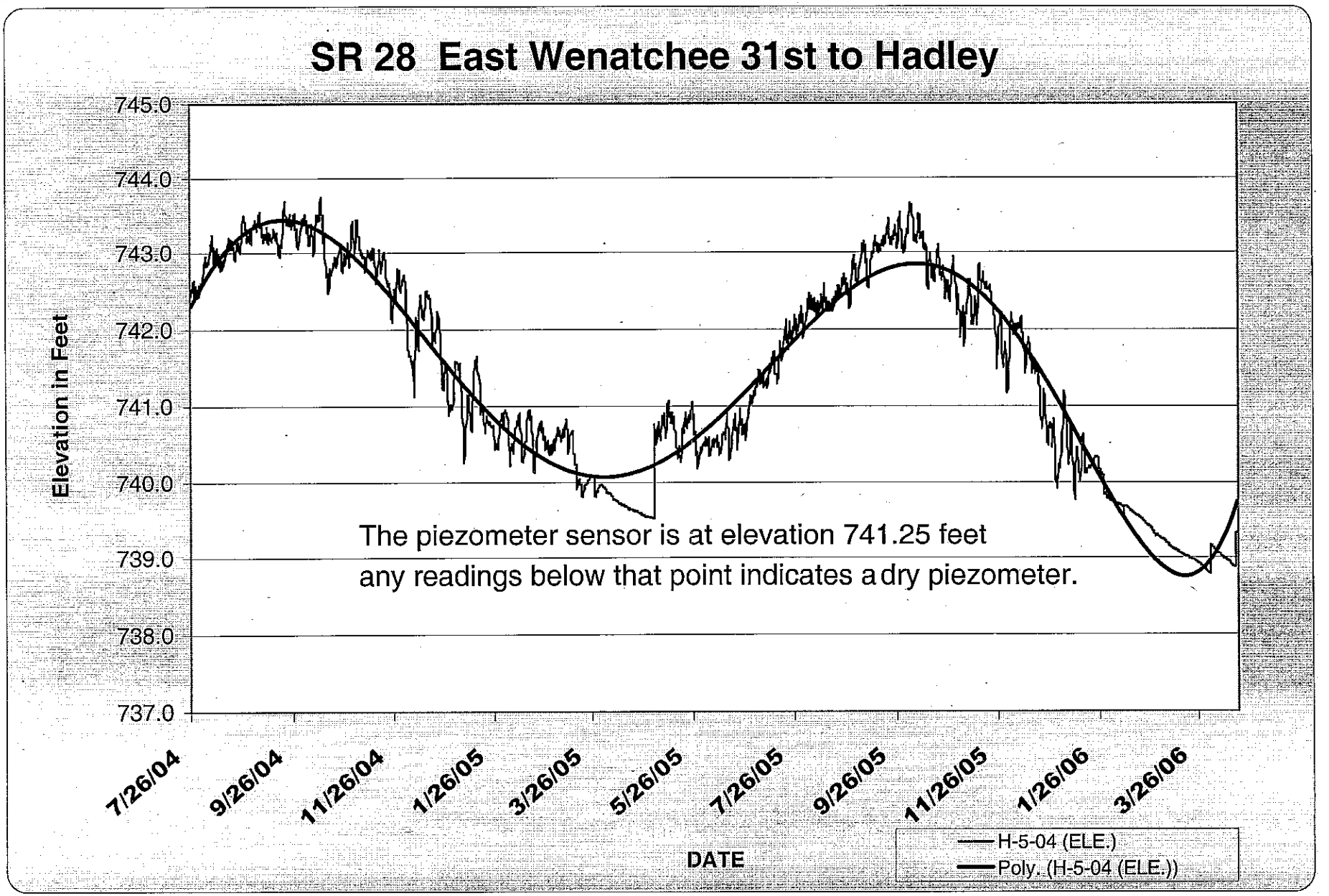
Job No. XL-1217 SR 28 Elevation 781.3 ft (238.1 m)

Sheet 3 of 3

Project 31st to Hadley

Driller Kerry Cooper Lic# 2552

Depth (ft)	Elevation (ft)	Profile	Field SPT (N) / Moisture Content / RQD (20 40 60 80)	Blows/6" (N) and/or RQD FF	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
	735			3 4 6 (10)		D-11	GS MC AL	SP-SM, MC=39%, PI=7 Poorly graded SAND with silt, loose, olive gray, moist, laminated Length Recovered 1.5 ft, Length Retained 1.3 ft		
50	730							End of test hole boring at 46.5 ft below ground elevation. This is a summary Log of Test Boring. Soil/Rock descriptions are derived from visual field identifications and laboratory test data. Bail test done, water table in casing before bailing hole is 6.0'. Bailed hole to 43.0' after 30 minutes delay is 41.2'. 07/06/2004. Water level reading overnight was at 39.2'. (07/07/2004) Water level reading varied between 37.6 ft. and 40.3 ft. as recorded by VIB- wire piezometer with a data logger.		
55	725									
60	720									
65	715									
70										


SR 28 East Wenatchee 31st to Hadley
Elevation in Feet
745.0
744.0
743.0
742.0
741.0
740.0
739.0
738.0
737.0
The piezometer sensor is at elevation 741.25 feet
any readings below that point indicates a dry piezometer.
7/26/04
9/26/04
11/26/04
1/26/05
3/26/05
5/26/05
7/26/05
9/26/05
11/26/05
1/26/06
3/26/06
DATE
H-5-04 (ELE.)
Poly. (H-5-04 (ELE.))

Washington State Department of Transportation

LOG OF TEST BORING

Start Card S-23983

HOLE No. H-6-04

Job No. XL-1217 SR 28 Elevation 784.2 ft

Sheet 1 of 2

Project 31st to Hadley

Driller Kerry Cooper Lic# 2552

Site Address Vicinity of SR-28 and 27th Street NE

Inspector Cleo Andrews

Start July 6, 2004 Completion July 7, 2004 Well ID# Equipment CME 45 w/ autohammer

Station 129+69 Offset 976' LT Hole Dia (inches) HQ 3" ID x 45.0' Method Wet Rotary

Northing 492608.07 Easting 2100200.33 Latitude Longitude

County Douglas Subsection NW 1/4 of the NW 1/4 Section 35 Range 20 EWM Township 23

◆ Field SPT (N) ✚ Moisture Content ▨ RQD

Depth (ft)	Elevation (ft)	Profile	Blows/6" (N) and/or RQD FF	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
	784.0						Well graded GRAVEL with sand		
	783.0								
	782.0								
	781.0								
	780.0								
5	779.0		4 4 5 (9)		D-1	GS MC	SP, MC=13% Poorly graded SAND, loose, brown, wet, Homogeneous, HCl reaction not tested Length Recovered 1.5 ft, Length Retained 1.0 ft		
	778.0								
	777.0								
	776.0								
	775.0								
10	774.0		14 17 35 (52)		D-2		Well graded GRAVEL with sand, subrounded, very dense, olive gray, wet, Homogeneous, HCl reaction not tested, very little drilling fluid loss Length Recovered 0.4 ft, Length Retained 0.4 ft		
	773.0								
	772.0								
	771.0								
	770.0								
15	769.0		3 5 9 (14)		D-3	GS MC	SP, MC=19% Poorly graded SAND, medium dense, brown, wet, Homogeneous, HCl reaction not tested, encountered some gravel at 17.0' Length Recovered 1.5 ft, Length Retained 1.0 ft		
	768.0								
	767.0								
	766.0								
	765.0								
20									

Washington State Department of Transportation

LOG OF TEST BORING

Start Card S-23983

HOLE No. H-6-04

Job No. XL-1217 SR 28 Elevation 784.2 ft (239.0 m)

Sheet 2 of 2

Project 31st to Hadley Driller Kerry Cooper Lic#. 2552

◆ Field SPT (N) ✚ Moisture Content ▨ RQD (20 40 60 80)

Depth (ft)	Elevation (ft)	Blows/6" (N) and/or RQD FF	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
		8 12 12 (24)		D-4		Well graded SAND with gravel, medium dense, grayish brown, wet, Homogeneous, HCl reaction not tested, some coarse gravel from 10.0' to 24.0' Length Recovered 1.5 ft, Length Retained 1.0 ft	▽ 07/08/2004	
	760							
25		13 14 18 (32)		D-5		Well graded SAND with gravel, dense, grayish brown, moist, Homogeneous, HCl reaction not tested Length Recovered 1.5 ft, Length Retained 1.0 ft		
	755							
30		9 14 17 (31)		D-6		Well graded SAND with gravel, dense, grayish brown, wet, Homogeneous, HCl reaction not tested Length Recovered 1.5 ft, Length Retained 1.0 ft		
		9 14 14 (28)		D-7	GS MC	SP-SM, MC=15% Poorly graded SAND with silt, dense, grayish brown, wet, Homogeneous, HCl reaction not tested Length Recovered 1.5 ft, Length Retained 1.0 ft		
	750							
35		9 10 14 (24)		D-8	GS MC	SP-SM, MC=16% Poorly graded SAND with silt, medium dense, grayish brown, wet, Homogeneous, HCl reaction not tested Length Recovered 1.5 ft, Length Retained 1.0 ft		
		3 3 3 (6)		D-9	GS MC AL	SC, MC=46%, PI=22 Clayey SAND, medium stiff, olive gray, moist, laminated, HCl reaction not tested, traces of brown stains Length Recovered 1.5 ft, Length Retained 1.3 ft		
	745							
40		3 3 5 (8)		D-10	GS MC AL	ML, MC=40%, LL=33 SILT with sand, loose, olive gray, moist, laminated Length Recovered 1.5 ft, Length Retained 1.3 ft		
						End of test hole boring at 41.5 ft below ground elevation. This is a summary Log of Test Boring. Soil/Rock descriptions are derived from visual field identifications and laboratory test data. Hole was left open over night, water table reading next day is 22.0'. 07/08/2004.		
	740							
45								

2004 - Storm Water Facility

Laboratory Test Data

Job No. **XL-1217** Date **July 20, 2006**

Hole No. **H-1-04** Sheet **1** of **1**

Project **31st to Hadley**

Laboratory Summary

Washington State Department of Transportation

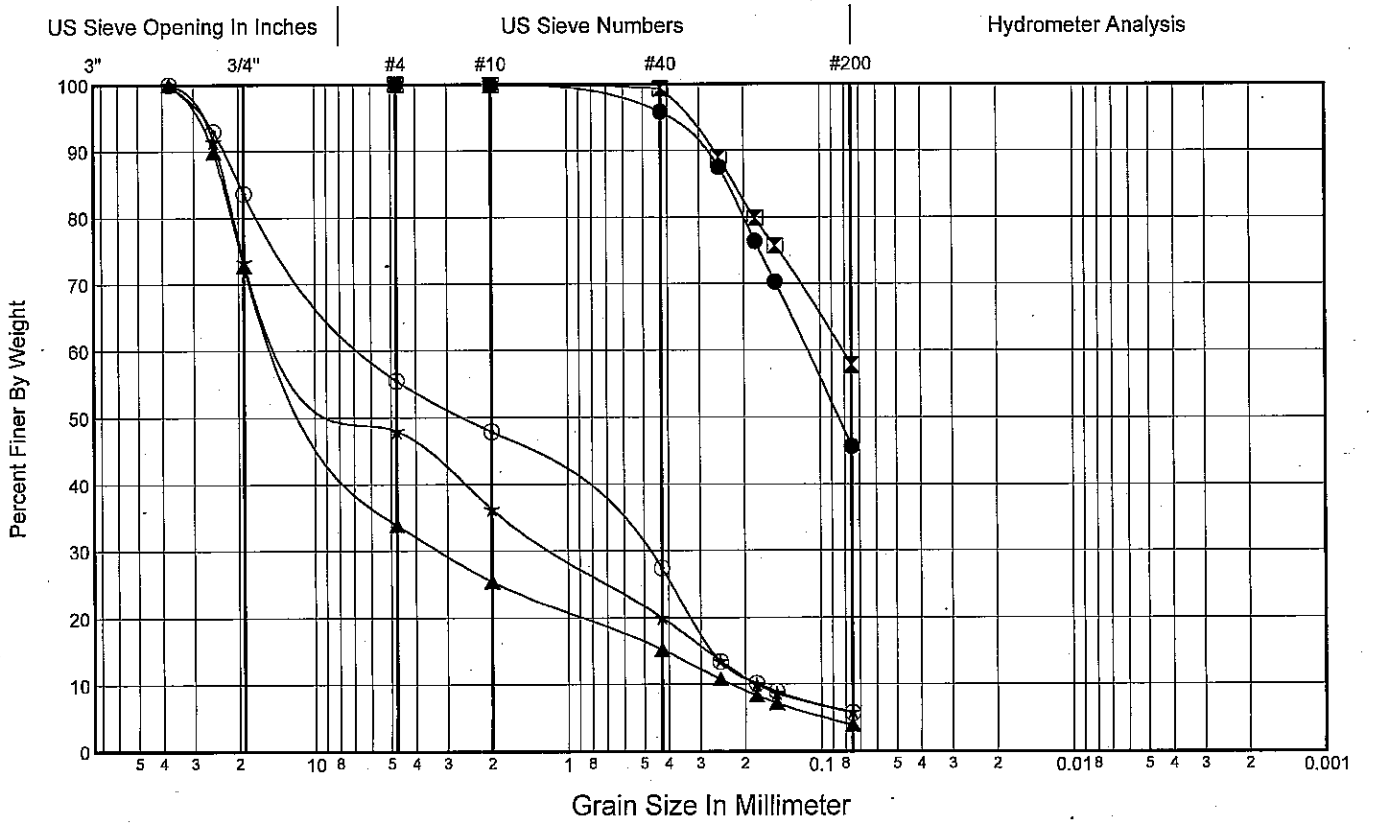
	Depth (ft)	Depth (m)	Sample No.	USCS	Color	Description	MC%	LL	PL	PI
●	0.0	0.00	D-1	SM	See Boring Log	SILTY SAND	4			
⊠	2.5	0.76	D-2	ML	See Boring Log	SANDY SILT	13			
▲	5.0	1.52	D-3	GP	See Boring Log	POORLY GRADED GRAVEL with SAND	9			
★	10.0	3.05	D-5	GP-GM	See Boring Log	POORLY GRADED GRAVEL with SILT and SAND	10			
⊙	20.0	6.10	D-7	SP-SM	See Boring Log	POORLY GRADED SAND with SILT and GRAVEL	11			

GRADATION FRACTIONS

	%Gravel	%Sand	%Fines	Cc	Cu
●	0.0	54.3	45.7		
⊠	0.0	42.2	57.8		
▲	66.2	29.9	3.9	3.8	53.6
★	52.0	42.2	5.8	0.7	50.9
⊙	44.5	49.8	5.7	0.3	33.6

GRADATION VALUES

	D60	D50	D30	D20	D10
●	0.112	0.08			
⊠	0.082				
▲	12.101	8.47	3.21	0.88	0.226
★	9.160	5.30	1.10	0.43	0.180
⊙	5.935	2.54	0.52	0.32	0.176



Gravel	Sand			Silt and Clay
	Coarse	Medium	Fine	

Job No. **XL-1217**
Hole No. **H-2-04**
Project **31st to Hadley**

Date **July 20, 2006**
Sheet **1** of **1**

Laboratory Summary

Washington State Department of Transportation

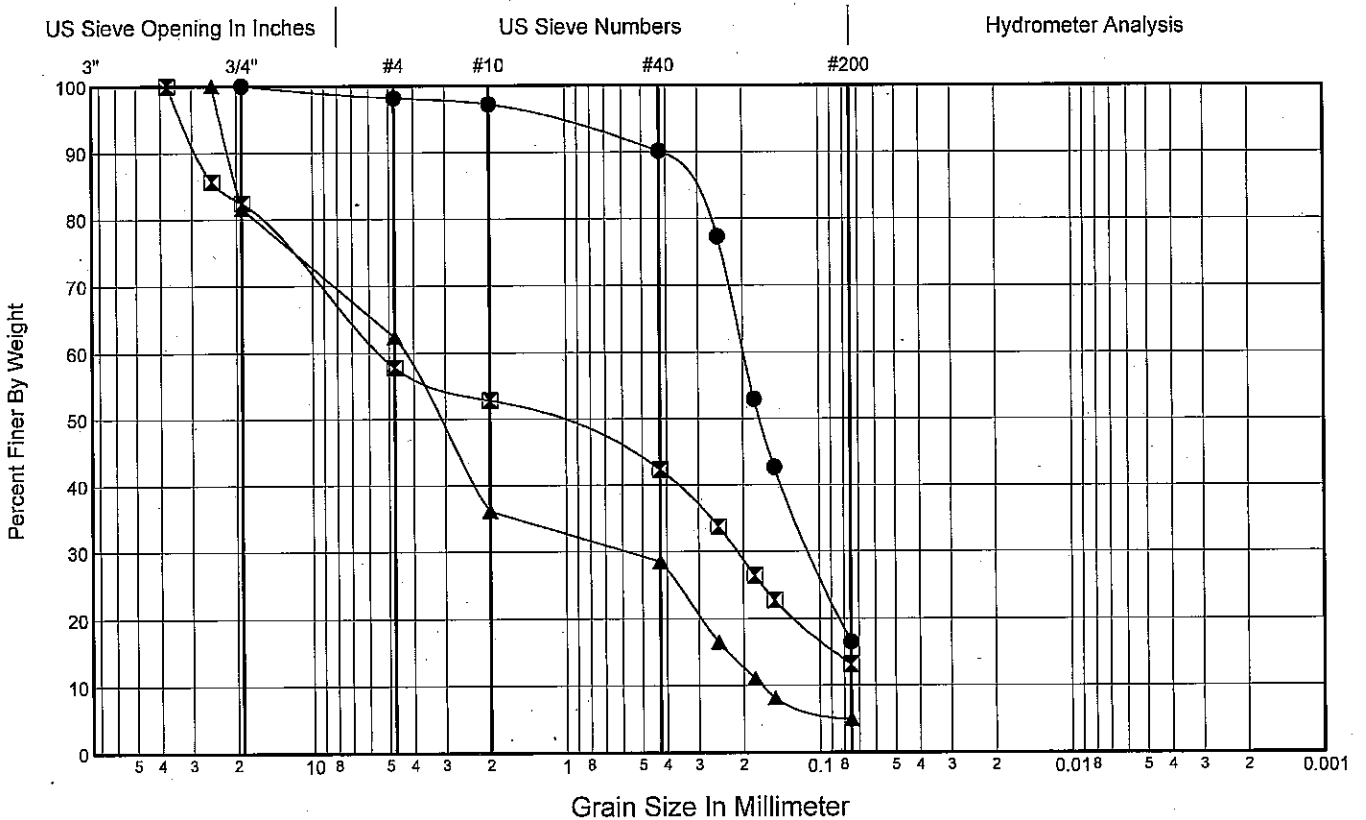
	Depth (ft)	Depth (m)	Sample No.	USCS	Color	Description	MC%	LL	PL	PI
●	0.0	0.00	D-1	SM	See Boring Log	SILTY SAND	3			
⊠	2.5	0.76	D-2	SM	See Boring Log	SILTY SAND with GRAVEL	11			
▲	7.5	2.29	D-4	SP	See Boring Log	POORLY GRADED SAND with GRAVEL	9			

GRADATION FRACTIONS

	%Gravel	%Sand	%Fines	Cc	Cu
●	1.9	81.6	16.5		
⊠	42.2	44.6	13.1		
▲	37.7	57.5	4.8	0.4	26.1

GRADATION VALUES

	D60	D50	D30	D20	D10
●	0.198	0.17	0.11	0.08	
⊠	5.383	1.32	0.21	0.12	
▲	4.400	3.16	0.58	0.29	0.169



Job No. **XL-1217** Date **July 20, 2006**

Hole No. **H-3-04** Sheet **1** of **1**

Project **31st to Hadley**

Laboratory Summary

Washington State Department of Transportation

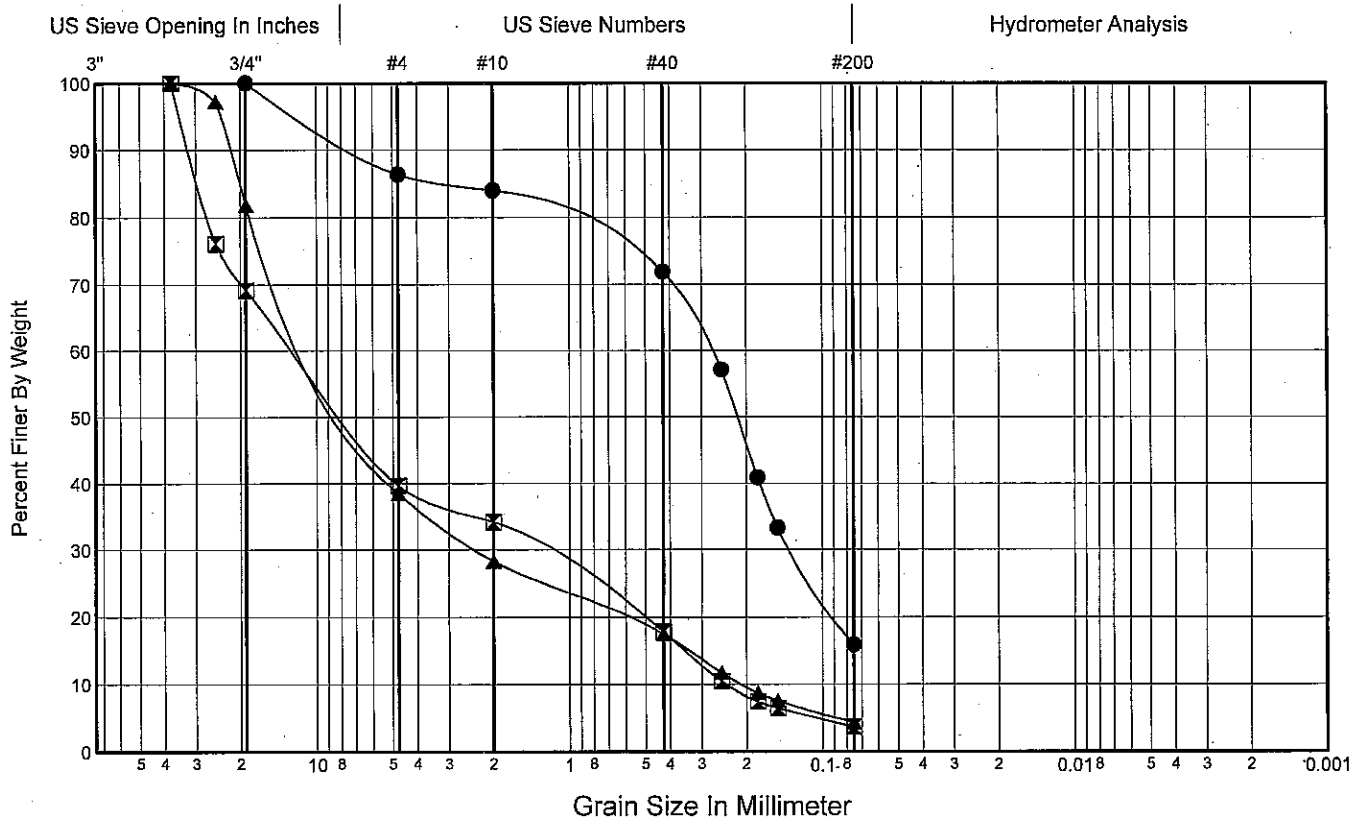
	Depth (ft)	Depth (m)	Sample No.	USCS	Color	Description	MC%	LL	PL	PI
●	0.0	0.00	D-1	SM	See Boring Log	SILTY SAND	3			
⊠	2.5	0.76	D-2	GP	See Boring Log	POORLY GRADED GRAVEL with SAND	10			
▲	7.5	2.29	D-4	GW	See Boring Log	WELL-GRADED GRAVEL with SAND	6			

GRADATION FRACTIONS

	%Gravel	%Sand	%Fines	Cc	Cu
●	13.7	70.5	15.9		
⊠	60.4	36.0	3.6	0.6	51.9
▲	61.6	34.1	4.3	2.7	45.6

GRADATION VALUES

	D60	D50	D30	D20	D10
●	0.277	0.22	0.13	0.09	
⊠	12.379	7.73	1.35	0.52	0.239
▲	9.477	6.89	2.32	0.61	0.208



Job No. **XL-1217**
Hole No. **H-4-04**
Project **31st to Hadley**

Date **July 20, 2006**
Sheet **1** of **1**

Laboratory Summary

Washington State Department of Transportation

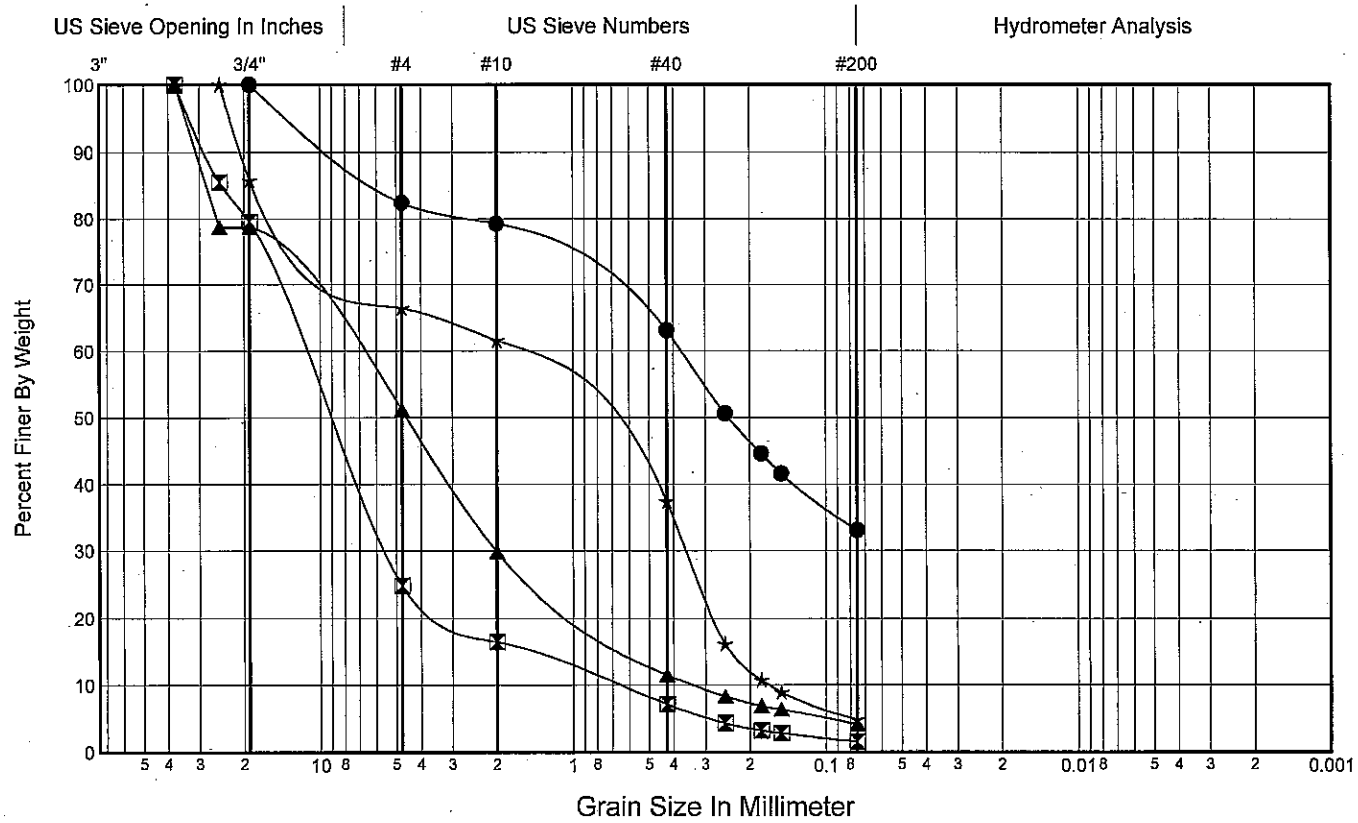
	Depth (ft)	Depth (m)	Sample No.	USCS	Color	Description	MC%	LL	PL	PI
●	0.0	0.00	D-1	SM	See Boring Log	SILTY SAND with GRAVEL	16	25	NP	NA
⊠	2.5	0.76	D-2	GP	See Boring Log	POORLY GRADED GRAVEL with SAND	5			
▲	7.5	2.29	D-4	GW	See Boring Log	WELL-GRADED GRAVEL with SAND	8			
★	15.0	4.57	D-6	SP	See Boring Log	POORLY GRADED SAND with GRAVEL	12			

GRADATION FRACTIONS

	%Gravel	%Sand	%Fines	Cc	Cu
●	17.6	49.4	33.0		
⊠	75.2	23.3	1.5	3.7	17.0
▲	48.9	47.0	4.1	1.7	22.4
★	33.6	61.6	4.8	0.4	10.8

GRADATION VALUES

	D60	D50	D30	D20	D10
●	0.373	0.24			
⊠	11.592	9.00	5.42	2.89	0.683
▲	7.424	4.54	2.02	0.87	0.331
★	1.809	0.95	0.35	0.28	0.167



Gravel	Sand			Silt and Clay
	Coarse	Medium	Fine	

Job No. **XL-1217** Date **July 20, 2006**

Hole No. **H-5-04** Sheet **1** of **2**

Project **31st to Hadley**

Laboratory Summary

Washington State Department of Transportation

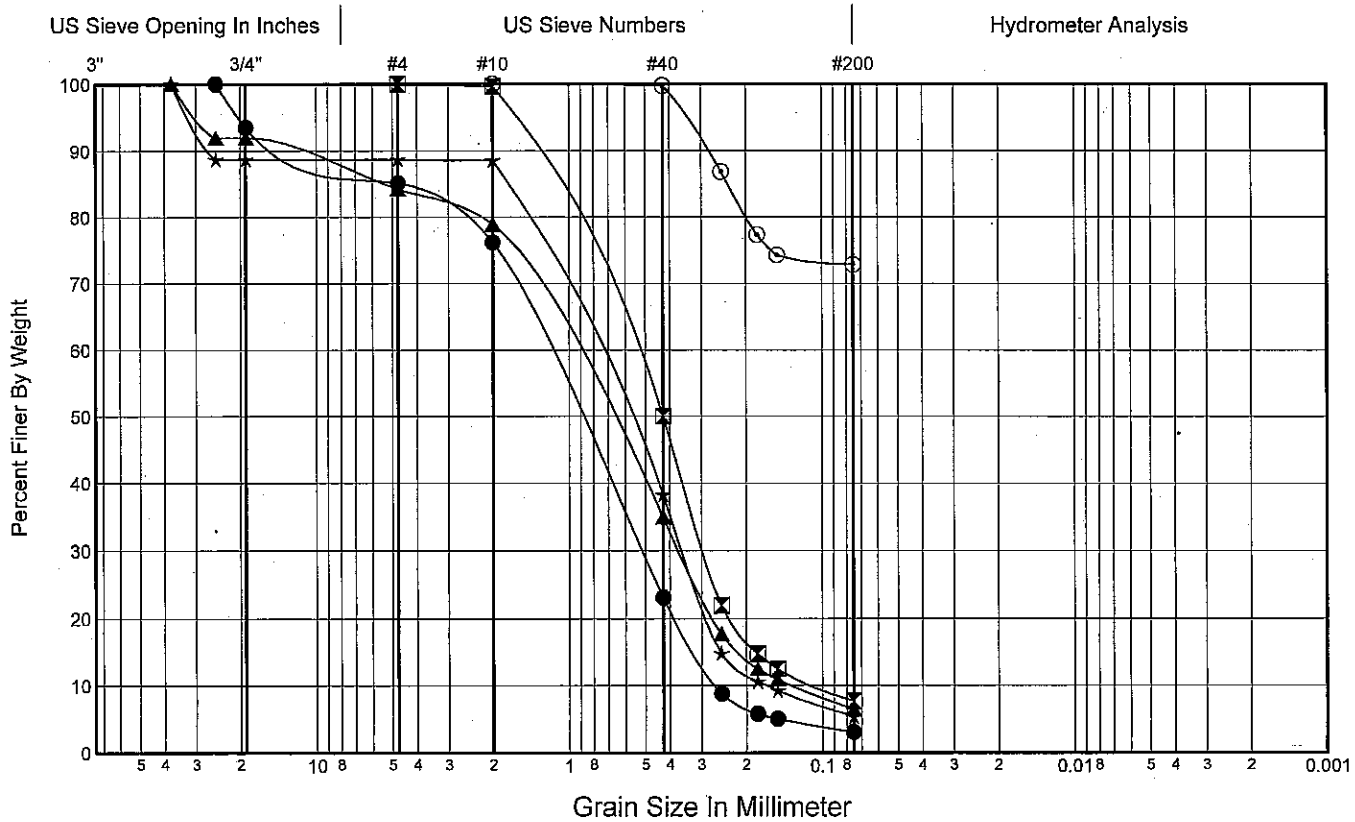
	Depth (ft)	Depth (m)	Sample No.	USCS	Color	Description	MC%	LL	PL	PI
●	15.0	4.57	D-3	SP	See Boring Log	POORLY GRADED SAND	13			
⊠	25.0	7.62	D-5	SP-SM	See Boring Log	POORLY GRADED SAND with SILT	18			
▲	35.0	10.67	D-7	SP-SM	See Boring Log	POORLY GRADED SAND with SILT and GRAVEL	12			
★	38.0	11.58	D-8	SP-SM	See Boring Log	POORLY GRADED SAND with SILT	16			
⊙	40.0	12.19	D-9	CL	See Boring Log	LEAN CLAY with SAND	37	40	25	15

GRADATION FRACTIONS

	%Gravel	%Sand	%Fines	Cc	Cu
●	14.9	82.0	3.1	0.8	4.8
⊠	0.0	92.3	7.7	1.4	5.5
▲	15.8	77.9	6.4	1.0	7.8
★	11.3	83.3	5.4	0.9	5.0
⊙	0.0	27.2	72.8		

GRADATION VALUES

	D60	D50	D30	D20	D10
●	1.248	0.93	0.52	0.38	0.262
⊠	0.580	0.42	0.29	0.23	0.105
▲	1.029	0.72	0.37	0.27	0.131
★	0.830	0.61	0.35	0.28	0.166
⊙					



Job No. **XL-1217**
Hole No. **H-5-04**
Project **31st to Hadley**

Date **July 20, 2006**
Sheet **2** of **2**

Laboratory Summary

Washington State Department of Transportation

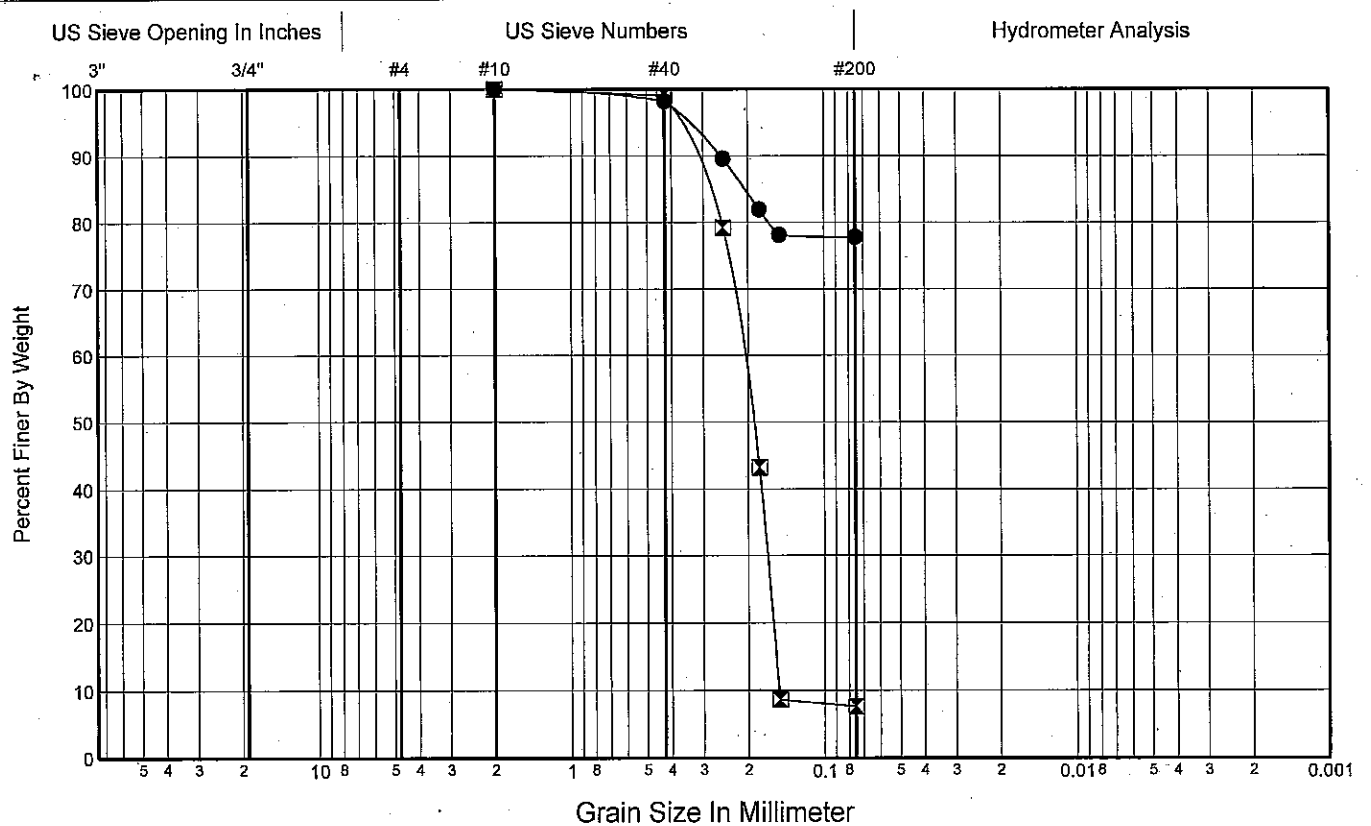
	Depth (ft)	Depth (m)	Sample No.	USCS	Color	Description	MC%	LL	PL	PI
●	43.0	13.11	D-10	ML	See Boring Log	SILT with SAND	44	39	28	11
⊠	45.0	13.72	D-11	SP-SM	See Boring Log	POORLY GRADED SAND with SILT	39	36	29	7

GRADATION FRACTIONS

	%Gravel	%Sand	%Fines	Cc	Cu
●	0.0	22.2	77.8		
⊠	0.0	92.5	7.5	0.9	1.4

GRADATION VALUES

	D60	D50	D30	D20	D10
●					
⊠	0.210	0.19	0.17	0.16	0.151



Job No. **XL-1217**
Hole No. **H-6-04**
Project **31st to Hadley**

Date **July 20, 2006**
Sheet **1** of **2**

Laboratory Summary

Washington State Department of Transportation

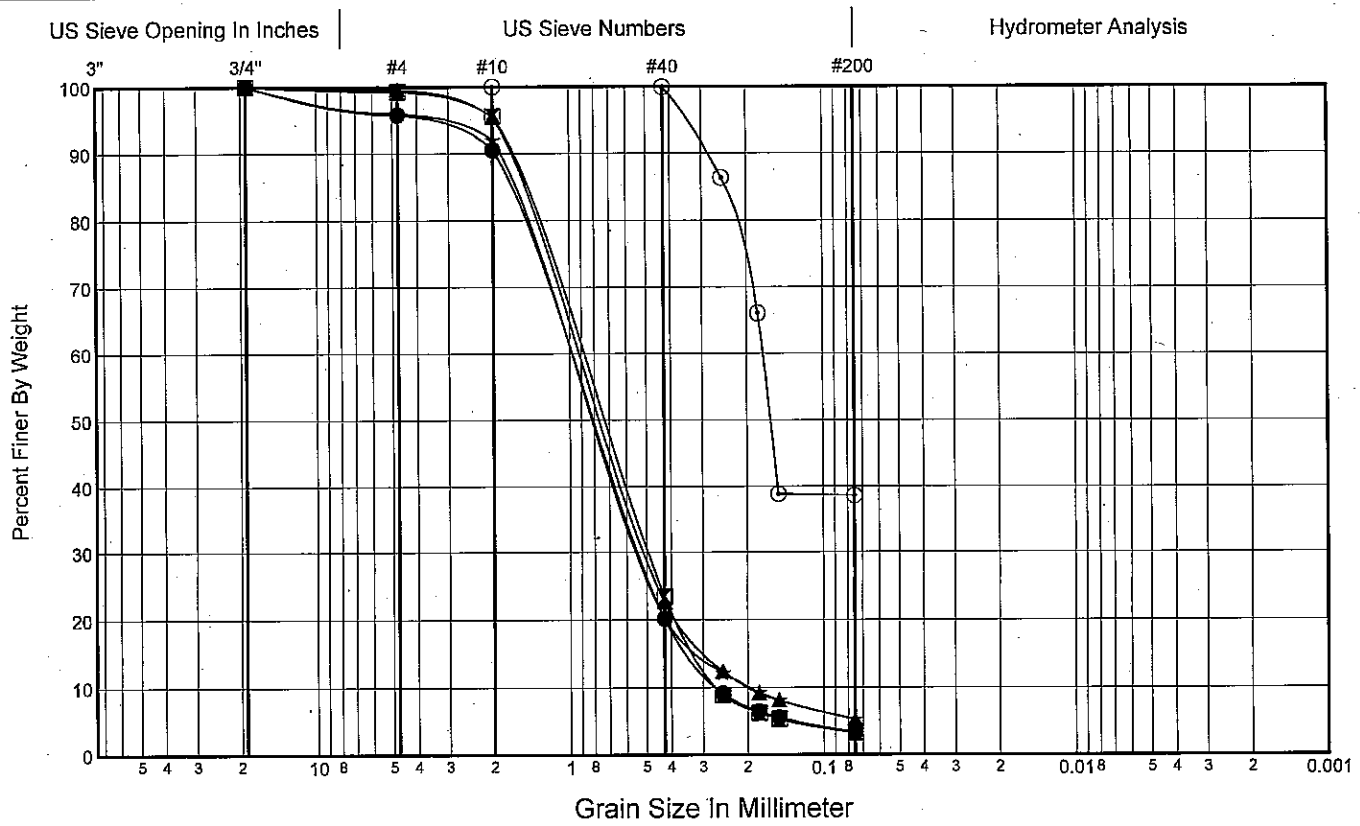
	Depth (ft)	Depth (m)	Sample No.	USCS	Color	Description	MC%	LL	PL	PI
●	5.0	1.52	D-1	SP	See Boring Log	POORLY GRADED SAND	13			
⊠	15.0	4.57	D-3	SP	See Boring Log	POORLY GRADED SAND	19			
▲	33.0	10.06	D-7	SP-SM	See Boring Log	POORLY GRADED SAND with SILT	15			
★	35.0	10.67	D-8	SP-SM	See Boring Log	POORLY GRADED SAND with SILT	16			
⊙	38.0	11.58	D-9	SC	See Boring Log	CLAYEY SAND	46	49	27	22

GRADATION FRACTIONS

	%Gravel	%Sand	%Fines	Cc	Cu
●	4.2	92.5	3.2	1.0	3.9
⊠	0.7	96.1	3.2	1.0	3.6
▲	0.4	94.5	5.1	1.3	4.8
★	4.0	90.8	5.2	1.4	5.1
⊙	0.0	61.4	38.6		

GRADATION VALUES

	D60	D50	D30	D20	D10
●	1.022	0.82	0.53	0.42	0.261
⊠	0.932	0.75	0.49	0.37	0.260
▲	0.941	0.76	0.50	0.37	0.197
★	1.002	0.81	0.52	0.42	0.195
⊙	0.173	0.16			



Gravel	Sand			Silt and Clay
	Coarse	Medium	Fine	

Job No. **XL-1217**
Hole No. **H-6-04**
Project **31st to Hadley**

Date **July 20, 2006**
Sheet **2** of **2**

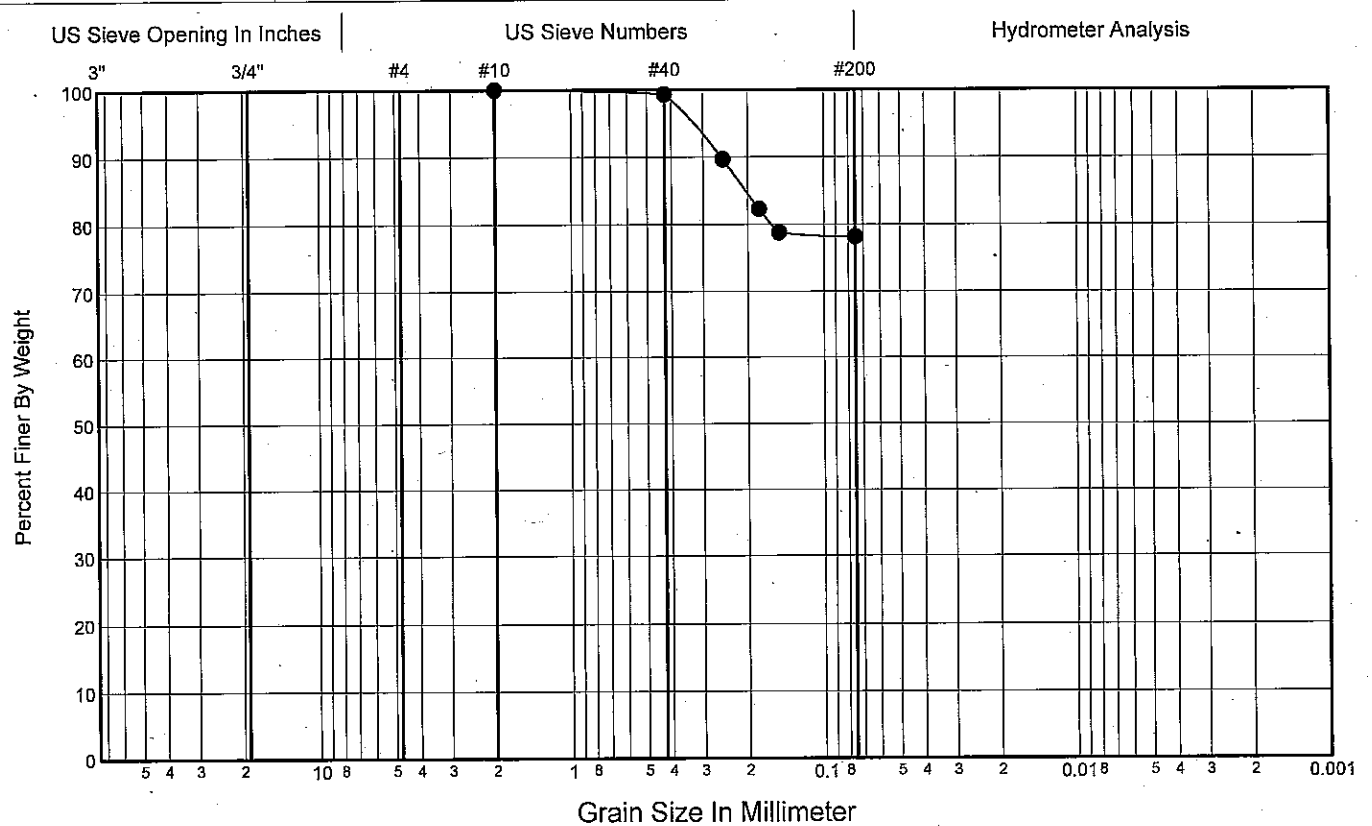
Laboratory Summary

Washington State Department of Transportation

	Depth (ft)	Depth (m)	Sample No.	USCS	Color	Description	MC%	LL	PL	PI
●	**40.0**	**12.19**	**D-10**	**ML**	**See Boring Log**	**SILT with SAND**	**40**	**33**	**NP**	**NA**

GRADATION FRACTIONS

	%Gravel	%Sand	%Fines	Cc	Cu
●	**0.0**	**21.9**	**78.1**		

GRADATION VALUES

	D60	D50	D30	D20	D10
●