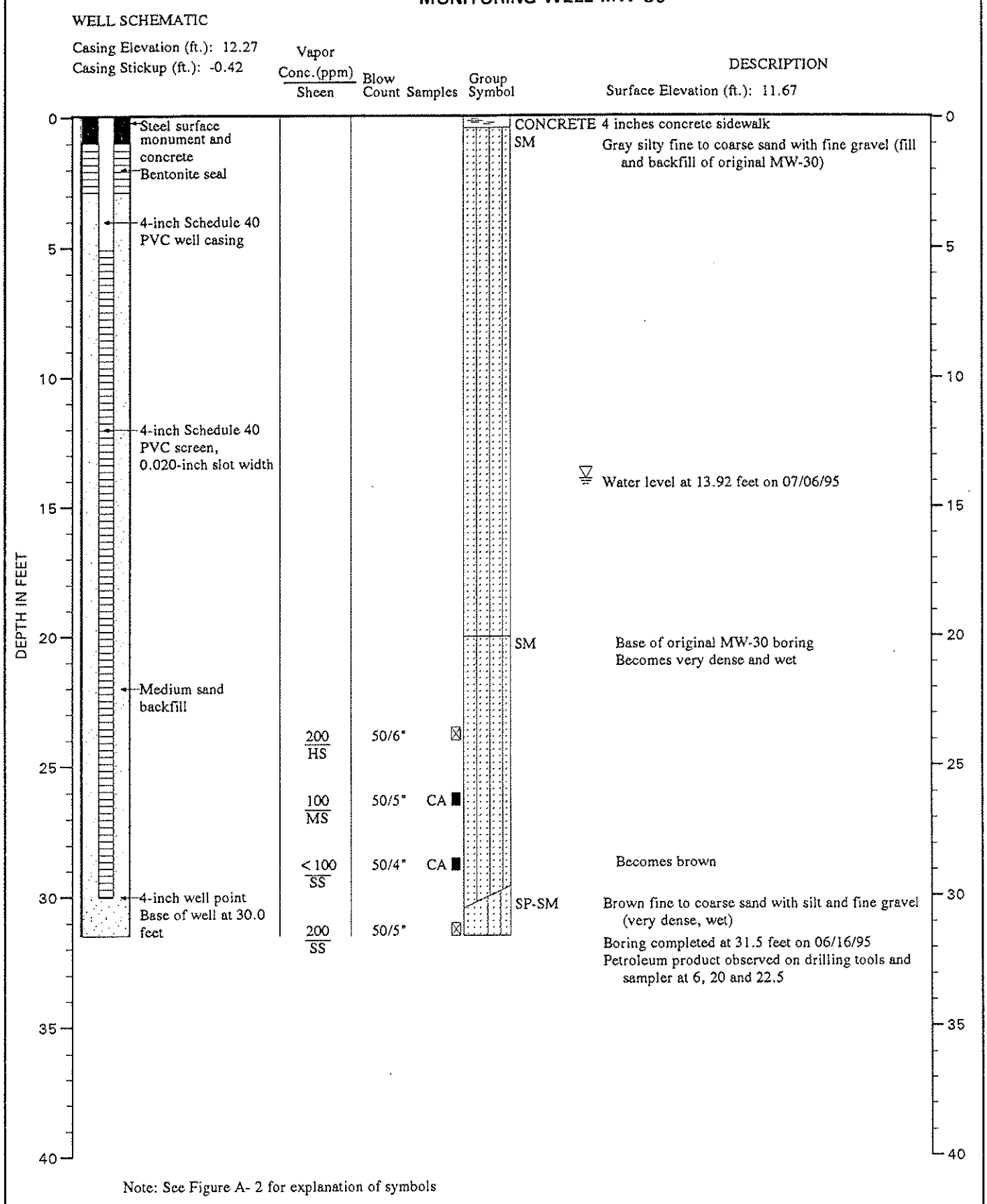
ARCADIS

Appendix A

Historical Boring Logs

MONITORING WELL MW-30



Note: See Figure A- 2 for explanation of symbols

0161-357-R04 Task6.6 :TNV:CMS 8/30/95

Geo Engineers

LOG OF MONITORING WELL

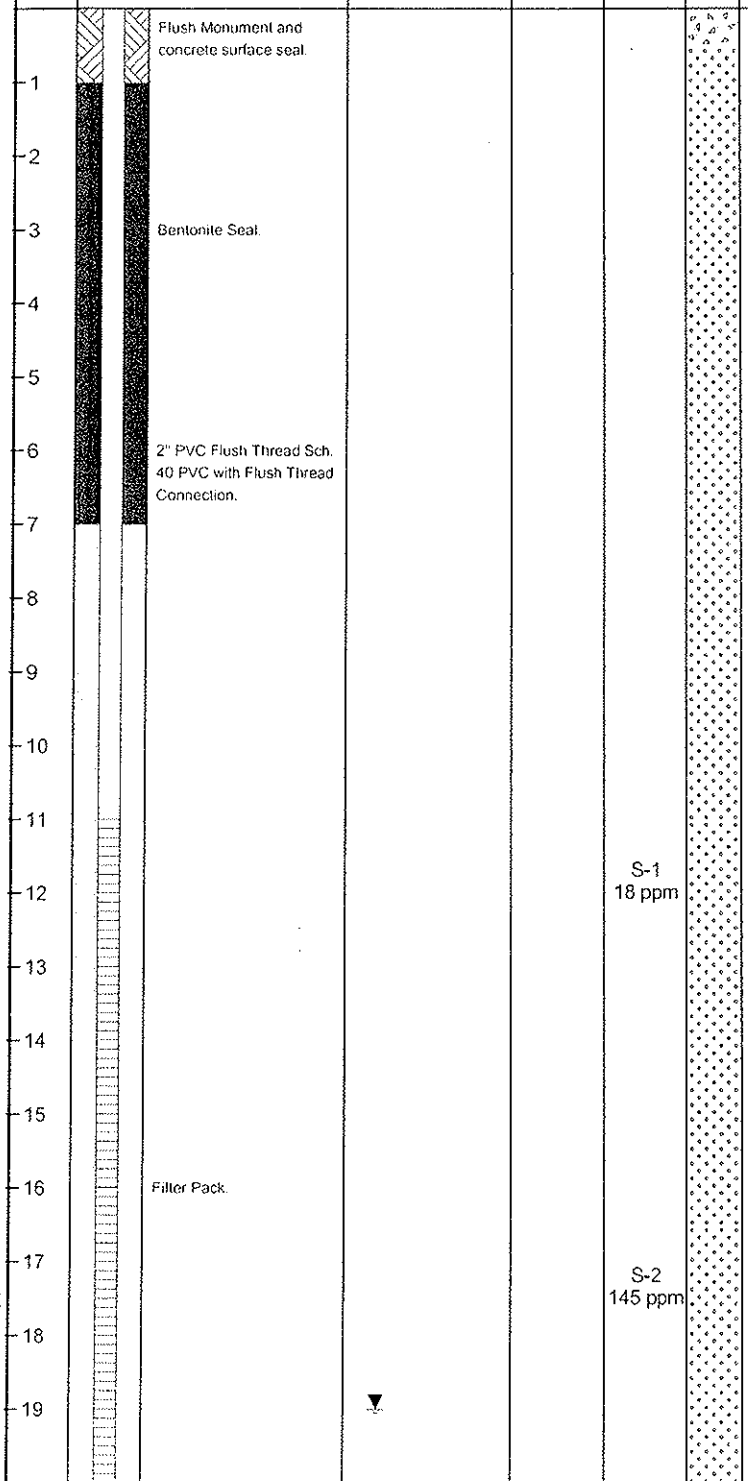
FIGURE A-8

Aspect consulting
IN-DEPTH PERSPECTIVE

Geologic & Monitoring Well Construction Log

Project Number	Well Number	Sheet
020118	MW-61A-R	1 of 2

Project Name	SAM - Olympic Sculpture Park	Top of PVC Casing Elev. (ft mllw)	23'
Location	Elliott Avenue, Seattle, Washington	Depth to Water (ft BTC)	
Drilling Method	Air Rotary ; Malcolm (Stacy)	Start Date	December 22, 2005
Sampling Method	Grab (Cuttings)	Finish Date	December 22, 2005



Sampler Type (ST):

- 3.25" OD D & M Split-Spoon Ring Sampler
- No Recovery
- 2" OD Split-Spoon Sampler

PID - Photoionization Detector

- Water Level (ATD)
- Static Water Level

Logged by: DLC

Approved by: JWC

Figure No. 1

MW_GEOLG SAM-MW-61A-R.GPJ March 23, 2006

Aspect consulting
IN-DEPTH PERSPECTIVE

Geologic & Monitoring Well Construction Log

Project Number	Well Number	Sheet
020118	MW-61A-R	2 of 2

Project Name: SAM - Olympic Sculpture Park
Location: Elliott Avenue, Seattle, Washington
Drilling Method: Air Rotary ; Malcolm (Stacy)
Sampling Method: Grab (Cuttings)

Top of PVC Casing Elev. (ft mllw): 23'
Depth to Water (ft BTC):
Start Date: December 22, 2005
Finish Date: December 22, 2005

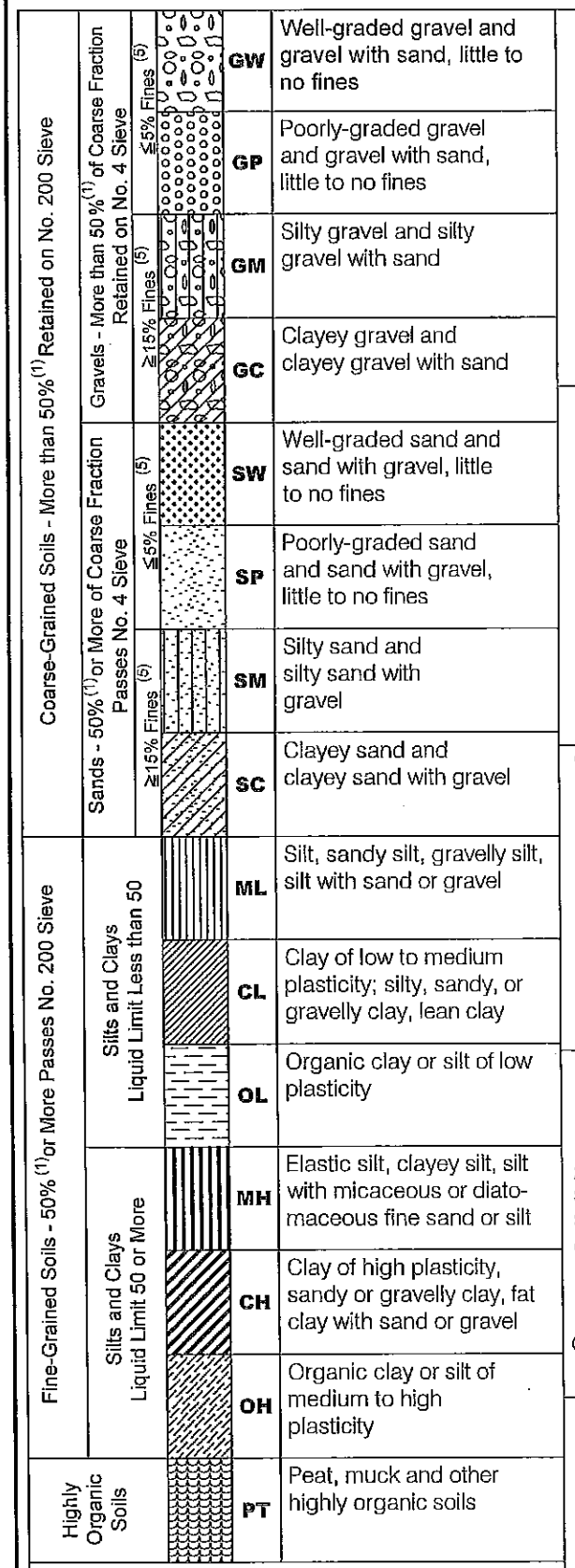
Depth feet	Well Construction	Sample Drive\Recovery	Blows/ 6"	Sample ID/ PID (ppm)	Mtl. Graphic	Description
21						
22	2" PVC (Western) 020 Slot Screen.					
23						
24						Medium dense, very moist, grey, slightly gravelly, very silty, SAND.
25				S-3 58 ppm		
26	6" Borehole Diameter.					
27						
28						
29						
30						
31	Sump Flush on Screen.					Bottom of Boring = 31' bgs.
32						
33						
34						
35						
36						
37						
38						
39						

Sampler Type (ST):
- 3.25" OD D & M Split-Spoon Ring Sampler
- No Recovery
- 2" OD Split-Spoon Sampler

PID - Photoionization Detector
- Water Level (ATD)
- Static Water Level

Logged by: DLC
Approved by: JWC
Figure No. 1

MW_GEOLG SAM-MW-61A-R.GPJ March 23, 2006



Terms Describing Relative Density and Consistency

	Density	SPT(2) blows/foot
Coarse-Grained Soils	Very Loose	0 to 4
	Loose	4 to 10
	Medium Dense	10 to 30
	Dense	30 to 50
	Very Dense	>50
	Consistency	**SPT(2) blows/foot**
Fine-Grained Soils	Very Soft	0 to 2
	Soft	2 to 4
	Medium Stiff	4 to 8
	Stiff	8 to 15
	Very Stiff	15 to 30
	Hard	>30

Test Symbols

G = Grain Size
M = Moisture Content
A = Atterberg Limits
C = Chemical
DD = Dry Density
K = Permeability

Component Definitions

Descriptive Term	Size Range and Sieve Number
Boulders	Larger than 12"
Cobbles	3" to 12"
Gravel	3" to No. 4 (4.75 mm)
Coarse Gravel	3" to 3/4"
Fine Gravel	3/4" to No. 4 (4.75 mm)
Sand	No. 4 (4.75 mm) to No. 200 (0.075 mm)
Coarse Sand	No. 4 (4.75 mm) to No. 10 (2.00 mm)
Medium Sand	No. 10 (2.00 mm) to No. 40 (0.425 mm)
Fine Sand	No. 40 (0.425 mm) to No. 200 (0.075 mm)
Silt and Clay	Smaller than No. 200 (0.075 mm)

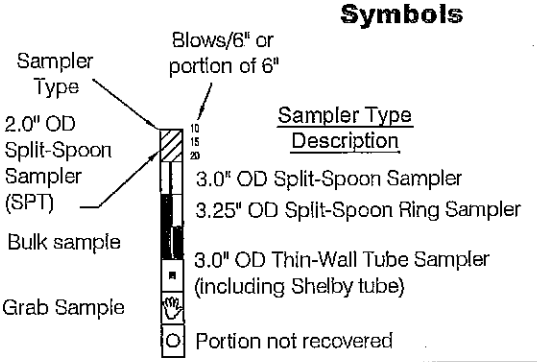
(3) Estimated Percentage

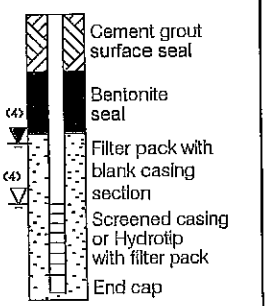
Percentage by Weight	Modifier
<5	Trace
5 to 15	Slightly (sandy, silty, clayey, gravelly)
15 to 30	Sandy, silty, clayey, gravelly)
30 to 49	Very (sandy, silty, clayey, gravelly)

Moisture Content

Dry - Absence of moisture, dusty, dry to the touch
Slightly Moist - Perceptible moisture
Moist - Damp but no visible water
Very Moist - Water visible but not free draining
Wet - Visible free water, usually from below water table

Symbols





(1) Percentage by dry weight
(2) (SPT) Standard Penetration Test (ASTM D-1586)
(3) In General Accordance with Standard Practice for Description and Identification of Soils (ASTM D-2488)
(4) Depth of groundwater ▽ ATD = At time of drilling ▼ Static water level (date)
(5) Combined USCS symbols used for fines between 5% and 15% as estimated in General Accordance with Standard Practice for Description and Identification of Soils (ASTM D-2488)

Classifications of soils in this report are based on visual field and/or laboratory observations, which include density/consistency, moisture condition, grain size, and plasticity estimates and should not be construed to imply field or laboratory testing unless presented herein. Visual-manual and/or laboratory classification methods of ASTM D-2487 and D-2488 were used as an identification guide for the Unified Soil Classification System.

Aspect consulting
IN-DEPTH PERSPECTIVE
179 Madrone Lane North
Bainbridge Island, WA 98110
(206) 780-9370
811 First Avenue #480
Seattle, WA 98104
(206)-328-7443

Exploration Log Key

DATE:
DESIGNED BY:
DRAWN BY:
REVISED BY:
PROJECT NO.
FIGURE NO.
A-1

Q:_ACAD Standards\Drawings\Exploration Log Key.dwg

Aspect consulting
IN-DEPTH PERSPECTIVE

Well Construction Log

Project Number	Well Number	Sheet
020118-001	MW-200	1 of 2

Project Name	SAM - Olympic Sculpture Park	Ground Surface Elev	14.6
Location	28,504.40 N, 26,761.82 E / Seattle, Washington	Top of Casing Elev.	14.43
Driller/Method	Malcom; Matt Kenedy / Air Rotary	Depth to Water	11.02
Sampling Method	Cuttings	Start/Finish Date	10/16/2006

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	USGS Unit	Material Type	Description	Depth (ft)
1 / 14	Steel Surface Monument				Loose, Slightly Moist, Brown, Silty Fine to Coarse SAND with Trace Gravel.	1
1 / 14	Concrete					1
2 / 13						2
3 / 12						3
4 / 11	Hydrated Bentonite Chips.					4
5 / 10	2-Inch Schedule 40 PVC Well Casing.					5
6 / 9						6
7 / 8						7
8 / 7						8
9 / 6						9
10 / 5	10-20 Colorado Sand Backfill					10
11 / 4	▼ 11/1/2006					11
12 / 3						12
13 / 2	▽				Wet, Wood Planking, Strong Odor	13
14 / 1						14
15 / 0	2-Inch Schedule 40 PVC Screen, 0.020-Inch Slot Width.					15
16 / -1					Loose, Wet, Gray-Black, Silty, Gravelly Fine to Coarse SAND with Wood Debris.	16
17 / -2	8" Diameter Borehole					17
18 / -3						18
19 / -4						19
-5						

Sampler Type:
No Recovery

PID - Photoionization Detector (Headspace Measurement)
▼ Static Water Level
▽ Water Level (ATD)

Logged by: MJN
Approved by: DLC
Figure No. A - 2

WELL CONSTRUCTION SAM-SHORELINE.GPJ February 22, 2007

Aspect consulting
IN-DEPTH PERSPECTIVE

Well Construction Log

Project Number	Well Number	Sheet
020118-001	MW-200	2 of 2

Project Name	SAM - Olympic Sculpture Park	Ground Surface Elev	14.6
Location	28,504.40 N, 26,761.82 E / Seattle, Washington	Top of Casing Elev.	14.43
Driller/Method	Malcom; Matt Kenedy / Air Rotary	Depth to Water	11.02
Sampling Method	Cuttings	Start/Finish Date	10/16/2006

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	USGS Unit	Material Type	Description	Depth (ft)
21 -6						21
22 -7						22
23 -8						23
24 -9	0.2' Flat Threaded Sump					24
25 -10						25
26 -11						26
27 -12						27
28 -13						28
29 -14						29
30 -15						30
31 -16						31
32 -17						32
33 -18						33
34 -19						34
35 -20						35
36 -21						36
37 -22						37
38 -23						38
39 -24						39
-25						

Sampler Type:
No Recovery

PID - Photoionization Detector (Headspace Measurement)
Static Water Level
Water Level (ATD)

Logged by: MJN
Approved by: DLC
Figure No. A - 2

_WELL CONSTRUCTION SAM-SHORELINE.GPJ February 22, 2007

Aspect consulting
IN-DEPTH PERSPECTIVE

Well Construction Log

Project Number	Well Number	Sheet
020118-001	MW-201	1 of 1

Project Name	SAM - Olympic Sculpture Park	Ground Surface Elev	15.2
Location	28,487.88 N, 26,778.94 E / Seattle, Washington	Top of Casing Elev.	14.93
Driller/Method	Malcom; Matt Kenedy / Air Rotary	Depth to Water	11.54
Sampling Method	Cuttings	Start/Finish Date	10/16/2006

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	USGS Unit	Material Type	Description	Depth (ft)
0 / 15	Steel Surface Monument				Loose, Slightly Moist, Brown, Silty Fine to Coarse SAND with Trace Gravel.	0
1 / 14	Concrete					1
2 / 13						2
3 / 12	Hydrated Bentonite Chips					3
4 / 11	2-Inch Schedule 40 PVC Well Casing					4
5 / 10						5
6 / 9						6
7 / 8						7
8 / 7						8
9 / 6					Medium Dense, Moist, Gray, Slightly Silty, Slightly Gravelly Fine to Coarse SAND.	9
10 / 5	2-Inch, Schedule 40 PVC Screen, 0.020-Inch Slot width					10
11 / 4	▼11/1/2006					11
12 / 3						12
13 / 2	▽				Wet, Wood Planking, Black Staining, Strong Hydrocarbon Odor.	13
14 / 1						14
15 / 0	10-20 Colorado Sand Backfill. Void at 15', Filled with Extra Sand.				Medium Dense, Wet, Gray, Silty Fine to Coarse SAND with Gravel.	15
16 / -1						16
17 / -2	8" Diameter Borehole.					17
18 / -3						18
19 / -4	0.2' Flat Threaded Sump					19

Sampler Type:
○ No Recovery

PID - Photoionization Detector (Headspace Measurement)
▼ Static Water Level
▽ Water Level (ATD)

Logged by: MJN
Approved by: DLC
Figure No. A - 3

WELL CONSTRUCTION SAM-SHORELINE.GPJ February 22, 2007

Aspect consulting
IN-DEPTH PERSPECTIVE

Well Construction Log

Project Number	Well Number	Sheet
020118-001	MW-202	1 of 2

Project Name	SAM - Olympic Sculpture Park	Ground Surface Elev	15
Location	28,423.69 N, 26,792.79 E / Seattle, Washington	Top of Casing Elev.	14.66
Driller/Method	Malcom; Matt Kenedy / Air Rotary	Depth to Water	11.05
Sampling Method	Cuttings	Start/Finish Date	10/17/2006

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	USGS Unit	Material Type	Description	Depth (ft)
1 / 14	Steel Surface Monument; Concrete				Loose, Brown, Gravelly Fine to Coarse SAND.	1
2 / 13						2
3 / 12						3
4 / 11	Hydrated Bentonite Chips					4
5 / 10						5
6 / 9	2-Inch, Schedule 40 PVC Well Casing					6
7 / 8						7
8 / 7						8
9 / 6						9
10 / 5	10-20 Colorado Sand Backfill.				Loose, Moist, Gray, Gravelly Fine to Coarse SAND.	10
11 / 4	▼ 11/1/2006					11
12 / 3						12
13 / 2					Wood Planking, Odor	13
14 / 1	▽					14
15 / 0	2-Inch Schedule 40 PVC Screen, 0.020-Inch Slot Width				Loose, Wet, Dark Gray, Gravelly Silty Fine to Coarse SAND with Wood Debris.	15
16 / -1						16
17 / -2	8" Borehole					17
18 / -3						18
19 / -4						19

Sampler Type:
○ No Recovery

PID - Photoionization Detector (Headspace Measurement)
▼ Static Water Level
▽ Water Level (ATD)

Logged by: MJN
Approved by: DLC
Figure No. A - 4

WELL CONSTRUCTION SAM-SHORELINE.GPJ February 22, 2007

Aspect consulting
IN-DEPTH PERSPECTIVE

Well Construction Log

Project Number	Well Number	Sheet
020118-001	MW-202	2 of 2

Project Name	SAM - Olympic Sculpture Park	Ground Surface Elev	15
Location	28,423.69 N, 26,792.79 E / Seattle, Washington	Top of Casing Elev.	14.66
Driller/Method	Malcom; Matt Kenedy / Air Rotary	Depth to Water	11.05
Sampling Method	Cuttings	Start/Finish Date	10/17/2006

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	USGS Unit	Material Type	Description	Depth (ft)
21 -6						21
22 -7						22
23 -8						23
24 -9						24
25 -10						25
26 -11						26
27 -12	0.2' Flat Threaded Sump					27
28 -13	Native Sand Backfill (allowed hole to cave)					28
29 -14						29
30 -15						30
31 -16						31
32 -17						32
33 -18						33
34 -19						34
35 -20						35
36 -21						36
37 -22						37
38 -23						38
39 -24						39

Sampler Type:
No Recovery

PID - Photoionization Detector (Headspace Measurement)
Static Water Level
Water Level (ATD)

Logged by: MJN
Approved by: DLC
Figure No. A - 4

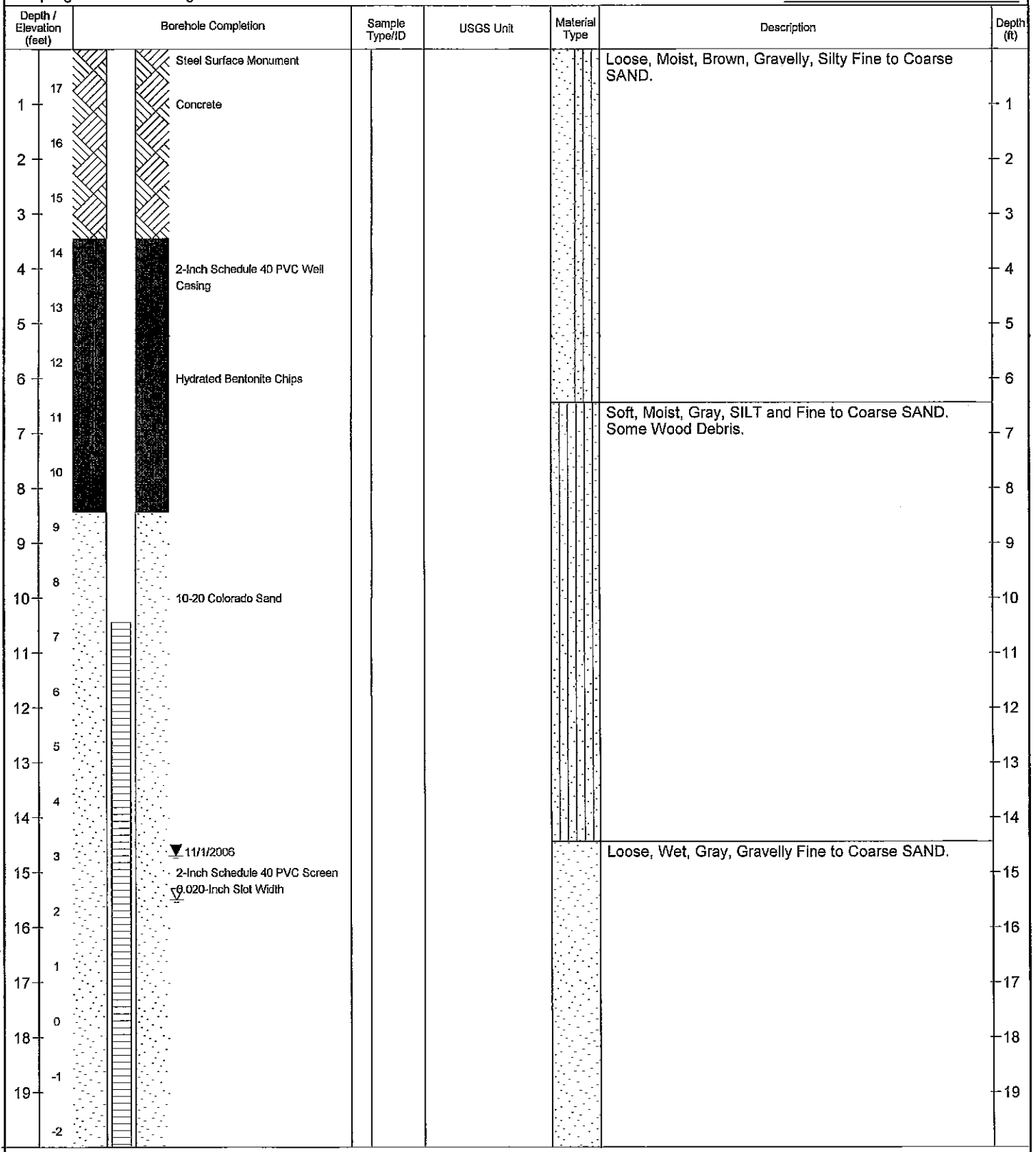
_WELL CONSTRUCTION SAM-SHORELINE.GPJ February 22, 2007

Aspect consulting
IN-DEPTH PERSPECTIVE

Well Construction Log

Project Number	Well Number	Sheet
020118-001	MW-203	1 of 2

Project Name	SAM - Olympic Sculpture Park	Ground Surface Elev	17.7
Location	28,392.41 N, 26,874.58 E / Seattle, Washington	Top of Casing Elev.	17.63
Driller/Method	Malcom; Matt Kenedy / Air Rotary	Depth to Water	14.7
Sampling Method	Cuttings	Start/Finish Date	10/17/2006



Sampler Type:
No Recovery

PID - Photoionization Detector (Headspace Measurement)
Static Water Level
Water Level (ATD)

Logged by: MJN
Approved by: DLC
Figure No. A - 5

WELL CONSTRUCTION SAM-SHORELINE.GPJ February 22, 2007

Aspect consulting
IN-DEPTH PERSPECTIVE

Well Construction Log

Project Number	Well Number	Sheet
020118-001	MW-203	2 of 2

Project Name	SAM - Olympic Sculpture Park	Ground Surface Elev	17.7
Location	28,392.41 N, 26,874.58 E / Seattle, Washington	Top of Casing Elev.	17.63
Driller/Method	Malcom; Matt Kenedy / Air Rotary	Depth to Water	14.7
Sampling Method	Cuttings	Start/Finish Date	10/17/2006

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	USGS Unit	Material Type	Description	Depth (ft)
21 / -3	8" Diameter Borehole					21
22 / -4						22
23 / -5					Loose, Wet, Gravelly, Silty, Fine to Coarse SAND.	23
24 / -6						24
25 / -7	0.02' Flat Threaded Sump					25
26 / -8						26
27 / -9						27
28 / -10						28
29 / -11						29
30 / -12						30
31 / -13						31
32 / -14						32
33 / -15						33
34 / -16						34
35 / -17						35
36 / -18						36
37 / -19						37
38 / -20						38
39 / -21						39
	-22					

Sampler Type:
○ No Recovery

PID - Photoionization Detector (Headspace Measurement)
▼ Static Water Level
▽ Water Level (ATD)

Logged by: MJN
Approved by: DLC
Figure No. A - 5

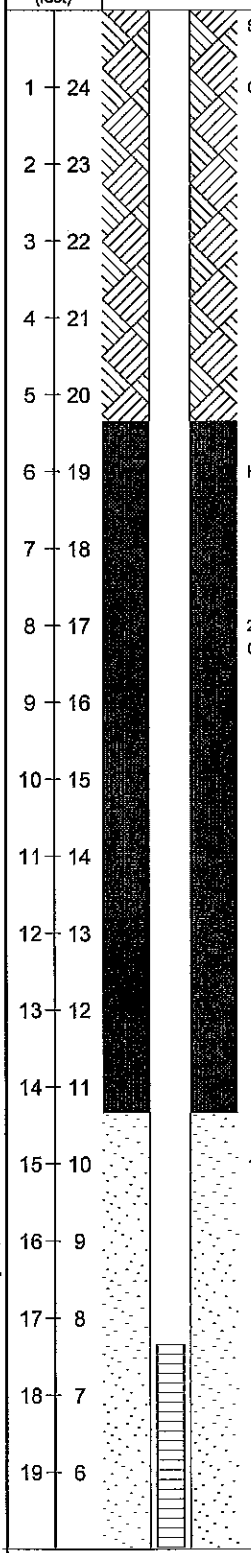
WELL CONSTRUCTION SAM-SHORELINE.GPJ February 22, 2007

Aspect consulting
IN-DEPTH PERSPECTIVE

Well Construction Log

Project Number	Well Number	Sheet
020118-001	MW-204	1 of 2

Project Name	SAM - Olympic Sculpture Park	Ground Surface Elev	25
Location	28,321.99 N, 26,939.01 E / Seattle, Washington	Top of Casing Elev.	24.03
Driller/Method	Malcom; Matt Kenedy / Air Rotary	Depth to Water	20.3
Sampling Method	Cuttings	Start/Finish Date	10/17/2006



Depth / Elevation (feet)	Sample Type/ID	USGS Unit	Material Type	Description	Depth (ft)
1 – 24				Loose, Slightly Moist, Brown, Silty Fine to Coarse SAND with Trace Gravel.	1
2 – 23					2
3 – 22					3
4 – 21					4
5 – 20					5
6 – 19					6
7 – 18					7
8 – 17					8
9 – 16					9
10 – 15					10
11 – 14					11
12 – 13				Loose, Moist, Brown, Fine to Coarse SAND with Silt & Wood Debris.	12
13 – 12					13
14 – 11					14
15 – 10					15
16 – 9					16
17 – 8					17
18 – 7					18
19 – 6					19

Sampler Type:
No Recovery

PID - Photoionization Detector (Headspace Measurement)
Static Water Level
Water Level (ATD)

Logged by: MJN
Approved by: DLC
Figure No. A - 6

_WELL CONSTRUCTION SAM-SHORELINE.GPJ February 22, 2007

Aspect consulting
IN-DEPTH PERSPECTIVE

Well Construction Log

Project Number	Well Number	Sheet
020118-001	MW-204	2 of 2

Project Name	SAM - Olympic Sculpture Park	Ground Surface Elev	25
Location	28,321.99 N, 26,939.01 E / Seattle, Washington	Top of Casing Elev.	24.03
Driller/Method	Malcom; Matt Kenedy / Air Rotary	Depth to Water	20.3
Sampling Method	Cuttings	Start/Finish Date	10/17/2006

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	USGS Unit	Material Type	Description	Depth (ft)
21 4	2-Inch Schedule 40 PVC Screen with 0.020-Inch Slot Width					21
22 3						22
23 2						23
24 1						24
25 0	8" Diameter Borehole					25
26 -1					Loose, Wet, Dark Gray, Silty Fine to Coarse SAND with Gravel.	26
27 -2						27
28 -3						28
29 -4						29
30 -5						30
31 -6	0.2 Flat Threaded Sump					31
32 -7						32
33 -8						33
34 -9						34
35 -10						35
36 -11						36
37 -12						37
38 -13						38
39 -14						39

Sampler Type:
○ No Recovery

PID - Photoionization Detector (Headspace Measurement)
▼ Static Water Level
▽ Water Level (ATD)

Logged by: MJN
Approved by: DLC
Figure No. A - 6

WELL CONSTRUCTION SAM-SHORELINE.GPJ February 22, 2007

Aspect consulting
IN-DEPTH PERSPECTIVE

Well Construction Log

Project Number	Well Number	Sheet
020118-001	MW-205	1 of 2

Project Name	SAM - Olympic Sculpture Park	Ground Surface Elev	28
Location	28,284.59 N, 26,972.53 E / Seattle, Washington	Top of Casing Elev.	28.08
Driller/Method	Malcom; Matt Kenedy / Air Rotary	Depth to Water	24.22
Sampling Method	Cuttings	Start/Finish Date	10/17/2006

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	USGS Unit	Material Type	Description	Depth (ft)
1 – 27	Steel Surface Monument Concrete				Loose, Slightly Moist, Brown, Silty, Fine to Coarse SAND with Trace Gravel.	1
2 – 26						2
3 – 25						3
4 – 24						4
5 – 23	Hydrated Bentonite Chips					5
6 – 22						6
7 – 21						7
8 – 20	2-Inch Schedule 40 PVC Well Casing					8
9 – 19						9
10 – 18						10
11 – 17						11
12 – 16						12
13 – 15						13
14 – 14					Loose, Moist, Brown, Fine to Coarse SAND with Silt and Trace Wood Debris.	14
15 – 13						15
16 – 12						16
17 – 11	10-20 Colorado Sand Backfill					17
18 – 10						18
19 – 9						19

Sampler Type:
No Recovery

PID - Photoionization Detector (Headspace Measurement)
Static Water Level
Water Level (ATD)

Logged by: MJN
Approved by: DLC
Figure No. A - 7

WELL CONSTRUCTION SAM-SHORELINE.GPJ February 22, 2007

Aspect consulting
IN-DEPTH PERSPECTIVE

Well Construction Log

Project Number	Well Number	Sheet
020118-001	MW-205	2 of 2

Project Name	SAM - Olympic Sculpture Park	Ground Surface Elev	28
Location	28,284.59 N, 26,972.53 E / Seattle, Washington	Top of Casing Elev.	28.08
Driller/Method	Malcom; Matt Kenedy / Air Rotary	Depth to Water	24.22
Sampling Method	Cuttings	Start/Finish Date	10/17/2006

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	USGS Unit	Material Type	Description	Depth (ft)
21 7	2-inch Schedule 40 PVC Screen 0.020-Inch Slot Width					21
22 6					Loose, Moist, Gray, Silty Fine to Coarse SAND, Trace Medium Gravel.	22
23 5						23
24 4	▼ 11/1/2006					24
25 3	8" Diameter Borehole					25
26 2						26
27 1	▽				Loose, Wet, Gray, Silty, Gravelly, Fine to Coarse SAND.	27
28 0						28
29 -1						29
30 -2						30
31 -3						31
32 -4						32
33 -5						33
34 -6						34
35 -7						35
36 -8						36
37 -9						37
38 -10	0.2 Flat Threaded Sump Bottom of Boring 40'					38
39 -11						39

Sampler Type:
No Recovery

PID - Photoionization Detector (Headspace Measurement)
▼ Static Water Level
▽ Water Level (ATD)

Logged by: MJN
Approved by: DLC
Figure No. A - 7

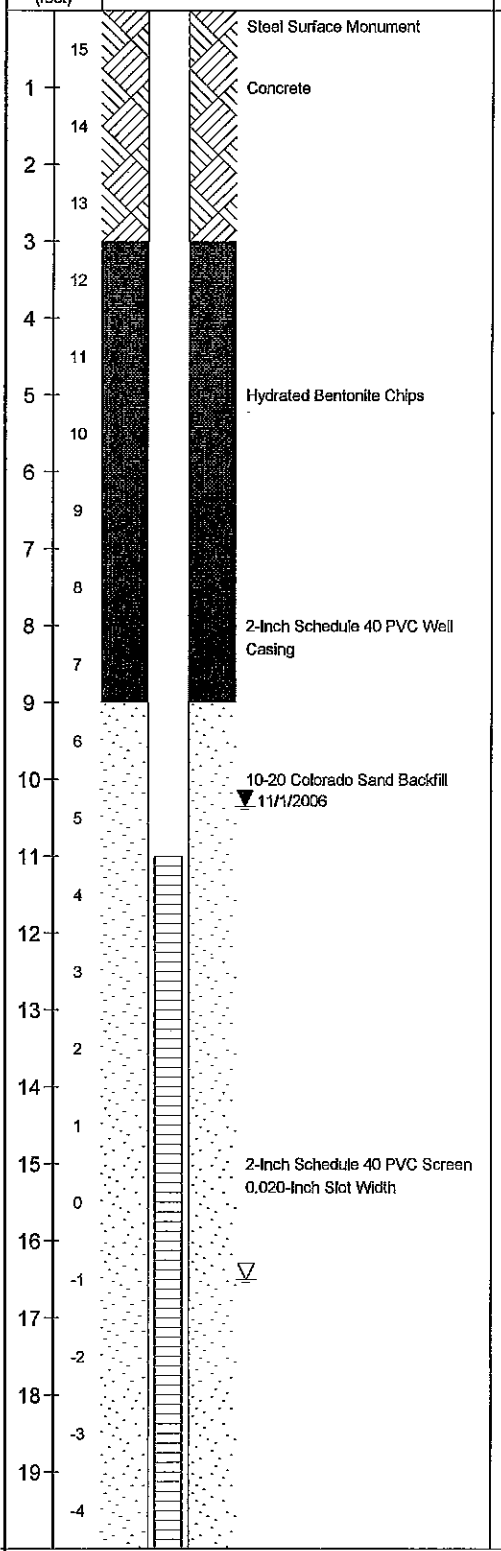
WELL CONSTRUCTION SAM-SHORELINE.GPJ February 22, 2007

Aspect consulting
IN-DEPTH PERSPECTIVE

Well Construction Log

Project Number	Well Number	Sheet
020118-001	MW-206	1 of 2

Project Name	SAM - Olympic Sculpture Park	Ground Surface Elev	15.5
Location	28,310.86 N, 26,876.32 E / Seattle, Washington	Top of Casing Elev.	15.24
Driller/Method	Malcom; Matt Kenedy / Air Rotary	Depth to Water	10.35
Sampling Method	Cuttings	Start/Finish Date	10/17/2006



Sample Type/ID	USGS Unit	Material Type	Description	Depth (ft)
			Loose, Slightly Moist, Brown, Slightly Gravelly Fine to Coarse SAND with Silt.	0
			Loose, Moist, Brown, Fine to Coarse SAND with Silt.	6
			Wood Planking Debris.	16
			Loose, Wet, Gray, Sandy GRAVEL.	17
			Wet, Wood Planking.	17
			Loose, Wet, Gray, Sandy GRAVEL.	19

Sampler Type:
○ No Recovery

PID - Photoionization Detector (Headspace Measurement)
▼ Static Water Level
▽ Water Level (ATD)

Logged by: MJN
Approved by: DLC
Figure No. A - 8

WELL CONSTRUCTION SAM-SHORELINE.GPJ February 22, 2007

Aspect consulting
IN-DEPTH PERSPECTIVE

Well Construction Log

Project Number	Well Number	Sheet
020118-001	MW-206	2 of 2

Project Name	SAM - Olympic Sculpture Park	Ground Surface Elev	15.5
Location	28,310.86 N, 26,876.32 E / Seattle, Washington	Top of Casing Elev.	15.24
Driller/Method	Malcom; Matt Kenedy / Air Rotary	Depth to Water	10.35
Sampling Method	Cuttings	Start/Finish Date	10/17/2006

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	USGS Unit	Material Type	Description	Depth (ft)
21 / -5	8" Diameter Borehole					21
22 / -6					Loose, Wet, Gray, Sandy SILT with Gravel.	22
23 / -7						23
24 / -8						24
25 / -9						25
26 / -10	0.2' Flat Threaded Sump					26
27 / -11						27
28 / -12						28
29 / -13						29
30 / -14						30
31 / -15						31
32 / -16						32
33 / -17						33
34 / -18						34
35 / -19						35
36 / -20						36
37 / -21						37
38 / -22						38
39 / -23						39
	-24					

Sampler Type:
○ No Recovery

PID - Photoionization Detector (Headspace Measurement)
▼ Static Water Level
▽ Water Level (ATD)

Logged by: MJN
Approved by: DLC
Figure No. A - 8

_WELL CONSTRUCTION SAM-SHORELINE.GPJ February 22, 2007

Aspect consulting
IN-DEPTH PERSPECTIVE

Well Construction Log

Project Number	Well Number	Sheet
020118-001	MW-207	1 of 2

Project Name	SAM - Olympic Sculpture Park	Ground Surface Elev	15.93
Location	28,172.24 N, 26,992.14 E / Seattle, Washington	Top of Casing Elev.	15.47
Driller/Method	Malcom; Matt Kenedy / Air Rotary	Depth to Water	11.0
Sampling Method	Cuttings	Start/Finish Date	10/17/2006

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	USGS Unit	Material Type	Description	Depth (ft)
1 – 15	Steel Surface Monument				Loose, Slightly Moist, Brown, Silty Fine to Coarse SAND with Trace Gravel.	1
2 – 14	Cement					2
3 – 13						3
4 – 12						4
5 – 11	Hydrated Bentonite Chips					5
6 – 10						6
7 – 9						7
8 – 8						8
9 – 7						9
10 – 6	2-Inch Schedule 40 PVC Well Casing					10
11 – 5	▼ 10/17/2006				Wood Planking	11
12 – 4	▽					12
13 – 3					Loose, Wet, Grayish Brown, Silty Fine to Coarse SAND with Wood Debris and Trace Gravel.	13
14 – 2						14
15 – 1	10-20 Colorado Sand Backfill					15
16 – 0						16
17 – -1						17
18 – -2	2-Inch Schedule 40 PVC Screen 0.020-Inch Slot Width					18
19 – -3					Loose, Wet, Gray Fine to Coarse Silty SAND.	19

Sampler Type:
⊘ No Recovery

PID - Photoionization Detector (Headspace Measurement)
▼ Static Water Level
▽ Water Level (ATD)

Logged by: MJN
Approved by: DLC
Figure No. A - 9

WELL CONSTRUCTION SAM-SHORELINE.GPJ February 22, 2007

Aspect consulting
IN-DEPTH PERSPECTIVE

Well Construction Log

Project Number	Well Number	Sheet
020118-001	MW-207	2 of 2

Project Name	SAM - Olympic Sculpture Park	Ground Surface Elev	15.93
Location	28,172.24 N, 26,992.14 E / Seattle, Washington	Top of Casing Elev.	15.47
Driller/Method	Malcom; Matt Kenedy / Air Rotary	Depth to Water	11.0
Sampling Method	Cuttings	Start/Finish Date	10/17/2006

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	USGS Unit	Material Type	Description	Depth (ft)
21 -5	8" Diameter Borehole.					21
22 -6						22
23 -7	0.2' Flat Threaded Sump					23
24 -8						24
25 -9						25
26 -10						26
27 -11						27
28 -12						28
29 -13						29
30 -14						30
31 -15						31
32 -16						32
33 -17						33
34 -18						34
35 -19						35
36 -20						36
37 -21						37
38 -22						38
39 -23						39

Sampler Type:
☐ No Recovery

PID - Photoionization Detector (Headspace Measurement)
▼ Static Water Level
▽ Water Level (ATD)

Logged by: MJN
Approved by: DLC
Figure No. A - 9

WELL CONSTRUCTION SAM-SHORELINE.GPJ February 22, 2007

Aspect consulting
IN-DEPTH PERSPECTIVE

Well Construction Log

Project Number	Well Number	Sheet
020118-001	MW-27R	1 of 2

Project Name	SAM - Olympic Sculpture Park	Ground Surface Elev	15
Location	28,532.47 N, 26,732.57 E / Seattle, Washington	Top of Casing Elev.	14.02
Driller/Method	Malcom; Matt Kenedy / Air Rotary	Depth to Water	11.59
Sampling Method	Cuttings	Start/Finish Date	10/16/2006

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	USGS Unit	Material Type	Description	Depth (ft)
0 / 15	Steel Surface Monument				Loose, Wet, Brown, Fine to Coarse SAND with Silt and Some Medium Gravel.	0
1 / 14						1
2 / 13	Concrete					2
3 / 12						3
4 / 11	Hydrated Bentonite Chips					4
5 / 10						5
6 / 9						6
7 / 8						7
8 / 7	2-Inch Schedule 40 PVC Well Casing					8
9 / 6						9
10 / 5	10-20 Colorado Sand Backfill					10
11 / 4						11
11.59 / 2.41	▼ 11/1/2006					11.59
12 / 3						12
12.41 / 1.59	▽					12.41
13 / 2						13
14 / 1	2-Inch Schedule 40 PVC Screen 0.020 Inch Slot Width					14
15 / 0					Wet, Wood Planking, Strong Odor	15
16 / -1	8" Diameter Borehole					16
17 / -2						17
18 / -3					Loose, Gray, Silty Fine to Medium SAND with Medium Gravel and Wood Debris.	18
19 / -4						19

Sampler Type:
○ No Recovery

PID - Photoionization Detector (Headspace Measurement)
▼ Static Water Level
▽ Water Level (ATD)

Logged by: MJN
Approved by: DLC
Figure No. A - 10

WELL CONSTRUCTION SAM-SHORELINE.GPJ February 22, 2007

Aspect consulting
IN-DEPTH PERSPECTIVE

Well Construction Log

Project Number	Well Number	Sheet
020118-001	MW-27R	2 of 2

Project Name	SAM - Olympic Sculpture Park	Ground Surface Elev	15
Location	28,532.47 N, 26,732.57 E / Seattle, Washington	Top of Casing Elev.	14.02
Driller/Method	Malcom; Matt Kenedy / Air Rotary	Depth to Water	11.59
Sampling Method	Cuttings	Start/Finish Date	10/16/2006

Depth / Elevation (feet)	Borehole Completion	Sample Type/ID	USGS Unit	Material Type	Description	Depth (ft)
	0.02' Flat Threaded Sump					
21 -6						21
22 -7						22
23 -8						23
24 -9						24
25 -10						25
26 -11						26
27 -12						27
28 -13						28
29 -14						29
30 -15						30
31 -16						31
32 -17						32
33 -18						33
34 -19						34
35 -20						35
36 -21						36
37 -22						37
38 -23						38
39 -24						39

Sampler Type:
No Recovery

PID - Photoionization Detector (Headspace Measurement)
Static Water Level
Water Level (ATD)

Logged by: MJN
Approved by: DLC
Figure No. A - 10

WELL CONSTRUCTION SAM-SHORELINE.GPJ February 22, 2007

ARCADIS

Appendix B

MI Lab Results

2340 Stock Creek Blvd.
Rockford TN 37853-3044
Phone: (865) 573-8188
Fax: (865) 573-8133
Email: info@microbe.com

Client: Michael Strickler
Arcadis
2300 Eastlake Avenue E.
Suite 200
Seattle, WA 98102

Phone: 206.726.4732

Fax:

Identifier: 045HF **Date Rec:** 06/17/2010 **Report Date:** 06/30/2010

Client Project #: B0045363.0003 **Client Project Name:** Former Unocal Seattle Terminal

Purchase Order #: B0045363.0003

Analysis Requested: Cancelled, PLFA

Reviewed By:

MICROBIAL INSIGHTS, INC.

2340 Stock Creek Blvd. Rockford, TN 37853-3044
Tel. (865) 573-8188 Fax. (865) 573-8133

PLFA

Client: **Arcadis**
Project: Former Unocal Seattle Terminal

MI Project Number: **045HF**
Date Received: 06/17/2010

Sample Information

Sample Name:	**MW-200**	**MW-202**	**MW-204**	**MW-207**
Sample Date:	06/16/2010	06/16/2010	06/16/2010	06/16/2010
Sample Matrix:	beads	beads	beads	beads
Analyst:	bj	bj	bj	bj

Biomass Concentrations

Total Biomass (cells/bead)	**5.62E+05**	**8.79E+05**	**2.55E+05**	**6.88E+05**

Community Structure (% total PLFA)

Firmicutes (TerBrSats)	**9.56**	**4.26**	**2.97**	**1.19**
Proteobacteria (Monos)	**63.55**	**61.49**	**76.24**	**76.10**
Anaerobic metal reducers (BrMonos)	**0.90**	**1.37**	**0.45**	**0.00**
SRB/Actinomycetes (MidBrSats)	**5.77**	**3.86**	**4.63**	**2.13**
General (Nsats)	**14.85**	**18.48**	**12.51**	**17.14**
Eukaryotes (polyenoics)	**5.36**	**10.55**	**3.19**	**3.45**

Physiological Status (Proteobacteria only)

Slowed Growth	**0.43**	**0.24**	**0.11**	**0.00**
Decreased Permeability	**0.13**	**0.15**	**0.35**	**0.06**

Legend:
NA = Not Analyzed NS = Not Sampled

MICROBIAL INSIGHTS, INC.

2340 Stock Creek Blvd. Rockford, TN 37853-3044
Tel. (865) 573-8188 Fax. (865) 573-8133

PLFA

Client: **Arcadis**
Project: Former Unocal Seattle Terminal

MI Project Number: **045HF**
Date Received: 06/17/2010

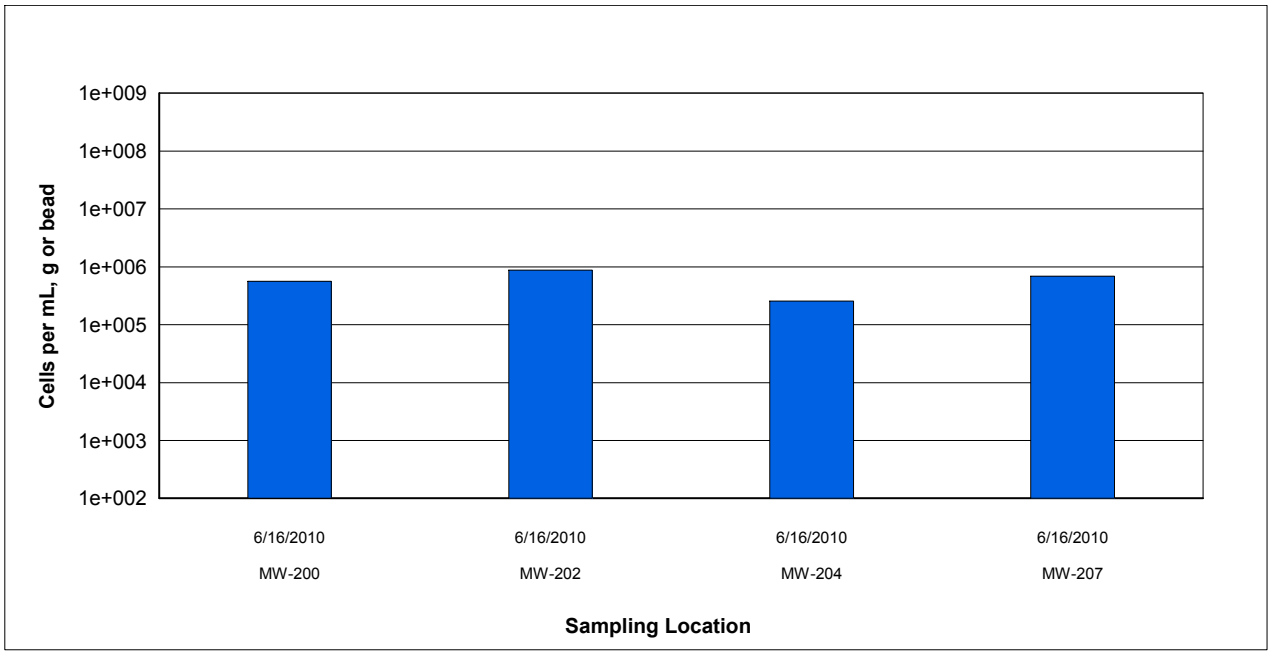


Figure 1. Biomass content is presented as a cell equivalent based on the total amount of phospholipid fatty acids (PLFA) extracted from a given sample. Total biomass is calculated based upon PLFA attributed to bacterial and eukaryotic biomass

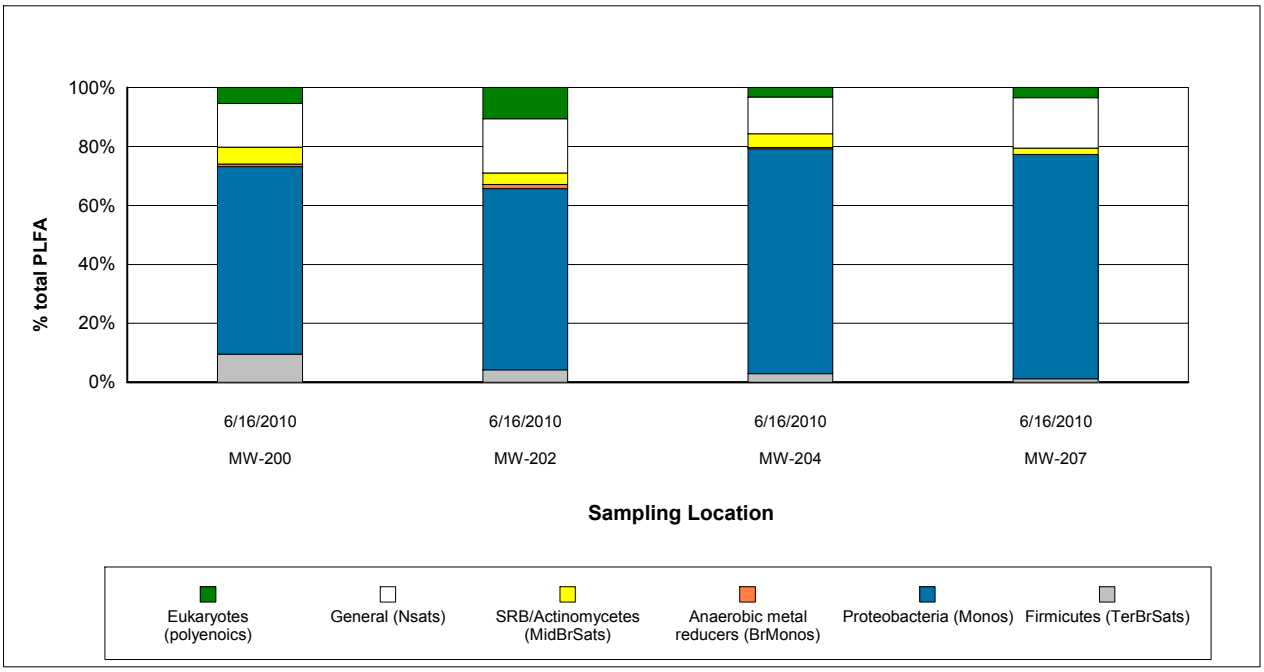


Figure 2. Relative percentages of total PLFA structural groups in the samples analyzed. Structural groups are assigned according to PLFA chemical structure, which is related to fatty acid biosynthesis.

2340 Stock Creek Blvd.
Rockford TN 37853-3044
Phone: (865) 573-8188
Fax: (865) 573-8133
Email: info@microbe.com

Identifier: 045HF **Date Rec:** 06/17/2010 **Report Date:** 06/30/2010

Client Project #: B0045363.0003 **Client Project Name:** Former Unocal Seattle Terminal

Purchase Order #: B0045363.0003

Comments:

2340 Stock Creek Blvd.
Rockford TN 37853-3044
Phone (865) 573-8188
Fax: (865) 573-8133
Email: info@microbe.com

Phospholipid Fatty Acid Analysis

Interpretation Guidelines

Phospholipids fatty acids (PLFA) are a main component of the membrane (essentially the "skin") of microbes and provide a powerful tool for assessing microbial responses to changes in their environment. This type of analysis provides direct information for assessing and monitoring sites where bioremediation processes, including natural attenuation, are of interest. Analysis of the types and amount of PLFA provides a broad based understanding of the entire microbial community with information obtained in three key areas viable biomass, community structure and metabolic activity.

What is the detection limit for PLFA?

Our limit of detection for PLFA analysis is ~150 picomoles of total PLFA and our limit of quantification is ~500 picomoles of total PLFA. Samples which contain PLFA amounts at or below 150 pmol cannot be used to determine biomass, likewise samples with PLFA content below ~500 pmol are generally considered to contain too few fatty acids to discuss community composition.

How should I interpret the PLFA results?

Interpreting the results obtained from PLFA analysis can be somewhat difficult, so this document was designed to provide a technical guideline. For convenience, this guideline has been divided into the three key areas.

Viable Biomass

PLFA analysis is one of the most reliable and accurate methods available for the determination of viable microbial biomass. Phospholipids break down rapidly upon cell death (21, 23), so biomass calculations based on PLFA content do not contain 'fossil' lipids of dead cells.

How is biomass measured?

Viable biomass is determined from the total amount of PLFA detected in a given sample. Since, phospholipids are an essential part of intact cell membranes they provide an accurate measure of viable cells.

How is biomass calculated?

Biomass levels are reported as cells per gram, mL or bead, and are calculated using a conversion factor of 20,000 cells/pmole of PLFA. This conversation factor is based upon cells grown in laboratory media, and varies somewhat with the type of organism and environmental conditions.

What does the concentration of biomass mean?

The overall abundance of microbes within a given sample is often used as an indicator of the potential for bioremediation to occur, but understanding the levels of biomass within each sample can be cumbersome. The following are benchmarks that can be used to understand whether the biomass levels are low, moderate or high.

Low	Moderate	High
10^3 to 10^4 cells	10^5 to 10^6 cells	10^7 to 10^8 cells

How do I know if a change in biomass is significant?

One of the primary functions of using PLFA analysis at contaminated sites is to evaluate how a community responds following a given treatment, but how does one know if the changes observed between two events are significant? As a general rule, biomass levels which increase or decrease by at least an order of magnitude are considered to be significant. However, changes in biomass levels of less than an order of magnitude may still show a trend. It is important to remember that many factors can affect microbial growth, so factors other than the treatment could be influencing the changes observed between sampling events. Some of the factors to consider are: temperature, moisture, pH, etc. The following illustration depicts three types of changes that occurred over time and the conclusions that could be drawn.

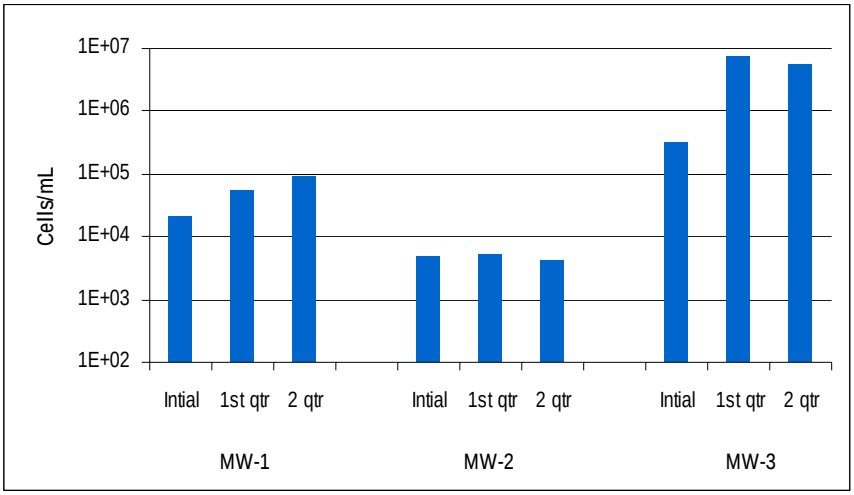


Figure 1. Biomass content is presented as a cell equivalent based on the total amount of phospholipid fatty acids (PLFA) extracted from a given sample. Total biomass is calculated based upon PLFA attributed to bacterial and eukaryotic biomass (associated with higher organisms).

Conclusions from graph above:

- MW-1 showed a trend of biomass levels increasing steadily over time, although cell concentrations were ~10^4 cells/mL at each sampling event.
- MW-2 showed no notable trends or significant changes in biomass concentrations.
- MW-3 showed a significant increase in biomass levels between the initial and 1st quarter sampling events (from ~10^5 to ~10^6 cells/mL).

Community Structure:

The PLFA in a sample can be separated into particular types, and the resulting PLFA "profile" reflects the proportions of the categories of organisms present in the sample. Because groups of bacteria differ in their metabolic capabilities, determining which bacterial groups are present and their relative distributions within the community can provide information on what metabolic processes are occurring at that location. This in turn can also provide information on the subsurface conditions (i.e oxidation/reduction status, etc.). Table 1 describes the six major structural groups used and their potential relevance to site specific projects.

Table 1. Description of PLFA structural groups.

PLFA Structural Group	General classification	Potential Relevance to Bioremediation Studies
Monoenoic (Monos)	Abundant in Proteobacteria (Gram negative bacteria), typically fast growing, utilize many carbon sources, and adapt quickly to a variety of environments.	Proteobacteria is one of the largest groups of bacteria and represents a wide variety of both aerobes and anaerobes. The majority of Hydrocarbon utilizing bacteria fall within the Proteobacteria
Terminally Branched Saturated (TerBrSats)	Characteristic of Firmicutes (Low G+C Gram-positive bacteria), and also found in Bacteriodes, and some Gram-negative bacteria (especially anaerobes).	Firmicutes are indicative of presence of anaerobic fermenting bacteria (mainly *Clostridia/Bacteriodes*-like), which produce the H_2 necessary for reductive dechlorination
Branched Monoenoic (BrMonos)	Found in the cell membranes of micro-aerophiles and anaerobes, such as sulfate- or iron-reducing bacteria	In contaminated environments high proportions are often associated with anaerobic sulfate and iron reducing bacteria
Mid-Chain Branched Saturated (MidBrSats)	Common in sulfate reducing bacteria and also Actinobacteria (High G+C Gram-positive bacteria).	In contaminated environments high proportions are often associated with anaerobic sulfate and iron reducing bacteria
Normal Saturated (Nsats)	Found in all organisms.	High proportions often indicate less diverse populations.
Polyenoic	Found in eukaryotes such as fungi, protozoa, algae, higher plants, and animals.	Eukaryotic scavengers will often rise up and prey on contaminant utilizing bacteria

Following are answers to some of the common questions about community composition and some detailed descriptions of some typical shifts which can be observed between sampling events.

How is the community structure data presented?

Community structure data is presented as percentage (%) of the total amount of PLFA. In order to relate the complex mixture of PLFA to the organisms present, the ratio of a specific PLFA group is determined (detailed in Table 1 above), and this corresponds to the proportion of the related bacterial classification within the overall community structure. Because normal saturated PLFA are found in both prokaryotes (bacteria) and eukaryotes (fungi, protozoa, diatoms etc), their distribution provides little insight into the types of microbes that are present at a sampling location. However, high proportions of normal saturates are often associated with less diverse microbial populations.

How can community structure data be used to manage my site?

It is important to understand that microbial communities are often a mixture of different types of bacteria (e.g. aerobes, sulfate reducers, methanogens, etc) with the abundance of each group behaving like a seesaw, i.e. as the population of one group increases, another is likely decreasing, mostly due to competition for available resources. The PLFA profile of a sample provides a "fingerprint" of the microbial community, showing relative proportions of the specific bacterial types at the time of sampling. This is a great tool for detecting shifts within the community over time and also to evaluate similarities/differences between sampling locations. It is important to note that PLFA analysis of community structure is analyzing the microbes directly, not just secondary breakdown products. So this provides evidence of how the entire microbial community is responding to the treatment.

How do I recognize community shifts and what they mean?

Shifts in the community structure are indications of changing conditions and their effect on the microbial community, and, by extension on the metabolic processes occurring at the sampling location. Some of the more commonly seen shifts within the community are illustrated and discussed below:

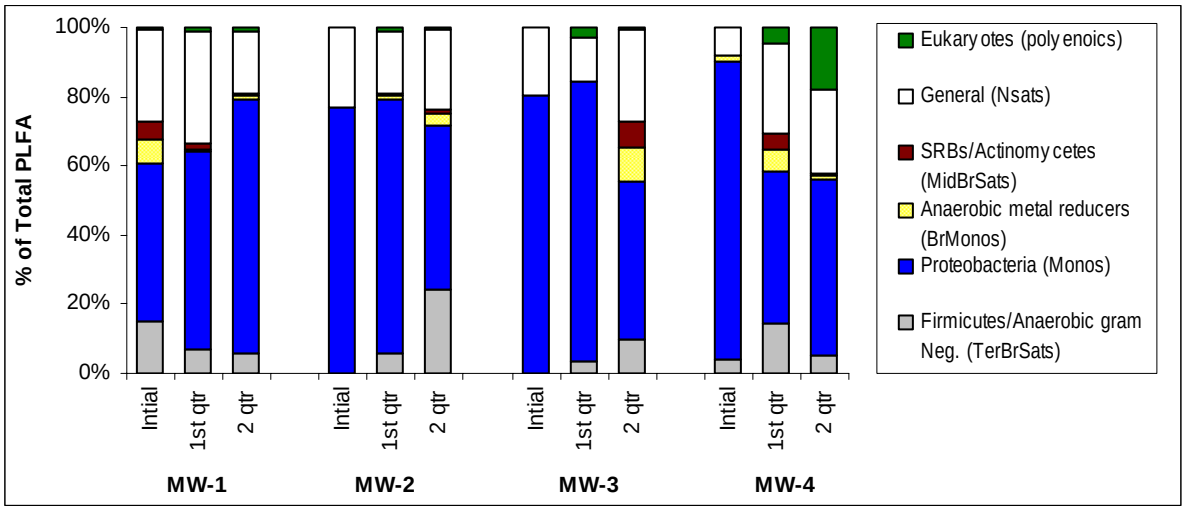


Figure 2. Relative percentages of total PLFA structural groups in the samples analyzed. Structural groups are assigned according to PLFA chemical structure, which is related to fatty acid biosynthesis. See Table 1 for detailed descriptions of structural groups.

- **Increased Proteobacteria**

Proportions of Proteobacteria are of interest because it is one of the largest groups of bacteria and represents a wide variety of both aerobe and anaerobes. The majority of hydrocarbons (including benzene and naphthalene) are metabolized by some member of Proteobacteria, mainly due to their ability to grow opportunistically, quickly taking advantage of available food (i.e. hydrocarbons), and adapting quickly to changes in the environment. The detection of increased proportions of Proteobacteria coupled with increased biomass suggests that the Proteobacteria are consuming something. In situations where it is important to determine the extent to which the Proteobacteria are utilizing anaerobic or aerobic pathways, it is possible to measure relative proportions of specific biomarkers that are associated with anaerobic or aerobic pathways thus separating the Proteobacteria into different groups, based on pathways used. Sample MW-1 from Figure 2 depicts a shift in community structure where the proportion of Proteobacteria has increased over time.

- **Increased Firmicutes/Anaerobic Gram negative bacteria**

Increased proportions of Firmicutes/Anaerobic Gram negative bacteria generally indicate that conditions are becoming more reductive (i.e. more anaerobic). Proportions of Firmicutes are of particular interest in sites contaminated with chlorinated hydrocarbons because Firmicutes include anaerobic fermenting bacteria (mainly *Clostridia/Bacteriodes*-like), which produce the H_2 necessary for reductive dechlorination.

Enhanced bioremediation of chlorinated solvents often employs the injection of fermentable substrates which, when utilized by fermenting bacteria, results in the release of H_2. Engineered shifts in the microbial community can be shown by observing increased proportions Firmicutes following an injection of fermentable substrate. Through long-term monitoring of the community structure it is possible to know when re-injection may be necessary or desirable. Sample MW-2 from Figure 2 depicts a shift in community structure where the proportion of Firmicutes has increased over time.

- **Increased anaerobic metal reducing bacteria (BrMonos) and SRB/Actinomycetes (MidBrSats)**

An increase in the proportions of metal and sulfate reducing bacterial groups, especially when combined with shifts in the other bacterial groups, can provide information helpful to monitoring bioremediation. Generally, an increase in metal and sulfate reducers points to more reduced (anaerobic) conditions at the sampled location. This is especially true if there is an increase in Firmicutes at the same time. Large increases in either metal and sulfate reducers, particularly if accompanied by a decrease in Firmicutes, may suggest that conditions are becoming increasingly reduced. In this situation the metal and sulfate reducers may be out-competing dechlorinators for available H_2, thereby limiting the potential for reductive dechlorination at that location. Sample MW-3 from Figure 2 depicts a shift in community structure where the proportion of metal reducing bacteria has increased over time.

- **Increased Eukaryotes**

Eukaryotes include organisms such as fungi, protozoa, and diatoms. At a contaminated location, an increase in eukaryotes, particularly if seen with a decrease in the contaminant utilizing bacteria, suggests that eukaryotic scavengers are preying upon what had been an abundance of bacteria which were consuming the contaminant. Sample MW-4 from Figure 2 depicts a shift in community structure where the proportion of eukaryotes has increased over time.

Physiological status of Proteobacteria

The membrane of a microbe adapts to the changing conditions of its environment, and these changes are reflected in the PLFA. Toxic compounds or environmental conditions may disrupt the membrane and some bacteria respond by making *trans* fatty acids instead of the usual *cis* fatty acids (7) in order to strengthen the cell membrane, making it less permeable. Many Proteobacteria respond to lack of available substrate or to highly toxic conditions by making cyclopropyl (7) or mid-chain branched fatty acids (20) which point to less energy expenditure and a slowed growth rate. The physiological status ratios for Decreased Permeability (trans/cis ratio) and for Slowed Growth (cy/cis ratio) are based on dividing the amount of the fatty acid induced by environmental conditions by the amount of its biosynthetic precursor.

What does slowed growth or decreased permeability mean?

Ratios for slowed growth and for decreased permeability of the cell membrane provide information on the “health” of the Gram negative community, that is, how this population is responding to the conditions present in the environment. It should be noted that one must be cautious when interpreting these measures from only one sampling event. The most effective way to use the physiological status indicators is in long term monitoring and comparing how these ratios increase/decrease over time.

A marked increase in either of these ratios suggests a change in environment which is less favorable to the Gram negative Proteobacteria population. The ratio for slowed growth is a relative measure, and does not directly correspond to log or stationary phases of growth, but is useful as a comparison of growth rates among sampling locations and also over time. An increase in this ratio (i.e. slower growth rate) suggests a change in conditions which is not as supportive of rapid, “healthy” growth of the Gram negative population, often due to reduced available substrate (food). A larger ratio for decreased permeability suggests that the environment has become more toxic to the Gram negative population, requiring energy expenditure to produce *trans* fatty acids in order to make the membrane more rigid.

References

1. Amann, R. I., W. Ludwig, and K.-H. Schleifer. 1995. Phylogenetic identification and in situ detection of individual microbial cells without cultivation. Microbiological Reviews 59:143-169.
2. Cottrell, MT and David L. Kirchman. Appl Environ Microbiol. 2000 April; 66 (4): 16921697.
3. Gillis, M., V. Tran Van, R. Bardin, M. Goor, P. Hebbar, A. Willems, P. Segers, K. Kerstens, T. Heulin, and M. P. Fernadez. 1995. Polyphasic taxonomy in the genus Burkholderia leading to an amended description of the genus and proposition of Burkholderia vietnamiensis sp. nov. for N2-fixing isolates from rice in Vietnam. Int. J. Syst. Bacteriol. 45:274-289.
4. Dowling, N. J. E., F. Widdel, and D. C. White. 1986. Phospholipid ester-linked fatty acid biomarkers of acetate-oxidizing sulfate reducers and other sulfide forming bacteria. Journal of General Microbiology 132:1815-1825.
5. Edlund, A., P. D. Nichols, R. Roffey, and D. C. White. 1985. Extractable and lipopolysaccharide fatty acid and hydroxy acid profiles from Desulfovibrio species. Journal of Lipid Research 26:982-988.
6. Guckert, J. B., C. P. Antworth, P. D. Nichols, and D. C. White. 1985. Phospholipid ester-linked fatty acid profiles as reproducible assays for changes in prokaryotic community structure of estuarine sediments. FEMS Microbiol. Ecol. 31:147-158.
7. Guckert, J. B., M. A. Hood, and D. C. White. 1986. Phospholipid ester-linked fatty acid profile changes during nutrient deprivation of Vibrio cholerae: increases in the trans/cis ratio and proportions of cyclopropyl fatty acids. Appl. Environ. Microbiol. 52:794–801.
8. Hedrick, D.B., A Peacock, J.R. Stephen, S.J. Macnaughton, Julia Brüggemann, and David C. White. 2000. Measuring soil microbial community diversity using polar lipid fatty acid and denatured gradient gel electrophoresis data. J. Microbiol. Methods, 41, 235-248.
9. ITRC Internet Training on Natural Attenuation of Chlorinated Solvents in Groundwater: Principles and Practices, Apr 00.
10. Löffler, F. E., Q. Sun, et al. (2000). “16S rRNA gene-based detection of tetrachloroethene-dechlorinating Desulfuromonas and Dehalococcoides species.” Appl Environ Microbiol 66(4): 1369-1374.
11. Maymo-Gatell X, Chien Y, Gossett JM, Zinder SH. 1997. Isolation of a bacterium that reductively dechlorinates tetrachloroethene to ethene. Science 276(5318):1568-71.
12. Muyzer, G., E. C. De Waal, and A. G. Uitterlinden. 1993. Profiling of complex microbial populations by denaturing gradient gel electrophoresis analysis of polymerase chain reaction-amplified genes coding for 16S rRNA. Applied and Environmental Microbiology 59:695-700.
13. Ribosomal Database Project (http://rdp.cme.msu.edu. National Center for Biotechnology Information. (http://www.ncbi.nlm.nih.gov/)
14. Overman, J., "Family Chlorobiaceae," in M. Dworkin et al., eds., The Prokaryotes: An Evolving Electronic Resource for the Microbiological Community, 3rd edition, release 3.7, November 2, 2001, Springer-Verlag, New York, www.prokaryotes.com.
15. Ringelberg, D. B., G. T. Townsend, K. A. DeWeerd, J. M. Sulita, and D. C. White. 1994. Detection of the anaerobic dechlorinating microorganism Desulfomonile tiedjei in environmental matrices by its signature lipopolysaccharide branch-long-chain hydroxy fatty acids. FEMS Microbiol. Ecol. 14:9-18.
16. Schlötelburg, C. 2001. Mikrobielle Diversität und Dynamik einer 1,2-Dichlorpropan dechlorierenden Mischkultur (Microbial Diversity and Dynamics in a 1,2-Dichloropropane Dechlorinating Mixed Culture). Dissertation, Humbolt University, Berlin, Germany. In German: http://edoc.hu-berlin.de/dissertationen/schloetelburg-cord-2001-12-07/PDF/Schloetelburg.pdf
17. Sharp, R., D. Cossar, and R. Williams. 1995. Physiology and metabolism of Thermus. Biotechnol. Handb. 9:67-91.
18. Stephen, J. R., Y.-J. Chang, Y. D. Gan, A. Peacock, S. Pfiffner, M. Barcelona, D. C. White, and S. J. Macnaughton. 1999. Microbial characterization of a JP-4 fuel-contaminated site using a combined lipid biomarker/polymerase chain reaction-denaturing gradient gel electrophoresis (PCR-DGGE) based approach. Environmental Microbiology 1:231-241.
19. Tighe, S.W., de Lajudie, P., Dipietro, K., Lindström, K., Nick, G. & Jarvis, B.D.W. (2000). Analysis of cellular fatty acids and phenotypic relationships of Agrobacterium, Bradyrhizobium, Mesorhizobium, Rhizobium and Sinorhizobium species using the Sherlock Microbial Identification System. Int J Syst Evol Microbiol 50, 787-801.
20. Tsitko, I.V. Gennadi M. Zaitsev, Anatoli G. Lobanok, and Mirja S. Salkinoja-Salonen. 1999. Applied and Environmental Microbiology 65(2) 853-855.
21. White, D. C., W. M. Davis, J. S. Nickels, J. D. King, and R. J. Bobbie. 1979. Determination of the sedimentary microbial biomass by extractable lipid phosphate. Oecologia 40:51-62.
22. White, D. C., H. C. Pinkart, and D. B. Ringelberg. 1997. Biomass measurements: Biochemical approaches, p. 91-101. In C. J. Hurst, G. R. Knudsen, M. J. McInerney, L. D. Stetzenbach, and M. V. Walter (ed.), Manual of Environmental Microbiology. ASM Press, Washington.
23. White, D. C., and D. B. Ringelberg. 1995. Utility of signature lipid biomarker analysis in determining in situ viable biomass, community structure, and nutritional / physiological status of the deep subsurface microbiota. In P. S. Amy and D. L. Halderman (ed.), The microbiology of the terrestrial subsurface. CRC Press, Boca Raton.
24. White, D. C., J. O. Stair, and D. B. Ringelberg. 1996. Quantitative comparisons of in situ microbial biodiversity by signature biomarker analysis. Journal of Industrial Microbiology 17:185-196.
25. Vandamme P, Pot B, Gillis M, de Vos P, Kersters K, Swings J. Polyphasic taxonomy, a consensus approach to bacterial systematics. Microbiol Rev 1996 Jun;60(2):407-38.

ARCADIS

Appendix C

MNA GWS Field Sheets

ARCADIS

Troll 9000 | Low-Flow System
04/14/10 | ISI Low-Flow Log

Project Information:

Operator Name	JRG
Company Name	ARCADIS
Project Name	Seattle Terminal Groundwater Monitoring
Site Name	Former Unocal Seattle Marketing Terminal

Pump Information:

Pump Model/Type	Geopump II
Tubing Type	1/4" OD Teflon-lined polyethylene
Tubing Diameter	0.07 [cm]
Tubing Length	59.06 [m]
Pump placement from TOC	3.28 [m]

Well Information:

Well Id	MW-30
Well diameter	1.57 [cm]
Well total depth	98.43 [m]
Depth to top of screen	16.4 [m]
Screen length	118.11 [cm]
Depth to Water	40.42 [m]

Pumping information:

Final pumping rate	250 [mL/min]
Flowcell volume	680.34 [mL]
Calculated Sample Rate	164 [sec]
Sample rate	180 [sec]
Stabilized drawdown	0.2 [cm]

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-1 +/-3 %	+/-1 +/-10 %	+/-1 +/-10 %	+/-10
Last 5 Readings	14:42:19	12.80	6.85	602.37	26.09	0.25	-80.08
	14:45:25	12.77	6.85	604.71	24.77	0.15	-79.43
	14:48:32	12.79	6.85	607.87	-13.50	0.15	-79.08
	14:51:38	12.77	6.85	608.01	19.27	0.12	-79.08
	14:55:48	12.75	6.84	608.25	-10.94	0.09	-78.82
Variance in last 3 readings	14:48:32	0.02	0.00	3.16	-38.26	0.00	0.35
	14:51:38	-0.01	0.00	0.14	32.77	-0.04	0.00
	14:55:48	-0.02	-0.01	0.24	-30.22	-0.03	0.26

Notes:

MW-30 @ 1250
Sheen not observed on purge water
tubing placed halfway down well screened interval.
nitrate=<5 mg/L
Fe=3.2 mg/L

ARCADIS

Troll 9000 | Low-Flow System
04/14/10 | ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	JRG	Pump Model/Type	Geopump II
Company Name	ARCADIS	Tubing Type	Tygon 0.25" OD
Project Name	Seattle Terminal Groundwater Monitoring	Tubing Diameter	0.07 [cm]
Site Name	Former Unocal Seattle Marketing Terminal	Tubing Length	52.49 [m]
		Pump placement from TOC	3.28 [m]

Well Information:		**Pumping information:**	
Well Id	MW-200	Final pumping rate	250 [mL/min]
Well diameter	0.79 [cm]	Flowcell volume	671.42 [mL]
Well total depth	79.1 [m]	Calculated Sample Rate	162 [sec]
Depth to top of screen	14.76 [m]	Sample rate	180 [sec]
Screen length	94.49 [cm]	Stabilized drawdown	0.2 [cm]
Depth to Water	28.54 [m]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-1 +/-3 %	+/-1 +/-10 %	+/-1 +/-10 %	+/-10
Last 5 Readings	9:16:38	14.91	7.12	1949.98	28.86	0.41	-104.89
	9:19:45	14.80	7.12	1939.64	-5.00	0.26	-108.53
	9:22:52	14.76	7.12	1931.63	-5.52	0.24	-112.07
	9:25:58	14.90	7.12	1929.91	2.75	0.22	-115.36
	9:29:04	15.02	7.12	1932.78	8.54	0.23	-117.16
Variance in last 3 readings	9:22:52	-0.03	0.00	-8.01	-0.52	-0.02	-3.55
	9:25:58	0.14	0.00	-1.72	8.27	-0.02	-3.29
	9:29:04	0.12	0.00	2.87	5.78	0.01	-1.79

Notes:

MW-200 @ 0930
No sheen on purge water
tubing placed halfway down the well screened interval.
nitrate=<5 mg/L
Fe=1.4 mg/L

ARCADIS

Troll 9000 Low-Flow System
04/14/10 ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	JRG	Pump Model/Type	Geopump II
Company Name	ARCADIS	Tubing Type	Tygon 0.25" OD
Project Name	Seattle Terminal Groundwater Monitoring	Tubing Diameter	0.07 [cm]
Site Name	Former Unocal Seattle Marketing Terminal	Tubing Length	42.65 [m]
		Pump placement from TOC	1.64 [m]

Well Information:		**Pumping information:**	
Well Id	MW-201	Final pumping rate	250 [mL/min]
Well diameter	0.79 [cm]	Flowcell volume	658.02 [mL]
Well total depth	65.62 [m]	Calculated Sample Rate	158 [sec]
Depth to top of screen	17.06 [m]	Sample rate	180 [sec]
Screen length	70.87 [cm]	Stabilized drawdown	0.39 [cm]
Depth to Water	31.23 [m]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-1 +/-3 %	+/-1 +/-10 %	+/-1 +/-10 %	+/-10
Last 5 Readings	11:03:59	15.06	6.89	936.37	10.64	0.29	-55.20
	11:07:05	15.07	6.88	929.65	31.12	0.29	-55.12
	11:10:11	15.06	6.87	941.53	-13.49	0.28	-54.90
	11:13:17	15.12	6.86	954.67	-13.49	0.28	-54.00
	11:15:19	15.28	6.86	960.02	-12.65	0.25	-53.92
Variance in last 3 readings	11:10:11	-0.02	-0.01	11.88	-44.61	-0.02	0.21
	11:13:17	0.06	-0.01	13.14	0.00	0.00	0.90
	11:15:19	0.16	0.00	5.35	0.85	-0.03	0.09

Notes:

MW-201 sample time = 11:20
no sheen visible in purge water
tubing placed halfway down well screened interval.
nitrate=<5 mg/L
Fe=1.0 mg/L

ARCADIS

Troll 9000 | Low-Flow System
04/14/10 | ISI Low-Flow Log

Project Information:

Operator Name	MLS
Company Name	ARCADIS
Project Name	Seattle Terminal Groundwater Monitoring
Site Name	Former Unocal Seattle Marketing Terminal

Pump Information:

Pump Model/Type	Geopump II
Tubing Type	1/4" OD Teflon-lined polyethylene
Tubing Diameter	0.07 [cm]
Tubing Length	52.49 [m]
Pump placement from TOC	3.28 [m]

Well Information:

Well Id	MW-202
Well diameter	0.79 [cm]
Well total depth	89.8 [m]
Depth to top of screen	22.97 [m]
Screen length	94.49 [cm]
Depth to Water	29.53 [m]

Pumping information:

Final pumping rate	200 [mL/min]
Flowcell volume	671.42 [mL]
Calculated Sample Rate	202 [sec]
Sample rate	202 [sec]
Stabilized drawdown	0.04 [cm]

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-1 +/-3 %	+/-1 +/-10 %	+/-1 +/-10 %	+/-10
Last 5 Readings	9:09:02	12.25	7.03	23255.42	7.70	0.32	-122.90
	9:12:31	12.26	7.03	23113.39	6.40	0.27	-127.00
	9:16:01	12.26	7.04	22870.29	8.91	0.24	-131.15
	9:19:30	12.27	7.04	22643.27	14.85	0.22	-133.71
	9:22:59	12.30	7.05	22382.07	16.14	0.22	-135.21
Variance in last 3 readings	9:16:01	0.00	0.00	-243.10	2.51	-0.03	-4.15
	9:19:30	0.01	0.00	-227.02	5.94	-0.02	-2.56
	9:22:59	0.02	0.00	-261.20	1.29	0.00	-1.50

Notes: MW-202 @ 0845
No sheen, tubing intake placed at center of water column

ARCADIS

Troll 9000 | Low-Flow System
04/14/10 | ISI Low-Flow Log

Project Information:

Operator Name	MLS
Company Name	ARCADIS
Project Name	Seattle Terminal Groundwater Monitoring
Site Name	Former Unocal Seattle Marketing Terminal

Pump Information:

Pump Model/Type	Geopump II
Tubing Type	Tygon 0.25" OD
Tubing Diameter	0.07 [cm]
Tubing Length	59.06 [m]
Pump placement from TOC	1.64 [m]

Well Information:

Well Id	MW-203
Well diameter	0.79 [cm]
Well total depth	82.02 [m]
Depth to top of screen	31.17 [m]
Screen length	70.87 [cm]
Depth to Water	39.7 [m]

Pumping information:

Final pumping rate	200 [mL/min]
Flowcell volume	680.34 [mL]
Calculated Sample Rate	205 [sec]
Sample rate	205 [sec]
Stabilized drawdown	0 [cm]

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-1 +/-3 %	+/-1 +/-10 %	+/-1 +/-10 %	+/-10
Last 5 Readings	10:54:00	14.12	7.10	17936.49	39.90	0.90	-79.68
	10:57:33	14.21	7.10	18010.45	128.14	0.83	-80.11
	11:01:06	14.25	7.09	18078.41	98.95	0.76	-80.71
	11:04:38	14.16	7.08	18195.61	271.31	0.71	-80.71
	11:08:10	14.26	7.08	18192.96	283.58	0.64	-81.14
Variance in last 3 readings	11:01:06	0.04	-0.01	67.96	-29.19	-0.07	-0.60
	11:04:38	-0.09	-0.01	117.20	172.36	-0.05	0.00
	11:08:10	0.10	0.00	-2.65	12.27	-0.07	-0.43

Notes: MW-203 sample time = 1115
no sheen present
tubing intake middle of water column

ARCADIS

Troll 9000 Low-Flow System
04/14/10 ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	MLS	Pump Model/Type	geopump
Company Name	ARCADIS	Tubing Type	1/4" Teflon-lined polyethylene
Project Name	Seattle Marketing Terminal	Tubing Diameter	0.07 [cm]
Site Name	Former Unocal Seattle Marketing Terminal	Tubing Length	82.02 [m]
		Pump placement from TOC	3.28 [m]

Well Information:		**Pumping information:**	
Well Id	MW-204	Final pumping rate	200 [mL/min]
Well diameter	0.79 [cm]	Flowcell volume	711.59 [mL]
Well total depth	101.71 [m]	Calculated Sample Rate	214 [sec]
Depth to top of screen	0 [m]	Sample rate	214 [sec]
Screen length	0 [cm]	Stabilized drawdown	0.08 [cm]
Depth to Water	62.99 [m]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-1 +/-3 %	+/-1 +/-10 %	+/-1 +/-10 %	+/-10
Last 5 Readings	12:55:16	13.85	6.93	497.42	542.46	0.10	-101.43
	12:58:58	14.00	6.91	496.21	124.39	0.08	-100.62
	13:02:40	13.90	6.90	494.98	4.67	0.06	-99.98
	13:06:22	14.09	6.88	497.62	2998.90	0.05	-99.46
	13:10:04	14.03	6.87	499.28	939.76	0.04	-98.95
Variance in last 3 readings	13:02:40	-0.10	-0.02	-1.23	-119.72	-0.01	0.64
	13:06:22	0.19	-0.02	2.64	2994.22	-0.01	0.51
	13:10:04	-0.07	-0.01	1.65	-2059.13	-0.01	0.51

Notes:

MW-204 @ 1315
BD-1 collected from MW-204
No sheen on purge water
tubing intake at mid water column

ARCADIS

Troll 9000 | Low-Flow System
04/14/10 | ISI Low-Flow Log

Project Information:

Operator Name	JRG
Company Name	ARCADIS
Project Name	Seattle Terminal Groundwater Monitoring
Site Name	Former Unocal Seattle Marketing Terminal

Pump Information:

Pump Model/Type	Geopump II
Tubing Type	Tygon 0.25" OD
Tubing Diameter	0.07 [cm]
Tubing Length	91.86 [m]
Pump placement from TOC	3.28 [m]

Well Information:

Well Id	MW-205
Well diameter	0.79 [cm]
Well total depth	121.39 [m]
Depth to top of screen	55.77 [m]
Screen length	94.49 [cm]
Depth to Water	75.39 [m]

Pumping information:

Final pumping rate	250 [mL/min]
Flowcell volume	724.98 [mL]
Calculated Sample Rate	174 [sec]
Sample rate	180 [sec]
Stabilized drawdown	0.94 [cm]

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-1 +/-3 %	+/-1 +/-10 %	+/-1 +/-10 %	+/-10
Last 5 Readings	12:48:32	13.92	7.38	507.03	-3.28	0.28	-108.52
	12:51:38	13.91	7.37	506.22	16.87	0.25	-110.86
	12:54:46	13.91	7.36	509.11	-13.49	0.21	-112.18
	12:57:52	14.22	7.35	511.99	-13.49	0.22	-112.57
	12:59:27	14.30	7.35	513.17	17.51	0.21	-112.69
Variance in last 3 readings	12:54:46	0.00	-0.01	2.90	-30.37	-0.04	-1.32
	12:57:52	0.30	-0.01	2.88	0.00	0.01	-0.38
	12:59:27	0.09	-0.01	1.18	31.01	-0.01	-0.13

Notes:

MW-205 sample time = 13:00
no sheen present in purge water.
tubing placed halfway down well screened interval.
nitrate=<5 mg/L
Fe=1.0 mg/L

ARCADIS

Troll 9000 | Low-Flow System
04/13/10 | ISI Low-Flow Log

Project Information:

Operator Name	MLS
Company Name	ARCADIS
Project Name	Seattle Terminal Groundwater Monitoring
Site Name	Former Unocal Seattle Marketing Terminal

Pump Information:

Pump Model/Type	Geopump II
Tubing Type	1/4" OD Teflon-lined polyethylene
Tubing Diameter	0.07 [cm]
Tubing Length	59.06 [m]
Pump placement from TOC	3.28 [m]

Well Information:

Well Id	MW-206
Well diameter	0.79 [cm]
Well total depth	80.38 [m]
Depth to top of screen	31.17 [m]
Screen length	70.87 [cm]
Depth to Water	42.16 [m]

Pumping information:

Final pumping rate	200 [mL/min]
Flowcell volume	680.34 [mL]
Calculated Sample Rate	205 [sec]
Sample rate	205 [sec]
Stabilized drawdown	0.04 [cm]

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-1 +/-3 %	+/-1 +/-10 %	+/-1 +/-10 %	+/-10
Last 5 Readings	13:08:46	12.56	6.90	16158.24	22.88	0.12	-134.07
	13:12:19	12.72	6.90	16063.81	14.25	0.11	-140.23
	13:15:54	12.79	6.92	16058.25	17.63	0.10	-146.25
	13:19:26	12.73	6.92	15988.05	17.05	0.09	-151.72
	13:22:58	12.86	6.93	15787.92	22.36	0.09	-157.41
Variance in last 3 readings	13:15:54	0.07	0.01	-5.55	3.38	-0.01	-6.03
	13:19:26	-0.05	0.01	-70.20	-0.58	-0.01	-5.47
	13:22:58	0.13	0.01	-200.13	5.31	0.00	-5.68

Notes: MW-206 @ 1340
No sheen
Tubing intake at water column midpoint

ARCADIS

Troll 9000 Low-Flow System
04/13/10 ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	JRG	Pump Model/Type	Geopump II
Company Name	ARCADIS	Tubing Type	Tygon 0.25" OD
Project Name	Seattle Terminal Groundwater Monitoring	Tubing Diameter	0.07 [cm]
Site Name	Former Unocal Seattle Marketing Terminal	Tubing Length	52.49 [m]
		Pump placement from TOC	3.28 [m]

Well Information:		**Pumping information:**	
Well Id	MW-207	Final pumping rate	250 [mL/min]
Well diameter	0.79 [cm]	Flowcell volume	671.42 [mL]
Well total depth	75.46 [m]	Calculated Sample Rate	162 [sec]
Depth to top of screen	26.25 [m]	Sample rate	180 [sec]
Screen length	70.87 [cm]	Stabilized drawdown	0.12 [cm]
Depth to Water	42.39 [m]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-1 +/-3 %	+/-1 +/-10 %	+/-1 +/-10 %	+/-10
Last 5 Readings	13:18:13	13.45	6.96	23869.51	0.96	1.44	-185.88
	13:21:19	13.46	6.97	23745.99	-3.82	1.39	-192.08
	13:24:25	13.48	6.98	23649.37	-8.71	1.47	-199.61
	13:27:31	13.40	6.99	23633.81	6.95	1.49	-208.07
	13:30:37	13.39	7.00	23604.48	-9.18	1.48	-217.73
Variance in last 3 readings	13:24:25	0.02	0.01	-96.62	-4.89	0.08	-7.52
	13:27:31	-0.08	0.01	-15.55	15.67	0.01	-8.46
	13:30:37	-0.01	0.01	-29.33	-16.13	0.00	-9.66

Notes:

MW-207 @ 1335
No sheen visible
nitrate=<5 mg/L
Fe=2.6 mg/L
tubing placed halfway down screened interval in well.

ARCADIS

Appendix D

GW Analytical Data

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories Inc.
TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

TestAmerica Job ID: 580-18827-1
Client Project/Site: Former Unocal Seattle Marketing Seattle

For:
ARCADIS U.S., Inc.
2300 Eastlake Avenue East
Suite 200
Seattle, Washington 98102

Attn: Mike Strickler

Authorized for release by:
4/30/2010 11:36 AM

Curtis Armstrong
Project Manager I
curtis.armstrong@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Table of Contents

Qualifier Definition/Glossary

Client: ARCADIS U.S., Inc. TestAmerica Job ID: 580-18827-1
Project/Site: Former Unocal Seattle Marketing Seattle

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
Y	The chromatographic response resembles a typical fuel pattern.
Z	The chromatographic response does not resemble a typical fuel pattern.

General Chemistry

Qualifier	Qualifier Description
F	MS or MSD exceeds the control limits

Glossary

Glossary	Glossary Description
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis.

Job Narrative
580-18827-1

Comments
No additional comments.

Receipt
The following sample was collected in properly preserved HCl amber, however, the pH was outside the required criteria when verified by the laboratory. Sample MW-203: Added enogh HCl to reduce ph to 2. Lot#49170.

All other samples were received in good condition within temperature requirements.

GC/MS VOA
Method(s) 8260B:
The method blank for analytical batch 62013 contained Toluene above the reporting limit (RL 0.5). None of the reported samples associated with this method blank contained the target compound; therefore, re-extraction and/or re-analysis of samples were not performed.

Method(s) NWTPH-Gx: The method blank for analytical batch 62012 contained GRO analyte above the reporting limit (RL). The associated sample(s) contained detects for this analyte at concentrations greater than 10X the value found in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

No other analytical or quality issues were noted.

GC/MS Semi VOA
No analytical or quality issues were noted.

GC Semi VOA
Method(s) NWTPH-Dx:
For samples 580-18827-3, 580-18827-5, 580-18827-11 and 580-18827-27 the results in the Diesel range are due to heavily weathered diesel fuel and gasoline.

No other analytical or quality issues were noted.

Metals
No analytical or quality issues were noted.

General Chemistry
Method(s) 350.1: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for batch 62068 were outside control limits. The associated laboratory control sample (LCS) recovery met acceptance criteria.

No other analytical or quality issues were noted.

Organic Prep
No analytical or quality issues were noted.

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Former Unocal Seattle Marketing Seattle

TestAmerica Job ID: 580-18827-1

Lab Sample ID	Client Sample ID	Matrix	Sampled	Received
580-18827-1	MW-206	Water	04/13/10 13:40	04/15/10 12:00
580-18827-3	MW-200	Water	04/14/10 09:30	04/15/10 12:00
580-18827-4	MW-200 (filtered)	Water	04/14/10 09:30	04/15/10 12:00
580-18827-5	MW-201	Water	04/14/10 11:15	04/15/10 12:00
580-18827-6	MW-201 (filtered)	Water	04/14/10 11:15	04/15/10 12:00
580-18827-7	MW-202	Water	04/14/10 09:25	04/15/10 12:00
580-18827-8	MW-202 (filtered)	Water	04/14/10 09:25	04/15/10 12:00
580-18827-9	MW-203	Water	04/14/10 11:15	04/15/10 12:00
580-18827-10	MW-203 (filtered)	Water	04/14/10 11:15	04/15/10 12:00
580-18827-11	MW-204	Water	04/14/10 13:15	04/15/10 12:00
580-18827-12	MW-204 (filtered)	Water	04/14/10 13:15	04/15/10 12:00
580-18827-13	MW-205	Water	04/14/10 13:00	04/15/10 12:00
580-18827-14	MW-205 (filtered)	Water	04/14/10 13:00	04/15/10 12:00
580-18827-15	MW-206	Water	04/14/10 08:50	04/15/10 12:00
580-18827-16	MW-206 (filtered)	Water	04/14/10 08:50	04/15/10 12:00
580-18827-17	MW-207	Water	04/14/10 09:50	04/15/10 12:00
580-18827-18	MW-207 (filtered)	Water	04/14/10 09:50	04/15/10 12:00
580-18827-19	MW-30	Water	04/14/10 15:00	04/15/10 12:00
580-18827-20	MW-30 (filtered)	Water	04/14/10 15:00	04/15/10 12:00
580-18827-21	BD-1	Water	04/14/10 00:00	04/15/10 12:00
580-18827-22	BD-1 (filtered)	Water	04/14/10 00:00	04/15/10 12:00
580-18827-23	Trip Blank	Water	04/14/10 00:00	04/15/10 12:00

Client Sample ID: MW-206

Lab Sample ID: 580-18827-1

Date Collected: 04/13/10 13:40

Matrix: Water

Date Received: 04/15/10 12:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.50		ug/L			04/19/10 22:52	1
Toluene	ND		0.50		ug/L			04/19/10 22:52	1
Ethylbenzene	ND		0.50		ug/L			04/19/10 22:52	1
m-Xylene & p-Xylene	ND		1.0		ug/L			04/19/10 22:52	1
o-Xylene	ND		1.0		ug/L			04/19/10 22:52	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Fluorobenzene (Surr)	*100*		*80 - 120*		*04/19/10 22:52*	*1*
Toluene-d8 (Surr)	*102*		*85 - 120*		*04/19/10 22:52*	*1*
Ethylbenzene-d10	*103*		*80 - 120*		*04/19/10 22:52*	*1*
Trifluorotoluene (Surr)	*103*		*80 - 120*		*04/19/10 22:52*	*1*
4-Bromofluorobenzene (Surr)	*105*		*75 - 120*		*04/19/10 22:52*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.050		mg/L			04/23/10 08:18	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*109*		*50 - 150*		*04/23/10 08:18*	*1*
Trifluorotoluene (Surr)	*106*		*50 - 150*		*04/23/10 08:18*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	**210**		50		ug/L			04/20/10 07:14	1
Methane	**120**		1.0		ug/L			04/20/10 07:41	1
Ethane	ND		1.0		ug/L			04/20/10 07:41	1
Ethylene	ND		1.0		ug/L			04/20/10 07:41	1

Client Sample ID: MW-200

Lab Sample ID: 580-18827-3

Date Collected: 04/14/10 09:30

Matrix: Water

Date Received: 04/15/10 12:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.50		ug/L			04/20/10 00:00	1
Toluene	ND		0.50		ug/L			04/20/10 00:00	1
Ethylbenzene	**0.54**		0.50		ug/L			04/20/10 00:00	1
m-Xylene & p-Xylene	ND		1.0		ug/L			04/20/10 00:00	1
o-Xylene	ND		1.0		ug/L			04/20/10 00:00	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Fluorobenzene (Surr)	*100*		*80 - 120*		*04/20/10 00:00*	*1*
Toluene-d8 (Surr)	*102*		*85 - 120*		*04/20/10 00:00*	*1*
Ethylbenzene-d10	*103*		*80 - 120*		*04/20/10 00:00*	*1*
Trifluorotoluene (Surr)	*103*		*80 - 120*		*04/20/10 00:00*	*1*
4-Bromofluorobenzene (Surr)	*104*		*75 - 120*		*04/20/10 00:00*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 22:25	1
Chrysene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 22:25	1
Benzo[b]fluoranthene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 22:25	1

Client Sample ID: MW-200

Date Collected: 04/14/10 09:30
Date Received: 04/15/10 12:00

Lab Sample ID: 580-18827-3
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[k]fluoranthene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 22:25	1
Benzo[a]pyrene	ND		0.020		ug/L		04/16/10 13:25	04/22/10 22:25	1
Indeno[1,2,3-cd]pyrene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 22:25	1
Dibenz(a,h)anthracene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 22:25	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*96*		*40 - 110*	*04/16/10 13:25*	*04/22/10 22:25*	*1*
2-Fluorobiphenyl	*78*		*50 - 110*	*04/16/10 13:25*	*04/22/10 22:25*	*1*
Terphenyl-d14	*80*		*50 - 135*	*04/16/10 13:25*	*04/22/10 22:25*	*1*

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	**0.31**	**Y**	0.12		mg/L		04/16/10 13:33	04/21/10 09:57	1
Motor Oil (>C24-C36)	ND		0.25		mg/L		04/16/10 13:33	04/21/10 09:57	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*104*		*50 - 150*	*04/16/10 13:33*	*04/21/10 09:57*	*1*

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**0.54**		0.0020		mg/L		04/20/10 14:08	04/21/10 13:35	5
Lead	ND		0.0020		mg/L		04/20/10 14:08	04/21/10 13:35	5
Iron	**1.0**		0.20		mg/L		04/20/10 14:08	04/21/10 13:35	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.90		mg/L			04/15/10 20:50	1
Sulfate	**21**		2.4		mg/L			04/16/10 12:21	2
Total Organic Carbon	**4.7**		1.0		mg/L			04/20/10 13:26	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**320**		5.0		mg/L			04/16/10 12:30	1
Ammonia	**2.0**		0.10		mg/L			04/20/10 08:04	1
Sulfide	ND		1.0		mg/L			04/21/10 15:17	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	**0.35**		0.050		mg/L			04/23/10 11:17	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*109*		*50 - 150*		*04/23/10 11:17*	*1*
Trifluorotoluene (Surr)	*108*		*50 - 150*		*04/23/10 11:17*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	**340**		50		ug/L			04/20/10 07:42	1
Methane	**4100**		10		ug/L			04/20/10 12:46	10
Ethane	ND		10		ug/L			04/20/10 12:46	10
Ethylene	ND		10		ug/L			04/20/10 12:46	10

Client Sample ID: MW-200 (filtered)

Lab Sample ID: 580-18827-4

Date Collected: 04/14/10 09:30

Matrix: Water

Date Received: 04/15/10 12:00

Method: 8270C - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 22:45	1
Chrysene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 22:45	1
Benzo[b]fluoranthene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 22:45	1
Benzo[k]fluoranthene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 22:45	1
Benzo[a]pyrene	ND		0.020		ug/L		04/16/10 13:25	04/22/10 22:45	1
Indeno[1,2,3-cd]pyrene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 22:45	1
Dibenz(a,h)anthracene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 22:45	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*90*		*40 - 110*	*04/16/10 13:25*	*04/22/10 22:45*	*1*
2-Fluorobiphenyl	*82*		*50 - 110*	*04/16/10 13:25*	*04/22/10 22:45*	*1*
Terphenyl-d14	*80*		*50 - 135*	*04/16/10 13:25*	*04/22/10 22:45*	*1*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0020		mg/L		04/20/10 14:08	04/21/10 12:33	5
Iron	**1.0**		0.20		mg/L		04/20/10 14:08	04/21/10 12:33	5
Manganese	**0.56**		0.0020		mg/L		04/20/10 14:08	04/21/10 12:33	5

Client Sample ID: MW-201

Lab Sample ID: 580-18827-5

Date Collected: 04/14/10 11:15

Matrix: Water

Date Received: 04/15/10 12:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.50		ug/L			04/20/10 02:37	1
Toluene	ND		0.50		ug/L			04/20/10 02:37	1
Ethylbenzene	ND		0.50		ug/L			04/20/10 02:37	1
m-Xylene & p-Xylene	ND		1.0		ug/L			04/20/10 02:37	1
o-Xylene	ND		1.0		ug/L			04/20/10 02:37	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Fluorobenzene (Surr)	*100*		*80 - 120*		*04/20/10 02:37*	*1*
Toluene-d8 (Surr)	*102*		*85 - 120*		*04/20/10 02:37*	*1*
Ethylbenzene-d10	*103*		*80 - 120*		*04/20/10 02:37*	*1*
Trifluorotoluene (Surr)	*102*		*80 - 120*		*04/20/10 02:37*	*1*
4-Bromofluorobenzene (Surr)	*104*		*75 - 120*		*04/20/10 02:37*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	**0.014**		0.0099		ug/L		04/16/10 13:25	04/22/10 23:05	1
Chrysene	**0.019**		0.0099		ug/L		04/16/10 13:25	04/22/10 23:05	1
Benzo[b]fluoranthene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 23:05	1
Benzo[k]fluoranthene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 23:05	1
Benzo[a]pyrene	ND		0.020		ug/L		04/16/10 13:25	04/22/10 23:05	1
Indeno[1,2,3-cd]pyrene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 23:05	1
Dibenz(a,h)anthracene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 23:05	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*105*		*40 - 110*	*04/16/10 13:25*	*04/22/10 23:05*	*1*
2-Fluorobiphenyl	*76*		*50 - 110*	*04/16/10 13:25*	*04/22/10 23:05*	*1*
Terphenyl-d14	*78*		*50 - 135*	*04/16/10 13:25*	*04/22/10 23:05*	*1*

Client Sample ID: MW-201

Lab Sample ID: 580-18827-5

Date Collected: 04/14/10 11:15

Matrix: Water

Date Received: 04/15/10 12:00

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	0.17	Y	0.12		mg/L		04/16/10 13:33	04/21/10 10:18	1
Motor Oil (>C24-C36)	ND		0.25		mg/L		04/16/10 13:33	04/21/10 10:18	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*108*		*50 - 150*	*04/16/10 13:33*	*04/21/10 10:18*	*1*

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	0.23		0.0020		mg/L		04/20/10 14:08	04/21/10 13:39	5
Lead	ND		0.0020		mg/L		04/20/10 14:08	04/21/10 13:39	5
Iron	0.50		0.20		mg/L		04/20/10 14:08	04/21/10 13:39	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.90		mg/L			04/15/10 21:39	1
Sulfate	5.3		1.2		mg/L			04/16/10 14:01	1
Total Organic Carbon	5.0		1.0		mg/L			04/20/10 07:26	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	280		5.0		mg/L			04/16/10 12:30	1
Ammonia	0.34		0.10		mg/L			04/20/10 08:09	1
Sulfide	ND		1.0		mg/L			04/21/10 15:17	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	0.15		0.050		mg/L			04/23/10 10:10	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*110*		*50 - 150*		*04/23/10 10:10*	*1*
Trifluorotoluene (Surr)	*107*		*50 - 150*		*04/23/10 10:10*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	610		50		ug/L			04/20/10 07:54	1
Methane	5100		10		ug/L			04/20/10 12:56	10
Ethane	ND		10		ug/L			04/20/10 12:56	10
Ethylene	ND		10		ug/L			04/20/10 12:56	10

Client Sample ID: MW-201 (filtered)

Lab Sample ID: 580-18827-6

Date Collected: 04/14/10 11:15

Matrix: Water

Date Received: 04/15/10 12:00

Method: 8270C - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 23:24	1
Chrysene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 23:24	1
Benzo[b]fluoranthene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 23:24	1
Benzo[k]fluoranthene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 23:24	1
Benzo[a]pyrene	ND		0.020		ug/L		04/16/10 13:25	04/22/10 23:24	1
Indeno[1,2,3-cd]pyrene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 23:24	1
Dibenz(a,h)anthracene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 23:24	1

Client Sample ID: MW-201 (filtered)

Lab Sample ID: 580-18827-6

Date Collected: 04/14/10 11:15

Matrix: Water

Date Received: 04/15/10 12:00

Surrogate	% Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	*80*		*40 - 110*	*04/16/10 13:25*	*04/22/10 23:24*	*1*
2-Fluorobiphenyl	*62*		*50 - 110*	*04/16/10 13:25*	*04/22/10 23:24*	*1*
Terphenyl-d14	*67*		*50 - 135*	*04/16/10 13:25*	*04/22/10 23:24*	*1*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0020		mg/L		04/20/10 14:08	04/21/10 12:26	5
Iron	**0.52**		0.20		mg/L		04/20/10 14:08	04/21/10 12:26	5
Manganese	**0.24**		0.0020		mg/L		04/20/10 14:08	04/21/10 12:26	5

Client Sample ID: MW-202

Lab Sample ID: 580-18827-7

Date Collected: 04/14/10 09:25

Matrix: Water

Date Received: 04/15/10 12:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.50		ug/L			04/20/10 02:59	1
Toluene	ND		0.50		ug/L			04/20/10 02:59	1
Ethylbenzene	ND		0.50		ug/L			04/20/10 02:59	1
m-Xylene & p-Xylene	ND		1.0		ug/L			04/20/10 02:59	1
o-Xylene	ND		1.0		ug/L			04/20/10 02:59	1

Surrogate	% Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Fluorobenzene (Surr)	*100*		*80 - 120*		*04/20/10 02:59*	*1*
Toluene-d8 (Surr)	*102*		*85 - 120*		*04/20/10 02:59*	*1*
Ethylbenzene-d10	*103*		*80 - 120*		*04/20/10 02:59*	*1*
Trifluorotoluene (Surr)	*101*		*80 - 120*		*04/20/10 02:59*	*1*
4-Bromofluorobenzene (Surr)	*104*		*75 - 120*		*04/20/10 02:59*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	**0.013**		0.0099		ug/L		04/16/10 13:25	04/22/10 23:44	1
Chrysene	**0.013**		0.0099		ug/L		04/16/10 13:25	04/22/10 23:44	1
Benzo[b]fluoranthene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 23:44	1
Benzo[k]fluoranthene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 23:44	1
Benzo[a]pyrene	ND		0.020		ug/L		04/16/10 13:25	04/22/10 23:44	1
Indeno[1,2,3-cd]pyrene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 23:44	1
Dibenz(a,h)anthracene	ND		0.0099		ug/L		04/16/10 13:25	04/22/10 23:44	1

Surrogate	% Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	*78*		*40 - 110*	*04/16/10 13:25*	*04/22/10 23:44*	*1*
2-Fluorobiphenyl	*70*		*50 - 110*	*04/16/10 13:25*	*04/22/10 23:44*	*1*
Terphenyl-d14	*70*		*50 - 135*	*04/16/10 13:25*	*04/22/10 23:44*	*1*

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		0.12		mg/L		04/16/10 13:33	04/21/10 10:39	1
Motor Oil (>C24-C36)	ND		0.25		mg/L		04/16/10 13:33	04/21/10 10:39	1

Surrogate	% Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	*108*		*50 - 150*	*04/16/10 13:33*	*04/21/10 10:39*	*1*

Client Sample ID: MW-202

Lab Sample ID: 580-18827-7

Date Collected: 04/14/10 09:25

Matrix: Water

Date Received: 04/15/10 12:00

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	0.11		0.0020		mg/L		04/20/10 14:08	04/21/10 13:50	5
Lead	ND		0.0020		mg/L		04/20/10 14:08	04/21/10 13:50	5
Iron	ND		0.20		mg/L		04/20/10 14:08	04/21/10 13:50	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.90		mg/L			04/15/10 22:29	1
Sulfate	930		120		mg/L			04/16/10 14:18	100
Total Organic Carbon	4.4		1.0		mg/L			04/21/10 06:44	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	310		5.0		mg/L			04/16/10 12:30	1
Ammonia	0.31		0.10		mg/L			04/20/10 08:10	1
Sulfide	1.3		1.0		mg/L			04/21/10 15:17	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	0.10		0.050		mg/L			04/23/10 08:40	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*109*		*50 - 150*		*04/23/10 08:40*	*1*
Trifluorotoluene (Surr)	*110*		*50 - 150*		*04/23/10 08:40*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	350		50		ug/L			04/20/10 08:05	1
Methane	850		10		ug/L			04/20/10 08:28	10
Ethane	ND		10		ug/L			04/20/10 08:28	10
Ethylene	ND		10		ug/L			04/20/10 08:28	10

Client Sample ID: MW-202 (filtered)

Lab Sample ID: 580-18827-8

Date Collected: 04/14/10 09:25

Matrix: Water

Date Received: 04/15/10 12:00

Method: 8270C - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.0099		ug/L		04/16/10 13:25	04/23/10 00:04	1
Chrysene	ND		0.0099		ug/L		04/16/10 13:25	04/23/10 00:04	1
Benzo[b]fluoranthene	ND		0.0099		ug/L		04/16/10 13:25	04/23/10 00:04	1
Benzo[k]fluoranthene	ND		0.0099		ug/L		04/16/10 13:25	04/23/10 00:04	1
Benzo[a]pyrene	ND		0.020		ug/L		04/16/10 13:25	04/23/10 00:04	1
Indeno[1,2,3-cd]pyrene	ND		0.0099		ug/L		04/16/10 13:25	04/23/10 00:04	1
Dibenz(a,h)anthracene	ND		0.0099		ug/L		04/16/10 13:25	04/23/10 00:04	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*81*		*40 - 110*	*04/16/10 13:25*	*04/23/10 00:04*	*1*
2-Fluorobiphenyl	*73*		*50 - 110*	*04/16/10 13:25*	*04/23/10 00:04*	*1*
Terphenyl-d14	*77*		*50 - 135*	*04/16/10 13:25*	*04/23/10 00:04*	*1*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0020		mg/L		04/20/10 14:08	04/21/10 13:06	5
Iron	ND		0.20		mg/L		04/20/10 14:08	04/21/10 13:06	5

Client Sample ID: MW-202 (filtered)

Lab Sample ID: 580-18827-8

Date Collected: 04/14/10 09:25

Matrix: Water

Date Received: 04/15/10 12:00

Method: 6020 - Metals (ICP/MS) - Dissolved (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	0.12		0.0020		mg/L		04/20/10 14:08	04/21/10 13:06	5

Client Sample ID: MW-203

Lab Sample ID: 580-18827-9

Date Collected: 04/14/10 11:15

Matrix: Water

Date Received: 04/15/10 12:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.50		ug/L			04/20/10 03:22	1
Toluene	ND		0.50		ug/L			04/20/10 03:22	1
Ethylbenzene	ND		0.50		ug/L			04/20/10 03:22	1
m-Xylene & p-Xylene	ND		1.0		ug/L			04/20/10 03:22	1
o-Xylene	ND		1.0		ug/L			04/20/10 03:22	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Fluorobenzene (Surr)	*101*		*80 - 120*		*04/20/10 03:22*	*1*
Toluene-d8 (Surr)	*102*		*85 - 120*		*04/20/10 03:22*	*1*
Ethylbenzene-d10	*103*		*80 - 120*		*04/20/10 03:22*	*1*
Trifluorotoluene (Surr)	*103*		*80 - 120*		*04/20/10 03:22*	*1*
4-Bromofluorobenzene (Surr)	*104*		*75 - 120*		*04/20/10 03:22*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.010		ug/L		04/16/10 13:25	04/23/10 00:24	1
Chrysene	ND		0.010		ug/L		04/16/10 13:25	04/23/10 00:24	1
Benzo[b]fluoranthene	ND		0.010		ug/L		04/16/10 13:25	04/23/10 00:24	1
Benzo[k]fluoranthene	ND		0.010		ug/L		04/16/10 13:25	04/23/10 00:24	1
Benzo[a]pyrene	ND		0.020		ug/L		04/16/10 13:25	04/23/10 00:24	1
Indeno[1,2,3-cd]pyrene	ND		0.010		ug/L		04/16/10 13:25	04/23/10 00:24	1
Dibenz(a,h)anthracene	ND		0.010		ug/L		04/16/10 13:25	04/23/10 00:24	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*70*		*40 - 110*	*04/16/10 13:25*	*04/23/10 00:24*	*1*
2-Fluorobiphenyl	*67*		*50 - 110*	*04/16/10 13:25*	*04/23/10 00:24*	*1*
Terphenyl-d14	*69*		*50 - 135*	*04/16/10 13:25*	*04/23/10 00:24*	*1*

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		0.12		mg/L		04/16/10 13:33	04/21/10 11:00	1
Motor Oil (>C24-C36)	ND		0.25		mg/L		04/16/10 13:33	04/21/10 11:00	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*108*		*50 - 150*	*04/16/10 13:33*	*04/21/10 11:00*	*1*

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	0.24		0.0020		mg/L		04/20/10 14:08	04/21/10 13:54	5
Lead	ND		0.0020		mg/L		04/20/10 14:08	04/21/10 13:54	5
Iron	0.44		0.20		mg/L		04/20/10 14:08	04/21/10 13:54	5

Client Sample ID: MW-203

Lab Sample ID: 580-18827-9

Date Collected: 04/14/10 11:15

Matrix: Water

Date Received: 04/15/10 12:00

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.90		mg/L			04/15/10 22:45	1
Sulfate	**890**		120		mg/L			04/16/10 14:51	100
Total Organic Carbon	**4.8**		1.0		mg/L			04/20/10 08:21	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**300**		5.0		mg/L			04/16/10 12:30	1
Ammonia	**0.57**		0.10		mg/L			04/20/10 08:12	1
Sulfide	ND		1.0		mg/L			04/21/10 15:17	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.050		mg/L			04/23/10 09:03	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*108*		*50 - 150*		*04/23/10 09:03*	*1*
Trifluorotoluene (Surr)	*108*		*50 - 150*		*04/23/10 09:03*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	**290**		50		ug/L			04/20/10 08:19	1
Methane	**360**		10		ug/L			04/20/10 08:41	10
Ethane	ND		10		ug/L			04/20/10 08:41	10
Ethylene	ND		10		ug/L			04/20/10 08:41	10

Client Sample ID: MW-203 (filtered)

Lab Sample ID: 580-18827-10

Date Collected: 04/14/10 11:15

Matrix: Water

Date Received: 04/15/10 12:00

Method: 8270C - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.0097		ug/L		04/16/10 13:25	04/23/10 00:44	1
Chrysene	ND		0.0097		ug/L		04/16/10 13:25	04/23/10 00:44	1
Benzo[b]fluoranthene	ND		0.0097		ug/L		04/16/10 13:25	04/23/10 00:44	1
Benzo[k]fluoranthene	ND		0.0097		ug/L		04/16/10 13:25	04/23/10 00:44	1
Benzo[a]pyrene	ND		0.019		ug/L		04/16/10 13:25	04/23/10 00:44	1
Indeno[1,2,3-cd]pyrene	ND		0.0097		ug/L		04/16/10 13:25	04/23/10 00:44	1
Dibenz(a,h)anthracene	ND		0.0097		ug/L		04/16/10 13:25	04/23/10 00:44	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*82*		*40 - 110*	*04/16/10 13:25*	*04/23/10 00:44*	*1*
2-Fluorobiphenyl	*69*		*50 - 110*	*04/16/10 13:25*	*04/23/10 00:44*	*1*
Terphenyl-d14	*75*		*50 - 135*	*04/16/10 13:25*	*04/23/10 00:44*	*1*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0020		mg/L		04/20/10 14:08	04/21/10 13:10	5
Iron	**0.48**		0.20		mg/L		04/20/10 14:08	04/21/10 13:10	5
Manganese	**0.26**		0.0020		mg/L		04/20/10 14:08	04/21/10 13:10	5

Client Sample ID: MW-204

Lab Sample ID: 580-18827-11

Date Collected: 04/14/10 13:15

Matrix: Water

Date Received: 04/15/10 12:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.1		0.50		ug/L			04/23/10 11:40	1
Toluene	2.1		0.50		ug/L			04/23/10 11:40	1
Ethylbenzene	ND		0.50		ug/L			04/23/10 11:40	1
m-Xylene & p-Xylene	3.6		1.0		ug/L			04/23/10 11:40	1
o-Xylene	ND		1.0		ug/L			04/23/10 11:40	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Fluorobenzene (Surr)	*99*		*80 - 120*		*04/23/10 11:40*	*1*
Toluene-d8 (Surr)	*102*		*85 - 120*		*04/23/10 11:40*	*1*
Ethylbenzene-d10	*104*		*80 - 120*		*04/23/10 11:40*	*1*
Trifluorotoluene (Surr)	*109*		*80 - 120*		*04/23/10 11:40*	*1*
4-Bromofluorobenzene (Surr)	*109*		*75 - 120*		*04/23/10 11:40*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.0097		ug/L		04/16/10 13:25	04/23/10 01:03	1
Chrysene	ND		0.0097		ug/L		04/16/10 13:25	04/23/10 01:03	1
Benzo[b]fluoranthene	ND		0.0097		ug/L		04/16/10 13:25	04/23/10 01:03	1
Benzo[k]fluoranthene	ND		0.0097		ug/L		04/16/10 13:25	04/23/10 01:03	1
Benzo[a]pyrene	ND		0.019		ug/L		04/16/10 13:25	04/23/10 01:03	1
Indeno[1,2,3-cd]pyrene	ND		0.0097		ug/L		04/16/10 13:25	04/23/10 01:03	1
Dibenz(a,h)anthracene	ND		0.0097		ug/L		04/16/10 13:25	04/23/10 01:03	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*91*		*40 - 110*	*04/16/10 13:25*	*04/23/10 01:03*	*1*
2-Fluorobiphenyl	*70*		*50 - 110*	*04/16/10 13:25*	*04/23/10 01:03*	*1*
Terphenyl-d14	*62*		*50 - 135*	*04/16/10 13:25*	*04/23/10 01:03*	*1*

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	1.2	Y	0.13		mg/L		04/16/10 13:33	04/21/10 11:22	1
Motor Oil (>C24-C36)	0.84	Z	0.26		mg/L		04/16/10 13:33	04/21/10 11:22	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*109*		*50 - 150*	*04/16/10 13:33*	*04/21/10 11:22*	*1*

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	0.84		0.0020		mg/L		04/20/10 14:08	04/21/10 13:57	5
Lead	ND		0.0020		mg/L		04/20/10 14:08	04/21/10 13:57	5
Iron	4.0		0.20		mg/L		04/20/10 14:08	04/21/10 13:57	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.90		mg/L			04/15/10 23:01	1
Sulfate	ND		1.2		mg/L			04/16/10 20:56	1
Total Organic Carbon	6.1		1.0		mg/L			04/20/10 08:49	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	230		5.0		mg/L			04/16/10 12:30	1
Ammonia	0.93		0.10		mg/L			04/29/10 17:30	1
Sulfide	ND		1.0		mg/L			04/21/10 15:17	1

Client Sample ID: MW-204

Lab Sample ID: 580-18827-11

Date Collected: 04/14/10 13:15

Matrix: Water

Date Received: 04/15/10 12:00

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	1.5		0.050		mg/L			04/23/10 11:40	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*116*		*50 - 150*		*04/23/10 11:40*	*1*
Trifluorotoluene (Surr)	*112*		*50 - 150*		*04/23/10 11:40*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	710		50		ug/L			04/20/10 08:31	1
Methane	3300		5.0		ug/L			04/20/10 08:52	5
Ethane	ND		5.0		ug/L			04/20/10 08:52	5
Ethylene	ND		5.0		ug/L			04/20/10 08:52	5

Client Sample ID: MW-204 (filtered)

Lab Sample ID: 580-18827-12

Date Collected: 04/14/10 13:15

Matrix: Water

Date Received: 04/15/10 12:00

Method: 8270C - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.010		ug/L		04/16/10 13:25	04/23/10 01:23	1
Chrysene	ND		0.010		ug/L		04/16/10 13:25	04/23/10 01:23	1
Benzo[b]fluoranthene	ND		0.010		ug/L		04/16/10 13:25	04/23/10 01:23	1
Benzo[k]fluoranthene	ND		0.010		ug/L		04/16/10 13:25	04/23/10 01:23	1
Benzo[a]pyrene	ND		0.020		ug/L		04/16/10 13:25	04/23/10 01:23	1
Indeno[1,2,3-cd]pyrene	ND		0.010		ug/L		04/16/10 13:25	04/23/10 01:23	1
Dibenz(a,h)anthracene	ND		0.010		ug/L		04/16/10 13:25	04/23/10 01:23	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*66*		*40 - 110*	*04/16/10 13:25*	*04/23/10 01:23*	*1*
2-Fluorobiphenyl	*90*		*50 - 110*	*04/16/10 13:25*	*04/23/10 01:23*	*1*
Terphenyl-d14	*87*		*50 - 135*	*04/16/10 13:25*	*04/23/10 01:23*	*1*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0020		mg/L		04/20/10 14:08	04/21/10 13:13	5
Iron	3.9		0.20		mg/L		04/20/10 14:08	04/21/10 13:13	5
Manganese	0.87		0.0020		mg/L		04/20/10 14:08	04/21/10 13:13	5

Client Sample ID: MW-205

Lab Sample ID: 580-18827-13

Date Collected: 04/14/10 13:00

Matrix: Water

Date Received: 04/15/10 12:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.50		ug/L			04/20/10 04:07	1
Toluene	ND		0.50		ug/L			04/20/10 04:07	1
Ethylbenzene	ND		0.50		ug/L			04/20/10 04:07	1
m-Xylene & p-Xylene	ND		1.0		ug/L			04/20/10 04:07	1
o-Xylene	ND		1.0		ug/L			04/20/10 04:07	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Fluorobenzene (Surr)	*100*		*80 - 120*		*04/20/10 04:07*	*1*

Client Sample ID: MW-205

Date Collected: 04/14/10 13:00
Date Received: 04/15/10 12:00

Lab Sample ID: 580-18827-13

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	% Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	*102*		*85 - 120*		*04/20/10 04:07*	*1*
Ethylbenzene-d10	*103*		*80 - 120*		*04/20/10 04:07*	*1*
Trifluorotoluene (Surr)	*102*		*80 - 120*		*04/20/10 04:07*	*1*
4-Bromofluorobenzene (Surr)	*104*		*75 - 120*		*04/20/10 04:07*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.013		ug/L		04/16/10 13:25	04/23/10 01:43	1
Chrysene	ND		0.013		ug/L		04/16/10 13:25	04/23/10 01:43	1
Benzo[b]fluoranthene	ND		0.013		ug/L		04/16/10 13:25	04/23/10 01:43	1
Benzo[k]fluoranthene	ND		0.013		ug/L		04/16/10 13:25	04/23/10 01:43	1
Benzo[a]pyrene	ND		0.026		ug/L		04/16/10 13:25	04/23/10 01:43	1
Indeno[1,2,3-cd]pyrene	ND		0.013		ug/L		04/16/10 13:25	04/23/10 01:43	1
Dibenz(a,h)anthracene	ND		0.013		ug/L		04/16/10 13:25	04/23/10 01:43	1

Surrogate	% Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	*70*		*40 - 110*	*04/16/10 13:25*	*04/23/10 01:43*	*1*
2-Fluorobiphenyl	*62*		*50 - 110*	*04/16/10 13:25*	*04/23/10 01:43*	*1*
Terphenyl-d14	*67*		*50 - 135*	*04/16/10 13:25*	*04/23/10 01:43*	*1*

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		0.12		mg/L		04/16/10 13:33	04/21/10 11:43	1
Motor Oil (>C24-C36)	ND		0.25		mg/L		04/16/10 13:33	04/21/10 11:43	1

Surrogate	% Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	*112*		*50 - 150*	*04/16/10 13:33*	*04/21/10 11:43*	*1*

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**0.93**		0.0020		mg/L		04/20/10 14:08	04/21/10 14:01	5
Lead	ND		0.0020		mg/L		04/20/10 14:08	04/21/10 14:01	5
Iron	**0.49**		0.20		mg/L		04/20/10 14:08	04/21/10 14:01	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.90		mg/L			04/15/10 23:18	1
Sulfate	**7.5**		1.2		mg/L			04/16/10 21:13	1
Total Organic Carbon	**3.1**		1.0		mg/L			04/20/10 11:35	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**270**		5.0		mg/L			04/16/10 12:30	1
Ammonia	**3.5**		0.10		mg/L			04/20/10 08:13	1
Sulfide	ND		1.0		mg/L			04/21/10 15:17	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	**0.051**		0.050		mg/L			04/23/10 09:25	1

Surrogate	% Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*109*		*50 - 150*		*04/23/10 09:25*	*1*
Trifluorotoluene (Surr)	*105*		*50 - 150*		*04/23/10 09:25*	*1*

Client Sample ID: MW-205

Lab Sample ID: 580-18827-13

Date Collected: 04/14/10 13:00

Matrix: Water

Date Received: 04/15/10 12:00

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	2700		50		ug/L			04/20/10 08:58	1
Methane	1600		1.0		ug/L			04/20/10 09:14	1
Ethane	ND		1.0		ug/L			04/20/10 09:14	1
Ethylene	ND		1.0		ug/L			04/20/10 09:14	1

Client Sample ID: MW-205 (filtered)

Lab Sample ID: 580-18827-14

Date Collected: 04/14/10 13:00

Matrix: Water

Date Received: 04/15/10 12:00

Method: 8270C - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.0095		ug/L		04/16/10 13:25	04/23/10 02:03	1
Chrysene	ND		0.0095		ug/L		04/16/10 13:25	04/23/10 02:03	1
Benzo[b]fluoranthene	ND		0.0095		ug/L		04/16/10 13:25	04/23/10 02:03	1
Benzo[k]fluoranthene	ND		0.0095		ug/L		04/16/10 13:25	04/23/10 02:03	1
Benzo[a]pyrene	ND		0.019		ug/L		04/16/10 13:25	04/23/10 02:03	1
Indeno[1,2,3-cd]pyrene	ND		0.0095		ug/L		04/16/10 13:25	04/23/10 02:03	1
Dibenz(a,h)anthracene	ND		0.0095		ug/L		04/16/10 13:25	04/23/10 02:03	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*84*		*40 - 110*	*04/16/10 13:25*	*04/23/10 02:03*	*1*
2-Fluorobiphenyl	*72*		*50 - 110*	*04/16/10 13:25*	*04/23/10 02:03*	*1*
Terphenyl-d14	*81*		*50 - 135*	*04/16/10 13:25*	*04/23/10 02:03*	*1*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0020		mg/L		04/20/10 14:08	04/21/10 13:17	5
Iron	0.53		0.20		mg/L		04/20/10 14:08	04/21/10 13:17	5
Manganese	1.0		0.0020		mg/L		04/20/10 14:08	04/21/10 13:17	5

Client Sample ID: MW-206

Lab Sample ID: 580-18827-15

Date Collected: 04/14/10 08:50

Matrix: Water

Date Received: 04/15/10 12:00

Method: 8270C - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.010		ug/L		04/16/10 13:25	04/23/10 02:23	1
Chrysene	ND		0.010		ug/L		04/16/10 13:25	04/23/10 02:23	1
Benzo[b]fluoranthene	ND		0.010		ug/L		04/16/10 13:25	04/23/10 02:23	1
Benzo[k]fluoranthene	ND		0.010		ug/L		04/16/10 13:25	04/23/10 02:23	1
Benzo[a]pyrene	ND		0.020		ug/L		04/16/10 13:25	04/23/10 02:23	1
Indeno[1,2,3-cd]pyrene	ND		0.010		ug/L		04/16/10 13:25	04/23/10 02:23	1
Dibenz(a,h)anthracene	ND		0.010		ug/L		04/16/10 13:25	04/23/10 02:23	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*69*		*40 - 110*	*04/16/10 13:25*	*04/23/10 02:23*	*1*
2-Fluorobiphenyl	*69*		*50 - 110*	*04/16/10 13:25*	*04/23/10 02:23*	*1*
Terphenyl-d14	*71*		*50 - 135*	*04/16/10 13:25*	*04/23/10 02:23*	*1*

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		0.12		mg/L		04/16/10 13:33	04/21/10 12:04	1

Client Sample ID: MW-206

Lab Sample ID: 580-18827-15

Date Collected: 04/14/10 08:50

Matrix: Water

Date Received: 04/15/10 12:00

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil (>C24-C36)	ND		0.24		mg/L		04/16/10 13:33	04/21/10 12:04	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*115*		*50 - 150*	*04/16/10 13:33*	*04/21/10 12:04*	*1*

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**0.24**		0.0020		mg/L		04/20/10 14:08	04/21/10 14:04	5
Lead	ND		0.0020		mg/L		04/20/10 14:08	04/21/10 14:04	5
Iron	**0.66**		0.20		mg/L		04/20/10 14:08	04/21/10 14:04	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.90		mg/L			04/15/10 23:34	1
Sulfate	**1800**		120		mg/L			04/16/10 21:46	100
Total Organic Carbon	**2.2**		1.0		mg/L			04/19/10 21:01	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**170**		5.0		mg/L			04/16/10 12:30	1
Ammonia	**0.95**		0.10		mg/L			04/20/10 08:23	1
Sulfide	**1.1**		1.0		mg/L			04/21/10 15:17	1

Client Sample ID: MW-206 (filtered)

Lab Sample ID: 580-18827-16

Date Collected: 04/14/10 08:50

Matrix: Water

Date Received: 04/15/10 12:00

Method: 8270C - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.0098		ug/L		04/16/10 13:25	04/26/10 19:55	1
Chrysene	ND		0.0098		ug/L		04/16/10 13:25	04/26/10 19:55	1
Benzo[b]fluoranthene	ND		0.0098		ug/L		04/16/10 13:25	04/26/10 19:55	1
Benzo[k]fluoranthene	ND		0.0098		ug/L		04/16/10 13:25	04/26/10 19:55	1
Benzo[a]pyrene	ND		0.020		ug/L		04/16/10 13:25	04/26/10 19:55	1
Indeno[1,2,3-cd]pyrene	ND		0.0098		ug/L		04/16/10 13:25	04/26/10 19:55	1
Dibenz(a,h)anthracene	ND		0.0098		ug/L		04/16/10 13:25	04/26/10 19:55	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*98*		*40 - 110*	*04/16/10 13:25*	*04/26/10 19:55*	*1*
2-Fluorobiphenyl	*80*		*50 - 110*	*04/16/10 13:25*	*04/26/10 19:55*	*1*
Terphenyl-d14	*74*		*50 - 135*	*04/16/10 13:25*	*04/26/10 19:55*	*1*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0020		mg/L		04/20/10 14:08	04/21/10 13:21	5
Iron	**0.53**		0.20		mg/L		04/20/10 14:08	04/21/10 13:21	5
Manganese	**0.34**		0.0020		mg/L		04/20/10 14:08	04/21/10 13:21	5

Client Sample ID: MW-207

Date Collected: 04/14/10 09:50
Date Received: 04/15/10 12:00

Lab Sample ID: 580-18827-17

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.50		ug/L			04/20/10 04:29	1
Toluene	ND		0.50		ug/L			04/20/10 04:29	1
Ethylbenzene	ND		0.50		ug/L			04/20/10 04:29	1
m-Xylene & p-Xylene	ND		1.0		ug/L			04/20/10 04:29	1
o-Xylene	ND		1.0		ug/L			04/20/10 04:29	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Fluorobenzene (Surr)	*100*		*80 - 120*		*04/20/10 04:29*	*1*
Toluene-d8 (Surr)	*102*		*85 - 120*		*04/20/10 04:29*	*1*
Ethylbenzene-d10	*102*		*80 - 120*		*04/20/10 04:29*	*1*
Trifluorotoluene (Surr)	*101*		*80 - 120*		*04/20/10 04:29*	*1*
4-Bromofluorobenzene (Surr)	*103*		*75 - 120*		*04/20/10 04:29*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.0097		ug/L		04/16/10 13:25	04/23/10 03:02	1
Chrysene	ND		0.0097		ug/L		04/16/10 13:25	04/23/10 03:02	1
Benzo[b]fluoranthene	ND		0.0097		ug/L		04/16/10 13:25	04/23/10 03:02	1
Benzo[k]fluoranthene	ND		0.0097		ug/L		04/16/10 13:25	04/23/10 03:02	1
Benzo[a]pyrene	ND		0.019		ug/L		04/16/10 13:25	04/23/10 03:02	1
Indeno[1,2,3-cd]pyrene	ND		0.0097		ug/L		04/16/10 13:25	04/23/10 03:02	1
Dibenz(a,h)anthracene	ND		0.0097		ug/L		04/16/10 13:25	04/23/10 03:02	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*78*		*40 - 110*	*04/16/10 13:25*	*04/23/10 03:02*	*1*
2-Fluorobiphenyl	*79*		*50 - 110*	*04/16/10 13:25*	*04/23/10 03:02*	*1*
Terphenyl-d14	*74*		*50 - 135*	*04/16/10 13:25*	*04/23/10 03:02*	*1*

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		0.12		mg/L		04/16/10 13:33	04/21/10 12:25	1
Motor Oil (>C24-C36)	ND		0.24		mg/L		04/16/10 13:33	04/21/10 12:25	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*103*		*50 - 150*	*04/16/10 13:33*	*04/21/10 12:25*	*1*

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**0.041**		0.0020		mg/L		04/20/10 14:08	04/21/10 14:08	5
Lead	ND		0.0020		mg/L		04/20/10 14:08	04/21/10 14:08	5
Iron	ND		0.20		mg/L		04/20/10 14:08	04/21/10 14:08	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.90		mg/L			04/15/10 23:51	1
Sulfate	**1400**		120		mg/L			04/16/10 22:19	100
Total Organic Carbon	**2.4**		1.0		mg/L			04/19/10 23:22	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**230**		5.0		mg/L			04/16/10 12:30	1
Ammonia	ND		0.10		mg/L			04/20/10 08:24	1
Sulfide	ND		1.0		mg/L			04/21/10 15:17	1

Client Sample ID: MW-207

Lab Sample ID: 580-18827-17

Date Collected: 04/14/10 09:50

Matrix: Water

Date Received: 04/15/10 12:00

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.050		mg/L			04/20/10 04:29	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*111*		*50 - 150*		*04/20/10 04:29*	*1*
Trifluorotoluene (Surr)	*108*		*50 - 150*		*04/20/10 04:29*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	**740**		50		ug/L			04/20/10 09:14	1
Methane	**780**		5.0		ug/L			04/20/10 09:29	5
Ethane	ND		5.0		ug/L			04/20/10 09:29	5
Ethylene	ND		5.0		ug/L			04/20/10 09:29	5

Client Sample ID: MW-207 (filtered)

Lab Sample ID: 580-18827-18

Date Collected: 04/14/10 09:50

Matrix: Water

Date Received: 04/15/10 12:00

Method: 8270C - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.0094		ug/L		04/16/10 13:25	04/23/10 03:22	1
Chrysene	ND		0.0094		ug/L		04/16/10 13:25	04/23/10 03:22	1
Benzo[b]fluoranthene	ND		0.0094		ug/L		04/16/10 13:25	04/23/10 03:22	1
Benzo[k]fluoranthene	ND		0.0094		ug/L		04/16/10 13:25	04/23/10 03:22	1
Benzo[a]pyrene	ND		0.019		ug/L		04/16/10 13:25	04/23/10 03:22	1
Indeno[1,2,3-cd]pyrene	ND		0.0094		ug/L		04/16/10 13:25	04/23/10 03:22	1
Dibenz(a,h)anthracene	ND		0.0094		ug/L		04/16/10 13:25	04/23/10 03:22	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*83*		*40 - 110*	*04/16/10 13:25*	*04/23/10 03:22*	*1*
2-Fluorobiphenyl	*78*		*50 - 110*	*04/16/10 13:25*	*04/23/10 03:22*	*1*
Terphenyl-d14	*74*		*50 - 135*	*04/16/10 13:25*	*04/23/10 03:22*	*1*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0020		mg/L		04/20/10 14:08	04/21/10 13:24	5
Iron	ND		0.20		mg/L		04/20/10 14:08	04/21/10 13:24	5
Manganese	**0.041**		0.0020		mg/L		04/20/10 14:08	04/21/10 13:24	5

Client Sample ID: MW-30

Lab Sample ID: 580-18827-19

Date Collected: 04/14/10 15:00

Matrix: Water

Date Received: 04/15/10 12:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.50		ug/L			04/20/10 04:51	1
Toluene	ND		0.50		ug/L			04/20/10 04:51	1
Ethylbenzene	ND		0.50		ug/L			04/20/10 04:51	1
m-Xylene & p-Xylene	ND		1.0		ug/L			04/20/10 04:51	1
o-Xylene	ND		1.0		ug/L			04/20/10 04:51	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Fluorobenzene (Surr)	*100*		*80 - 120*		*04/20/10 04:51*	*1*

Client Sample ID: MW-30

Lab Sample ID: 580-18827-19

Date Collected: 04/14/10 15:00

Matrix: Water

Date Received: 04/15/10 12:00

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*85 - 120*		*04/20/10 04:51*	*1*
Ethylbenzene-d10	*102*		*80 - 120*		*04/20/10 04:51*	*1*
Trifluorotoluene (Surr)	*101*		*80 - 120*		*04/20/10 04:51*	*1*
4-Bromofluorobenzene (Surr)	*103*		*75 - 120*		*04/20/10 04:51*	*1*

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		0.13		mg/L		04/16/10 13:33	04/21/10 15:59	1
Motor Oil (>C24-C36)	ND		0.27		mg/L		04/16/10 13:33	04/21/10 15:59	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*103*		*50 - 150*	*04/16/10 13:33*	*04/21/10 15:59*	*1*

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**0.52**		0.0020		mg/L		04/20/10 14:08	04/21/10 14:11	5
Lead	ND		0.0020		mg/L		04/20/10 14:08	04/21/10 14:11	5
Iron	**2.8**		0.20		mg/L		04/20/10 14:08	04/21/10 14:11	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.90		mg/L			04/16/10 00:07	1
Sulfate	**180**		12		mg/L			04/16/10 22:36	10
Total Organic Carbon	**5.9**		1.0		mg/L			04/19/10 23:51	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**220**		5.0		mg/L			04/16/10 12:30	1
Ammonia	**0.31**		0.10		mg/L			04/20/10 08:26	1
Sulfide	**3.3**		1.0		mg/L			04/21/10 15:17	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.050		mg/L			04/23/10 09:48	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*110*		*50 - 150*		*04/23/10 09:48*	*1*
Trifluorotoluene (Surr)	*105*		*50 - 150*		*04/23/10 09:48*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	**630**		50		ug/L			04/20/10 09:26	1
Methane	**260**		1.0		ug/L			04/20/10 09:40	1
Ethane	ND		1.0		ug/L			04/20/10 09:40	1
Ethylene	ND		1.0		ug/L			04/20/10 09:40	1

Client Sample ID: MW-30 (filtered)

Lab Sample ID: 580-18827-20

Date Collected: 04/14/10 15:00

Matrix: Water

Date Received: 04/15/10 12:00

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**2.7**		0.20		mg/L		04/20/10 14:08	04/21/10 13:28	5

Client Sample ID: MW-30 (filtered)

Lab Sample ID: 580-18827-20

Date Collected: 04/14/10 15:00

Matrix: Water

Date Received: 04/15/10 12:00

Method: 6020 - Metals (ICP/MS) - Dissolved (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	0.51		0.0020		mg/L		04/20/10 14:08	04/21/10 13:28	5

Client Sample ID: BD-1

Lab Sample ID: 580-18827-21

Date Collected: 04/14/10 00:00

Matrix: Water

Date Received: 04/15/10 12:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.1		0.50		ug/L			04/23/10 12:02	1
Toluene	2.1		0.50		ug/L			04/23/10 12:02	1
Ethylbenzene	ND		0.50		ug/L			04/23/10 12:02	1
m-Xylene & p-Xylene	3.7		1.0		ug/L			04/23/10 12:02	1
o-Xylene	ND		1.0		ug/L			04/23/10 12:02	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Fluorobenzene (Surr)	*99*		*80 - 120*		*04/23/10 12:02*	*1*
Toluene-d8 (Surr)	*102*		*85 - 120*		*04/23/10 12:02*	*1*
Ethylbenzene-d10	*104*		*80 - 120*		*04/23/10 12:02*	*1*
Trifluorotoluene (Surr)	*109*		*80 - 120*		*04/23/10 12:02*	*1*
4-Bromofluorobenzene (Surr)	*108*		*75 - 120*		*04/23/10 12:02*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.0099		ug/L		04/16/10 13:25	04/23/10 03:42	1
Chrysene	0.0099		0.0099		ug/L		04/16/10 13:25	04/23/10 03:42	1
Benzo[b]fluoranthene	ND		0.0099		ug/L		04/16/10 13:25	04/23/10 03:42	1
Benzo[k]fluoranthene	ND		0.0099		ug/L		04/16/10 13:25	04/23/10 03:42	1
Benzo[a]pyrene	ND		0.020		ug/L		04/16/10 13:25	04/23/10 03:42	1
Indeno[1,2,3-cd]pyrene	ND		0.0099		ug/L		04/16/10 13:25	04/23/10 03:42	1
Dibenz(a,h)anthracene	ND		0.0099		ug/L		04/16/10 13:25	04/23/10 03:42	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*95*		*40 - 110*	*04/16/10 13:25*	*04/23/10 03:42*	*1*
2-Fluorobiphenyl	*56*		*50 - 110*	*04/16/10 13:25*	*04/23/10 03:42*	*1*
Terphenyl-d14	*86*		*50 - 135*	*04/16/10 13:25*	*04/23/10 03:42*	*1*

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	1.1	Y	0.12		mg/L		04/16/10 13:33	04/21/10 16:20	1
Motor Oil (>C24-C36)	ND		0.25		mg/L		04/16/10 13:33	04/21/10 16:20	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*106*		*50 - 150*	*04/16/10 13:33*	*04/21/10 16:20*	*1*

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	0.83		0.0020		mg/L		04/20/10 14:08	04/21/10 14:15	5
Lead	ND		0.0020		mg/L		04/20/10 14:08	04/21/10 14:15	5
Iron	3.9		0.20		mg/L		04/20/10 14:08	04/21/10 14:15	5

Client Sample ID: BD-1

Lab Sample ID: 580-18827-21

Date Collected: 04/14/10 00:00

Matrix: Water

Date Received: 04/15/10 12:00

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.90		mg/L			04/15/10 20:17	1
Sulfate	ND		1.2		mg/L			04/16/10 22:52	1
Total Organic Carbon	**5.1**		1.0		mg/L			04/20/10 06:02	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**240**		5.0		mg/L			04/16/10 12:30	1
Ammonia	**1.1**		0.10		mg/L			04/20/10 08:28	1
Sulfide	**4.1**		1.0		mg/L			04/21/10 15:17	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	**1.5**		0.050		mg/L			04/23/10 12:02	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*116*		*50 - 150*		*04/23/10 12:02*	*1*
Trifluorotoluene (Surr)	*112*		*50 - 150*		*04/23/10 12:02*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	**670**		50		ug/L			04/20/10 09:38	1
Methane	**3300**		10		ug/L			04/20/10 13:06	10
Ethane	ND		10		ug/L			04/20/10 13:06	10
Ethylene	ND		10		ug/L			04/20/10 13:06	10

Client Sample ID: BD-1 (filtered)

Lab Sample ID: 580-18827-22

Date Collected: 04/14/10 00:00

Matrix: Water

Date Received: 04/15/10 12:00

Method: 8270C - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.0099		ug/L		04/16/10 13:25	04/23/10 04:02	1
Chrysene	ND		0.0099		ug/L		04/16/10 13:25	04/23/10 04:02	1
Benzo[b]fluoranthene	ND		0.0099		ug/L		04/16/10 13:25	04/23/10 04:02	1
Benzo[k]fluoranthene	ND		0.0099		ug/L		04/16/10 13:25	04/23/10 04:02	1
Benzo[a]pyrene	ND		0.020		ug/L		04/16/10 13:25	04/23/10 04:02	1
Indeno[1,2,3-cd]pyrene	ND		0.0099		ug/L		04/16/10 13:25	04/23/10 04:02	1
Dibenz(a,h)anthracene	ND		0.0099		ug/L		04/16/10 13:25	04/23/10 04:02	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*92*		*40 - 110*	*04/16/10 13:25*	*04/23/10 04:02*	*1*
2-Fluorobiphenyl	*61*		*50 - 110*	*04/16/10 13:25*	*04/23/10 04:02*	*1*
Terphenyl-d14	*74*		*50 - 135*	*04/16/10 13:25*	*04/23/10 04:02*	*1*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0020		mg/L		04/20/10 14:08	04/21/10 13:32	5
Iron	**4.0**		0.20		mg/L		04/20/10 14:08	04/21/10 13:32	5
Manganese	**0.85**		0.0020		mg/L		04/20/10 14:08	04/21/10 13:32	5

Client Sample ID: Trip Blank

Lab Sample ID: 580-18827-23

Date Collected: 04/14/10 00:00

Matrix: Water

Date Received: 04/15/10 12:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.50		ug/L			04/20/10 02:14	1
Toluene	ND		0.50		ug/L			04/20/10 02:14	1
Ethylbenzene	ND		0.50		ug/L			04/20/10 02:14	1
m-Xylene & p-Xylene	ND		1.0		ug/L			04/20/10 02:14	1
o-Xylene	ND		1.0		ug/L			04/20/10 02:14	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Fluorobenzene (Surr)	*100*		*80 - 120*		*04/20/10 02:14*	*1*
Toluene-d8 (Surr)	*101*		*85 - 120*		*04/20/10 02:14*	*1*
Ethylbenzene-d10	*101*		*80 - 120*		*04/20/10 02:14*	*1*
Trifluorotoluene (Surr)	*101*		*80 - 120*		*04/20/10 02:14*	*1*
4-Bromofluorobenzene (Surr)	*103*		*75 - 120*		*04/20/10 02:14*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.050		mg/L			04/20/10 02:14	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*111*		*50 - 150*		*04/20/10 02:14*	*1*
Trifluorotoluene (Surr)	*107*		*50 - 150*		*04/20/10 02:14*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-62013/6
Matrix: Water
Analysis Batch: 62013

Client Sample ID: MB 580-62013/6
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.50		ug/L			04/19/10 21:23	1
Toluene	0.657		0.50		ug/L			04/19/10 21:23	1
Ethylbenzene	ND		0.50		ug/L			04/19/10 21:23	1
m-Xylene & p-Xylene	ND		1.0		ug/L			04/19/10 21:23	1
o-Xylene	ND		1.0		ug/L			04/19/10 21:23	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Fluorobenzene (Surr)	*102*		*80 - 120*		*04/19/10 21:23*	*1*
Toluene-d8 (Surr)	*103*		*85 - 120*		*04/19/10 21:23*	*1*
Ethylbenzene-d10	*103*		*80 - 120*		*04/19/10 21:23*	*1*
Trifluorotoluene (Surr)	*102*		*80 - 120*		*04/19/10 21:23*	*1*
4-Bromofluorobenzene (Surr)	*105*		*75 - 120*		*04/19/10 21:23*	*1*

Lab Sample ID: LCS 580-62013/7
Matrix: Water
Analysis Batch: 62013

Client Sample ID: LCS 580-62013/7
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits
Benzene	25.0	26.1		ug/L	104	80 - 120
Toluene	25.1	26.5		ug/L	106	75 - 120
Ethylbenzene	25.0	25.9		ug/L	103	75 - 125
m-Xylene & p-Xylene	50.1	52.0		ug/L	104	75 - 130
o-Xylene	25.0	26.2		ug/L	105	80 - 120

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
Fluorobenzene (Surr)	*101*		*80 - 120*
Toluene-d8 (Surr)	*101*		*85 - 120*
Ethylbenzene-d10	*102*		*80 - 120*
Trifluorotoluene (Surr)	*98*		*80 - 120*
4-Bromofluorobenzene (Surr)	*104*		*75 - 120*

Lab Sample ID: 580-18827-3 MS
Matrix: Water
Analysis Batch: 62013

Client Sample ID: MW-200
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	% Rec.	% Rec. Limits
Benzene	ND		20.1	22.2		ug/L	110	80 - 120
Toluene	ND		20.1	22.6		ug/L	110	75 - 120
Ethylbenzene	0.54		20.1	22.5		ug/L	110	75 - 125
m-Xylene & p-Xylene	ND		40.2	45.5		ug/L	111	75 - 130
o-Xylene	ND		20.1	22.4		ug/L	110	80 - 120

Surrogate	*MS % Recovery*	*MS Qualifier*	*Limits*
Fluorobenzene (Surr)	*100*		*80 - 120*
Toluene-d8 (Surr)	*102*		*85 - 120*
Ethylbenzene-d10	*102*		*80 - 120*
Trifluorotoluene (Surr)	*104*		*80 - 120*
4-Bromofluorobenzene (Surr)	*104*		*75 - 120*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 580-18827-3 MSD
Matrix: Water
Analysis Batch: 62013

Client Sample ID: MW-200
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	% Rec.	% Rec. Limits	RPD	RPD Limit
Benzene	ND		20.1	22.1		ug/L	109	80 - 120	0	30
Toluene	ND		20.1	22.7		ug/L	110	75 - 120	1	30
Ethylbenzene	0.54		20.1	22.6		ug/L	110	75 - 125	0	30
m-Xylene & p-Xylene	ND		40.2	45.5		ug/L	111	75 - 130	0	30
o-Xylene	ND		20.1	22.3		ug/L	110	80 - 120	0	30

Surrogate	*MSD % Recovery*	*MSD Qualifier*	*Limits*
Fluorobenzene (Surr)	*100*		*80 - 120*
Toluene-d8 (Surr)	*101*		*85 - 120*
Ethylbenzene-d10	*103*		*80 - 120*
Trifluorotoluene (Surr)	*103*		*80 - 120*
4-Bromofluorobenzene (Surr)	*104*		*75 - 120*

Lab Sample ID: MB 580-62306/4
Matrix: Water
Analysis Batch: 62306

Client Sample ID: MB 580-62306/4
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.50		ug/L			04/23/10 07:10	1
Toluene	ND		0.50		ug/L			04/23/10 07:10	1
Ethylbenzene	ND		0.50		ug/L			04/23/10 07:10	1
m-Xylene & p-Xylene	ND		1.0		ug/L			04/23/10 07:10	1
o-Xylene	ND		1.0		ug/L			04/23/10 07:10	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Fluorobenzene (Surr)	*100*		*80 - 120*		*04/23/10 07:10*	*1*
Toluene-d8 (Surr)	*103*		*85 - 120*		*04/23/10 07:10*	*1*
Ethylbenzene-d10	*105*		*80 - 120*		*04/23/10 07:10*	*1*
Trifluorotoluene (Surr)	*108*		*80 - 120*		*04/23/10 07:10*	*1*
4-Bromofluorobenzene (Surr)	*107*		*75 - 120*		*04/23/10 07:10*	*1*

Lab Sample ID: LCS 580-62306/5
Matrix: Water
Analysis Batch: 62306

Client Sample ID: LCS 580-62306/5
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits
Benzene	25.0	25.3		ug/L	101	80 - 120
Toluene	25.1	25.6		ug/L	102	75 - 120
Ethylbenzene	25.0	25.4		ug/L	102	75 - 125
m-Xylene & p-Xylene	50.1	51.5		ug/L	103	75 - 130
o-Xylene	25.0	25.9		ug/L	103	80 - 120

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
Fluorobenzene (Surr)	*99*		*80 - 120*
Toluene-d8 (Surr)	*102*		*85 - 120*
Ethylbenzene-d10	*104*		*80 - 120*
Trifluorotoluene (Surr)	*100*		*80 - 120*
4-Bromofluorobenzene (Surr)	*106*		*75 - 120*

Method: 8270C - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 580-60190/2-A
Matrix: Water
Analysis Batch: 62443

Client Sample ID: MB 580-60190/2-A
Prep Type: Total/NA
Prep Batch: 60190

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.10		ug/L		03/19/10 18:36	04/26/10 17:35	1
Chrysene	ND		0.10		ug/L		03/19/10 18:36	04/26/10 17:35	1
Benzo[b]fluoranthene	ND		0.10		ug/L		03/19/10 18:36	04/26/10 17:35	1
Benzo[k]fluoranthene	ND		0.10		ug/L		03/19/10 18:36	04/26/10 17:35	1
Benzo[a]pyrene	ND		0.20		ug/L		03/19/10 18:36	04/26/10 17:35	1
Indeno[1,2,3-cd]pyrene	ND		0.10		ug/L		03/19/10 18:36	04/26/10 17:35	1
Dibenz(a,h)anthracene	ND		0.10		ug/L		03/19/10 18:36	04/26/10 17:35	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*71*		*40 - 110*	*03/19/10 18:36*	*04/26/10 17:35*	*1*
2-Fluorobiphenyl	*93*		*50 - 110*	*03/19/10 18:36*	*04/26/10 17:35*	*1*
Terphenyl-d14	*78*		*50 - 135*	*03/19/10 18:36*	*04/26/10 17:35*	*1*

Lab Sample ID: MB 580-61893/1-A
Matrix: Water
Analysis Batch: 62288

Client Sample ID: MB 580-61893/1-A
Prep Type: Total/NA
Prep Batch: 61893

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.010		ug/L		04/16/10 13:25	04/22/10 21:25	1
Chrysene	ND		0.010		ug/L		04/16/10 13:25	04/22/10 21:25	1
Benzo[b]fluoranthene	ND		0.010		ug/L		04/16/10 13:25	04/22/10 21:25	1
Benzo[k]fluoranthene	ND		0.010		ug/L		04/16/10 13:25	04/22/10 21:25	1
Benzo[a]pyrene	ND		0.020		ug/L		04/16/10 13:25	04/22/10 21:25	1
Indeno[1,2,3-cd]pyrene	ND		0.010		ug/L		04/16/10 13:25	04/22/10 21:25	1
Dibenz(a,h)anthracene	ND		0.010		ug/L		04/16/10 13:25	04/22/10 21:25	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*81*		*40 - 110*	*04/16/10 13:25*	*04/22/10 21:25*	*1*
2-Fluorobiphenyl	*80*		*50 - 110*	*04/16/10 13:25*	*04/22/10 21:25*	*1*
Terphenyl-d14	*70*		*50 - 135*	*04/16/10 13:25*	*04/22/10 21:25*	*1*

Lab Sample ID: LCS 580-61893/2-A
Matrix: Water
Analysis Batch: 62288

Client Sample ID: LCS 580-61893/2-A
Prep Type: Total/NA
Prep Batch: 61893

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits
Benzo[a]anthracene	1.00	0.905		ug/L	90	60 - 140
Chrysene	1.00	1.05		ug/L	104	60 - 140
Benzo[b]fluoranthene	1.00	1.05		ug/L	105	60 - 140
Benzo[k]fluoranthene	1.00	1.10		ug/L	110	60 - 140
Benzo[a]pyrene	1.00	1.01		ug/L	101	60 - 140
Indeno[1,2,3-cd]pyrene	1.00	0.789		ug/L	79	60 - 140
Dibenz(a,h)anthracene	1.00	0.791		ug/L	79	60 - 140

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
Nitrobenzene-d5	*92*		*40 - 110*
2-Fluorobiphenyl	*83*		*50 - 110*
Terphenyl-d14	*79*		*50 - 135*

Method: 8270C - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCSD 580-61893/3-A
Matrix: Water
Analysis Batch: 62288

Client Sample ID: LCSD 580-61893/3-A
Prep Type: Total/NA
Prep Batch: 61893

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	% Rec.	% Rec. Limits	RPD	RPD Limit
Benzo[a]anthracene			1.00	0.786		ug/L	79	60 - 140	14	20
Chrysene			1.00	0.916		ug/L	91	60 - 140	13	20
Benzo[b]fluoranthene			1.00	0.894		ug/L	89	60 - 140	16	20
Benzo[k]fluoranthene			1.00	0.983		ug/L	98	60 - 140	12	20
Benzo[a]pyrene			1.00	0.902		ug/L	90	60 - 140	11	20
Indeno[1,2,3-cd]pyrene			1.00	0.730		ug/L	73	60 - 140	8	20
Dibenz(a,h)anthracene			1.00	0.736		ug/L	73	60 - 140	7	20

Surrogate	*LCSD % Recovery*	*LCSD Qualifier*	*Limits*
Nitrobenzene-d5	*85*		*40 - 110*
2-Fluorobiphenyl	*75*		*50 - 110*
Terphenyl-d14	*68*		*50 - 135*

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Lab Sample ID: MB 580-61895/1-B
Matrix: Water
Analysis Batch: 62063

Client Sample ID: MB 580-61895/1-B
Prep Type: Total/NA
Prep Batch: 61895

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		0.12		mg/L		04/16/10 13:33	04/21/10 05:00	1
Motor Oil (>C24-C36)	ND		0.25		mg/L		04/16/10 13:33	04/21/10 05:00	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*112*		*50 - 150*	*04/16/10 13:33*	*04/21/10 05:00*	*1*

Lab Sample ID: LCS 580-61895/2-B
Matrix: Water
Analysis Batch: 62063

Client Sample ID: LCS 580-61895/2-B
Prep Type: Total/NA
Prep Batch: 61895

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits		
#2 Diesel (C10-C24)			5.00	5.99		mg/L	120	70 - 130		
Motor Oil (>C24-C36)			5.00	6.40		mg/L	128	70 - 130		

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*108*		*50 - 150*

Lab Sample ID: LCSD 580-61895/3-B
Matrix: Water
Analysis Batch: 62063

Client Sample ID: LCSD 580-61895/3-B
Prep Type: Total/NA
Prep Batch: 61895

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	% Rec.	% Rec. Limits	RPD	RPD Limit
#2 Diesel (C10-C24)			5.00	5.85		mg/L	117	70 - 130	2	30
Motor Oil (>C24-C36)			5.00	6.17		mg/L	123	70 - 130	4	30

Surrogate	*LCSD % Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl	*104*		*50 - 150*

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 580-62091/24-A
Matrix: Water
Analysis Batch: 62218

Client Sample ID: MB 580-62091/24-A
Prep Type: Total Recoverable
Prep Batch: 62091

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0020		mg/L		04/20/10 14:08	04/21/10 12:22	5
Iron	ND		0.20		mg/L		04/20/10 14:08	04/21/10 12:22	5
Manganese	ND		0.0020		mg/L		04/20/10 14:08	04/21/10 12:22	5

Lab Sample ID: LCS 580-62091/25-A
Matrix: Water
Analysis Batch: 62218

Client Sample ID: LCS 580-62091/25-A
Prep Type: Total Recoverable
Prep Batch: 62091

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits
Lead	1.00	1.08		mg/L	108	80 - 120
Iron	22.0	21.1		mg/L	96	80 - 120
Manganese	1.00	0.989		mg/L	99	80 - 120

Lab Sample ID: LCSD 580-62091/26-A
Matrix: Water
Analysis Batch: 62218

Client Sample ID: LCSD 580-62091/26-A
Prep Type: Total Recoverable
Prep Batch: 62091

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	% Rec.	% Rec. Limits	RPD	RPD Limit
Lead	1.00	1.09		mg/L	109	80 - 120	1	20
Iron	22.0	21.3		mg/L	97	80 - 120	1	20
Manganese	1.00	0.991		mg/L	99	80 - 120	0	20

Lab Sample ID: 580-18827-4 MS
Matrix: Water
Analysis Batch: 62218

Client Sample ID: MW-200 (filtered)
Prep Type: Dissolved
Prep Batch: 62091

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	% Rec.	% Rec. Limits
Lead	ND		1.00	1.11		mg/L	111	75 - 125
Iron	1.0		22.0	22.1		mg/L	96	75 - 125
Manganese	0.56		1.00	1.54		mg/L	98	75 - 125

Lab Sample ID: 580-18827-4 MSD
Matrix: Water
Analysis Batch: 62218

Client Sample ID: MW-200 (filtered)
Prep Type: Dissolved
Prep Batch: 62091

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	% Rec.	% Rec. Limits	RPD	RPD Limit
Lead	ND		1.00	1.09		mg/L	109	75 - 125	2	20
Iron	1.0		22.0	21.9		mg/L	95	75 - 125	1	20
Manganese	0.56		1.00	1.55		mg/L	99	75 - 125	1	20

Lab Sample ID: 580-18827-4 DU
Matrix: Water
Analysis Batch: 62218

Client Sample ID: MW-200 (filtered)
Prep Type: Dissolved
Prep Batch: 62091

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	RPD	RPD Limit
Lead	ND		ND		mg/L	NC	20
Iron	1.0		1.01		mg/L	0	20
Manganese	0.56		0.562		mg/L	0	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 580-61979/3
Matrix: Water
Analysis Batch: 61979

Client Sample ID: MB 580-61979/3
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		1.2		mg/L			04/16/10 08:05	1

Lab Sample ID: LCS 580-61979/4
Matrix: Water
Analysis Batch: 61979

Client Sample ID: LCS 580-61979/4
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits
Sulfate	6.00	6.22		mg/L	104	90 - 110

Lab Sample ID: 580-18827-3 MS
Matrix: Water
Analysis Batch: 61979

Client Sample ID: MW-200
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	% Rec.	% Rec. Limits
Sulfate			6.00	ND		mg/L	108	80 - 120

Lab Sample ID: 580-18827-3 MS
Matrix: Water
Analysis Batch: 61979

Client Sample ID: MW-200
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	% Rec.	% Rec. Limits
Sulfate	21		6.00	26.2		mg/L	90	80 - 120

Lab Sample ID: 580-18827-3 DU
Matrix: Water
Analysis Batch: 61979

Client Sample ID: MW-200
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	RPD	RPD Limit
Sulfate			ND		mg/L	0	20

Lab Sample ID: 580-18827-3 DU
Matrix: Water
Analysis Batch: 61979

Client Sample ID: MW-200
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	RPD	RPD Limit
Sulfate	21		19.6		mg/L	6	20

Lab Sample ID: MB 580-61981/5
Matrix: Water
Analysis Batch: 61981

Client Sample ID: MB 580-61981/5
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.90		mg/L			04/15/10 15:55	1

Lab Sample ID: LCS 580-61981/6
Matrix: Water
Analysis Batch: 61981

Client Sample ID: LCS 580-61981/6
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits
Nitrate as N	2.50	2.58		mg/L	103	90 - 110

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 580-18827-3 MS
Matrix: Water
Analysis Batch: 61981

Client Sample ID: MW-200
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	% Rec.	% Rec. Limits		
Nitrate as N	ND		4.00	ND		mg/L	98	80 - 120		

Lab Sample ID: 580-18827-3 DU
Matrix: Water
Analysis Batch: 61981

Client Sample ID: MW-200
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit			RPD	RPD Limit
Nitrate as N	ND		ND		mg/L			NC	20

Method: 310.1 - Alkalinity

Lab Sample ID: MB 580-61916/1
Matrix: Water
Analysis Batch: 61916

Client Sample ID: MB 580-61916/1
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	ND		5.0		mg/L			04/16/10 12:30	1

Lab Sample ID: LCS 580-61916/2
Matrix: Water
Analysis Batch: 61916

Client Sample ID: LCS 580-61916/2
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits		
Alkalinity			100	95.1		mg/L	95	85 - 115		

Lab Sample ID: 580-18827-3 DU
Matrix: Water
Analysis Batch: 61916

Client Sample ID: MW-200
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit			RPD	RPD Limit
Alkalinity	320		319		mg/L			1	17

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 580-62068/1
Matrix: Water
Analysis Batch: 62068

Client Sample ID: MB 580-62068/1
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.10		mg/L			04/20/10 07:59	1

Lab Sample ID: LCS 580-62068/2
Matrix: Water
Analysis Batch: 62068

Client Sample ID: LCS 580-62068/2
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits		
Ammonia			2.00	2.03		mg/L	101	90 - 110		

Method: 350.1 - Nitrogen, Ammonia (Continued)

Lab Sample ID: 580-18827-3 MS — **Client Sample ID: MW-200**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 62068

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	% Rec.	% Rec. Limits		
Ammonia	2.0		2.00	3.30	F	mg/L	67	90 - 110		

Lab Sample ID: 580-18827-3 DU — **Client Sample ID: MW-200**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 62068

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit			RPD	RPD Limit
Ammonia	2.0			1.87		mg/L			5	20

Lab Sample ID: MB 580-62678/1 — **Client Sample ID: MB 580-62678/1**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 62678

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.10		mg/L			04/29/10 17:15	1

Lab Sample ID: LCS 580-62678/2 — **Client Sample ID: LCS 580-62678/2**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 62678

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits		
Ammonia			2.00	1.91		mg/L	95	90 - 110		

Method: 376.1 - Sulfide

Lab Sample ID: MB 680-166332/1 — **Client Sample ID: MB 680-166332/1**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 166332

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	ND		1.0		mg/L			04/21/10 15:17	1

Lab Sample ID: LCS 680-166332/2 — **Client Sample ID: LCS 680-166332/2**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 166332

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits		
Sulfide			10.0	8.18		mg/L	82	75 - 125		

Lab Sample ID: LCSD 680-166332/14 — **Client Sample ID: LCSD 680-166332/14**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 166332

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	% Rec.	% Rec. Limits	RPD	RPD Limit
Sulfide			10.0	8.65		mg/L	86	75 - 125	6	30

Method: 9060 - Organic Carbon, Total (TOC)

Lab Sample ID: MB 580-62104/3
Matrix: Water
Analysis Batch: 62104

Client Sample ID: MB 580-62104/3
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0		mg/L			04/19/10 20:03	1

Lab Sample ID: LCS 580-62104/4
Matrix: Water
Analysis Batch: 62104

Client Sample ID: LCS 580-62104/4
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits
Total Organic Carbon	15.0	14.9		mg/L	99	85 - 115

Lab Sample ID: 580-18827-15 MS
Matrix: Water
Analysis Batch: 62104

Client Sample ID: MW-206
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	% Rec.	% Rec. Limits
Total Organic Carbon	2.2		10.0	12.4		mg/L	102	49 - 142

Lab Sample ID: 580-18827-15 DU
Matrix: Water
Analysis Batch: 62104

Client Sample ID: MW-206
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	RPD	RPD Limit
Total Organic Carbon	2.2		2.29		mg/L	4	20

Lab Sample ID: MB 580-62116/3
Matrix: Water
Analysis Batch: 62116

Client Sample ID: MB 580-62116/3
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0		mg/L			04/20/10 09:16	1

Lab Sample ID: LCS 580-62116/4
Matrix: Water
Analysis Batch: 62116

Client Sample ID: LCS 580-62116/4
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits
Total Organic Carbon	15.0	15.2		mg/L	101	85 - 115

Lab Sample ID: MB 580-62155/3
Matrix: Water
Analysis Batch: 62155

Client Sample ID: MB 580-62155/3
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0		mg/L			04/20/10 18:02	1

Lab Sample ID: LCS 580-62155/4
Matrix: Water
Analysis Batch: 62155

Client Sample ID: LCS 580-62155/4
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits
Total Organic Carbon	15.0	15.1		mg/L	101	85 - 115

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-62012/7
Matrix: Water
Analysis Batch: 62012

Client Sample ID: MB 580-62012/7
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	0.102		0.050		mg/L			04/19/10 21:23	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*111*		*50 - 150*		*04/19/10 21:23*	*1*
Trifluorotoluene (Surr)	*106*		*50 - 150*		*04/19/10 21:23*	*1*

Lab Sample ID: LCS 580-62012/8
Matrix: Water
Analysis Batch: 62012

Client Sample ID: LCS 580-62012/8
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits
Gasoline	1.00	0.942		mg/L	94	79 - 110

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*111*		*50 - 150*
Trifluorotoluene (Surr)	*100*		*50 - 150*

Lab Sample ID: MB 580-62305/5
Matrix: Water
Analysis Batch: 62305

Client Sample ID: MB 580-62305/5
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.050		mg/L			04/23/10 07:10	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*109*		*50 - 150*		*04/23/10 07:10*	*1*
Trifluorotoluene (Surr)	*106*		*50 - 150*		*04/23/10 07:10*	*1*

Lab Sample ID: LCS 580-62305/6
Matrix: Water
Analysis Batch: 62305

Client Sample ID: LCS 580-62305/6
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits
Gasoline	1.00	0.895		mg/L	89	79 - 110

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*109*		*50 - 150*
Trifluorotoluene (Surr)	*95*		*50 - 150*

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 400-107414/1
Matrix: Water
Analysis Batch: 107414

Client Sample ID: MB 400-107414/1
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	ND		50		ug/L			04/20/10 07:02	1

Method: RSK-175 - Dissolved Gases (GC) (Continued)

Lab Sample ID: LCS 400-107414/2
Matrix: Water
Analysis Batch: 107414

Client Sample ID: LCS 400-107414/2
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits
Carbon dioxide	5840	6190		ug/L	106	80 - 120

Lab Sample ID: LCSD 400-107414/3
Matrix: Water
Analysis Batch: 107414

Client Sample ID: LCSD 400-107414/3
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	% Rec.	% Rec. Limits	RPD	RPD Limit
Carbon dioxide	5840	6430		ug/L	110	80 - 120	4	50

Lab Sample ID: MB 400-107462/1
Matrix: Water
Analysis Batch: 107462

Client Sample ID: MB 400-107462/1
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		1.0		ug/L			04/20/10 07:04	1
Ethane	ND		1.0		ug/L			04/20/10 07:04	1
Ethylene	ND		1.0		ug/L			04/20/10 07:04	1

Lab Sample ID: LCS 400-107462/2
Matrix: Water
Analysis Batch: 107462

Client Sample ID: LCS 400-107462/2
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits
Methane	23.8	24.2		ug/L	101	80 - 120
Ethane	48.1	46.6		ug/L	97	80 - 120
Ethylene	35.6	35.2		ug/L	99	80 - 120

Lab Sample ID: LCSD 400-107462/3
Matrix: Water
Analysis Batch: 107462

Client Sample ID: LCSD 400-107462/3
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	% Rec.	% Rec. Limits	RPD	RPD Limit
Methane	23.8	23.3		ug/L	98	80 - 120	4	50
Ethane	48.1	44.6		ug/L	93	80 - 120	4	50
Ethylene	35.6	33.7		ug/L	95	80 - 120	4	50

Client Sample ID: MW-206

Lab Sample ID: 580-18827-1

Date Collected: 04/13/10 13:40

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	62013	04/19/10 22:52	JMB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	62305	04/23/10 08:18	JMB	TestAmerica Seattle
Total/NA	Analysis	RSK-175		1	107414	04/20/10 07:14	KA	TestAmerica Pensacola
Total/NA	Analysis	RSK-175		1	107462	04/20/10 07:41	KA	TestAmerica Pensacola

Client Sample ID: MW-200

Lab Sample ID: 580-18827-3

Date Collected: 04/14/10 09:30

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	62013	04/20/10 00:00	JMB	TestAmerica Seattle
Total/NA	Prep	3520C			61893	04/16/10 13:25	SP	TestAmerica Seattle
Total/NA	Analysis	8270C		1	62288	04/22/10 22:25	AP	TestAmerica Seattle
Total/NA	Prep	3510C			61895	04/16/10 13:33	SP	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	62063	04/21/10 09:57	EK	TestAmerica Seattle
Total Recoverable	Prep	3005A			62091	04/20/10 14:08	PAB	TestAmerica Seattle
Total Recoverable	Analysis	6020		5	62218	04/21/10 13:35	FCW	TestAmerica Seattle
Total/NA	Analysis	300.0		1	61981	04/15/10 20:50	AM	TestAmerica Seattle
Total/NA	Analysis	300.0		2	61979	04/16/10 12:21	KT	TestAmerica Seattle
Total/NA	Analysis	310.1		1	61916	04/16/10 12:30	BAB	TestAmerica Seattle
Total/NA	Analysis	350.1		1	62068	04/20/10 08:04	AO	TestAmerica Seattle
Total/NA	Analysis	376.1		1	166332	04/21/10 15:17	JV	TestAmerica Savannah
Total/NA	Analysis	9060		1	62116	04/20/10 13:26	BAB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	62305	04/23/10 11:17	JMB	TestAmerica Seattle
Total/NA	Analysis	RSK-175		1	107414	04/20/10 07:42	KA	TestAmerica Pensacola
Total/NA	Analysis	RSK-175		10	107462	04/20/10 12:46	KA	TestAmerica Pensacola

Client Sample ID: MW-200 (filtered)

Lab Sample ID: 580-18827-4

Date Collected: 04/14/10 09:30

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			61893	04/16/10 13:25	SP	TestAmerica Seattle
Total/NA	Analysis	8270C		1	62288	04/22/10 22:45	AP	TestAmerica Seattle
Dissolved	Prep	3005A			62091	04/20/10 14:08	PAB	TestAmerica Seattle
Dissolved	Analysis	6020		5	62218	04/21/10 12:33	FCW	TestAmerica Seattle

Client Sample ID: MW-201

Lab Sample ID: 580-18827-5

Date Collected: 04/14/10 11:15

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	62013	04/20/10 02:37	JMB	TestAmerica Seattle
Total/NA	Prep	3520C			61893	04/16/10 13:25	SP	TestAmerica Seattle

Client Sample ID: MW-201

Lab Sample ID: 580-18827-5

Date Collected: 04/14/10 11:15

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8270C		1	62288	04/22/10 23:05	AP	TestAmerica Seattle
Total/NA	Prep	3510C			61895	04/16/10 13:33	SP	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	62063	04/21/10 10:18	EK	TestAmerica Seattle
Total Recoverable	Prep	3005A			62091	04/20/10 14:08	PAB	TestAmerica Seattle
Total Recoverable	Analysis	6020		5	62218	04/21/10 13:39	FCW	TestAmerica Seattle
Total/NA	Analysis	300.0		1	61981	04/15/10 21:39	AM	TestAmerica Seattle
Total/NA	Analysis	300.0		1	61979	04/16/10 14:01	KT	TestAmerica Seattle
Total/NA	Analysis	310.1		1	61916	04/16/10 12:30	BAB	TestAmerica Seattle
Total/NA	Analysis	350.1		1	62068	04/20/10 08:09	AO	TestAmerica Seattle
Total/NA	Analysis	376.1		1	166332	04/21/10 15:17	JV	TestAmerica Savannah
Total/NA	Analysis	9060		1	62104	04/20/10 07:26	BAB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	62305	04/23/10 10:10	JMB	TestAmerica Seattle
Total/NA	Analysis	RSK-175		1	107414	04/20/10 07:54	KA	TestAmerica Pensacola
Total/NA	Analysis	RSK-175		10	107462	04/20/10 12:56	KA	TestAmerica Pensacola

Client Sample ID: MW-201 (filtered)

Lab Sample ID: 580-18827-6

Date Collected: 04/14/10 11:15

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			61893	04/16/10 13:25	SP	TestAmerica Seattle
Total/NA	Analysis	8270C		1	62288	04/22/10 23:24	AP	TestAmerica Seattle
Dissolved	Prep	3005A			62091	04/20/10 14:08	PAB	TestAmerica Seattle
Dissolved	Analysis	6020		5	62218	04/21/10 12:26	FCW	TestAmerica Seattle

Client Sample ID: MW-202

Lab Sample ID: 580-18827-7

Date Collected: 04/14/10 09:25

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	62013	04/20/10 02:59	JMB	TestAmerica Seattle
Total/NA	Prep	3520C			61893	04/16/10 13:25	SP	TestAmerica Seattle
Total/NA	Analysis	8270C		1	62288	04/22/10 23:44	AP	TestAmerica Seattle
Total/NA	Prep	3510C			61895	04/16/10 13:33	SP	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	62063	04/21/10 10:39	EK	TestAmerica Seattle
Total Recoverable	Prep	3005A			62091	04/20/10 14:08	PAB	TestAmerica Seattle
Total Recoverable	Analysis	6020		5	62218	04/21/10 13:50	FCW	TestAmerica Seattle
Total/NA	Analysis	300.0		1	61981	04/15/10 22:29	AM	TestAmerica Seattle
Total/NA	Analysis	300.0		100	61979	04/16/10 14:18	KT	TestAmerica Seattle
Total/NA	Analysis	310.1		1	61916	04/16/10 12:30	BAB	TestAmerica Seattle
Total/NA	Analysis	350.1		1	62068	04/20/10 08:10	AO	TestAmerica Seattle
Total/NA	Analysis	376.1		1	166332	04/21/10 15:17	JV	TestAmerica Savannah
Total/NA	Analysis	9060		1	62155	04/21/10 06:44	BAB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	62305	04/23/10 08:40	JMB	TestAmerica Seattle

Client Sample ID: MW-202

Lab Sample ID: 580-18827-7

Date Collected: 04/14/10 09:25

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	107414	04/20/10 08:05	KA	TestAmerica Pensacola
Total/NA	Analysis	RSK-175		10	107462	04/20/10 08:28	KA	TestAmerica Pensacola

Client Sample ID: MW-202 (filtered)

Lab Sample ID: 580-18827-8

Date Collected: 04/14/10 09:25

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			61893	04/16/10 13:25	SP	TestAmerica Seattle
Total/NA	Analysis	8270C		1	62288	04/23/10 00:04	AP	TestAmerica Seattle
Dissolved	Prep	3005A			62091	04/20/10 14:08	PAB	TestAmerica Seattle
Dissolved	Analysis	6020		5	62218	04/21/10 13:06	FCW	TestAmerica Seattle

Client Sample ID: MW-203

Lab Sample ID: 580-18827-9

Date Collected: 04/14/10 11:15

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	62013	04/20/10 03:22	JMB	TestAmerica Seattle
Total/NA	Prep	3520C			61893	04/16/10 13:25	SP	TestAmerica Seattle
Total/NA	Analysis	8270C		1	62288	04/23/10 00:24	AP	TestAmerica Seattle
Total/NA	Prep	3510C			61895	04/16/10 13:33	SP	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	62063	04/21/10 11:00	EK	TestAmerica Seattle
Total Recoverable	Prep	3005A			62091	04/20/10 14:08	PAB	TestAmerica Seattle
Total Recoverable	Analysis	6020		5	62218	04/21/10 13:54	FCW	TestAmerica Seattle
Total/NA	Analysis	300.0		1	61981	04/15/10 22:45	AM	TestAmerica Seattle
Total/NA	Analysis	300.0		100	61979	04/16/10 14:51	KT	TestAmerica Seattle
Total/NA	Analysis	310.1		1	61916	04/16/10 12:30	BAB	TestAmerica Seattle
Total/NA	Analysis	350.1		1	62068	04/20/10 08:12	AO	TestAmerica Seattle
Total/NA	Analysis	376.1		1	166332	04/21/10 15:17	JV	TestAmerica Savannah
Total/NA	Analysis	9060		1	62104	04/20/10 08:21	BAB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	62305	04/23/10 09:03	JMB	TestAmerica Seattle
Total/NA	Analysis	RSK-175		1	107414	04/20/10 08:19	KA	TestAmerica Pensacola
Total/NA	Analysis	RSK-175		10	107462	04/20/10 08:41	KA	TestAmerica Pensacola

Client Sample ID: MW-203 (filtered)

Lab Sample ID: 580-18827-10

Date Collected: 04/14/10 11:15

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			61893	04/16/10 13:25	SP	TestAmerica Seattle
Total/NA	Analysis	8270C		1	62288	04/23/10 00:44	AP	TestAmerica Seattle
Dissolved	Prep	3005A			62091	04/20/10 14:08	PAB	TestAmerica Seattle
Dissolved	Analysis	6020		5	62218	04/21/10 13:10	FCW	TestAmerica Seattle

Client Sample ID: MW-204

Lab Sample ID: 580-18827-11

Date Collected: 04/14/10 13:15

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	62306	04/23/10 11:40	JMB	TestAmerica Seattle
Total/NA	Prep	3520C			61893	04/16/10 13:25	SP	TestAmerica Seattle
Total/NA	Analysis	8270C		1	62288	04/23/10 01:03	AP	TestAmerica Seattle
Total/NA	Prep	3510C			61895	04/16/10 13:33	SP	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	62063	04/21/10 11:22	EK	TestAmerica Seattle
Total Recoverable	Prep	3005A			62091	04/20/10 14:08	PAB	TestAmerica Seattle
Total Recoverable	Analysis	6020		5	62218	04/21/10 13:57	FCW	TestAmerica Seattle
Total/NA	Analysis	300.0		1	61981	04/15/10 23:01	AM	TestAmerica Seattle
Total/NA	Analysis	300.0		1	61979	04/16/10 20:56	KT	TestAmerica Seattle
Total/NA	Analysis	310.1		1	61916	04/16/10 12:30	BAB	TestAmerica Seattle
Total/NA	Analysis	350.1		1	62678	04/29/10 17:30	AO	TestAmerica Seattle
Total/NA	Analysis	376.1		1	166332	04/21/10 15:17	JV	TestAmerica Savannah
Total/NA	Analysis	9060		1	62104	04/20/10 08:49	BAB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	62305	04/23/10 11:40	JMB	TestAmerica Seattle
Total/NA	Analysis	RSK-175		1	107414	04/20/10 08:31	KA	TestAmerica Pensacola
Total/NA	Analysis	RSK-175		5	107462	04/20/10 08:52	KA	TestAmerica Pensacola

Client Sample ID: MW-204 (filtered)

Lab Sample ID: 580-18827-12

Date Collected: 04/14/10 13:15

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			61893	04/16/10 13:25	SP	TestAmerica Seattle
Total/NA	Analysis	8270C		1	62288	04/23/10 01:23	AP	TestAmerica Seattle
Dissolved	Prep	3005A			62091	04/20/10 14:08	PAB	TestAmerica Seattle
Dissolved	Analysis	6020		5	62218	04/21/10 13:13	FCW	TestAmerica Seattle

Client Sample ID: MW-205

Lab Sample ID: 580-18827-13

Date Collected: 04/14/10 13:00

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	62013	04/20/10 04:07	JMB	TestAmerica Seattle
Total/NA	Prep	3520C			61893	04/16/10 13:25	SP	TestAmerica Seattle
Total/NA	Analysis	8270C		1	62288	04/23/10 01:43	AP	TestAmerica Seattle
Total/NA	Prep	3510C			61895	04/16/10 13:33	SP	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	62063	04/21/10 11:43	EK	TestAmerica Seattle
Total Recoverable	Prep	3005A			62091	04/20/10 14:08	PAB	TestAmerica Seattle
Total Recoverable	Analysis	6020		5	62218	04/21/10 14:01	FCW	TestAmerica Seattle
Total/NA	Analysis	300.0		1	61981	04/15/10 23:18	AM	TestAmerica Seattle
Total/NA	Analysis	300.0		1	61979	04/16/10 21:13	KT	TestAmerica Seattle
Total/NA	Analysis	310.1		1	61916	04/16/10 12:30	BAB	TestAmerica Seattle
Total/NA	Analysis	350.1		1	62068	04/20/10 08:13	AO	TestAmerica Seattle
Total/NA	Analysis	376.1		1	166332	04/21/10 15:17	JV	TestAmerica Savannah

Client Sample ID: MW-205

Lab Sample ID: 580-18827-13

Date Collected: 04/14/10 13:00

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	9060		1	62116	04/20/10 11:35	BAB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	62305	04/23/10 09:25	JMB	TestAmerica Seattle
Total/NA	Analysis	RSK-175		1	107414	04/20/10 08:58	KA	TestAmerica Pensacola
Total/NA	Analysis	RSK-175		1	107462	04/20/10 09:14	KA	TestAmerica Pensacola

Client Sample ID: MW-205 (filtered)

Lab Sample ID: 580-18827-14

Date Collected: 04/14/10 13:00

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			61893	04/16/10 13:25	SP	TestAmerica Seattle
Total/NA	Analysis	8270C		1	62288	04/23/10 02:03	AP	TestAmerica Seattle
Dissolved	Prep	3005A			62091	04/20/10 14:08	PAB	TestAmerica Seattle
Dissolved	Analysis	6020		5	62218	04/21/10 13:17	FCW	TestAmerica Seattle

Client Sample ID: MW-206

Lab Sample ID: 580-18827-15

Date Collected: 04/14/10 08:50

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			61893	04/16/10 13:25	SP	TestAmerica Seattle
Total/NA	Analysis	8270C		1	62288	04/23/10 02:23	AP	TestAmerica Seattle
Total/NA	Prep	3510C			61895	04/16/10 13:33	SP	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	62063	04/21/10 12:04	EK	TestAmerica Seattle
Total Recoverable	Prep	3005A			62091	04/20/10 14:08	PAB	TestAmerica Seattle
Total Recoverable	Analysis	6020		5	62218	04/21/10 14:04	FCW	TestAmerica Seattle
Total/NA	Analysis	300.0		1	61981	04/15/10 23:34	AM	TestAmerica Seattle
Total/NA	Analysis	300.0		100	61979	04/16/10 21:46	KT	TestAmerica Seattle
Total/NA	Analysis	310.1		1	61916	04/16/10 12:30	BAB	TestAmerica Seattle
Total/NA	Analysis	350.1		1	62068	04/20/10 08:23	AO	TestAmerica Seattle
Total/NA	Analysis	376.1		1	166332	04/21/10 15:17	JV	TestAmerica Savannah
Total/NA	Analysis	9060		1	62104	04/19/10 21:01	BAB	TestAmerica Seattle

Client Sample ID: MW-206 (filtered)

Lab Sample ID: 580-18827-16

Date Collected: 04/14/10 08:50

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			61893	04/16/10 13:25	SP	TestAmerica Seattle
Total/NA	Analysis	8270C		1	62443	04/26/10 19:55	BT	TestAmerica Seattle
Dissolved	Prep	3005A			62091	04/20/10 14:08	PAB	TestAmerica Seattle
Dissolved	Analysis	6020		5	62218	04/21/10 13:21	FCW	TestAmerica Seattle

Client Sample ID: MW-207

Lab Sample ID: 580-18827-17

Date Collected: 04/14/10 09:50

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	62013	04/20/10 04:29	JMB	TestAmerica Seattle
Total/NA	Prep	3520C			61893	04/16/10 13:25	SP	TestAmerica Seattle
Total/NA	Analysis	8270C		1	62288	04/23/10 03:02	AP	TestAmerica Seattle
Total/NA	Prep	3510C			61895	04/16/10 13:33	SP	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	62063	04/21/10 12:25	EK	TestAmerica Seattle
Total Recoverable	Prep	3005A			62091	04/20/10 14:08	PAB	TestAmerica Seattle
Total Recoverable	Analysis	6020		5	62218	04/21/10 14:08	FCW	TestAmerica Seattle
Total/NA	Analysis	300.0		1	61981	04/15/10 23:51	AM	TestAmerica Seattle
Total/NA	Analysis	300.0		100	61979	04/16/10 22:19	KT	TestAmerica Seattle
Total/NA	Analysis	310.1		1	61916	04/16/10 12:30	BAB	TestAmerica Seattle
Total/NA	Analysis	350.1		1	62068	04/20/10 08:24	AO	TestAmerica Seattle
Total/NA	Analysis	376.1		1	166332	04/21/10 15:17	JV	TestAmerica Savannah
Total/NA	Analysis	9060		1	62104	04/19/10 23:22	BAB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	62012	04/20/10 04:29	JMB	TestAmerica Seattle
Total/NA	Analysis	RSK-175		1	107414	04/20/10 09:14	KA	TestAmerica Pensacola
Total/NA	Analysis	RSK-175		5	107462	04/20/10 09:29	KA	TestAmerica Pensacola

Client Sample ID: MW-207 (filtered)

Lab Sample ID: 580-18827-18

Date Collected: 04/14/10 09:50

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			61893	04/16/10 13:25	SP	TestAmerica Seattle
Total/NA	Analysis	8270C		1	62288	04/23/10 03:22	AP	TestAmerica Seattle
Dissolved	Prep	3005A			62091	04/20/10 14:08	PAB	TestAmerica Seattle
Dissolved	Analysis	6020		5	62218	04/21/10 13:24	FCW	TestAmerica Seattle

Client Sample ID: MW-30

Lab Sample ID: 580-18827-19

Date Collected: 04/14/10 15:00

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	62013	04/20/10 04:51	JMB	TestAmerica Seattle
Total/NA	Prep	3510C			61895	04/16/10 13:33	SP	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	62063	04/21/10 15:59	EK	TestAmerica Seattle
Total Recoverable	Prep	3005A			62091	04/20/10 14:08	PAB	TestAmerica Seattle
Total Recoverable	Analysis	6020		5	62218	04/21/10 14:11	FCW	TestAmerica Seattle
Total/NA	Analysis	300.0		1	61981	04/16/10 00:07	AM	TestAmerica Seattle
Total/NA	Analysis	300.0		10	61979	04/16/10 22:36	KT	TestAmerica Seattle
Total/NA	Analysis	310.1		1	61916	04/16/10 12:30	BAB	TestAmerica Seattle
Total/NA	Analysis	350.1		1	62068	04/20/10 08:26	AO	TestAmerica Seattle
Total/NA	Analysis	376.1		1	166332	04/21/10 15:17	JV	TestAmerica Savannah
Total/NA	Analysis	9060		1	62104	04/19/10 23:51	BAB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	62305	04/23/10 09:48	JMB	TestAmerica Seattle

Client Sample ID: MW-30

Lab Sample ID: 580-18827-19

Date Collected: 04/14/10 15:00

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	107414	04/20/10 09:26	KA	TestAmerica Pensacola
Total/NA	Analysis	RSK-175		1	107462	04/20/10 09:40	KA	TestAmerica Pensacola

Client Sample ID: MW-30 (filtered)

Lab Sample ID: 580-18827-20

Date Collected: 04/14/10 15:00

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			62091	04/20/10 14:08	PAB	TestAmerica Seattle
Dissolved	Analysis	6020		5	62218	04/21/10 13:28	FCW	TestAmerica Seattle

Client Sample ID: BD-1

Lab Sample ID: 580-18827-21

Date Collected: 04/14/10 00:00

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	62306	04/23/10 12:02	JMB	TestAmerica Seattle
Total/NA	Prep	3520C			61893	04/16/10 13:25	SP	TestAmerica Seattle
Total/NA	Analysis	8270C		1	62288	04/23/10 03:42	AP	TestAmerica Seattle
Total/NA	Prep	3510C			61895	04/16/10 13:33	SP	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	62063	04/21/10 16:20	EK	TestAmerica Seattle
Total Recoverable	Prep	3005A			62091	04/20/10 14:08	PAB	TestAmerica Seattle
Total Recoverable	Analysis	6020		5	62218	04/21/10 14:15	FCW	TestAmerica Seattle
Total/NA	Analysis	300.0		1	61981	04/15/10 20:17	AM	TestAmerica Seattle
Total/NA	Analysis	300.0		1	61979	04/16/10 22:52	KT	TestAmerica Seattle
Total/NA	Analysis	310.1		1	61916	04/16/10 12:30	BAB	TestAmerica Seattle
Total/NA	Analysis	350.1		1	62068	04/20/10 08:28	AO	TestAmerica Seattle
Total/NA	Analysis	376.1		1	166332	04/21/10 15:17	JV	TestAmerica Savannah
Total/NA	Analysis	9060		1	62104	04/20/10 06:02	BAB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	62305	04/23/10 12:02	JMB	TestAmerica Seattle
Total/NA	Analysis	RSK-175		1	107414	04/20/10 09:38	KA	TestAmerica Pensacola
Total/NA	Analysis	RSK-175		10	107462	04/20/10 13:06	KA	TestAmerica Pensacola

Client Sample ID: BD-1 (filtered)

Lab Sample ID: 580-18827-22

Date Collected: 04/14/10 00:00

Matrix: Water

Date Received: 04/15/10 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			61893	04/16/10 13:25	SP	TestAmerica Seattle
Total/NA	Analysis	8270C		1	62288	04/23/10 04:02	AP	TestAmerica Seattle
Dissolved	Prep	3005A			62091	04/20/10 14:08	PAB	TestAmerica Seattle
Dissolved	Analysis	6020		5	62218	04/21/10 13:32	FCW	TestAmerica Seattle

Client: ARCADIS U.S., Inc.
Project/Site: Former Unocal Seattle Marketing Seattle

TestAmerica Job ID: 580-18827-1

Client Sample ID: Trip Blank
Date Collected: 04/14/10 00:00
Date Received: 04/15/10 12:00

Lab Sample ID: 580-18827-23
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	62013	04/20/10 02:14	JMB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	62012	04/20/10 02:14	JMB	TestAmerica Seattle

Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Former Unocal Seattle Marketing Seattle

TestAmerica Job ID: 580-18827-1

Laboratory	Program	Authority	EPA Region	Certification ID	Expiration Date
TestAmerica Pensacola	NELAC Primary AB	Florida	4	E81010	06/30/10
TestAmerica Pensacola	NELAC Secondary AB	Illinois	5	200041	10/09/10
TestAmerica Pensacola	NELAC Secondary AB	Kansas	7	E-10253	10/31/10
TestAmerica Pensacola	NELAC Secondary AB	Louisiana	6	30748	06/30/10
TestAmerica Pensacola	NELAC Secondary AB	New Hampshire	1	2505	08/16/10
TestAmerica Pensacola	NELAC Secondary AB	New Jersey	2	FL006	06/30/10
TestAmerica Pensacola	NELAC Secondary AB	Pennsylvania	3	68-00467	12/31/10
TestAmerica Pensacola	NELAC Secondary AB	Texas	6	T104704286-09-1	09/30/10
TestAmerica Pensacola	State Program	Alabama	4	40150	06/30/10
TestAmerica Pensacola	State Program	Arizona	9	AZ0710	01/11/11
TestAmerica Pensacola	State Program	Arkansas	6	88-0689	08/31/10
TestAmerica Pensacola	State Program	Georgia	4	N/A	06/30/10
TestAmerica Pensacola	State Program	Iowa	7	367	08/01/10
TestAmerica Pensacola	State Program	Kentucky	4	53	08/25/11
TestAmerica Pensacola	State Program	Maryland	3	233	09/30/10
TestAmerica Pensacola	State Program	Massachusetts	1	M-FL094	06/30/10
TestAmerica Pensacola	State Program	Michigan	5	9912	06/30/10
TestAmerica Pensacola	State Program	North Carolina	4	314	12/31/10
TestAmerica Pensacola	State Program	Oklahoma	6	9810	08/31/10
TestAmerica Pensacola	State Program	Rhode Island	1	LAO00307	12/30/10
TestAmerica Pensacola	State Program	South Carolina	4	96026	06/30/10
TestAmerica Pensacola	State Program	Tennessee	4	TN02907	06/30/10
TestAmerica Pensacola	State Program	Virginia	3	8	06/30/10
TestAmerica Pensacola	State Program	Washington	10	C2043	08/08/10
TestAmerica Pensacola	State Program	West Virginia	3	136	06/30/11
TestAmerica Pensacola	USDA			P330-08-00006	01/03/11
TestAmerica Seattle	DoD ELAP	L-A-B	0	L2236	01/19/13
TestAmerica Seattle	ISO/IEC 17025	L-A-B	0	L2236	01/19/13
TestAmerica Seattle	NELAC Primary AB	Oregon	10	WA100007	11/06/09
TestAmerica Seattle	NELAC Secondary AB	California	9	1115CA	01/31/11
TestAmerica Seattle	State Program	Alaska	10	UST-022	03/04/11
TestAmerica Seattle	State Program	Washington	10	C1226	02/17/11
TestAmerica Seattle	USDA			P330-08-00099	05/22/11
TestAmerica Savannah	DoD ELAP	A2LA	0	0399-01	02/28/11
TestAmerica Savannah	ISO/IEC 17025	A2LA	0	399.01	02/28/11
TestAmerica Savannah	NELAC Primary AB	Florida	4	E87052	06/30/10
TestAmerica Savannah	NELAC Secondary AB	California	9	3217CA	07/31/10
TestAmerica Savannah	NELAC Secondary AB	Illinois	5	200022	11/30/10
TestAmerica Savannah	NELAC Secondary AB	Kansas	7	E-10322	07/31/10
TestAmerica Savannah	NELAC Secondary AB	Louisiana	6	30690	06/30/10
TestAmerica Savannah	NELAC Secondary AB	New Jersey	2	GA769	06/30/10
TestAmerica Savannah	NELAC Secondary AB	New York	2	10842	04/01/10
TestAmerica Savannah	NELAC Secondary AB	Pennsylvania	3	68-00474	06/30/10
TestAmerica Savannah	NELAC Secondary AB	Texas	6	T104704185-08-TX	11/30/10
TestAmerica Savannah	State Program	Alabama	4	41450	06/30/10
TestAmerica Savannah	State Program	Arizona	9	AZ0741	11/12/10
TestAmerica Savannah	State Program	Arkansas	6	88-0692	06/06/10
TestAmerica Savannah	State Program	Arkansas	6	N/A	06/30/10
TestAmerica Savannah	State Program	Colorado	8	N/A	12/31/10
TestAmerica Savannah	State Program	Connecticut	1	PH-0161	03/31/11
TestAmerica Savannah	State Program	Delaware	3	N/A	06/30/10
TestAmerica Savannah	State Program	Georgia	4	N/A	06/30/10
TestAmerica Savannah	State Program	Georgia	4	803	06/30/10
TestAmerica Savannah	State Program	Georgia	4	803	08/12/12
TestAmerica Savannah	State Program	Guam	9	09-005r	04/17/10
TestAmerica Savannah	State Program	Hawaii	9	N/A	06/30/10
TestAmerica Savannah	State Program	Indiana	5	N/A	06/30/10
TestAmerica Savannah	State Program	Iowa	7	353	07/01/11

Certification Summary

Client: ARCADIS U.S., Inc.
TestAmerica Job ID: 580-18827-1
Project/Site: Former Unocal Seattle Marketing Seattle

Laboratory	Program	Authority	EPA Region	Certification ID	Expiration Date
TestAmerica Savannah	State Program	Kentucky	4	18	11/17/11
TestAmerica Savannah	State Program	Kentucky	4	90084	12/31/10
TestAmerica Savannah	State Program	Louisiana	6	LA100015	12/31/10
TestAmerica Savannah	State Program	Maine	1	GA0006	06/09/10
TestAmerica Savannah	State Program	Maryland	3	250	12/31/10
TestAmerica Savannah	State Program	Massachusetts	1	M-GA006	06/30/10
TestAmerica Savannah	State Program	Michigan	5	9925	06/30/10
TestAmerica Savannah	State Program	Mississippi	4	N/A	06/30/10
TestAmerica Savannah	State Program	Nebraska	7	TestAmerica-Savannah	06/30/10
TestAmerica Savannah	State Program	Nevada	9	GA6	07/31/10
TestAmerica Savannah	State Program	New Mexico	6	N/A	06/30/10
TestAmerica Savannah	State Program	North Carolina	4	269	12/31/10
TestAmerica Savannah	State Program	North Carolina	4	13701	07/31/10
TestAmerica Savannah	State Program	Oklahoma	6	9984	08/31/10
TestAmerica Savannah	State Program	Puerto Rico	2	GA00006	01/01/11
TestAmerica Savannah	State Program	Rhode Island	1	LAO00244	12/30/10
TestAmerica Savannah	State Program	South Carolina	4	98001	06/30/10
TestAmerica Savannah	State Program	Tennessee	4	TN02961	06/30/10
TestAmerica Savannah	State Program	Vermont	1	87052	11/16/10
TestAmerica Savannah	State Program	Virginia	3	302	06/30/10
TestAmerica Savannah	State Program	Washington	10	C1794	06/10/10
TestAmerica Savannah	State Program	West Virginia	3	94	06/30/10
TestAmerica Savannah	State Program	West Virginia	3	9950C	12/31/10
TestAmerica Savannah	State Program	Wisconsin	5	999819810	08/31/10
TestAmerica Savannah	State Program	Wyoming	8	8TMS-Q	06/30/10
TestAmerica Savannah	USDA			SAV 3-04	10/29/10

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

Seattle/Tacoma
7755 8th Street East
Tacoma, WA 98424
Phone 253.922.2310 fax 253.922.5047

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
18827
TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Rebecca Andresen	Site Contact: Michael Strickler	Date: 4/15/10	COC No:
ARCADIS	Tel/Fax: 206-726-4717	Lab Contact: Curtis Armstrong	Carrier: Courier	1 of 2 COCs
2300 Eastlake Avenue East, Suite 200	Analysis Turnaround Time			Job No. B0045363
Seattle, WA 98102	STANDARD TAT			SDG No.
(206) 726-4717 Phone	TAT if different from Below _____			
(206) 325-8218 FAX	☐ 2 weeks			
Project Name: Former Unocal Seattle Marketing Terminal	☐ 1 week			
Site: Former Unocal Seattle Marketing Terminal	☐ 2 days			
PO #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	NWTPH-Gx	NWTPH-Dx	BTEX 8260	cPAHs 8270 SIM	Dissolved Lead	Total Alkalinity 310.1	Sulfate 300.0	Sulfide 376.1	Nitrate 300.0	Ammonia 350.3	Total Manganese 6020	Dissolved Manganese 6020	Total Iron 6020	Dissolved Iron 6020	Total Organic Carbon 9060 Modified	Methane RSK 175	Carbon Dioxide GC/FID-TCD	Sample Specific Notes:
MW-206	4/13/10	1340	Grab	Water	12		X		X													X	X	1
MW-207	4/13/10	1335	Grab	Water	2																		X	2 Additional Samples collected 4/14/10
MW-200	4/14/10	0930	Grab	Water	20		X	X	X	X		X	X	X	X	X	X		X		X	X	X	3
MW-200 (filtered)	4/14/10	0930	Grab	Water	3	X				X	X							X		X				4
MW-201	4/14/10	1115	Grab	Water	20		X	X	X	X		X	X	X	X	X	X		X		X	X	X	5
MW-201 (filtered)	4/14/10	1115	Grab	Water	3	X				X	X							X		X				6
MW-202	4/14/10	0925	Grab	Water	20		X	X	X	X		X	X	X	X	X	X		X		X	X	X	7
MW-202 (filtered)	4/14/10	0925	Grab	Water	3	X				X	X							X		X				8
MW-203	4/14/10	1115	Grab	Water	20		X	X	X	X		X	X	X	X	X	X		X		X	X	X	9
MW-203 (filtered)	4/14/10	1115	Grab	Water	3	X				X	X							X		X				10
MW-204	4/14/10	1315	Grab	Water	21		X	X	X	X		X	X	X	X	X	X		X		X	X	X	11
MW-204 (filtered)	4/14/10	1315	Grab	Water	3	X				X	X							X		X				12
							2	2	2		4				5	3	4	4	4	4	3	2		13

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments: Email results to Michael.Strickler@arcadis-us.com

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Michael Strickler	ARCADIS	4/15/10 1200		TA-SEA	4/15/10 1200
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Seattle/Tacoma
5755 8th Street East
Tacoma, WA 98424
Phone 253.922.2310 fax 253.922.5047

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

19627
TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Rebecca Andresen	Site Contact: Michael Strickler	Date: 4/15/10	COC No:
ARCADIS	Tel/Fax: 206-726-4717	Lab Contact: Curtis Armstrong	Carrier: Courier	2 of 2 COCs
2300 Eastlake Avenue East, Suite 200	Analysis Turnaround Time			Job No. B0045363
Seattle, WA 98102	STANDARD TAT			
(206) 726-4717 Phone	TAT if different from Below ____			SDG No.
(206) 325-8218 FAX	☐ 2 weeks			
Project Name: Former Unocal Seattle Marketing Terminal	☐ 1 week			
Site: Former Unocal Seattle Marketing Terminal	☐ 2 days			
PO #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	NWTPH-Gx	NWTPH-Dx	BTEX 8260	cPAHs 8270 SIM	Dissolved Lead	Total Alkalinity 310.1	Sulfate 300.0	Sulfide 376.1	Nitrate 300.0	Ammonia 350.3	Total Manganese 6020	Dissolved Manganese 6020	Total Iron 6020	Dissolved Iron 6020	Total Organic Carbon 9060 Modified	Methane RSK 175	Carbon Dioxide GC/FID-TCD	Sample Specific Notes:
MW-205	4/14/10	1300	Grab	Water	21		X	X	X	X		X	X	X	X	X	X		X		X	X	X	14 13
MW-205 (filtered)	4/14/10	1300	Grab	Water	3	X				X	X							X		X				15 14
MW-206	4/14/10	0850	Grab	Water	8			X		X		X	X	X	X	X	X		X		X			16 15
MW-206 (filtered)	4/14/10	0850	Grab	Water	3	X				X	X							X		X				17 16
MW-207	4/14/10	0950	Grab	Water	18		X	X	X	X		X	X	X	X	X	X		X		X	X	X	18 17 Additional samples collected 4/13/10
MW-207 (filtered)	4/14/10	0950	Grab	Water	3	X				X	X							X		X				19 18
MW-30	4/14/10	1500	Grab	Water	18		X	X	X			X	X	X	X	X	X		X		X	X	X	20 19
MW-30 (filtered)	4/14/10	1500	Grab	Water	1	X												X		X				21 20
BD-1	4/14/10	--	Grab	Water	21		X	X	X	X		X	X	X	X	X	X		X		X	X	X	22 21
BD-1 (filtered)	4/14/10	--	Grab	Water	3	X				X	X							X		X				23 22
Trip Blank	--	--	Other	Water	9 MLS		X		X															24 23
							2	2	2		4				5	3	4	4	4	4	3	2		

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant Poison B ☐ Unknown ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements & Comments: Email results to Michael.Strickler@arcadis-us.com

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Michael Strickler	ARCADIS	4/15/10 1200		TA-SEA	4/15/10 1200
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Login Sample Receipt Check List

Client: ARCADIS U.S., Inc.

Job Number: 580-18827-1

Login Number: 18827

List Source: TestAmerica Tacoma

Creator: Luna, Francisco

List Number: 1

Question	T / F/ NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	1 cooler temp @ 6.5 but TB was @ 2.8
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	False	Did not submit non filtered metals bottle for total metals
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Is the Field Sampler's name present on COC?	False	no name
Sample Preservation Verified	True	

Login Sample Receipt Check List

Client: ARCADIS U.S., Inc.

Job Number: 580-18827-1

Login Number: 18827
Creator: Chea, Vanda
List Number: 1

List Source: TestAmerica Pensacola
List Creation: 04/17/10 12:42 PM

Question	T / F/ NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	0.0°C
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	the A,D & F bottles was rec'd for SX#3 (preserved vials)
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Is the Field Sampler's name present on COC?	True	
Sample Preservation Verified	True	

Login Sample Receipt Check List

Client: ARCADIS U.S., Inc.

Job Number: 580-18827-1

Login Number: 18827
Creator: Daughtry, Beth
List Number: 1

List Source: TestAmerica Savannah
List Creation: 04/17/10 04:53 PM

Question	T / F/ NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Is the Field Sampler's name present on COC?	N/A	
Sample Preservation Verified	True	

ARCADIS

Appendix E

Sulfate Calc

Biodegradation stochiometric consumption rate of sulfate for decane ($C_{10}H_{22}$).

Adapted from Johnson, et al, 2006.

Transformation process chemical equation:

$$C_{10}H_{22} + {}^{31}/_{4}\, SO_4^{2-} + {}^{31}/_{2}\, H^+ \rightarrow 10CO_2 + {}^{31}/_{4}\, H_2S + 11\, H_2O$$

Molecular weights:

$C_{10}H_{22}$ = 142 grams per mole

SO_4^{2-} = 96.1 grams per mole

Mass of each compound required:

$${}^{31}/_{4}\, moles\ of\ SO_4^{2-} \times 96.1\ \frac{grams}{mole} = 744.8\ grams\ SO_4^{2-}$$

$$1\ mole\ of\ C_{10}H_{22} \times 142.1\ \frac{grams}{mole} = 142.1\ grams\ C_{10}H_{22}$$

Stochiometric Consumption Rate for Sulfate:

$$\frac{142.1\ grams\ C_{10}H_{22}}{744.8\ grams\ SO_4^{2-}} = 0.19\ \frac{grams\ C_{10}H_{22}}{grams\ SO_4^{2-}}$$

Example Biodegradation Capacity Calculation:

For well MW-206:

$$0.19\ \frac{grams\ C_{10}H_{22}}{grams\ SO_4^{2-}} \times 1{,}000 \frac{milligrams\ C_{10}H_{22}}{grams\ C_{10}H_{22}} \times \frac{1}{1{,}000} \frac{grams\ SO_4^{2-}}{milligrams\ SO_4^{2-}} = 0.19 \frac{milligrams\ C_{10}H_{22}}{milligrams\ SO_4^{2-}}$$

$$0.19 \frac{milligrams\ C_{10}H_{22}}{milligrams\ SO_4^{2-}} \times 1{,}800\ \frac{milligrams\ of SO_4^{2-}}{liter} = 342 \frac{milligrams\ C_{10}H_{22}}{liter}$$

$$342 \frac{milligrams\ C_{10}H_{22}}{liter} \times\ 1{,}000 \frac{micrograms\ C_{10}H_{22}}{milligrams\ C_{10}H_{22}} = 342{,}000 \frac{micrograms\ C_{10}H_{22}}{liter}$$

ARCADIS

Appendix F

New Boring Logs

Date Start/Finish: 05/26/10
Drilling Company: Cascade Drilling
Driller's Name: Curtis
Drilling Method: Hollow Stem Auger (Limited Access)
Auger Size: 8"
Rig Type: Limited access HSA
Sampling Method: Split spoon

Northing:
Easting:
Casing Elevation:

Borehole Depth: 30'
Surface Elevation:

Descriptions By: MS/DR

Well/Boring ID: **PZ-61A-R**

Client: Chevron EMC

Location: 3001 Elliott Avenue, Seattle WA

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0										Flush mounted 8" Steel well box monument and j-plug
		1		100			0.0	SP		Poorly graded sand, trace silt and sub-rounded gravel, grey to light grey, damp, no odor	Borehole backfilled with concrete to grade
											2" Blank sch. 40 PVC riser
		2		100			0.0	GP		Poorly graded gravel with sand, little to no fines, subangular gravel, grey sand, damp, very dense, no odor	
5	-5	3	Chem.	100			0.0	SP		Poorly graded sand with gravel, little to no fines, subangular gravel, brown and grey, damp, very dense, no odor	Analytical sample PZ-61A-R-5.0 collected at 5.0 feet bgs
		4		100			0.3	SP		Same as above	
											Borehole backfilled with Bentonite
		5	Chem.	100	50		0.3	SP		Same as above, dry	Analytical sample PZ-61A-R-9.0 collected at 9.0 feet bgs
					50						
10	-10	6	Core	50	100			NA		No descriptions, core samples collected from 10 to 19 feet bgs for LNAPL mobility analysis.	
		7	Core	50							
		8	Core	50	60						#10/20 Silica Sand
			Core		64						
		9	Core	50	100						2" sch. 40 PVC 0.02" slotted screen
			Core		100						
		10	Core	100	100						
		11	Core	100	105						
		12	Core	100	75						
		13	Core	100	100						
15	-15										

ARCADIS
Infrastructure, environment, facilities

Remarks: Boring hand cleared via vaccum truck and air knife to 7 feet bgs. Hand auger used for soil descriptions and sample collection in this interval. From 7 to 30 feet bgs, hollow stem auger drill rig used, with 140 lb. slide hammer to drive samplers. Core samples collected in 6" brass tubes with teflon lined plastic caps secured with duct tape. Core samples were immediatley frozen and packed on dry ice in an upright position for LNAPL Mobility analysis. Analytical (Chemical) analysis samples packed on ice and submitted for NWTPH-Gx and NWTPH-Dx analysis.

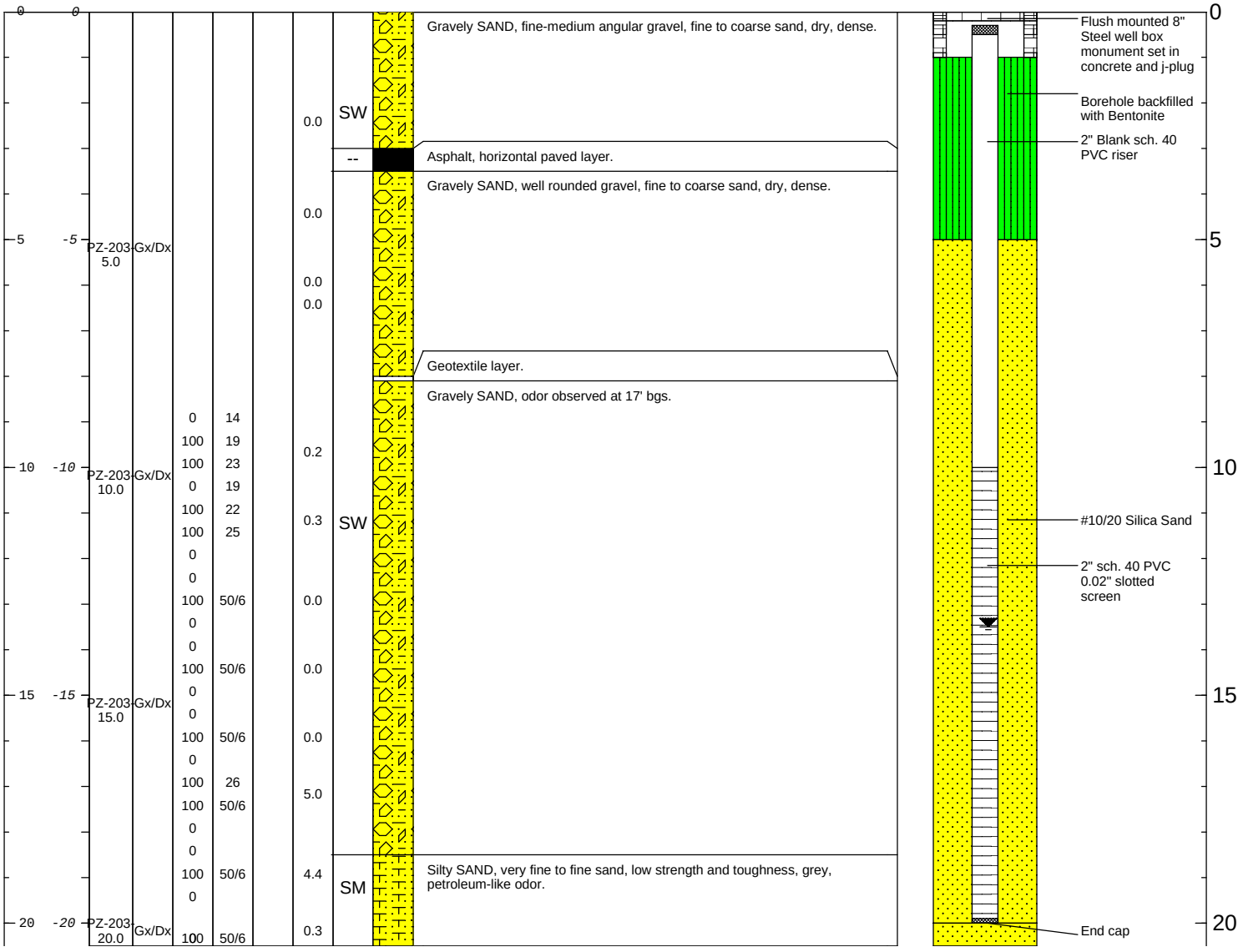
Date Start/Finish: 05/26/10 **Drilling Company:** Cascade Drilling **Driller's Name:** Curtis **Drilling Method:** Hollow Stem Auger (Limited Access) **Auger Size:** 8" **Rig Type:** Limited access HSA **Sampling Method:** Split spoon	**Northing:** **Easting:** **Casing Elevation:** **Borehole Depth:** 30' **Surface Elevation:** **Descriptions By:** MS/DR	**Well/Boring ID:** **PZ-61A-R** **Client:** Chevron EMC **Location:** 3001 Elliott Avenue, Seattle WA

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
15	-15	14	Core	100	75						
		15	Core	100	100						
		16	Core	100	65						
		17	Core	100	75						
		18	Core	100	100						
		19	Core	100	65						
		20	Core	100	75						
		21	Core	100	65						
		22		100	100			SP		Poorly graded sand, trace silt, fine to medium sand, grey, wet, dense, no odor	
			Chem.		65		3.3				Analytical sample PZ-61A-R-19.5 collected at 19.5 feet bgs
20	-20	23		100	35		1.7	SP		Same as above, increasing silt	
					50						
		24		100	50		59.9	SM		Silty sand, very fine to fine sand,no gravel, grey, wet, dense, no odor	
					50						
		25		100	55		4.1	SP		Poorly graded sand, fine-medium sand, trace silt, grey, wet, dense, no odor	
					55						
					40						
		26		100	45		6	SM		Silty sand, very fine to fine sand, no gravel, grey and brown, wet, dense, no odor	
					45						
25	-25		Chem.		45						Analytical sample PZ-61A-R-25.0 collected at 20.5 feet bgs
		27		100	35		1.9	SM		Same as above	
					50						
					50						
		28		100	35		7.0	SM		Same as above	
					40						
					50						End cap
		29		100	35		0.2	SM		Same as above	
					50						
			Chem.		50						Analytical sample PZ-61A-R-30.0 collected at 30.0 feet bgs
30	-30										

ARCADIS
Infrastructure, environment, facilities

Remarks: Boring hand cleared via vaccum truck and air knife to 7 feet bgs. Hand auger used for soil descriptions and sample collection in this interval. From 7 to 30 feet bgs, hollow stem auger drill rig used, with 140 lb. slide hammer to drive samplers. Core samples collected in 6" brass tubes with teflon lined plastic caps secured with duct tape. Core samples were immediatley frozen and packed on dry ice in an upright position for LNAPL Mobility analysis. Analytical (Chemical) analysis samples packed on ice and submitted for NWTPH-Gx and NWTPH-Dx analysis.

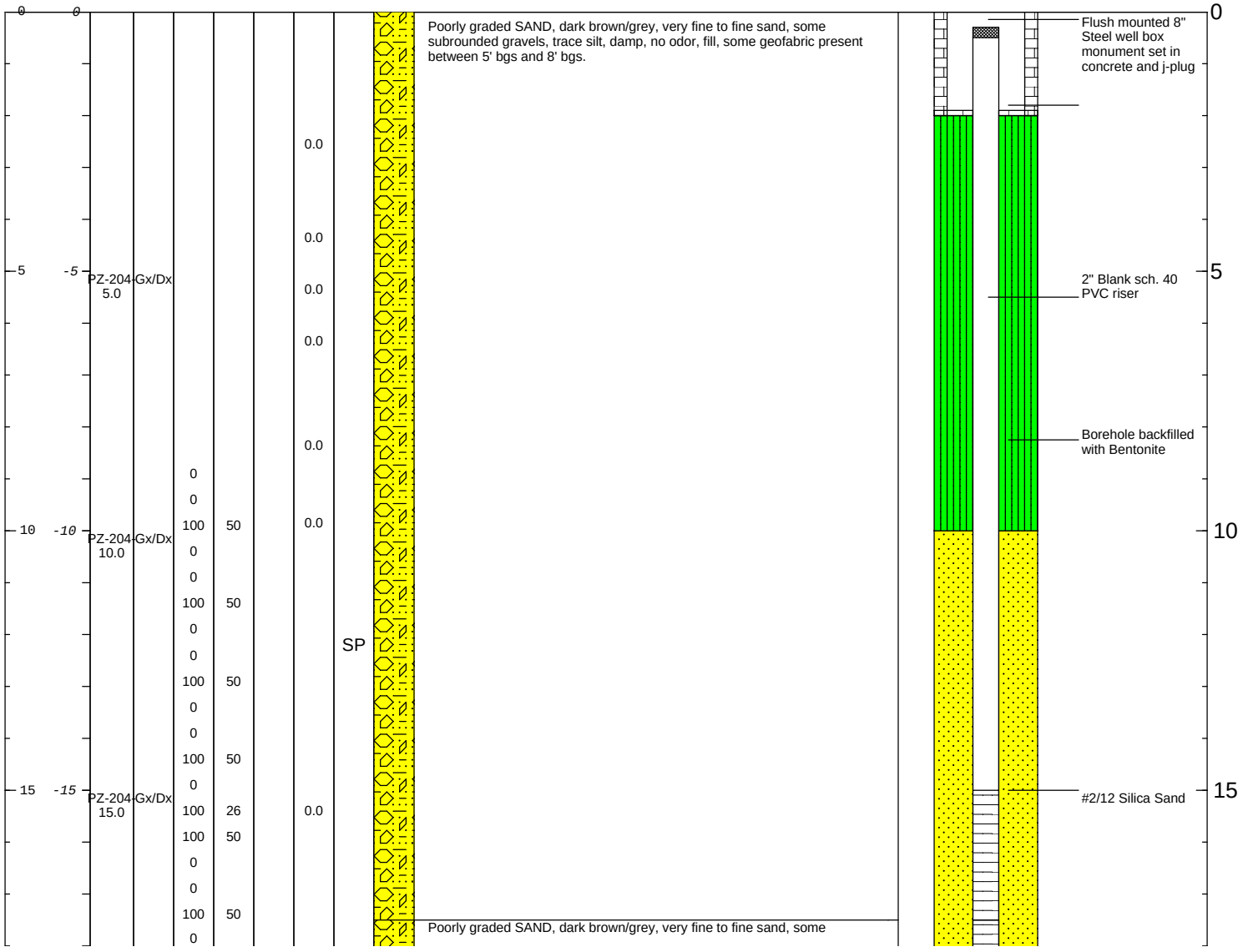
Date Start/Finish: 06/28/10 **Drilling Company:** Cascade Drilling **Driller's Name:** Curtis **Drilling Method:** Hollow Stem Auger (Limited Access) **Auger Size:** 8" **Rig Type:** Limited access HSA **Sampling Method:** Split spoon	**Northing:** **Easting:** **Casing Elevation:** **Borehole Depth:** 20 **Surface Elevation:** **Descriptions By:** MS/DR	**Well/Boring ID:** **PZ-203** **Client:** Chevron EMC **Location:** 3001 Elliott Avenue, Seattle WA



ARCADIS
Infrastructure, environment, facilities

Remarks: Boring hand cleared via vaccum truck and air knife to 8 feet bgs. Hand auger used for soil descriptions and sample collection in this interval.

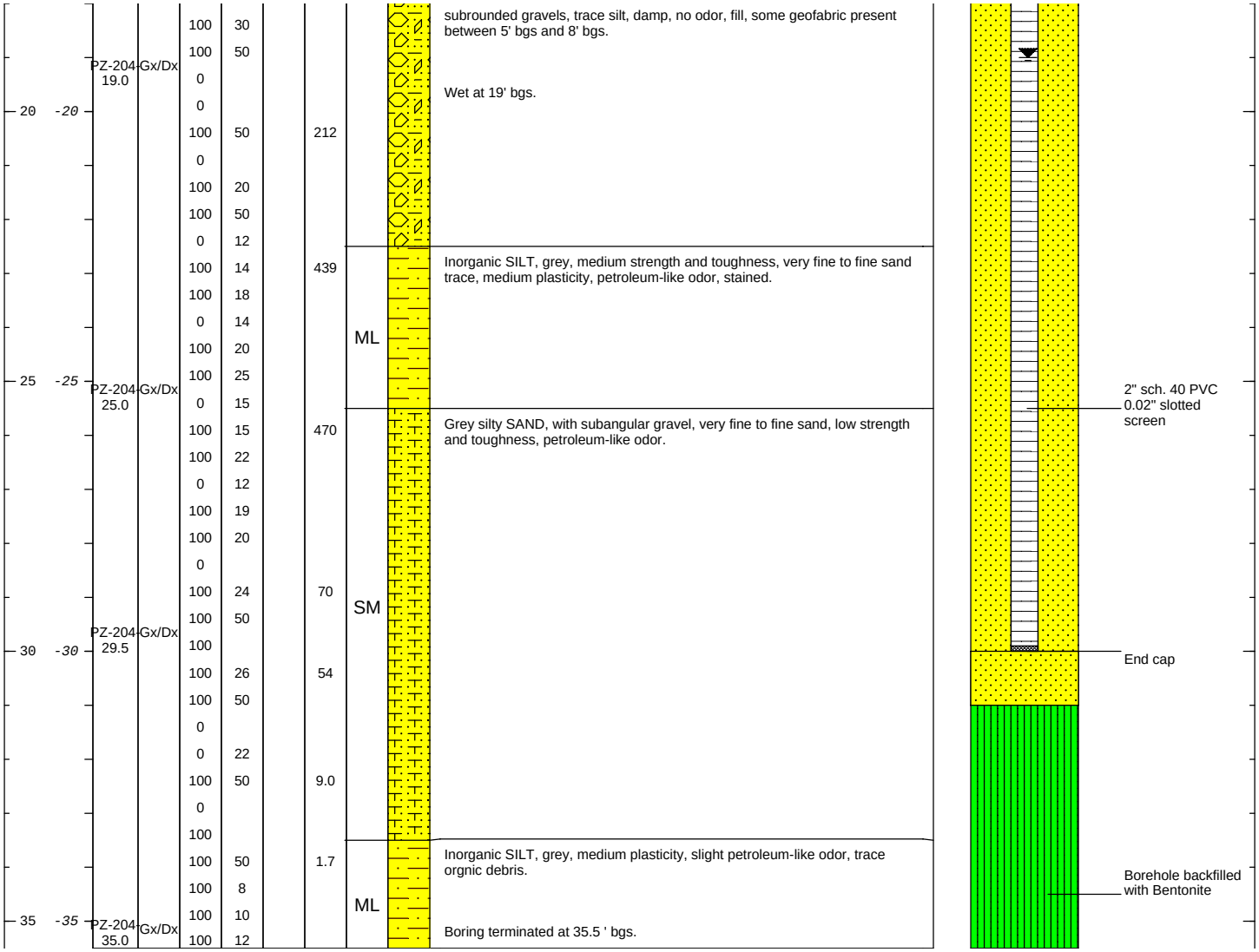
Date Start/Finish: 06/28/10 **Drilling Company:** Cascade Drilling **Driller's Name:** Curtis **Drilling Method:** Hollow Stem Auger (Limited Access) **Auger Size:** 8" **Rig Type:** Limited access HSA **Sampling Method:** Split spoon	**Northing:** **Easting:** **Casing Elevation:** **Borehole Depth:** 20 **Surface Elevation:** **Descriptions By:** MS/DR	**Well/Boring ID: PZ-204** **Client:** Chevron EMC **Location:** 3001 Elliott Avenue, Seattle WA



Remarks: Boring hand cleared via vaccum truck and air knife to 8 feet bgs. Hand auger used for soil descriptions and sample collection in this interval.

ARCADIS
Infrastructure, environment, facilities

Date Start/Finish: 06/28/10 **Drilling Company:** Cascade Drilling **Driller's Name:** Curtis **Drilling Method:** Hollow Stem Auger (Limited Access) **Auger Size:** 8" **Rig Type:** Limited access HSA **Sampling Method:** Split spoon	**Northing:** **Easting:** **Casing Elevation:** **Borehole Depth:** 20 **Surface Elevation:** **Descriptions By:** MS/DR	**Well/Boring ID:** **PZ-204** **Client:** Chevron EMC **Location:** 3001 Elliott Avenue, Seattle WA



Remarks: Boring hand cleared via vaccum truck and air knife to 8 feet bgs. Hand auger used for soil descriptions and sample collection in this interval.

ARCADIS
Infrastructure, environment, facilities

ARCADIS

Appendix G

Soil Analytical Data

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories Inc.
TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

TestAmerica Job ID: 580-19762-1
Client Project/Site: Chevron Seattle Terminal

For:
ARCADIS U.S., Inc.
2300 Eastlake Avenue East
Suite 200
Seattle, Washington 98102

Attn: Mike Strickler

Authorized for release by:
6/10/2010 12:28 PM

Curtis Armstrong
Project Manager I
curtis.armstrong@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Table of Contents

Comments
No additional comments.

Receipt
All samples were received in good condition within temperature requirements.

GC/MS VOA
No analytical or quality issues were noted.

GC Semi VOA
No analytical or quality issues were noted.

General Chemistry
No analytical or quality issues were noted.

Organic Prep
No analytical or quality issues were noted.

Client: ARCADIS U.S., Inc.
Project/Site: Chevron Seattle Terminal

TestAmerica Job ID: 580-19762-1

Glossary

Glossary	Glossary Description
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis.

Client Sample ID: PZ-61A-R-9.0

Lab Sample ID: 580-19762-1
Date Collected: 06/04/10 10:00
Matrix: Solid
Date Received: 06/07/10 12:40
Percent Solids: 91.7

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		27		mg/Kg	☼	06/08/10 10:46	06/08/10 16:32	1
Motor Oil (>C24-C36)	ND		53		mg/Kg	☼	06/08/10 10:46	06/08/10 16:32	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*97*		*50 - 150*	*06/08/10 10:46*	*06/08/10 16:32*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	92		0.10		%			06/08/10 10:42	1
Percent Moisture	8.3		0.10		%			06/08/10 10:42	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.7		mg/Kg	☼	06/08/10 12:23	06/08/10 18:35	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*50 - 150*	*06/08/10 12:23*	*06/08/10 18:35*	*1*
Trifluorotoluene (Surr)	*103*		*50 - 150*	*06/08/10 12:23*	*06/08/10 18:35*	*1*

Client Sample ID: PZ-61A-R-19.5

Lab Sample ID: 580-19762-2
Date Collected: 06/04/10 12:20
Matrix: Solid
Date Received: 06/07/10 12:40
Percent Solids: 87.8

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		27		mg/Kg	☼	06/08/10 10:46	06/08/10 17:24	1
Motor Oil (>C24-C36)	ND		54		mg/Kg	☼	06/08/10 10:46	06/08/10 17:24	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*98*		*50 - 150*	*06/08/10 10:46*	*06/08/10 17:24*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	88		0.10		%			06/08/10 10:42	1
Percent Moisture	12		0.10		%			06/08/10 10:42	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	43		6.9		mg/Kg	☼	06/08/10 12:23	06/08/10 19:02	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*125*		*50 - 150*	*06/08/10 12:23*	*06/08/10 19:02*	*1*
Trifluorotoluene (Surr)	*109*		*50 - 150*	*06/08/10 12:23*	*06/08/10 19:02*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-65197/1-B
Matrix: Solid
Analysis Batch: 65167

Client Sample ID: MB 580-65197/1-B
Prep Type: Total/NA
Prep Batch: 65197

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		25		mg/Kg		06/08/10 10:46	06/08/10 15:39	1
Motor Oil (>C24-C36)	ND		50		mg/Kg		06/08/10 10:46	06/08/10 15:39	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*98*		*50 - 150*	*06/08/10 10:46*	*06/08/10 15:39*	*1*

Lab Sample ID: LCS 580-65197/2-B
Matrix: Solid
Analysis Batch: 65167

Client Sample ID: LCS 580-65197/2-B
Prep Type: Total/NA
Prep Batch: 65197

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits
#2 Diesel (C10-C24)	500	466		mg/Kg	93	64 - 127
Motor Oil (>C24-C36)	500	473		mg/Kg	95	70 - 125

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*96*		*50 - 150*

Lab Sample ID: 580-19762-1 DU
Matrix: Solid
Analysis Batch: 65167

Client Sample ID: PZ-61A-R-9.0
Prep Type: Total/NA
Prep Batch: 65197

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	RPD	RPD Limit
#2 Diesel (C10-C24)	ND		ND		mg/Kg	NC	35
Motor Oil (>C24-C36)	ND		ND		mg/Kg	NC	35

Surrogate	*DU % Recovery*	*DU Qualifier*	*Limits*
o-Terphenyl	*96*		*50 - 150*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-65221/1-A
Matrix: Solid
Analysis Batch: 65227

Client Sample ID: MB 580-65221/1-A
Prep Type: Total/NA
Prep Batch: 65221

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		4.0		mg/Kg		06/08/10 12:22	06/08/10 12:31	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*50 - 150*	*06/08/10 12:22*	*06/08/10 12:31*	*1*
Trifluorotoluene (Surr)	*110*		*50 - 150*	*06/08/10 12:22*	*06/08/10 12:31*	*1*

Lab Sample ID: LCS 580-65221/2-A
Matrix: Solid
Analysis Batch: 65227

Client Sample ID: LCS 580-65221/2-A
Prep Type: Total/NA
Prep Batch: 65221

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits
Gasoline	40.0	39.1		mg/Kg	98	68 - 120

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC) (Continued)

Lab Sample ID: LCS 580-65221/2-A
Matrix: Solid
Analysis Batch: 65227

Client Sample ID: LCS 580-65221/2-A
Prep Type: Total/NA
Prep Batch: 65221

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*50 - 150*
Trifluorotoluene (Surr)	*109*		*50 - 150*

Lab Sample ID: LCSD 580-65221/3-A
Matrix: Solid
Analysis Batch: 65227

Client Sample ID: LCSD 580-65221/3-A
Prep Type: Total/NA
Prep Batch: 65221

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	% Rec.	% Rec. Limits	RPD	RPD Limit
Gasoline			40.0	41.7		mg/Kg	104	68 - 120	6	25

Surrogate	*LCSD % Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*105*		*50 - 150*
Trifluorotoluene (Surr)	*113*		*50 - 150*

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Chevron Seattle Terminal

TestAmerica Job ID: 580-19762-1

Client Sample ID: PZ-61A-R-9.0
Date Collected: 06/04/10 10:00
Date Received: 06/07/10 12:40

Lab Sample ID: 580-19762-1
Matrix: Solid
Percent Solids: 91.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			65197	06/08/10 10:46	KKJ	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	65167	06/08/10 16:32	EK	TestAmerica Seattle
Total/NA	Analysis	Moisture		1	65196	06/08/10 10:42	KKJ	TestAmerica Seattle
Total/NA	Prep	5035			65221	06/08/10 12:23	MAT	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	65227	06/08/10 18:35	MAT	TestAmerica Seattle

Client Sample ID: PZ-61A-R-19.5
Date Collected: 06/04/10 12:20
Date Received: 06/07/10 12:40

Lab Sample ID: 580-19762-2
Matrix: Solid
Percent Solids: 87.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			65197	06/08/10 10:46	KKJ	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	65167	06/08/10 17:24	EK	TestAmerica Seattle
Total/NA	Analysis	Moisture		1	65196	06/08/10 10:42	KKJ	TestAmerica Seattle
Total/NA	Prep	5035			65221	06/08/10 12:23	MAT	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	65227	06/08/10 19:02	MAT	TestAmerica Seattle

Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Chevron Seattle Terminal

TestAmerica Job ID: 580-19762-1

Laboratory	Program	Authority	EPA Region	Certification ID	Expiration Date
TestAmerica Seattle	DoD ELAP	L-A-B	0	L2236	01/19/13
TestAmerica Seattle	ISO/IEC 17025	L-A-B	0	L2236	01/19/13
TestAmerica Seattle	NELAC Primary AB	Oregon	10	WA100007	11/06/10
TestAmerica Seattle	NELAC Secondary AB	California	9	1115CA	01/31/11
TestAmerica Seattle	State Program	Alaska	10	UST-022	03/04/11
TestAmerica Seattle	State Program	Washington	10	C1226	02/17/11
TestAmerica Seattle	USDA			P330-08-00099	05/22/11

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Chevron Seattle Terminal

TestAmerica Job ID: 580-19762-1

Lab Sample ID	Client Sample ID	Matrix	Sampled	Received
580-19762-1	PZ-61A-R-9.0	Solid	06/04/10 10:00	06/07/10 12:40
580-19762-2	PZ-61A-R-19.5	Solid	06/04/10 12:20	06/07/10 12:40

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Seattle
5755 8th Street E.
Tacoma, WA 98424
Tel. 253-922-2310
Fax 253-922-5047
www.testamericainc.com

☐ Rush
☒ Short Hold

Chain of Custody Record
19762

Client: ARCADIS	Client Contact: Mike Stricker	Date: 6/4/10	Chain of Custody Number: 5930
Address: 2300 Eastlake Ave E Suite 200	Telephone Number (Area Code)/Fax Number: 206 325 5254	Lab Number:	Page 1 of 1
City: Seattle; State: WA; Zip Code: 98102	Sampler: DR/RR; Lab Contact:		
Project Name and Location (State): Seattle Terminal	Billing Contact:		
Contract/Purchase Order/Quote No.: B0045363			

Sample I.D. and Location/Description (Containers for each sample may be combined on one line)	Date	Time	Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Meth.	NWTPH Gx	NWTPH Dx		Special Instructions/ Conditions of Receipt
PZ-61A-R-9.0	6/4/10	1000				X	1						1	X	X	1	3 day TAT
PZ-61A-R-19.5	↓	1220				X	1						1	X	X	2	3 day TAT
PZ-61A-R-25	↓	1250				X	1						1	X	X	3	HOLD
PZ-61A-R-30	↓	1310				X	1						1	X	X	4	HOLD

Analysis (Attach list if more space is needed)

w/o
@ Lab 1240 Temp 5.7 °C TB 5.1 °C
Cooler Dsc Lg Blue/white Wet/Packs
Packing Bubble Bag

Cooler: ☐ Yes ☐ No Cooler Temp: ______

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ______ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required (business days): ☐ 24 Hours ☐ 48 Hours ☐ 5 Days ☐ 10 Days ☐ 15 Days ☐ Other ______

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By Sign/Print: [signature]	6/7/10	1130	1. Received By Sign/Print: [signature]	6/7/10	1130
2. Relinquished By Sign/Print:			2. Received By Sign/Print:		
3. Relinquished By Sign/Print:			3. Received By Sign/Print:		

Comments

DISTRIBUTION: WHITE – Stays with the Samples; CANARY – Returned to Client with Report; PINK – Field Copy

TAL-8274-580 (0210)

Login Sample Receipt Check List

Client: ARCADIS U.S., Inc.

Job Number: 580-19762-1

Login Number: 19762

List Source: TestAmerica Tacoma

Creator: Luna, Francisco

List Number: 1

Question	T / F/ NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Is the Field Sampler's name present on COC?	True	
Sample Preservation Verified	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories Inc.
TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

TestAmerica Job ID: 580-20208-1
Client Project/Site: Chevron Seattle Terminal

For:
ARCADIS U.S., Inc.
2300 Eastlake Avenue East
Suite 200
Seattle, Washington 98102

Attn: Mike Strickler

Authorized for release by:
7/14/2010 4:00 PM
Curtis Armstrong
Project Manager I
curtis.armstrong@testamericainc.com

Designee for

Melissa Armstrong
Project Manager I
melissa.armstrong@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Table of Contents

Qualifier Definition/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Chevron Seattle Terminal

TestAmerica Job ID: 580-20208-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
F	Duplicate RPD exceeds the control limit
F	MS or MSD exceeds the control limits
H	Sample was prepped or analyzed beyond the specified holding time
Y	The chromatographic response resembles a typical fuel pattern.

GC VOA

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
I	Indicates the presence of an interference, recovery is not calculated.
X	Surrogate is outside control limits

Glossary

Glossary	Glossary Description
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis.

Job Narrative
580-20208-1

Comments
No additional comments.

Receipt
All samples were received in good condition within temperature requirements.

GC/MS VOA
Method(s) NWTPH-Gx:
The surrogate 4-Bromofluorobenzene recovery for the following sample(s) was outside control limits: (580-20283-1 MS), (580-20283-1 MSD), Secondstockpile-01072010 (1) (580-20283-1). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method(s) NWTPH-Gx:
The following sample(s) was received outside of holding time: PZ-204-5.0 (580-20208-5).

Method(s) NWTPH-Gx:
The surrogate 4-Bromofluorobenzene recovery for the following sample(s) was outside control limits: PZ-204-25.0 (580-20208-9). Evidence of matrix interference is present: see chromatogram; therefore, re-extraction and/or re-analysis was not performed.

No other analytical or quality issues were noted.

GC Semi VOA
Method(s) NWTPH-Dx:
For sample 580-20208-3, the results in the Diesel and Motor oil ranges are due to heavy fuel oil/bunker C.

For sample 580-20208-8, the results in the Diesel range are due to heavily weathered diesel fuel.

The following sample(s) was received outside of holding time: 580-20208-5.

For sample 580-20208-4, the results in the Diesel and Motor oil ranges are due to heavy fuel oil/bunker c.

For sample 580-20208-9, the results in the Diesel range are due to a complex mixture of a gasoline range product and diesel fuel, which overlaps into the Motor oil range.

No other analytical or quality issues were noted.

General Chemistry
No analytical or quality issues were noted.

Organic Prep
No analytical or quality issues were noted.

Client Sample ID: PZ-203-5.0

Lab Sample ID: 580-20208-1
Date Collected: 06/29/10 10:40
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 95.0

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		24		mg/Kg	☼	07/07/10 12:00	07/07/10 22:18	1
Motor Oil (>C24-C36)	150		48		mg/Kg	☼	07/07/10 12:00	07/07/10 22:18	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*108*		*50 - 150*	*07/07/10 12:00*	*07/07/10 22:18*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	95		0.10		%			07/08/10 07:59	1
Percent Moisture	5.0		0.10		%			07/08/10 07:59	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		7.9		mg/Kg	☼	07/08/10 11:10	07/08/10 21:13	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*118*		*50 - 150*	*07/08/10 11:10*	*07/08/10 21:13*	*1*
Trifluorotoluene (Surr)	*111*		*50 - 150*	*07/08/10 11:10*	*07/08/10 21:13*	*1*

Client Sample ID: PZ-203-10.0

Lab Sample ID: 580-20208-2
Date Collected: 06/29/10 14:20
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 94.0

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		25		mg/Kg	☼	07/07/10 12:00	07/07/10 23:13	1
Motor Oil (>C24-C36)	180		51		mg/Kg	☼	07/07/10 12:00	07/07/10 23:13	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*105*		*50 - 150*	*07/07/10 12:00*	*07/07/10 23:13*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	94		0.10		%			07/08/10 07:59	1
Percent Moisture	6.0		0.10		%			07/08/10 07:59	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		7.9		mg/Kg	☼	07/08/10 11:10	07/08/10 22:21	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*117*		*50 - 150*	*07/08/10 11:10*	*07/08/10 22:21*	*1*
Trifluorotoluene (Surr)	*112*		*50 - 150*	*07/08/10 11:10*	*07/08/10 22:21*	*1*

Client Sample ID: PZ-203-15.0

Lab Sample ID: 580-20208-3
Date Collected: 06/29/10 14:40
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 90.8

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	130	Y	25		mg/Kg	☼	07/01/10 09:17	07/01/10 16:59	1
Motor Oil (>C24-C36)	180	Y	50		mg/Kg	☼	07/01/10 09:17	07/01/10 16:59	1

Client Sample ID: PZ-203-15.0

Lab Sample ID: 580-20208-3
Date Collected: 06/29/10 14:40
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 90.8

Surrogate	% Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	94		50 - 150	07/01/10 09:17	07/01/10 16:59	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	91		0.10		%			07/01/10 15:52	1
Percent Moisture	9.2		0.10		%			07/01/10 15:52	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	55		7.9		mg/Kg	☼	07/02/10 17:42	07/02/10 21:52	1

Surrogate	% Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	104		50 - 150	07/02/10 17:42	07/02/10 21:52	1
Trifluorotoluene (Surr)	107		50 - 150	07/02/10 17:42	07/02/10 21:52	1

Client Sample ID: PZ-203-20.0

Lab Sample ID: 580-20208-4
Date Collected: 06/29/10 14:55
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 82.3

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	41	Y	30		mg/Kg	☼	07/07/10 12:00	07/07/10 23:31	1
Motor Oil (>C24-C36)	68	Y	60		mg/Kg	☼	07/07/10 12:00	07/07/10 23:31	1

Surrogate	% Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	103		50 - 150	07/07/10 12:00	07/07/10 23:31	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	82		0.10		%			07/08/10 07:59	1
Percent Moisture	18		0.10		%			07/08/10 07:59	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	19		9.0		mg/Kg	☼	07/08/10 11:10	07/08/10 22:43	1

Surrogate	% Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	117		50 - 150	07/08/10 11:10	07/08/10 22:43	1
Trifluorotoluene (Surr)	113		50 - 150	07/08/10 11:10	07/08/10 22:43	1

Client Sample ID: PZ-204-5.0

Lab Sample ID: 580-20208-5
Date Collected: 06/01/10 09:15
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 96.0

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND	H	24		mg/Kg	☼	07/07/10 12:00	07/07/10 23:49	1
Motor Oil (>C24-C36)	ND	H	48		mg/Kg	☼	07/07/10 12:00	07/07/10 23:49	1

Surrogate	% Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	107		50 - 150	07/07/10 12:00	07/07/10 23:49	1

Client Sample ID: PZ-204-5.0

Lab Sample ID: 580-20208-5
Date Collected: 06/01/10 09:15
Matrix: Solid
Date Received: 06/29/10 13:50

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	96		0.10		%			07/08/10 07:59	1
Percent Moisture	4.0		0.10		%			07/08/10 07:59	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND	H	8.4		mg/Kg	☼	07/08/10 11:10	07/08/10 23:51	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*117*		*50 - 150*	*07/08/10 11:10*	*07/08/10 23:51*	*1*
Trifluorotoluene (Surr)	*113*		*50 - 150*	*07/08/10 11:10*	*07/08/10 23:51*	*1*

Client Sample ID: PZ-204-10.0

Lab Sample ID: 580-20208-6
Date Collected: 06/29/10 10:20
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 96.2

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		25		mg/Kg	☼	07/07/10 12:00	07/08/10 00:07	1
Motor Oil (>C24-C36)	ND		50		mg/Kg	☼	07/07/10 12:00	07/08/10 00:07	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*107*		*50 - 150*	*07/07/10 12:00*	*07/08/10 00:07*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	96		0.10		%			07/08/10 07:59	1
Percent Moisture	3.8		0.10		%			07/08/10 07:59	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		8.0		mg/Kg	☼	07/08/10 11:10	07/09/10 00:13	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*117*		*50 - 150*	*07/08/10 11:10*	*07/09/10 00:13*	*1*
Trifluorotoluene (Surr)	*111*		*50 - 150*	*07/08/10 11:10*	*07/09/10 00:13*	*1*

Client Sample ID: PZ-204-15.0

Lab Sample ID: 580-20208-7
Date Collected: 06/29/10 10:35
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 96.0

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		26		mg/Kg	☼	07/07/10 12:00	07/08/10 00:25	1
Motor Oil (>C24-C36)	ND		52		mg/Kg	☼	07/07/10 12:00	07/08/10 00:25	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*106*		*50 - 150*	*07/07/10 12:00*	*07/08/10 00:25*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	96		0.10		%			07/08/10 07:59	1
Percent Moisture	4.0		0.10		%			07/08/10 07:59	1

Client Sample ID: PZ-204-15.0

Lab Sample ID: 580-20208-7
Date Collected: 06/29/10 10:35
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 96.0

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		7.4		mg/Kg	☼	07/08/10 11:10	07/09/10 00:36	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*118*		*50 - 150*	*07/08/10 11:10*	*07/09/10 00:36*	*1*
Trifluorotoluene (Surr)	*110*		*50 - 150*	*07/08/10 11:10*	*07/09/10 00:36*	*1*

Client Sample ID: PZ-204-19.0

Lab Sample ID: 580-20208-8
Date Collected: 06/29/10 10:40
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 85.0

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	2600	Y	25		mg/Kg	☼	07/01/10 09:17	07/01/10 17:19	1
Motor Oil (>C24-C36)	820		50		mg/Kg	☼	07/01/10 09:17	07/01/10 17:19	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*110*		*50 - 150*	*07/01/10 09:17*	*07/01/10 17:19*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	85		0.10		%			07/01/10 15:52	1
Percent Moisture	15		0.10		%			07/01/10 15:52	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	3200		170		mg/Kg	☼	07/02/10 17:42	07/02/10 22:17	20

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*109*		*50 - 150*	*07/02/10 17:42*	*07/02/10 22:17*	*20*
Trifluorotoluene (Surr)	*126*		*50 - 150*	*07/02/10 17:42*	*07/02/10 22:17*	*20*

Client Sample ID: PZ-204-25.0

Lab Sample ID: 580-20208-9
Date Collected: 06/29/10 11:00
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 87.2

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	2100	Y	26		mg/Kg	☼	07/07/10 12:00	07/08/10 01:18	1
Motor Oil (>C24-C36)	360	Y	52		mg/Kg	☼	07/07/10 12:00	07/08/10 01:18	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*111*		*50 - 150*	*07/07/10 12:00*	*07/08/10 01:18*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	87		0.10		%			07/08/10 07:59	1
Percent Moisture	13		0.10		%			07/08/10 07:59	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	1300		7.3		mg/Kg	☼	07/08/10 11:10	07/09/10 00:58	1

Client Sample ID: PZ-204-25.0

Lab Sample ID: 580-20208-9
Date Collected: 06/29/10 11:00
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 87.2

Surrogate	% Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*218*	*X I*	*50 - 150*	*07/08/10 11:10*	*07/09/10 00:58*	*1*
Trifluorotoluene (Surr)	*95*		*50 - 150*	*07/08/10 11:10*	*07/09/10 00:58*	*1*

Client Sample ID: PZ-204-29.5

Lab Sample ID: 580-20208-10
Date Collected: 06/29/10 11:15
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 81.6

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		28		mg/Kg	☼	07/07/10 12:00	07/08/10 01:36	1
Motor Oil (>C24-C36)	ND		56		mg/Kg	☼	07/07/10 12:00	07/08/10 01:36	1

Surrogate	% Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	*100*		*50 - 150*	*07/07/10 12:00*	*07/08/10 01:36*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**82**		0.10		%			07/08/10 07:59	1
Percent Moisture	**18**		0.10		%			07/08/10 07:59	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	**310**		9.2		mg/Kg	☼	07/08/10 11:10	07/09/10 01:21	1

Surrogate	% Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*126*		*50 - 150*	*07/08/10 11:10*	*07/09/10 01:21*	*1*
Trifluorotoluene (Surr)	*114*		*50 - 150*	*07/08/10 11:10*	*07/09/10 01:21*	*1*

Client Sample ID: PZ-204-35.0

Lab Sample ID: 580-20208-11
Date Collected: 06/29/10 11:40
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 79.4

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		30		mg/Kg	☼	07/07/10 12:00	07/08/10 01:54	1
Motor Oil (>C24-C36)	ND		60		mg/Kg	☼	07/07/10 12:00	07/08/10 01:54	1

Surrogate	% Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	*97*		*50 - 150*	*07/07/10 12:00*	*07/08/10 01:54*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**79**		0.10		%			07/08/10 07:59	1
Percent Moisture	**21**		0.10		%			07/08/10 07:59	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	**67**		11		mg/Kg	☼	07/08/10 11:10	07/09/10 01:43	1

Surrogate	% Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*119*		*50 - 150*	*07/08/10 11:10*	*07/09/10 01:43*	*1*
Trifluorotoluene (Surr)	*110*		*50 - 150*	*07/08/10 11:10*	*07/09/10 01:43*	*1*

Client Sample ID: Trip Blank
Date Collected: 06/29/10 00:00
Date Received: 06/29/10 13:50

Lab Sample ID: 580-20208-12
Matrix: Solid

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		4.0		mg/Kg		07/02/10 17:42	07/02/10 21:01	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*50 - 150*	*07/02/10 17:42*	*07/02/10 21:01*	*1*
Trifluorotoluene (Surr)	*113*		*50 - 150*	*07/02/10 17:42*	*07/02/10 21:01*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-66894/1-B
Matrix: Solid
Analysis Batch: 66916

Client Sample ID: MB 580-66894/1-B
Prep Type: Total/NA
Prep Batch: 66894

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		25		mg/Kg		07/01/10 09:17	07/01/10 15:16	1
Motor Oil (>C24-C36)	ND		50		mg/Kg		07/01/10 09:17	07/01/10 15:16	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*94*		*50 - 150*	*07/01/10 09:17*	*07/01/10 15:16*	*1*

Lab Sample ID: LCS 580-66894/2-B
Matrix: Solid
Analysis Batch: 66916

Client Sample ID: LCS 580-66894/2-B
Prep Type: Total/NA
Prep Batch: 66894

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits
#2 Diesel (C10-C24)	502	533		mg/Kg	106	64 - 127
Motor Oil (>C24-C36)	501	536		mg/Kg	107	70 - 125

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*99*		*50 - 150*

Lab Sample ID: MB 580-67269/1-B
Matrix: Solid
Analysis Batch: 67216

Client Sample ID: MB 580-67269/1-B
Prep Type: Total/NA
Prep Batch: 67269

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		25		mg/Kg		07/07/10 12:00	07/07/10 21:42	1
Motor Oil (>C24-C36)	ND		50		mg/Kg		07/07/10 12:00	07/07/10 21:42	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*105*		*50 - 150*	*07/07/10 12:00*	*07/07/10 21:42*	*1*

Lab Sample ID: LCS 580-67269/2-B
Matrix: Solid
Analysis Batch: 67216

Client Sample ID: LCS 580-67269/2-B
Prep Type: Total/NA
Prep Batch: 67269

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits
#2 Diesel (C10-C24)	502	560		mg/Kg	112	64 - 127
Motor Oil (>C24-C36)	501	606		mg/Kg	121	70 - 125

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*112*		*50 - 150*

Lab Sample ID: 580-20208-1 MS
Matrix: Solid
Analysis Batch: 67216

Client Sample ID: PZ-203-5.0
Prep Type: Total/NA
Prep Batch: 67269

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	% Rec.	% Rec. Limits
#2 Diesel (C10-C24)	ND		474	572		mg/Kg	118	70 - 125
Motor Oil (>C24-C36)	150		473	842	F	mg/Kg	146	64 - 127

Surrogate	*MS % Recovery*	*MS Qualifier*	*Limits*
o-Terphenyl	*117*		*50 - 150*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

Lab Sample ID: 580-20208-1 DU
Matrix: Solid
Analysis Batch: 67216

Client Sample ID: PZ-203-5.0
Prep Type: Total/NA
Prep Batch: 67269

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit			RPD	RPD Limit
#2 Diesel (C10-C24)	ND			ND		mg/Kg			12	35
Motor Oil (>C24-C36)	150			225	F	mg/Kg			39	35

Surrogate	*DU % Recovery*	*DU Qualifier*	*Limits*
o-Terphenyl	*106*		*50 - 150*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-67078/1-A
Matrix: Solid
Analysis Batch: 67082

Client Sample ID: MB 580-67078/1-A
Prep Type: Total/NA
Prep Batch: 67078

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		4.0		mg/Kg		07/02/10 17:42	07/02/10 19:45	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*50 - 150*	*07/02/10 17:42*	*07/02/10 19:45*	*1*
Trifluorotoluene (Surr)	*115*		*50 - 150*	*07/02/10 17:42*	*07/02/10 19:45*	*1*

Lab Sample ID: LCS 580-67078/2-A
Matrix: Solid
Analysis Batch: 67082

Client Sample ID: LCS 580-67078/2-A
Prep Type: Total/NA
Prep Batch: 67078

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits		
Gasoline			40.0	37.6		mg/Kg	94	68 - 120		

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*105*		*50 - 150*
Trifluorotoluene (Surr)	*112*		*50 - 150*

Lab Sample ID: LCSD 580-67078/3-A
Matrix: Solid
Analysis Batch: 67082

Client Sample ID: LCSD 580-67078/3-A
Prep Type: Total/NA
Prep Batch: 67078

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	% Rec.	% Rec. Limits	RPD	RPD Limit
Gasoline			40.0	38.5		mg/Kg	96	68 - 120	2	25

Surrogate	*LCSD % Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*50 - 150*
Trifluorotoluene (Surr)	*113*		*50 - 150*

Lab Sample ID: MB 580-67366/1-A
Matrix: Solid
Analysis Batch: 67412

Client Sample ID: MB 580-67366/1-A
Prep Type: Total/NA
Prep Batch: 67366

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		4.0		mg/Kg		07/08/10 11:10	07/08/10 19:43	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC) (Continued)

Lab Sample ID: MB 580-67366/1-A
Matrix: Solid
Analysis Batch: 67412

Client Sample ID: MB 580-67366/1-A
Prep Type: Total/NA
Prep Batch: 67366

Surrogate	MB % Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	117		50 - 150	07/08/10 11:10	07/08/10 19:43	1
Trifluorotoluene (Surr)	116		50 - 150	07/08/10 11:10	07/08/10 19:43	1

Lab Sample ID: LCS 580-67366/2-A
Matrix: Solid
Analysis Batch: 67412

Client Sample ID: LCS 580-67366/2-A
Prep Type: Total/NA
Prep Batch: 67366

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits
Gasoline	40.0	36.3		mg/Kg	91	68 - 120

Surrogate	LCS % Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	117		50 - 150
Trifluorotoluene (Surr)	111		50 - 150

Lab Sample ID: LCSD 580-67366/3-A
Matrix: Solid
Analysis Batch: 67412

Client Sample ID: LCSD 580-67366/3-A
Prep Type: Total/NA
Prep Batch: 67366

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	% Rec.	% Rec. Limits	RPD	RPD Limit
Gasoline	40.0	28.9		mg/Kg	72	68 - 120	23	25

Surrogate	LCSD % Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	118		50 - 150
Trifluorotoluene (Surr)	112		50 - 150

Lab Sample ID: 580-20208-1 MS
Matrix: Solid
Analysis Batch: 67412

Client Sample ID: PZ-203-5.0
Prep Type: Total/NA
Prep Batch: 67366

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	% Rec.	% Rec. Limits
Gasoline	ND		91.9	88.9		mg/Kg	93	50 - 150

Surrogate	MS % Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	119		50 - 150
Trifluorotoluene (Surr)	108		50 - 150

Lab Sample ID: 580-20208-1 MSD
Matrix: Solid
Analysis Batch: 67412

Client Sample ID: PZ-203-5.0
Prep Type: Total/NA
Prep Batch: 67366

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	% Rec.	% Rec. Limits	RPD	RPD Limit
Gasoline	ND		91.9	88.4		mg/Kg	93	50 - 150	1	35

Surrogate	MSD % Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	119		50 - 150
Trifluorotoluene (Surr)	104		50 - 150

Client Sample ID: PZ-203-5.0

Lab Sample ID: 580-20208-1
Date Collected: 06/29/10 10:40
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 95.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			67269	07/07/10 12:00	EK	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	67216	07/07/10 22:18	EK	TestAmerica Seattle
Total/NA	Analysis	Moisture		1	67343	07/08/10 07:59	EK	TestAmerica Seattle
Total/NA	Prep	5035			67366	07/08/10 11:10	JMB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	67412	07/08/10 21:13	JMB	TestAmerica Seattle

Client Sample ID: PZ-203-10.0

Lab Sample ID: 580-20208-2
Date Collected: 06/29/10 14:20
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 94.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			67269	07/07/10 12:00	EK	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	67216	07/07/10 23:13	EK	TestAmerica Seattle
Total/NA	Analysis	Moisture		1	67343	07/08/10 07:59	EK	TestAmerica Seattle
Total/NA	Prep	5035			67366	07/08/10 11:10	JMB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	67412	07/08/10 22:21	JMB	TestAmerica Seattle

Client Sample ID: PZ-203-15.0

Lab Sample ID: 580-20208-3
Date Collected: 06/29/10 14:40
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 90.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			66894	07/01/10 09:17	EK	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	66916	07/01/10 16:59	EK	TestAmerica Seattle
Total/NA	Analysis	Moisture		1	66951	07/01/10 15:52	SP	TestAmerica Seattle
Total/NA	Prep	5035			67078	07/02/10 17:42	JMB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	67082	07/02/10 21:52	TR	TestAmerica Seattle

Client Sample ID: PZ-203-20.0

Lab Sample ID: 580-20208-4
Date Collected: 06/29/10 14:55
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 82.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			67269	07/07/10 12:00	EK	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	67216	07/07/10 23:31	EK	TestAmerica Seattle
Total/NA	Analysis	Moisture		1	67343	07/08/10 07:59	EK	TestAmerica Seattle
Total/NA	Prep	5035			67366	07/08/10 11:10	JMB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	67412	07/08/10 22:43	JMB	TestAmerica Seattle

Client Sample ID: PZ-204-5.0

Lab Sample ID: 580-20208-5
Date Collected: 06/01/10 09:15
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 96.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			67269	07/07/10 12:00	EK	TestAmerica Seattle

Client Sample ID: PZ-204-5.0

Lab Sample ID: 580-20208-5
Date Collected: 06/01/10 09:15
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 96.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	NWTPH-Dx		1	67216	07/07/10 23:49	EK	TestAmerica Seattle
Total/NA	Analysis	Moisture		1	67343	07/08/10 07:59	EK	TestAmerica Seattle
Total/NA	Prep	5035			67366	07/08/10 11:10	JMB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	67412	07/08/10 23:51	JMB	TestAmerica Seattle

Client Sample ID: PZ-204-10.0

Lab Sample ID: 580-20208-6
Date Collected: 06/29/10 10:20
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 96.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			67269	07/07/10 12:00	EK	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	67216	07/08/10 00:07	EK	TestAmerica Seattle
Total/NA	Analysis	Moisture		1	67343	07/08/10 07:59	EK	TestAmerica Seattle
Total/NA	Prep	5035			67366	07/08/10 11:10	JMB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	67412	07/09/10 00:13	JMB	TestAmerica Seattle

Client Sample ID: PZ-204-15.0

Lab Sample ID: 580-20208-7
Date Collected: 06/29/10 10:35
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 96.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			67269	07/07/10 12:00	EK	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	67216	07/08/10 00:25	EK	TestAmerica Seattle
Total/NA	Analysis	Moisture		1	67343	07/08/10 07:59	EK	TestAmerica Seattle
Total/NA	Prep	5035			67366	07/08/10 11:10	JMB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	67412	07/09/10 00:36	JMB	TestAmerica Seattle

Client Sample ID: PZ-204-19.0

Lab Sample ID: 580-20208-8
Date Collected: 06/29/10 10:40
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 85.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			66894	07/01/10 09:17	EK	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	66916	07/01/10 17:19	EK	TestAmerica Seattle
Total/NA	Analysis	Moisture		1	66951	07/01/10 15:52	SP	TestAmerica Seattle
Total/NA	Prep	5035			67078	07/02/10 17:42	JMB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		20	67082	07/02/10 22:17	TR	TestAmerica Seattle

Client Sample ID: PZ-204-25.0

Lab Sample ID: 580-20208-9
Date Collected: 06/29/10 11:00
Matrix: Solid
Date Received: 06/29/10 13:50
Percent Solids: 87.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			67269	07/07/10 12:00	EK	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	67216	07/08/10 01:18	EK	TestAmerica Seattle

Client Sample ID: PZ-204-25.0

Lab Sample ID: 580-20208-9

Date Collected: 06/29/10 11:00

Matrix: Solid

Date Received: 06/29/10 13:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	5035			67366	07/08/10 11:10	JMB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	67412	07/09/10 00:58	JMB	TestAmerica Seattle

Client Sample ID: PZ-204-29.5

Lab Sample ID: 580-20208-10

Date Collected: 06/29/10 11:15

Matrix: Solid

Date Received: 06/29/10 13:50

Percent Solids: 81.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			67269	07/07/10 12:00	EK	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	67216	07/08/10 01:36	EK	TestAmerica Seattle
Total/NA	Analysis	Moisture		1	67343	07/08/10 07:59	EK	TestAmerica Seattle
Total/NA	Prep	5035			67366	07/08/10 11:10	JMB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	67412	07/09/10 01:21	JMB	TestAmerica Seattle

Client Sample ID: PZ-204-35.0

Lab Sample ID: 580-20208-11

Date Collected: 06/29/10 11:40

Matrix: Solid

Date Received: 06/29/10 13:50

Percent Solids: 79.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			67269	07/07/10 12:00	EK	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	67216	07/08/10 01:54	EK	TestAmerica Seattle
Total/NA	Analysis	Moisture		1	67343	07/08/10 07:59	EK	TestAmerica Seattle
Total/NA	Prep	5035			67366	07/08/10 11:10	JMB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	67412	07/09/10 01:43	JMB	TestAmerica Seattle

Client Sample ID: Trip Blank

Lab Sample ID: 580-20208-12

Date Collected: 06/29/10 00:00

Matrix: Solid

Date Received: 06/29/10 13:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	5035			67078	07/02/10 17:42	JMB	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	67082	07/02/10 21:01	TR	TestAmerica Seattle

Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Chevron Seattle Terminal

TestAmerica Job ID: 580-20208-1

Laboratory	Authority	Program	EPA Region	Certification ID	Expiration Date
TestAmerica Seattle		USDA		P330-08-00099	05/22/11
TestAmerica Seattle	Alaska	State Program	10	UST-022	03/04/11
TestAmerica Seattle	California	NELAC Secondary AB	9	1115CA	01/31/11
TestAmerica Seattle	L-A-B	DoD ELAP	0	L2236	01/19/13
TestAmerica Seattle	L-A-B	ISO/IEC 17025	0	L2236	01/19/13
TestAmerica Seattle	Montana	State Program	8		04/30/20
TestAmerica Seattle	Oregon	NELAC Primary AB	10	WA100007	11/06/10
TestAmerica Seattle	Washington	State Program	10	C1226	02/17/11

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Chevron Seattle Terminal

TestAmerica Job ID: 580-20208-1

Lab Sample ID	Client Sample ID	Matrix	Sampled	Received
580-20208-1	PZ-203-5.0	Solid	06/29/10 10:40	06/29/10 13:50
580-20208-2	PZ-203-10.0	Solid	06/29/10 14:20	06/29/10 13:50
580-20208-3	PZ-203-15.0	Solid	06/29/10 14:40	06/29/10 13:50
580-20208-4	PZ-203-20.0	Solid	06/29/10 14:55	06/29/10 13:50
580-20208-5	PZ-204-5.0	Solid	06/01/10 09:15	06/29/10 13:50
580-20208-6	PZ-204-10.0	Solid	06/29/10 10:20	06/29/10 13:50
580-20208-7	PZ-204-15.0	Solid	06/29/10 10:35	06/29/10 13:50
580-20208-8	PZ-204-19.0	Solid	06/29/10 10:40	06/29/10 13:50
580-20208-9	PZ-204-25.0	Solid	06/29/10 11:00	06/29/10 13:50
580-20208-10	PZ-204-29.5	Solid	06/29/10 11:15	06/29/10 13:50
580-20208-11	PZ-204-35.0	Solid	06/29/10 11:40	06/29/10 13:50
580-20208-12	Trip Blank	Solid	06/29/10 00:00	06/29/10 13:50

Seattle/Tacoma
5755 8th Street East
Tacoma, WA 98424
phone 253.922.2310 fax 253.922.5047

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Rebecca Andresen	Site Contact: Michael Strickler	Date: 6/29/10	COC No:
ARCADIS	Tel/Fax: 206-726-4717 / 206-325-8218	Lab Contact: Curtis Armstrong	Carrier:	1 of 1 COCs
2300 Eastlake Avenue East, Suite 200	Analysis Turnaround Time			Job No. 20208
Seattle, WA 98102	Calendar (C) or Work Days (W) _____			SDG No.
(206) 325-5254 Phone	TAT if different from Below _____			
(206) 325-8218 FAX	☐ 2 weeks			
Project Name: Former Unocal Seattle Marketing Terminal	☐ 1 week			
Site: 3001 Elliott Ave	☐ 2 days			
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	NWTPH-Gx	NWTPH-Dx (with Silica Gel Cleanup)	Sample Specific Notes:
-1 PZ-203-5.0	06/29/10	1040	Grab	Soil	2		X	X	HOLD
-2 PZ-203-10.0	06/29/10	1420	Grab	Soil	2		X	X	HOLD
-3 PZ-203-15.0	06/29/10	1440	Grab	Soil	2		X	X	3-day Turn Around Time
-4 PZ-203-20.0	06/29/10	1455	Grab	Soil	2		X	X	HOLD
-5 PZ-204-5.0	06/01/10	0915	Grab	Soil	2		X	X	HOLD
-6 PZ-204-10.0	06/29/10	1020	Grab	Soil	2		X	X	HOLD
-7 PZ-204-15.0	06/29/10	1035	Grab	Soil	2		X	X	HOLD
-8 PZ-204-19.0	06/29/10	1040	Grab	Soil	2		X	X	3-day Turn Around Time
-9 PZ-204-25.0	06/29/10	1100	Grab	Soil	2		X	X	HOLD
-10 PZ-204-29.5	06/29/10	1115	Grab	Soil	2		X	X	HOLD
-11 PZ-204-35.0	06/29/10	1140	Grab	Soil	2		X	X	HOLD
-12 Trip Blank	--	--	--	--	1		X		Standard Turn Around Time
							6		

w/o
Lab 1350 Temp 6.0°C TB 2.4°C
Cooler Dsc Lg Blue/White Wet/Packs
Packing Bubble Bag

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ___MeOH___

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For _____ Months*

Special Instructions/QC Requirements & Comments: **Please note specific TATs noted above**

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Michael Strickler	ARCADIS	6/29/10 1245		TASEA	6/29/10 1245
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

07/14/2010

Login Sample Receipt Check List

Client: ARCADIS U.S., Inc.

Job Number: 580-20208-1

Login Number: 20208

List Source: TestAmerica Seattle

Creator: Luna, Francisco

List Number: 1

Question	T / F/ NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	False	sampling date on labels (excl. Sx -5 & -12) is 6/28/10
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Is the Field Sampler's name present on COC?	False	no
Sample Preservation Verified	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories Inc.
TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

TestAmerica Job ID: 580-20257-1
Client Project/Site: Chevron Seattle Terminal

For:
ARCADIS U.S., Inc.
2300 Eastlake Avenue East
Suite 200
Seattle, Washington 98102

Attn: Mike Strickler

Authorized for release by:
7/14/2010 4:01 PM
Curtis Armstrong
Project Manager I
curtis.armstrong@testamericainc.com

Designee for

Melissa Armstrong
Project Manager I
melissa.armstrong@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Table of Contents

Client: ARCADIS U.S., Inc.
Project/Site: Chevron Seattle Terminal

TestAmerica Job ID: 580-20257-1

Glossary

Glossary	Glossary Description
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis.

Client Sample ID: COMP-1-S
Date Collected: 06/29/10 15:00
Date Received: 06/29/10 13:50

Lab Sample ID: 580-20257-1
Matrix: Solid
Percent Solids: 87.9

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	92		28		mg/Kg	☼	07/02/10 08:25	07/02/10 17:59	1
Motor Oil (>C24-C36)	84		56		mg/Kg	☼	07/02/10 08:25	07/02/10 17:59	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*95*		*50 - 150*	*07/02/10 08:25*	*07/02/10 17:59*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	88		0.10		%			07/02/10 08:40	1
Percent Moisture	12		0.10		%			07/02/10 08:40	1

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.050		mg/Kg	☼	07/10/10 18:29	07/11/10 09:05	1
Toluene	ND		0.13		mg/Kg	☼	07/10/10 18:29	07/11/10 09:05	1
Ethylbenzene	ND		0.13		mg/Kg	☼	07/10/10 18:29	07/11/10 09:05	1
m-Xylene & p-Xylene	ND		0.25		mg/Kg	☼	07/10/10 18:29	07/11/10 09:05	1
o-Xylene	ND		0.25		mg/Kg	☼	07/10/10 18:29	07/11/10 09:05	1
Xylenes, Total	ND		0.25		mg/Kg	☼	07/10/10 18:29	07/11/10 09:05	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene	*105*		*50 - 150*	*07/10/10 18:29*	*07/11/10 09:05*	*1*
4-Bromofluorobenzene (Surr)	*98*		*75 - 135*	*07/10/10 18:29*	*07/11/10 09:05*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	150		10		mg/Kg	☼	07/10/10 18:29	07/11/10 09:05	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*50 - 150*	*07/10/10 18:29*	*07/11/10 09:05*	*1*
Trifluorotoluene (Surr)	*101*		*50 - 150*	*07/10/10 18:29*	*07/11/10 09:05*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-67006/1-B
Matrix: Solid
Analysis Batch: 67046

Client Sample ID: MB 580-67006/1-B
Prep Type: Total/NA
Prep Batch: 67006

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		25		mg/Kg		07/02/10 08:25	07/02/10 14:53	1
Motor Oil (>C24-C36)	ND		50		mg/Kg		07/02/10 08:25	07/02/10 14:53	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*95*		*50 - 150*	*07/02/10 08:25*	*07/02/10 14:53*	*1*

Lab Sample ID: LCS 580-67006/2-B
Matrix: Solid
Analysis Batch: 67046

Client Sample ID: LCS 580-67006/2-B
Prep Type: Total/NA
Prep Batch: 67006

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits
#2 Diesel (C10-C24)	502	548		mg/Kg	109	64 - 127
Motor Oil (>C24-C36)	501	563		mg/Kg	112	70 - 125

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*102*		*50 - 150*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 580-67503/1-A
Matrix: Solid
Analysis Batch: 67508

Client Sample ID: MB 580-67503/1-A
Prep Type: Total/NA
Prep Batch: 67503

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.020		mg/Kg		07/10/10 18:25	07/11/10 06:29	1
Toluene	ND		0.050		mg/Kg		07/10/10 18:25	07/11/10 06:29	1
Ethylbenzene	ND		0.050		mg/Kg		07/10/10 18:25	07/11/10 06:29	1
m-Xylene & p-Xylene	ND		0.10		mg/Kg		07/10/10 18:25	07/11/10 06:29	1
o-Xylene	ND		0.10		mg/Kg		07/10/10 18:25	07/11/10 06:29	1
Xylenes, Total	ND		0.10		mg/Kg		07/10/10 18:25	07/11/10 06:29	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene	*114*		*50 - 150*	*07/10/10 18:25*	*07/11/10 06:29*	*1*
4-Bromofluorobenzene (Surr)	*95*		*75 - 135*	*07/10/10 18:25*	*07/11/10 06:29*	*1*

Lab Sample ID: LCS 580-67503/3-A
Matrix: Solid
Analysis Batch: 67508

Client Sample ID: LCS 580-67503/3-A
Prep Type: Total/NA
Prep Batch: 67503

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits
Benzene	0.800	0.878		mg/Kg	110	75 - 125
Toluene	0.802	0.878		mg/Kg	109	75 - 120
Ethylbenzene	0.800	0.864		mg/Kg	108	80 - 120
m-Xylene & p-Xylene	1.60	1.74		mg/Kg	108	75 - 120
o-Xylene	0.802	0.857		mg/Kg	107	75 - 120

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
a,a,a-Trifluorotoluene	*111*		*50 - 150*
4-Bromofluorobenzene (Surr)	*97*		*75 - 135*

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: 580-20257-1 MS
Matrix: Solid
Analysis Batch: 67508

Client Sample ID: COMP-1-S
Prep Type: Total/NA
Prep Batch: 67503

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	% Rec.	% Rec. Limits
Benzene	ND		2.01	1.92		mg/Kg	94	75 - 130
Toluene	ND		2.02	1.96		mg/Kg	95	75 - 135
Ethylbenzene	ND		2.01	1.83		mg/Kg	91	75 - 135
m-Xylene & p-Xylene	ND		4.03	3.65		mg/Kg	89	75 - 135
o-Xylene	ND		2.02	1.86		mg/Kg	92	75 - 135

Surrogate	*MS % Recovery*	*MS Qualifier*	*Limits*
a,a,a-Trifluorotoluene	*105*		*50 - 150*
4-Bromofluorobenzene (Surr)	*96*		*75 - 135*

Lab Sample ID: 580-20257-1 MSD
Matrix: Solid
Analysis Batch: 67508

Client Sample ID: COMP-1-S
Prep Type: Total/NA
Prep Batch: 67503

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	% Rec.	% Rec. Limits	RPD	RPD Limit
Benzene	ND		2.01	2.05		mg/Kg	101	75 - 130	7	40
Toluene	ND		2.02	2.11		mg/Kg	102	75 - 135	7	40
Ethylbenzene	ND		2.01	2.00		mg/Kg	99	75 - 135	9	40
m-Xylene & p-Xylene	ND		4.03	3.98		mg/Kg	97	75 - 135	9	40
o-Xylene	ND		2.02	2.01		mg/Kg	100	75 - 135	8	40

Surrogate	*MSD % Recovery*	*MSD Qualifier*	*Limits*
a,a,a-Trifluorotoluene	*108*		*50 - 150*
4-Bromofluorobenzene (Surr)	*99*		*75 - 135*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-67503/1-A
Matrix: Solid
Analysis Batch: 67507

Client Sample ID: MB 580-67503/1-A
Prep Type: Total/NA
Prep Batch: 67503

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		4.0		mg/Kg		07/10/10 18:25	07/11/10 06:29	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*50 - 150*	*07/10/10 18:25*	*07/11/10 06:29*	*1*
Trifluorotoluene (Surr)	*106*		*50 - 150*	*07/10/10 18:25*	*07/11/10 06:29*	*1*

Lab Sample ID: LCS 580-67503/2-A
Matrix: Solid
Analysis Batch: 67507

Client Sample ID: LCS 580-67503/2-A
Prep Type: Total/NA
Prep Batch: 67503

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	% Rec.	% Rec. Limits
Gasoline	40.0	39.9		mg/Kg	100	68 - 120

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*50 - 150*
Trifluorotoluene (Surr)	*107*		*50 - 150*

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Chevron Seattle Terminal

TestAmerica Job ID: 580-20257-1

Client Sample ID: COMP-1-S
Date Collected: 06/29/10 15:00
Date Received: 06/29/10 13:50

Lab Sample ID: 580-20257-1
Matrix: Solid
Percent Solids: 87.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			67006	07/02/10 08:25	EK	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Dx		1	67046	07/02/10 17:59	MAM	TestAmerica Seattle
Total/NA	Analysis	Moisture		1	67007	07/02/10 08:40	EK	TestAmerica Seattle
Total/NA	Analysis	8021B		1	67508	07/11/10 09:05	MAT	TestAmerica Seattle
Total/NA	Prep	5035			67503	07/10/10 18:29	MAT	TestAmerica Seattle
Total/NA	Analysis	NWTPH-Gx		1	67507	07/11/10 09:05	MAT	TestAmerica Seattle

Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Chevron Seattle Terminal

TestAmerica Job ID: 580-20257-1

Laboratory	Authority	Program	EPA Region	Certification ID	Expiration Date
TestAmerica Seattle		USDA		P330-08-00099	05/22/11
TestAmerica Seattle	Alaska	State Program	10	UST-022	03/04/11
TestAmerica Seattle	California	NELAC Secondary AB	9	1115CA	01/31/11
TestAmerica Seattle	L-A-B	DoD ELAP	0	L2236	01/19/13
TestAmerica Seattle	L-A-B	ISO/IEC 17025	0	L2236	01/19/13
TestAmerica Seattle	Montana	State Program	8		04/30/20
TestAmerica Seattle	Oregon	NELAC Primary AB	10	WA100007	11/06/10
TestAmerica Seattle	Washington	State Program	10	C1226	02/17/11

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Chevron Seattle Terminal

TestAmerica Job ID: 580-20257-1

Lab Sample ID	Client Sample ID	Matrix	Sampled	Received
580-20257-1	COMP-1-S	Solid	06/29/10 15:00	06/29/10 13:50

Seattle/Tacoma
5755 8th Street East

Tacoma, WA 98424
phone 253.922.2310 fax 253.922.5047

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Rebecca Andresen	Site Contact: Michael Strickler	Date: 6/29/10	COC No:
ARCADIS	Tel/Fax: 206-726-4717 / 206-325-8218	Lab Contact: Curtis Armstrong	Carrier:	1 of 1 COCs
2300 Eastlake Avenue East, Suite 200	Analysis Turnaround Time			Job No.
Seattle, WA 98102	Calendar (C) or Work Days (W) _____			
(206) 325-5254 Phone	STANDARD TAT			SDG No.
(206) 325-8218 FAX	☐			
Project Name: Former Unocal Seattle Marketing Terminal	☐			
Site: 3001 Elliott Ave	☐			
P O #	☐			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	NWTPH-Gx	NWTPH-Dx (with Silica Gel Cleanup)	BTEX	Sample Specific Notes:
COMP-1-S	06/29/10	1500	Grab	Soil	2		X	X	X	
PZ-204-10.0	06/01/10	1005	Grab	Soil	2					Please Dispose
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ___MeOH___							6		6	

w/c
Lab 1350 Temp 6.4°C TB 2.4°C
Cooler Dsc Lg Blue/Wht Wet/Packs
Packing Bubble Bag

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Michael Strickler	ARCADIS	6/29/10 1245		TA-SEA	6/29/10 1245
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

07/14/2010

Login Sample Receipt Check List

Client: ARCADIS U.S., Inc.

Job Number: 580-20257-1

Login Number: 20257

List Source: TestAmerica Seattle

Creator: Luna, Francisco

List Number: 1

Question	T / F/ NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Is the Field Sampler's name present on COC?	False	
Sample Preservation Verified	N/A	