Appendix B

Groundwater Sampling Forms

Contract A

BLACK & VEATCH

Well Development | Purging/Groundwater Sampling

Well No. TB 02

Sheet # 1 of 1 Sheets

1. Project: Metro GW Sampling	2. Project Location: Seattle, Washington	3. Date: 10/10/97
4. Development/Purging Subcontractor: The Ralix Ortega Group	5. Name of Developer/Purger: Miguel Ortega	6. Sampler Name, Affiliation: Miguel Ortega / Ralix Ortega
7. Development/Purge Method: Pumping/Surging Air Lifting Bailing	8. Manufacturer's Designation of Rig: —	9. Location of Well (Site, Description): On a dead end gravel road off of Elliot Ave., south of Mercer intersection w/ Elliot

Water Levels

Initial	Final	
Date 10/10 Time 1055	Date 10/10 Time 1140	Date Time
10. Total Depth of Well (from TOC): 50 feet	15. Total Depth of Well (from TOC): 50 feet	20. Total Depth of Well (from TOC):
11. Water Level (from TOC): 13.2 feet	16. Water Level (from TOC): 13.3 feet	21. Water Level (from TOC):

12. Water Column Height: 36.8 feet

13. Well Diameter: 2 inches

14. Well Volume (gal) (x)(w.c. height): 6.0 gallons

Nom Dia	x = gal/ft Sch 40	Sch 80
2"	0.1743	0.1534
4"	0.6613	0.5972
6"	1.5007	1.3540
8"	2.5856	2.3720

17. 3 Well Volumes: 18 gallons

18. 5 Well Volumes: 30 gallons

19. Purge Volume: 19 gallons

22. Size and Type of Pump or Bailer

Used in purging: Bailer

Used in sampling: Bailer

Final Field Analysis

23. Total Amount of Water Removed: 19 gallons

24. Was Well Pumped Dry? Yes No

25. Was water added to well? No Yes If yes, amount

26. Groundwater Sampled? Yes No If yes, what was the sample #? Date 10/10 Sampling Personnel? TB02-GW-01

IF PETROLEUM PRODUCT IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

27. Physical Appearance and Remarks: Wellhead protector was very rusty, standing water on top of well; lots of drill mud outside of well

28. Purge and Development water disposal method: Purged well with a bailer. well was a good producer water cleared up very well.

Development Parameters

Time	Temp C	Conductivity (umhos/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Flow Rate (gpm)	Photo #, Observations [1]
1100	12.2	1404	7.1	41.2	13.2	6.0		
1105	12.2	1407	7.1	41.5	13.2	6.0		
1110	12.2	1411	7.1	43.7	13.2	6.0		
1115	12.2	1415	7.1	42.1	13.2	6.0		
1120	12.2	1410	7.1	41.2	13.3	6.0		
1125	12.2	1410	7.1	41.5	13.3	6.0		

[1] Note volume and physical character of sediments removed.

NTU = Nephelometric turbidity units

WL = Water Level from Top of PVC Casing

Checked By | Date

BLACK & VEATCH

Well Development / Purging/Groundwater Sampling

Well No. TB06

Sheet 1 of 1 Sheets

1. Project: Metro GW Sampling	2. Project Location: Seattle, Washington	3. Date: 10/9/97
4. Development/Purging Subcontractor: The Radix Ortega Group	5. Name of Developer/Purger: Miguel Ortega	6. Sampler Name, Affiliation: Miguel Ortega / Radix Ortega
7. Development/Purge Method: submersible pump (Pressure/Surging, Air Lifting, Bailing)	8. Manufacturer's Designation of Rig: —	9. Location of Well (Sketch, Description): Approximately 10 feet due south of SE corner of Warren & Mercer

Water Levels

Initial	Final	
Date: 10/9/97 Time: 1250	Date: 10/9/97 Time: 1340	Date: Time:
10. Total Depth of Well (from TOC): 162 ft	15. Total Depth of Well (from TOC): 162 ft	20. Total Depth of Well (from TOC):
11. Water Level (from TOC): 121.22 ft	16. Water Level (from TOC): 157.2 ft	21. Water Level (from TOC):

12. Water Column Height: 40.78 ft	Nom Dia	1 = gal/ft Sch 40	Sch 80	17. 3 Well Volumes: 20.1 gallons
13. Well Diameter: 2 inches	2"	0.1743	0.1534	18. 5 Well Volumes: 33.5 gallons
14. Well Volume (gal) (1X(w.c. height)): 6.7 gals	4"	0.6613	0.5972	19. Purge Volume: 6.7 gallons
	6"	1.5007	1.3540	
	8"	2.5836	2.3720	

22. Size and Type of Pump or Bailer: Used in purging: Grundfos BTI - submersible; Used in sampling: Bailer

Final Field Analysis

23. Total Amount of Water Removed: 4.6 gals	24. Was Well Pumped Dry? Yes / No	25. Was water added to well? No / Yes; If yes, amount:	26. Groundwater Sampled? Yes / No; If yes, what was the sample #? Date: Sampling Personnel? TB06-GW-01

IF PETROLEUM PRODUCT IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

27. Physical Appearance and Remarks: Well was in very good condition, surface seal intact, very little rust or staining on well cover

28. Purge and Development water disposal method: Well was purged with a submersible pump lowered to 3 feet above bottom of well. Well pumped dry after removal of 3 gallons. Allowed to recover for 1/2 hour then sampled.

Development Parameters

Time	Temp C	Conductivity (µmhos/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Flow Rate (gpm)	Phase I. Observations [1]
1330	12.4	538	9.1	88.6	147.2	2.41		

[1] Note volume and physical character of sediments removed.

NTU = Nephelometric turbidity units

WL = Water Level from Top of PVC Casing

Checked By: Date:

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FIELD SAMPLING DATA SHEET

Project Name/#: 97001 Well Number: TB-6
Project Location: Sample Number: TB6-GW-01
Client/Contact: B+V Weather: Clear Date: 6/3/98

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume)
1556	160	121.77	TOC			6.2

(2" case = 0.163 gal/ft)
(4" case = 0.653 gal/ft)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature
1610	Pump	6.2	1	7.0	330	15.6
1620	Pump	6.2	2	7.0	320	15.1
1628	Pump	6.2	3	7.1	300	15.2

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered(Y/N)	Preservative	Iced (Y/N)
1630	Pump	BTEX	2	40ml	GLASS	N	HCl	Y

COMMENTS/NOTES: (Include Equipment Used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

Total # of Bottles: 2 Sampler: GW Signature: [illegible]

BLACK & VEATCH

Well Development / Purging/Groundwater Sampling

Well No. TB08.

Sheet 1 of 1 Sheets

1. Project: Metro GW Sampling	2. Project Location: Seattle, Washington	3. Date: 10/9/97
4. Development/Purging Subcontractor: The Radix Ortega Group	5. Name of Developer/Purger: Miguel Ortega	6. Sampler Name, Affiliation: Miguel Ortega / Radix Ortega
7. Development/Purge Method: submersible pump (Pumping/Surging, Air Lifting, Bailing)	8. Manufacturer's Designation of Rig: —	9. Location of Well (Site, Downgradient): Approximately 20 ft due north of the NW corner of Nob Hill and Roy in Seattle, WA.

Water Levels

Initial	Final	
Date 10/9/97 Time 1100	Date 10/9/97 Time 1215	Date Time
10. Total Depth of Well (from TOC): 150 feet	13. Total Depth of Well (from TOC): 150 ft	23. Total Depth of Well (from TOC):
11. Water Level (from TOC): 92.55 ft	16. Water Level (from TOC): 93.15 ft	21. Water Level (from TOC):

12. Water Column Height: 57.45 ft	Name: 1 = gal/ft	17. 3 Well Volumes: 28.2 gallons	22. Size and Type of Pump or Bailer: Used in purging: Grundfos BTI
13. Well Diameter: 2 inches	Dia / Sch 40 / Sch 80: 2" 0.1743 0.1534; 4" 0.6613 0.5972; 6" 1.5007 1.3540; 8" 2.5836 2.3720	18. 5 Well Volumes: 47.0 gallons	Used in sampling: bailer
14. Well Volume (gal) (12 in. height): 9.4 gallons		19. Purge Volume:	

Final Field Analysis

23. Total Amount of Water Removed: 37 gallons	24. Was Well Pumped Dry? Yes (No)	25. Was water added to well? (No) Yes If yes, amount:	26. Groundwater Sampled? (Yes) No If yes, what was the sample #? Date Sampling Performed? TB08-GW-01

IF PETROLEUM PRODUCTS IN THE WELL DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

27. Physical Appearance and Remarks: Well was in very good condition; surface seal intact, well protector in good condition.

28. Purge and Development water disposal method: Purged the well with a submersible, removed a total of 37 gallons, water clear, well appears to be a very good producer, only lowered water level by a factor of 0.6 feet.

Development Parameters

Time	Temp C	Conductivity (micromhos)	pH	NTUs	WL (from TOC)	Volume (gallons)	Flow Rate (gpm)	Item 6. Observations (1)
1120	12.7	827	8.54	96.8	92.55	9.4	1.8	
1125	13.8	613	8.50	96.0	92.55	9.4		
1130	13.2	807	8.01	88.6	92.55	9.4		
1135	13.1	804	8.60	80.0	92.55	9.4		
1140	13.2	801	8.60	39.0	93.00	9.3		
1145	13.2	788	8.60	12.0	93.00	9.3		
1150	12.8	782	8.62	18.0	93.15	9.3		
1155	12.8	782	8.62	16.0	93.15	9.3		
1200	12.8	782	8.62	17.0	93.15	9.3		

(1) Note volume and physical character of sediments removed.

NTU = Nephelometric turbidity units

WL = Water Level from Top of PVC Casing

Checked By: Date:

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FIELD SAMPLING DATA SHEET

ject Name/#: 97061 Well Number: TB-8

Project Location: Sample Number: TB8-GW-01

Client/Contact: B+V Weather: CLEAR Date: 6/3

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume)
1447	148	93.21				9

(2" case = 0.163 gal/ft)
(4" case = 0.653 gal/ft)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature
1502	PUMP	9	1	7.5	340	18.7
1508	PUMP	9	2	7.2	320	16.4
1514	PUMP	9	3	6.9	310	15.6

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered(Y/N)	Preservative	Iced (Y/N)
1530	PUMP	BTEX	4	40 ml	GLASS	N	HCl	N

COMMENTS/NOTES: (Include Equipment Used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

TB8B- DUPLICATE SAMPLE

Total # of Bottles: 4 Sampler: GME Signature:

BLACK & VEATCH

Well Development / Purging/Groundwater Sampling

Well No. TB11

Sheet 1 of 1 Sheets

1. Project: Metro GW Sampling

2. Project Location: Seattle, Washington

3. Date: 10/10/97

4. Developer/Purging Subcontractor: The Radix Ortega Group

5. Name of Developer/Purger: Miguel Ortega

6. Sampler Name/Affiliation: Miguel Ortega / Radix Ortega

7. Development/Purge Method: submersible pump (Pumping/Surging, Air Lifting, Bailing)

8. Manufacturer's Designation of Rig: —

9. Location of Well (Site Description): Approximately 25' due west along Roy St, west of the intersection of Roy and Aurora Avenue

Water Levels

Initial	Final	
Date 10/10 Time 1245	Date Time	Date Time
10. Total Depth of Well (from TOC) 90.00 ft	15. Total Depth of Well (from TOC) 90.00 ft	20. Total Depth of Well (from TOC)
11. Water Level (from TOC) 35.53 ft	16. Water Level (from TOC) 47.65 ft	21. Water Level (from TOC)

12. Water Column Height: 54.47

13. Well Diameter: 2 inches

14. Well Volume (gal) (2.16 x w.c. height): 9.1 gallons

Nom. Dia.	Sch 40 (1 = gal/ft)	Sch 80
2"	0.1745	0.1534
4"	0.6613	0.5972
6"	1.5007	1.3540
8"	2.5856	2.3720

17. 3 Well Volumes: 26.7 gallons

18. 5 Well Volumes: 44.5 gallons

19. Purge Volume: 7.6 gallons

22. Size and Type of Pump or Bailer: Used in purging: Grundfos BT1; Used in sampling: Bailer

Final Field Analysis

23. Total Amount of Water Removed: 7.6 gallons

24. Was Well Pumped Dry? Yes No

25. Was water added to well? No Yes If yes, amount

26. Groundwater Sampled? Yes No

If yes, what was the sample #? Date

Sampling Personnel? TB11-GW-01

IF PETROLEUM PRODUCT IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

27. Physical Appearance and Remarks: Well looks to be in great shape.

28. Purge and Development water disposal method: The well was pumped dry, allowed to recover for 1 hour and then sampled. The water quality looks good; little turbidity, well is a poor producer

Development Parameters

Time	Temp C	Conductivity (micromhos)	pH	NTUs	WL (from TOC)	Volume (gallons)	Flow Rate (gpm)	Phase I. Observations [1]
1350	15.0	876	8.1	10.7	47.65	6.9 gallons		

[1] Note volume and physical character of sediments removed.

NTU = Nephelometric turbidity units

WL = Water Level from Top of PVC Casing

Checked By: Date:

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FIELD SAMPLING DATA SHEET

Project Name/#: 97061
Project Location:
Client/Contact: BNV

Well Number: TB-13
Sample Number: TB13-GW-01
Weather: Overcast
Date: 6/4/98

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume) (2" case = 0.163 gal/ft) (4" case = 0.653 gal/ft)
1038	78.6	9.50	monument			11.26 (3 buckets)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature
1045	Pump	11	1	7.9	350	14.6
1054	Pump	11	2	7.8	370	14.4
	Pump	11	3	7.9	360	14.5

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered(Y/N)	Preservative	Iced (Y/N)
1110	Pump	BTEX	2	40ml	Glass	N	HCl	Y
1110	Pump	HCID	1	500ml	Amber	N	HCl	Y

COMMENTS/NOTES: (Include Equipment Used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

Total # of Bottles: 3
Sampler: GWE
Signature:

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FIELD SAMPLING DATA SHEET

Project Name/#: 97061
Project Location:
Client/Contact: BAV

Well Number: TB-15
Sample Number: TB15-GW-01
Weather: RAIN
Date: 6/4/98

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume)
1253	160	72.46	TOC			14.3

(2" case = 0.163 gal/ft)
(4" case = 0.653 gal/ft)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature
1309	PUMP	14	1	7.9	280	13.4
1312	PUMP	14	2	7.9	350	13.6
1318	PUMP	14	3	7.9	350	13.7

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered(Y/N)	Preservative	Iced (Y/N)
1320	PUMP	BTEX	2	40ml	GLASS	N	HCl	Y
1320	PUMP	HCID	1	500ml	AMBER	N	HCl	Y

COMMENTS/NOTES: (Include Equipment Used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

Total # of Bottles: 3 Sampler: GWE Signature:

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FIELD SAMPLING DATA SHEET

ect Name/#: 97061
Project Location:
Client/Contact: BTV

Well Number: TB-16
Sample Number: TB16-GW-01
Weather: Overcast
Date: 8/4

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume)
1348	165	59.08				17.3

(2" case = 0.163 gal/ft)
(4" case = 0.653 gal/ft)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature
1403	Pump	17.5	1	7.9		14.4
1409	Pump	17.5	2	7.9		14.9
1414	Pump	17.5	3	7.8		15.1

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered(Y/N)	Preservative	Iced (Y/N)
1415	Pump	BTEX	2	40ml	Glass	N	HCl	Y
1415	Pump	HCID	1	500ml	Amber	N	HCl	Y

COMMENTS/NOTES: (Include Equipment Used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

TDS METER NOT FUNCTIONING.

Total # of Bottles: 3 Sampler: DWE Signature:

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FIELD SAMPLING DATA SHEET

Project Name/#: 97061
Project Location:
Client/Contact: B+V
Well Number: TB17
Sample Number: TB17-GW-01
Weather: RAIN
Date: 6/4/98

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume)
1448	115	47.69	TOC			11

(2" case = 0.163 gal/ft)
(4" case = 0.653 gal/ft)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature
1500	Pump	11	1	7.8		15.5
1505	Pump	11	2	7.4		14.5
1510	Pump	11	3	7.2		14.4

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered(Y/N)	Preservative	Iced (Y/N)
1515	Pump	BTEX	2	40ml	Glass	N	HCl	Y
1515	Pump	HC10	1	50ml	Amber	N	HCl	Y

COMMENTS/NOTES: (Include Equipment Used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

TDS METER NOT WORKING

Total # of Bottles: 3
Sampler: GWE
Signature:

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FIELD SAMPLING DATA SHEET

Project Name/#: 97061
Well Number: TB-18
Project Location:
Sample Number: TB18-GW-01
Client/Contact: BTV
Weather: Overcast
Date: 6/4/95

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume)
0924	114	30.05				13.7

(2" case = 0.163 gal/ft)
(4" case = 0.653 gal/ft)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature
0935	Pump	13.7	1	7.1	230	15.0
0945	Pump	14	2	7.1	220	15.1
0955	Pump	14	3	7.5	190	14.7

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered(Y/N)	Preservative	Iced (Y/N)
1000	Pump	BTEX	2	40ml	Glass	N	HCl	Y
1000	Pump	VOC	2	40ml	Glass	N	HCl	Y
1000	Pump	HCID	1	500ml	Amber	N	HCl	Y

COMMENTS/NOTES: (Include Equipment Used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

Total # of Bottles: Sampler: Signature:

BLACK & VEATCH

Well Development / Purging/Groundwater Sampling

Well No. CB02

Sheet 1 of 1

1. Project: metroGW Sampling

2. Project Location: Seattle, Washington

3. Date: 10/9/97

4. Development/Purging Subcontractor: Tim Rebix Orteca Group

5. Name of Developer/Purger: Miguel Ortega

6. Sampler Name, Affiliation: Miguel Ortega / Radir Ortega

7. Development/Purge Method: Pumping/Surging Air Lifting Bailing

8. Manufacturer's Designation of Rig: —

9. Location of Well (Site Description): Open field along Elliot Ave. north of drum storage area. Field is along Elliot 02 feet south of Wharf

Water Levels

Initial	Final	
Date 10/9 Time 1600	Date 10/9 Time 1645	Date Time
10. Total Depth of Well (from TOC) 18 feet	15. Total Depth of Well (from TOC) 18 feet	20. Total Depth of Well (from TOC)
11. Water Level (from TOC) 0.4 feet	16. Water Level (from TOC) 2.5 feet	21. Water Level (from TOC)

12. Water Column Height: 17.6 feet

13. Well Diameter: 2 inches

14. Well Volume (gal) (Water Height): 2.1 gallons

Name	1 = gal/ft	
Dia	Sch 40	Sch 80
2"	0.1743	0.1534
4"	0.6613	0.5972
6"	1.5007	1.3540
8"	2.5854	2.3720

17. 3 Well Volumes: 6.3 gallons

18. 5 Well Volumes: 10.5 gallons

19. Purge Volume: 14 gallons

22. Size and Type of Pump or Bailer: Used in purging: Bailer; Used in sampling: Bailer

Final Field Analysis

23. Total Amount of Water Removed: 14 gallons

24. Was Well Pumped Dry? Yes No

25. Was water added to well? No Yes If yes, amount:

26. Groundwater Sampled? Yes No If yes, what was the sample #? Date: Sampling Personnel: CB02-GW-01

IF PETROLEUM PRODUCT IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

27. Physical Appearance and Remarks: Well was in excellent condition

28. Purge and Development water disposal method: Well was a reasonable producer, the GW was murky and did not significantly clear up. Well was able to keep up w/ bailing

Development Parameters

Time	Temp C	Conductivity (umhos/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Flow Rate (gpm)	Remarks Observations (1)
	15.2	1493	7.7	24	.55	2.8		
	15.2	1597	7.3	86	.60	2.8		
	15.2	1765	7.3	65	.65	2.8		
	15.2	1617	7.2	40	1.8	2.6		
	15.2	1548	7.2	37	2.1	2.6		
	15.2	1568	7.2	37	2.3	2.6		
	15.2	1560	7.2	37	2.5	2.5		

(1) Note volume and physical character of sediment removed.

NTU = Nephelometric turbidity units

WL = Water Level from Top of PVC Casing

Checked By: Date:

BLACK & VEATCH

Well Development | Purging/Groundwater Sampling

Well No. CB03

Sheet # 1 of 1 Sheets

1. Project: Metro GW Sampling	2. Project Location: Seattle, Washington	3. Date: 10/9/97
4. Development/Purging Subcontractor: The Radix Ortega Group	5. Name of Developer/Purger: Miguel Ortega	6. Sampler Name, Affiliation: Miguel Ortega / Radix Ortega
7. Development/Purge Method: Pumping/Surging Air Lifting Bailing	8. Manufacturer's Designation of Rig: —	9. Location of Well (Site, Description): In an open field located west of Elliot Avenue. well is located at end of an abandoned driveway

Water Levels

Initial	Final	
Date: 10/9 Time: 1405	Date: 10/9 Time: 1450	Date: Time:
10. Total Depth of Well (from TOC): 20 feet	15. Total Depth of Well (from TOC): 20 feet	20. Total Depth of Well (from TOC):
11. Water Level (from TOC): 4.2 feet	16. Water Level (from TOC): 14.3 feet	21. Water Level (from TOC):

12. Water Column Height: 15.8 feet	Name: x = gal/ft Dia / Sch 40 / Sch 80	17. 3 Well Volumes: 7.8 gallons	22. Size and Type of Pump or Bailer
13. Well Diameter: 2 inches	2" 0.1743 0.1534 4" 0.6613 0.5972	18. 5 Well Volumes: 13 gallons	Used in purging: Bailer
14. Well Volume (gal) (x/w.c. height): 2.6 gallons	6" 1.5007 1.3540 8" 2.5856 2.3720	19. Purge Volume: 12 gallons	Used in sampling: Bailer

Final Field Analysis

23. Total Amount of Water Removed: 12 gallons	24. Was Well Pumped Dry? Yes No	25. Was water added to well? No Yes If yes, source:	26. Groundwater Sampled? Yes No If yes, what was the sample #? Date: 10/9 Sampling Personnel? CB03-GW-01

IF PETROLEUM PRODUCT IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

27. Physical Appearance and Remarks: well looked to be in excellent condition

28. Purge and Development water disposal method: Well water level significantly lowered after removing 10 gallons, gw very murky, poor producer

Development Parameters

Time	Temp C	Conductivity (umhos/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Flow Rate (gpm)	Photo #, Observations [1]
1430	16.2	865	7.01	65	4.2	2.6		
1435	16.2	870	7.08	45	6.2	2.3		
1440	16.2	830	7.18	50	8.2	1.9		
1445	16.2	760	7.01	35	11.6	1.4		
1447	16.2	760	7.01	35	12.3	1.3		
1450	16.2	760	7.01	35	14.3	0.9		

[1] Note volume and physical character of sediments removed.

NTU = Nephelometric turbidity units

WL = Water Level from Top of PVC Casing

Checked By | Date

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FIELD SAMPLING DATA SHEET

Project Name/#: 97061 A1B
Well Number: CB-5
Project Location: Denny Way/Lake Union CSO
Sample Number:
Client/Contact:
Weather: Sunny
Date: 5/20/98

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume)	(2" case = 0.163 gal/ft) (4" case = 0.653 gal/ft)
0820	88.85	2.85	Monument			14	(x3 = 42 g)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature		
9:50	pump	±50	> 3	7.7	370	15.4		
9:55	"	"		8.1	350	15.0		
9:56	"	"		8.3	370	15.1		

WELL SAMPLING:

CB-5-GW-01

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered(Y/N)	Preservative	Iced (Y/N)
10:05	Pump line	HCID	1	0.5 l	Amber	N	HCl	Y
"	"	BTEX	2	40 ml	VOA	"	"	"

COMMENTS/NOTES:

(Include Equipment Used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

Buckets: 4# 4# 1

Using Carbon Unit. - Grundfos Pump - 55 gal
Very Cloudy, Gray water to begin (first ± 20 gal).
Slightly Cloudy at end.

Calibration 8 Am
PH - 7.0
Cond - 1000

Total # of Bottles: 3
Sampler: André Maré
Signature: [signature]

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FIELD SAMPLING DATA SHEET

Project Name/#: 97061.A1B
Project Location: DW/LU CSO
Client/Contact:
Well Number: CB-7
Sample Number:
Weather: Sunny
Date: 5/20/98

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume)
10:40	86.90	3.40	Monument			13.6

(2" case = 0.163 gal/ft)
(4" case = 0.653 gal/ft)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature
11:50	Pump		>3	8.7	360	17.8
"	"			8.7	340	16.8
"	"			8.6	360	16.2

WELL SAMPLING:

CB-07-GW-01

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered(Y/N)	Preservative	Iced (Y/N)
11:58	Pump-line	HCID	1	0.5 l	Amber	N	HCl	Y
"	"	BTEX	2	40 ml	VOA	"	"	"

COMMENTS/NOTES: (Include Equipment Used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

Carbon Filter & Grunfos Pump - 50 gal. 5 gal. buckets: ~~IIII~~ ~~IIII~~
Clear H_2O

Started Pumping 10:55

Total # of Bottles: 3 Sampler: Andre Moré Signature: [signature]

BLACK & VEATCH

Well Development | Purging/Groundwater Sampling

Well No. OB 01

Sheet 1 of 1 Sheets

1. Project: Metro GW Sampling	2. Project Location: Seattle, Washington	3. Date: 10/10/97
4. Development/Purging Subcontractor: The Radix Ortega Group	5. Name of Developer/Purger: Miguel Ortega	6. Sampler Name, Affiliation: Miguel Ortega / Radix Ortega
7. Development/Purge Method: Pumping/Surging Air Lifting Bailing	8. Manufacturer's Designation of Rig: —	9. Location of Well (Site, Description): Approximately 25' due NE of pump house structure within Myrtle Edwards Park ≈ 15' from shoreline

Water Levels

Initial	Final	
Date: 10/10 Time: 0910	Date: Time:	Date: Time:
10. Total Depth of Well (from TOC): 30.5 feet	15. Total Depth of Well (from TOC): 30.5 feet	20. Total Depth of Well (from TOC):
11. Water Level (from TOC): 6.5 feet	16. Water Level (from TOC): 6.7 feet	21. Water Level (from TOC):

12. Water Column Height: 24 feet	Nom x = gal/ft	17. 3 Well Volumes: 11.7 gallons	22. Size and Type of Pump or Bailer
13. Well Diameter: 2 inches	Dia / Sch 40 / Sch 80: 2" 0.1743 0.1534; 4" 0.6613 0.5972; 6" 1.5007 1.3540; 8" 2.5856 2.3720	18. 5 Well Volumes: 19.5 gallons	Used in purging: Bailer
14. Well Volume (gal) (x)(w.c. height): 3.9 gallons		19. Purge Volume: 16 gallons	Used in sampling: Bailer

Final Field Analysis

23. Total Amount of Water Removed: 16 gallons	24. Was Well Pumped Dry? Yes No	25. Was water added to well? No Yes If yes, source:	26. Groundwater Sampled? Yes No If yes, what was the sample #? Date: 10/10 Sampling Personnel? OB 01-GW-01

IF PETROLEUM PRODUCT IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

27. Physical Appearance and Remarks: Well was in very good conditions, well very close to shoreline; low tide at time of sampling

28. Purge and Development water disposal method: The well was purged with a bailer, well very good producer, water cleared as more volume was removed

Development Parameters

conductivity in mmhos/cm not Nmohs.

Time	Temp C	Conductivity (umhos/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Flow Rate (gpm)	Photo #, Observations [1]
0925	15.9	mmhos/cm 2.92	7.4	23.07	6.5	3.9		
0930	15.9	3.46	6.4	22.30	6.5			
0935	15.5	3.39	6.2	20.10	6.5			
0940	15.2	3.30	7.2	20.7	6.5			
0950	15.2	3.44	7.4	19.6	6.5			
0955	15.2	3.42	7.6	18.2	6.5			
1000	15.2	3.44	7.6	17.10	6.5			
1015	15.2	2.55	7.6	17.9	6.5			
1020	15.2	3.51	7.6	17.7	6.5			

[1] Note volume and physical character of sediments removed.

NTU = Nephelometric turbidity units

WL = Water Level from Top of PVC Casing

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Contract B

Well Development ✓ Purging/Groundwater Sampling

Sheet # 1 of Sheets

1. Project: Denny Way CSO	2. Project Location: 8th Ave. N. & Republican	3. Date: 11-13-97
4. Development/Sampling Subcontractor: HWA	5. Name of Developer/Purger: RCD	6. Sampler Name, Affiliation: RCD
7. Development/Purge Method: disposable bailer. Pumping/Surging Air Lifting Bailing	8. Manufacturer's Designation of Rig: —	9. Location of Well (Size, Description)

Water Levels

Initial	Final	
Date: 11-13-97 Time: 1000	Date: Time:	Date: Time:
10. Total Depth of Well (from TOC): 62.5	15. Total Depth of Well (from TOC)	20. Total Depth of Well (from TOC)
11. Water Level (from TOC): 41.95	16. Water Level (from TOC)	21. Water Level (from TOC)

12. Water Column Height: 20.5	Note: x = gal/ft; Dia / Sch 40 / Sch 80	17. 3 Well Volumes: 10.8	22. Size and Type of Pump or Bailer
13. Well Diameter: 2"	2" 0.1743 0.1534; 4" 0.6613 0.5972	18. 5 Well Volumes: 18	Used in purging: bailer
14. Well Volume (gal) (gpw c. height): 3.6	6" 1.5087 1.3540; 8" 2.5856 2.3720	19. Purge Volume: 9	Used in sampling: bailer

Final Field Analysis

23. Total Amount of Water Removed: 9	24. Was Well Pumped Dry? Yes No	25. Was water added to well? No Yes If yes, source:	26. Groundwater Sampled? Yes No. If yes, what was the sample #? BB01-GW-01 Date: 11-14-97. Sampling Personnel?

IF PETROLEUM PRODUCT IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

27. Physical Appearance and Remarks: H_2O v. silty/gray, Recovery Very slow, x 1 gallon per 2 hr. Purged over 2-day period.

28. Purge and Development water disposal method: Drum #90

Development Parameters

	Time	Temp C	Conductivity (umhos/cm)	pH	NTU	WL (from TOC)	Volume (gallons)	Flow Rate (gpm)	Photo #, Observations [1]
1-13-97	1515	13.0	340	6.7	X		5		
11-14-97	0830	13.7	350	7.4			3		
11-14-97	1000	13.8	340	7.4			3		

[1] Note volume and physical character of sediments removed.

NTU = Nephelometric turbidity units

WL = Water Level from Top of PVC Casing

TPH-HCID
BTEX

BB-1

Checked By: Date:

BLACK & VEATCH

Well Development ✓ Purging/Groundwater Sampling

Sheet # of Sheets: BB02

1. Project: Denny Way CSO	2. Project Location: 8th Ave N between Republican St & Mercer St.	3. Date: 11-13-97
4. Development/Purging Subcontractor: HWA	5. Name of Developer/Purger: RCD	6. Sampler Name, Affiliation: RCD
7. Development/Purge Method: disposable bailer (Pumping/Surging, Air Lifting, Bailing)	8. Manufacturer's Designation of Rig: —	9. Location of Well (Site, Description)

Water Levels

Initial	Final	
Date: 11-13-97 Time: 1215	Date: Time:	Date: Time:
10. Total Depth of Well (from TOC): 38.3	15. Total Depth of Well (from TOC)	20. Total Depth of Well (from TOC)
11. Water Level (from TOC): 24.06	16. Water Level (from TOC)	21. Water Level (from TOC)

12. Water Column Height: 14.2

13. Well Diameter: 2"

14. Well Volume (gal) (x/w c. height): 2.5

Note: x = gal/ft

Dia	Sch 40	Sch 80
2"	0.1743	0.1534
4"	[illegible]613	0.5972
6"	1.5007	1.3540
8"	2.5856	2.3720

17. 3 Well Volumes: 7.5

18. 5 Well Volumes: 12.5

19. Purge Volume: 16

22. Size and Type of Pump or Bailer

Used in purging: disposable hand bailer

Used in sampling:

Final Field Analysis

23. Total Amount of Water Removed: 16

24. Was Well Pumped Dry? Yes No

25. Was water added to well? No Yes If yes, source:

26. Groundwater Sampled? Yes No If yes, what was the sample #? BB02-GW-07 Date: 11-13-97 Sampling Personnel?

IF PETROLEUM PRODUCT IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

27. Physical Appearance and Remarks: H_2O v. silty/gray (almost thick) Does not clear up

28. Purge and Development water disposal method: Disposable bailer. Drum #: 98

Development Parameters

Time	Temp C	Conductivity (umhos/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Flow Rate (gpm) hand bailer	Photo # Observations [1]
1230	16.6	360	6.4	X	X	4	↓	
1300	14.6	420	7.1	X	X	4	↓	
1315	14.6	430	7.4	X	X	4	↓	
1330	14.7	420	7.4	X	X	4	↓	

[1] Note volume and physical character of sediments removed.

NTU = Nephelometric turbidity units

WL = Water Level from Top of PVC Casing

Checked By: Date:

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10 SW Ash Street, Portland, OR 97204-3598 Tel. 503-226-8012 Fax. 503-226-8016

SAMPLING DATA SHEET

SAMPLE INFORMATION:

Project Name/#: Denny WA CSO
Project Location:
Well Number: BB-03
Sample Number: BB03-GW-01
Weather: Sunny
Date: 6/24/97

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Casing Volume)
1200	35	19.29	TOC			2.5

1.25" case = 0.064 gal/ft
2" case = 0.163 gal/ft
4" case = 0.653 gal/ft
6" case = 1.469 gal/ft

WELL PURGING:

Time	Method	Gallons	Casing Volumes	pH	Conductivity	Temperature		
1205	BAIL	2.5	1	6.8	624			
1215	↓	2.5	2	7.4	654			
1225		2.5	3	7.3	643			

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Filtered (Y/N)	Preservative	Iced (Y/N)
1225	BAILER	TPH-HCID	1	1L	AMBER	N	N	Y
1225	"	BTEX	3	40ml	CLEAR	N	Y	Y

COMMENTS/NOTES:

Total # of Bottles: _____ Sampler: _____ Signature: _____

BLACK & VEATCH

Well Development | ✓ Purging/Groundwater Sampling

Well No. BB07
Sheet # of Sheets

1. Project: Denny Way CSO	2. Project Location: 8th Ave. N. & Mercer St.	3. Date: 11-13-97
4. Development/Purging Subcontractor: HWA	5. Name of Developer/Purger: RCD	6. Sampler Name, Affiliation: RCD
7. Development/Purge Method: hand bail (Pumping/Surging, Air Lifting, Bailing)	8. Manufacturer's Designation of Rig:	9. Location of Well (Site, Description)

Water Levels

Initial	Final	
Date: 11-13-97 Time: 1400	Date: Time:	Date: Time:
10. Total Depth of Well (from TOC): 37.7	15. Total Depth of Well (from TOC):	20. Total Depth of Well (from TOC):
11. Water Level (from TOC): 22.07	16. Water Level (from TOC):	21. Water Level (from TOC):

12. Water Column Height: 15.6

13. Well Diameter: 2"

14. Well Volume (gal) (ft/w.c. height): 2.7

Nom. x = gal/ft

Dia	Sch 40	Sch 80
2"	0.1743	0.1534
4"	0.6613	0.5972
6"	1.5007	1.3540
8"	2.5856	2.3720

17. 3 Well Volumes: 8.2

18. 5 Well Volumes: 13.5

19. Purge Volume: 12

22. Size and Type of Pump or Bailer: Used in purging / Used in sampling: disposable bailer

Final Field Analysis

23. Total Amount of Water Removed: 12

24. Was Well Pumped Dry? Yes / No (circled: No)

25. Was water added to well? No / Yes (circled: No)
If yes, source:

26. Groundwater Sampled? Yes / No (circled: Yes)
If yes, what was the sample #? BB04-GW-01 Date: 11-13-97
Sampling Personnel:

IF PETROLEUM PRODUCT IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

27. Physical Appearance and Remarks: H_2O v. silty/gray - does not clean up. ~~Slow~~ medium recovery

28. Purge and Development water disposal method: Drum #97

Development Parameters

Time	Temp C	Conductivity (umhos/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Flow Rate (gpm)	Photo #, Observations [1]
1400	14.8	490	7.4			4	bailer	
1430	14.5	510	7.3			4	↓	
1500	14.2	510	7.3			4	↓	

[1] Note volume and physical character of sediments removed.

NTU = Nephelometric turbidity units

WL = Water Level from Top of PVC Casing

BB04

Checked By: | Date:

Well Development	Purging/Groundwater Sampling	Sheet # of Sheets

1. Project: Denny Way CSO	2. Project Location: N. of Mercer St. on 8th Ave. N.	3. Date: 11-17-97
4. Development/Purging Subcontractor: HWA	5. Name of Developer/Purger: RCD	6. Sampler Name, Affiliation: RCD
7. Development/Purge Method: hand bail. Pumping/Surging Air Lifting Bailing	8. Manufacturer's Designation of Rig	9. Location of Well (Size, Description)

Water Levels

Initial	Final	
Date: 11-17-97 Time: 1330	Date: Time:	Date: Time:
10. Total Depth of Well (from TOC): 38.8	15. Total Depth of Well (from TOC)	20. Total Depth of Well (from TOC)
11. Water Level (from TOC): 23.45	16. Water Level (from TOC)	21. Water Level (from TOC)

12. Water Column Height: 15.4	Note: x = gal/ft	17. 3 Well Volumes: 8.1	22. Size and Type of Pump or Bailer
13. Well Diameter: 2"	Dia / Sch 40 / Sch 80: 2" 0.1743 0.1534; 4" 0.6613 0.5972; 6" 1.5007 1.3540; 8" 2.5856 2.3720	18. 5 Well Volumes: 13.5	Used in purging: disposable bailer
14. Well Volume (gal) (grw c. height): 2.7		19. Purge Volume: 12	Used in sampling: disposable bailer

Final Field Analysis

23. Total Amount of Water Removed: 12	24. Was Well Pumped Dry? Yes No	25. Was water added to well? No Yes If yes, amount:	26. Groundwater Sampled? Yes No If yes, what was the sample #? BB05-GW-01 Date: 11-17-97 Sampling Personnel?

IF PETROLEUM PRODUCT IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

27. Physical Appearance and Remarks: H_2O v. silty/gray - cleans up very little. Bailed well down but not dry.

28. Purge and Development water disposal method: Drum # 96

Development Parameters

Time	Temp C	Conductivity (umhos/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Flow Rate (gpm)	Phase I Observations [1]
1345	14.1	600	6.7			4	bailer	
1400	13.7	600	6.9			4		
1430	13.5	600	6.9			4		

[1] Note volume and physical character of sediments removed.

NTU = Nephelometric turbidity units

WL = Water Level from Top of PVC Casing

HCID VOC

BB05

Checked By: Date:

BLACK & VEATCH

Well Development ✓ Purging/Groundwater Sampling

Sheet # BB06 of Sheets

1. Project: Denny Way CSO	2. Project Location: Valley St + Terry Ave., Seattle	3. Date: 11-17-97
4. Development/Purging Subcontractor: HW	5. Name of Developer/Purger: RCD	6. Sampler Name, Affiliation: RCD
7. Development/Purge Method: 12V Pump; Pumping/Surging Air Lifting Bailing	8. Manufacturer's Designation of Rig	9. Location of Well (Site, Description)

Water Levels

Initial	Final	
Date: 11-17-97 Time: 1200	Date: Time:	Date: Time:
10. Total Depth of Well (from TOC): 33.5	15. Total Depth of Well (from TOC)	20. Total Depth of Well (from TOC)
11. Water Level (from TOC): 8.85	16. Water Level (from TOC)	21. Water Level (from TOC)

12. Water Column Height: 24.7

13. Well Diameter: 2"

14. Well Volume (gal) (gpw.c. height): 4.3

Note	x = gal/ft	
Dia	Sch 40	Sch 80
2"	0.1743	0.1534
4"	0.6613	0.5972
6"	1.5007	1.3540
8"	2.5856	2.3720

17. 3 Well Volumes: 12.9

18. 5 Well Volumes: 21.5

19. Purge Volume: 35

22. Size and Type of Pump or Bailer
Used in purging: 12V Pump
Used in sampling: disposable bailer

Final Field Analysis

23. Total Amount of Water Removed: 35

24. Was Well Pumped Dry? Yes No

25. Was water added to well? No Yes
If yes, source:

26. Groundwater Sampled? Yes No
If yes, what was the sample #? BB06-GW-01 Date: 11-17-97
Sampling Personnel?

IF PETROLEUM PRODUCT IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

27. Physical Appearance and Remarks: H2O started out yellowish brown - Becomes clear > ≈ 3 gallons Good flow - no odor etc.

28. Purge and Development water disposal method: Drum # 95

Development Parameters

Time	Temp C	Conductivity (umhos/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Flow Rate (gpm)	Flow & Observations [1]
1215	13.7	840	6.5			10	1-1.5	
1230	13.8	840	6.5			15	↓	
1245	13.7	850	6.5			10	↓	

[1] Note volume and physical character of sediments removed.

NTU = Nephelometric turbidity units

WL = Water Level from Top of PVC Casing

BTEX HCID BB06

Checked By: Date:

Well Development	✓ Purging/Groundwater Sampling	Sheet # of Sheets

1. Project: Denny Way CSO	2. Project Location: Westlake + Valley St., Seattle	3. Date: 11-17-97
4. Development/Purging Subcontractor: HWA	5. Name of Developer/Purger: RCD	6. Sampler Name, Affiliation: RCD
7. Development/Purge Method: 12V Pump; Pumping/Surging, Air Lifting, Bailing	8. Manufacturer's Designation of Rig: —	9. Location of Well (Size, Description): —

Water Levels

Initial	Final	
Date: 11-17-97 Time: 1000	Date: Time:	Date: Time:
10. Total Depth of Well (from TOC): 33.7	15. Total Depth of Well (from TOC):	20. Total Depth of Well (from TOC):
11. Water Level (from TOC): 9.75	16. Water Level (from TOC):	21. Water Level (from TOC):

12. Water Column Height: 24	Note: x = gal/ft; Dia / Sch 40 / Sch 80	17. 3 Well Volumes: 12.6	22. Size and Type of Pump or Bailer
13. Well Diameter: 24	2" 0.1743 0.1534; 4" 0.6613 0.5972	18. 5 Well Volumes: 21	Used in purging: 12V. Pump.
14. Well Volume (gal) (x x w.c. height): 4.2	6" 1.5007 1.3540; 8" 2.5856 2.3720	19. Purge Volume: 30	Used in sampling: Disposable Bailer

Final Field Analysis

23. Total Amount of Water Removed: 30	24. Was Well Pumped Dry? Yes No	25. Was water added to well? No Yes; If yes, source:	26. Groundwater Sampled? Yes No; If yes, what was the sampling Sampling Personnel? BB07-GW-01; Date: 11-17-97

IF PETROLEUM PRODUCT IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

27. Physical Appearance and Remarks: H_2O started out silty/gray. Cleared up v. well after 3 gallons.

28. Purge and Development water disposal method: Drum # 94

Development Parameters

Time	Temp C	Conductivity (mmhos/cm)	pH	NTU	WL (from TOC)	Volume (gallons)	Flow Rate (gpm)	Photo # Observations [1]
1045	14.2	1390	6.4	✓	✓	10	1-1.5	✓
1100	13.7	1400	6.3	✓		15		
1115	13.8	1400	6.4	✓		10	↓	

[1] Note volume and physical character of sediments removed.

NTU = Nephelometric turbidity units

WL = Water Level from Top of PVC Casing

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10 SW Ash Street, Portland, OR 97204-3598 Tel. 503-226-8012 Fax. 503-226-8016

GROUND WATER SAMPLING DATA SHEET

SAMPLE INFORMATION:

Project Name/#: Denny Wly CSO
Project Location:
Well Number: BB08
Sample Number: BB08-GW-01
Weather: Sunny
Date: 6/24/97

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Casing Volume)
0947	40	18.97	TOC			3.4

1.25" case = 0.064 gal/ft
2" case = 0.163 gal/ft
4" case = 0.653 gal/ft
6" case = 1.469 gal/ft

WELL PURGING:

Time	Method	Gallons	Casing Volumes	pH	Conductivity	Temperature		
1005	BAILER	3.5	1	7.4	1031			
1015	↓	3.4	2	7.2	1002			
1030	↓	3.4	3	7.2	1024			

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Filtered (Y/N)	Preservative	Iced (Y/N)
1030	BAILER	TPH-HCID	1	1L	AMBER	N	N	Y
1030	BAILER	VOC	3	40ml	GLASS			

COMMENTS/NOTES:

Total # of Bottles: 4 Sampler: [illegible] Signature:

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157 Yesler Way, Suite 505, Seattle, WA 98104 (206) 622-7698

FIELD SAMPLING DATA SHEET

'ect Name/#: 97061 Well Number: BB8

Project Location: Sample Number: BB8-GW-01

Client/Contact: Weather: Overcast Date: 6/4

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume)
1600	40	20.51	TOC			3.2

(2" case = 0.163 gal/ft)
(4" case = 0.653 gal/ft)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature
1605	Pump	3.2	1	7.5		15.5
1615	Pump	3.2	2	7.6		15.2
	Pump	3.2	3	7.5		15.2

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered(Y/N)	Preservative	Iced (Y/N)
1620	Pump	BTEX	2	40ml	Glass	N	HCl	Y
1620	Pump	VOC	2	40ml	Glass	N	HCl	Y

COMMENTS/NOTES: (Include Equipment Used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

TDS meter not working

Total # of Bottles: 4 Sampler: Clint Signature:

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FIELD SAMPLING DATA SHEET

Project Name/#: 97061
Project Location:
Client/Contact:

Well Number: BB-9
Sample Number: BB9-GW-01
Weather: Partly Cloudy Date: 8/3/99

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume)
1251	80	38.92	TOC			6.7

(2" case = 0.163 gal/ft)
(4" case = 0.653 gal/ft)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature
1319	PUMP	7	1	7.7	920	18.3
1324	"	7	2	7.5	600	18.4
1329	"	7	3	7.3	580	18.1

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered(Y/N)	Preservative	Iced (Y/N)
1345	PUMP	BTEX	6	40ml	GLASS	N	HCl	Y
1345	PUMP	HCID	3	500ml	AMBER	N	HCl	Y

COMMENTS/NOTES: (Include Equipment Used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

MS/MSD VOLUMES TAKEN

Total # of Bottles: 9 Sampler: GWE Signature:

Well Development	✓ Purging/Groundwater Sampling	Sheet # of Sheets

1. Project: Denny Way CSO	2. Project Location: Dexter Ave. N.	3. Date: 11-13-97
4. Development/Purging Subcontractor: HWA	5. Name of Developer/Purger: RCD	6. Sampler Name, Affiliation: RCD
7. Development/Purge Method: Pumping/Surging Air Lifting Bailing — disp. bailer	8. Manufacturer's Designation of Rig: —	9. Location of Well (Size, Description): —

Water Levels

Initial	Final	
Date: 11-13-97 Time: 1600	Date: Time:	Date: Time:
10. Total Depth of Well (from TOC): 36.7	15. Total Depth of Well (from TOC):	20. Total Depth of Well (from TOC):
11. Water Level (from TOC): 25.3	16. Water Level (from TOC):	21. Water Level (from TOC):

12. Water Column Height: 11.4	Note: x = gal/ft Dia / Sch 40 / Sch 80	17. 3 Well Volumes: 6	22. Size and Type of Pump or Bailer
13. Well Diameter: 2"	2" 0.1743 0.1534	18. 5 Well Volumes: 10	Used in purging: disposable bailer
14. Well Volume (gal) (ttw c. height): 2.0	4" 0.6613 0.5972 6" 1.5007 1.3540 8" 2.5856 2.3720	19. Purge Volume: 12	Used in sampling:

Final Field Analysis

23. Total Amount of Water Removed: 12	24. Was Well Pumped Dry? Yes No	25. Was water added to well? No Yes If yes, source:	26. Groundwater Sampled? Yes No If yes, what was the sample? Sampling Personnel? BB10-GW-01 Date: 11-13-97

IF PETROLEUM PRODUCT IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

27. Physical Appearance and Remarks: H_2O v. silty/gray - does not clean up very well. Recovery slow to med., bailed MW down but not dry.

28. Purge and Development water disposal method: Drum # 100

Development Parameters

Time	Temp C	Conductivity (umhos/cm)	pH	NTU	WL (from TOC)	Volume (gallons)	Flow Rate (gpm)	Photo #, Observations [1]
1600	15.5	370	6.7			4	bailer	
	15.5	390	6.9			4	"	
1630	14.4	390	7.0			4	"	

[1] Note volume and physical character of sediments removed.

NTU = Nephelometric turbidity units

WL = Water Level from Top of PVC Casing

BB10 HCID VOC

Checked By: Date:

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FIELD SAMPLING DATA SHEET

Project Name/#: 97061
Project Location:
Client/Contact: B+V
Well Number: BB-11
Sample Number: BB11-GW-01
Weather: CLEAR
Date: 6/3/98

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume)
1706	85	33.37	TOC			8.4

(2" case = 0.163 gal/ft)
(4" case = 0.653 gal/ft)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature
1710	Pump	8.5	1	7.2	230	16.3
1720	Pump	8.5	2	7.1	220	15.9
1728	Pump	8.5	3	7.0	220	15.7

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered(Y/N)	Preservative	Iced (Y/N)
1730	Pump	BTEX	4	40ml	GLASS	N	HCl	Y
1730	Pump	HCID	2	500ml	AMBER	N	HCl	Y

COMMENTS/NOTES: (Include Equipment Used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

DUPLICATE SAMPLE TAKEN BB-11B @ 1750

Total # of Bottles: Sampler: Signature:

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FIELD SAMPLING DATA SHEET

Project Name/#: Denny Way CSO
Project Location: Sea, WA
Client/Contact:
Well Number: BB-12
Sample Number: BB12-GW-01
Weather: Sunny
Date: 5-~~18~~-98 19

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume)
2:10PM	43.45	15.01	monument			4.64

(2" case = 0.163 gal/ft)
(4" case = 0.653 gal/ft)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature
2:30	pump		>3	6.6	1000	19.6
2:32	"		"	6.6	1000	19.0
2:34	"		"	6.6	1000	18.9

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered(Y/N)	Preservative	Iced (Y/N)
	from line	HCID	1	0.5l	AMBER	N	HCL	Y
	"	BTEX	2	40ml	VOA	"	"	"
	"	VOC	2	40ml	VOA	"	"	"

COMMENTS/NOTES: (Include Equipment Used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

I had VOC bottle taken - took an extra sample.

2 20 gallons through barrel.

Total # of Bottles: 5 Sampler: Marcus Byers Signature: Marcus Byers

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FIELD SAMPLING DATA SHEET

Project Name/#: Denny Way CSO
Project Location: Sea, WA
Client/Contact:
Well Number: BB-13
Sample Number: BB-13-GW-01
Weather: Sunny
Date: 5-~~18~~-98 19

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume)
3:45	45.43	9.11	monument			5.92

(2" case = 0.163 gal/ft)
(4" case = 0.653 gal/ft)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature
			>3	6.6	1350	19.0
				6.9	1340	18.0
				6.7	1370	17.8

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered(Y/N)	Preservative	Iced (Y/N)
	from line	HCID	1	0.5 l	AMBER	N	HCL	Y
	"	BTEX	2	40 ml	VOA	"	"	"
	"	VOC	2	40 ml	VOA	"	"	"

COMMENTS/NOTES: (Include Equipment Used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

~ 25 gallons through barrel

Total # of Bottles: 5 Sampler: Marion Byers Signature: Marion Byers

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FIELD SAMPLING DATA SHEET

Project Name/#: Denny Way CSO
Project Location:
Client/Contact:

Well Number: BB-14
Sample Number: BB14 - GW - 01
Weather: Sunny
Date: 5-~~18~~-98 19

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume)
12:40	49.65	8.29	Monument			6.74

(2" case = 0.163 gal/ft)
(4" case = 0.653 gal/ft)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature
1pm	pump	20		6.4	820	18.0
1:05	"	21		6.5	820	17.8
1:10	"	22		6.5	870	17.8

WELL SAMPLING:

BB14-GW-01

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered(Y/N)	Preservative	Iced (Y/N)
1:30	from line	1-HCID	1	0.5l	AMBER	N	HCL	Y
"	"	BTEX	2	40ml	VOA	"	"	"

COMMENTS/NOTES: (Include Equipment Used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

Using carbon unit - 40 gal

Total # of Bottles: 3 Sampler: Marvin Byers Signature: Marvin Byers

Contract C

BLACK & VEATCH

Well Development ✓ Purging/Groundwater Sampling

Well No. CC01

Sheet # of Sheets

1. Project: Derring Way CSO	2. Project Location: Myrtle Edwards Park	3. Date: 11-14-97
4. Development/Purging Subcontractor: HWA	5. Name of Developer/Purger: RCD	6. Sampler Name, Affiliation: RCD
7. Development/Purge Method: hand bailer (Pumping/Surging, Air Lifting, Bailing)	8. Manufacturer's Designation of Rig: —	9. Location of Well (Site, Description): —

Water Levels

Initial	Final	
Date: 11-14-97 Time: 1345	Date: Time:	Date: Time:
10. Total Depth of Well (from TOC): 41.5	15. Total Depth of Well (from TOC):	20. Total Depth of Well (from TOC):
11. Water Level (from TOC): 9.0	16. Water Level (from TOC):	21. Water Level (from TOC):

12. Water Column Height: 32.5	Note: x = gal/ft	17. 3 Well Volumes: 17	22. Size and Type of Pump or Bailer
13. Well Diameter: 2"	Dia / Sch 40 / Sch 80: 2" 0.1743 0.1534; 4" 0.6613 0.5972	18. 5 Well Volumes: 28	Used in purging: Disposable bailer
14. Well Volume (gal) (ppw.c. height): 5.7	6" 1.5007 1.3540; 8" 2.5856 2.3720	19. Purge Volume: 20	Used in sampling: Disposable bailer

Final Field Analysis

23. Total Amount of Water Removed: 20	24. Was Well Pumped Dry? frequently Yes No	25. Was water added to well? No Yes If yes, source:	26. Groundwater Sampled? Yes No If yes, what was the sample #? Date: 11-14-97 Sampling Personnel: CC01-GW-01

IF PETROLEUM PRODUCT IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

27. Physical Appearance and Remarks: H2O v. silty/gray - does not clean up very well. bailed dry frequently

28. Purge and Development water disposal method: Drum # 92

Development Parameters

Time	Temp C	Conductivity (umhos/cm) m/s	pH	NTU	WL (from TOC)	Volume (gallons)	Flow Rate (gpm)	Observations [1]
1400	14.3	6.90	7.0	✓	✓	8	bailer	✓
1430	14.8	10.10	7.1	✓	✓	4	↓	✓
1500	14.7	10.50	7.1	✓	✓	4	↓	✓

[1] Note volume and physical character of sediments removed.

NTU = Nephelometric turbidity units

WL = Water Level from Top of PVC Casing

CC01

Checked By: Date:

Well Development ✓ Purging/Groundwater Sampling

CC02

Sheet # of Sheets

1. Project: Denny Way CSO	2. Project Location: Myrtle Edwards Park	3. Date: 11-14-97
4. Development/Purging Subcontractor: HWA	5. Name of Developer/Purger: RCD	6. Sampler Name, Affiliation: RCD
7. Development/Purge Method: Pumping/Surging Air Lifting Bailing hand bail	8. Manufacturer's Designation of Rig: —	9. Location of Well (Site, Description): —

Water Levels

Initial	Final	
Date: 11-14-97 Time: 1100	Date: Time:	Date: Time:
10. Total Depth of Well (from TOC): 29.25	15. Total Depth of Well (from TOC):	20. Total Depth of Well (from TOC):
11. Water Level (from TOC): 7.21	16. Water Level (from TOC):	21. Water Level (from TOC):

12. Water Column Height: 22.04

13. Well Diameter: 2"

14. Well Volume (gal) (gpw.c. height): 3.8

Note: x = gal/ft

Dia	Sch 40	Sch 80
2"	0.1743	0.1534
4"	0.6613	0.5972
6"	1.5007	1.3540
8"	2.5856	2.3720

17. 3 Well Volumes: 11.5

18. 5 Well Volumes: 19.0

19. Purge Volume: 25

22. Size and Type of Pump or Bailer: Used in purging: hand bailer; Used in sampling:

Final Field Analysis

23. Total Amount of Water Removed: 25

24. Was Well Pumped Dry? Yes No

25. Was water added to well? No Yes If yes, answer:

26. Groundwater Sampled? Yes No If yes, what was the sample #? Date: 11-14-97

Sampling Personnel: CC02-GW-01

IF PETROLEUM PRODUCT IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

27. Physical Appearance and Remarks: H_2O is visibly/gray purge H_2O foams ≈ 2 minutes when poured in bucket. (*) Sample + Duplicate + MS/MSD

28. Purge and Development water disposal method: Drum #91

Development Parameters

Time	Temp C	Conductivity (umhos/cm)	pH	NTU's	WL (from TOC)	Volume (gallons)	Flow Rate (gpm)	Photo #, Observations [1]
1130	15.5	300	6.8	X	7.6	4		
1145	15.7	1160	6.9	X	7.6	4		
1200	15.8	1160	6.9	X	7.7	4		

[1] Note volume and physical character of sediments removed.

NTU = Nephelometric turbidity units

WL = Water Level from Top of PVC Casing

Collected: CC02-GW-01, CC02-MS/MSD-01, Duplicate

CC02

Checked By: Date:

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Well Development ✓ Purging/Groundwater Sampling

Well No. CC03A

Sheet 1 of Sheets

1. Project: Denny/Jan C 90	2. Project Location: Montlake Edwards Park, Seattle	3. Date: 11-12-97
4. Development/Purging Contractor: HWA	5. Name of Developer/Purger: RCD	6. Sampler Name, Affiliation: RCD
7. Development/Purge Method: 12V pump Pumping/Surging Air Lifting Bailing	8. Manufacturer's Designation of Rig: —	9. Location of Well (Site, Development): —

Water Levels

Initial	Final	
Date: 11-12-97 Time: 1600	Date: Time:	Date: Time:
10. Total Depth of Well (from TOC): 49.	15. Total Depth of Well (from TOC):	20. Total Depth of Well (from TOC):
11. Water Level (from TOC): 6.93	16. Water Level (from TOC):	21. Water Level (from TOC):

12. Water Column Height: 42.07	Note: s = gal/ft Dia / Sch 40 / Sch 80 2" 0.1743 0.1534 4" 0.6613 0.5972 6" 1.5007 1.3548 8" 2.5856 2.3721	17. 3 Well Volumes: 22	22. Size and Type of Pump or Bailer Used in purging: 12V Pump
13. Well Diameter: 2"		18. 5 Well Volumes: 36.5	
14. Well Volume (gal) (a.w.c. height): 7.3		19. Purge Volume: 45	Used in sampling: bailer

Final Field Analysis

23. Total Amount of Water Removed: 45	24. Was Well Pumped Dry? Yes No	25. Was water added to well? No Yes If yes, source:	26. Groundwater Sampled? Yes No If yes, what was the sample? Date: 11-12-97 Sampling Personnel: CC03-GW-01

IF PETROLEUM PRODUCT IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

27. Physical Appearance and Remarks: H_2O remains clear from start to finish

28. Purge and Development water disposal method: Drum #HW81

Development Parameters

Time	Temp C	Conductivity (mmhos/cm)	pH	NTU	WL (from TOC)	Volume (gallons)	Flow Rate (gpm)	Observations [1]
1615	12.8	5.60 mS	6.9	X		10	1.5-2	X
1630	12.1	5.80 mS	7.1	X	16.4	20	1	
1645	12.2	5.70 mS	7.1	X	17.0	15		

[1] Note volume and physical character of sediments removed.

NTU = Nephelometric turbidity units

WL = Water Level from Top of PVC Casing

Checked By: Date:

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FIELD SAMPLING DATA SHEET

Project Name/#: 97061
Well Number: CC-3A
Project Location:
Sample Number: CC3A-GW-01
Client/Contact: B+V
Weather: OVERCAST
Date: 6/3/98

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume)
1005	20	4.77	TOC			2.5

(2" case = 0.163 gal/ft)
(4" case = 0.653 gal/ft)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature
1010	BAIL	2.5	1	6.3	1770	13.4
1015	BAIL	2.5	2	6.8	1740	13.2
1020	BAIL	2.5	3	6.9	1750	13.4

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered(Y/N)	Preservative	Iced (Y/N)
1020	BAIL	BTEX	2	40mL	GLASS	N	HCL	Y
1020	BAIL	HCID	1	500mL	AMBER	N	/	Y
	DUPE	BTEX	2	40mL	GLASS	N	HCL	Y
	DUPE	HCID	1	500mL	AMBER	N	/	Y

COMMENTS/NOTES: (Include Equipment Used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

CC3C DUPE OF CC3A
– SLOW RECOVERY

Total # of Bottles: 6
Sampler: GWE
Signature: [signature]

Well Development ✓ Purging/Groundwater Sampling

1. Project: Denny Way CSO	2. Project Location: Myrtle Edwards Park, Seattle	3. Date: 11-12-97
4. Development/Purging Subcontractor: HWA	5. Name of Developer/Purger: KCD	6. Sampler Name, Affiliation: Same
7. Development/Purge Method: hand bail; Pumping/Surging; Air Lifting; Bailing	8. Manufacturer's Designation of Rig:	9. Location of Well (Site, Development):

Water Levels

Initial	Final	
Date: 11-12-97 Time: 1430	Date: Time:	Date: Time:
10. Total Depth of Well (from TOC): 19.40	15. Total Depth of Well (from TOC):	20. Total Depth of Well (from TOC):
11. Water Level (from TOC): 11.60	16. Water Level (from TOC):	21. Water Level (from TOC):

12. Water Column Height: 7.8

13. Well Diameter: 2"

14. Well Volume (gal) (ppw.c. height): 1.4

Dia	Sch 40	Sch 80
2"	0.1743	0.1534
4"	0.6613	0.5972
6"	1.5007	1.3540
8"	2.5856	2.3720

17. 3 Well Volumes: 4.2

18. 5 Well Volumes: 7.0

19. Purge Volume: 14

22. Size and Type of Pump or Bailer: Used in purging: disposable bailer; Used in sampling: bailer

Final Field Analysis

23. Total Amount of Water Removed: 14

24. Was Well Pumped Dry? @ 1.5 G. Yes No

25. Was water added to well? No Yes; If yes, source:

26. Groundwater Sampled? Yes No; If yes, what was the sample #? Date: 11-12-97; Sampling Personnel: CC04-GW-01

IF PETROLEUM PRODUCT IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

27. Physical Appearance and Remarks: H_2O is silty/gray. Fast bail down and relatively fast recovery

28. Purge and Development water contained in: Drum # HW 75

Development Parameters

Time	Temp C	Conductivity (mmhos/cm)	pH	NTU	WL (from TOC)	Volume (gallons)	Flow Rate (gpm)	Photo #, Observations [1]
1445	13.3	540	6.7	X	15	2	hand bail	
1500	13.6	360	6.7			3		
	13.4	310	7.5			4		
	13.3	300	7.6			5		

[1] Note volume and physical character of sediments removed.

NTU = Nephelometric turbidity units

WL = Water Level from Top of PVC Casing

Checked By: Date:

BLACK & VEATCH

Well Development | ✓ Purging/Groundwater Sampling

Well No. CC05

Sheet # 2 of Sheets

1. Project: Denny Way SSO Phase B	2. Project Location: Murtle Edwards Park Seattle	3. Date: 11-12-97
4. Development/Purging Subcontractor: HWA	5. Name of Developer/Purger: Randy Dyer	6. Sampler Name, Affiliation: Same
7. Development/Purge Method: 12V pump Pumping/Surging Air Lifting Bailing	8. Manufacturer's Designation of Rig: —	9. Location of Well (Site, Description)

Water Levels

Initial	Final	
Date: 11-12-97 Time: 1300	Date: Time:	Date: Time:
10. Total Depth of Well (from TOC): 30	15. Total Depth of Well (from TOC)	20. Total Depth of Well (from TOC)
11. Water Level (from TOC): 9.43	16. Water Level (from TOC)	21. Water Level (from TOC)

12. Water Column Height: 20.57

13. Well Diameter: 2"

14. Well Volume (gal) (gsw.c. height): 3.6

Nom Dia	x = gal/ft Sch 40	Sch 80
2"	0.1743	0.1534
4"	0.6613	0.5972
6"	1.5007	1.3540
8"	2.5856	2.3720

17. 3 Well Volumes: 10.8

18. 5 Well Volumes: 18

19. Purge Volume: 22

22. Size and Type of Pump or Bailer

Used in purging: 12V, down hole pump

Used in sampling: disposable bailer

Final Field Analysis

23. Total Amount of Water Removed: 22 G

24. Was Well Pumped Dry? Yes No

25. Was water added to well? No Yes If yes, source:

26. Groundwater Sampled? Yes No

If yes, what was the sample # CC05-GW-01

Sampling Personnel: RCO 11-12-97

IF PETROLEUM PRODUCT IS IN THE WELL DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

27. Physical Appearance and Remarks: Started out silty/gray. Cleared to faint lt. gray after ≈ 5 G. No odor or obvious indications of contamination

28. Purge and Development water disposal method: Drum # HW82

Development Parameters

Time	Temp C	Conductivity (~~umhos/cm~~) bS/cm	pH	~~NTU~~	WL (from TOC)	Volume (gallons)	Flow Rate (gpm)	Photo #, Observations [1]
1315	13.2	2600	8.9			1	1-1.5	
	13.4	1610	7.4		15.1	6	"	
	13.4	1600	7.4		16.12	10	"	
1400	13.3	1600	7.3		16.3	5	"	

[1] Note volume and physical character of sediments removed.

NTU = Nephelometric turbidity units

WL = Water Level from Top of PVC Casing

Checked By | Date

Well Development	✓ Purging/Groundwater Sampling	Sheet # 1 of Sheets 1

1. Project: Denny Way CSO Phase B	2. Project Location: Myrtle Edwards Park Seattle, Wa.	3. Date: 11-12-97
4. Development/Purging Subcontractor: HWA	5. Name of Developer/Purger: Randy Dyer	6. Sampler Name, Affiliation: Same
7. Development/Purge Method: 12V Pump. Pumping/Surging Air Lifting Bailing	8. Manufacturer's Designation of Rig:	9. Location of Well (Size, Description): 2" PVC, N. End of Park

Water Levels

Initial	Final	
Date: 11-12-97 Time: 1100	Date: Time:	Date: Time:
10. Total Depth of Well (from TOC): 36.65	15. Total Depth of Well (from TOC):	20. Total Depth of Well (from TOC):
11. Water Level (from TOC): 12.42	16. Water Level (from TOC): 12.9	21. Water Level (from TOC):

12. Water Column Height: 24.23	Note: x = gal/ft	17. 3 Well Volumes: 12.6	22. Size and Type of Pump or Bailer
13. Well Diameter: 2"	Dia / Sch 40 / Sch 80: 2" 0.1743 0.1534; 4" 0.6613 0.5972; 6" 1.5007 1.3540; 8" 2.5856 2.3720	18. 5 Well Volumes: 21	Used in purging: 12V pump
14. Well Volume (gal) (g/w c. height): 4.2		19. Purge Volume: 25	Used in sampling: disposable bailer

Final Field Analysis

23. Total Amount of Water Removed: 25	24. Was Well Pumped Dry? Yes No	25. Was water added to well? No Yes If yes, source:	26. Groundwater Sampled? Yes No If yes, what was the sample? CC06-GW-01 Date: 11-12-97 Sampling Personnel?

IF PETROLEUM PRODUCT IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

27. Physical Appearance and Remarks: H_2O starts out v. silty + lt gray. Clears up to faint lt gray with few - trace susp. solids.

28. Purge and Development water disposal method: Drum # HW 73 12V, down hole pump.

Development Parameters

Time	Temp C	Conductivity (mS/cm)	pH	~~Dis~~	WL (from TOC)	Volume (gallons)	Flow Rate (gpm)	~~Photo Observations [1]~~
1145	12.9	4.80	6.9	✓		5	1-1.5	✓
1200	13.3	4.7	7.1		15	5	↓	
1215	12.8	4.80	7.2		?	15	↓	

[1] Note volume and physical character of sediments removed.

NTU = Nephelometric turbidity units

WL = Water Level from Top of PVC Casing

Checked By: Date:

BLACK & VEATCH

Well Development ✓ Purging/Groundwater Sampling

Well No. CC 07

Sheet # of Sheets

1. Project: Denny Way CSO	2. Project Location: Railroad tracks	3. Date: 11-14-97
4. Development/Purging Subcontractor: HWA	5. Name of Developer/Purger: RCD	6. Sampler Name, Affiliation: RCD
7. Development/Purge Method: 12V pump Pumping/Surging Air Lifting Bailing	8. Manufacturer's Designation of Rig: —	9. Location of Well (Size, Description): —

Water Levels

Initial	Final	
Date: 11-14-97 Time: 1600	Date: Time:	Date: Time:
10. Total Depth of Well (from TOC): 36.5	15. Total Depth of Well (from TOC):	20. Total Depth of Well (from TOC):
11. Water Level (from TOC): 5.15	16. Water Level (from TOC):	21. Water Level (from TOC):

12. Water Column Height: 31.4

13. Well Diameter: 2"

14. Well Volume (gal) (ppw.c. height): 5.4

Nom. Dia	x = gal/ft Sch 40	Sch 80
2"	0.1743	0.1534
4"	0.6613	0.5972
6"	1.5007	1.3540
8"	2.5856	2.3720

17. 3 Well Volumes: 16.3

18. 5 Well Volumes: 27.2

19. Purge Volume: 19

22. Size and Type of Pump or Bailer

Used in purging: 12V pump

Used in sampling: disposable bailer

Final Field Analysis

23. Total Amount of Water Removed: 19

24. Was Well Pumped Dry? V. fast (Yes) No

25. Was water added to well? (No) Yes If yes, source:

26. Groundwater Sampled? (Yes) No If yes, what was the sample #? Date: Sampling Personnel? CC07-GW-01

IF PETROLEUM PRODUCT IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

27. Physical Appearance and Remarks: H_2O start silty/gray, pumps dry recover & then start silty/gray & then clears up

28. Purge and Development water disposal method: Drum # 93

Development Parameters

Time	Temp C	Conductivity (umhos/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Flow Rate (gpm)	Photo & Observations [1]
1615	14.7	8.00 m/s	6.8	X	X	6	1-1.5 g	X
1630	14.6	9.10 m/s	6.8			6	↓	
1700	14.6	10.00 m/s	6.9			7	↓	

[1] Note volume and physical character of sediments removed.

NTU = Nephelometric turbidity units

WL = Water Level from Top of PVC Casing

HCID BTEX

CC07

Checked By

Date

HONG WEST & ASSOCIATES
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FIELD SAMPLING DATA SHEET

Project Name/#: Denny Way CSO
Well Number: CC-8
Project Location:
Sample Number: CC8-GW-01
Client/Contact:
Weather: overcast
Date: 5-21-98

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume)
2pm	80.05	8.20	monument			11.71

(2" case = 0.163 gal/ft)
(4" case = 0.653 gal/ft)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature
2:50	from line	35+	>3	8.1	840	14.6
2:51	"	"	>3	8.1	880	14.6
2:53	"	"	>3	8.1	900	15.1

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered(Y/N)	Preservative	Iced (Y/N)
2:55	from line	HCID	1	500ml	AMBER	N	HCL	Y
2:56	"	BTEX	2	~~500ml~~	VOA	"	"	"

COMMENTS/NOTES: (Include Equipment Used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

~ 45 gallons through charcoal barrel.

Total # of Bottles: 3
Sampler: Marcus Byers
Signature: Marcus Byers

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FIELD SAMPLING DATA SHEET

Project Name/#: Denny Way CSO
Project Location:
Client/Contact:
Well Number: CC-9
Sample Number: CC9-GW-01
Weather: overcast
Date: 5-21-98

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume)
3:33	60.04	6.69	Monument			8.70

(2" case = 0.163 gal/ft)
(4" case = 0.653 gal/ft)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature
3:57	in line	30+	>3	8.1	1210	14.1
3:58	"	30+	>3	8.1	1150	14.2
3:59	"	30+	>3	8.1	1240	14.0

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered(Y/N)	Preservative	Iced (Y/N)
4:02	in line	HCID	1	500ml	AMBER	N	HCL	Y
4:03	"	BTEX	2	40ml	VOA	"	"	"

COMMENTS/NOTES: (Include Equipment Used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

~ 40 gallons through charcoal barrel

Total # of Bottles: 3
Sampler: Marcus Byers
Signature: Marcus Byers

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FIELD SAMPLING DATA SHEET

Project Name/#: 97061
Project Location:
Client/Contact:
Well Number: CC-10
Sample Number: CC10-GW-01
Weather: Overcast
Date: 6/9/98

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume)
1030	40	9.83	TOC			5

(2" case = 0.163 gal/ft)
(4" case = 0.653 gal/ft)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature
1047	BAIL	5	1	7.2	14.50mS	13.3
1103	BAIL	5	2	7.2	15.6mS	13.0
1118	BAIL	5	3	7.1	15.4mS	13.2

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered(Y/N)	Preservative	Iced (Y/N)
1120	BAIL	BTEX	2	40ml	Glass	N	HCl	Y
1120	BAIL	HPID	1	1L	Amber	N	HCl	Y

COMMENTS/NOTES: (Include Equipment Used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

Total # of Bottles: 3
Sampler: GWC
Signature:

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FIELD SAMPLING DATA SHEET

Project Name/#: DW/LU CSO 97061 Well Number: CC-11
Project Location: Sample Number:
Client/Contact: Weather: Date: 5/20/98

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume) (2" case = 0.163 gal/ft) (4" case = 0.653 gal/ft)
12:48	69.8	5.1	Monument			10.6 (x 3 = 31.8)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature
1:50	Pump		>3	8.5	510	18.0
"	"			8.4	530	16.5
"	"			8.4	530	16.2

WELL SAMPLING:

CC11-GW-01

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered(Y/N)	Preservative	Iced (Y/N)
1:55	Pump Line	HCID	1	.5 l	Amber	N	HCl	Y
"	" "	BTEX	2	40 ml	VOA	"	"	Y

COMMENTS/NOTES: (Include Equipment Used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

Buckets: ~~IIII~~ 11 1/2

Carbon Filter & Grunfos Pump. - 37 gal

Clear Water

Started Pumping 1:04

Total # of Bottles: 3 Sampler: André Marré Signature: André Marré

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FIELD SAMPLING DATA SHEET

ect Name/#: 97081 Well Number: CC-12

Project Location: Sample Number: CC12-GW-01

Client/Contact: B+V Weather: OVERCAST Date: 6/3/98

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume)
1101	41	9.74	TOC			5

(2" case = 0.163 gal/ft)
(4" case = 0.653 gal/ft)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature
1105	BAIL	5	1	6.7	1600	14.7
1120	"	5	2	6.6	1510	14.5
1130	"	5	3	7.1	1330	14.8

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered(Y/N)	Preservative	Iced (Y/N)
1130	BAIL	BTEX	6	40ml	GLASS	N	HCL	Y
1130	BAIL	HC10	3	500ml	AMBER	N	HCL	Y

COMMENTS/NOTES: (Include Equipment Used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

MS/MSD VOLUMES TAKEN

Total # of Bottles: 9 Sampler: [illegible] Signature: [illegible]

HONG WEST & ASSOCIATES, INC.
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10 SW Ash Street, Portland, OR 97204-3558 Tel. 503-226-8012 Fax. 503-226-8016

GROUND WATER SAMPLING DATA SHEET

SAMPLE INFORMATION:

Project Name/#: Denny Way CSO / S. Lk. Union
Project Location: Seattle, WA
Well Number: MW-12 (CC-1)
Sample Number: MW-12
Weather: Sunny
Date: 8-7-98

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Casing Volume)
3:00	41.60	10.43	Monument			5.08

1.25" case = 0.064 gal/ft
2" case = 0.163 gal/ft
4" case = 0.653 gal/ft
6" case = 1.469 gal/ft

WELL PURGING:

Time	Method	Gallons	Casing Volumes	pH	Conductivity	Temperature
3:40	from line	16	3	7.7	1500	18.7 C
3:43	"	17	3	7.6	1460	18.3 C
3:45	"	18	3	7.6	1490	18.2 C

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Filtered (Y/N)	Preservative	Iced (Y/N)
:47	from line		1	500ml	AMBER	N	Y	Y
"	"		2	40ml	VOA	N	Y	Y

COMMENTS/NOTES:

Total # of Bottles: 3 Sampler: Marcus Byers Signature: Marcus Byers

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FIELD SAMPLING DATA SHEET

Project Name/#: NW/LW CSO, 97061
Well Number: CC-13
Project Location:
Sample Number:
Client/Contact:
Weather:
Date: 5/20/98

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC ?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume) (2" case = 0.163 gal/ft) (4" case = 0.653 gal/ft)
2:45	25.5	3.4	Monument			3.6 (x3 = 10.8)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature
3:12	Pump	13	>3	7.5	690	17.1
"	"	"	"	7.2	710	16.3
"	"	"		7.3	720	15.9

WELL SAMPLING:

CC13-GW-01

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered(Y/N)	Preservative	Iced (Y/N)
3:20	Pumpline	MCID	1	.5 l	Amber	N	HCl	Y
"	"	BTEX	2	40 ml	VOA	"	"	Y

COMMENTS/NOTES: (Include Equipment Used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)
Buckets : 1111

Carbon Filter & Grundfos Pump - 20 gal.

Clear H_2O

Total # of Bottles: 3 Sampler: Andrea Marè Signature: [signature]