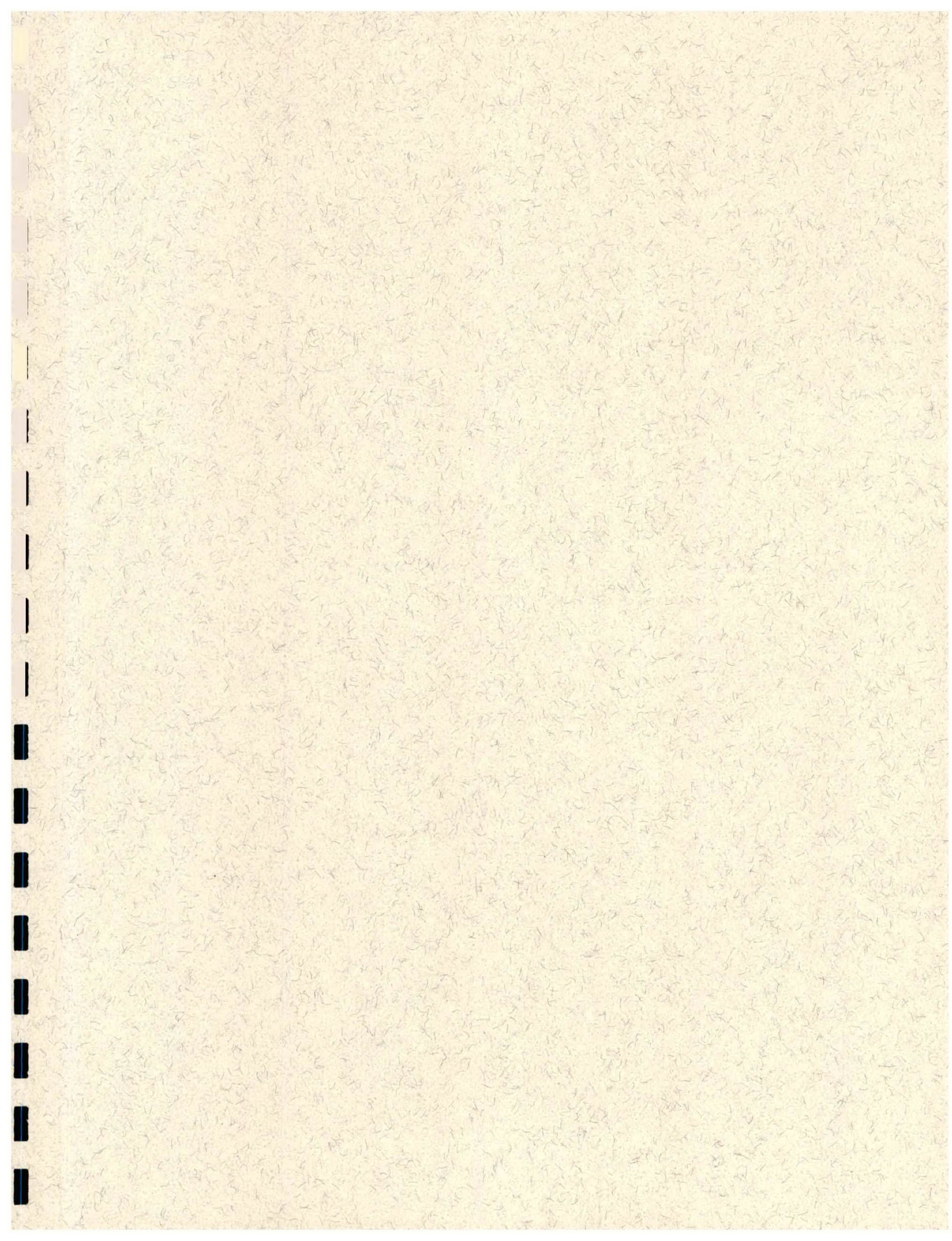


**Report  
Ground Water Compliance Monitoring  
First Quarter 2002  
Parcel 1 of the Former Puget Sound  
Energy Grady Way Complex  
Renton, Washington**

**February 27, 2002**

**For  
Puget Western, Inc.**

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February 27, 2002

Consulting Engineers  
and Geoscientists

Puget Western, Inc.  
19515 North Creek Parkway, Suite 310  
Bothell, Washington 98011

Attention: Bob Boyd

We are pleased to submit three copies of our report entitled "Ground Water Compliance Monitoring, First Quarter 2002" for Parcel 1 of the former Puget Sound Energy (PSE) Grady Way Complex located in Renton, Washington. Our study was completed in general accordance with the scope of services described in our fee estimate dated February 4, 1999 and the conditions of our general agreement with PSE (Contract No. 4600001763).

We appreciate the opportunity to assist Puget Western and PSE on this project. Please contact us if you have questions regarding this report.

Yours very truly,

GeoEngineers, Inc.



Kurt R. Fraese  
Principal

BPP:SCW:KRF:ab:sg  
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**REPORT  
GROUND WATER COMPLIANCE MONITORING  
FIRST QUARTER 2002  
PARCEL 1 OF THE FORMER  
PUGET SOUND ENERGY GRADY WAY COMPLEX  
RENTON, WASHINGTON  
FOR  
PUGET WESTERN, INC.**

**1.0 INTRODUCTION**

This report presents the results of our quarterly ground water monitoring activities performed on Parcel 1 of Puget Sound Energy's (PSE) former Grady Way Complex located at 915 Grady Way South in Renton, Washington. The activities described in this report were completed during January 2002. The location of the site relative to surrounding physical features is shown in Figure 1. The layout of the site is shown in Figure 2. PSE vacated the site in 1998. There are no buildings currently located at the site.

Ground water monitoring activities are being conducted at the site to satisfy the conditions of a "No Further Action" (NFA) letter issued by the Washington State Department of Ecology (Ecology). The ground water sampling activities currently are being conducted in accordance with our "Petition for Modification to the Ground Water Compliance Monitoring Plan, Grady Way Complex Property, Renton, Washington," dated July 9, 2001, and Ecology's response letter dated July 17, 2001. In this petition, we proposed no further ground water monitoring in Parcel 1 after sampling monitoring well GMW-12/12a for petroleum hydrocarbons during the first quarter of 2002. The modified sampling and analysis plan for compliance monitoring in Parcel 1 is presented in Table 1.

This report presents the results for the final (first quarter of 2002) ground water monitoring event in Parcel 1.

**2.0 SCOPE OF SERVICES**

Our scope of services for this monitoring event is as follows:

1. Measure the depth to ground water in accessible monitoring wells located on Parcel 1 and adjacent parcels comprising the former Grady Way Complex.
2. Calculate the ground water elevation in each monitoring well and evaluate the direction of shallow ground water flow beneath the site.
3. Measure the airspace in the monitoring well casings for combustible vapors using a Bacharach TLV Sniffer calibrated to hexane.
4. Purge one monitoring well (GMW-12/12a) located on Parcel 1 using low-flow sampling techniques, and place the purge water in a labeled and secured 55-gallon drum.
5. Obtain a ground water sample from monitoring well GMW-12/12a in accordance with the sampling and analysis plan presented in Table 1. Submit the ground water sample for chemical analysis of diesel- and lube oil-range hydrocarbons using Ecology Method NWTPH-D extended.

- Evaluate the chemical analytical results relative to applicable Model Toxics Control Act (MTCA) cleanup levels.

### **3.0 GROUND WATER MONITORING RESULTS**

#### **3.1 GENERAL**

A ground water sample was obtained from monitoring well GMW-12/12a on January 4, 2002. The location of the monitoring well is shown in Figure 2. The ground water sample was submitted for chemical analysis of diesel- and lube oil-range hydrocarbons using Ecology Method NWTPH-D extended. A summary of our ground water monitoring field procedures is presented in Appendix A.

#### **3.2 GROUND WATER ELEVATIONS**

Ground water levels were measured in nine monitoring wells (GMW-1, GMW-2/2a, MW-4, MW-10, GMW-12/12a, GMW-15 through GMW-17 and MW-20) located on Parcel 1 on January 4, 2002. The depth to ground water and ground water elevations for this and previous monitoring events are presented in Table 2. Table 2 also presents ground water elevations measured in monitoring wells located adjacent to Parcel 1, on property that formerly comprised the PSE Grady Way Complex. The depth to ground water ranged from approximately 2.52 to 7.67 feet below the ground surface (bgs) on Parcel 1 based on our January 4, 2002 measurements.

Ground water elevations were calculated relative to an assumed site datum (100.00 feet) based on the January 2002 water level measurements. The ground water elevations in each monitoring well and interpolated elevation contours are shown in Figure 2. Shallow ground water beneath Parcel 1 generally appears to flow in a northwesterly direction based on our January 2002 measurements. This is similar to the general direction of shallow ground water flow observed during previous monitoring events.

#### **3.3 COMBUSTIBLE VAPOR CONCENTRATIONS**

Combustible vapors were detected at concentrations greater than 10,000 parts per million (ppm) in the casing of GMW-1. Combustible vapors were detected at a concentration ranging between 300 to 9,000 ppm in the casings of monitoring wells GMW-16, GMW-17, MW-4 and MW-20. Combustible vapors either were not detected or were detected at concentrations less than 400 ppm in the other monitoring wells located on Parcel 1.

Based on our past ground water monitoring activities at the site, it is our opinion that elevated combustible vapor concentrations in the monitoring wells do not indicate the presence of soil or ground water contamination. The elevated vapors measured in the casings likely are related to methane associated with the presence of coal debris in fill soil at the site.

#### **3.4 CHEMICAL ANALYTICAL RESULTS**

The ground water sample obtained during the January 2002 sampling event was submitted for analysis of diesel- and lube oil-range hydrocarbons. Chemical analytical results for the ground water sample are presented in Table 3. Laboratory reports for the chemical analyses are presented in Appendix B.

Diesel-range hydrocarbons were detected at a concentration less than the MTCA Method A cleanup level in the ground water sample obtained from GMW-12/12a during this monitoring event. Lube oil-range hydrocarbons were not detected in the sample.

### **3.5 TREND ANALYSIS OF ANALYTICAL RESULTS**

The trend of petroleum hydrocarbon concentrations in monitoring well GMW-12/12a is presented in Figure 3. The MTCA Method A cleanup level for petroleum hydrocarbons also is shown in Figure 3. Ground water samples in which petroleum hydrocarbons were not detected are assigned a value of zero in the trend plot.

The concentrations of petroleum hydrocarbons in ground water samples obtained from GMW-12/2a have been less than the MTCA Method A cleanup level for the last five monitoring events, as shown in Figure 3.

### **4.0 CONCLUSIONS**

GeoEngineers completed ground water monitoring activities in general accordance with our "Petition for Modification to the Ground Water Compliance Monitoring Plan, Grady Way Complex Property, Renton, Washington," dated July 9, 2001. The concentration of petroleum hydrocarbons detected in GMW-12/12a during this monitoring event is less than the MTCA Method A cleanup level.

Based on the revised sampling and analysis plan presented in our July 2001 petition, ground water monitoring activities in Parcel 1 will be terminated.

### **5.0 LIMITATIONS**

We have prepared this report for the exclusive use of Puget Western, PSE, their authorized agents and regulatory agencies. Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

Please refer to Appendix C titled "Report Limitations and Guidelines for Use" for additional information pertaining to use of this report.



We appreciate the opportunity to assist Puget Western on this project. Please call if you have questions.

Yours very truly,

GeoEngineers, Inc.



Stephen C. Woodward  
Senior Project Geologist



Kurt R. Fraese  
Principal

BPP:SCW:KRF:ab:sg  
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Attachments

Three copies submitted

TABLE 2 (Page 1 of 5)  
 SUMMARY OF GROUND WATER ELEVATIONS  
 FORMER PUGET SOUND ENERGY GRADY WAY COMPLEX  
 RENTON, WASHINGTON

Monitoring Well <sup>1</sup>	Date Measured	Depth to Ground Water <sup>2</sup> (feet)	Ground Water Elevation <sup>3</sup> (feet)
GMW-1	11/30/98	3.74	95.92
	02/24/99	3.21	96.45
	05/20/99	4.16	95.50
	08/10/99	4.80	94.86
	11/09/99	5.28	94.38
	01/28/00	4.02	95.64
	04/14/00	4.13	95.53
	07/21/00	5.99	93.67
	10/19/00	5.90	93.76
	01/25/01	4.48	95.18
	08/01/01	5.14	94.52
	01/04/02	3.88	95.78
GMW-2/2a <sup>4</sup>	11/30/98	2.46	96.18
	02/24/99	1.17	97.47
	05/20/99	3.10	95.54
	08/10/99	3.81	94.83
	11/09/99	2.91	95.73
	01/28/00	3.84	94.80
	04/14/00	3.97	94.67
	07/21/00	5.85	92.79
	10/19/00	5.80	92.84
	01/25/01	3.32	95.32
	08/01/01	4.23	94.41
	01/04/02	2.73	95.91
GMW-3/3a <sup>4</sup>	11/30/98	1.42	95.70
	02/24/99	0.83	96.29
	05/20/99	1.64	95.48
	08/10/99	1.99	95.13
	11/09/99	2.19	94.93
	01/28/00	1.74	95.38
	04/14/00	1.86	95.26
	07/21/00	2.98	94.14
	10/19/00	2.84	94.28
	01/25/01	1.83	95.29
	08/01/01	2.97	94.15
	01/04/02	1.74	95.38
GMW-4/4a <sup>4</sup>	11/30/98	1.45	95.13
	02/24/99	0.58	96.00
	05/20/99	2.04	94.54
	08/10/99	2.49	94.09
	11/09/99	2.14	94.44
	01/28/00	2.00	94.58
	04/14/00	2.19	94.39
	07/21/00	3.32	93.26
	10/19/00	3.12	93.46
	01/25/01	1.93	94.65
	08/01/01	3.98	92.60
	01/04/02	1.87	94.71

Notes appear on page 5 of 5.

TABLE 2 (Page 2 of 5)

Monitoring Well <sup>1</sup>	Date Measured	Depth to Ground Water <sup>2</sup> (feet)	Ground Water Elevation <sup>3</sup> (feet)
GMW-5	11/30/98	2.93	94.24
	02/24/99	2.80	94.37
	05/20/99	3.80	93.37
	08/10/99	4.72	92.45
	11/09/99	4.55	92.62
	01/28/00	3.68	93.49
	04/14/00	4.04	93.13
	07/21/00	5.11	92.06
	10/19/00	5.05	92.12
	01/25/01	3.85	93.32
08/01/01	4.98	92.19	
	01/04/02	3.54	93.63
GMW-6 <sup>5</sup>	11/30/98	1.60	94.58
	02/24/99	1.24	94.94
	05/20/99	2.09	94.09
	08/10/99	3.61	92.57
	11/09/99 <sup>5</sup>	--	--
	01/28/00	2.32	93.86
	04/14/00	2.47	93.71
	07/21/00	2.47	93.71
	10/19/00	3.54	92.64
	01/25/01	2.47	93.71
08/01/01	3.04	93.14	
	01/04/02	2.13	94.05
GMW-7	11/30/98	4.29	93.22
	02/24/99	4.06	93.45
	05/20/99	5.09	92.42
	08/10/99	5.20	92.31
	11/09/99	5.36	92.15
	01/28/00	5.41	92.10
	04/14/00	5.59	91.92
	07/21/00	6.51	91.00
	10/19/00	6.41	91.10
	01/25/01	5.17	92.34
08/01/01	6.00	91.51	
	01/04/02	5.09	92.42
GMW-8	11/30/98	4.60	93.51
	02/24/99	4.40	93.71
	05/20/99	5.41	92.70
	08/10/99	5.89	92.22
	11/09/99	5.98	92.13
	01/28/00	5.33	92.78
	04/14/00	5.74	92.37
	07/21/00	6.74	91.37
	10/19/00	6.63	91.48
	01/25/01	5.59	92.52
08/01/01	6.34	91.77	
	01/04/02	5.17	92.94

Notes appear on Page 5 of 5.

TABLE 2 (Page 3 of 5)

Monitoring Well <sup>1</sup>	Date Measured	Depth to Ground Water <sup>2</sup> (feet)	Ground Water Elevation <sup>3</sup> (feet)
GMW-9	11/30/98	5.85	92.86
	02/24/99	5.74	92.97
	05/20/99	6.39	92.32
	08/10/99	6.67	92.04
	11/09/99	7.02	91.69
	01/28/00	6.23	92.48
	04/14/00	6.51	92.20
	07/21/00	7.52	91.19
	10/19/00	7.40	91.31
	01/25/01	6.44	92.27
	08/01/01	7.14	91.57
	<b>01/04/02</b>	<b>6.14</b>	<b>92.57</b>
GMW-10	11/30/98	2.60	93.24
	02/24/99	2.40	93.44
	05/20/99	3.35	92.49
	08/10/99	3.42	92.42
	11/09/99	3.77	92.07
	01/28/00	3.25	92.59
	04/14/00	3.45	92.39
	07/21/00	3.90	91.94
	10/19/00	3.85	91.99
	01/25/01	3.44	92.40
	08/01/01	4.25	91.59
	<b>01/04/02</b>	<b>3.20</b>	<b>92.64</b>
GMW-11	11/30/98	4.42	94.33
	02/24/99	4.09	94.66
	05/20/99	5.10	93.65
	08/10/99	4.91	93.84
	11/09/99	4.76	93.99
	01/28/00	4.84	93.91
	04/14/00	4.98	93.77
	07/21/00	5.39	93.36
	10/19/00	5.30	93.45
	01/25/01	5.02	93.73
	08/01/01	5.81	92.94
	<b>01/04/02</b>	<b>4.77</b>	<b>93.98</b>
GMW-12/12a <sup>4,5</sup>	11/30/98	8.02	94.56
	02/24/99	7.18	95.40
	05/20/99	8.00	94.58
	08/10/99	9.00	93.58
	11/09/99	9.60	92.98
	01/28/00	8.00	94.58
	04/14/00	8.24	94.34
	07/21/00	8.60	93.98
	10/19/00	8.52	94.06
	01/25/01	8.19	94.39
	08/01/01	9.17	93.41
	<b>01/04/02</b>	<b>7.67</b>	<b>94.91</b>

Notes appear on page 5 of 5.

TABLE 2 (Page 4 of 5)

Monitoring Well <sup>1</sup>	Date Measured	Depth to Ground Water <sup>2</sup> (feet)	Ground Water Elevation <sup>3</sup> (feet)
GMW-13	11/30/98	5.86	93.00
	02/24/99	5.67	93.19
	05/20/99	6.22	92.64
	08/10/99	6.64	92.22
	11/09/99	6.82	92.04
	01/28/00	6.32	92.54
	04/14/00	6.54	92.32
	07/21/00	6.91	91.95
	10/19/00	7.26	91.60
	01/25/01	6.52	92.34
	08/01/01	7.06	91.80
	<b>01/04/02</b>	<b>6.30</b>	<b>92.56</b>
GMW-14	11/30/98	5.66	93.40
	02/24/99	5.50	93.56
	05/20/99	6.35	92.71
	08/10/99	6.80	92.26
	11/09/99	7.02	92.04
	01/28/00	6.25	92.81
	04/14/00	6.60	92.46
	07/21/00	7.06	92.00
	10/19/00	7.50	91.56
	01/25/01	6.54	92.52
	08/01/01	7.19	91.87
	<b>01/04/02</b>	<b>6.08</b>	<b>92.98</b>
GMW-15	11/09/99	4.05	95.56
	01/28/00	3.86	95.75
	04/14/00	3.85	95.76
	07/21/00	4.16	95.45
	10/19/00	4.24	95.37
	01/25/01 <sup>6</sup>	-	-
	08/01/01	4.35	95.26
	<b>01/04/02</b>	<b>3.81</b>	<b>95.80</b>
GMW-16	11/09/99	4.91	90.46
	01/28/00	2.91	92.46
	04/14/00	3.31	92.06
	07/21/00	4.45	90.92
	10/19/00	5.42	89.95
	01/25/01	3.54	91.83
	08/01/01	4.78	90.59
	<b>01/04/02</b>	<b>2.55</b>	<b>92.82</b>
GMW-17	11/09/99	5.00	90.43
	01/28/00	2.95	92.48
	04/14/00	3.41	92.02
	07/21/00	4.60	90.83
	10/19/00	5.51	89.92
	01/25/01	3.56	91.87
	08/01/01	4.82	90.61
	<b>01/04/02</b>	<b>2.52</b>	<b>92.91</b>

Notes appear on page 5 of 5.

TABLE 2 (Page 5 of 5)

Monitoring Well <sup>1</sup>	Date Measured	Depth to Ground Water <sup>2</sup> (feet)	Ground Water Elevation <sup>3</sup> (feet)
MW-4	11/30/98	4.65	90.28
	02/24/99	4.45	90.48
	05/20/99	5.21	89.72
	08/10/99	5.52	89.41
	11/09/99	5.74	89.19
	01/28/00	5.13	89.80
	04/14/00	5.39	89.54
	07/21/00	6.49	88.44
	10/19/00	6.40	88.53
	01/25/01	5.20	89.73
	08/01/01	5.85	89.08
	<b>01/04/02</b>	<b>5.01</b>	<b>89.92</b>
MW-10	11/30/98	7.17	93.07
	02/24/99	6.94	93.30
	05/20/99	7.56	92.68
	08/10/99	7.95	92.29
	11/09/99	8.13	92.11
	01/28/00	6.98	93.26
	04/14/00	7.32	92.92
	07/21/00	8.40	91.84
	10/19/00	8.33	91.91
	01/25/01	7.82	92.42
	08/01/01	8.38	91.86
	<b>01/04/02</b>	<b>7.57</b>	<b>92.67</b>
MW-20	11/30/98	6.92	92.62
	02/24/99	6.75	92.79
	05/20/99	7.31	92.23
	08/10/99	7.71	91.83
	11/09/99	7.88	91.66
	01/28/00	7.41	92.13
	04/14/00	7.68	91.86
	07/21/00	8.68	90.86
	10/19/00	8.61	90.93
	01/25/01	7.54	92.00
	08/01/01	8.09	91.45
	<b>01/04/02</b>	<b>7.29</b>	<b>92.25</b>

Notes:

<sup>1</sup> Approximate locations of the monitoring wells are shown in Figure 2.

<sup>2</sup> The depths to ground water were measured relative to the tops of the monitoring well casings.

<sup>3</sup> Casing elevations were surveyed relative to a temporary benchmark. The benchmark was assigned an arbitrary elevation of 100.00 feet.

<sup>4</sup> Monitoring well was abandoned during remedial activities and subsequently replaced.

<sup>5</sup> This monitoring well is located on a storage dock that is elevated several feet above surrounding site grades.

<sup>6</sup> This monitoring well was not accessible on this date.

"—" = not measured

Bolding indicates data obtained during the current reporting period.

**TABLE 3 (Page 1 of 2)**  
**SUMMARY OF GROUND WATER CHEMICAL ANALYTICAL DATA<sup>1</sup>**  
**PARCEL 1 OF THE FORMER PUGET SOUND ENERGY GRADY WAY COMPLEX**  
**RENTON, WASHINGTON**

Sample Number <sup>2</sup>	Date Sampled	Petroleum Hydrocarbons <sup>3</sup> (mg/l)		PCBs <sup>4</sup> (µg/l)	Dissolved Arsenic <sup>5</sup> (µg/l)	pH <sup>6</sup> (pH units)
		Diesel-Range	Lube Oil-Range			
GMW-12/12a <sup>7</sup>	09/08/98	<0.250	<0.500	<0.100	<1.00	6.61
	11/03/98	<0.250	<0.500	<0.100	8.46	6.56
	02/24/99	0.325	<0.500	<0.100	1.74	6.44
	05/20/99	0.349	0.786	<0.100	—	—
	08/10/99	0.390	<0.500	—	—	—
	11/09/99	<0.250	<0.500	—	—	—
	01/28/00	0.270	<0.500	—	<1.00	—
	08/01/01	<0.250	<0.500	—	—	—
	01/04/02	0.255	<0.500	—	—	—
GMW-15	11/09/99	<0.250	<0.500	—	—	—
	01/28/00	<0.250	<0.500	—	8.15	—
	04/14/00	<0.250	<0.500	—	2.08	—
	07/21/00	<0.250	<0.500	—	1.52	—
GMW-17	11/09/99 <sup>8</sup>	0.460	0.919	—	—	—
	01/28/00	0.269	<0.500	—	<1.00	—
	04/14/00	0.321	<0.500	—	<1.00	—
	07/21/00	0.382	<0.500	—	<1.00	—
	10/19/00	<0.250	<0.500	—	<1.00	—
MW-4	08/29/98 <sup>9</sup>	<0.250	<0.500	—	55.5	6.99
	09/17/98	—	—	—	19.9	—
	11/03/98 <sup>9</sup>	<0.250	<0.500	—	12.1	6.56
	02/24/99	—	—	—	2.15	6.55
	05/20/99	<0.250	<0.500	—	—	—
	08/10/99	0.279	<0.500	—	—	—
	01/28/00	<0.250	<0.500	—	—	—
MW-20 <sup>10</sup>	08/29/98 <sup>9</sup>	<0.250	<0.500	—	4.26	8.08
	11/03/98 <sup>9</sup>	<0.250	<0.500	—	1.70	6.63
	02/24/99	<0.250	<0.500	—	<1.00	6.53
	05/20/99	<0.250	<0.500	—	—	—
	01/28/00	—	—	—	1.35	—
MTCA Method A Cleanup Level <sup>11</sup>		1.0 <sup>12</sup>		0.1	5.0	NA

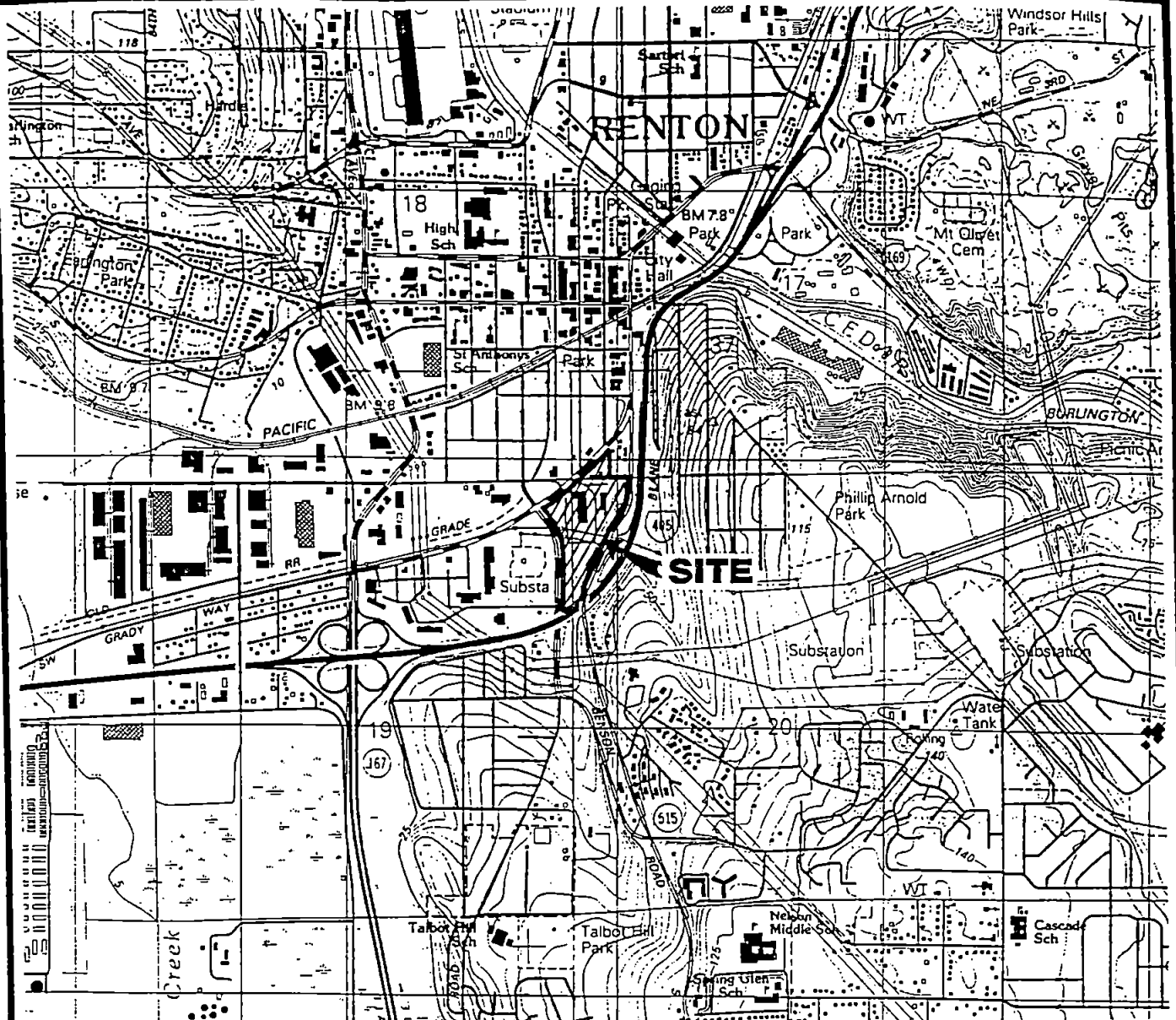
Notes appear on Page 2 of 2.

TABLE 3 (Page 2 of 2)

Notes:

- <sup>1</sup> Chemical analyses were performed by North Creek Analytical Laboratory of Bothell, Washington.
- <sup>2</sup> Ground water sampling locations are shown in Figure 2. Ground water sampling procedures are described in Appendix A.
- <sup>3</sup> Diesel- and lube oil-range hydrocarbons analyzed using Ecology Method NWTPH-D extended.
- <sup>4</sup> Polychlorinated biphenyls (PCBs) analyzed using EPA Method 8082.
- <sup>5</sup> Dissolved arsenic analyzed using EPA Method 6020 or by EPA Method 6000/7000 Series.
- <sup>6</sup> pH analyzed using EPA Method 150.1.
- <sup>7</sup> Monitoring well was abandoned during remedial activities and subsequently replaced.
- <sup>8</sup> This sample also was submitted for analysis of carcinogenic polycyclic aromatic hydrocarbons (cPAHs) and other semivolatile organic compounds (SVOCs) using EPA Method 8270. cPAHs and other SVOCs were not detected in the sample.
- <sup>9</sup> This sample also was submitted for analysis of gasoline-range hydrocarbons using NWTPH-G, and benzene, ethylbenzene, toluene and xylenes (BETX) using EPA Method 8021B. Gasoline-range hydrocarbons and BETX were not detected in the sample.
- <sup>10</sup> A ground water sample also was obtained from MW-20 on 09/17/98 and 11/03/98 and submitted for analysis of halogenated volatile organic compounds (HVOCs) using EPA Method 8021B. HVOCs were not detected in these samples.
- <sup>11</sup> The January 1996 MTCA Method A cleanup levels are referenced in this report because the final cleanup action was initiated prior to August 15, 2001 [Washington Administrative Code (WAC) 173-340-702(12)(b)].
- <sup>12</sup> The MTCA Method A cleanup level applies to the sum of all ranges of petroleum hydrocarbons.

"-x" = not tested  
NA = not applicable  
mg/l = milligrams per liter  
µg/l = micrograms per liter  
MTCA = Model Toxics Control Act  
Shaded values exceed MTCA Method A cleanup levels  
Bolding indicates samples were obtained during the current reporting period.



Reference: USGS 7.5' X 15' topographic-bathymetric quadrangle map "Renton, Wash.," dated 1983.

Geo  Engineers

VICINITY MAP

FIGURE 1

0186-346-R95 LCM:BDH 9/1/95

10/18/95

BPP-SYF 0186-407-00 02/15/00

MAIN AVENUE S.

I-405

EXPLANATION:

● GMW-1 95.78 MONITORING WELL  
GROUND WATER ELEVATION BASED ON  
01/04/02 MEASUREMENTS

← INFERRED DIRECTION OF SHALLOW GROUND  
WATER FLOW BASED ON 01/04/02  
MEASUREMENTS

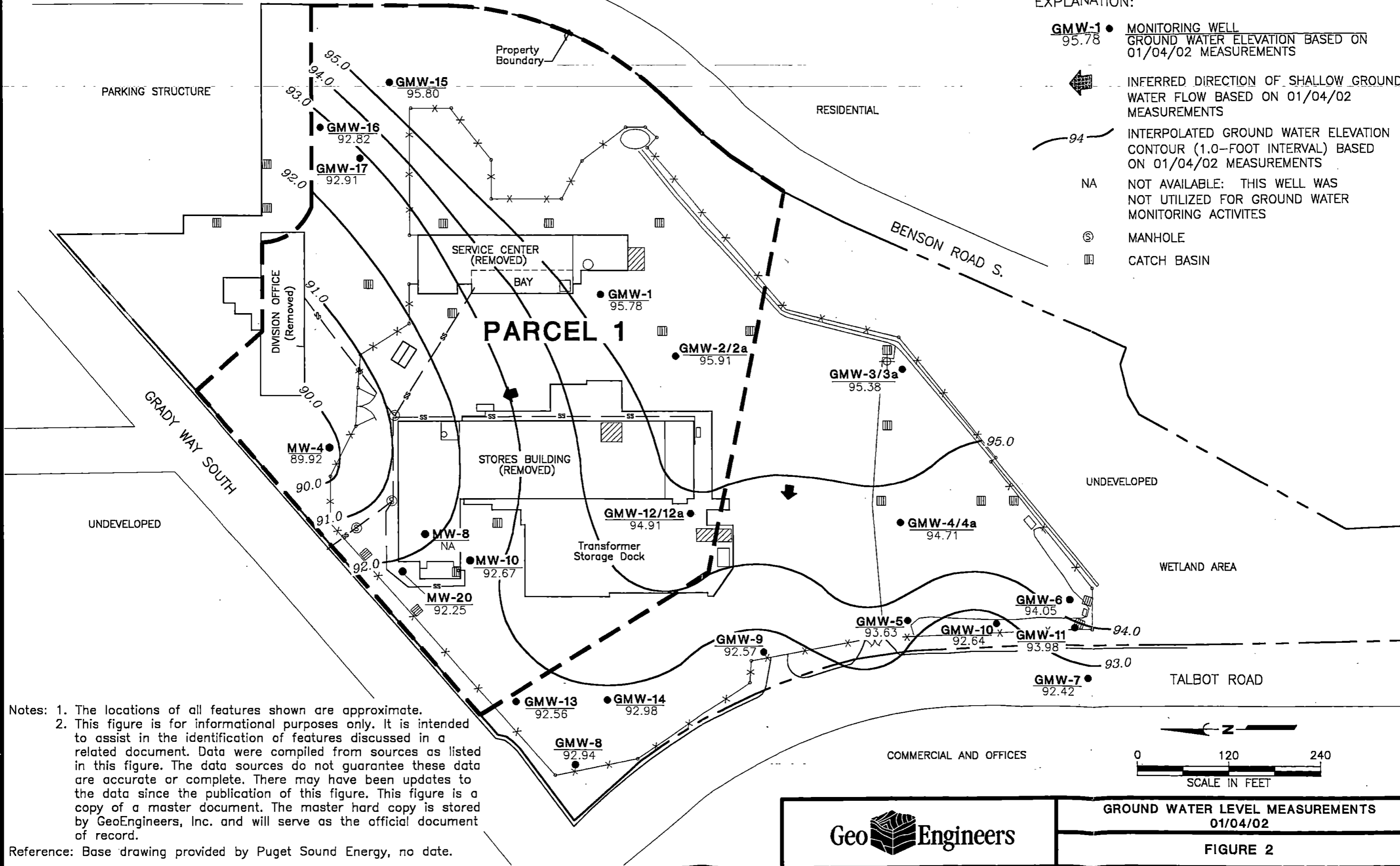
— 94 — INTERPOLATED GROUND WATER ELEVATION  
CONTOUR (1.0-FOOT INTERVAL) BASED  
ON 01/04/02 MEASUREMENTS

NA NOT AVAILABLE: THIS WELL WAS  
NOT UTILIZED FOR GROUND WATER  
MONITORING ACTIVITIES

⊙ MANHOLE

▣ CATCH BASIN

REDMOND\p:\0186407\CAD\00\018640700J.DWG BPP:SYF 02/19/02



Notes: 1. The locations of all features shown are approximate.  
 2. This figure is for informational purposes only. It is intended to assist in the identification of features discussed in a related document. Data were compiled from sources as listed in this figure. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this figure. This figure is a copy of a master document. The master hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.

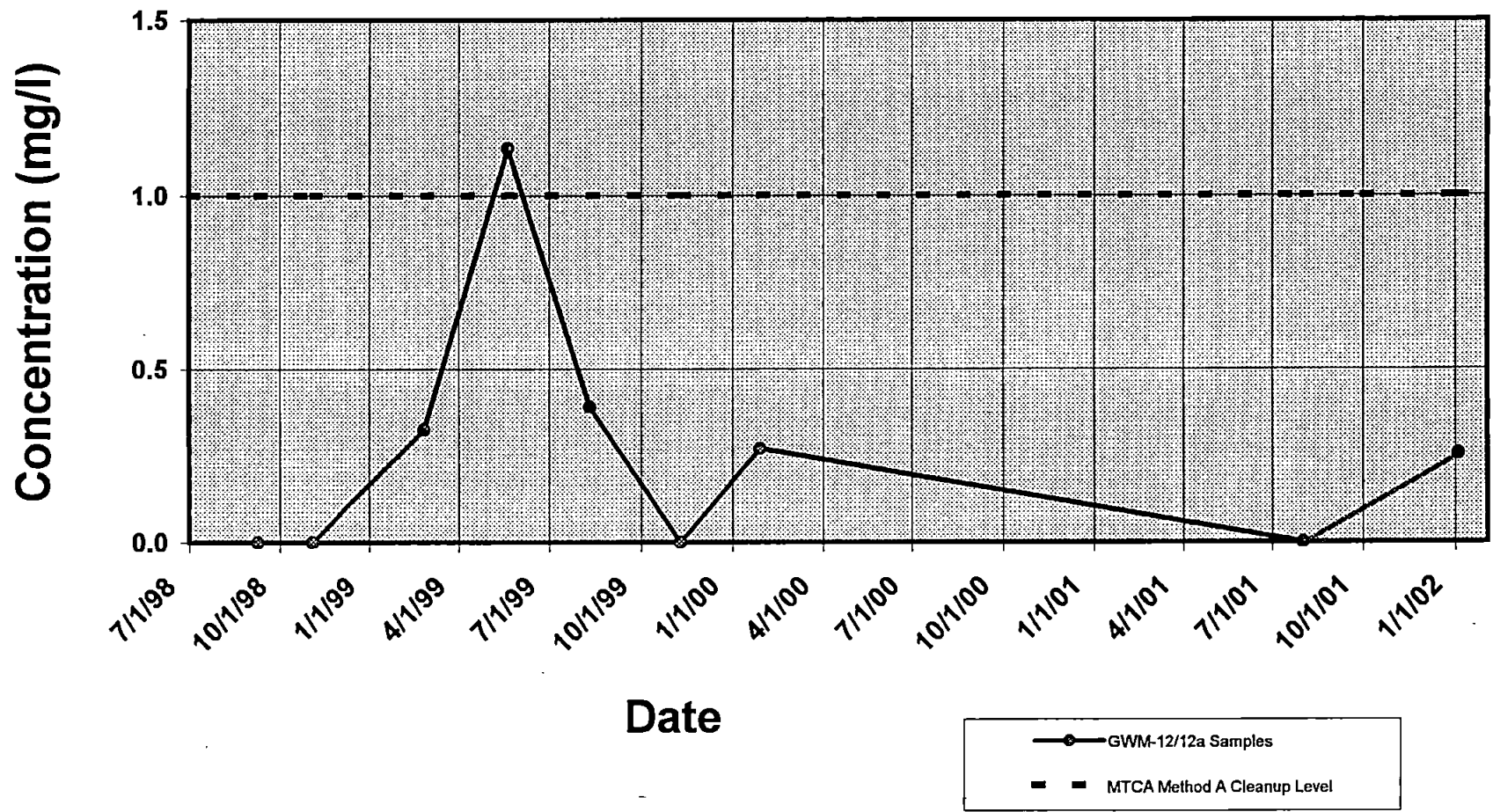
Reference: Base drawing provided by Puget Sound Energy, no date.



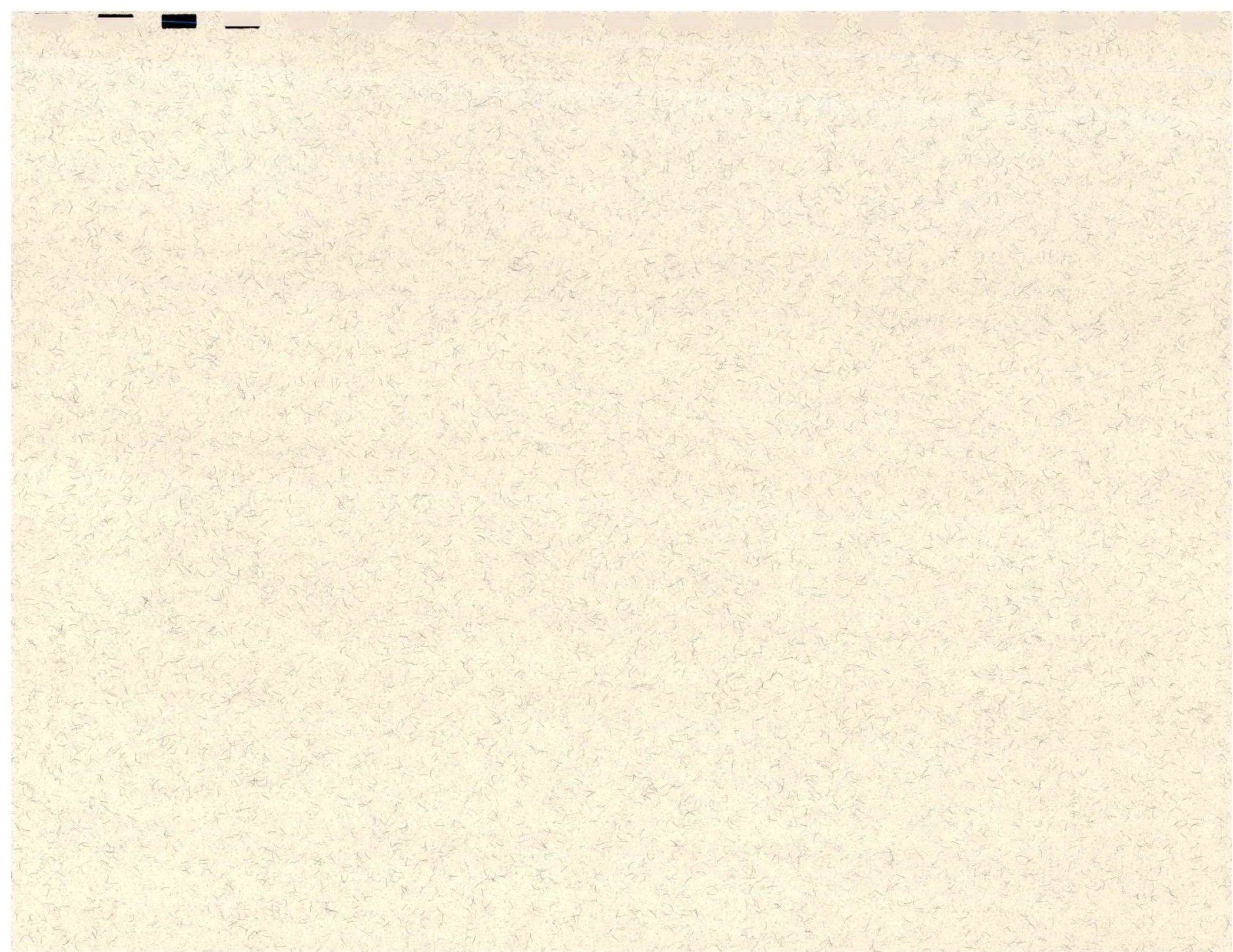
GROUND WATER LEVEL MEASUREMENTS  
01/04/02

FIGURE 2

**Figure 3**  
**Parcel 1 Ground Water Analytical Results**  
**Total Petroleum Hydrocarbons**



**APPENDIX A**  
**FIELD PROCEDURES**



## **APPENDIX A**

### **FIELD PROCEDURES**

#### **GROUND WATER MONITORING**

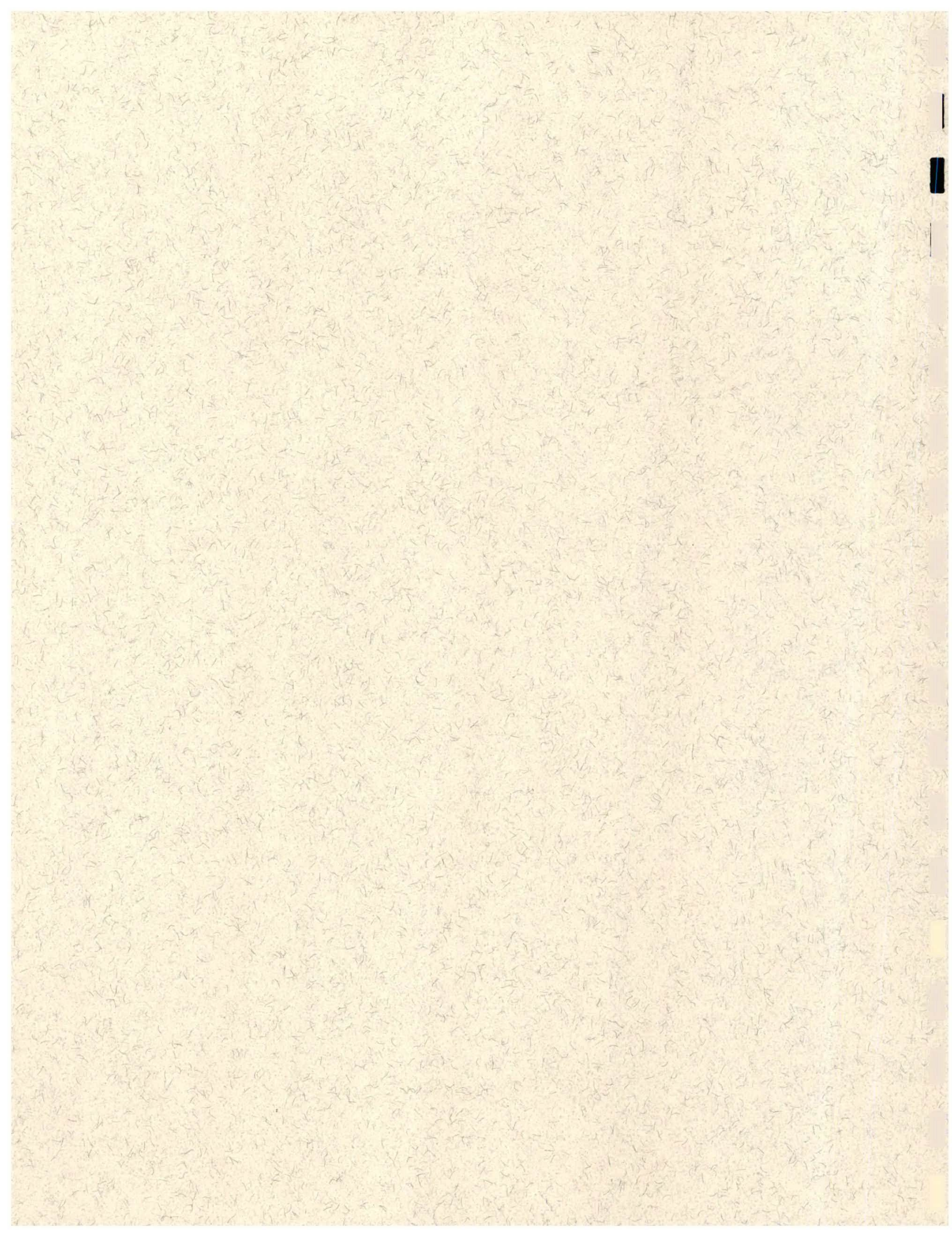
Prior to obtaining the ground water sample, combustible vapors and the depths to ground water were measured in each monitoring well. Combustible vapors were measured using a Bacharach TLV Sniffer calibrated to hexane. The depths to ground water were measured using an electronic water level indicator. The water level indicator was cleaned with a Liquinox wash and distilled water rinse prior to use in each well.

The ground water sample was obtained from monitoring well GMW-12/12a using low-flow/low-turbidity sampling techniques to minimize sediment suspension in ground water samples. Dedicated polyethylene tubing was installed in the monitoring well and connected to a peristaltic pump at the well head. A Horiba U-22 water quality measuring device (with flow-through-cell) was used to monitor geochemical parameters. The well was considered purged when dissolved oxygen, pH, temperature, conductivity and turbidity results were within 10 percent of each other during consecutive measurements. The sample was transferred to laboratory-prepared bottles in the field and kept cool during transport to the testing laboratory. Chain-of-custody procedures were observed during transport of the sample to the laboratory.

#### **PURGE WATER STORAGE/DISPOSAL**

Purge and decontamination water generated during this monitoring event was placed in a sealed and labeled container pending off-site disposal.

**APPENDIX B**  
**CHEMICAL ANALYTICAL PROGRAM**



## **APPENDIX B**

### **CHEMICAL ANALYTICAL PROGRAM**

#### **SAMPLES**

Chain-of-custody procedures were followed during the transport of the field sample to the accredited analytical laboratory. The sample was held in cold storage pending extraction and/or analysis. The analytical results and quality control records are included in this appendix.

#### **ANALYTICAL DATA REVIEW**

The laboratory maintains an internal quality assurance program as documented in its laboratory quality assurance manual. The laboratory uses a combination of blanks, surrogate recoveries, duplicates, matrix spike recoveries, matrix spike duplicate recoveries, blank spike recoveries and blank spike duplicate recoveries to evaluate the analytical results. The laboratory also uses data quality goals for individual chemicals or groups of chemicals based on the long-term performance of the test methods. The data quality goals were included in the laboratory reports. The laboratory compared each group of samples with the existing data quality goals and noted any exceptions in the laboratory report. Data quality exceptions documented by the accredited laboratory are reviewed by GeoEngineers and are addressed in the data quality exception section of this appendix.

#### **DATA QUALITY EXCEPTION SUMMARY**

Significant data quality exceptions were not noted in the laboratory report or during our review. Based on our data quality review, it is our opinion that the analytical data are of acceptable quality for their intended use in this study.



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541.383.9310 fax 541.382.7588

19 February 2002

Brian Peterka  
Geo Engineers - Seattle  
600 Stewart St, Suite 1420  
Seattle, WA/USA 98101  
RE: PSE-Grady Way

Enclosed are **amended** results of analyses for samples received by the laboratory on 01/04/02 18:45. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Scott A. Woerman  
Project Manager

RECEIVED  
FEB 20 2002



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Geo Engineers - Seattle  
600 Stewart St, Suite 1420  
Seattle WA/USA, 98101

Project: PSE-Grady Way  
Project Number: 0186-407-00  
Project Manager: Brian Peterka

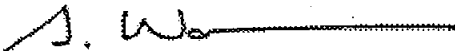
**Amended Report**  
Issued: 02/19/02 22:02

**ANALYTICAL REPORT FOR SAMPLES - Amended**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GMW 4/4a	B2A0073-01	Water	01/04/02 16:08	01/04/02 18:45
GMW- 8	B2A0073-02	Water	01/04/02 15:13	01/04/02 18:45
GMW- 12/12a	B2A0073-03	Water	01/04/02 14:08	01/04/02 18:45
GMW- 13	B2A0073-04	Water	01/04/02 14:52	01/04/02 18:45
GMW- 14	B2A0073-05	Water	01/04/02 15:50	01/04/02 18:45

North Creek Analytical - Bothell

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

  
\_\_\_\_\_  
Scott A. Woerman, Project Manager

**North Creek Analytical, Inc.**  
**Environmental Laboratory Network**



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Geo Engineers - Seattle  
 600 Stewart St, Suite 1420  
 Seattle WA/USA, 98101

Project: PSE-Grady Way  
 Project Number: 0186-407-00  
 Project Manager: Brian Peterka

Amended Report  
 Issued: 02/19/02 22:02

**Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>GMW- 8 (B2A0073-02) Water</b> Sampled: 01/04/02 15:13 Received: 01/04/02 18:45									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	2A08010	01/08/02	01/09/02	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	109 %	50-121			"	"	"	"	
Surrogate: Octacosane	120 %	56-123			"	"	"	"	
<b>GMW- 12/12a (B2A0073-03) Water</b> Sampled: 01/04/02 14:08 Received: 01/04/02 18:45									
Diesel Range Hydrocarbons	0.255	0.250	mg/l	1	2A08010	01/08/02	01/09/02	NWTPH-Dx	D-06
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	116 %	50-121			"	"	"	"	
Surrogate: Octacosane	123 %	56-123			"	"	"	"	
<b>GMW- 13 (B2A0073-04) Water</b> Sampled: 01/04/02 14:52 Received: 01/04/02 18:45									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	2A08010	01/08/02	01/09/02	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	101 %	50-121			"	"	"	"	
Surrogate: Octacosane	111 %	56-123			"	"	"	"	
<b>GMW- 14 (B2A0073-05) Water</b> Sampled: 01/04/02 15:50 Received: 01/04/02 18:45									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	2A08010	01/08/02	01/09/02	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	96.0 %	50-121			"	"	"	"	
Surrogate: Octacosane	108 %	56-123			"	"	"	"	

North Creek Analytical - Bothell

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Scott A. Woerman, Project Manager

North Creek Analytical, Inc.  
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Geo Engineers - Seattle  
 600 Stewart St, Suite 1420  
 Seattle WA/USA, 98101

Project: PSE-Grady Way  
 Project Number: 0186-407-00  
 Project Manager: Brian Peterka

**Amended Report**  
 Issued: 02/19/02 22:02

**Polychlorinated Biphenyls by EPA Method 8082**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>GMW 4/4a (B2A0073-01) Water</b> <b>Sampled: 01/04/02 16:08</b> <b>Received: 01/04/02 18:45</b>									
Aroclor 1016	ND	0.0943	ug/l	1	2A10011	01/10/02	01/18/02	EPA 8082	
Aroclor 1221	ND	0.0943	"	"	"	"	"	"	
Aroclor 1232	ND	0.0943	"	"	"	"	"	"	
Aroclor 1242	ND	0.0943	"	"	"	"	"	"	
Aroclor 1248	ND	0.0943	"	"	"	"	"	"	
Aroclor 1254	ND	0.0943	"	"	"	"	"	"	
Aroclor 1260	ND	0.0943	"	"	"	"	"	"	
Aroclor 1262	ND	0.0943	"	"	"	"	"	"	
Aroclor 1268	ND	0.0943	"	"	"	"	"	"	
Surrogate: TCX	56.1 %	29-130			"	"	"	"	
Surrogate: Decachlorobiphenyl	20.9 %	22-112			"	"	"	"	S-03

North Creek Analytical - Bothell

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Scott A. Woerman, Project Manager

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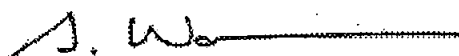
**Amended Report**  
 Issued: 02/19/02 22:02

**Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up) - Quality Control**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 2A08010: Prepared 01/08/02 Using EPA 3520C</b>										
<b>Blank (2A08010-BLK1)</b>										
Diesel Range Hydrocarbons	ND	0.250	mg/l							
Lube Oil Range Hydrocarbons	ND	0.500	"							
Surrogate: 2-FBP	0.286		"	0.320		89.4	50-121			
Surrogate: Octacosane	0.325		"	0.320		102	56-123			
<b>LCS (2A08010-BS1)</b>										
Diesel Range Hydrocarbons	1.60	0.250	mg/l	2.00		80.0	62-122			
Surrogate: 2-FBP	0.314		"	0.320		98.1	50-121			
<b>LCS Dup (2A08010-BSD1)</b>										
Diesel Range Hydrocarbons	1.79	0.250	mg/l	2.00		89.5	62-122	11.2	40	
Surrogate: 2-FBP	0.328		"	0.320		102	50-121			

North Creek Analytical - Bothell

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Project: PSE-Grady Way  
 Project Number: 0186-407-00  
 Project Manager: Brian Peterka

**Amended Report**  
 Issued: 02/19/02 22:02

**Polychlorinated Biphenyls by EPA Method 8082 - Quality Control**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

**Batch 2A10011: Prepared 01/10/02 Using EPA 3520C**

**Blank (2A10011-BLK1)**

Aroclor 1016	ND	0.100	ug/l							
Aroclor 1221	ND	0.100	"							
Aroclor 1232	ND	0.100	"							
Aroclor 1242	ND	0.100	"							
Aroclor 1248	ND	0.100	"							
Aroclor 1254	ND	0.100	"							
Aroclor 1260	ND	0.100	"							
Aroclor 1262	ND	0.100	"							
Aroclor 1268	ND	0.100	"							

Surrogate: TCX	0.167		"	0.200		83.5	29-130			
Surrogate: Decachlorobiphenyl	0.134		"	0.200		67.0	22-112			

**LCS (2A10011-BS1)**

Aroclor 1016	1.93	0.100	ug/l	2.50		77.2	51-125			
Aroclor 1260	2.45	0.100	"	2.50		98.0	66-131			
Surrogate: TCX	0.181		"	0.200		90.5	29-130			
Surrogate: Decachlorobiphenyl	0.135		"	0.200		67.5	22-112			

**LCS Dup (2A10011-BSD1)**

Aroclor 1016	2.12	0.100	ug/l	2.50		84.8	51-125	9.38	30	
Aroclor 1260	2.59	0.100	"	2.50		104	66-131	5.56	30	
Surrogate: TCX	0.192		"	0.200		96.0	29-130			
Surrogate: Decachlorobiphenyl	0.130		"	0.200		65.0	22-112			

North Creek Analytical - Bothell

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North Creek Analytical, Inc.  
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Page 5 of 6



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Project: PSE-Grady Way  
 Project Number: 0186-407-00  
 Project Manager: Brian Peterka

**Amended Report**  
 Issued: 02/19/02 22:02

**Notes and Definitions**

- D-06 The sample chromatographic pattern does not resemble the fuel standard used for quantitation.
- S-03 The surrogate recovery for this sample is outside of established control limits. Review of associated QC indicates the recovery for this surrogate does not represent an out-of-control condition.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

North Creek Analytical - Bothell

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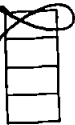
  
 Scott A. Woerman, Project Manager

**North Creek Analytical, Inc.**  
**Environmental Laboratory Network**



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 (509) 924-9200 FAX 924-9290  
 (503) 906-9200 FAX 906-9210  
 (541) 383-9310 FAX 382-7588

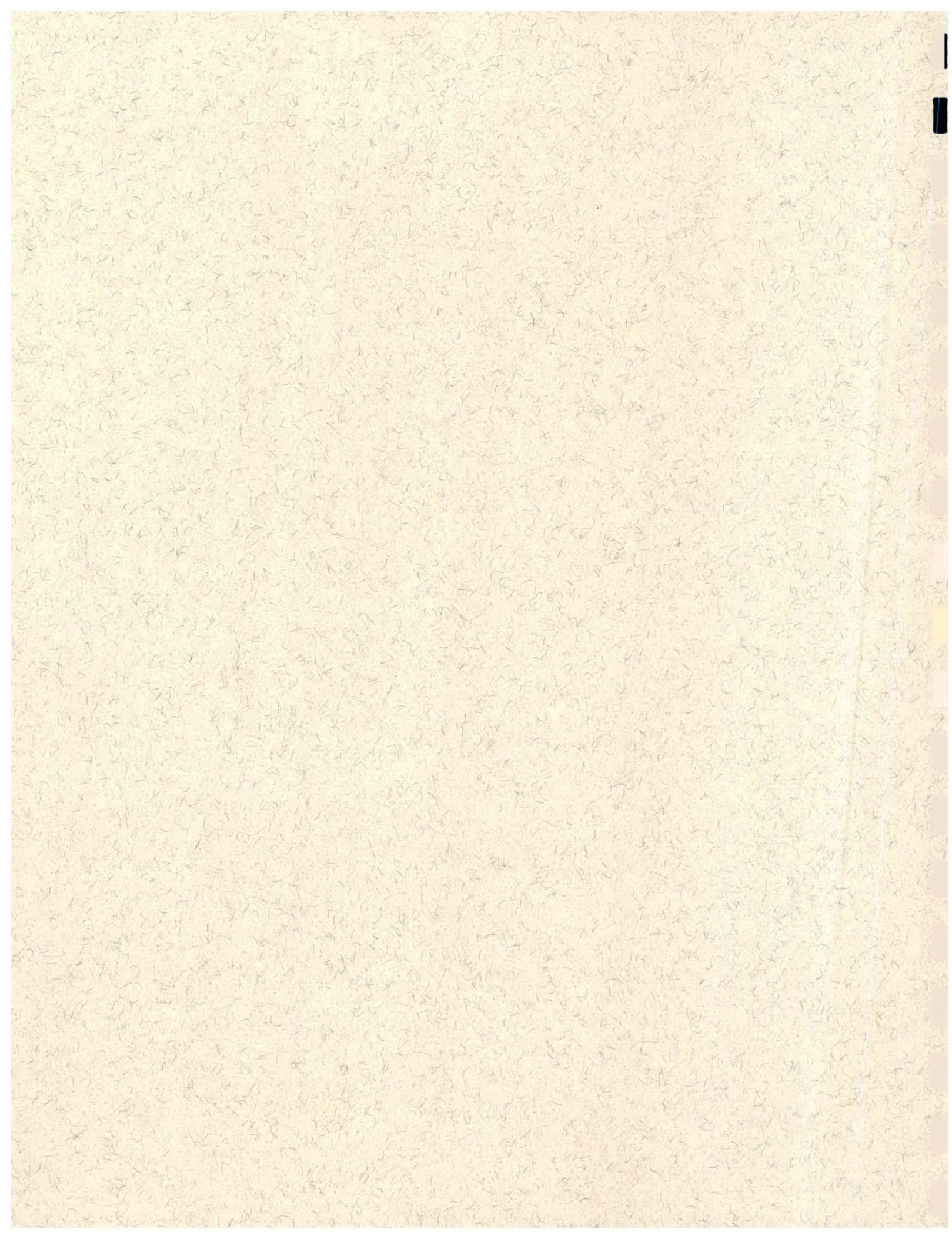


# CHAIN OF CUSTODY REPORT

Work Order #: **B2A073**

CLIENT: <b>GEOENGINEERS</b>		INVOICE TO: <b>BRIAN PETERKA</b>		<b>TURNAROUND REQUEST in Business Days*</b> Organic & Inorganic Analyses <input checked="" type="checkbox"/> 7 <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 STD. Petroleum Hydrocarbon Analyses <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 STD. <input type="checkbox"/> OTHER _____ Please Specify <small>*Turnaround Request less than standard may incur Rush Charges.</small>							
REPORT TO: <b>BRIAN PETERKA</b>		<b>GEI SEATTLE, WA.</b>									
ADDRESS: <b>600 STEWART ST. STE. 1420</b>		P.O. NUMBER:									
SEATTLE, WA 98101											
PHONE: <b>206-728-2674</b>		FAX: <b>206-728-2732</b>									
PROJECT NAME:		REQUESTED ANALYSES									
PROJECT NUMBER:											
SAMPLED BY:											
CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NWTPHD EXTENDED	PCBs BY EPA Method 8082					MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA WO ID
1. <b>GMW 4/4a</b>	<b>1-4-02/1608</b>		<b>P</b>					<b>W</b>	<b>2</b>		<b>01</b>
2. <b>GMW-8</b>	<b>1/1513</b>	<b>P</b>						<b>W</b>	<b>2</b>		<b>02</b>
3. <b>GMW-12/12a</b>	<b>1/1408</b>	<b>P</b>						<b>W</b>	<b>2</b>		<b>03</b>
4. <b>GMW-13</b>	<b>1/1452</b>	<b>P</b>						<b>W</b>	<b>2</b>		<b>04</b>
5. <b>GMW-14</b>	<b>1-4-02/1550</b>	<b>P</b>						<b>W</b>	<b>2</b>		<b>05</b>
6.											
7.											
8.											
9.											
10.											
11.											
12.											
13.											
14.											
15.											
RELINQUISHED BY: <b>James B. Anderson</b>		DATE: <b>1-4-01</b>		RECEIVED BY: <b>S. Tacamovich</b>		DATE: <b>1-4-01</b>					
PRINT NAME: <b>JAMES BRIAN ANDERSON</b>		FIRM: <b>GEI</b>		TIME: <b>1845</b>		PRINT NAME:		FIRM: <b>NCA</b>		TIME: <b>1845</b>	
RELINQUISHED BY:		DATE:		RECEIVED BY:		DATE:					
PRINT NAME:		FIRM:		TIME:		PRINT NAME:		FIRM:		TIME:	
ADDITIONAL REMARKS:										TEMP: <b>32</b>	
COC REV 3/99										PAGE OF	

**APPENDIX C**  
**REPORT LIMITATIONS AND GUIDELINES FOR USE**



## APPENDIX C

### REPORT LIMITATIONS AND GUIDELINES FOR USE<sup>1</sup>

This appendix provides information to help you manage your risks with respect to the use of this report.

#### ENVIRONMENTAL SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES, PERSONS AND PROJECTS

This report has been prepared for use by Puget Western, their authorized agents and regulatory agencies. This report is not intended for use by others, and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, an environmental site assessment study conducted for a property owner may not fulfill the needs of a prospective purchaser of the same property. Because each environmental study is unique, each environmental report is unique, prepared solely for the specific client and project site. No one except Puget Western should rely on this environmental report without first conferring with GeoEngineers. This report should not be applied for any purpose or project except the one originally contemplated.

#### THIS ENVIRONMENTAL REPORT IS BASED ON A UNIQUE SET OF PROJECT-SPECIFIC FACTORS

This report has been prepared for Puget Western, their authorized agents and regulatory agencies. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

If important changes are made after the date of this report, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

#### RELIANCE CONDITIONS FOR *THIRD* PARTIES

*No lending agency* or other third party may rely on the product of our services, unless we *agree* in advance and in writing to such reliance. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be *no* contractual limits to their actions.

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<sup>1</sup> Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; [www.asfe.org](http://www.asfe.org).

## **ENVIRONMENTAL REGULATIONS ARE ALWAYS EVOLVING**

Some substances may be present in the site vicinity in quantities or under conditions that may have led, or may lead, to contamination of the subject site, but are not included in current local, state or federal regulatory definitions of hazardous substances or do not otherwise present current potential liability. GeoEngineers cannot be responsible if the standards for appropriate inquiry, or regulatory definitions of hazardous substance, change or if more stringent environmental standards are developed in the future.

## **UNCERTAINTY MAY REMAIN EVEN AFTER THIS REMEDIAL ACTION IS COMPLETED**

No ESA can wholly eliminate uncertainty regarding the potential for contamination in connection with a property. Our interpretation of subsurface conditions in this study is based on field observations and chemical analytical data from widely-spaced sampling locations. It is always possible that contamination exists in areas that were not explored, sampled or analyzed.

## **SUBSURFACE CONDITIONS CAN CHANGE**

This environmental report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, by new releases of hazardous substances, or by natural events such as floods, earthquakes, slope instability or ground water fluctuations. Always contact GeoEngineers before applying this report to determine if it is still applicable.

## **MOST ENVIRONMENTAL FINDINGS ARE PROFESSIONAL OPINIONS**

Our interpretations of subsurface conditions are based on field observations and chemical analytical data from widely spaced sampling locations at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ – sometimes significantly – from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

## **READ THESE PROVISIONS CLOSELY**

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering, geology and environmental science) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory “limitations” provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these “Report Limitations and Guidelines for Use” apply to your project or site.

## **GEOTECHNICAL, GEOLOGIC AND GEOENVIRONMENTAL REPORTS SHOULD NOT BE INTERCHANGED**

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.