RECEIVED
JAN 14 2008
Washington State
Department of Ecology

PNG ENVIRONMENTAL, INC.

January 9, 2008

1052-01

Mr. Rob Grenley
Grenley Stewart Resources
1019 Pacific Avenue, 13th Floor
Tacoma, Washington 98402-4443

Subject: **Groundwater Monitoring Report - December 2007**
Fife Metroplex Card Lock Fuel Sales Facility
3200 20th Street East
Fife, Washington
VCP Site# SW0610

Dear Mr. Grenley:

This letter documents the results of surface water and groundwater sampling conducted at the above referenced site (Figure 1) on December 12, 2007. This work was conducted under the Washington State Department of Ecology (Ecology) Voluntary Cleanup Program.

PNG Environmental, Inc. (PNG) performed the following scope of work:

- Collected depth to water measurements at the seven site monitoring wells and the drainage ditch.
- Collected groundwater samples from the seven monitoring wells and the surface water sample from the drainage ditch.

GROUNDWATER AND SURFACE WATER SAMPLING

PNG collected groundwater samples from the seven monitoring wells and the surface water sample at the drainage ditch (Figure 2). This sampling event represents the sixth quarterly groundwater-sampling event after the fourth injection of ORC into the subsurface at the site.

Prior to sampling, the cap of each well was removed and the water was allowed to stabilize before collecting depth to water measurements. The volume of water in each well was then calculated, and a minimum of three casing volumes of water removed prior to sample collection using a peristaltic pump equipped with a new length of LDPE tubing and a disposable bailer. The surface water sample was collected directly from the ditch. Samples were carefully transferred into laboratory-prepared sample containers and placed in a chilled cooler. Chain-of-custody documentation accompanied the samples and was delivered to Friedman and Bruya, Inc. in Seattle, Washington.

The water purged from each well was relatively clear and there was no noticeable sheen or chemical odor observed during sampling activities. *Groundwater Sample Collection Forms* documenting field activities are included in Attachment A. A copy of the laboratory report and chain-of-custody documentation for this sampling event is included in Attachment B.

1339 Commerce Avenue, Suite 313
Longview, Washington 98632

TEL (360) 414-0669
FAX (360) 414-0663

GROUNDWATER CONDITIONS

Water levels were measured prior to sample collection. Depth to water measurements in the site wells and drainage ditch ranged between 1.85 to 7.82 feet below ground surface, as summarized on Table 1. In general, the direction of groundwater flow is towards the southwest, which is consistent with previous quarterly monitoring events. The gradient is approximately 0.012 feet per foot (ft/ft).

LABORATORY RESULTS

This section describes the results of the groundwater and surface water sampling conducted at the site on December 12, 2007. The complete laboratory report is included as Attachment B. The samples were analyzed for the following constituents:

- Gasoline range organics (GRO) using Method NWTPH-Gx.
- Volatile organic compounds (VOCs) using EPA Method 8260B.
- Total lead using EPA Method 6010.
- Field parameters: pH, conductivity, temperature, dissolved oxygen, and oxidation reduction potential (ORP).

Groundwater Analytical Results

Groundwater analytical results are reported as micrograms per liter (ug/L). The groundwater data along with the respective MTCA Method A Cleanup Level is summarized on Table 2. The groundwater analytical results are discussed below:

GRO: GRO was not detected above the method reporting limit (MRL) of 100 ug/L in any of the wells or in the surface water ditch.

VOCs: Acetone (130 ug/L), MEK (10 ug/L), benzene (1.6 ug/L), and 1,2,4-trimethylbenzene (1.1 ug/L) were detected in MW-3. Chloroform (1.6 ug/L) was detected in MW-5.

MTBE: MTBE was detected above the MRL in samples from MW-3 (10 ug/L) and MW-4 (15 ug/L). The concentration of MTBE in both samples is below the MTCA Method A Cleanup Level of 20 ug/L.

Total Lead: Total lead was not detected above the MRL in any of the samples.

Dissolved oxygen and ORP: Dissolved oxygen levels in the wells ranged between 0.31 to 13.04 parts per million. ORP ranged from -81 to -192 millivolts. Field measurements are found in the Groundwater Sample Collection Forms (Attachment A).

Surface Water Analytical Results

Surface water analytical results are reported as micrograms per liter (ug/L). The surface water data is summarized on Table 3 and the results are discussed below:

GRO: GRO was not detected above the MRL of 100 ug/L in the sample.

VOCs: There was no detection of VOCs above their respective MRLs in the sample.

MTBE: There was no detection of MTBE above the MRL of 1 ug/L in the sample.

Groundwater Analytical Results

The results of this quarterly groundwater monitoring event indicates that all contaminants of concern are below their respective MTCA Method A Cleanup Levels at all site wells and the surface water sampling location. This is the fourth consecutive quarterly groundwater-sampling event where concentration levels have been below cleanup levels.

DISCUSSION

This section provides a discussion of environmental work performed at the site since the discovery of a release of gasoline in 2002. PNG submitted all reports prepared by others as well as by PNG to Ecology during (and after) entry into the VCP. A chronological sequence of key events is discussed below.

In August 2002, Bristol Environmental, Inc. performed a limited subsurface investigation to assess the extent of a known gasoline release related to periodic overfilling of a product overflow tank located in the UST cavity area of the site. Results of the investigation indicated that groundwater was contaminated with gasoline constituents above the MTCA Method A Cleanup Levels, with the highest concentrations observed around the UST cavity.

In October 2002, Saltbush Environmental Services, Inc. (Saltbush) performed a follow up environmental investigation that included drilling ten temporary borings (BH-1 through BH-10) for the purpose of collecting soil and groundwater samples and the installation of six monitoring wells (MW-1 through MW-6) to monitor groundwater conditions at the site.

Analytical results from the Saltbush investigation indicated that soil samples collected from three temporary borings (BH-1, BH-2, and BH-5) had detectable concentrations of one or more gasoline constituents. The concentration of benzene exceeded the MTCA Method A Cleanup Level of 0.03 mg/Kg in four samples, including the sample collected from 7 to 9 feet bgs at BH-1, two samples collected from BH-2 (the 5 to 7 feet bgs sample and the 7 to 9 foot bgs sample), and the sample collected from 7 to 9 feet bgs at BH-5.

Groundwater analytical results from the temporary borings drilled by Saltbush indicated that gasoline constituents were detected in four borings near the UST cavity (BH-1, BH-2, BH-3, and BH-5). Groundwater analytical results from Saltbush's sampling of the six monitoring wells indicated that two monitoring wells (MW-3 and MW-4) had detectable concentrations of gasoline constituents

In 2003, Grenley Stewart Resources (GSR) retained PNG to perform groundwater monitoring and remediation services at the subject site. Based on the fact that the site is an active fuel sales facility with limited supervision due to the nature of the Cardlock business and the lack of the need for an expeditious cleanup timetable, PNG selected an in-situ remediation method. This method included the injection of oxygen release compounds (ORC) into the subsurface to enhance the biodegradation of petroleum hydrocarbons. The ORC (sold under the product name of ORC Advanced by Regenesis) increases the available oxygen content in the subsurface environment by the slow reaction of the ORC with water (the active ingredient is calcium oxy hydroxide). This product has been used in the industry for sites impacted with petroleum hydrocarbons. ORC has an effective lifespan of approximately twelve months.

Multiple injections were required to reduce MTBE concentrations in groundwater to below the MTCA Method A Cleanup Level of 20 ug/L at all site-monitoring wells. A total of four ORC injection events were performed at the site:

- May 20-22, 2003. 720 pounds of ORC were injected into 20 injection points placed around the UST cavity.
- July 13-14, 2004. 950 pounds of ORC were injected into 22 injection points placed around the UST cavity.
- July 20-21, 2005. 1,125 pounds of ORC were injected into 24 injection points placed around monitoring wells MW-3, MW-4 and MW-7.
- June 22, 2006. 500 pounds of ORC were injected into 10 injection points placed near and upgradient of monitoring well MW-4.

A trend plot of MTBE concentrations in the three wells (MW-3, MW-4, and MW-7) where MTBE has persistently been measured is included as Figure 3. The plot illustrates a decreasing trend in MTBE concentrations over time, with notable decreases observed after each ORC injection event. The plot also illustrates that the concentration of MTBE has remained below the 20 ug/L MTCA Method A Cleanup Level at each of these wells for four consecutive quarters.

REQUEST FOR NO FURTHER ACTION OPINION

Ecology prepared an opinion letter dated April 29, 2005 regarding work conducted at the site and addressed some perceived data gaps. PNG performed additional soil assessment and installation of an additional monitoring well (MW-7) to address these issues. PNG also provided a discussion addressing Ecology's concerns, which is found in the *Third ORC Injection and Groundwater Monitoring Report* (PNG, October 18, 2005).

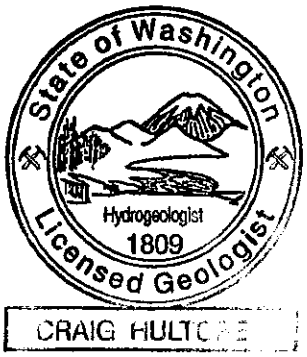
As discussed above, the results of quarterly groundwater monitoring at the site have demonstrated that all contaminants of concern at all site monitoring wells and the surface water monitoring location have remained below their respective MTCA Method A Cleanup Levels. PNG requests that Ecology review the site file and issue an opinion as to whether the site meets the criteria for issuing a no further action (NFA) determination for the site.

PNG appreciates the opportunity to assist you on this project. Please call (360) 414-0669 if you have any questions or comments.

Sincerely,

PNG ENVIRONMENTAL, INC.

Craig Hultgren, R.G.
Project Manager



John Kuhlman, R.G.
Vice President

Attachments: Table 1 - Depth to Groundwater Measurements
Table 2 - Groundwater Analytical Results Summary (ug/L)
Table 3 - Surface Water Analytical Results Summary (ug/L)
Figure 1 - Site Location Map
Figure 2 - Groundwater Elevation Contour Plot - December 12, 2007
Figure 3 - MTBE Trend Plot

Attachment A - Groundwater Sample Collection Forms
Attachment B - Laboratory Report and Chain-of-Custody Documentation

cc: Mr. Scott Rose, Ecology
Mr. Terry Dahl, Markel

Table 1
Depth to Groundwater Measurements
Card Lock Fuel Sales Facility
Fife, Washington

Depth to Groundwater

Well	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	Ditch
Casing Elevation[a]	12.01	12.48	13.65	12.87	11.62	12.90	13.95	7.50
11/17/2003	6.59	6.99	7.91	7.07	5.99	7.04	NM	2.03
02/23/2004	5.76	6.46	7.52	6.45	5.07	6.44	NM	1.76
05/13/2004	6.37	6.99	7.99	7.06	5.76	7.01	NM	2.03
08/16/2004	7.05	7.62	8.61	7.56	6.22	7.48	NM	2.74
11/09/2004	6.34	6.85	7.97	6.89	5.62	6.88	NM	2.32
02/02/2005	5.92	6.58	7.81	6.58	4.95	6.56	NM	2.16
05/09/2005	5.82	6.56	7.82	6.58	3.00	6.56	NM	2.20
08/23/2005	6.97	7.59	8.54	7.57	6.23	7.50	8.77	2.32
11/14/2005	6.17	6.62	7.63	6.70	5.35	6.71	7.87	2.25
02/16/2006	5.61	6.26	7.31	6.22	4.28	6.24	7.56	1.65
05/16/2006	6.21	6.79	7.77	6.83	4.00	6.76	8.09	2.05
08/15/2006	7.30	7.98	8.97	8.03	6.50	8.03	9.34	2.85
12/04/2006	5.72	6.38	7.37	6.35	2.74	6.33	7.76	2.05
03/05/2007	5.51	6.20	7.37	6.24	2.76	6.17	7.72	2.06
06/04/2007	6.27	6.86	7.48	7.29	3.93	6.94	8.36	2.05
08/30/2007	6.98	7.49	8.50	7.58	6.17	7.52	8.80	2.66
12/12/2007	5.85	6.44	7.40	6.33	4.37	6.43	7.82	1.85

Water Level Elevation

Well	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	Ditch
Casing Elevation[a]	12.01	12.48	13.65	12.87	11.62	12.90	13.95	7.50
11/17/2003	6.59	6.99	7.91	7.07	5.99	7.04	NM	2.03
02/23/2004	6.25	6.02	6.13	6.42	6.55	6.46	NM	5.74
05/13/2004	5.64	5.49	5.66	5.81	5.86	5.89	NM	5.47
08/16/2004	4.96	4.86	5.04	5.31	5.40	5.42	NM	4.76
11/09/2004	5.67	5.63	5.68	5.98	6.00	6.02	NM	5.18
02/02/2005	6.09	5.90	5.84	6.29	6.67	6.34	NM	5.34
05/09/2005	6.19	5.92	5.83	6.29	8.62	6.34	NM	5.30
08/23/2005	5.04	4.89	5.11	5.30	5.39	5.40	5.18	5.18
11/14/2005	5.84	5.86	6.02	6.17	6.27	6.19	6.08	5.25
02/16/2006	6.40	6.22	6.34	6.65	7.34	6.66	6.39	5.85
05/16/2006	5.80	5.69	5.88	6.04	7.62	6.14	5.86	5.45
08/15/2006	4.71	4.50	4.68	4.84	5.12	4.87	4.61	4.65
12/04/2006	6.29	6.10	6.28	6.52	8.88	6.57	6.19	5.45
03/05/2007	6.50	6.28	6.28	6.63	8.86	6.73	6.23	5.44
06/04/2007	5.74	5.62	6.17	5.58	7.69	5.96	5.59	5.45
08/30/2007	5.03	4.99	5.15	5.29	5.45	5.38	5.15	4.84
12/12/2007	6.16	6.04	6.25	6.54	7.25	6.47	6.13	5.65

Notes:
[a] Elevations are relative to a City of Tacoma control point in NE 20th Street, relative to NGVD29.
NM = Not measured (location was not installed or was not accessible at time of measurement).

Table 2
Groundwater Analytical Results Summary (ug/L)
Card Lock Fuels Sales Facility
Fife, Washington

Sample Identification / Date Sampled	MTCA Method A Cleanup Level	MW-1 08/23/2005	11/14/2005	02/16/2006	05/16/2006	08/15/2006	12/04/2006	03/05/2007	06/04/2007	08/30/2007	1
nge Organics	**800**	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	
e Organics	**500**	50 U	NA	NA	NA	NA	NA	NA	NA	NA	
	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	
	1,000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	
e	**700**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	
s	**1,000**	3 U	3 U	3 U	3 U	3 U	3 U	3 U	30 U	3 U	
l ether (MTBE)	**20**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	
ethane (EDB)	**0.01**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	
ethane (EDC)	**5**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	
		10 L	10 L	1 U	1 U	1 U	1 U	1 U	10 U	1 U	
	160	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	
	15	NA	1 U	10 U	1 U	1 U	2 U	1 U	5 U	1 U	

grams per liter
ted at method reporting limit shown
d value by laboratory
alyzed
cted (from a library search)
old exceeds referenced Cleanup Level
nge organics by NWTPH-Gx
e organics by NWTPH-Dx
petroleum hydrocarbons by NWTPH-Dx
y EPA Method 200.8
PA Method 8260B

1052

Table 2
Groundwater Analytical Results Summary (ug/L)
Card Lock Fuels Sales Facility
Fife, Washington

Sample Identification / Date Sampled	MTCA Method A Cleanup Level	MW-2 08/23/2005	11/14/2005	02/16/2006	05/16/2006	08/15/2006	12/04/2006	03/05/2007	06/04/2007	08/30/2007
nge Organics	**800**	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
e Organics	**500**	50 U	NA	NA	NA	NA	NA	NA	NA	NA
	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	1,000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
e	**700**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
s	**1,000**	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
l ether (MTBE)	**20**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
ethane (EDB)	**0.01**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
ethane (EDC)	**5**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		10 L	10 L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	160	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	15	NA	1 U	1 U	1 U	1 U	2 U	1 U	1 U	1 U

grams per liter
ted at method reporting limit shown
d value by laboratory
alyzed
cted (from a library search)
old exceeds referenced Cleanup Level
ge organics by NWTPH-Gx
organics by NWTPH-Dx
petroleum hydrocarbons by NWTPH-Dx
EPA Method 200.8
A Method 8260B

Table 2
Groundwater Analytical Results Summary (ug/L)
Card Lock Fuels Sales Facility
Fife, Washington

Sample Identification / Date Sampled	MTCA Method A Cleanup Level	MW-3 08/23/2005	11/14/2005	02/16/2006	05/16/2006	08/15/2006	12/04/2006	03/05/2007	06/04/2007	08/30/2007
ge Organics	**800**	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
Organics	**500**	50 U	NA	NA	NA	NA	NA	NA	NA	NA
	5	4.5	2.5	1.8	1.5	2	1.4	1.3	1.7	1.8
	1,000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
e	**700**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
s	**1,000**	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
l ether (MTBE)	**20**	**33**	12	9.5	7.8	8.6	7.6	9.7	11	14
ethane (EDB)	**0.01**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
ethane (EDC)	**5**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		10 L	10 L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	160	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	15	1	1 U	1 UJ	1 U	1 U	2 U	1 U	1 U	1 U

grams per liter
ted at method reporting limit shown
d value by laboratory
alyzed
cted (from a library search)
old exceeds referenced Cleanup Level
ge organics by NWTPH-Gx
organics by NWTPH-Dx
petroleum hydrocarbons by NWTPH-Dx
EPA Method 200.8
A Method 8260B

1052

Table 2
Groundwater Analytical Results Summary (ug/L)
Card Lock Fuels Sales Facility
Fife, Washington

Sample Identification	MTCA	MW-4								
Date Sampled	Method A Cleanup Level	08/23/2005	11/14/2005	02/16/2006	05/16/2006	08/15/2006	12/04/2006	03/05/2007	06/04/2007	08/30/2007
nge Organics	**800**	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
e Organics	**500**	50 U	NA	NA	NA	NA	NA	NA	NA	NA
	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	1,000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
e	**700**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
s	**1,000**	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
l ether (MTBE)	**20**	**50**	**65**	**29**	**20**	**20**	**21**	12	11	14
ethane (EDB)	**0.01**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
ethane (EDC)	**5**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		10 L	10 L	10 L	10 L	1 U	1 U	1 U	1 U	1 U
	160	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	15	1 U	1 U	1 UJ	1 U	1 U	2 U	1 U	1 U	1 U

grams per liter
ted at method reporting limit shown
d value by laboratory
alyzed
cted (from a library search)
old exceeds referenced Cleanup Level
ge organics by NWTPH-Gx
e organics by NWTPH-Dx
petroleum hydrocarbons by NWTPH-Dx
y EPA Method 200.8
A Method 8260B

Table 2
Groundwater Analytical Results Summary (ug/L)
Card Lock Fuels Sales Facility
Fife, Washington

Sample Identification / Date Sampled	MTCA Method A Cleanup Level	MW-5 08/23/2005	11/14/2005	02/16/2006	05/16/2006	08/15/2006	12/04/2006	03/05/2007	06/04/2007	08/30/2007
nge Organics	**800**	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
e Organics	**500**	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	1,000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
e	**700**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
s	**1,000**	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
l ether (MTBE)	**20**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
ethane (EDB)	**0.01**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
ethane (EDC)	**5**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		10 L	10 L	10 L	1 U	1 U	1 U	1 U	1 U	1 U
	160	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	15	NA	1 U	1 U	1 U	1 U	2 U	1 U	1 U	6.66

grams per liter
ted at method reporting limit shown
d value by laboratory
alyzed
cted (from a library search)
old exceeds referenced Cleanup Level
nge organics by NWTPH-Gx
e organics by NWTPH-Dx
petroleum hydrocarbons by NWTPH-Dx
y EPA Method 200.8
PA Method 8260B

Table 2
Groundwater Analytical Results Summary (ug/L)
Card Lock Fuels Sales Facility
Fife, Washington

Sample Identification / Date Sampled	MTCA Method A Cleanup Level	MW-6 08/23/2005	11/14/2005	02/16/2006	05/16/2006	08/15/2006	12/04/2006	03/05/2007	06/04/2007	08/30/2007
ge Organics	**800**	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
Organics	**500**	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	1,000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
e	**700**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
s	**1,000**	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
l ether (MTBE)	**20**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
ethane (EDB)	**0.01**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
ethane (EDC)	**5**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		10 L	10 L	10 L	1 U	1 U	1 U	1 U	1 U	1 U
	160	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	15	NA	1 U	1 UJ	1 U	1 U	2 U	1 U	1 U	1 U

grams per liter
ted at method reporting limit shown
d value by laboratory
alyzed
cted (from a library search)
old exceeds referenced Cleanup Level
ge organics by NWTPH-Gx
organics by NWTPH-Dx
petroleum hydrocarbons by NWTPH-Dx
EPA Method 200.8
A Method 8260B

Table 2
Groundwater Analytical Results Summary (ug/L)
Card Lock Fuels Sales Facility
Fife, Washington

Sample Identification / Date Sampled	MTCA Method A Cleanup Level	MW-7 08/23/2005	11/14/2005	02/16/2006	05/16/2006	08/15/2006	12/04/2006	03/05/2007	06/04/2007	8/30/2007
ge Organics	**800**	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
Organics	**500**	50 U	NA	NA	NA	NA	NA	NA	NA	NA
	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	1,000	1 U	1 U	1 U	1 U	1 U	2.8	12	1 U	1 U
e	**700**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
s	**1,000**	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
ether (MTBE)	**20**	**20**	2	4.6	5.2	11	1 U	1 U	4.9	10
ethane (EDB)	**0.01**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
thane (EDC)	**5**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		10 L	10 L	10 L	10 L	1 U	1 U	1 U	1 U	1 U
	160	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	15	3	3.68	1.38	1 U	4.51	16.5	2.5	2.59	1.73

grams per liter
ted at method reporting limit shown
d value by laboratory
alyzed
cted (from a library search)
old exceeds referenced Cleanup Level
ge organics by NWTPH-Gx
organics by NWTPH-Dx
petroleum hydrocarbons by NWTPH-Dx
EPA Method 200.8
A Method 8260B

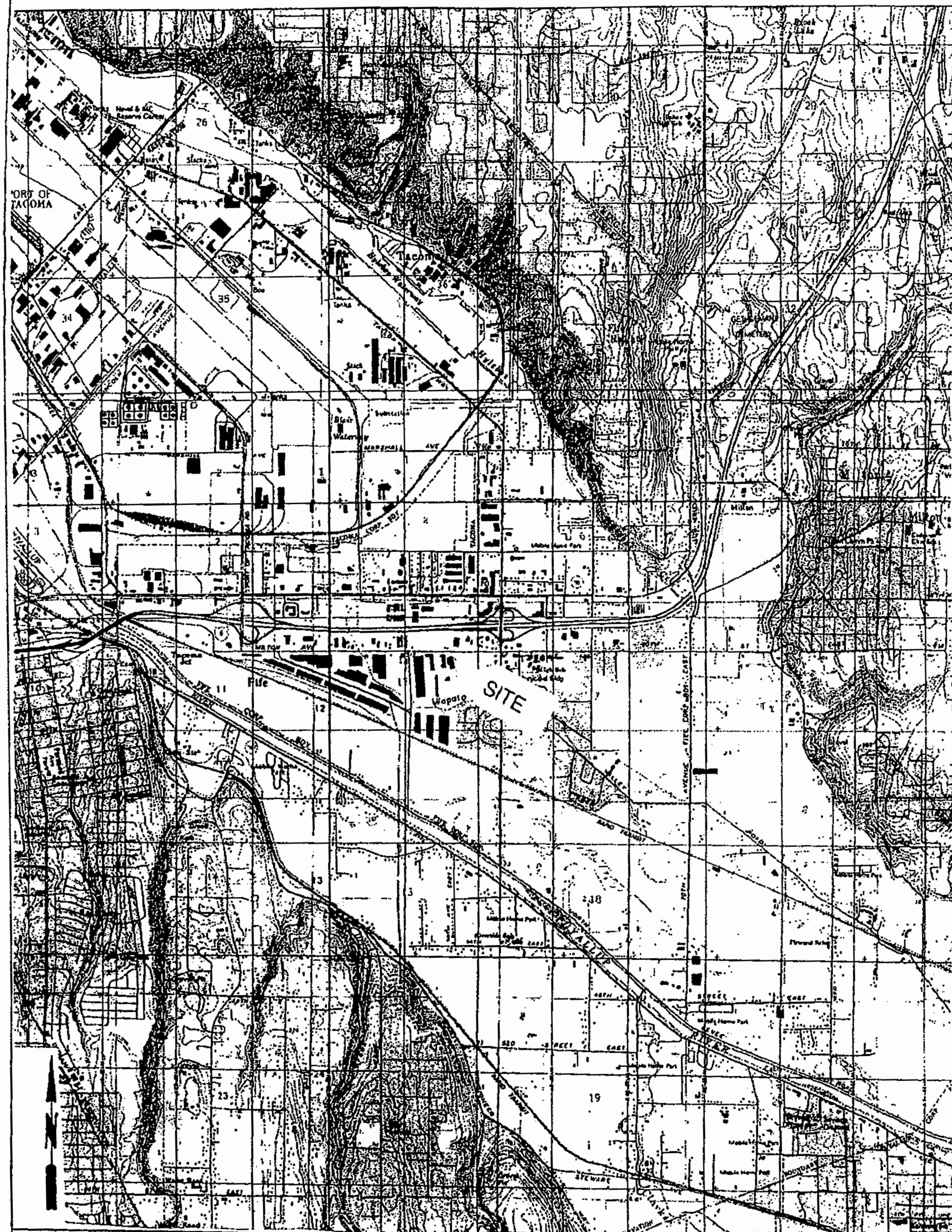
1052

Table 3
Surface Water Analytical Results Summary (ug/L)
Card Lock Fuels Sales Facility
Fife, Washington

Sample Identification	DITCH									
Date Sampled	8/23/2005	11/14/2005	2/16/2006	5/16/2006	8/15/2006	12/4/2006	3/5/2007	6/4/2007	8/30/2007	12/12/
Parameters										
Gasoline Range Organics	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	10
Diesel Range Organics	50 U	NA	NA	NA	NA	NA	NA	NA	NA	N
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Toluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Total Xylenes	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	
Methyl t-butyl ether (MTBE)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
1,2-Dibromoethane (EDB)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
1,2-Dichloroethane (EDC)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Hexane	10 L	10 L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Naphthalene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Total Lead	1 U	NA	NA	NA	NA	NA	NA	NA	NA	N

Notes:
ug/L = Micrograms per liter
U = Undetected at method reporting limit shown
L = Not detected (from a library search)
NA = Not analyzed
Gasoline range organics by NWTPH-Gx
Diesel range organics by NWTPH-Dx
Total range petroleum hydrocarbons (TRPH) by NWTPH-Dx
Total lead by EPA Method 200.8
VOCs by EPA Method 8260B

1052



PNG ENVIRONMENTAL INC.

Longview, Washington

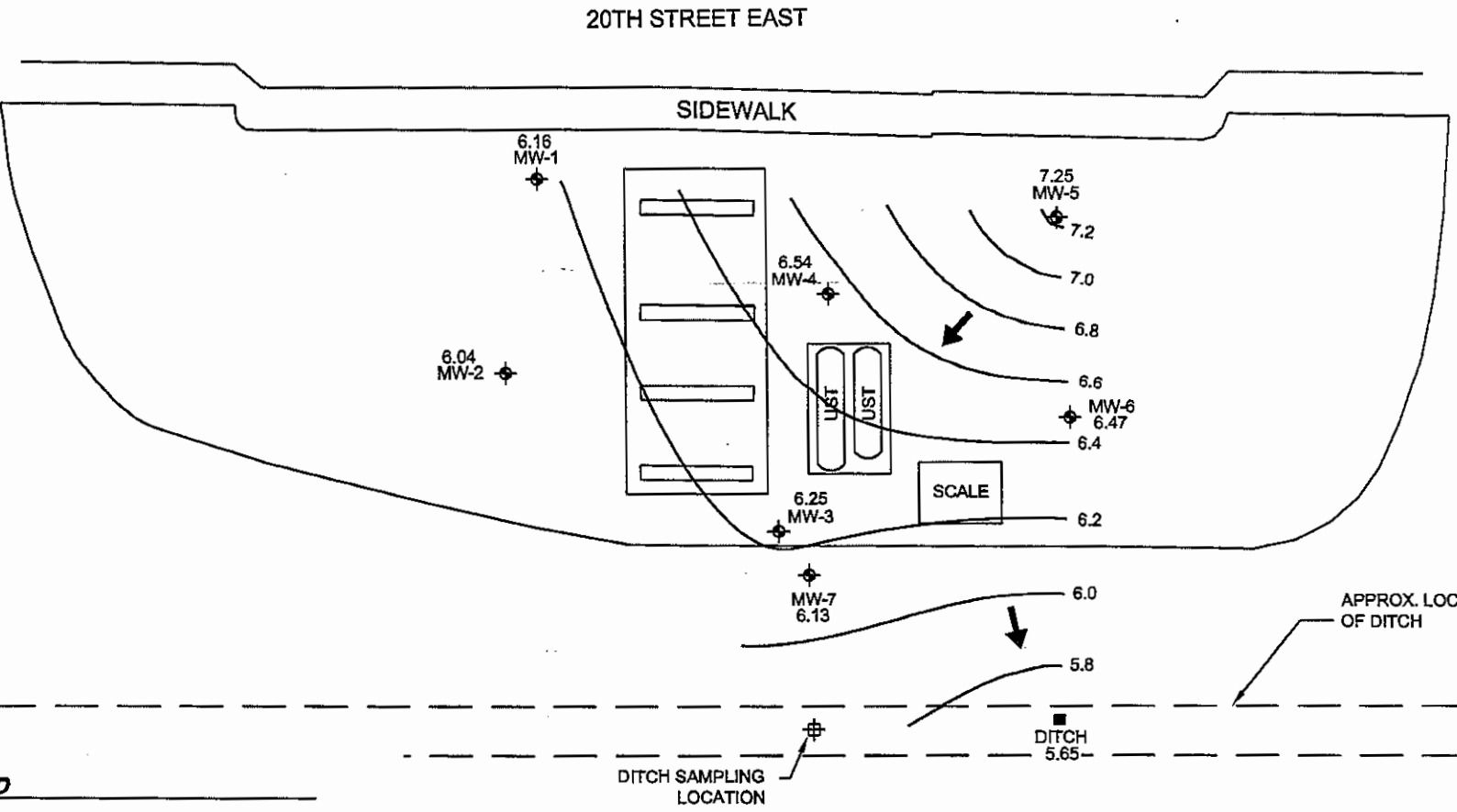
DATE:
FILE NAME: Fig1
DRAWN BY: AA
APPROVED BY: DH

File Cardlock Facility
Fife, Washington
Cenex Stewart

Site Location Map

1052-01

1



MONITORING WELL

GROUNDWATER ELEVATION CONTOUR

GROUNDWATER ELEVATION

PUMP ISLAND

DITCH (MONITORING POINT)

GROUNDWATER FLOW DIRECTION

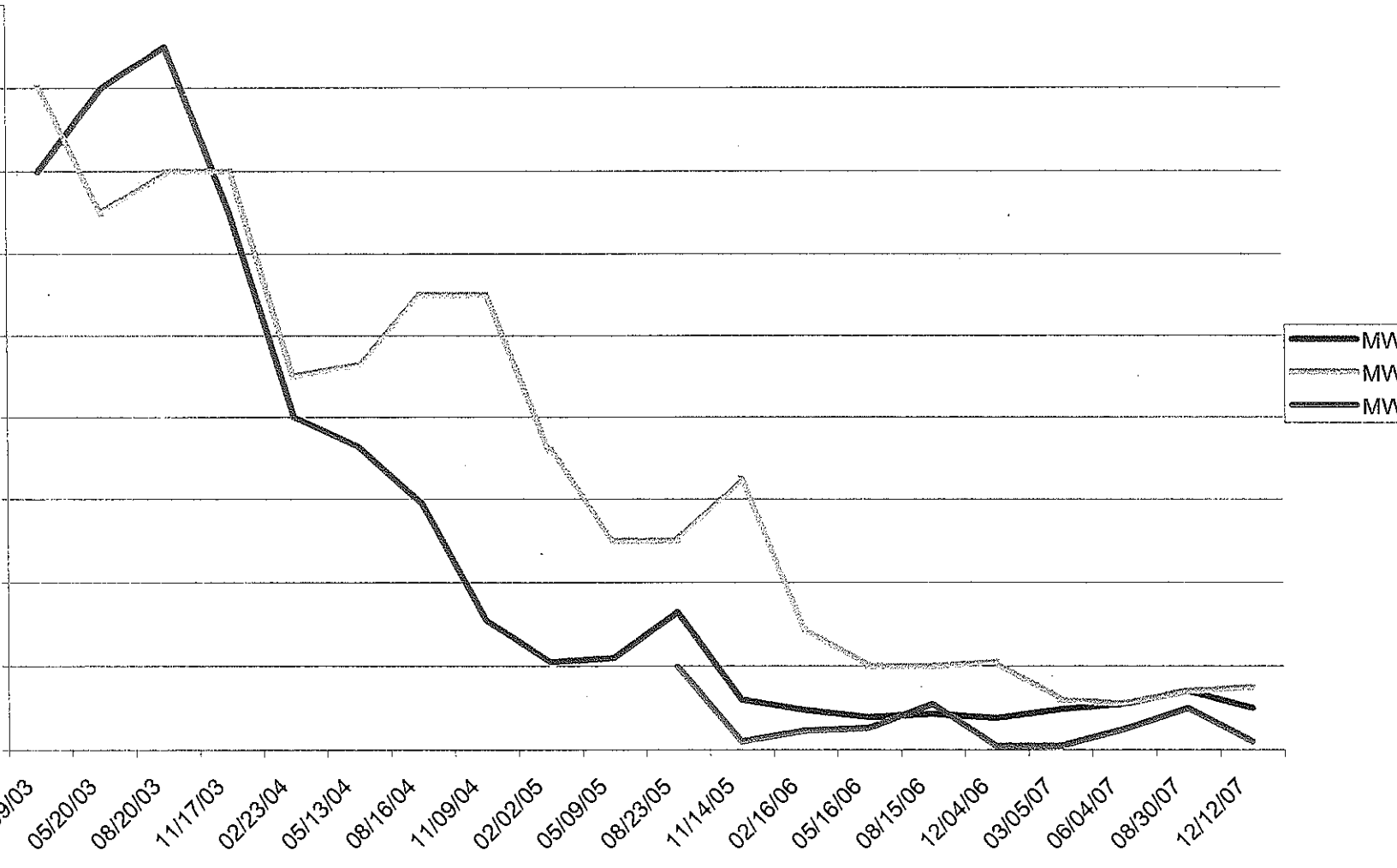
NOTE:
BASE MAP FROM BLUHM & ASSOCIATES
LAND SURVEYORS, INC. JUNE 13, 2003.

APPROXIMATE SCALE IN FEET

0 40 80

PNG ENVIRONMENTAL INC. 1339 Commerce Avenue, Suite 313 TEL (360) 414-0669 Longview, Washington 98632 FAX (360) 414-0663	DATE: 1-4-08 FILE NAME: 1052-01 DRAWN BY: JJT APPROVED BY:CH	FIFE CARDLOCK FUEL FACILITY 3200 20TH ST. EAST FIFE, WASHINGTON	GROUNDWATER ELEVATION CONTOUR PLOT DECEMBER 12, 2007	

MTBE



PNG ENVIRONMENTAL INC. 1339 Commerce Avenue, Suite 313 TEL (360) 414-0669 Longview, Washington 98632 FAX (360) 414-0663	DATE: 1-4-2008 FILE NAME: Fig3.dwg DRAWN BY: MM APPROVED BY: CH	Fife Metroplex Cardlock Facility 3200 20th Street East Fife, Washington	**MTBE** **Trend Plot**

ATTACHMENT A
GROUNDWATER SAMPLE COLLECTION FORMS

GROUNDWATER
SAMPLE COLLECTION FORM

Well ID no MW- 1 | Project name FIFE
Sample no. MW- 1 | Project no. 1052
Date 12/12/07 | Collector JMJ

Well Information
Monument condition ☐ Good ☑ Needs repair
Well cap condition ☑ Good ☐ Locked ☐ Replaced ☐ Needs replacement
Headspace reading ☑ Not measured _____ ppm ☐ Odor
Elevation mark ☑ Yes ☐ Added ☐ Other
Well diameter ☑ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other
Comments

Purge Data
Total well depth 15 ft ☐ Clean bottom ☐ Muddy bottom ☐ Not measured
Depth to product ft
Depth to water 5.85 ft
Casing volume 9.15 ft (H_2O) X .16 gpf = 1.46 X 3 = 4.39
Casing volumes 3/4"=0.02 gpf 1"=0.04 gpf 2"=0.16 gpf 4"=0.65 gpf 6"= 1.47 gpf

Purge Method
Pump type ☑ Peristaltic ☐ Centrifugal ☐ Submersible ☐ Other
Purge tubing ☑ New LDPE ☐ New HDPE ☐ New Teflon ☐ New Tygon ☐ Other
Bailer type ☐ Disposable ☐ Teflon ☐ Stainless ☐ PVC ☐ Other
Purge start time 1355 Purge stop time 1415 Purge rate 0.2 gpm

Field Parameters
Meter used ☐ HYDAC ☐ pH2Tester ☑ Hanna ☐ Other

Gallons	pH	Temperature	Conductivity	Comments
1	7.27	57.0	1.96	yellow
2	7.09	58.3	1.81	"
3	7.06	57.3	1.66	"
4.3	7.07	58.0	1.62	

Dissolved Oxygen 0.44 **Oxidation Reduction Potential** -132

Sampling Device
Bailer ☐ Disposable ☐ Stainless ☐ Teflon ☐ Other
Filter Type Size (micron) ☐ Other
Bailer cord used ☐ Monofilliament ☐ Other

Bottles Filled Time 1420

Number	Type			Preservative					Filtration	
5	☑ VOA	☐ Amber	☐ Poly	☑ HCL	☐ Nitric	☐ Sulfuric	☐ None	☐ Other	☐ Yes	☐ No
1	☐ VOA	☐ Amber	☑ Poly	☐ HCL	☑ Nitric	☐ Sulfuric	☐ None	☐ Other	☐ Yes	☐ No
	☐ VOA	☐ Amber	☐ Poly	☐ HCL	☐ Nitric	☐ Sulfuric	☐ None	☐ Other	☐ Yes	☐ No
	☐ VOA	☐ Amber	☐ Poly	☐ HCL	☐ Nitric	☐ Sulfuric	☐ None	☐ Other	☐ Yes	☐ No
	☐ VOA	☐ Amber	☐ Poly	☐ HCL	☐ Nitric	☐ Sulfuric	☐ None	☐ Other	☐ Yes	☐ No

Comments:

Sampler's Signature JMJ Date 12/12/07

GROUNDWATER
SAMPLE COLLECTION FORM

Well ID no. MW-2 | Project name FIFE
Sample no. MW-2 | Project no. 1052
Date 12/12/07 | Collector MW

Well Information
Monument condition ☐ Good ☑ Needs repair
Well cap condition ☑ Good ☐ Locked ☐ Replaced ☐ Needs replacement
Headspace reading ☐ Not measured 0 ppm ☐ Odor
Elevation mark ☑ Yes ☐ Added ☐ Other
Well diameter ☑ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other
Comments

Purge Data
Total well depth 15 ft ☐ Clean bottom ☐ Muddy bottom ☐ Not measured
Depth to product ft
Depth to water 6.44 ft
Casing volume 8.56 ft (H_2O) X .16 gpf = 1.36 X 3 = 4.10
Casing volumes 3/4"=0.02 gpf 1"=0.04 gpf 2"=0.16 gpf 4"=0.65 gpf 6"= 1.47 gpf

Purge Method
Pump type ☑ Peristaltic ☐ Centrifugal ☐ Submersible ☐ Other
Purge tubing ☑ New LDPE ☐ New HDPE ☐ New Teflon ☐ New Tygon ☐ Other
Bailer type ☐ Disposable ☐ Teflon ☐ Stainless ☐ PVC ☐ Other
Purge start time 1425 1433 Purge stop time 1442 Purge rate 0.24 gpm

Field Parameters
Meter used ☐ HYDAC ☐ pH2Tester ☑ Hanna ☐ Other

Gallons	pH	Temperature	Conductivity	Comments
1	7.04	52.3	1.30	Slightly cloudy
2	7.00	54.2	1.28	clear
3	7.01	56.1	1.30	"
4+	6.96	57.0	1.34	"

Dissolved Oxygen 1.04 **Oxidation Reduction Potential** -90

Sampling Device
Bailer ☐ Disposable ☐ Stainless ☐ Teflon ☐ Other
Filter Type Size (micron) ☐ Other
Bailer cord used ☐ Monofillament ☐ Other

Bottles Filled Time 1447

Number	Type			Preservative					Filtration
5	☑ VOA	☐ Amber	☐ Poly	☑ HCL	☐ Nitric	☐ Sulfuric	☐ None	☐ Other	☐Yes ☐No
1	☐ VOA	☐ Amber	☑ Poly	☐ HCL	☑ Nitric	☐ Sulfuric	☐ None	☐ Other	☐Yes ☐No
	☐ VOA	☐ Amber	☐ Poly	☐ HCL	☐ Nitric	☐ Sulfuric	☐ None	☐ Other	☐Yes ☐No
	☐ VOA	☐ Amber	☐ Poly	☐ HCL	☐ Nitric	☐ Sulfuric	☐ None	☐ Other	☐Yes ☐No
	☐ VOA	☐ Amber	☐ Poly	☐ HCL	☐ Nitric	☐ Sulfuric	☐ None	☐ Other	☐Yes ☐No

Comments:

Sampler's Signature Date 12/12/07

GROUNDWATER
SAMPLE COLLECTION FORM

Well ID no MW-3 | Project name FIFB
Sample no. MW-3 | Project no. 1052
Date 12/13/07 | Collector JWL

Well Information
Monument condition ☐ Good ☒ Needs repair
Well cap condition ☒ Good ☐ Locked ☐ Replaced ☐ Needs replacement
Headspace reading ☒ Not measured _____ ppm ☐ Odor
Elevation mark ☒ Yes ☐ Added ☐ Other
Well diameter ☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other
Comments

Purge Data
Total well depth 15 ft ☐ Clean bottom ☐ Muddy bottom ☐ Not measured
Depth to product ft
Depth to water 7.40 ft
Casing volume 7.60 ft (H_2O) X .16 gpf = 1.21 X 3 = 3.64
Casing volumes 3/4"=0.02 gpf 1"=0.04 gpf 2"=0.16 gpf 4"=0.65 gpf 6"= 1.47 gpf

Purge Method
Pump type ☒ Peristaltic ☐ Centrifugal ☐ Submersible ☐ Other
Purge tubing ☒ New LDPE ☐ New HDPE ☐ New Teflon ☐ New Tygon ☐ Other
Bailer type ☐ Disposable ☐ Teflon ☐ Stainless ☐ PVC ☐ Other
Purge start time 1508 Purge stop time 1531 Purge rate 0.16 gpm

Field Parameters
Meter used ☐ HYDAC ☐ pH2Tester ☒ Hanna ☐ Other

Gallons	pH	Temperature	Conductivity	Comments
1	12.21	54.7	4.51	Clear
2	12.32	56.2	4.44	"
3	12.37	55.3	4.29	"
3.75				"

Dissolved Oxygen 13.04 Oxidation Reduction Potential -112

Sampling Device
Bailer ☐ Disposable ☐ Stainless ☐ Teflon ☐ Other
Filter Type Size (micron) ☐ Other
Bailer cord used ☐ Monofillament ☐ Other

Bottles Filled Time 1535

Number	Type	Preservative	Filtration
5	☒ VOA ☐ Amber ☐ Poly	☒ HCL ☐ Nitric ☐ Sulfuric ☐ None ☐ Other	☐ Yes ☐ No
1	☐ VOA ☐ Amber ☒ Poly	☐ HCL ☒ Nitric ☐ Sulfuric ☐ None ☐ Other	☐ Yes ☐ No
	☐ VOA ☐ Amber ☐ Poly	☐ HCL ☐ Nitric ☐ Sulfuric ☐ None ☐ Other	☐ Yes ☐ No
	☐ VOA ☐ Amber ☐ Poly	☐ HCL ☐ Nitric ☐ Sulfuric ☐ None ☐ Other	☐ Yes ☐ No
	☐ VOA ☐ Amber ☐ Poly	☐ HCL ☐ Nitric ☐ Sulfuric ☐ None ☐ Other	☐ Yes ☐ No

Comments:

Sampler's Signature _____ Date 12/12/07

GROUNDWATER
SAMPLE COLLECTION FORM

Well ID no. MW-4 | Project name FHR
Sample no. MW-4 | Project no. 1052
Date 12/12/07 | Collector JMD

Well Information
Monument condition ☐ Good ☑ Needs repair
Well cap condition ☑ Good ☐ Locked ☐ Replaced ☐ Needs replacement
Headspace reading ☐ Not measured 0 ppm ☐ Odor
Elevation mark ☑ Yes ☐ Added ☐ Other
Well diameter ☑ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other
Comments

Purge Data
Total well depth 15 ft ☐ Clean bottom ☐ Muddy bottom ☐ Not measured
Depth to product ft
Depth to water 6.33 ft
Casing volume 8.67 ft (H_2O) X 0.16 gpf = 1.38 X 3 = 4.16
Casing volumes 3/4"=0.02 gpf 1"=0.04 gpf 2"=0.16 gpf 4"=0.65 gpf 6"= 1.47 gpf

Purge Method
Pump type ☑ Peristaltic ☐ Centrifugal ☐ Submersible ☐ Other
Purge tubing ☑ New LDPE ☐ New HDPE ☐ New Teflon ☐ New Tygon ☐ Other
Bailer type ☐ Disposable ☐ Teflon ☐ Stainless ☐ PVC ☐ Other
Purge start time 1546 Purge stop time 1603 Purge rate

Field Parameters
Meter used ☐ HYDAC ☐ pH2Tester ☑ Hanna ☐ Other

Gallons	pH	Temperature	Conductivity	Comments
1	7.30	56.3	1.51	Muddy
2	6.93	57.4	1.51	" "
3	6.88	57.3	1.53	
4.25	6.83	58.3	1.53	

Dissolved Oxygen 0.31 Oxidation Reduction Potential -192

Sampling Device
Bailer ☐ Disposable ☐ Stainless ☐ Teflon ☐ Other
Filter Type Size (micron) ☐ Other
Bailer cord used ☐ Monofillament ☐ Other

Bottles Filled Time 1609

Number	Type	Preservative	Filtration
5	☑ VOA ☐ Amber ☐ Poly	☑ HCL ☐ Nitric ☐ Sulfuric ☐ None ☐ Other	☐ Yes ☐ No
1	☐ VOA ☐ Amber ☑ Poly	☐ HCL ☑ Nitric ☐ Sulfuric ☐ None ☐ Other	☐ Yes ☐ No
	☐ VOA ☐ Amber ☐ Poly	☐ HCL ☐ Nitric ☐ Sulfuric ☐ None ☐ Other	☐ Yes ☐ No
	☐ VOA ☐ Amber ☐ Poly	☐ HCL ☐ Nitric ☐ Sulfuric ☐ None ☐ Other	☐ Yes ☐ No
	☐ VOA ☐ Amber ☐ Poly	☐ HCL ☐ Nitric ☐ Sulfuric ☐ None ☐ Other	☐ Yes ☐ No

Comments:

Sampler's Signature Date 12/12/07

PNG Environmental

GROUNDWATER
SAMPLE COLLECTION FORM

Well ID no MW-5 | Project name FIPE
Sample no. MW-5 | Project no. 1052
Date 12/12/07 | Collector JWS

Well Information

Monument condition ☐ Good ☑ Needs repair
Well cap condition ☑ Good ☐ Locked ☐ Replaced ☐ Needs replacement
Headspace reading ☐ Not measured 0 ppm ☐ Odor
Elevation mark ☑ Yes ☐ Added ☐ Other
Well diameter ☑ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other
Comments

Purge Data

Total well depth 15 ft ☐ Clean bottom ☐ Muddy bottom ☐ Not measured
Depth to product ft
Depth to water 4.37 ft
Casing volume 10.63 ft (H_2O) X .16 gpf = 1.70 X 3 = 5.10
Casing volumes 3/4"=0.02 gpf 1"=0.04 gpf 2"=0.16 gpf 4"=0.65 gpf 6"= 1.47 gpf

Purge Method

Pump type ☑ Peristaltic ☐ Centrifugal ☐ Submersible ☐ Other
Purge tubing ☑ New LDPE ☐ New HDPE ☐ New Teflon ☐ New Tygon ☐ Other
Bailer type ☐ Disposable ☐ Teflon ☐ Stainless ☐ PVC ☐ Other
Purge start time 1359 Purge stop time 1378 Purge rate 0.16 gpm

Field Parameters

Meter used ☐ HYDAC ☐ pH2Tester ☑ Hanna ☐ Other

Gallons	pH	Temperature	Conductivity	Comments
1	11.46	55.7	0.70	Clear
2.5	11.69	56.1	0.96	"
4	11.65	56.2	0.96	
5	11.66	56.3	0.94	

Dissolved Oxygen 2.96 **Oxidation Reduction Potential** -112

Sampling Device

Bailer ☐ Disposable ☐ Stainless ☐ Teflon ☐ Other
Filter Type Size (micron) ☐ Other
Bailer cord used ☐ Monofillament ☐ Other

Bottles Filled Time 1334

Number	Type	Preservative	Filtration
5	☑ VOA ☐ Amber ☐ Poly	☑ HCL ☐ Nitric ☐ Sulfuric ☐ None ☐ Other	☐ Yes ☐ No
1	☐ VOA ☐ Amber ☑ Poly	☐ HCL ☑ Nitric ☐ Sulfuric ☐ None ☐ Other	☐ Yes ☐ No
	☐ VOA ☐ Amber ☐ Poly	☐ HCL ☐ Nitric ☐ Sulfuric ☐ None ☐ Other	☐ Yes ☐ No
	☐ VOA ☐ Amber ☐ Poly	☐ HCL ☐ Nitric ☐ Sulfuric ☐ None ☐ Other	☐ Yes ☐ No
	☐ VOA ☐ Amber ☐ Poly	☐ HCL ☐ Nitric ☐ Sulfuric ☐ None ☐ Other	☐ Yes ☐ No

Comments:

Sampler's Signature JWS Date 12/12/07

GROUNDWATER
SAMPLE COLLECTION FORM

Well ID no. MW- 6 | Project name FIFE
Sample no. MW- 6 | Project no. 1052
Date 12/12/07 | Collector JMZ

Well Information
Monument condition ☐ Good ☑ Needs repair
Well cap condition ☑ Good ☐ Locked ☐ Replaced ☐ Needs replacement
Headspace reading ☐ Not measured 0 ppm ☐ Odor
Elevation mark ☑ Yes ☐ Added ☐ Other
Well diameter ☑ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other
Comments

Purge Data
Total well depth 15 ft ☐ Clean bottom ☐ Muddy bottom ☐ Not measured
Depth to product ft
Depth to water 6.43 ft
Casing volume 8.57 ft (H_2O) X .16 gpf = 1.37 X 3 = 4.11
Casing volumes 3/4"=0.02 gpf 1"=0.04 gpf 2"=0.16 gpf 4"=0.65 gpf 6"= 1.47 gpf

Purge Method
Pump type ☑ Peristaltic ☐ Centrifugal ☐ Submersible ☐ Other
Purge tubing ☑ New LDPE ☐ New HDPE ☐ New Teflon ☐ New Tygon ☐ Other
Bailer type ☐ Disposable ☐ Teflon ☐ Stainless ☐ PVC ☐ Other
Purge start time 1236 Purge stop time 1247 Purge rate 0.3 gpm

Field Parameters
Meter used ☐ HYDAC ☐ pH2Tester ☑ Hanna ☐ Other

Gallons	pH	Temperature	Conductivity	Comments
1	6.94	52.3	1.73	Lt yellow
2	6.95	56.3	1.52	Cloudy
3	6.88	58.4	1.46	"
4.1+	6.87	56.7	1.43	"

Dissolved Oxygen 0.96 Oxidation Reduction Potential -81

Sampling Device
Bailer ☐ Disposable ☐ Stainless ☐ Teflon ☐ Other
Filter Type Size (micron) ☐ Other
Bailer cord used ☐ Monofillament ☐ Other

Bottles Filled Time 1252

Number	Type			Preservative					Filtration	
3	☑ VOA	☐ Amber	☐ Poly	☑ HCL	☐ Nitric	☐ Sulfuric	☐ None	☐ Other	☐ Yes	☐ No
1	☐ VOA	☐ Amber	☑ Poly	☐ HCL	☑ Nitric	☐ Sulfuric	☐ None	☐ Other	☐ Yes	☐ No
	☐ VOA	☐ Amber	☐ Poly	☐ HCL	☐ Nitric	☐ Sulfuric	☐ None	☐ Other	☐ Yes	☐ No
	☐ VOA	☐ Amber	☐ Poly	☐ HCL	☐ Nitric	☐ Sulfuric	☐ None	☐ Other	☐ Yes	☐ No
	☐ VOA	☐ Amber	☐ Poly	☐ HCL	☐ Nitric	☐ Sulfuric	☐ None	☐ Other	☐ Yes	☐ No

Comments:

Sampler's Signature Date 12/12/07

GROUNDWATER
SAMPLE COLLECTION FORM

Well ID no MW- 7 | Project name FIFE
Sample no. MW- 7 | Project no. 1052
Date 12/12/07 | Collector JW

Well Information
Monument condition ☑ Good ☐ Needs repair
Well cap condition ☑ Good ☐ Locked ☐ Replaced ☐ Needs replacement
Headspace reading ☑ Not measured _____ ppm ☐ Odor
Elevation mark ☑ Yes ☐ Added ☐ Other
Well diameter ☐ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other 1"
Comments

Purge Data
Total well depth 15 ft ☐ Clean bottom ☐ Muddy bottom ☐ Not measured
Depth to product ft
Depth to water 7.82 ft
Casing volume 7.18 ft (H_2O) X 0.04 gpf = 0.28 X 3 = 0.86
Casing volumes 3/4"=0.02 gpf 1"=0.04 gpf 2"=0.16 gpf 4"=0.65 gpf 6"= 1.47 gpf

Purge Method
Pump type ☑ Peristaltic ☐ Centrifugal ☐ Submersible ☐ Other
Purge tubing ☑ New LDPE ☐ New HDPE ☐ New Teflon ☐ New Tygon ☐ Other
Bailer type ☐ Disposable ☐ Teflon ☐ Stainless ☐ PVC ☐ Other
Purge start time 1457 Purge stop time 1459 Purge rate

Field Parameters
Meter used ☐ HYDAC ☐ pH2Tester ☑ Hanna ☐ Other

Gallons	pH	Temperature	Conductivity	Comments
0.5	6.96	51.3	0.76	Muddy
0.75+	6.99	53.0	0.71	Clear

Dissolved Oxygen 0.85 **Oxidation Reduction Potential** -113

Sampling Device
Bailer ☐ Disposable ☐ Stainless ☐ Teflon ☐ Other
Filter Type Size (micron) ☐ Other
Bailer cord used ☐ Monofilament ☐ Other

Bottles Filled Time 1504

Number	Type			Preservative					Filtration	
5	☑ VOA	☐ Amber	☐ Poly	☑ HCL	☐ Nitric	☐ Sulfuric	☐ None	☐ Other	☐ Yes	☐ No
1	☐ VOA	☐ Amber	☑ Poly	☐ HCL	☑ Nitric	☐ Sulfuric	☐ None	☐ Other	☐ Yes	☐ No
	☐ VOA	☐ Amber	☐ Poly	☐ HCL	☐ Nitric	☐ Sulfuric	☐ None	☐ Other	☐ Yes	☐ No
	☐ VOA	☐ Amber	☐ Poly	☐ HCL	☐ Nitric	☐ Sulfuric	☐ None	☐ Other	☐ Yes	☐ No
	☐ VOA	☐ Amber	☐ Poly	☐ HCL	☐ Nitric	☐ Sulfuric	☐ None	☐ Other	☐ Yes	☐ No

Comments:

Sampler's Signature JW Date 12/12/07

ATTACHMENT B

LABORATORY REPORT AND CHAIN-OF-CUSTODY DOCUMENTATION

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

January 2, 2008

Craig Hultgren, Project Manager
PNG Environmental
1339 Commerce Ave., Suite 313
Longview, WA 98632

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on December 12, 2007 from the Fife 1052, F&BI 712132 project. There are 28 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Eric Young

Eric Young
Chemist

Enclosures
PNG0102R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on December 12, 2007 by Friedman & Bruya, Inc. from the PNG Environmental Fife 1052, F&BI 712132 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	PNG Environmental
712132-01	TB-121207
712132-02	MW-1
712132-03	MW-2
712132-04	MW-3
712132-05	MW-4
712132-06	MW-5
712132-07	MW-6
712132-08	MW-7
712132-09	Ditch

The 8260B samples for MW-1, MW-4, MW-6, and MW-7 were diluted due to matrix effect. All other quality control requirements were acceptable.

Date of Report: 01/02/08
Date Received: 12/12/07
Project: Fife 1052, F&BI 712132
Date Extracted: 12/13/07
Date Analyzed: 12/13/07

RESULTS FROM THE ANALYSIS OF THE WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES USING EPA METHOD 8021B

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Surrogate (% Recovery) Limit (52-124)
TB-121207 712132-01	<1	<1	<1	<3	96
Method Blank	<1	<1	<1	<3	111

Date of Report: 01/02/08
Date Received: 12/12/07
Project: Fife 1052, F&BI 712132
Date Extracted: 12/13/07
Date Analyzed: 12/13/07

RESULTS FROM THE ANALYSIS OF THE WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 51-134)
MW-1 712132-02	<100	104
MW-2 712132-03	<100	94
MW-3 712132-04	<100	97
MW-4 712132-05	<100	82
MW-5 712132-06	<100	93
MW-6 712132-07	<100	96
MW-7 712132-08	<100	96
Ditch 712132-09	<100	95
Method Blank	<100	104

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-1	Client:	PNG Environmental
Date Received:	12/12/07	Project:	Fife 1052, F&BI 712132
Date Extracted:	12/17/07	Lab ID:	712132-02
Date Analyzed:	12/18/07	Data File:	712132-02.058
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	hr

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Bismuth	91	60	125

Analyte:	Concentration ug/L (ppb)
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-2	Client:	PNG Environmental
Date Received:	12/12/07	Project:	Fife 1052, F&BI 712132
Date Extracted:	12/17/07	Lab ID:	712132-03
Date Analyzed:	12/18/07	Data File:	712132-03.061
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	hr

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Bismuth	88	60	125

Analyte:	Concentration ug/L (ppb)
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-3	Client:	PNG Environmental
Date Received:	12/12/07	Project:	Fife 1052, F&BI 712132
Date Extracted:	12/17/07	Lab ID:	712132-04
Date Analyzed:	12/18/07	Data File:	712132-04.063
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	hr

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Bismuth	79	60	125

Analyte:	Concentration ug/L (ppb)
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-4	Client:	PNG Environmental
Date Received:	12/12/07	Project:	Fife 1052, F&BI 712132
Date Extracted:	12/17/07	Lab ID:	712132-05
Date Analyzed:	12/18/07	Data File:	712132-05.064
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	hr

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Bismuth	86	60	125

Analyte:	Concentration ug/L (ppb)
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-5	Client:	PNG Environmental
Date Received:	12/12/07	Project:	Fife 1052, F&BI 712132
Date Extracted:	12/17/07	Lab ID:	712132-06
Date Analyzed:	12/18/07	Data File:	712132-06.065
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	hr

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Bismuth	90	60	125

Analyte:	Concentration ug/L (ppb)
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-6	Client:	PNG Environmental
Date Received:	12/12/07	Project:	Fife 1052, F&BI 712132
Date Extracted:	12/17/07	Lab ID:	712132-07
Date Analyzed:	12/18/07	Data File:	712132-07.066
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	hr

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Bismuth	87	60	125

Analyte:	Concentration ug/L (ppb)
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-7	Client:	PNG Environmental
Date Received:	12/12/07	Project:	Fife 1052, F&BI 712132
Date Extracted:	12/17/07	Lab ID:	712132-08
Date Analyzed:	12/18/07	Data File:	712132-08.067
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	hr

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Bismuth	94	60	125

Analyte:	Concentration ug/L (ppb)
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	PNG Environmental
Date Received:	NA	Project:	Fife 1052, F&BI 712132
Date Extracted:	12/17/07	Lab ID:	I7-480 mb
Date Analyzed:	12/18/07	Data File:	I7-480 mb.056
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	hr

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Bismuth	100	60	125

Analyte:	Concentration ug/L (ppb)
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID:	MW-1	Client:	PNG Environmental
Date Received:	12/12/07	Project:	Fife 1052, F&BI 712132
Date Extracted:	12/24/07	Lab ID:	712132-02 1/2
Date Analyzed:	12/24/07	Data File:	122417.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MB

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	84	55	118
1,2-Dichloroethane-d4	83	53	121
Toluene-d8	83	55	121
4-Bromofluorobenzene	85	29	181

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<2	1,3-Dichloropropane	<2
Chloromethane	<2	Tetrachloroethene	<2
Vinyl chloride	<0.4	Dibromochloromethane	<2
Bromomethane	<2	1,2-Dibromoethane (EDB)	<2
Chloroethane	<2	Chlorobenzene	<2
Trichlorofluoromethane	<2	Ethylbenzene	<2
Acetone	<20	1,1,1,2-Tetrachloroethane	<2
1,1-Dichloroethene	<2	m,p-Xylene	<4
Hexane	<2	o-Xylene	<2
Methylene chloride	<10	Styrene	<2
Methyl t-butyl ether (MTBE)	<2	Isopropylbenzene	<2
trans-1,2-Dichloroethene	<2	Bromoform	<2
1,1-Dichloroethane	<2	n-Propylbenzene	<2
2,2-Dichloropropane	<2	Bromobenzene	<2
cis-1,2-Dichloroethene	<2	1,3,5-Trimethylbenzene	<2
Chloroform	<2	1,1,2,2-Tetrachloroethane	<2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<2
1,2-Dichloroethane (EDC)	<2	2-Chlorotoluene	<2
1,1,1-Trichloroethane	<2	4-Chlorotoluene	<2
1,1-Dichloropropene	<2	tert-Butylbenzene	<2
Carbon Tetrachloride	<2	1,2,4-Trimethylbenzene	<2
Benzene	<2	sec-Butylbenzene	<2
Trichloroethene	<2	p-Isopropyltoluene	<2
1,2-Dichloropropane	<2	1,3-Dichlorobenzene	<2
Bromodichloromethane	<2	1,4-Dichlorobenzene	<2
Dibromomethane	<2	1,2-Dichlorobenzene	<2
4-Methyl-2-pentanone	<20	1,2-Dibromo-3-chloropropane	<2
cis-1,3-Dichloropropene	<2	1,2,4-Trichlorobenzene	<2
Toluene	<2	Hexachlorobutadiene	<2
trans-1,3-Dichloropropene	<2	Naphthalene	<2
1,1,2-Trichloroethane	<2	1,2,3-Trichlorobenzene	<2
2-Hexanone	<20		

Note: The reporting limit for vinyl chloride is equal to the MDL.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID:	MW-2	Client:	PNG Environmental
Date Received:	12/12/07	Project:	Fife 1052, F&BI 712132
Date Extracted:	12/13/07	Lab ID:	712132-03
Date Analyzed:	12/14/07	Data File:	121320.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MB

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	87	55	118
1,2-Dichloroethane-d4	79	53	121
Toluene-d8	79	55	121
4-Bromofluorobenzene	80	29	181

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<1	Tetrachloroethene	<1
Vinyl chloride	<0.2	Dibromochloromethane	<1
Bromomethane	<1	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<10	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	<10	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<1	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon Tetrachloride	<1	1,2,4-Trimethylbenzene	<1
Benzene	<1	sec-Butylbenzene	<1
Trichloroethene	<1	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<1	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<1
cis-1,3-Dichloropropene	<1	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	<1
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

Note: The reporting limit for vinyl chloride is equal to the MDL.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID:	MW-3	Client:	PNG Environmental
Date Received:	12/12/07	Project:	Fife 1052, F&BI 712132
Date Extracted:	12/13/07	Lab ID:	712132-04
Date Analyzed:	12/14/07	Data File:	121321.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MB

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	85	55	118
1,2-Dichloroethane-d4	78	53	121
Toluene-d8	78	55	121
4-Bromofluorobenzene	80	29	181

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<1	Tetrachloroethene	<1
Vinyl chloride	<0.2	Dibromochloromethane	<1
Bromomethane	<1	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	130	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	10	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	<10	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<1	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon Tetrachloride	<1	1,2,4-Trimethylbenzene	1.1
Benzene	1.6	sec-Butylbenzene	<1
Trichloroethene	<1	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<1	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<1
cis-1,3-Dichloropropene	<1	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	<1
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

Note: The reporting limit for vinyl chloride is equal to the MDL.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID:	MW-4	Client:	PNG Environmental
Date Received:	12/12/07	Project:	Fife 1052, F&BI 712132
Date Extracted:	12/24/07	Lab ID:	712132-05 1/2
Date Analyzed:	12/24/07	Data File:	122418.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MB

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	82	55	118
1,2-Dichloroethane-d4	84	53	121
Toluene-d8	82	55	121
4-Bromofluorobenzene	85	29	181

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<2	1,3-Dichloropropane	<2
Chloromethane	<2	Tetrachloroethene	<2
Vinyl chloride	<0.4	Dibromochloromethane	<2
Bromomethane	<2	1,2-Dibromoethane (EDB)	<2
Chloroethane	<2	Chlorobenzene	<2
Trichlorofluoromethane	<2	Ethylbenzene	<2
Acetone	<20	1,1,1,2-Tetrachloroethane	<2
1,1-Dichloroethene	<2	m,p-Xylene	<4
Hexane	<2	o-Xylene	<2
Methylene chloride	<10	Styrene	<2
Methyl t-butyl ether (MTBE)	15	Isopropylbenzene	<2
trans-1,2-Dichloroethene	<2	Bromoform	<2
1,1-Dichloroethane	<2	n-Propylbenzene	<2
2,2-Dichloropropane	<2	Bromobenzene	<2
cis-1,2-Dichloroethene	<2	1,3,5-Trimethylbenzene	<2
Chloroform	<2	1,1,2,2-Tetrachloroethane	<2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<2
1,2-Dichloroethane (EDC)	<2	2-Chlorotoluene	<2
1,1,1-Trichloroethane	<2	4-Chlorotoluene	<2
1,1-Dichloropropene	<2	tert-Butylbenzene	<2
Carbon Tetrachloride	<2	1,2,4-Trimethylbenzene	<2
Benzene	<2	sec-Butylbenzene	<2
Trichloroethene	<2	p-Isopropyltoluene	<2
1,2-Dichloropropane	<2	1,3-Dichlorobenzene	<2
Bromodichloromethane	<2	1,4-Dichlorobenzene	<2
Dibromomethane	<2	1,2-Dichlorobenzene	<2
4-Methyl-2-pentanone	<20	1,2-Dibromo-3-chloropropane	<2
cis-1,3-Dichloropropene	<2	1,2,4-Trichlorobenzene	<2
Toluene	<2	Hexachlorobutadiene	<2
trans-1,3-Dichloropropene	<2	Naphthalene	<2
1,1,2-Trichloroethane	<2	1,2,3-Trichlorobenzene	<2
2-Hexanone	<20		

Note: The reporting limit for vinyl chloride is equal to the MDL.

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID:	MW-5	Client:	PNG Environmental
Date Received:	12/12/07	Project:	Fife 1052, F&BI 712132
Date Extracted:	12/24/07	Lab ID:	712132-06
Date Analyzed:	12/24/07	Data File:	122415.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MB

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	83	55	118
1,2-Dichloroethane-d4	83	53	121
Toluene-d8	83	55	121
4-Bromofluorobenzene	84	29	181

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<1	Tetrachloroethene	<1
Vinyl chloride	<0.2	Dibromochloromethane	<1
Bromomethane	<1	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<10	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	1.6	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	<10	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<1	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon Tetrachloride	<1	1,2,4-Trimethylbenzene	<1
Benzene	<1	sec-Butylbenzene	<1
Trichloroethene	<1	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<1	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<1
cis-1,3-Dichloropropene	<1	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	<1
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

Note: The reporting limit for vinyl chloride is equal to the MDL.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID:	MW-6	Client:	PNG Environmental
Date Received:	12/12/07	Project:	Fife 1052, F&BI 712132
Date Extracted:	12/24/07	Lab ID:	712132-07 1/2
Date Analyzed:	12/24/07	Data File:	122419.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MB

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	84	55	118
1,2-Dichloroethane-d4	83	53	121
Toluene-d8	82	55	121
4-Bromofluorobenzene	85	29	181

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<2	1,3-Dichloropropane	<2
Chloromethane	<2	Tetrachloroethene	<2
Vinyl chloride	<0.4	Dibromochloromethane	<2
Bromomethane	<2	1,2-Dibromoethane (EDB)	<2
Chloroethane	<2	Chlorobenzene	<2
Trichlorofluoromethane	<2	Ethylbenzene	<2
Acetone	<20	1,1,1,2-Tetrachloroethane	<2
1,1-Dichloroethene	<2	m,p-Xylene	<4
Hexane	<2	o-Xylene	<2
Methylene chloride	<10	Styrene	<2
Methyl t-butyl ether (MTBE)	<2	Isopropylbenzene	<2
trans-1,2-Dichloroethene	<2	Bromoform	<2
1,1-Dichloroethane	<2	n-Propylbenzene	<2
2,2-Dichloropropane	<2	Bromobenzene	<2
cis-1,2-Dichloroethene	<2	1,3,5-Trimethylbenzene	<2
Chloroform	<2	1,1,2,2-Tetrachloroethane	<2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<2
1,2-Dichloroethane (EDC)	<2	2-Chlorotoluene	<2
1,1,1-Trichloroethane	<2	4-Chlorotoluene	<2
1,1-Dichloropropene	<2	tert-Butylbenzene	<2
Carbon Tetrachloride	<2	1,2,4-Trimethylbenzene	<2
Benzene	<2	sec-Butylbenzene	<2
Trichloroethene	<2	p-Isopropyltoluene	<2
1,2-Dichloropropane	<2	1,3-Dichlorobenzene	<2
Bromodichloromethane	<2	1,4-Dichlorobenzene	<2
Dibromomethane	<2	1,2-Dichlorobenzene	<2
4-Methyl-2-pentanone	<20	1,2-Dibromo-3-chloropropane	<2
cis-1,3-Dichloropropene	<2	1,2,4-Trichlorobenzene	<2
Toluene	<2	Hexachlorobutadiene	<2
trans-1,3-Dichloropropene	<2	Naphthalene	<2
1,1,2-Trichloroethane	<2	1,2,3-Trichlorobenzene	<2
2-Hexanone	<20		

Note: The reporting limit for vinyl chloride is equal to the MDL.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID:	MW-7	Client:	PNG Environmental
Date Received:	12/12/07	Project:	Fife 1052, F&BI 712132
Date Extracted:	12/24/07	Lab ID:	712132-08 1/2
Date Analyzed:	12/24/07	Data File:	122420.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MB

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	82	55	118
1,2-Dichloroethane-d4	83	53	121
Toluene-d8	81	55	121
4-Bromofluorobenzene	85	29	181

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<2	1,3-Dichloropropane	<2
Chloromethane	<2	Tetrachloroethene	<2
Vinyl chloride	<0.4	Dibromochloromethane	<2
Bromomethane	<2	1,2-Dibromoethane (EDB)	<2
Chloroethane	<2	Chlorobenzene	<2
Trichlorofluoromethane	<2	Ethylbenzene	<2
Acetone	<20	1,1,1,2-Tetrachloroethane	<2
1,1-Dichloroethene	<2	m,p-Xylene	<4
Hexane	<2	o-Xylene	<2
Methylene chloride	<10	Styrene	<2
Methyl t-butyl ether (MTBE)	<2	Isopropylbenzene	<2
trans-1,2-Dichloroethene	<2	Bromoform	<2
1,1-Dichloroethane	<2	n-Propylbenzene	<2
2,2-Dichloropropane	<2	Bromobenzene	<2
cis-1,2-Dichloroethene	<2	1,3,5-Trimethylbenzene	<2
Chloroform	<2	1,1,2,2-Tetrachloroethane	<2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<2
1,2-Dichloroethane (EDC)	<2	2-Chlorotoluene	<2
1,1,1-Trichloroethane	<2	4-Chlorotoluene	<2
1,1-Dichloropropene	<2	tert-Butylbenzene	<2
Carbon Tetrachloride	<2	1,2,4-Trimethylbenzene	<2
Benzene	<2	sec-Butylbenzene	<2
Trichloroethene	<2	p-Isopropyltoluene	<2
1,2-Dichloropropane	<2	1,3-Dichlorobenzene	<2
Bromodichloromethane	<2	1,4-Dichlorobenzene	<2
Dibromomethane	<2	1,2-Dichlorobenzene	<2
4-Methyl-2-pentanone	<20	1,2-Dibromo-3-chloropropane	<2
cis-1,3-Dichloropropene	<2	1,2,4-Trichlorobenzene	<2
Toluene	<2	Hexachlorobutadiene	<2
trans-1,3-Dichloropropene	<2	Naphthalene	<2
1,1,2-Trichloroethane	<2	1,2,3-Trichlorobenzene	<2
2-Hexanone	<20		

Note: The reporting limit for vinyl chloride is equal to the MDL.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID:	Ditch	Client:	PNG Environmental
Date Received:	12/12/07	Project:	Fife 1052, F&BI 712132
Date Extracted:	12/24/07	Lab ID:	712132-09
Date Analyzed:	12/24/07	Data File:	122416.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MB

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	82	55	118
1,2-Dichloroethane-d4	84	53	121
Toluene-d8	82	55	121
4-Bromofluorobenzene	84	29	181

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<1	Tetrachloroethene	<1
Vinyl chloride	<0.2	Dibromochloromethane	<1
Bromomethane	<1	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<10	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	<10	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<1	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon Tetrachloride	<1	1,2,4-Trimethylbenzene	<1
Benzene	<1	sec-Butylbenzene	<1
Trichloroethene	<1	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<1	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<1
cis-1,3-Dichloropropene	<1	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	<1
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

Note: The reporting limit for vinyl chloride is equal to the MDL.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID:	Method Blank	Client:	PNG Environmental
Date Received:	Not Applicable	Project:	Fife 1052, F&BI 712132
Date Extracted:	12/13/07	Lab ID:	072005 mb
Date Analyzed:	12/13/07	Data File:	121306.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MB

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	85	55	118
1,2-Dichloroethane-d4	78	53	121
Toluene-d8	75	55	121
4-Bromofluorobenzene	85	29	181

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<1	Tetrachloroethene	<1
Vinyl chloride	<0.2	Dibromochloromethane	<1
Bromomethane	<1	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<10	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	<10	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<1	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon Tetrachloride	<1	1,2,4-Trimethylbenzene	<1
Benzene	<1	sec-Butylbenzene	<1
Trichloroethene	<1	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<1	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<1
cis-1,3-Dichloropropene	<1	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	<1
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

Note: The reporting limit for vinyl chloride is equal to the MDL.

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID:	Method Blank	Client:	PNG Environmental
Date Received:	Not Applicable	Project:	Fife 1052, F&BI 712132
Date Extracted:	12/24/07	Lab ID:	072074 mb
Date Analyzed:	12/24/07	Data File:	122414.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MB

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	152 vo	55	118
1,2-Dichloroethane-d4	153 vo	53	121
Toluene-d8	147 vo	55	121
4-Bromofluorobenzene	148	29	181

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<1	Tetrachloroethene	<1
Vinyl chloride	<0.2	Dibromochloromethane	<1
Bromomethane	<1	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<10	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	<10	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<1	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon Tetrachloride	<1	1,2,4-Trimethylbenzene	<1
Benzene	<1	sec-Butylbenzene	<1
Trichloroethene	<1	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<1	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<1
cis-1,3-Dichloropropene	<1	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	<1
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

Note: The reporting limit for vinyl chloride is equal to the MDL.

Date of Report: 01/02/08
Date Received: 12/12/07
Project: Fife 1052, F&BI 712132

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES USING EPA METHOD 8021B

Laboratory Code: 712146-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	96	65-118
Toluene	ug/L (ppb)	50	98	72-122
Ethylbenzene	ug/L (ppb)	50	97	73-126
Xylenes	ug/L (ppb)	150	99	74-118

Date of Report: 01/02/08
Date Received: 12/12/07
Project: Fife 1052, F&BI 712132

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 712134-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Gasoline	ug/L (ppb)	1,000	530	84 b	88 b	50-150	5

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	ug/L (ppb)	1,000	90	69-134

Date of Report: 01/02/08
Date Received: 12/12/07
Project: Fife 1052, F&BI 712132

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 712132-02 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
Lead	ug/L (ppb)	<1	<1	nm	0-20

Laboratory Code: 712132-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Lead	ug/L (ppb)	10	<1	98	50-150

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	ug/L (ppb)	10	99	70-130

Date of Report: 01/02/08
Date Received: 12/12/07
Project: Fife 1052, F&BI 712132

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260B

Laboratory Code: 712134-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	50	<1	117	109	50-150	7
Chloromethane	ug/L (ppb)	50	<1	131	135	50-150	3
Vinyl chloride	ug/L (ppb)	50	<0.2	129	129	50-150	0
Bromomethane	ug/L (ppb)	50	<1	135	136	50-150	1
Chloroethane	ug/L (ppb)	50	<1	127	129	50-150	2
Trichlorofluoromethane	ug/L (ppb)	50	<1	126	123	50-150	2
Acetone	ug/L (ppb)	50	<10	134	131	50-150	2
1,1-Dichloroethene	ug/L (ppb)	50	<1	99	97	50-150	2
Hexane	ug/L (ppb)	50	<1	92	84	50-150	9
Methylene chloride	ug/L (ppb)	50	<5	101	103	50-150	2
Methyl t-bntyl ether (MTBE)	ug/L (ppb)	50	<1	97	97	50-150	0
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	101	98	50-150	3
1,1-Dichloroethane	ug/L (ppb)	50	<1	98	96	50-150	2
2,2-Dichloropropane	ug/L (ppb)	50	<1	89	86	50-150	3
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	101	98	50-150	3
Chloroform	ug/L (ppb)	50	<1	95	94	50-150	1
2-Butanone (MEK)	ug/L (ppb)	50	<10	101	99	50-150	2
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	96	94	50-150	2
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	96	94	50-150	2
1,1-Dichloropropene	ug/L (ppb)	50	<1	99	97	50-150	2
Carbon Tetrachloride	ug/L (ppb)	50	<1	95	92	50-150	3
Benzene	ug/L (ppb)	50	4.1	98	96	50-150	2
Trichloroethene	ug/L (ppb)	50	<1	97	95	50-150	2
1,2-Dichloropropane	ug/L (ppb)	50	<1	100	98	50-150	2
Bromodichloromethane	ug/L (ppb)	50	<1	98	96	50-150	2
Dibromomethane	ug/L (ppb)	50	<1	102	99	50-150	3
4-Methyl-2-pentanone	ug/L (ppb)	50	<10	101	100	50-150	1
cis-1,3-Dichloropropene	ug/L (ppb)	50	<1	100	98	50-150	2
Toluene	ug/L (ppb)	50	1.1	95	95	50-150	0
trans-1,3-Dichloropropene	ug/L (ppb)	50	<1	98	98	50-150	0
1,1,2-Trichloroethane	ug/L (ppb)	50	<1	97	96	50-150	1
2-Hexanone	ug/L (ppb)	50	<10	102	104	50-150	2
1,3-Dichloropropane	ug/L (ppb)	50	<1	96	97	50-150	1
Tetrachloroethene	ug/L (ppb)	50	<1	98	97	50-150	1
Dibromochloromethane	ug/L (ppb)	50	<1	101	102	50-150	1
1,2-Dibromoethane (EDB)	ug/L (ppb)	50	<1	99	99	50-150	0
Chlorobenzene	ug/L (ppb)	50	<1	98	96	50-150	2
Ethylbenzene	ug/L (ppb)	50	3.6	95	94	50-150	1
1,1,1,2-Tetrachloroethane	ug/L (ppb)	50	<1	97	97	50-150	0
m,p-Xylene	ug/L (ppb)	100	10	94	94	50-150	0
o-Xylene	ug/L (ppb)	50	<1	96	95	50-150	1
Styrene	ug/L (ppb)	50	<1	96	96	50-150	0
Isopropylbenzene	ug/L (ppb)	50	7.1	95	94	50-150	1
Bromoform	ug/L (ppb)	50	<1	105	105	50-150	0
n-Propylbenzene	ug/L (ppb)	50	12	96	91	50-150	5
Bromobenzene	ug/L (ppb)	50	<1	98	95	50-150	3
1,3,5-Trimethylbenzene	ug/L (ppb)	50	<1	93	90	50-150	3
1,1,2,2-Tetrachloroethane	ug/L (ppb)	50	<1	99	97	50-150	2
1,2,3-Trichloropropane	ug/L (ppb)	50	<1	99	98	50-150	1
2-Chlorotoluene	ug/L (ppb)	50	<1	93	90	50-150	3
4-Chlorotoluene	ug/L (ppb)	50	<1	94	90	50-150	4
tert-Butylbenzene	ug/L (ppb)	50	<1	94	92	50-150	2
1,2,4-Trimethylbenzene	ug/L (ppb)	50	3.0	94	92	50-150	2
sec-Butylbenzene	ug/L (ppb)	50	<1	95	93	50-150	2
p-Isopropyltoluene	ug/L (ppb)	50	<1	96	93	50-150	3
1,3-Dichlorobenzene	ug/L (ppb)	50	<1	98	96	50-150	2
1,4-Dichlorobenzene	ug/L (ppb)	50	<1	96	94	50-150	2
1,2-Dichlorobenzene	ug/L (ppb)	50	<1	96	94	50-150	2
1,2-Dibromo-3-chloropropane	ug/L (ppb)	50	<1	101	100	50-150	1
1,2,4-Trichlorobenzene	ug/L (ppb)	50	<1	106	103	50-150	3
Hexachlorobutadiene	ug/L (ppb)	50	<1	93	87	50-150	7
Naphthalene	ug/L (ppb)	50	6.7	107	105	50-150	2
1,2,3-Trichlorobenzene	ug/L (ppb)	50	<1	104	101	50-150	3

Date of Report: 01/02/08
Date Received: 12/12/07
Project: Fife 1052, F&BI 712132

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260B

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Dichlorodifluoromethane	ug/L (ppb)	50	92	50-136
Chloromethane	ug/L (ppb)	50	108	55-134
Vinyl chloride	ug/L (ppb)	50	106	56-144
Bromomethane	ug/L (ppb)	50	120	58-140
Chloroethane	ug/L (ppb)	50	103	55-144
Trichlorofluoromethane	ug/L (ppb)	50	102	54-142
Acetone	ug/L (ppb)	50	98	52-162
1,1-Dichloroethene	ug/L (ppb)	50	79	34-135
Hexane	ug/L (ppb)	50	94	60-139
Methylene chloride	ug/L (ppb)	50	84	65-112
Methyl t-butyl ether (MTBE)	ug/L (ppb)	50	91	71-119
trans-1,2-Dichloroethene	ug/L (ppb)	50	85	66-120
1,1-Dichloroethane	ug/L (ppb)	50	90	65-119
2,2-Dichloropropane	ug/L (ppb)	50	86	42-143
cis-1,2-Dichloroethene	ug/L (ppb)	50	90	76-121
Chloroform	ug/L (ppb)	50	88	63-117
2-Butanone (MEK)	ug/L (ppb)	50	93	77-125
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	91	67-116
1,1,1-Trichloroethane	ug/L (ppb)	50	82	63-124
1,1-Dichloropropene	ug/L (ppb)	50	88	62-122
Carbon Tetrachloride	ug/L (ppb)	50	81	63-126
Benzene	ug/L (ppb)	50	90	55-134
Trichloroethene	ug/L (ppb)	50	88	75-116
1,2-Dichloropropane	ug/L (ppb)	50	96	76-118
Bromodichloromethane	ug/L (ppb)	50	89	69-129
Dibromomethane	ug/L (ppb)	50	89	68-117
4-Methyl-2-pentanone	ug/L (ppb)	50	87	68-124
cis-1,3-Dichloropropene	ug/L (ppb)	50	96	64-123
Toluene	ug/L (ppb)	50	95	56-140
trans-1,3-Dichloropropene	ug/L (ppb)	50	103	71-124
1,1,2-Trichloroethane	ug/L (ppb)	50	98	66-123
2-Hexanone	ug/L (ppb)	50	93	66-128
1,3-Dichloropropane	ug/L (ppb)	50	99	71-125
Tetrachloroethene	ug/L (ppb)	50	93	78-116
Dibromochloromethane	ug/L (ppb)	50	99	76-122
1,2-Dibromoethane (EDB)	ug/L (ppb)	50	95	72-124
Chlorobenzene	ug/L (ppb)	50	92	72-116
Ethylbenzene	ug/L (ppb)	50	92	76-123
1,1,1,2-Tetrachloroethane	ug/L (ppb)	50	94	69-121
m,p-Xylene	ug/L (ppb)	100	91	49-166
o-Xylene	ug/L (ppb)	50	90	68-121
Styrene	ug/L (ppb)	50	91	72-119
Isopropylbenzene	ug/L (ppb)	50	87	66-121
Bromoform	ug/L (ppb)	50	100	70-127
n-Propylbenzene	ug/L (ppb)	50	90	67-118
Bromobenzene	ug/L (ppb)	50	93	71-124
1,3,5-Trimethylbenzene	ug/L (ppb)	50	88	69-116
1,1,2,2-Tetrachloroethane	ug/L (ppb)	50	92	57-128
1,2,3-Trichloropropane	ug/L (ppb)	50	96	58-126
2-Chlorotoluene	ug/L (ppb)	50	87	66-116
4-Chlorotoluene	ug/L (ppb)	50	88	67-117
tert-Butylbenzene	ug/L (ppb)	50	86	65-121
1,2,4-Trimethylbenzene	ug/L (ppb)	50	88	69-123
sec-Butylbenzene	ug/L (ppb)	50	86	70-118
p-Isopropyltoluene	ug/L (ppb)	50	86	72-120
1,3-Dichlorobenzene	ug/L (ppb)	50	90	76-114
1,4-Dichlorobenzene	ug/L (ppb)	50	90	72-113
1,2-Dichlorobenzene	ug/L (ppb)	50	90	76-115
1,2-Dibromo-3-chloropropane	ug/L (ppb)	50	91	54-131
1,2,4-Trichlorobenzene	ug/L (ppb)	50	101	72-123
Hexachlorobutadiene	ug/L (ppb)	50	87	80-111
Naphthalene	ug/L (ppb)	50	97	61-137
1,2,3-Trichlorobenzene	ug/L (ppb)	50	95	74-126

Date of Report: 01/02/08
Date Received: 12/12/07
Project: Fife 1052, F&BI 712132

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260B

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	50	104	104	50-136	0
Chloromethane	ug/L (ppb)	50	112	105	55-134	6
Vinyl chloride	ug/L (ppb)	50	113	112	56-144	1
Bromomethane	ug/L (ppb)	50	96	93	58-140	3
Chloroethane	ug/L (ppb)	50	104	103	55-144	1
Trichlorofluoromethane	ug/L (ppb)	50	100	100	54-142	0
Acetone	ug/L (ppb)	50	177 vo	125	52-162	34 vo
1,1-Dichloroethene	ug/L (ppb)	50	107	106	34-135	2
Hexane	ug/L (ppb)	50	93	99	66-139	6
Methylene chloride	ug/L (ppb)	50	94	92	65-112	2
Methyl t-butyl ether (MTBE)	ug/L (ppb)	50	101	100	71-119	1
trans-1,2-Dichloroethene	ug/L (ppb)	50	101	100	66-120	1
1,1-Dichloroethane	ug/L (ppb)	50	99	99	65-119	0
2,2-Dichloropropane	ug/L (ppb)	50	104	106	42-143	2
cis-1,2-Dichloroethene	ug/L (ppb)	50	101	100	75-121	1
Chloroform	ug/L (ppb)	50	99	99	63-117	0
2-Butanone (MEK)	ug/L (ppb)	50	123	103	77-125	18
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	102	103	67-116	1
1,1,1-Trichloroethane	ug/L (ppb)	50	102	101	63-124	1
1,1-Dichloropropene	ug/L (ppb)	50	106	106	62-122	0
Carbon Tetrachloride	ug/L (ppb)	50	102	98	63-126	4
Benzene	ug/L (ppb)	50	97	98	65-134	1
Trichloroethene	ug/L (ppb)	50	104	104	75-116	0
1,2-Dichloropropane	ug/L (ppb)	50	105	104	75-118	1
Bromodichloromethane	ug/L (ppb)	50	101	100	69-129	1
Dibromomethane	ug/L (ppb)	50	102	103	68-117	1
4-Methyl-2-pentanone	ug/L (ppb)	50	107	105	68-124	2
cis-1,3-Dichloropropene	ug/L (ppb)	50	108	109	64-123	1
Toluene	ug/L (ppb)	50	93	96	56-140	2
trans-1,3-Dichloropropene	ug/L (ppb)	50	109	110	71-124	1
1,1,2-Trichloroethane	ug/L (ppb)	50	101	103	66-123	2
2-Hexanone	ug/L (ppb)	50	123	108	66-128	13
1,3-Dichloropropane	ug/L (ppb)	50	101	103	71-125	2
Tetrachloroethene	ug/L (ppb)	50	98	98	78-116	0
Dibromochloromethane	ug/L (ppb)	50	103	102	75-122	1
1,2-Dibromoethane (EDB)	ug/L (ppb)	50	105	108	72-124	3
Chlorobenzene	ug/L (ppb)	50	98	99	72-116	1
Ethylbenzene	ug/L (ppb)	50	97	97	76-123	0
1,1,1,2-Tetrachloroethane	ug/L (ppb)	50	107	108	69-121	1
m,p-Xylene	ug/L (ppb)	100	97	98	49-166	1
o-Xylene	ug/L (ppb)	50	99	99	68-121	0
Styrene	ug/L (ppb)	50	99	99	72-119	0
Isopropylbenzene	ug/L (ppb)	50	99	100	66-121	1
Bromoform	ug/L (ppb)	50	109	108	70-127	1
n-Propylbenzene	ug/L (ppb)	50	96	94	67-118	2
Bromobenzene	ug/L (ppb)	50	94	93	71-124	1
1,3,5-Trimethylbenzene	ug/L (ppb)	50	95	93	69-116	2
1,1,2,2-Tetrachloroethane	ug/L (ppb)	50	101	101	67-128	0
1,2,3-Trichloropropane	ug/L (ppb)	50	100	99	58-126	1
2-Chlorotoluene	ug/L (ppb)	50	94	92	66-116	2
4-Chlorotoluene	ug/L (ppb)	50	94	93	67-117	1
tert-Butylbenzene	ug/L (ppb)	50	96	94	65-121	2
1,2,4-Trimethylbenzene	ug/L (ppb)	50	96	95	69-123	1
sec-Butylbenzene	ug/L (ppb)	50	96	95	70-118	1
p-Isopropyltoluene	ug/L (ppb)	50	97	96	72-120	1
1,3-Dichlorobenzene	ug/L (ppb)	50	98	97	76-114	1
1,4-Dichlorobenzene	ug/L (ppb)	50	96	96	72-113	1
1,2-Dichlorobenzene	ug/L (ppb)	50	97	96	76-115	1
1,2-Dibromo-3-chloropropane	ug/L (ppb)	50	113	113	54-131	0
1,2,4-Trichlorobenzene	ug/L (ppb)	50	100	104	72-123	2
Hexachlorobutadiene	ug/L (ppb)	50	102	99	80-111	3
Naphthalene	ug/L (ppb)	50	107	105	61-137	2
1,2,3-Trichlorobenzene	ug/L (ppb)	50	106	104	74-126	2

Note: The calibration verification result for 4-methyl-2-pentanone exceeded 15% deviation. The average deviation for all compounds was not greater than 15%; therefore, the calibration is considered valid. This applies to samples 712132-03, -04.

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - The analyte indicated was found in the method blank. The result should be considered an estimate.

fc – The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - The sample was extracted outside of holding time. Results should be considered estimates.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - The value reported exceeded the calibration range established for the analyte. The reported concentration should be considered an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The pattern of peaks present is not indicative of diesel.

y - The pattern of peaks present is not indicative of motor oil.

712132

SAMPLE CH[illegible] OF CUSTODY ME 12/12/07

ort To Craig Weltgren
PNG Environmental, Inc
1339 Commerce Ave
te, ZIP Longview, WA
3604140669 Fax #

SAMPLERS (signature) Jay [illegible]

PROJECT NAME/NO. FIFE #1052 | PO # 1052

REMARKS

Page # 1

TURNAROUN[D]
☑ Standard (2 Week[s])
☐ RUSH
Rush charges autho[rized]

SAMPLE DIS[POSAL]
☐ Dispose after 30 d[ays]
☐ Return samples
☐ Will call with inst[ructions]

Sample ID	Lab ID	Date	Time	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	GRO	PB Total			
	NP 12/12/07															
[illegible]21207	01	121207	1310	Water	1			X								
[illegible]1	02 A-F		1420		6				X			X	X			
2	03 A-F		1447						X			X	X			
3	04 A-F		1535						X			X	X			
[illegible]	05 A-F		1609						X			X	X			
5	06 A-F		1334						X			X	X			
[illegible]	07 A-F		1252						X			X	X			
7	08 A-F		1304						X			X	X			
[illegible]	09 A-E		1215		5				X			X				

[Friedm]an & Bruya, Inc.
[...]th Avenue West
[Seattle,] WA 98119-2029
[(206)] 285-8282
[(20]6) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE
Relinquished by:	Jay [illegible]	Jay Greiber	PNG	12-12-0[7]
Received by:	[illegible]	Nhan Phan	Fe B I	12/12/0[7]
Relinquished by:				
Received by:			Samples received at 4 °C	

[F]ORMS\COC\COC.DOC

2007