July 17, 2012
Project 101.00221.00009

Mr. Norman Hepner
Washington Department of Ecology
15 West Yakima Avenue, Suite 200
Yakima, Washington 98902

Re: Soil Vapor and Groundwater Sampling Report – May 2012 Event, Closed City of Yakima Landfill, Yakima, Washington

Dear Mr. Hepner:

On behalf of the City of Yakima, SLR International Corporation (SLR) has prepared this report to present the results of the soil vapor and groundwater sampling activities conducted in May 2012 at the closed City of Yakima Landfill (Yakima Landfill) area. The Yakima Landfill is located at the south end of the former Boise Cascade Sawmill and Plywood facility (sawmill). The former sawmill property is located at 805 North 7th Street, in the northeastern part of Yakima, Washington (see Figure 1).

The objectives of the soil vapor and groundwater sampling event were: 1) to assess the current methane concentrations in the soil vapors within and around the landfill, 2) to assess the current concentrations of the preliminary groundwater indicator hazardous substances (IHSs) at locations hydraulically upgradient and downgradient of the landfill, 3) to identify where the shallow groundwater from beneath the landfill discharges to the Yakima River during a period of high groundwater elevation conditions, and 4) to evaluate the potential effects of the previous removal of surficial wood waste at the former sawmill on the soil vapor concentrations.

MAY 2012 SAMPLING EVENT

Soil Vapor Sampling

On May 10, 2010, SLR personnel extracted and analyzed soil vapors from all of the soil vapor probes (GP-3 through G-20) located in the southern part of the former sawmill property by using a CES/Landtec GEM-2000 multi-gas meter. We had also planned to extract and analyze soil vapors from probe GP-21, but we discovered that the probe had been accidentally destroyed by the property operations. The multi-gas meter measured the percentages of oxygen (O_2), carbon dioxide, and combustible gas in the extracted soil vapors. Based on the laboratory analytical results of previous soil vapor samples that were collected in 2009 and 2010 (SLR, 2010), the detected combustible gas at the southern part of the former sawmill property consists almost entirely of methane.

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The Model Toxics Control Act (MTCA) Cleanup Regulation[1] was used to establish methane gas screening levels for outdoor air and indoor air that are protective of human health and the environment; however, it does not specifically address landfill gas in soil. Unless the Yakima Landfill closed in December 1972, which is unlikely, there were no state municipal solid waste regulations that addressed landfill gas in soil at the time of the landfill closure. Therefore, the Washington minimal functional standards for landfilling that specifically address landfill gas do not apply to the Yakima Landfill site. Washington's Criteria for Municipal Solid Waste Landfills[2], 173-351 WAC, apply only to municipal solid waste landfills that received waste on or after November 26, 1993, and therefore, also do not apply to the site. However, WAC 173-351-200 regulations have been used for the remedial investigation at the site to evaluate if the methane conditions are protective of human health and the environment (SLR, 2009 and SLR, 2010). Under WAC 173-351-200, the methane concentrations generated by a landfill must not exceed the lower explosive limit (LEL; 5 percent by volume) in the soil at the property boundaries.

On May 10, 2012, the methane concentrations measured in the soil vapor probes ranged from 0 to 62.6 percent. The greatest methane concentrations (53.1 to 62.6 percent) were detected at the soil vapor probes (GP-19 and GP-20) located within the footprint of the landfill and screened within municipal solid waste (MSW). At the probes (GP-11 and GP-13) located to the north of the landfill that are screened within wood waste, the methane concentrations (14.3 to 40.3 percent) exceeded the upper explosive limit (UEL; 15 percent by volume) or the LEL. Near the northwest, west, and southwest edges of the landfill, the methane concentrations (13.9 to 34.0 percent) at probes GP-4, GP-5, GP-10, and GP-12 also exceeded the UEL or LEL. Further to the northwest, along the east side of the former plywood plant building, the methane concentration (8.1 percent) at probe GP-3 exceeded the LEL. To the west, southwest, south, and northeast of the landfill, along or near the property line (at probes GP-6 through GP-9 and GP-14 through GP-18), methane was not detected. The combustible gas survey results from the May 2012 sampling event, as well as from the previous remedial investigation, are presented in Table 1. The methane concentrations on May 10, 2012, are shown on Figure 2.

Groundwater Sampling

To assess the current preliminary groundwater IHS concentrations and identify where the groundwater from beneath the landfill discharges to the Yakima River, SLR personnel conducted a groundwater sampling event on May 9 and 10, 2012. Prior to sampling, SLR measured the depths to groundwater in all of the monitoring wells located at the southern part of the former sawmill property and hydraulically downgradient (southeast) of the

[1] Washington Department of Ecology. 2007. Chapter 173-340 WAC, Model Toxics Control Act Cleanup Regulation. November.

[2] Washington Department of Ecology. 1993. Chapter 173-351 WAC, Criteria for Municipal Solid Waste Landfills. October.

property (MW-6, MW-7, MW-8, MW-9A, and MW-11 through MW-18) by using an electronic water level meter. SLR also measured the depths to water at the gauging stations (designated RG-1 through RG-4) located on the west bank of the Yakima River that were established during the remedial investigation (SLR, 2010). The locations of the monitoring wells and river gauging stations are shown on Figure 3.

During the sampling event, groundwater samples were collected from monitoring wells MW-7, MW-8, MW-9A, and MW-11 through MW-18 for laboratory analysis. Each well was purged and sampled by using low-flow methods with a peristaltic pump and new polyethylene tubing. During purging and immediately prior to sampling, SLR measured the pH, specific conductivity, temperature, dissolved oxygen, and oxidation-reduction potential of the purge water. The groundwater samples were submitted to Friedman & Bruya, Inc. (F&B) in Seattle, Washington, for analysis of the preliminary groundwater IHSs (vinyl chloride, arsenic, iron, manganese, sodium, nitrate, and pH) that were identified during the remedial investigation (SLR, 2009). The analyses were conducted by using the following methods:

- Vinyl chloride by EPA Method 8260C
- Dissolved arsenic and manganese by EPA Method 200.8
- Dissolved sodium and iron by EPA Method 200.7
- Nitrate by EPA Method 300.0
- pH by EPA Method 9040C

Groundwater Monitoring Results

On May 9, 2012, the depths to groundwater in the monitoring wells ranged from 4.48 to 17.85 feet. The depth to the river water at gauging station RG-2 was 2.15 feet. At the time of the measurements, gauging station RG-4 was not accessible because it was under water, and stations RG-1 and RG-3 could not be located. The depth to groundwater and river water measurements were converted to elevations based on the results of previous well and gauging station elevation surveys conducted by Gray Surveying & Engineering, Inc., of Yakima, Washington. The groundwater elevations in the wells ranged from 1,035.93 to 1,052.48 feet above the NAVD 88 datum, and the river water elevation at gauging station RG-2 was 1,039.81 feet above the NAVD 88 datum. The river water elevation at the submerged downstream station (RG-4) was greater than 1,033.42 feet above the NAVD 88 datum. The groundwater and river water monitoring data from the May 2012 sampling event, as well as from the previous investigations, are presented in Table 2.

Based on the groundwater and river water elevations on May 9, 2012, the general groundwater flow direction beneath the landfill area was to the southeast, towards the Yakima River. This flow direction is consistent with the flow direction during the previous groundwater sampling events conducted during 2009 and 2010 (SLR, 2009 and

SLR, 2010, respectively). A groundwater elevation contour map of the May 2012 data is presented on Figure 3. The previous groundwater elevations in 2009 and 2010 revealed that a localized area of groundwater mounding was present near the southern end of the former plywood plant (near well MW-13) (SLR, 2009 and SLR, 2010), and the groundwater mounding suggested the presence of a localized groundwater recharge source (such as a leaking underground pipe). However, in May 2012, the groundwater elevation at MW-13 was over 4 feet lower than in February 2010, and there was no evidence of groundwater mounding near the southern end of the former plywood plant. It appears that the groundwater recharge source was shut off prior to May 2012, and since the plywood plant was being demolished during the groundwater sampling event, the recharge source could have been associated with the former plywood plant operations.

Based on the groundwater flow direction and the Yakima River elevations on May 9, 2012, it appears that the groundwater from beneath the landfill discharged into the section of the river between gauging stations RG-2 and RG-4 (see Figure 3).

Groundwater Sample Analytical Results

The groundwater sample analytical results were compared to groundwater screening levels that were based on the most stringent potential cleanup levels for the Yakima Landfill site (SLR, 2009). If the most stringent potential cleanup level for a compound was below the practical quantitation limits (PQLs), then the PQL became the screening level. The sample analytical results and groundwater screening levels are presented in Table 2.

The sample analytical results showed that the samples from all of the monitoring wells, except MW-7 and MW-14, contained dissolved arsenic concentrations [0.39 to 8.31 micrograms per liter (µg/L)] that exceeded the groundwater screening level (0.31 µg/L). The samples from all of the monitoring wells, except MW-9A and MW-14, contained dissolved manganese concentrations (346 to 3,460 µg/L) that exceeded the screening level (50 µg/L). The samples from wells MW-11, MW-12, MW-13, MW-15, MW-17, and MW-18 contained dissolved iron concentrations (487 to 35,100 µg/L) that exceeded the screening level (300 µg/L). The groundwater samples from MW-8, MW-12, MW-13, MW-16, and MW-17 contained dissolved sodium concentrations (26,200 to 42,500 µg/L) that exceeded the screening level (20,000 µg/L).

The groundwater samples from all of the monitoring wells contained pH concentrations (5.62 to 6.27) that were outside of the groundwater screening level range (6.5 to 8.5). The groundwater sample from well MW-8 contained a nitrate concentration (86,200 µg/L) that exceeded the groundwater screening level (10,000 µg/L). None of the groundwater samples contained detectable vinyl chloride concentrations, and the method reporting limit (0.06 µg/L) was below the screening level (0.11 µg/L). The groundwater sample analytical results from the May 2012 sampling event, as well as from the previous

groundwater sampling events at the landfill area, are presented in Table 2. Copies of the laboratory analytical reports are attached.

CONCLUSIONS

Under WAC 173-351-200, the methane concentrations generated by the landfill must not exceed the LEL in the soil at the property boundaries. The landfill extends beyond the eastern property line in a localized area near the southeastern corner of the property (see Figure 2), and since the soil vapor sampling results indicate that the methane concentrations in the landfill exceed the UEL, it is likely that the subsurface methane concentrations exceed the LEL within the area where the waste extends beyond the eastern property line. The soil vapor sampling results indicate that methane concentrations are below the LEL at the southern and western property lines. Since the northern property line is over 3,000 feet to the north of the landfill (see Figure 1), the methane concentrations derived from the MSW are likely below the LEL at the northern property line.

Prior to 2010, the Yakima Landfill was covered with approximately 2 to 12 feet of wood waste, sandy silt, and/or silty gravel. During 2010, the tenant of the former sawmill property, Yakima Resources, removed the majority of the surficial wood waste from the property (including above the landfill at the former log deck and barker areas). Based on a comparison of the methane concentrations in May 2012 to the methane concentrations in 2009 and 2010 (see Table 1), the detectable concentrations in May 2012 from all of the soil gas probes, except GP-19, located within or near the former log deck and barker areas (GP-3, GP-11, GP-13, and GP-20; see Figure 2) were at least 19 to 66 percent lower than any of the methane concentrations from those probes prior to the removal of the surficial wood waste. The May 2012 methane concentration (62.6 percent) from GP-19 (located within the landfill footprint) was consistent with the concentrations (61.3 to 69.5 percent) prior to the removal of the surficial wood waste. The removal of the surficial wood waste eliminated a methane source at the property; however, the MSW in the landfill and the remaining deeper wood waste (outside of the landfill footprint) continue to generate methane concentrations greater than the LEL.

The May 2012 groundwater sample analytical results showed that the arsenic, manganese, sodium, and iron concentrations in most of the groundwater samples exceeded the groundwater screening levels. The greatest arsenic, manganese, sodium, and iron concentrations were detected at wells located to the north-northwest (hydraulically upgradient) of the landfill and the concentrations typically decreased with distance to the south-southeast (downgradient). However, at well MW-15, which is located near the western bank of the Yakima River, the arsenic, manganese, and iron concentrations still exceeded the screening level. Since the arsenic, manganese, sodium, and iron in the groundwater appear to be due to sources located hydraulically upgradient of the landfill, these compounds are eliminated as groundwater IHSs for the landfill site. The distribution

of the arsenic, manganese, sodium, and iron concentrations in May 2012 are shown on Figures 4, 5, 6, and 7, respectively.

The groundwater samples from all of the monitoring wells, including the two wells (MW-14 and MW-15) located near the western bank of the Yakima River, contained pH concentrations (5.62 to 6.27) that were outside of the groundwater screening level range (6.5 to 8.5). The distribution of the pH concentrations in May 2012 is shown on Figure 8. Since the pH concentrations to the north-northwest (hydraulically upgradient) of the landfill are outside of the screening level range, the primary sources of the low pH appear to be located upgradient of the landfill. Therefore, pH is eliminated as a groundwater IHS for the landfill site.

The groundwater sample from well MW-8 contained a nitrate concentration that exceeded the groundwater screening level. The nitrate concentrations attenuate to below the screening level within approximately 750 feet downgradient (south-southeast) of MW-8 (see Figure 9). Since MW-8 is located near the southern (downgradient) edge of the landfill, it appears that the MSW in the landfill is the source of the nitrate. Therefore, nitrate is retained as a groundwater IHS. Since none of the groundwater samples from the May 2012 sampling event or the 2009 and 2010 sampling events contained detectable vinyl chloride concentrations, vinyl chloride is eliminated as a groundwater IHS for the landfill site.

If you have any questions, please contact me at (425) 471-0479.

Sincerely,

SLR International Corporation

Michael D. Staton, L.G.
Principal Geologist

Attachments: Limitations
References
Tables 1, 2, and 3
Figures 1 through 9
Laboratory Reports

cc: Jeff Cutter, City of Yakima
Kurt Peterson, Cascadia Law Group

LIMITATIONS

The services reflected in this report were performed consistent with generally accepted professional consulting principals and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This information is solely for the use of our client unless otherwise noted. Any reliance on this information by a third party is at such party's sole risk.

Opinions and recommendations contained herein apply to conditions existing when services were performed and are intended only for the client, purposes, location, timeframes, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report.

REFERENCES

Landau Associates, Inc. 1998. *Hydrogeologic Study and Groundwater Monitoring Plan, Boise Cascade Yakima Wood Products Complex, Yakima, Washington.* November 5.

Parametrix. 2008. *Draft Phase II Environmental Site Assessment, Former City of Yakima Municipal Landfil, Yakima, Washington.* June.

SLR International Corporation. 2009. *Remedial Investigation Report, Closed City of Yakima Landfill Site, Yakima, Washington.* October 12.

SLR International Corporation. 2010. *Additional Investigation Report, Closed City of Yakima Landfill Site, Yakima, Washington.* March 17.

TABLES

Table 1
Combustible Gas Survey Results
Closed City of Yakima Landfill
Yakima, Washington

Soil Vapor Probe ID	Date	Gas Concentration[a] (%)		
		Combustible Gas (Methane[b])	Carbon Dioxide	Oxygen
GP-3	2/24/2009	19.5	14.8	0.0
	4/17/2009	17.8	12.0	0.3
	11/5/2009	13.7	15.8	0.0
	2/3/2010	13.2	12.2	0.0
	5/10/2012	8.1	12.2	0.0
GP-4	2/25/2009	22.4	9.2	0.0
	4/17/2009	21.6	11.9	0.0
	11/5/2009	37.2	17.1	0.0
	2/3/2010	37.8	10.2	0.5
	5/10/2012	24.7	15.7	1.7
GP-5	2/25/2009	17.6	13.7	0.0
	4/17/2009	16.2	12.7	0.0
	11/5/2009	27.2	17.2	0.8
	2/3/2010	19.9	13.5	0.0
	5/10/2012	15.2	10.9	2.9
GP-6	2/25/2009	0.1	12.7	6.1
	4/17/2009	0.2	11.3	8.5
	11/5/2009	0.0	18.4	3.9
	2/3/2010	0.0	13.4	5.6
	5/10/2012	0.0	11.3	9.3
GP-7	2/25/2009	0.0	1.8	19.2
	4/17/2009	0.1	2.7	19.4
	11/5/2009	0.0	1.8	19.2
	2/3/2010	0.0	2.5	18.9
	5/10/2012	0.0	0.2	20.1
GP-8	2/25/2009	0.0	3.8	15.3
	4/17/2009	0.1	4.8	14.2
	11/5/2009	0.0	2.9	17.9
	2/3/2010	0.0	2.7	17.8
	5/10/2012	0.0	4.6	16.2
GP-9	2/25/2009	0.1	2.0	17.5
	4/17/2009	0.1	3.3	17.8
	11/5/2009	0.0	3.1	18.3
	2/3/2010	0.0	4.5	15.9
	5/10/2012	0.0	3.2	16.9
GP-10	2/25/2009	22.6	16.8	0.0
	4/17/2009	32.4	21.4	0.0
	11/5/2009	41.3	31.4	1.5
	2/3/2010	50.0	24.1	0.0
	5/10/2012	34.0	22.7	1.5

Table 1
Combustible Gas Survey Results
Closed City of Yakima Landfill
Yakima, Washington

Soil Vapor Probe ID	Date	Gas Concentration[a] (%)		
		Combustible Gas (Methane[b])	Carbon Dioxide	Oxygen
GP-11	2/25/2009	58.5	33.9	0.0
	4/17/2009	51.7	35.6	0.0
	11/5/2009	57.4	39.0	0.0
	2/3/2010	62.4	36.2	0.0
	5/10/2012	40.3	34.9	0.0
GP-12	2/25/2009	15.4	18.8	0.0
	4/17/2009	21.3	21.1	0.0
	11/5/2009	24.2	24.8	3.2
	2/3/2010	28.1	23.3	0.0
	5/10/2012	13.9	17.1	4.9
GP-13	2/25/2009	51.6	40.1	0.0
	4/17/2009	53.7	43.1	0.0
	11/5/2009	41.9	40.8	0.0
	2/3/2010	45.4	39.9	0.0
	5/10/2012	14.3	23.4	4.6
GP-14	4/17/2009	0.0	3.9	15.0
	11/5/2009	0.0	4.2	16.3
	2/3/2010	0.0	3.3	16.5
	5/10/2012	0.0	2.0	18.2
GP-15	4/17/2009	0.0	2.0	18.5
	11/5/2009	0.0	0.7	20.2
	2/3/2010	0.0	1.1	19.4
	5/10/2012	0.0	0.1	20.0
GP-16	4/17/2009	0.0	1.7	19.0
	11/5/2009	0.0	1.3	19.7
	2/3/2010	0.0	1.8	18.8
	5/10/2012	0.0	0.5	19.4
GP-17	4/17/2009	0.2	1.5	19.6
	11/5/2009	0.0	1.9	17.3
	2/3/2010	0.0	1.3	19.1
	5/10/2012	0.0	2.2	17.7
GP-18	4/17/2009	0.1	0.5	21.0
	11/5/2009	0.0	0.7	20.4
	2/3/2010	0.0	0.7	20.0
	5/10/2012	0.0	0.9	19.1
GP-19	11/5/2009	61.3	39.8	0.0
	2/3/2010	69.5	35.5	0.0
	5/10/2012	62.6	34.9	0.4
GP-20	11/5/2009	65.9	35.8	0.0
	2/3/2010	77.7	26.0	0.0
	5/10/2012	53.1	30.2	2.6

Table 1
Combustible Gas Survey Results
Closed City of Yakima Landfill
Yakima, Washington

Soil Vapor Probe ID	Date	Gas Concentration[a] (%)		
		Combustible Gas (Methane[b])	Carbon Dioxide	Oxygen
GP-21	11/5/2009	69.3	25.7	0.0
	2/3/2010	75.7	24.8	0.0
	5/10/2012	Not measured. Probe had been destroyed.		
GP-22	11/5/2009	43.1	43.2	0.0
	2/3/2010	Not measured. Probe had been destroyed.		

Notes:

Oxygen = O_2.

The lower explosive limit (LEL) and upper explosive limit (UEL) for methane are 5 percent by volume and 15 percent by volume, respectively.

[a] Concentrations were measured by using a CES/Landtec GEM-2000 multi-gas monitor.

[b] In February 2010, analyzed methane concentrations in soil vapor samples were consistently within 4 percent of the combustible gas readings when using a CES/Landtec GEM-2000 multi-gas monitor (SLR, 2010). Therefore, the combustible gas readings depict methane concentrations.

Table 2
Groundwater and River Water Monitoring Data
Closed City of Yakima Landfill
Yakima, Washington

Measuring Point ID	Elevation[a] (feet)	Date	Depth to Water[b] (feet)	Groundwater Elevation (feet)
Groundwater Monitoring Wells				
MW-6	1,059.68	7/28/1998	12.70	1,046.98
		8/21/1998	12.39	1,047.29
		9/21/1998	12.55	1,047.13
		10/16/1998	13.34	1,046.34
		10/10/2006	12.63	1,047.05
		2/12/2007	14.20	1,045.48
		2/7/2008	15.47	1,044.21
		2/26/2009	14.94	1,044.74
		4/17/2009	13.39	1,046.29
		11/6/2009	14.20	1,045.48
		2/1/2010	14.41	1,045.27
		5/9/2012	10.02	1,049.66
MW-7	1,049.05	7/28/1998	7.64	1,041.41
		8/21/1998	7.68	1,041.37
		9/21/1998	7.84	1,041.21
		10/16/1998	8.45	1,040.60
		10/10/2006	8.40	1,040.65
		2/12/2007	10.06	1,038.99
		2/7/2008	10.89	1,038.16
		2/26/2009	10.66	1,038.39
		4/17/2009	9.76	1,039.29
		11/6/2009	9.51	1,039.54
		2/1/2010	10.02	1,039.03
		5/9/2012	7.38	1,041.67
MW-8	1,051.59	7/28/1998	5.57	1,046.02
		8/21/1998	5.54	1,046.05
		9/21/1998	5.74	1,045.85
		10/16/1998	6.19	1,045.40
		2/6/2008	10.70	1,040.89
		2/26/2009	10.97	1,040.62
		4/17/2009	10.17	1,041.42
		11/6/2009	8.77	1,042.82
		2/1/2010	10.14	1,041.45
		5/9/2012	8.83	1,042.76
MW-9A	1,064.46	3/25/2008	16.85	1,047.61
		2/26/2009	15.25	1,049.21
		4/17/2009	12.19	1,052.27
		11/6/2009	12.48	1,051.98
		2/1/2010	13.80	1,050.66
		5/9/2012	11.98	1,052.48

Table 2
Groundwater and River Water Monitoring Data
Closed City of Yakima Landfill
Yakima, Washington

Measuring Point ID	Elevation[a] (feet)	Date	Depth to Water[b] (feet)	Groundwater Elevation (feet)
Groundwater Monitoring Wells (continued)				
MW-11	1,065.94	2/26/2009	20.70	1,045.24
		4/17/2009	20.23	1,045.71
		11/6/2009	19.41	1,046.53
		2/1/2010	20.07	1,045.87
		5/9/2012	17.85	1,048.09
MW-12	1,068.53	2/26/2009	15.40	1,053.13
		4/17/2009	15.34	1,053.19
		11/6/2009	15.32	1,053.21
		2/1/2010	15.41	1,053.12
		5/9/2012	16.42	1,052.11
MW-13	1,066.13	2/26/2009	10.87	1,055.26
		4/17/2009	10.87	1,055.26
		11/6/2009	10.49	1,055.64
		2/1/2010	9.80	1,056.33
		5/9/2012	14.12	1,052.01
MW-14	1,041.39	11/6/2009	8.73	1,032.66
		2/1/2010	8.41	1,032.98
		5/9/2012	5.46	1,035.93
MW-15	1,050.59	11/6/2009	13.12	1,037.47
		2/1/2010	12.68	1,037.91
		5/9/2012	8.75	1,041.84
MW-16	1,046.84	11/6/2009	7.61	1,039.23
		2/1/2010	9.36	1,037.48
		5/9/2012	7.38	1,039.46
MW-17	1,044.29	11/6/2009	6.19	1,038.10
		2/1/2010	7.11	1,037.18
		5/9/2012	4.48	1,039.81
MW-18	1,063.85	11/6/2009	17.55	1,046.30
		2/1/2010	18.03	1,045.82
		5/9/2012	15.22	1,048.63
Yakima River Gauging Stations				
RG-1	1,044.03	11/6/2009	3.56	1,040.47
		2/1/2010	2.77	1,041.26
		5/9/2012	NM	--
RG-2	1,041.96	11/6/2009	NM	--
		2/1/2010	NM	--
		5/9/2012	2.15	1,039.81
RG-3	1,037.37	11/6/2009	3.75	1,033.62
		2/1/2010	2.32	1,035.05
		5/9/2012	NM	--

Table 2
Groundwater and River Water Monitoring Data
Closed City of Yakima Landfill
Yakima, Washington

Measuring Point ID	Elevation[a] (feet)	Date	Depth to Water[b] (feet)	Groundwater Elevation (feet)
Yakima River Gauging Stations (continued)				
RG-4	1,033.42	11/6/2009	NM	--
		2/1/2010	NM	--
		5/9/2012	NA	>1,033.42

Notes:

[a] Elevations of top of well casings and river gauging points surveyed to NAVD 88 datum by Gray Surveying & Engineering, Inc., in February and November 2009.

[b] Depth to water measured from top of well casing or from river gauging point by using an electric water level meter.

NM = Not measured because river water was not present directly below the gauging station (in November 2009 and February 2010) or because gauging station could not be found (in May 2012).

NA = River gauging station was not accessible because it was under water.

Wells MW-6, MW-7, MW-8, MW-11, MW-12, MW-13, and MW-18 are completed above ground and the top of each well casing is approximately 3 feet above the ground surface. Wells MW-9A, MW-14, MW-15, MW-16, and MW-17 are flush-grade completions. The ground surface elevation at each well location is listed in Table 5.

Table 3
Groundwater Sample Analytical Results -
Preliminary Indicator Hazardous Substances
Closed City of Yakima Landfill
Yakima, Washington

Well ID	Date[a]	Analytical Result (µg/L)						
		pH[b]	Arsenic[c]	Iron[c]	Manganese[c]	Nitrate[d]	Sodium[e]	Vinyl Chloride[e]
Lowest Groundwater Screening Level[f]		**6.5 to 8.5**	**0.31[g]**	**300**	**50**	**10,000**	**20,000**	**0.11[g]**
MW-7	2/6/2008	**6.49**	<50[h]	**37,500**	**2,520**	<50	**22,900**	0.06
	2/26/2009	**6.28**	**3.83**	**23,700**	**1,950**	1,610	19,300	<0.03
	11/4/2009	**6.45**	**3.06**	**18,500**	**2,330**	199	**22,900**	<0.2[h]
	2/4/2010	**6.47**	**0.39**	22	**1,590**	**10,300**	**28,600**	<0.03 J
MW37 (dupl. of MW-7)	2/4/2010	**6.36**	**1.2**	**851**	**1,750**	**11,200**	**28,900**	<0.03 J
	5/10/2012	**5.77**	<0.15	23	**346**	621	7,490	<0.06 E
MW-8	2/6/2008	6.76	<50[h]	**12,200**	**2,340**	200	**33,800**	0.034
	2/26/2009	6.54	<1[h]	**3,330**	**2,380**	**14,400**	**27,000**	<0.03
	11/4/2009	**6.34**	**0.98 E**	45	**2,690**	**17,900**	**48,300**	<0.2[h]
	2/4/2010	**6.28**	**0.93**	<20	**6,290**	**95,300**	**52,600**	<0.03 J
MW38 (dupl. of MW-8)	2/4/2010	**6.23**	**0.97**	<20	**6,210**	**94,700**	**51,800**	<0.03 J
	5/10/2012	**5.62**	**0.54**	<20	**1,880**	**86,200**	**34,100**	<0.06 E
MW-9A	3/25/2008	6.77	<50[h]	270	**872**	1,410	15,700	<1[h]
	2/26/2009	6.69	<1[h]	<10	<10	2,180	10,900	<0.03
	11/4/2009	6.72	**0.93 E**	<20	13.3	3,130	11,100	<0.2[h]
	2/4/2010	6.65	**1.00**	<20	<1	2,800	14,400	<0.03 J
	5/10/2012	**6.02**	**0.64**	<20	11.4	4,560	11,500	<0.06 E
MW-11	2/26/2009	**6.28**	**4.33**	**24,100**	**1,410**	33	15,300	<0.03
	11/4/2009	**6.47**	**4.80**	**35,400**	**1,890**	27	17,300	<0.2[h]
	2/4/2010	6.50	**3.01**	**7,200**	**1,610**	28	**20,100**	<0.03 J
	5/10/2012	**5.97**	**5.02**	**35,100**	**1,220**	51	18,000	<0.06 E
MW-12	2/26/2009	**6.01**	<1[h]	**7,600**	**503**	14	10,300	<0.03
	11/4/2009	6.53	**2.01**	**5,840**	**745**	16	13,300	<0.2[h]
	2/4/2010	**6.34**	**0.87**	**3,000**	**767**	24	16,700	<0.03 J
	5/10/2012	**6.09**	**0.67**	**15,400**	**2,780**	39	**33,600**	<0.06 E
MW-13	2/26/2009	**6.49**	<1[h]	**3,650**	**649**	18	10,700	<0.03
	11/4/2009	6.85	**0.36 E**	**1,550**	**287**	26	7,760	<0.2[h]
	2/4/2010	7.22	0.26	**495**	**192**	201	9,370	<0.03 J
	5/10/2012	**5.87**	**0.39**	**8,230**	**3,190**	<10	**40,100**	<0.06 E
MW-14	11/5/2009	6.90	**0.61 E**	63	**331**	265	**27,800**	<0.2[h]
	2/4/2010	7.19	**0.32**	<20	2.88	2,710	15,900	<0.03 J
	5/10/2012	**6.27**	0.15	183	30.8	147	3,490	<0.06 E
MW-15	11/5/2009	6.61	**1.39**	**7,970**	**993**	13	9,600	<0.2[h]
	2/4/2010	6.66	**0.71**	**876**	**1,080**	15	11,300	<0.03 J
	5/10/2012	**5.92**	**0.75**	**4,890**	**773**	<10	7,860	<0.06 E
MW-16	11/5/2009	6.76	**0.77 E**	<20	**587**	306	**36,800**	<0.2[h]
	2/4/2010	6.60	**0.72**	<20	**917**	18	**23,800**	<0.03 J
	5/10/2012	**6.15**	**0.50**	26	**915**	3,930	**42,500**	<0.06 E
MW-17	11/5/2009	6.50	**2.15**	**16,800**	**2,150**	27	**23,400**	<0.2[h]
	2/4/2010	6.67	**0.85**	**1,750**	**2,580**	806	**27,800**	<0.03 J
	5/10/2012	**6.21**	**0.84**	**487**	**1,500**	533	**26,200**	<0.06 E
MW-18	11/5/2009	**6.36**	**6.75**	**26,100**	**4,450**	35	**38,400**	<0.2[h]
	2/4/2010	6.57	**2.08**	**4,910**	**5,360**	134	**21,700**	<0.03 J
	5/10/2012	**6.16**	**8.31**	**18,600**	**3,460**	86	11,400	<0.06 E

Notes:

NE = Cleanup level not established.

NA = Not analyzed.

µg/L = micrograms per liter (ppb).

E = Value was reported by laboratory as an estimate because it is below the normal reporting limit.

J = Value was reported by laboratory as an estimate because it was analyzed outside of the recommended holding time. The sample initially did not contain a detectable concentration above a higher reporting limit (0.2 µg/L), and the re-analysis to a lower reporting limit was outside of the holding time.

Values in **bold** exceed the groundwater screening level.

[a] Samples collected on 2/6/2008 by Parametrix. Samples collected on 2/26/2009, 11/4/2009, 11/5/2009, 2/4/2010, and 5/10/2012 by SLR.

[b] Samples collected on 2/6/2008 analyzed for pH by EPA Method 150.1. Samples collected on 2/26/2009, 11/4/2009, 11/5/2009, 2/4/2010, and 5/10/2012 analyzed for pH by EPA Method 9040C.

[c] Samples collected on 2/6/2008 analyzed for dissolved metals by EPA Method SW6010B. Samples collected on 2/26/2009, 11/4/2009, 11/5/2009, 2/4/2010, and 5/10/2012 analyzed for dissolved metals by EPA Methods 200.8 or 200.7.

[d] Samples analyzed for nitrate by EPA Method 300.0.

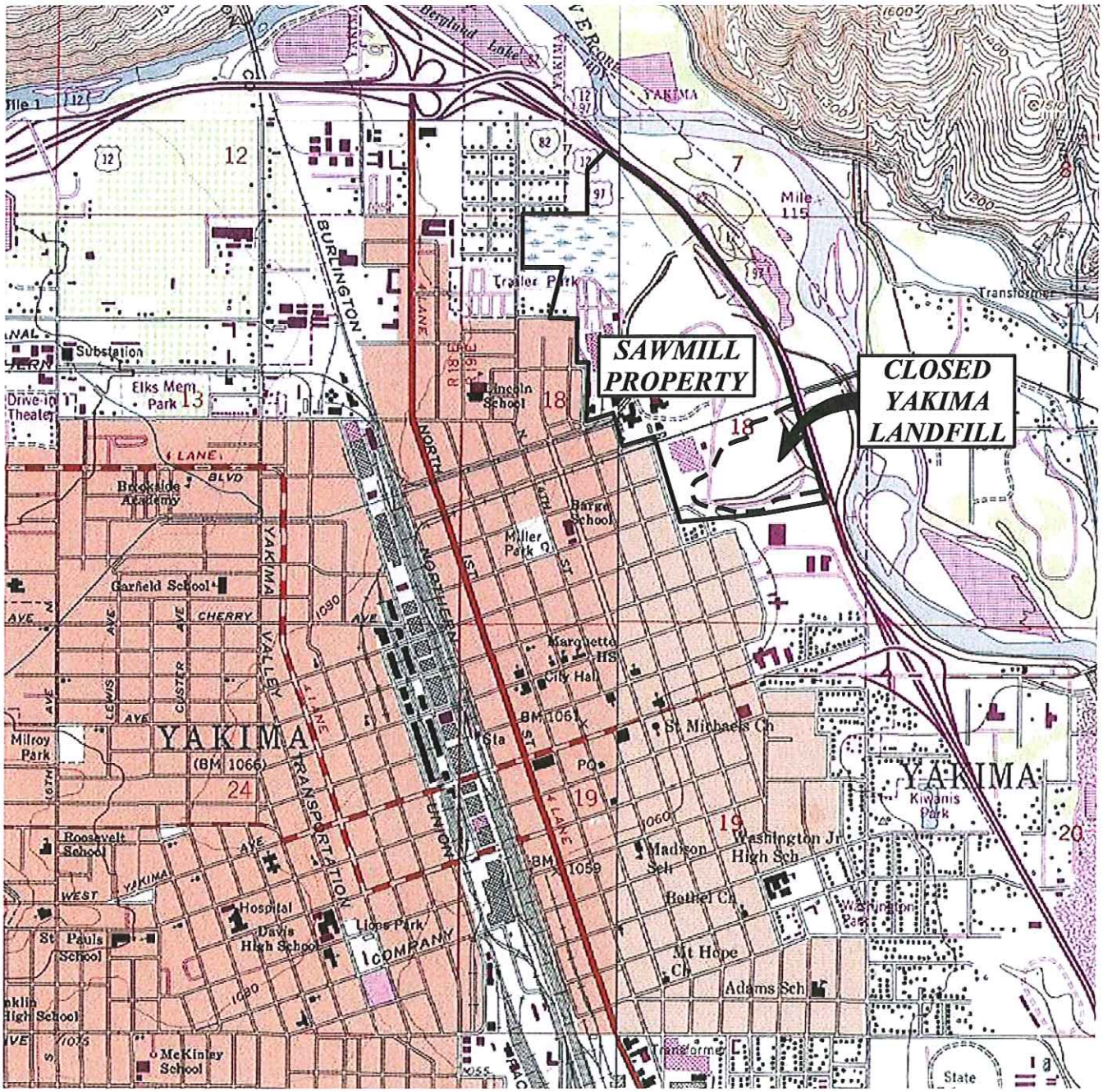
[e] Samples analyzed for vinyl chloride by EPA Method 8260C.

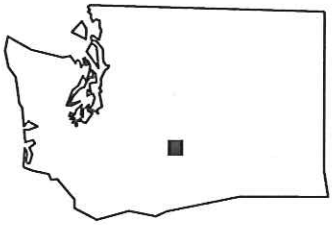
[f] Groundwater screening levels were the lowest selected federal maximum contaminant level (MCL) for protection of drinking water or the lowest available state water quality criteria (WQC) for protection of surface water. If an MCL or a WQC were not available, then the screening level was obtained from the MTCA Method B equation for groundwater or surface water. If the lowest screening level exceeded the practical quantification limit (PQL) for that compound, then the PQL became the screening level.

[g] Screening level is the PQL.

[h] Method reporting limit exceeded the screening level.

FIGURES





WASHINGTON

0 2000 4000

SCALE IN FEET

SOURCE: USGS 7.5 Minute Quadrangle Yakima West and Yakima East, 1985 Contour Interval 20 Feet.

SLR

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BLDG. G, SUITE 202
BOTHELL, WA 98021

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FIGURE 1
CLOSED CITY OF YAKIMA MUNICIPAL LANDFILL
YAKIMA, WASHINGTON

LANDFILL LOCATION MAP

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LEGEND

- GP-5 ⊗ 2009 SOIL VAPOR PROBE LOCATION AND DESIGNATION
- GP-3 ◑ 2008 SOIL VAPOR PROBE LOCATION AND DESIGNATION
- GP-22 ⊗ DESTROYED SOIL VAPOR PROBE LOCATION AND DESIGNATION
- (62.6%) PERCENTAGE OF COMBUSTIBLE GAS (METHANE) BY VOLUME IN SOIL VAPOR SAMPLES COLLECTED ON MAY 10, 2012
- PROPERTY LINE
- ESTIMATED LIMITS OF MUNICIPAL SOLID WASTE
- RAILROAD TRACKS
- FENCE

NOTE:

THE FLAMMABLE RANGE OF METHANE IS APPROXIMATELY 5% (LOWER EXPLOSIVE LIMIT) TO 15% (UPPER EXPLOSIVE LIMIT) BY VOLUME IN AIR.

EAST "G" St.
PROPERTY LINE
GP-16 (0.0%)
FORMER PLYWOOD PLANT
GP-3 (8.1%)
FORMER BARKER AREA
ASPHALT
DIRT ROAD
GP-22
GP-13 (14.3%)
GP-11 (40.3%)
FORMER ELEVATED CHIP BINS
FORMER LOG DECK
GP-6 (0.0%)
DRAINAGE SWALE
ASPHALT ROAD
DRAINAGE DITCH
PROPERTY LINE
HIGHWAY 82
STORMWATER POND
GP-10 (34.0%)
GP-21
EAST "F" St.
GP-4 (24.7%)
GP-20 (53.1%)
N. 8th St.
GP-17 (0.0%)
ASPHALT
GP-19 (62.6%)
ASPHALT ROAD
ESTIMATED LIMITS OF MUNICIPAL SOLID WASTE
GATE
GP-5 (15.2%)
GP-12 (13.9%)
GP-8 (0.0%)
GP-7 (0.0%)
OFF-RAMP
EAST "E" St.
GP-18 (0.0%)
FENCE
GP-15 (0.0%)
GP-14 (0.0%)
GP-9 (0.0%)
PROPERTY LINE

0 200 400
SCALE IN FEET

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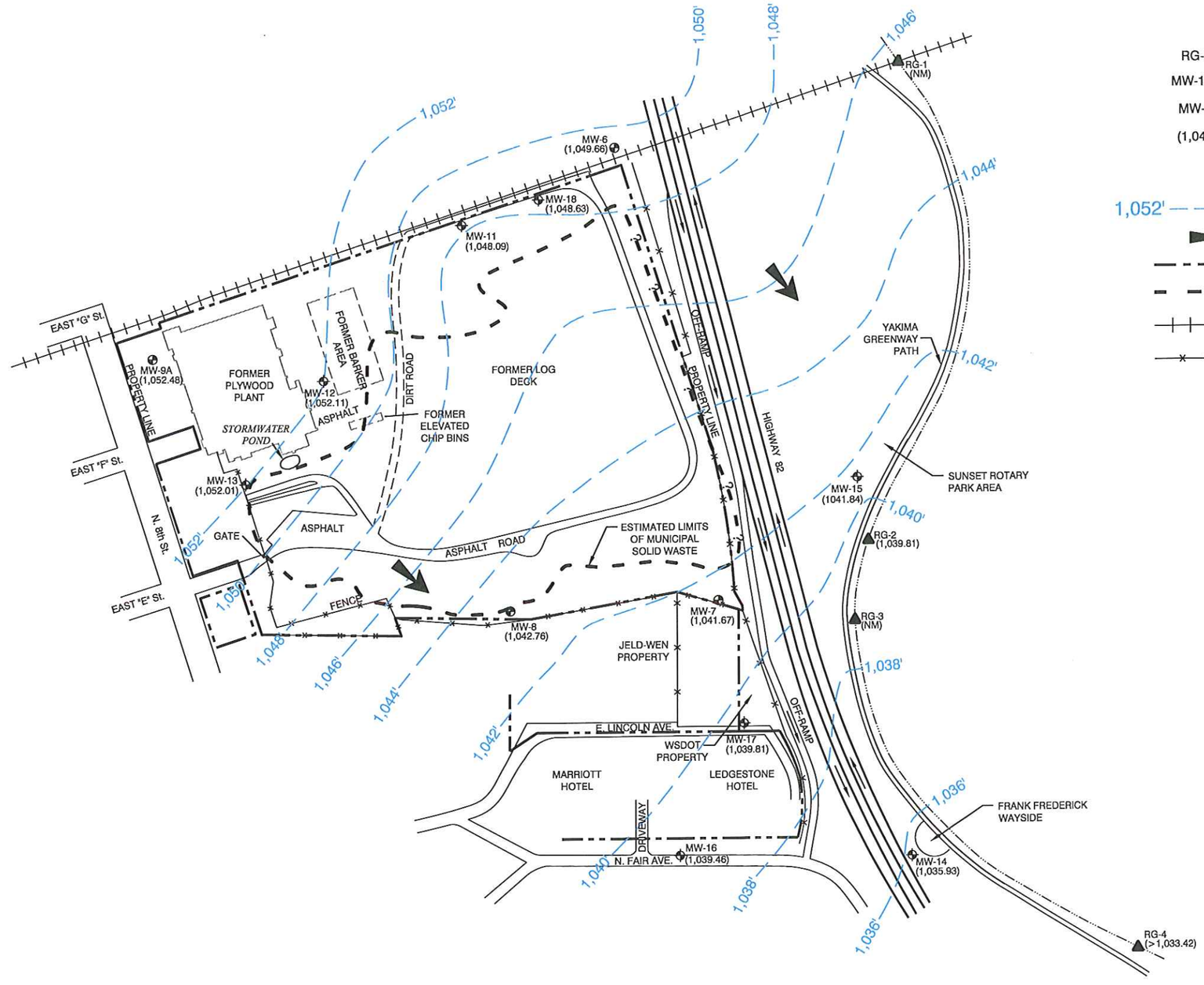
FIGURE 2
CLOSED CITY OF YAKIMA MUNICIPAL LANDFILL
YAKIMA, WASHINGTON

COMBUSTIBLE GAS (METHANE) CONCENTRATIONS - MAY 10, 2012



LEGEND

- RG-2 ▲ RIVER GAUGING LOCATION AND DESIGNATION
- MW-12 ⊕ 2009 MONITORING WELL LOCATION AND DESIGNATION
- MW-8 ◔ PRE-2009 MONITORING WELL LOCATION AND DESIGNATION
- (1,048.63) GROUNDWATER ELEVATION ON MAY 9, 2012
- (NM) NOT MEASURED BECAUSE GAUGING STATION COULD NOT BE FOUND
- 1,052' INFERRED GROUNDWATER ELEVATION CONTOUR LINE (FEET)
- GENERAL GROUNDWATER FLOW DIRECTION
- PROPERTY LINE
- ESTIMATED LIMITS OF MUNICIPAL SOLID WASTE
- RAILROAD TRACKS
- FENCE

NOTE:
GROUNDWATER AND YAKIMA RIVER ELEVATIONS WERE MEASURED ON MAY 9, 2012.

0 400 800
SCALE IN FEET

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FIGURE 3
CLOSED CITY OF YAKIMA MUNICIPAL LANDFILL
YAKIMA, WASHINGTON

GROUNDWATER ELEVATION CONTOUR MAP - MAY 2012

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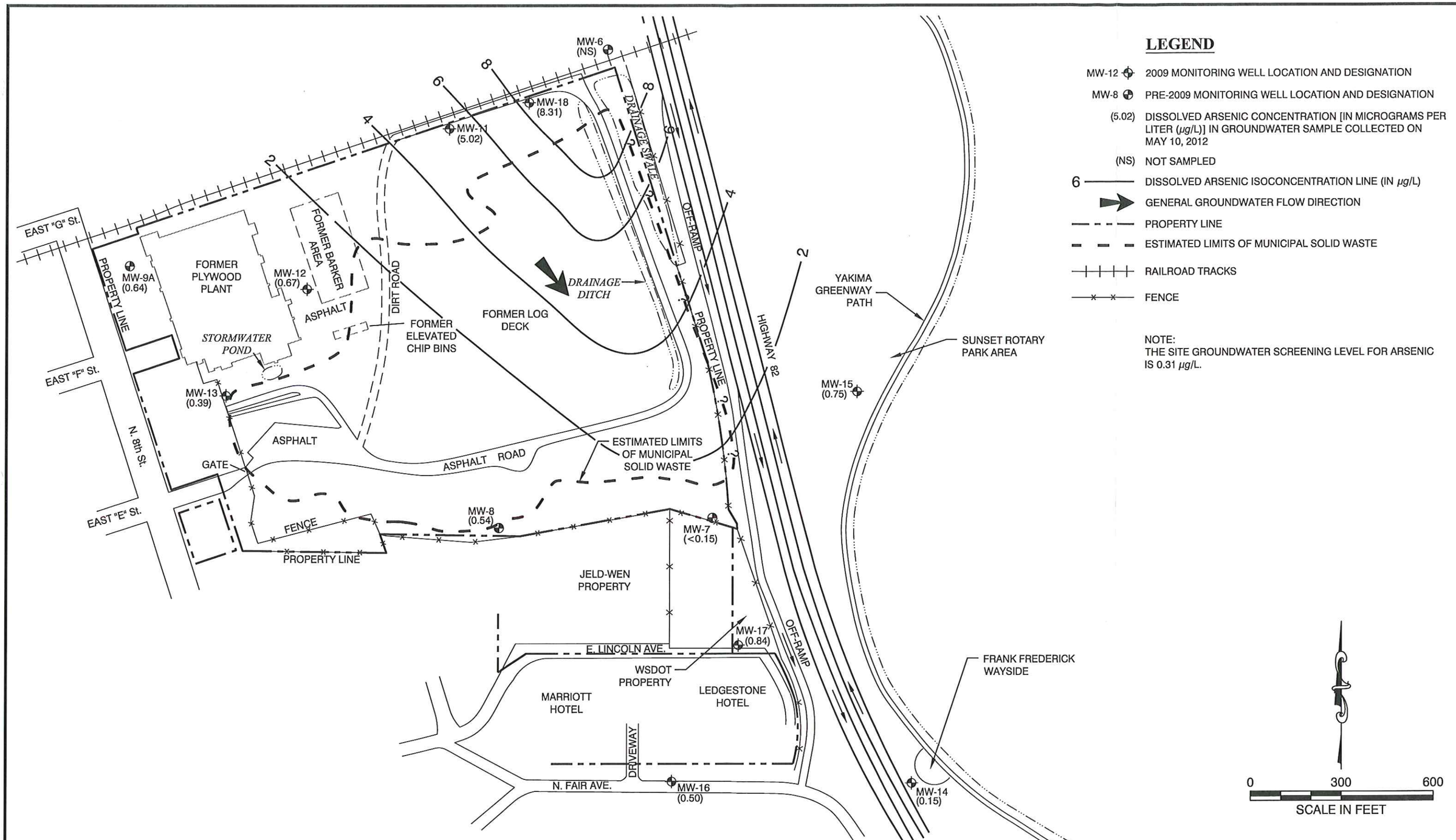

LEGEND

- MW-12 — 2009 MONITORING WELL LOCATION AND DESIGNATION
- MW-8 — PRE-2009 MONITORING WELL LOCATION AND DESIGNATION
- (5.02) — DISSOLVED ARSENIC CONCENTRATION [IN MICROGRAMS PER LITER (µg/L)] IN GROUNDWATER SAMPLE COLLECTED ON MAY 10, 2012
- (NS) — NOT SAMPLED
- 6 — DISSOLVED ARSENIC ISOCONCENTRATION LINE (IN µg/L)
- GENERAL GROUNDWATER FLOW DIRECTION
- PROPERTY LINE
- ESTIMATED LIMITS OF MUNICIPAL SOLID WASTE
- RAILROAD TRACKS
- FENCE

NOTE:
THE SITE GROUNDWATER SCREENING LEVEL FOR ARSENIC IS 0.31 µg/L.

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FIGURE 4
CLOSED CITY OF YAKIMA MUNICIPAL LANDFILL
YAKIMA, WASHINGTON

DISSOLVED ARSENIC CONCENTRATIONS - MAY 2012

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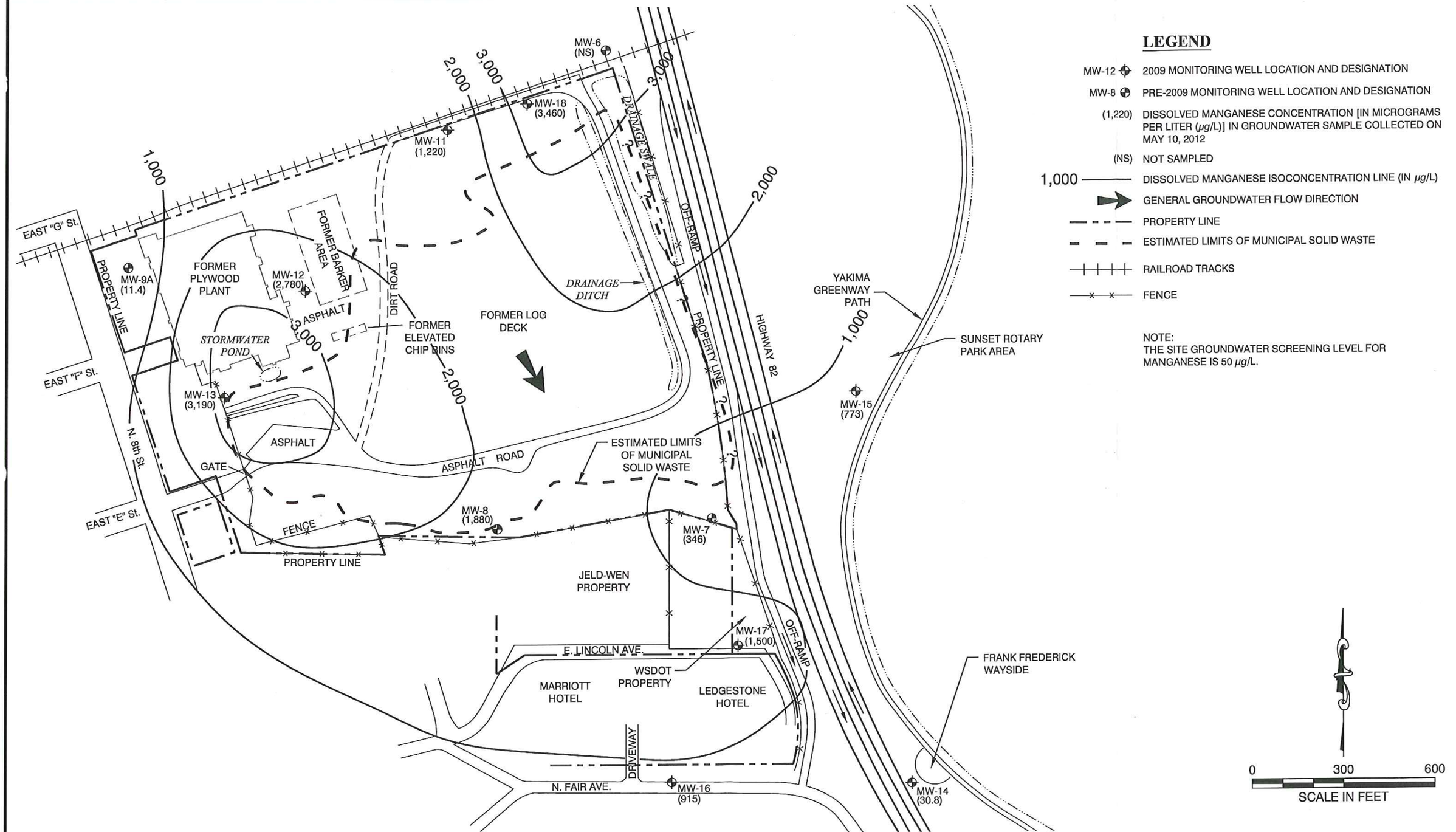

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FIGURE 5
CLOSED CITY OF YAKIMA MUNICIPAL LANDFILL
YAKIMA, WASHINGTON

DISSOLVED MANGANESE CONCENTRATIONS - MAY 2012

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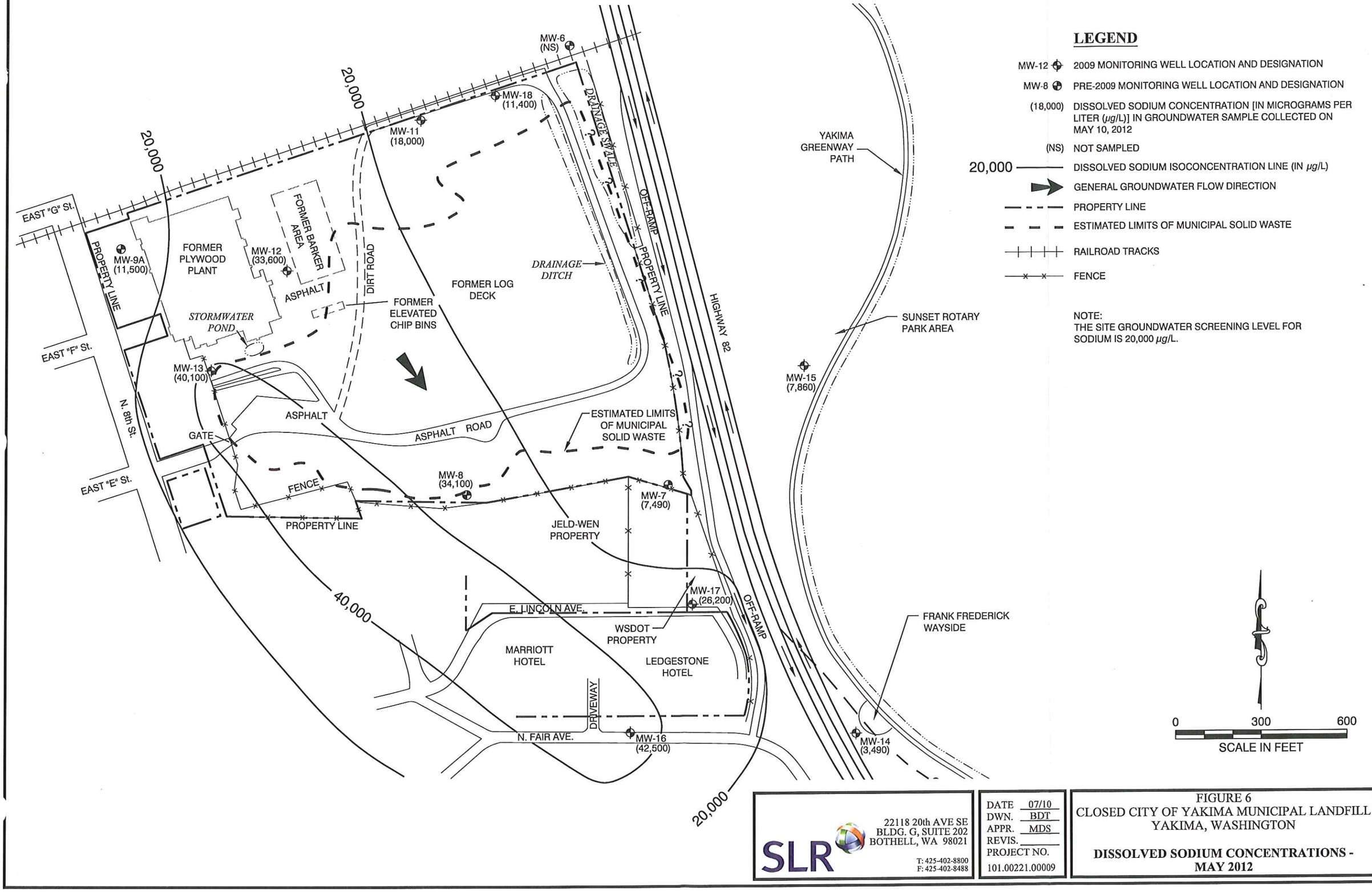

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FIGURE 6
CLOSED CITY OF YAKIMA MUNICIPAL LANDFILL
YAKIMA, WASHINGTON

DISSOLVED SODIUM CONCENTRATIONS - MAY 2012

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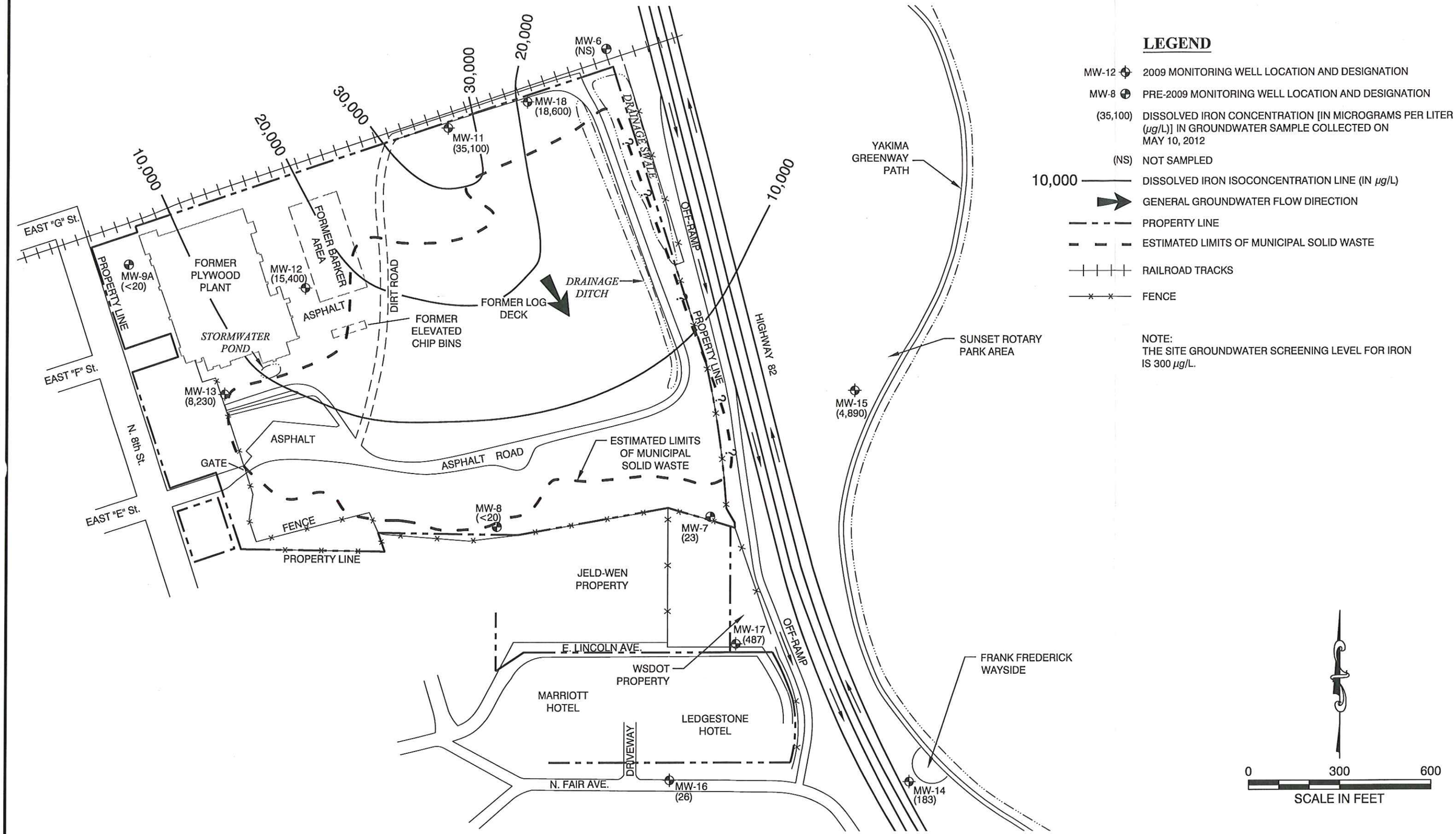

LEGEND

- MW-12 — 2009 MONITORING WELL LOCATION AND DESIGNATION
- MW-8 — PRE-2009 MONITORING WELL LOCATION AND DESIGNATION
- (35,100) — DISSOLVED IRON CONCENTRATION [IN MICROGRAMS PER LITER (µg/L)] IN GROUNDWATER SAMPLE COLLECTED ON MAY 10, 2012
- (NS) — NOT SAMPLED
- 10,000 — DISSOLVED IRON ISOCONCENTRATION LINE (IN µg/L)
- GENERAL GROUNDWATER FLOW DIRECTION
- PROPERTY LINE
- ESTIMATED LIMITS OF MUNICIPAL SOLID WASTE
- RAILROAD TRACKS
- FENCE

NOTE:
THE SITE GROUNDWATER SCREENING LEVEL FOR IRON IS 300 µg/L.

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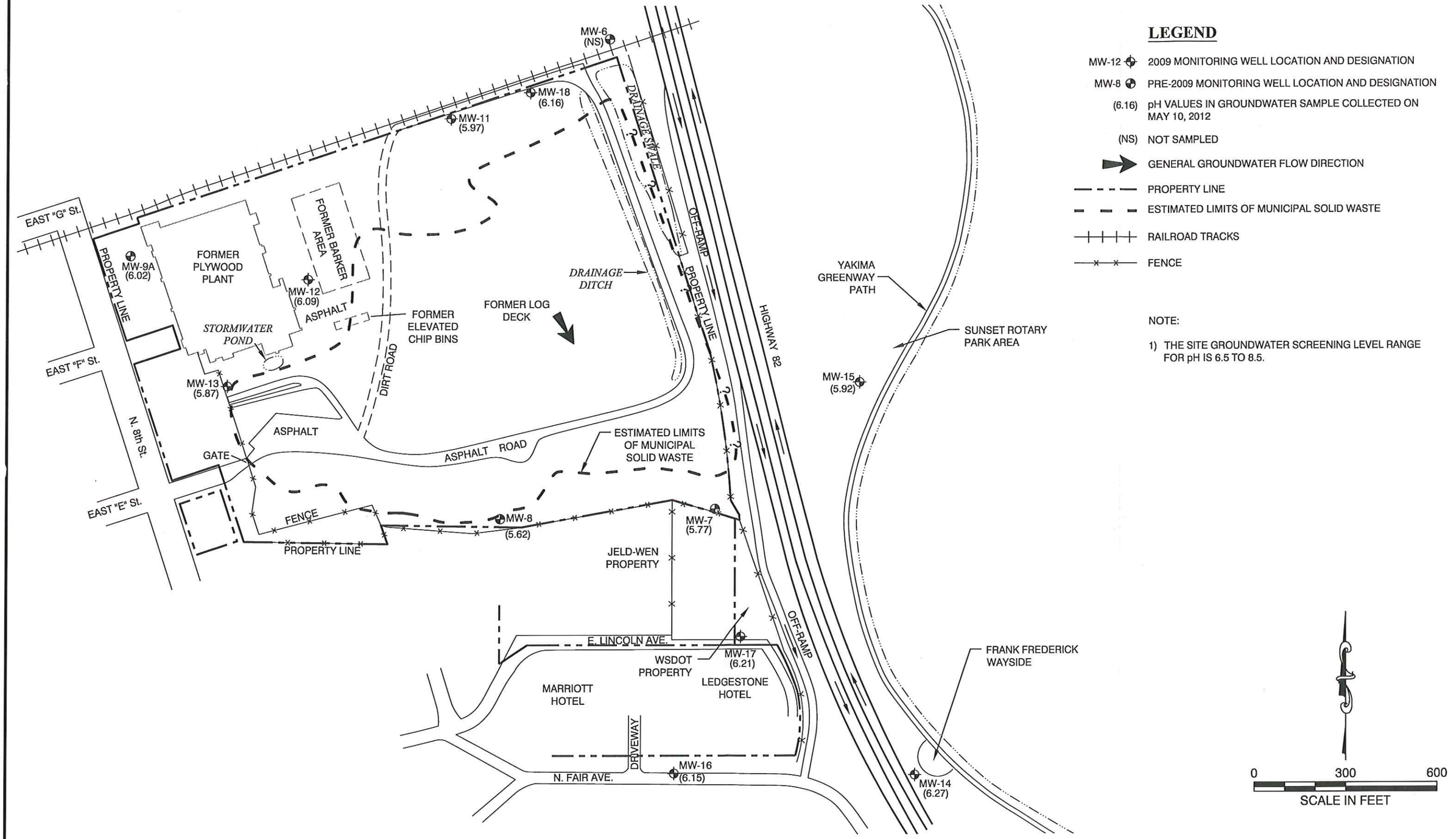
FIGURE 7
CLOSED CITY OF YAKIMA MUNICIPAL LANDFILL
YAKIMA, WASHINGTON

DISSOLVED IRON CONCENTRATIONS - MAY 2012



LEGEND

- MW-12 — 2009 MONITORING WELL LOCATION AND DESIGNATION
- MW-8 — PRE-2009 MONITORING WELL LOCATION AND DESIGNATION
- (6.16) — pH VALUES IN GROUNDWATER SAMPLE COLLECTED ON MAY 10, 2012
- (NS) — NOT SAMPLED
- GENERAL GROUNDWATER FLOW DIRECTION
- PROPERTY LINE
- ESTIMATED LIMITS OF MUNICIPAL SOLID WASTE
- RAILROAD TRACKS
- FENCE

NOTE:

1) THE SITE GROUNDWATER SCREENING LEVEL RANGE FOR pH IS 6.5 TO 8.5.

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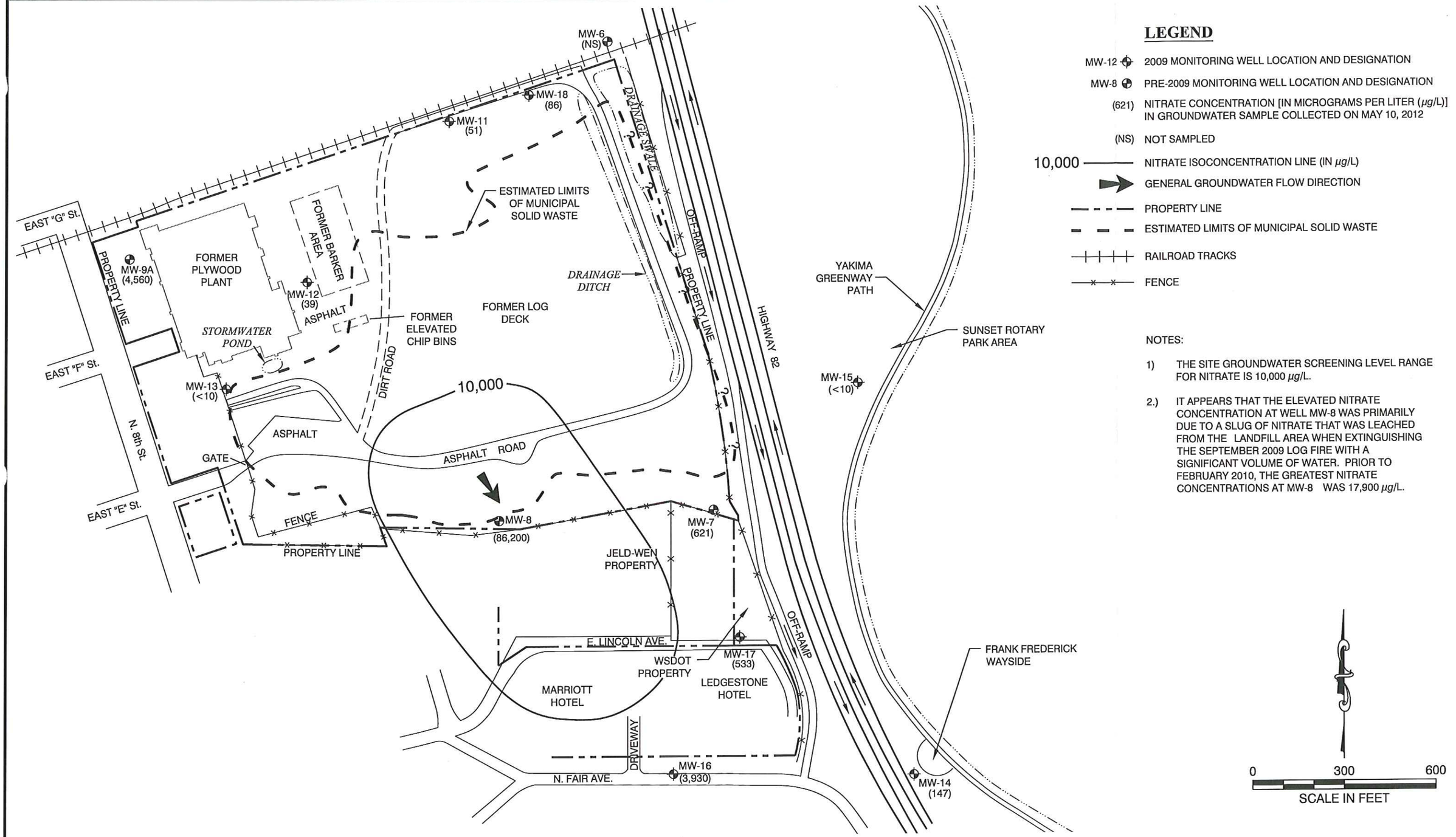
FIGURE 8
CLOSED CITY OF YAKIMA MUNICIPAL LANDFILL
YAKIMA, WASHINGTON

pH VALUES - MAY 2012



LEGEND

- MW-12 — 2009 MONITORING WELL LOCATION AND DESIGNATION
- MW-8 — PRE-2009 MONITORING WELL LOCATION AND DESIGNATION
- (621) — NITRATE CONCENTRATION [IN MICROGRAMS PER LITER (µg/L)] IN GROUNDWATER SAMPLE COLLECTED ON MAY 10, 2012
- (NS) — NOT SAMPLED
- 10,000 — NITRATE ISOCONCENTRATION LINE (IN µg/L)
- GENERAL GROUNDWATER FLOW DIRECTION
- PROPERTY LINE
- ESTIMATED LIMITS OF MUNICIPAL SOLID WASTE
- RAILROAD TRACKS
- FENCE

NOTES:

1) THE SITE GROUNDWATER SCREENING LEVEL RANGE FOR NITRATE IS 10,000 µg/L.

2.) IT APPEARS THAT THE ELEVATED NITRATE CONCENTRATION AT WELL MW-8 WAS PRIMARILY DUE TO A SLUG OF NITRATE THAT WAS LEACHED FROM THE LANDFILL AREA WHEN EXTINGUISHING THE SEPTEMBER 2009 LOG FIRE WITH A SIGNIFICANT VOLUME OF WATER. PRIOR TO FEBRUARY 2010, THE GREATEST NITRATE CONCENTRATIONS AT MW-8 WAS 17,900 µg/L.

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FIGURE 9
CLOSED CITY OF YAKIMA MUNICIPAL LANDFILL
YAKIMA, WASHINGTON

NITRATE CONCENTRATIONS - MAY 2012

LABORATORY REPORTS

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
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
e-mail: fbi@isomedia.com

May 29, 2012

Mike Staton, Project Manager
SLR International Corp.
22118 20th Ave. SE., G-202
Bothell, WA 98021

Dear Mr. Staton:

Included are the amended results from the testing of material submitted on May 11, 2012 from the 101.00221.00009, F&BI 205161 project. The reporting limits for arsenic and vinyl chloride have been lowered per your request.

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.

Kurt Johnson
Chemist

Enclosures
SLR0525R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on May 11, 2012 by Friedman & Bruya, Inc. from the SLR International Corp. 101.00221.00009, F&BI 205161 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	SLR International Corp.
205161-01	MW7-0512
205161-02	MW8-0512
205161-03	MW9A-0512
205161-04	MW11-0512
205161-05	MW12-0512
205161-06	MW13-0512
205161-07	MW14-0512
205161-08	MW15-0512
205161-09	MW16-0512
205161-10	MW17-0512
205161-11	MW18-0512

The samples were sent to Aquatic Research for nitrate and dissolved sodium and iron analyses. The report generated by Aquatic Research is enclosed.

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW7-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/11/12	Lab ID:	205161-01
Date Analyzed:	05/11/12	Data File:	051120.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	50	150
Toluene-d8	102	50	150
4-Bromofluorobenzene	100	50	150

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.06 j

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW8-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/11/12	Lab ID:	205161-02
Date Analyzed:	05/11/12	Data File:	051121.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	97	50	150
Toluene-d8	100	50	150
4-Bromofluorobenzene	100	50	150

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.06 j

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW9A-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/11/12	Lab ID:	205161-03
Date Analyzed:	05/11/12	Data File:	051122.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	50	150
Toluene-d8	100	50	150
4-Bromofluorobenzene	101	50	150

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.06 j

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW11-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/11/12	Lab ID:	205161-04
Date Analyzed:	05/11/12	Data File:	051123.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	95	50	150
Toluene-d8	101	50	150
4-Bromofluorobenzene	99	50	150

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.06 j

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW12-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/11/12	Lab ID:	205161-05
Date Analyzed:	05/11/12	Data File:	051124.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	50	150
Toluene-d8	101	50	150
4-Bromofluorobenzene	96	50	150

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.06 j

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW13-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/11/12	Lab ID:	205161-06
Date Analyzed:	05/12/12	Data File:	051125.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	97	50	150
Toluene-d8	102	50	150
4-Bromofluorobenzene	100	50	150

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.06 j

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW14-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/11/12	Lab ID:	205161-07
Date Analyzed:	05/12/12	Data File:	051126.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	50	150
Toluene-d8	100	50	150
4-Bromofluorobenzene	99	50	150

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.06 j

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW15-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/14/12	Lab ID:	205161-08 rr
Date Analyzed:	05/14/12	Data File:	051415.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	96	50	150
Toluene-d8	100	50	150
4-Bromofluorobenzene	99	50	150

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.06 j

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW16-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/14/12	Lab ID:	205161-09 rr
Date Analyzed:	05/14/12	Data File:	051416.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	96	50	150
Toluene-d8	100	50	150
4-Bromofluorobenzene	97	50	150

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.06 j

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW17-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/14/12	Lab ID:	205161-10 rr
Date Analyzed:	05/14/12	Data File:	051417.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	50	150
Toluene-d8	100	50	150
4-Bromofluorobenzene	100	50	150

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.06 j

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW18-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/14/12	Lab ID:	205161-11 rr
Date Analyzed:	05/14/12	Data File:	051418.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	106	50	150
Toluene-d8	101	50	150
4-Bromofluorobenzene	96	50	150

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.06 j

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	SLR International Corp.
Date Received:	Not Applicable	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/11/12	Lab ID:	02-0782 mb
Date Analyzed:	05/11/12	Data File:	051119.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	50	150
Toluene-d8	102	50	150
4-Bromofluorobenzene	100	50	150

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.06 j

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	SLR International Corp.
Date Received:	Not Applicable	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/14/12	Lab ID:	02-0783 mb
Date Analyzed:	05/14/12	Data File:	051407.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	50	150
Toluene-d8	102	50	150
4-Bromofluorobenzene	102	50	150

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.06 j

Date of Report: 05/25/12
Date Received: 05/11/12
Project: 101.00221.00009, F&BI 205161
Date Extracted: NA
Date Analyzed: 05/11/12

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR pH USING EPA METHOD 9040C

Sample ID Laboratory ID	pH
MW7-0512 205161-01	5.77
MW8-0512 205161-02	5.62
MW9A-0512 205161-03	6.02
MW11-0512 205161-04	5.97
MW12-0512 205161-05	6.09
MW13-0512 205161-06	5.87
MW14-0512 205161-07	6.27
MW15-0512 205161-08	5.92
MW16-0512 205161-09	6.15
MW17-0512 205161-10	6.21
MW18-0512 201161-11	6.16

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW7-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/22/12	Lab ID:	205161-01
Date Analyzed:	05/24/12	Data File:	205161-01.014
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	98	60	125
Indium	92	60	125

Analyte:	Concentration ug/L (ppb)
Arsenic	<0.150
Manganese	346

Date of Report: 05/25/12
Date Received: 05/11/12
Project: 101.00221.00009, F&BI 205161
Date Extracted: NA
Date Analyzed: 05/11/12

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR pH USING EPA METHOD 9040C

Sample ID Laboratory ID	pH
MW7-0512 205161-01	5.77
MW8-0512 205161-02	5.62
MW9A-0512 205161-03	6.02
MW11-0512 205161-04	5.97
MW12-0512 205161-05	6.09
MW13-0512 205161-06	5.87
MW14-0512 205161-07	6.27
MW15-0512 205161-08	5.92
MW16-0512 205161-09	6.15
MW17-0512 205161-10	6.21
MW18-0512 201161-11	6.16

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW7-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/22/12	Lab ID:	205161-01
Date Analyzed:	05/24/12	Data File:	205161-01.014
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	98	60	125
Indium	92	60	125

Analyte:	Concentration ug/L (ppb)
Arsenic	<0.150
Manganese	346

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW8-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/22/12	Lab ID:	205161-02
Date Analyzed:	05/24/12	Data File:	205161-02.025
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	88	60	125
Indium	85	60	125

Analyte:	Concentration ug/L (ppb)
Arsenic	0.542
Manganese	1,880

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW9A-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/22/12	Lab ID:	205161-03
Date Analyzed:	05/24/12	Data File:	205161-03.026
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	89	60	125
Indium	91	60	125

Analyte:	Concentration ug/L (ppb)
Arsenic	0.624
Manganese	11.4

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW11-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/22/12	Lab ID:	205161-04
Date Analyzed:	05/24/12	Data File:	205161-04.027
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	120	60	125
Indium	88	60	125

Analyte:	Concentration ug/L (ppb)
Arsenic	5.02
Manganese	1,220

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW12-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/22/12	Lab ID:	205161-05
Date Analyzed:	05/24/12	Data File:	205161-05.029
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	107	60	125
Indium	86	60	125

Analyte:	Concentration ug/L (ppb)
Arsenic	0.666
Manganese	2,780

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW13-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/22/12	Lab ID:	205161-06
Date Analyzed:	05/24/12	Data File:	205161-06.030
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	87	60	125
Indium	79	60	125

Analyte:	Concentration ug/L (ppb)
Arsenic	0.393
Manganese	3,190

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW14-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/22/12	Lab ID:	205161-07
Date Analyzed:	05/24/12	Data File:	205161-07.031
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	82	60	125
Indium	85	60	125

Analyte:	Concentration ug/L (ppb)
Arsenic	0.154
Manganese	30.8

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW15-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/22/12	Lab ID:	205161-08
Date Analyzed:	05/24/12	Data File:	205161-08.035
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	87	60	125
Indium	83	60	125

Analyte:	Concentration ug/L (ppb)
Arsenic	0.752
Manganese	773

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW16-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/22/12	Lab ID:	205161-09
Date Analyzed:	05/24/12	Data File:	205161-09.036
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	77	60	125
Indium	77	60	125

Analyte:	Concentration ug/L (ppb)
Arsenic	0.498
Manganese	915

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW17-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/22/12	Lab ID:	205161-10
Date Analyzed:	05/24/12	Data File:	205161-10.037
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	78	60	125
Indium	78	60	125

Analyte:	Concentration ug/L (ppb)
Arsenic	0.837
Manganese	1,500

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW18-0512	Client:	SLR International Corp.
Date Received:	05/11/12	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/22/12	Lab ID:	205161-11
Date Analyzed:	05/24/12	Data File:	205161-11.038
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	104	60	125
Indium	83	60	125

Analyte:	Concentration ug/L (ppb)
Arsenic	8.31
Manganese	3,460

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	SLR International Corp.
Date Received:	NA	Project:	101.00221.00009, F&BI 205161
Date Extracted:	05/22/12	Lab ID:	I2-326 mb
Date Analyzed:	05/24/12	Data File:	I2-326 mb.012
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	106	60	125
Indium	98	60	125

Analyte:	Concentration ug/L (ppb)
Arsenic	<0.150
Manganese	<1

Date of Report: 05/25/12
Date Received: 05/11/12
Project: 101.00221.00009, F&BI 205161

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

Laboratory Code: 205161-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.06 j	102	50-150

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	90	93	70-130	3

Date of Report: 05/25/12
Date Received: 05/11/12
Project: 101.00221.00009, F&BI 205161

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

Laboratory Code: 205180-07 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.06 j	96	50-150

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	91	91	70-130	0

Date of Report: 05/25/12
Date Received: 05/11/12
Project: 101.00221.00009, F&BI 205161

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR pH BY METHOD 9040C

Laboratory Code: 205161-01 (Duplicate)

Analyte	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
pH	5.77	5.75	0	0-20

Date of Report: 05/25/12
Date Received: 05/11/12
Project: 101.00221.00009, F&BI 205161

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

Laboratory Code: 205161-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	<0.150	100	101	51-167	1
Manganese	ug/L (ppb)	20	346	210 b	207 b	54-157	1 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	102	81-118
Manganese	ug/L (ppb)	20	90	81-122

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 - Analyte present in the blank and the sample.

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 - Analysis performed outside the method or client-specified holding time requirement.

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 - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

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

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

205 1

SAMPLE CHA OF CUSTODY

KT 05/11/12

RT 5/03

Page # 1 of 2

Send Report To MIKE STATON

Company SLR INTERNATIONAL CORP

Address 22118 20TH AVE SE, G-202

City, State, ZIP BOTHELL, WA 98021

Phone # (425) 402-8800 Fax # (425) 402-8488

SAMPLERS (signature)

PROJECT NAME/NO.: CLOSED CITY OF YAKIMA LANDFILL 101.0022.00009

PO#: 101.0022.00009

REMARKS 24-hr hold time for pH
48-hr hold time for nitrate

TURNAROUND TIME
- [x] Standard (2 Weeks)
- [ ] RUSH
Rush charges authorized by

SAMPLE DISPOSAL
- [x] Dispose after 30 days
- [ ] Return samples
- [ ] Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	pH by 150.1	Nitrate by 300.0	Vinyl Chloride by 8260C	Dissolved arsenic, iron, manganese, and sodium by 200.8			Notes
						ANALYSES REQUESTED												
MW7-0512	01 A-F	5/10/12	1535	WATER	6							X	X	X	X			
MW8-0512	02		1550															
MW9A-0512	03		1445															
MW11-0512	04		1505															
MW12-0512	05		1630															
MW13-0512	06		1610															
MW14-0512	07		1417															
MW15-0512	08		1330															
MW16-0512	09		1735															
MW17-0512	10		1805															

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		CHRIS LEE	SLR	5/11/12	0925
Received by:		Nhan Phan	FEBI	5/11/12	0925
Relinquished by:					
Received by:			Samples received at 1 °C		

FORMS\COC\COC.DOC

205161

SAMPLE CHAIN OF CUSTODY

MS 05/11/12

Page # 2 of 2

Send Report To MIKE STATON

Company SLR INTERNATIONAL CORP

Address 22118 20TH AVE SE, G-202

City, State, ZIP BOTHELL, WA 98021

Phone # (425) 402-8800 Fax # (425) 402-8488

SAMPLERS (signature)

PROJECT NAME/NO.: CLOSED CITY OF YAKIMA LANDFILL 101.00221.00009

PO#: 101.00221.00009

REMARKS: 24-hr hold time for pH; 48-hr hold time for nitrate

TURNAROUND TIME
- [x] Standard (2 Weeks)
- [ ] RUSH
- Rush charges authorized by

SAMPLE DISPOSAL
- [x] Dispose after 30 days
- [ ] Return samples
- [ ] Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED: TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS	pH by 150.1	Nitrate by 300.0	Vinyl Chloride by 8260C	Dissolved arsenic, iron, manganese and sulfide by 200.8			Notes
MW18-0512	11 A-F	5/10/12	1655	WATER	6							X	X	X	X			

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Received by:	Nhan Phan	FEBI	5/11/12	0925
Relinquished by:		Samples received at 1 °C		
Received by:				

FORMS\COC .DOC

AQUATIC RESEARCH INCORPORATED

LABORATORY & CONSULTING SERVICES

3927 AURORA AVENUE NORTH, SEATTLE, WA 98103

PHONE: (206) 632-2715 FAX: (206) 632-2417

CASE FILE NUMBER:	**FBI010-11**		**PAGE 1**
REPORT DATE:	**05/23/12**		
DATE SAMPLED:	**05/10/12**	**DATE RECEIVED:**	**05/11/12**

FINAL REPORT, LABORATORY ANALYSIS OF SELECTED PARAMETERS ON WATER SAMPLES FROM FRIEDMAN & BRUYA, INC. / PROJECT NO. 205161

CASE NARRATIVE

Eleven water samples were received by the laboratory in good condition and analyzed according to the chain of custody. No difficulties were encountered in the preparation or analysis of these samples. Sample data follows while QA/QC data is contained on subsequent pages.

SAMPLE DATA

		DISSOLVED METALS	
SAMPLE ID	NITRATE (mg/L)	SODIUM (mg/L)	IRON (mg/L)
MW7-0512	0.621	7.49	0.023
MW8-0512	86.2	34.1	<0.020
MW9A-0512	4.56	11.5	<0.020
MW11-0512	0.051	18.0	35.1
MW12-0512	0.039	33.6	15.4
MW13-0512	<0.010	40.1	8.23
MW14-0512	0.147	3.49	0.183
MW15-0512	<0.010	7.86	4.89
MW16-0512	3.93	42.5	0.026
MW17-0512	0.533	26.2	0.487
MW18-0512	0.086	11.4	18.6

AQUATIC RESEARCH INCORPORATED

LABORATORY & CONSULTING SERVICES

3927 AURORA AVENUE NORTH, SEATTLE, WA 98103

PHONE: (206) 632-2715 FAX: (206) 632-2417

CASE FILE NUMBER: FBI010-11

REPORT DATE: 05/23/12

DATE SAMPLED: 05/10/12 **DATE RECEIVED:** 05/11/12

FINAL REPORT, LABORATORY ANALYSIS OF SELECTED PARAMETERS ON WATER SAMPLES FROM FRIEDMAN & BRUYA, INC. / PROJECT NO. 205161

QA/QC DATA

		DISSOLVED METALS	
QC PARAMETER	NITRATE (mg/L)	SODIUM (mg/L)	IRON (mg/L)
METHOD	SM184500N03F	EPA 200.7	EPA 200.7
DATE ANALYZED	05/11/12	05/22/12	05/22/12
DETECTION LIMIT	0.010	0.500	0.020
DUPLICATE			
SAMPLE ID	BATCH	BATCH	BATCH
ORIGINAL	0.204	37.3	<0.020
DUPLICATE	0.188	37.4	<0.020
RPD	8.13%	0.33%	NC
SPIKE SAMPLE			
SAMPLE ID	BATCH	BATCH	BATCH
ORIGINAL	0.204	37.3	<0.020
SPIKED SAMPLE	0.411	45.3	4.24
SPIKE ADDED	0.200	10.0	5.00
% RECOVERY	103.80%	80.15%	84.77%
QC CHECK			
FOUND	0.406	46.2	9.98
TRUE	0.408	50.0	10.0
% RECOVERY	99.49%	92.35%	99.84%
BLANK	<0.010	<0.100	<0.020

RPD = RELATIVE PERCENT DIFFERENCE.
NA = NOT APPLICABLE OR NOT AVAILABLE.
NC = NOT CALCULABLE DUE TO ONE OR MORE VALUES BEING BELOW THE DETECTION LIMIT.
OR = RECOVERY NOT CALCULABLE DUE TO SPIKE SAMPLE OUT OF RANGE OR SPIKE TOO LOW RELATIVE TO SAMPLE CONCENTRATION.

SUBMITTED BY:

Damien Gadomski

Damien Gadomski
Project Manager

SUBCONTRACT SAM LE CHAIN OF CUSTODY

FB1010.11

Page # 1 of 1

Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # (206) 285-8282 Fax # (206) 283-5044

SUBCONTRACTER Ag. Research
PROJECT NAME/NO. 205161
PO # B-725
REMARKS Please Email Results

TURNAROUND TIME
☒ Standard (2 Weeks)
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	Dioxins and Furans by 8290	EPH	VPH	Nitrate	Sulfate	Alkalinity	Dissolved Mn+Fe				Notes
MW7-0512		5/10/12	1535	W					X			X				
MW8-0512			1550													
MW9A-0512			1445													
MW11-0512			1505													
MW12-0512			1630													
MW13-0512			1610													
MW14-0512			1417													
MW15-0512			1330													
MW16-0512			1735													
MW17-0512			1805													
MW18-0512			1655													

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	5/11/12	10:06
Received by:		SHANEGAN	ARI	5/11/12	1400
Relinquished by:					
Received by:					

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # (206) 285-8282 Fax # (206) 283-5044

SUBCONTRACTER Ag. Research
PROJECT NAME/NO. 205161
PO # B-725
REMARKS
Please Email Results

TURNAROUND TIME
☒ Standard (2 Weeks)
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
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Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	Dioxins and Furans by 8290	EPH	VPH	Nitrate	Sulfate	Alkalinity	Dissolved Mn+Fe				Notes
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MW8-0512			1550													
MW9A-0512			1445													
MW11-0512			1505													
MW12-0512			1630													
MW13-0512			1610													
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MW15-0512			1330													
MW16-0512			1735													
MW17-0512			1805													
MW18-0512			1655													

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	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	5/11/12	10:06
Received by:					
Relinquished by:					
Received by:					