



September 27, 2013
G-Logics File 01-0739-B

BV Holdings, LLC
Mr. Michael Nielson
10672 NE 9th Pl
Bellevue, WA 98004

**Subject: Operation and Monitoring Summary Memo 3rd Quarter 2013
Former Drycleaner Location
10610 NE 8th Street
Bellevue, WA**

Dear Mr. Nielson:

This summary memo is intended to provide you with the third-quarter monitoring and vapor sampling results conducted at the subject property (Figure 1). This work has been performed in accordance with our authorized *AS/SVE Continued Operation Workplan*, dated July 9, 2013. Operation of the AS/SVE system was extended as a recommended measure to continue the contaminant removal from the on-property soils and groundwater. With this effort, monthly site visits were made to monitor the system and its operational components, specifically to assess if the system was operating within design parameters.

The AS/SVE system primarily consists of one regenerative blower, one rotary-vane compressor, related electrical equipment, and a moisture-reduction tank (K/O tank). The equipment is housed in a wood-framed building identified as the Equipment Shed (Figure 2). The regenerative blower produces a vacuum that removes subsurface vapors from the vadose zone. The rotary-vane compressor injects air into the subsurface to volatilize contaminants contained in the saturated soil and groundwater.

Underground piping that originates in the equipment shed directs compressed air to a manifold system that feeds the three AS Wells installed in the south vault (Figure 2). Similarly, a vacuum line extends from the blower in the equipment shed to the south vault,

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where another manifold system directs vacuum to SVE Wells 5 through 9. A second vacuum line extends from the blower in the equipment shed to the north vault, where a manifold system directs vacuum to SVE Wells 1 through 4 (Figure 2).

During the monthly visits, vacuum pressures were observed and record at the K/O tank and at the two vacuum lines before they reach the K/O tank. Likewise, air-pressures were observed and recorded from the supply piping. Observed pressures during the third-quarter were within normal (designed) operating ranges.

On September 12, 2013, vapor samples were collected (using Tedlar bags) from the exhaust-stack and all nine SVE Wells. Groundwater levels were recorded in the on-property monitoring wells. The vapor samples were analyzed by EPA Method 8260. Summary analytical results can be reviewed on the attached Table 2. Analytical results demonstrate that vapor-contaminants continue to be removed from the soil and groundwater on the property. During this round of sampling, the most significant concentrations of contaminant removal were observed in SVE Wells 4, 5, 6, and 7. Specifically, SVE Well 5 recorded a concentration of Tetrachloroethene (PCE) vapor at 1,720 ug/L (parts-per-billion, or ppb). This is the most significant concentration recorded to date during the operation of this AS/SVE system (see Table 2).

Groundwater levels were measured on September 13, after the system was turned off for twenty-four hours. In comparing the groundwater levels recorded on the 13th to previous levels, the groundwater appears to be lower overall (typically seen at the end of a dry season), except for fluctuations observed in Monitoring Wells 3, 4, 5, and 6. Groundwater levels in well 3 rose an unexplainable 3.91 feet, while the groundwater levels in wells 4, 5, and 6 changed slightly, by 0.07, 0.27, and 0.11 tenths of a foot, respectively. Monitoring Well 3 is not considered to be in an area that would be affected by the AS Wells; therefore this is not seen as mounding created by the system. Recorded groundwater levels can be reviewed on the attached Table 5.

Closing

With the latest round of sampling, analytical results indicate that the system is effective and continuing to remove concentrations of PCE and other contaminants. We appreciate this opportunity to provide our services to you. Please contact us at your convenience with any questions regarding our work or findings.

Sincerely,
G-Logics, Inc.

Rory L. Galloway, LG, LHG
Principal

Dan Hatch
Remediation Manager

Attachments:

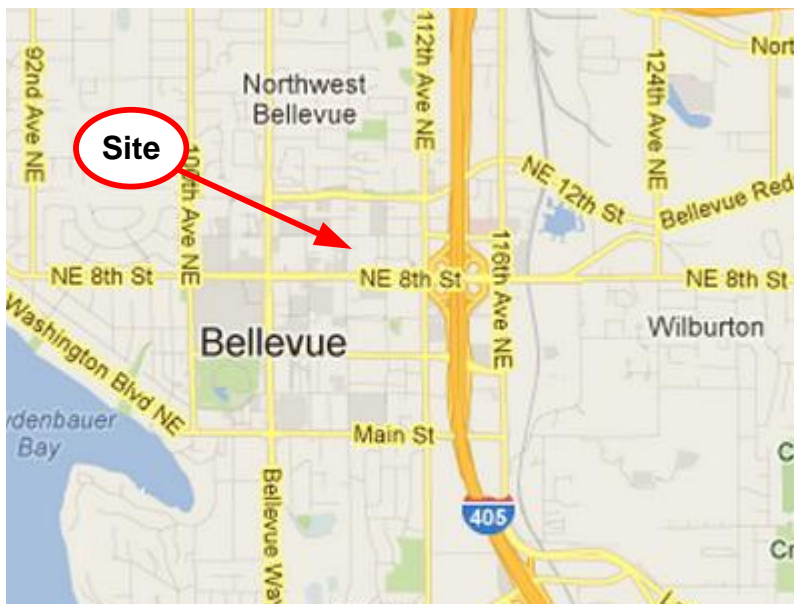
Figure 1 – Site Location Maps

Figure 2 – Site Diagram, AS/SVE System Layout

Table 2 – Vapor Sample Analyses, Volatile Organic Compounds

Table 4 – Groundwater Elevation Measurements

FIGURES



Project File: 01-0739-B F1.vsd



Site Location Maps
 Former Thinker Toy Property
 10610 NE 8th Street
 Bellevue, Washington

Figure
 1

Mapping Reference: Google, Bing Maps



Drive-thru Canopy

MW-14

MW-13

Equipment Shed

Fencing

Underground Electrical Vault

MW-1

Typical SVE Trunk Lines,
(Connecting Equipment to Manifolds)

AS Trunk Line,
(Connecting Equipment to Manifold)

MW-B2

MW-6

MW-8

MW-9

GL-SVE-2

GL-SVE-4

GL-SVE-7

GL-AS-1

GL-AS-3

GL-SVE-9

GL-SVE-6

MW-7S

GL-SVE-1

GL-SVE-3

GL-SVE-5

GL-AS-2

GL-SVE-8

MW-5

MW-2

Typical AS Branch Lines,
(Connecting Trunk Line to Wells)

MW-15

Typical SVE Branch Lines,
(Connecting Trunk Lines to Wells)

Existing 480V Power Trench











MW-4

Street / Curb

106th Avenue Northeast

Sidewalk

LEGEND

-  Air Sparge Point
-  Soil-Vapor Extraction Well
-  Monitoring Wells
-  SVE Trunk Lines,
(Connecting Equipment to Manifolds)
-  AS Trunk Line,
(Connecting Equipment to Manifolds)
-  Typical SVE Branch Lines,
(Connecting Trunk Lines to Wells)
-  Typical AS Branch Lines,
(Connecting Trunk Line to Wells)
-  Manifold Vaults (North and South)
-  Understood Subject Property Line
-  Underground Power Line (480V)

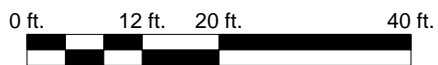
This location of MW-8 is a Figure placement only. The well is physically located 60 feet to the north of this mapped location.

Project File: 01-0739-B F2.vsd



This figure contains information in color. Black & white photocopies may not be suitable for review. Buildings are shown for reference only and may not be to scale.

Approximate Drawing Scale: 1" = 20'



Property Diagram, AS/SVE System Layout
Former Thinker Toy Property
NE. 8th St.
Bellevue, Washington

Figure
2

TABLES

TABLE 2
Vapor Sample Analyses, Volatile Organic Compounds (1)
Former Thinker Toys (Bellevue)

Sample Location	Sample Date	Sample Number	trans-1,2-Dichloroethene	Chloroethane	Toluene	cis-1,2-Dichloroethene	Trichloroethene (TCE)	Tetrachloroethene (PCE)	Chloroform	m, p-Xylene	1,1,1-Trichloroethane
(Units reported in ug/L)											
Exhaust Stack	12/7/2012	Ex Stack (T)	nd	nd	nd	1.32	1.29	21.4	nd	nd	nd
	12/28/2012	Ex Stack	nd	nd	nd	0.110	nd	28.0	nd	0.106	nd
	1/5/2013	Ex Stack	nd	nd	nd	0.103	nd	26.5	nd	nd	nd
	1/14/2013	Ex Stack (H)	nd	nd	nd	0.231	0.203	54.6	nd	nd	nd
	1/22/2013	Ex Stack	nd	nd	nd	0.169	0.169	64.7	nd	nd	nd
	1/31/2013	Ex Stack	nd	nd	nd	0.453	0.475	40.4	nd	nd	nd
	3/8/2013	Ex Stack	nd	nd	nd	nd	nd	19.4	nd	nd	nd
	4/10/2013	Ex Stack	nd	nd	nd	nd	nd	9.85	nd	nd	nd
	5/30/2013	Ex Stack	nd	nd	nd	nd	nd	8.0	nd	nd	nd
6/11/2013	Ex Stack	nd	nd	nd	0.113	0.145	21.8	nd	nd	nd	
9/12/2013	Ex Stack	nd	nd	nd	nd	0.127	15.7	nd	nd	nd	
SVE-1	1/31/2013	SVE-1	nd	nd	0.123	1.06	0.445	10.8	nd	nd	nd
	3/8/2013	SVE-1	nd	nd	nd	nd	0.147	14.0	nd	nd	nd
	4/10/2013	SVE-1	nd	nd	nd	0.271	0.289	22.8	nd	nd	nd
	5/30/2013	SVE-1	nd	nd	nd	0.333	nd	16.4	nd	nd	nd
	6/11/2013	SVE-1	nd	nd	nd	0.313	0.363	37.7	nd	nd	nd
	9/12/2013	SVE-1	nd	nd	nd	0.133	0.176	18.4	nd	nd	nd
SVE-2	1/31/2013	SVE-2	nd	nd	0.132	1.04	0.466	5.64	nd	0.190	nd
	3/8/2013	SVE-2	nd	nd	nd	nd	nd	6.82	nd	nd	nd
	4/10/2013	SVE-2	nd	nd	nd	nd	nd	6.55	nd	nd	nd
	5/30/2013	SVE-2	nd	nd	nd	nd	nd	6.27	nd	nd	nd
	6/11/2013	SVE-2	nd	nd	nd	nd	nd	10.6	nd	nd	nd
	9/12/2013	SVE-2	nd	nd	nd	nd	nd	4.82	nd	nd	nd
SVE-3	1/31/2013	SVE-3	nd	nd	0.125	1.03	0.460	15.8	nd	nd	nd
	3/8/2013	SVE-3	nd	nd	nd	1.07	0.553	13.6	nd	nd	nd
	4/10/2013	SVE-3	nd	nd	nd	0.340	0.426	14.2	nd	nd	nd
	5/30/2013	SVE-3	nd	nd	nd	1.08	0.494	14.8	nd	nd	nd
	6/11/2013	SVE-3	nd	nd	nd	3.14	1.74	36.7	nd	nd	nd
	9/12/2013	SVE-3	nd	nd	nd	0.989	0.495	15.8	nd	nd	nd
SVE-4	1/31/2013	SVE-4	nd	nd	0.125	0.981	0.546	18.3	nd	nd	nd
	3/8/2013	SVE-4	nd	nd	nd	0.853	3.380	70.5	nd	nd	nd
	4/10/2013	SVE-4	nd	nd	nd	1.29	12.1	191	nd	nd	nd
	5/30/2013	SVE-4	nd	nd	nd	0.40	2.52	78.2	nd	nd	nd
	6/11/2013	SVE-4	nd	nd	nd	0.240	1.70	21.0	nd	nd	nd
	9/12/2013	SVE-4	nd	nd	nd	2.74	15.3	493	nd	nd	nd
SVE-5	1/31/2013	SVE-5	nd	nd	0.147	0.62	1.06	45.0	nd	nd	nd
	3/8/2013	SVE-5	nd	nd	nd	0.46	0.66	55.2	nd	nd	nd
	4/10/2013	SVE-5	nd	nd	nd	0.934	1.40	38.1	nd	nd	nd
	5/30/2013	SVE-5	nd	0.222	nd	nd	0.473	33.3	nd	nd	nd
	6/11/2013	SVE-5	0.458	nd	nd	5.87	9.23	238	nd	nd	nd
	9/12/2013	SVE-5	0.224	nd	nd	4.04	8.7	1,720	0.135	nd	0.262
SVE-6	1/31/2013	SVE-6	nd	nd	0.130	0.246	0.716	77.6	nd	nd	nd
	3/8/2013	SVE-6	nd	nd	nd	nd	0.257	307	nd	nd	nd
	4/10/2013	SVE-6	nd	nd	nd	0.204	0.471	240	nd	nd	nd
	5/30/2013	SVE-6	nd	nd	nd	nd	nd	47.4	nd	nd	nd
	6/11/2013	SVE-6	nd	nd	nd	0.284	1.21	370	nd	nd	nd
	9/12/2013	SVE-6	nd	nd	nd	0.287	0.748	238	nd	nd	nd
SVE-7	1/31/2013	SVE-7	nd	nd	0.139	0.388	0.712	57.2	nd	0.187	nd
	3/8/2013	SVE-7	nd	nd	nd	0.591	7.500	165.0	nd	nd	nd

TABLE 2
Vapor Sample Analyses, Volatile Organic Compounds (1)
Former Thinker Toys (Bellevue)

Sample Location	Sample Date	Sample Number	trans-1,2-Dichloroethene	Chloroethane	Toluene	cis-1,2-Dichloroethene	Trichloroethene	Tetrachloroethene (TCE)	Chloroform	m, p-Xylene	1,1,1-Trichloroethane
(Units reported in ug/L)											
	4/10/2013	SVE-7	nd	nd	nd	nd	0.688	22.9	nd	nd	nd
	5/30/2013	SVE-7	nd	nd	nd	nd	nd	6.0	nd	nd	nd
	6/11/2013	SVE-7	nd	nd	nd	nd	1.72	89.0	nd	nd	nd
	9/12/2013	SVE-7	nd	nd	nd	0.570	16.2	330	nd	nd	nd
SVE-8	1/31/2013	SVE-8	nd	nd	0.134	0.349	0.373	19.7	nd	0.203	nd
	3/8/2013	SVE-8	nd	nd	nd	nd	0.108	6.9	nd	nd	nd
	4/10/2013	SVE-8	nd	nd	nd	nd	nd	4.8	nd	nd	nd
	5/30/2013	SVE-8	nd	nd	nd	nd	nd	4.75	nd	nd	nd
	6/11/2013	SVE-8	nd	nd	nd	nd	0.175	31.6	nd	nd	nd
	9/12/2013	SVE-8	nd	nd	nd	nd	0.243	26.3	nd	nd	nd
SVE-9	1/31/2013	SVE-9	nd	nd	0.123	0.312	0.256	14.4	nd	nd	nd
	3/8/2013	SVE-9	nd	nd	nd	nd	nd	17.2	nd	nd	nd
	4/10/2013	SVE-9	nd	nd	nd	nd	nd	6.20	nd	nd	nd
	5/30/2013	SVE-9	nd	0.222	nd	nd	nd	13.7	nd	nd	nd
	6/11/2013	SVE-9	nd	nd	nd	nd	nd	15.2	nd	nd	nd
	9/12/2013	SVE-9	nd	nd	nd	nd	0.441	39.4	nd	nd	nd
		RL	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100

Notes: Refer to site diagram(s) for sampling locations.

(1) Method EPA 8260B, Other 8260 Compounds not listed were not detected.

H Holding times for preparation or analysis exceeded.

nd The concentration is less than the given laboratory detection limit.

--- Not Analyzed - No Sample Collected

4.8 Bold Number(s) Indicates Contaminant Detected.

RL Laboratory Reporting Limits for EPA Method 8260

(T) Sample analysis performed by EPA Method TO-15 (ug/m3), results were converted to match EPA Method 8260 (ug/L). Detected analytes shown with nd were below typical Method 8260 reporting limits. Other compounds not listed also were below typical Method 8260 reporting limits.

TABLE 5
Groundwater Elevation Measurements
Former Thinker Toys Property Properties
10610 Northeast 8th Street Bellevue WA

Location Designation	Measured by	Well Installation Date	Elevation Monument Rim (ft.)*	Elevation Top of PVC Casing (ft.)*	Depth to Top of Screen (ft.)	Depth to Bottom of Screen (ft.)	Well Diameter (in.)	Date Measured	Depth to Water (ft.)	Calculated Elevations (ft.)
MW-1	Farallon	4/19/10	161.37	161.04	15	30		5/3/10	13.58	147.46
		4/19/10	161.37	161.04	15	30	2	8/23/10	14.45	146.59
	G-logics	4/19/10	161.37	161.04	15	30	2	09/13/13	15.92	145.12
MW-2	Farallon	4/19/10	159.53	159.08	15	30		5/3/10	11.7	147.38
		4/19/10	159.53	159.08	15	30	2	8/23/10	13.35	145.73
	G-logics	4/19/10	159.53	159.08	15	30	2	09/13/13	13.75	145.33
MW-3	Farallon	4/19/10	161.26	160.88	15	30		5/3/10	15.8	145.08
		4/19/10	161.26	160.88	15	30	2	8/23/10	16.11	144.77
	G-logics	4/19/10	161.26	160.88	15	30	2	09/13/13	12.2	148.68
MW-4	Farallon	4/20/10	157.77	157.44	15	30		5/3/10	17.01	140.43
		4/20/10	157.77	157.44	15	30	2	8/23/10	17.45	139.99
	G-logics	4/20/10	157.77	157.44	15	30	2	09/13/13	17.38	140.06
MW-5	Farallon	4/20/10	158.60	158.60	15	30		5/3/10	19.54	139.06
		4/20/10	158.60	158.60	15	30	2	8/23/10	20.25	138.35
	G-logics	4/20/10	158.60	158.60	15	30	2	09/13/13	19.98	138.62
MW-6	Farallon	4/20/10	159.28	159.00	15	30		5/3/10	19.55	139.45
		4/20/10	159.28	159.00	15	30	2	8/23/10	20.13	138.87
	G-logics	4/20/10	159.28	159.00	15	30	2	09/13/13	20.02	138.98
MW-7S	Farallon	8/4/10	159.28	159.51	15	30	2	8/23/10	18.08	141.43
	G-logics	8/4/10	159.28	159.51	15	30	2	09/13/13	18.28	141.23
MW-8	Farallon	8/6/10	160.71	160.25	15	30	2	8/23/10	11.55	148.70
	G-logics	8/6/10	160.71	160.25	15	30	2	09/13/13	13.2	147.05
MW-9	Farallon	8/5/10	160.65	160.08	15	30	2	8/23/10	12.33	147.75
	G-logics	8/5/10	160.65	160.80	15	30	2	09/13/13	13.65	147.15
MW-10	Farallon	8/5/10	160.32	159.93	15	30	2	8/23/10	13.55	146.38
	G-logics	8/5/10	160.32	159.93	15	30	2	09/13/13	14.05	145.88
MW-13	Farallon	8/6/10	162.26	161.71	15	30	2	8/23/10	18.77	142.94
	G-logics	8/6/10	162.26	161.71	15	30	2	09/13/13	19.55	142.16

**Groundwater Elevation Measurements
Former Thinker Toys Property Properties
10610 Northeast 8th Street Bellevue WA**

Location Designation	Measured by	Well Installation Date	Elevation Monument Rim (ft.)*	Elevation Top of PVC Casing (ft.)*	Depth to Top of Screen (ft.)	Depth to Bottom of Screen (ft.)	Well Diameter (in.)	Date Measured	Depth to Water (ft.)	Calculated Elevations (ft.)
MW-14	Farallon	8/11/10	163.30	162.96	15	30	2	8/23/10	15.79	147.17
	G-logics	8/11/10	163.30	162.96	15	30	2	09/13/13	18.25	144.71
MW-15	Farallon	8/4/10	158.31	157.76	15	30	2	8/23/10	18.86	138.90
	G-logics	8/4/10	158.31	157.76	15	30	2	09/13/13	19.1	138.66

Notes:

* Elevations based on an arbitrary elevation of 100.00 feet at the monument rim for MW03.

(a) Elevation measured from west side of 78th Avenue South vehicle bridge over the Green River. Yellow paint mark on top of railing (located above north drain).

** Replaced monument installed on July 1, 2005.

Depth not recorded.

-- Not Applicable.

Monitoring wells GMW-01 through GMW-05 elevations measured after well head reconstruction (due to placement of geofabric and recycled concrete in treatment system area).

Monitoring wells GMW-01 through GMW-05 depth to bottom of screen based from original ground surface elevation prior to the placement of geo fabric and recycled concrete.

Monitoring wells GMW-06 through GMW-11 monument rim elevation measured at top of aboveground steel pipe (lid removed).