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February 14, 2019

Mr. Jason A. Miller  
Land Protection Manager  
Commonwealth of Virginia  
Department of Environmental Quality  
Piedmont Regional Office  
4949-A Cox Road  
Glen Allen, Virginia 23060

**Re: Shoosmith Sanitary Landfill, Permit No. 587  
Table 3.1 Column B Constituent Detection Notification  
First Quarter 2019 Groundwater Monitoring Event (MW-104D)  
Project No. 2190527.00/Phase 01**

Dear Mr. Miller:

On behalf of Shoosmith Bros., Inc., and in accordance with 9VAC20-81-250.B.3.c.(1), Joyce Engineering (JOYCE) is hereby notifying the Virginia Department of Environmental Quality (DEQ) of detections of Virginia Solid Waste Management Regulations (VSWMR) Table 3.1 (Column B) constituents at the Shoosmith Sanitary Landfill during the first quarter 2019 compliance monitoring event, specifically from monitoring well MW-104D. In response to the January 3, 2019, ASD review letter from DEQ, monitoring well MW-104D was moved into the Assessment Monitoring Program, and was initially sampled for the complete VSWMR Table 3.1 Column B list of constituents on January 16, 2019. The complete laboratory data package for MW-104D was received on February 1, 2019.

The Column B constituents detected in MW-104D during the first quarter 2019 monitoring event are listed on the attached Analysis Detects Report, provided by Air, Water, and Soil Laboratories, Inc. (AWS). **As shown, there were no new Column B constituents detected in MW-104D during the first quarter 2019 groundwater monitoring event.** Including the results from the first quarter 2019 groundwater monitoring events, the current list of Table 3.1 Column B detected constituents includes: cyanide; tin; bis(2-ethylhexyl)phthalate; di-n-butylphthalate; dichlorodifluoromethane; heptachlor; endosulfan I; kepone; sulfide; naphthalene; mercury; 1,3 dichlorobenzene; total cresols; and m,p-cresols.

Please note that the analytical data provided by the laboratory has not undergone data validation. Data validation will be completed 30 days from the receipt of the laboratory data package for MW-104D.

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Please contact me at (804) 355-4520 if you have any questions or comments.

Respectfully,  
**JOYCE ENGINEERING**



Ryan Smith  
Senior Project Consultant

Attachment: AWS Analysis Detects Reports

cc: Bruce Coble, Shoosmith Bros., Inc.  
Dean Starook, DEQ-PRO  
Geoff Christe, DEQ - CO

*P:\Shoosmith\Shoosmith Sanitary LF\Groundwater\GMR\2019\01\_2019\Report Correspondence\2018 Column B detects letter - MW-104D.docx*



**Analysis Detects Report**

Client Name: LaBella Associates, D.P.C.  
 Client Site ID: Shoosmith Sanitary Landfill  
 Submitted To: John Westerfield

Date Issued: 2/1/2019 12:10:28PM

**Laboratory Sample ID: 19A0812-01                      Client Sample ID: MW-20**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	01	SW6010C	265		5.0	10.0	1	ug/L

**Laboratory Sample ID: 19A0812-02                      Client Sample ID: MW-19R**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	02	SW6020A	1.8	J	1.0	5.0	1	ug/L
Barium	02	SW6010C	202		5.0	10.0	1	ug/L
Copper	02	SW6010C	13.2		3.0	10.0	1	ug/L
Nickel	02	SW6010C	10.1		2.0	10.0	1	ug/L
Zinc	02	SW6010C	33.2		10.0	10.0	1	ug/L
Acetone	02	SW8260B	7.98	J	7.00	10.0	1	ug/L
Benzene	02	SW8260B	1.89		0.40	1.00	1	ug/L
cis-1,2-Dichloroethylene	02	SW8260B	0.73	J	0.40	1.00	1	ug/L
bis (2-Ethylhexyl) phthalate	02	SW8270D	3.04		2.72	2.72	1	ug/L

**Laboratory Sample ID: 19A0812-03                      Client Sample ID: MW-101R2**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	03	SW6010C	286		5.0	10.0	1	ug/L
Cobalt	03	SW6010C	2.8	J	2.0	4.0	1	ug/L
Copper	03	SW6010C	3.0	J	3.0	10.0	1	ug/L
Nickel	03	SW6010C	74.8		2.0	10.0	1	ug/L
Zinc	03	SW6010C	16.6		10.0	10.0	1	ug/L



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Laboratory Sample ID: 19A0812-04      Client Sample ID: MW-102

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	04	SW6010C	97.2		5.0	10.0	1	ug/L
Beryllium	04	SW6010C	6.8		2.0	4.0	1	ug/L
Cobalt	04	SW6010C	3.1	J	2.0	4.0	1	ug/L
Mercury	04	SW7470A	0.38		0.20	0.20	1	ug/L
Nickel	04	SW6010C	29.4		2.0	10.0	1	ug/L
Zinc	04	SW6010C	28.5		10.0	10.0	1	ug/L
1,4-Dichlorobenzene	04	SW8260B	1.81		0.40	1.00	1	ug/L
Benzene	04	SW8260B	2.78		0.40	1.00	1	ug/L
cis-1,2-Dichloroethylene	04	SW8260B	0.46	J	0.40	1.00	1	ug/L
Vinyl chloride	04	SW8260B	0.50		0.50	0.50	1	ug/L

Laboratory Sample ID: 19A0812-05      Client Sample ID: MW-107

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	05RE1	SW6020A	6.5	J	2.0	10	2	ug/L
Barium	05	SW6010C	75.1		5.0	10.0	1	ug/L
Benzene	05	SW8260B	1.51		0.40	1.00	1	ug/L
cis-1,2-Dichloroethylene	05	SW8260B	2.08		0.40	1.00	1	ug/L
Vinyl chloride	05	SW8260B	1.14		0.50	0.50	1	ug/L



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**Laboratory Sample ID: 19A0812-06                      Client Sample ID: MW-115**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	06	SW6010C	196		5.0	10.0	1	ug/L
Cobalt	06	SW6010C	18.5		2.0	4.0	1	ug/L
Nickel	06	SW6010C	18.5		2.0	10.0	1	ug/L
Zinc	06	SW6010C	69.9		10.0	10.0	1	ug/L
Acetone	06	SW8260B	13.9		7.00	10.0	1	ug/L
bis (2-Ethylhexyl) phthalate	06	SW8270D	2.93		2.75	2.75	1	ug/L

**Laboratory Sample ID: 19A0812-07                      Client Sample ID: MW-114R**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	07	SW6020A	2.8	J	1.0	5.0	1	ug/L
Barium	07	SW6010C	52.7		5.0	10.0	1	ug/L
Copper	07	SW6010C	6.3	J	3.0	10.0	1	ug/L

**Laboratory Sample ID: 19A0812-08                      Client Sample ID: MW-8R2**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	08	SW6010C	225		5.0	10.0	1	ug/L
cis-1,2-Dichloroethylene	08	SW8260B	1.47		0.40	1.00	1	ug/L



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**Laboratory Sample ID: 19A0812-09**

**Client Sample ID: MW-5R2**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	09	SW6010C	124		5.0	10.0	1	ug/L
Cobalt	09	SW6010C	6.4		2.0	4.0	1	ug/L
Nickel	09	SW6010C	11.2		2.0	10.0	1	ug/L
Zinc	09	SW6010C	10.6		10.0	10.0	1	ug/L
1,2-Dichlorobenzene	09	SW8260B	0.47	J	0.40	1.00	1	ug/L
1,4-Dichlorobenzene	09	SW8260B	3.07		0.40	1.00	1	ug/L
Benzene	09	SW8260B	0.47	J	0.40	1.00	1	ug/L
cis-1,2-Dichloroethylene	09	SW8260B	2.51		0.40	1.00	1	ug/L

**Laboratory Sample ID: 19A0812-10**

**Client Sample ID: MW-18**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	10	SW6010C	422		5.0	10.0	1	ug/L
Nickel	10	SW6010C	3.7	J	2.0	10.0	1	ug/L
1,4-Dichlorobenzene	10	SW8260B	0.69	J	0.40	1.00	1	ug/L
Benzene	10	SW8260B	0.99	J	0.40	1.00	1	ug/L
cis-1,2-Dichloroethylene	10	SW8260B	0.49	J	0.40	1.00	1	ug/L

**Laboratory Sample ID: 19A0812-11**

**Client Sample ID: MW-3R**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	11	SW6010C	69.9		5.0	10.0	1	ug/L

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**Laboratory Sample ID: 19A0812-12**

**Client Sample ID: MW-17R**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	12	SW6010C	211		5.0	10.0	1	ug/L
Cobalt	12	SW6010C	4.0		2.0	4.0	1	ug/L
1,1-Dichloroethane	12	SW8260B	0.88	J	0.60	1.00	1	ug/L
1,4-Dichlorobenzene	12	SW8260B	0.71	J	0.40	1.00	1	ug/L
cis-1,2-Dichloroethylene	12	SW8260B	2.97		0.40	1.00	1	ug/L

**Laboratory Sample ID: 19A0812-13**

**Client Sample ID: MW-13R**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	13	SW6010C	204		5.0	10.0	1	ug/L
Cobalt	13	SW6010C	6.7		2.0	4.0	1	ug/L
Copper	13	SW6010C	10.4		3.0	10.0	1	ug/L
Nickel	13	SW6010C	12.0		2.0	10.0	1	ug/L

**Laboratory Sample ID: 19A0812-14**

**Client Sample ID: MW-23**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	14	SW6020A	1.2	J	1.0	5.0	1	ug/L
Barium	14	SW6010C	81.1		5.0	10.0	1	ug/L
Cadmium	14	SW6010C	3.2	J	2.0	4.0	1	ug/L
Cobalt	14	SW6010C	14.7		2.0	4.0	1	ug/L
Copper	14	SW6010C	264		3.0	10.0	1	ug/L
Nickel	14	SW6010C	46.5		2.0	10.0	1	ug/L
Vanadium	14	SW6010C	10.0	J	8.0	10.0	1	ug/L
Zinc	14	SW6010C	117		10.0	10.0	1	ug/L



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**Laboratory Sample ID: 19A0812-15**

**Client Sample ID: MW-6**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	15	SW6010C	92.3		5.0	10.0	1	ug/L

**Laboratory Sample ID: 19A0812-16**

**Client Sample ID: MW-7**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	16	SW6010C	73.0		5.0	10.0	1	ug/L
Cobalt	16	SW6010C	2.9	J	2.0	4.0	1	ug/L

**Laboratory Sample ID: 19A0812-17**

**Client Sample ID: MW-11**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	17	SW6010C	42.7		5.0	10.0	1	ug/L

**Laboratory Sample ID: 19A0812-18**

**Client Sample ID: MW-16R2**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	18	SW6010C	109		5.0	10.0	1	ug/L

**Laboratory Sample ID: 19A0812-19**

**Client Sample ID: MW-21**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	19	SW6010C	18.4		5.0	10.0	1	ug/L





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**Laboratory Sample ID: 19A0812-20                      Client Sample ID: MW-22**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	20	SW6010C	85.6		5.0	10.0	1	ug/L

**Laboratory Sample ID: 19A0812-21                      Client Sample ID: MW-108**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	21	SW6010C	40.8		5.0	10.0	1	ug/L
Copper	21	SW6010C	3.5	J	3.0	10.0	1	ug/L

**Laboratory Sample ID: 19A0812-22                      Client Sample ID: MW-109**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	22	SW6010C	125		5.0	10.0	1	ug/L
Copper	22	SW6010C	4.4	J	3.0	10.0	1	ug/L
Nickel	22	SW6010C	2.1	J	2.0	10.0	1	ug/L

**Laboratory Sample ID: 19A0812-23                      Client Sample ID: MW-110**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	23	SW6010C	141		5.0	10.0	1	ug/L



Air Water & Soil Laboratories, Inc.  
 1941 Reymet Road  
 Richmond, VA 23237  
 (804)-358-8295 - Telephone  
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Date Issued: 2/1/2019 12:10:28PM

**Laboratory Sample ID: 19A0812-24**                      **Client Sample ID: MW-104D**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	24	SW6010C	211		5.0	10.0	1	ug/L
Chromium	24	SW6010C	7.9	J	4.0	10.0	1	ug/L
Copper	24	SW6010C	3.8	J	3.0	10.0	1	ug/L
Nickel	24	SW6010C	10.3		2.0	10.0	1	ug/L
Benzene	24	SW8260B	1.85		0.40	1.00	1	ug/L
cis-1,2-Dichloroethylene	24	SW8260B	0.56	J	0.40	1.00	1	ug/L

Note that this report is not the "Certificate of Analysis". This report only lists the target analytes that displayed concentrations that exceeded the detection limit specified for that analyte. For a complete listing of all analytes requested and the results of the analysis see the "Certificate of Analysis".