Weston Solutions, Inc.
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February 3, 2017

Mr. Robert Vinson, P.E.
Bay West, Inc.
Customer-Focused Environmental & Industrial Solutions
2655 Triple Tree
San Antonio, TX 78263

W.O. No. 12264.029.001.0500

RE: West Point Former Motor Pool Landfill (WPTST-11) Draft Annual Groundwater Sampling Event

Dear Mr. Vinson:

Weston Solutions, Inc. (WESTON®) is providing the validated analytical results of groundwater monitoring conducted at the Former Motor Pool Landfill (WPTST-11) at the United States Military Academy located in West Point, New York. Existing monitoring wells MP-2 through MP-4 were sampled on 25 October 2016 for 6 NYCRR Part 360-2.11(d)(6) baseline parameters including volatile organic compounds (VOCs), metals, cyanide and general chemistry parameters. Upgradient well location MP-1 and seep location MPLE-1 were dry and could not be sampled. Locations MP-1 and MPLE-1 were scheduled to be sampled for the same monitoring list as MP-2 through MP-4 with location MPLE-1 also scheduled to be sampled for the 6 NYCRR Part 360-2.11(d)(6) expanded landfill parameters.

Analytical results summary tables are provided in Tables 1 through 3. Detected results are highlighted in light gray and exceedances of New York State Department of Environmental Conservation (NYSDEC) screening criteria are in bold. Analytes detected at concentrations in exceedance of NYSDEC screening criteria were limited to total and soluble maganese, and sodium. The validation report for these results is provided in Attachment A, and the complete analytical data packages are provided on the CD provided in Attachment B.

Please feel free to contact me directly at 610-701-3793 (J.Gerhard@westonsolutions.com) with any questions or comments you may have.

Very truly yours,

WESTON SOLUTIONS, INC.

John P. Gerhard
Senior Project Manager

cc: E. Stahl (Weston)
M. Eliason (Weston)

Table 1
Motor Pool Landfill
Volatile Organic Compounds in Water
US Military Academy, West Point, New York

	Field ID:	**NYSDEC Screening Value**	**WP11-MP-4-102516**		**WP11-MP-3-102516**		**WP11-MP-2-102516**	
	Lab Sample ID:		**280-90206-1**		**280-90206-2**		**280-90206-3**	
	Date Collected:		**10/25/2016**		**10/25/2016**		**10/25/2016**	
	Sample Type:		**Groundwater**		**Groundwater**		**Groundwater**	
Method	Analyte		Lab Analytical Result	Validator Qualified Data	Lab Analytical Result	Validator Qualified Data	Lab Analytical Result	Validator Qualified Data
8260B	1,1,1,2-Tetrachloroethane	5	0.80 U		0.80 U		0.80 U	
8260B	1,1,1-Trichloroethane	5	0.40 U		0.40 U		0.40 U	
8260B	1,1,2,2-Tetrachloroethane	5	0.80 U		0.80 U		0.80 U	
8260B	1,1,2-Trichloroethane	1	0.80 U		0.80 U		0.80 U	
8260B	1,1-Dichloroethane	5	0.80 U		0.80 U		0.80 U	
8260B	1,1-Dichloroethene	5	0.80 U		0.80 U		0.80 U	
8260B	1,1-Dichloropropene	5	0.40 U		0.40 U		0.40 U	
8260B	1,2,3-Trichlorobenzene		0.80 U		0.80 U		0.80 U	
8260B	1,2,3-Trichloropropane	0.04	0.80 U		0.80 U		0.80 U	
8260B	1,2,4-Trichlorobenzene		0.80 U		0.80 U		0.80 U	
8260B	1,2,4-Trimethylbenzene	5	0.40 U		0.40 U		0.40 U	
8260B	1,2-Dibromo-3-chloropropane	0.04	1.6 U		1.6 U		1.6 U	
8260B	1,2-Dichlorobenzene	3	0.40 U		0.40 U		0.40 U	
8260B	1,2-Dichloroethane	0.6	0.40 U		0.40 U		0.40 U	
8260B	1,2-Dichloropropane	1	0.40 U		0.40 U		0.40 U	
8260B	1,3,5-Trimethylbenzene	5	0.40 U		0.40 U		0.40 U	
8260B	1,3-Dichlorobenzene	3	0.40 U		0.40 U		0.40 U	
8260B	1,3-Dichloropropane	5	0.80 U		0.80 U		0.80 U	
8260B	1,4-Dichlorobenzene	3	0.40 U		0.40 U		0.40 U	
8260B	1-Chlorohexane		0.40 U		0.40 U		0.40 U	
8260B	2,2-Dichloropropane	5	0.40 U		0.40 U		0.40 U	
8260B	2-Butanone	50	4.0 U		4.0 U		4.0 U	
8260B	2-Chlorotoluene	5	0.40 U		0.40 U		0.40 U	
8260B	2-Hexanone	50	4.0 U		4.0 U		4.0 U	
8260B	4-Chlorotoluene	5	0.80 U		0.80 U		0.80 U	
8260B	4-Isopropyltoluene	5	0.40 U		0.40 U		0.40 U	
8260B	4-Methyl-2-pentanone		3.2 U		3.2 U		3.2 U	
8260B	Acetone	50	6.4 U		6.4 U		6.4 U	
8260B	Benzene	1	0.40 U		0.40 U		0.40 U	
8260B	Bromobenzene	5	0.40 U		0.40 U		0.40 U	
8260B	Bromodichloromethane	50	0.40 U		0.40 U		0.40 U	
8260B	Bromoform	5	0.40 U		0.40 U		0.40 U	
8260B	Bromomethane		0.80 U		0.80 U		0.80 U	
8260B	Carbon disulfide	5	1.6 U		1.6 U		1.6 U	
8260B	Carbon tetrachloride	5	0.40 U		0.40 U		0.40 U	
8260B	Chlorobenzene		0.40 U		0.40 U		0.40 U	
8260B	Chlorobromomethane	50	0.20 U		0.20 U		0.20 U	
8260B	Chloroethane	5	1.6 U		1.6 U		1.6 U	
8260B	Chloroform	7	0.40 U		0.40 U		0.40 U	
8260B	Chloromethane	5	0.80 U		0.80 U		0.80 U	
8260B	cis-1,2-Dichloroethene	5	0.40 U		0.40 U		0.40 U	
8260B	cis-1,3-Dichloropropene	0.4	0.40 U		0.40 U		0.40 U	
8260B	Dibromochloromethane	5	0.40 U		0.40 U		0.40 U	
8260B	Dibromomethane	50	0.40 U		0.40 U		0.40 U	
8260B	Dichlorodifluoromethane	5	0.80 U		0.80 U		0.80 U	
8260B	Dichlorofluoromethane	5	0.80 U		0.80 U		0.80 U	
8260B	Ethylbenzene	5	0.40 U		0.40 U		0.40 U	
8260B	Hexachlorobutadiene	0.5	0.80 U		0.80 U		0.80 U	
8260B	Isopropylbenzene	5	0.40 U		0.40 U		0.40 U	
8260B	Methyl tert-butyl ether	10	0.80 U		0.80 U		0.80 U	
8260B	Methylene chloride	5	2.1 JBQ	5.0 U	2.2 JBQ	5.0 U	2.2 JBQ	5.0 U
8260B	m-Xylene & p-Xylene	5	0.80 U		0.80 U		0.80 U	
8260B	Naphthalene	10	0.80 U		0.80 U		0.80 U	
8260B	n-Butylbenzene	5	0.80 U		0.80 U		0.80 U	
8260B	N-Propylbenzene	5	0.40 U		0.40 U		0.40 U	
8260B	o-Xylene	5	0.40 U		0.40 U		0.40 U	
8260B	sec-Butylbenzene	5	0.40 U		0.40 U		0.40 U	
8260B	Styrene	930	0.40 U		0.40 U		0.40 U	
8260B	tert-Butylbenzene	5	0.40 U		0.40 U		0.40 U	
8260B	Tetrachloroethene	5	0.40 U		0.40 U		0.40 U	
8260B	Toluene	5	0.40 U		0.40 U		0.40 U	
8260B	trans-1,2-Dichloroethene	5	0.40 U		0.40 U		0.40 U	
8260B	trans-1,3-Dichloropropene	0.4	0.40 U		0.40 U		0.40 U	
8260B	Trichloroethene	5	0.40 U		0.40 U		0.40 U	
8260B	Trichlorofluoromethane	5	0.80 U		0.80 U		0.80 U	
8260B	Vinylchloride	2	0.20 U		0.20 U		0.20 U	
8260B	Xylenes, Total	5	0.80 U		0.80 U		0.80 U	

Results in micrograms per liter (µg/L).

FD = Field Duplicate
U = Analyte is not detected at the reported concentration.
JBQ = Analyte quantitation is estimated, the analyte was detected in an associated blank, and one or more quality control criteria failed.

Table 1
Motor Pool Landfill
Volatile Organic Compounds in Water
US Military Academy, West Point, New York

	Field ID:	**NYSDEC Screening Value**	**WP11-MP-2-102516 DUP**		**WP11-WQTB01-102516**		**WP11-WQEB01-102516**	
	Lab Sample ID:		**280-90206-4**		**280-90206-5**		**280-90206-6**	
	Date Collected:		**10/25/2016**		**10/25/2016**		**10/25/2016**	
	Sample Type:		**FD of WP11-MP-2-102516**		**Trip Blank**		**Equipment Blank**	
Method	Analyte		Lab Analytical Result	Validator Qualified Data	Lab Analytical Result	Validator Qualified Data	Lab Analytical Result	Validator Qualified Data
8260B	1,1,1,2-Tetrachloroethane	5	0.80 U		0.80 U		0.80 U	
8260B	1,1,1-Trichloroethane	5	0.40 U		0.40 U		0.40 U	
8260B	1,1,2,2-Tetrachloroethane	5	0.80 U		0.80 U		0.80 U	
8260B	1,1,2-Trichloroethane	1	0.80 U		0.80 U		0.80 U	
8260B	1,1-Dichloroethane	5	0.80 U		0.80 U		0.80 U	
8260B	1,1-Dichloroethene	5	0.80 U		0.80 U		0.80 U	
8260B	1,1-Dichloropropene	5	0.40 U		0.40 U		0.40 U	
8260B	1,2,3-Trichlorobenzene		0.80 U		0.80 U		0.80 U	
8260B	1,2,3-Trichloropropane	0.04	0.80 U		0.80 U		0.80 U	
8260B	1,2,4-Trichlorobenzene		0.80 U		0.80 U		0.80 U	
8260B	1,2,4-Trimethylbenzene	5	0.40 U		0.40 U		0.40 U	
8260B	1,2-Dibromo-3-chloropropane	0.04	1.6 U		1.6 U		1.6 U	
8260B	1,2-Dichlorobenzene	3	0.40 U		0.40 U		0.40 U	
8260B	1,2-Dichloroethane	0.6	0.40 U		0.40 U		0.40 U	
8260B	1,2-Dichloropropane	1	0.40 U		0.40 U		0.40 U	
8260B	1,3,5-Trimethylbenzene	5	0.40 U		0.40 U		0.40 U	
8260B	1,3-Dichlorobenzene	3	0.40 U		0.40 U		0.40 U	
8260B	1,3-Dichloropropane	5	0.80 U		0.80 U		0.80 U	
8260B	1,4-Dichlorobenzene	3	0.40 U		0.40 U		0.40 U	
8260B	1-Chlorohexane		0.40 U		0.40 U		0.40 U	
8260B	2,2-Dichloropropane	5	0.40 U		0.40 U		0.40 U	
8260B	2-Butanone	50	4.0 U		4.0 U		4.0 U	
8260B	2-Chlorotoluene	5	0.40 U		0.40 U		0.40 U	
8260B	2-Hexanone	50	4.0 U		4.0 U		4.0 U	
8260B	4-Chlorotoluene	5	0.80 U		0.80 U		0.80 U	
8260B	4-Isopropyltoluene	5	0.40 U		0.40 U		0.40 U	
8260B	4-Methyl-2-pentanone		3.2 U		3.2 U		3.2 U	
8260B	Acetone	50	6.4 U		6.4 U		12	
8260B	Benzene	1	0.40 U		0.40 U		0.40 U	
8260B	Bromobenzene	5	0.40 U		0.40 U		0.40 U	
8260B	Bromodichloromethane	50	0.40 U		0.40 U		0.40 U	
8260B	Bromoform	5	0.40 U		0.40 U		0.40 U	
8260B	Bromomethane		0.80 U		0.80 U		0.80 U	
8260B	Carbon disulfide	5	1.6 U		1.6 U		1.6 U	
8260B	Carbon tetrachloride	5	0.40 U		0.40 U		0.40 U	
8260B	Chlorobenzene		0.40 U		0.40 U		0.40 U	
8260B	Chlorobromomethane	50	0.20 U		0.20 U		0.20 U	
8260B	Chloroethane	5	1.6 U		1.6 U		1.6 U	
8260B	Chloroform	7	0.40 U		0.40 U		0.40 U	
8260B	Chloromethane	5	0.80 U		0.80 U		0.80 U	
8260B	cis-1,2-Dichloroethene	5	0.40 U		0.40 U		0.40 U	
8260B	cis-1,3-Dichloropropene	0.4	0.40 U		0.40 U		0.40 U	
8260B	Dibromochloromethane	5	0.40 U		0.40 U		0.40 U	
8260B	Dibromomethane	50	0.40 U		0.40 U		0.40 U	
8260B	Dichlorodifluoromethane	5	0.80 U		0.80 U		0.80 U	
8260B	Dichlorofluoromethane	5	0.80 U		0.80 U		0.80 U	
8260B	Ethylbenzene	5	0.40 U		0.40 U		0.40 U	
8260B	Hexachlorobutadiene	0.5	0.80 U		0.80 U		0.80 U	
8260B	Isopropylbenzene	5	0.40 U		0.40 U		0.40 U	
8260B	Methyl tert-butyl ether	10	0.80 U		0.80 U		0.80 U	
8260B	Methylene chloride	5	2.1 JBQ	5.0 U	1.8 JBQ	5.0 U	2.5 JBQ	5.0 U
8260B	m-Xylene & p-Xylene	5	0.80 U		0.80 U		0.80 U	
8260B	Naphthalene	10	0.80 U		0.80 U		0.80 U	
8260B	n-Butylbenzene	5	0.80 U		0.80 U		0.80 U	
8260B	N-Propylbenzene	5	0.40 U		0.40 U		0.40 U	
8260B	o-Xylene	5	0.40 U		0.40 U		0.40 U	
8260B	sec-Butylbenzene	5	0.40 U		0.40 U		0.40 U	
8260B	Styrene	930	0.40 U		0.40 U		0.40 U	
8260B	tert-Butylbenzene	5	0.40 U		0.40 U		0.40 U	
8260B	Tetrachloroethene	5	0.40 U		0.40 U		0.40 U	
8260B	Toluene	5	0.40 U		0.40 U		0.40 U	
8260B	trans-1,2-Dichloroethene	5	0.40 U		0.40 U		0.40 U	
8260B	trans-1,3-Dichloropropene	0.4	0.40 U		0.40 U		0.40 U	
8260B	Trichloroethene	5	0.40 U		0.40 U		0.40 U	
8260B	Trichlorofluoromethane	5	0.80 U		0.80 U		0.80 U	
8260B	Vinylchloride	2	0.20 U		0.20 U		0.20 U	
8260B	Xylenes, Total	5	0.80 U		0.80 U		0.80 U	

Results in micrograms per liter (µg/L).

Table 2
Motor Pool Landfill
Total and Dissolved Metals in Water
US Military Academy, West Point, New York

Field ID:		NYSDEC Screening Value	WP11-MP-4-102516				WP11-MP-3-102516				WP11-MP-2-102516			
Lab Sample ID:			280-90206-1				280-90206-2				280-90206-3			
Date Collected:			10/25/2016				10/25/2016				10/25/2016			
Sample Type:			Groundwater				Groundwater				Groundwater			
Method	Analyte		Total		Dissolved		Total		Dissolved		Total		Dissolved	
			Lab Analytical Result	Validator Qualified Data	Lab Analytical Result	Validator Qualified Data	Lab Analytical Result	Validator Qualified Data	Lab Analytical Result	Validator Qualified Data	Lab Analytical Result	Validator Qualified Data	Lab Analytical Result	Validator Qualified Data
6010C	Aluminum		70 U		70 U		70 U		70 U		70 U		70 U	
6010C	Antimony	3	12 U		12 U		12 U		12 U		12 U		12 U	
6010C	Arsenic	25	15 U		15 U		15 U		15 U		15 U		4.6 J	25 U
6010C	Barium	1,000	22		19		2.0 U		5.3 J		100		98	
6010C	Beryllium	11 - 1,100 [a]	1.2 U		1.2 U		1.2 U		1.2 U		1.2 U		1.2 U	
6010C	Boron		160		160		15 U		38 J		100		110	
6010C	Cadmium	5	0.74 J		0.46 J		1.8 U		1.8 U		1.8 U		0.49 J	
6010C	Calcium		71,000		65,000		14,000 J		28,000 J		120,000		120,000	
6010C	Chromium	50	2.6 U		2.6 U		2.6 U		2.6 U		2.6 U		2.6 U	
6010C	Cobalt		4.5 U		4.5 U		4.5 U		4.5 U		2.1 J		1.3 J	
6010C	Copper	200	10 U		10 U		10 U		10 U		10 U		10 U	
6010C	Iron	300	37 J	100 U	30 J		**14,000**		760		28 J	100 U	85 U	
6010C	Lead	25	10 U		10 U		10 U		10 U		10 U		10 U	
6010C	Magnesium	35,000	24,000		23,000		5,200 J		9,900 J		33,000		34,000	
6010C	Manganese	300	**1,200 J**	**1,200**	**1,200 J**	**1,200**	160 J		400 J		300		240	
6010C	Nickel	100	4 J		3.4 J		5.0 U		5.0 U		3.9 J		3.6 J	
6010C	Potassium		2,200 J		2,300 J	3,000 U	650 J		1,000 J		3,200		3,100	
6010C	Selenium	10	19 U		19 U		19 U		19 U		19 U		19 U	
6010C	Silver	50	3.5 UJ	3.5 U	0.95 J		3.5 U		3.5 U		3.5 UJ		3.5 U	
6010C	Sodium	20,000	**58,000**		**56,000**		8,800 J		**22,000 J**		**120,000**		**120,000**	
6010C	Thallium	8	5.5 J		19 U		19 U		19 U		19 U		19 U	
6010C	Tin		20 U		20 U		20 U		20 U		20 U		20 U	
6010C	Vanadium	14	4.0 U		4.0 U		4.0 U		4.0 U		4.0 U		4.0 U	
6010C	Zinc	Variable [b]	15 U		15 U		15 U		15 U		15 U		15 U	
7470A	Mercury	0.7	0.080 U		0.080 U		0.080 U		0.080 U		0.080 U		0.080 U	

(µg/L).

FD = Field Duplicate
NA = Not analyzed
U = Analyte is not detected at the reported concentration.
J = The reported concentration is estimated.
UJ = The detection limit is estimated.

Table 2
Motor Pool Landfill
Total and Dissolved Metals in Water
US Military Academy, West Point, New York

	Field ID:	NYSDEC Screening Value	WP11-MP-2-102516 DUP				WP11-WQEB01-102516			
	Lab Sample ID:		280-90206-4				280-90206-6			
	Date Collected:		10/25/2016				10/25/2016			
	Sample Type:		FD of WP11-MP-2-102516				Equipment Blank			
Method	Analyte		Total		Dissolved		Total		Dissolved	
			Lab Analytical Result	Validator Qualified Data	Lab Analytical Result	Validator Qualified Data	Lab Analytical Result	Validator Qualified Data	Lab Analytical Result	Validator Qualified Data
6010C	Aluminum		70 U		70 U		70 U		70 U	
6010C	Antimony	3	12 U		12 U		12 U		12 U	
6010C	Arsenic	25	15 U		15 U		15 U		15 U	
6010C	Barium	1,000	100		100		2.0 U		2.0 U	
6010C	Beryllium	11 - 1,100 [a]	1.2 U		1.2 U		1.2 U		1.2 U	
6010C	Boron		100		110		15 U		15 U	
6010C	Cadmium	5	1.8 U		1.8 U		1.8 U		1.8 U	
6010C	Calcium		120,000		120,000		140 U		140 U	
6010C	Chromium	50	2.6 U		2.6 U		2.6 U		2.6 U	
6010C	Cobalt		1.7 J		1.7 J		4.5 U		4.5 U	
6010C	Copper	200	10 U		10 U		10 U		10 U	
6010C	Iron	300	41 J	100 U	85 U		27 J		85 U	
6010C	Lead	25	10 U		10 U		10 U		10 U	
6010C	Magnesium	35,000	33,000		35,000		13 J		13 J	
6010C	Manganese	300	260		250		1.0 U		1.0 U	
6010C	Nickel	100	3.2 J		3.7 J		5.0 U		5.0 U	
6010C	Potassium		3,300		3,400		940 U		940 U	
6010C	Selenium	10	19 U		19 U		19 U		19 U	
6010C	Silver	50	3.5 U		3.5 U		3.5 U		3.5 U	
6010C	Sodium	20,000	**120,000**		**130,000**		280 J	5,000 U	330 J	5,000 U
6010C	Thallium	8	19 U		19 U		19 U		19 U	
6010C	Tin		20 U		20 U		20 U		20 U	
6010C	Vanadium	14	4.0 U		4.0 U		4.0 U		4.0 U	
6010C	Zinc	Variable [b]	15 U		15 U		15 U		15 U	
7470A	Mercury	0.7	0.080 U		0.080 U		0.080 U		0.080 U	

(µg/L).

FD = Field Duplicate
NA = Not analyzed
U = Analyte is not detected at the reported concentration.
J = The reported concentration is estimated.
UJ = The detection limit is estimated.

Table 3
Motor Pool Landfill
General Chemistry Results in Water
US Military Academy, West Point, New York

	Field ID:	Units	NYSDEC Screening Value	WP11-MP-4-102516		WP11-MP-3-102516		WP11-MP-2-102516		WP11-MP-2-102516 DUP		WP11-WQEB01-102516	
	Lab Sample ID:			280-90206-1		280-90206-2		280-90206-3		280-90206-4		280-90206-6	
	Date Collected:			10/25/2016		10/25/2016		10/25/2016		10/25/2016		10/25/2016	
	Sample Type:			Groundwater		Groundwater		Groundwater		FD of WP11-MP-2-102516		Equipment Blank	
Method	Analtye			Lab Analytical Result	Validator Qualified	Lab Analytical Result	Validator Qualified	Lab Analytical Result	Validator Qualified	Lab Analytical Result	Validator Qualified Data	Lab Analytical Result	Validator Qualified
SM 2320B	Alkalinity (as CaCO3)	mg/L		310 B	310	63 B	63	420 B	420	NA		NA	
EPA 350.1	Ammonia	mg/L		0.11		0.069 J		0.050 U		NA		NA	
SM5210B	Biochemical oxygen demand	mg/L		0.59 U		3.0 U		0.59 U		NA		NA	
9056A	Bromide	mg/L		0.32 J		0.20 U		0.38 J		NA		NA	
EPA 410.4	Chemical oxygen demand	mg/L		12 J	20 U	15 J	20 U	19 J	20 U	NA		NA	
9056A	Chloride	mg/L		89		9.0		220 D	220	NA		NA	
7196A	Chromium, hexavalent	mg/L	50	0.0040 U		0.0080 U		0.0040 U		NA		NA	
SM2120B	Color	PCU		5.0		250 D	250	5.0		NA		NA	
9056A	Nitrate as N	mg/L	20,000	0.67		0.10 U		0.58		NA		NA	
9056A	Nitrite as N	mg/L	20,000	0.10 U		0.10 U		0.10 U		NA		NA	
EPA 9066	Phenols, Total	mg/L	2	0.0083 JB	0.010 UJ	0.010 U		0.010 U		NA		NA	
9056A	Sulfate	mg/L	500,000	11		3.8 J		14		NA		NA	
EPA 9034	Sulfide	mg/L	1,000	1.9 U		1.9 U		1.9 U		NA		NA	
EPA 9060A	Total Organic Carbon (Quad)	mg/L		1.9		0.49 J		2.7		NA		NA	
EPA 351.2	Total Kjeldahl Nitrogen	mg/L		0.21 J		0.50 U		0.50 U		NA		NA	
EPA 9012B	Total Cyanide	mg/L		0.0092 J		0.0050 U		0.0050 U		NA		NA	
SM 2340C	Total Hardness	mg/L		290		75		460		460		1.5 U	
SM 2540C	Total Dissolved Solids	mg/L		460		97		750		NA		NA	

mg/L = milligrams per liter
PCU = Platinum-cobalt Color Unit
SM = Standard Methods

FD = Field Duplicate
NA = Not analyzed
U = Analyte is not detected at the reported concentration.
J = The reported concentration is estimated.
B = Blank contamination. The analyte was detected above one-half the reporting limit in an associated blank.
D + The reported value is a dilution.
UJ = The detection limit is estimated.

ATTACHMENT A
LABORATORY ANALTICAL DATA VALIDATION REPORT

Laboratory Analytical Data Validation

Site: WPTST-11
Date Completed: 1/17/2017
Review by: Tara Lambert
QA Review by: Gretchen Fodor
Sample Collection Dates: 10/25/2016
TestAmerica Project Number: 280-90054-1

This data validation memo describes the validation of three groundwater samples collected on October 25, 2016 by Weston Solutions, Inc. (WESTON) and analyzed for Biochemical Oxygen Demand (BOD), color, anions, and hexavalent chromium by the U.S Environmental Protection Agency (EPA) methods and Standards Methods (SM) indicated in the table below. Samples were analyzed by TestAmerica Laboratories located in Denver, Colorado and reported as sample delivery group (SDG) 280-90054-1. Samples included as part of this validation are listed below:

Sample ID	Date Sampled	TestAmerica, Denver Lab ID	*BOD SM5210B*	*Color SM2120B*	*Anions* 9056A*	*Hexavalent Chromium 7196A*
WP11-MP-4-102516	10/25/2016	280-90054-1	X	X	X	X
WP11-MP-3-102516	10/25/2016	280-90054-2	X	X	X	X
WM11-MP-2-102516	10/25/2016	280-90054-3	X	X	X	X

X – Analysis performed
* Anion list = nitrate, nitrite, chloride, sulfate, bromide

Data Qualification Summary Table:

Sample ID	Date Sampled	TestAmerica, Denver Lab ID	Data Qualifiers
WP11-MP-4-102516	10/25/2016	280-90054-1	None
WP11-MP-3-102516	10/25/2016	280-90054-2	None
WP11-MP-2-102516	10/25/2016	280-90054-3	None

Validation was conducted according to this hierarchy of validation guidance: Department of Defense (DoD) Quality Systems Manual for Environmental Laboratories, v 4.2 (QSM 4.2), October 2010 (DoD, 2010), USEPA Contract Laboratory Program National Functional Guidelines for Superfund Inorganic Superfund Data Review (NFG) (USEPA, 2010). The site Quality Assurance Project Plan (QAPP) (WESTON, 2013) and analytical methods were also consulted during the data validation. Sample results with data validation qualifiers are provided on Table 1 as an attachment to this data validation memo.

Data Validation Detail:

- **Data Package Completeness**

  The Level IV data package was reviewed to make certain that it contained the data required in the deliverable. This included checking the data package for the results of each analyte requested for each field sample submitted in the analytical batch, along with requested quality control (QC) documentation for the method.

- **Laboratory Case Narrative/Cooler Receipt Form**

  The following issues were noted in the review of the chain-of-custody (COC) documentation, case narrative, and sample receiving documents.

  - Sample WP11-MP-3-102516 did not have a collection time noted on one of the container labels. The laboratory logged the collection time for this sample that was recorded on the COC. The laboratory contacted WESTON regarding this discrepancy. Data quality was not impacted.

- **Holding Times, Storage, and Preservation**

  Review of the sample collection and analysis dates involved comparing the COC, the summary forms, and the data report for holding time compliance. Samples were received correctly, intact, and properly preserved except as noted below:

  - The cooler temperature upon laboratory receipt was recorded as 0.1°C, which is outside the QAPP limit of 4±2°C. No data qualifiers were applied on the basis of low temperature.

- **Initial Calibration (ICAL) and Initial Calibration Verification (ICV)**

  ICAL correlation coefficients (r) and/or ICV acceptance criteria were met for all parameters.

- **Continuing Calibration Verification (CCV)**

  CCV acceptance criteria for percent recoveries (%Rs) were met for all parameters.

- **Method Blank and Laboratory Blanks**

  All method, and laboratory calibration blanks were non-detected. Field blanks were not collected for this sample set. No qualifications were applied based on blank actions.

- **Matrix Spike/Matrix Spike Duplicates (MS/MSD)**

  MS and MSD analyses were only performed on hexavalent chromium for sample WP11-MP-4-102516 in association with these field samples. All recoveries and relative percent differences were within the QAPP and the DoD QSM 4.2 acceptance criteria. MS and MSD analyses were not required by WESTON for any of these parameters.

- **Laboratory Duplicate**

  A laboratory duplicate was performed on sample WP11-MP-4-102516 for hexavalent chromium and color. Hexavalent chromium was not detected in the sample or the laboratory duplicate and was detected at the same value in both field duplicate sample results. Laboratory precision was deemed acceptable

- **Laboratory Control Sample (LCS)**

  All LCS recoveries were within the QAPP and the DoD QSM 4.2 acceptance criteria. An LCS is not required for color analysis.

- **Field Duplicates**

  Field duplicates were not collected for this set of samples.

- **Target Analyte Identification and Quantitation**

  Target compound identification followed the analytical method. Retention times for anion analysis were consistent with the analytical standards. Dilutions were not required for any of the samples with the following exceptions:

  - Due to matrix interference, sample WP11-MP-3-102516 was analyzed at a 2-fold dilution for hexavalent chromium and a 5-fold dilution for BOD.
  - Color was reported from a 10-fold sample dilution for sample WP11-MP-3-102516.
  - High concentrations of chloride in sample WM11-MP-2-102516 required a 5-fold dilution.

  The DoD Limits of Quantitation (LOQs), Limits of Detection (LODs), and detection limits (DLs) were adjusted accordingly.

  For most analyses, non-detected results were reported to the LOD in accordance with DoD QSM 4.2. The laboratory also reported the LOQ for each analyte on the sample result sheet (Form 1). Any reported target analytes which were qualitatively identified at concentrations below the LOQs were reported with a “J” qualifier to indicate that the result is estimated as required by DoD QSM 4.2. The “J” qualifier was retained by the validator.

  The LOQs are consistent with the LOQs listed in the QAPP with the exception of bromide. The lab reported a higher LOQ of 0.5 milligram per liter (mg/L) than that listed in the QAPP (0.2 mg/L).

Overall Evaluation

All validation elements were acceptable and the data, as qualified, are acceptable for its intended use.

Data Validation Qualifiers

Validation Qualifier	Definition
J	The reported positive result is considered estimated, because the result is less than the LOQ or because certain quality control criteria were not met.
U	The analyte was not detected and is reported as less than the LOD or as defined by the client.
UJ	The analyte was not detected in the sample. The LOD (or LOQ) should be considered estimated and may be inaccurate or imprecise.
R	The result for this analyte is unusable. The analyte may or may not be present.

References

U.S. Department of Defense (DoD). DoD Quality Systems Manual for Environmental Laboratories, Version 4.2, October, 2010. (DoD, 2010).

USEPA Contract Laboratory Program (USEPA), National Functional Guidelines for Superfund Inorganic Superfund Data Review (USEPA, 2010).

Weston Solutions, Inc. (WESTON). Uniform Federal Policy Quality Assurance Project Plan, Annual Monitoring at Former Motor Pool Landfill (WPTST-11) United States Military Academy, West Point, New York, Version 00, June 2013. (WESTON, 2013)

Table 1
West Point Motor Pool Landfill
General Chemistry Results in Water

		Field ID:	WP11-MP-4-102516	WP11-MP-3-102516	WM11-MP-2-102516
		Lab Sample ID:	280-90054-1	280-90054-2	280-90054-3
		Date Collected:	10/25/2016	10/25/2016	10/25/2016
		Sample Type:	Groundwater	Groundwater	Groundwater
Method	Analyte	Units	Qualified Result	Qualified Result	Qualified Result
7196A	Chromium, hexavalent	mg/L	0.0040 U	0.0080 U	0.0040 U
SM2120B	Color	PCU	5.0	250	5.0
9056A	Bromide	mg/L	0.32 J	0.20 U	0.38 J
9056A	Nitrate as N	mg/L	0.67	0.10 U	0.58
9056A	Chloride	mg/L	89	9.0	220
9056A	Nitrite as N	mg/L	0.10 U	0.10 U	0.10 U
9056A	Sulfate	mg/L	11	3.8 J	14
SM5210B	Biochemical oxygen demand	mg/L	0.59 U	3.0 U	0.59 U

mg/L = milligrams per liter

PCU = Platinum-cobalt Color Unit

SM = Standard Methods

U = Analyte is not detected at the reported concentration.

J = The reported concentration is estimated.

Laboratory Analytical Data Validation

Site: WPTST-11
Date Completed: 1/17/2017
Review by: Tara Lambert
QA Review by: Gretchen Fodor
Sample Collection Date(s): 10/25/2016 and 10/26/2016
TestAmerica Project Number: 280-90206-1 (Rev. 2)

This data validation memo describes the validation of five groundwater samples, one equipment rinsate blank, and one trip blank. Samples were collected on October 25 and 26, 2016 by Weston Solutions, Inc. (WESTON). Analyses included Volatile Organic Compounds (VOCs) and Total and Dissolved Metals, and Total Hardness by the U.S. Environmental Protection Agency (EPA) methods and Standard Methods (SM) indicated in the table below. Other general chemistry parameters included ammonia (EPA 350.1), Total Kjeldahl Nitrogen (TKN) (EPA 351.2), Chemical Oxygen Demand (COD) (EPA 410.4), Total Cyanide (EPA 9012B), Total Sulfide (EPA 9034), Total Organic Carbon (TOC) (EPA 9060A), Total Phenols (EPA 9066), Alkalinity (SM2320B), and Total Dissolved Solids (TDS) (SM2540C).

Samples were analyzed by TestAmerica Laboratories located in Denver, Colorado and reported as sample delivery group (SDG) 280-90206-1. Samples included as part of this validation are listed below:

Sample ID	Date Sampled	TestAmerica Denver Lab ID	*VOC 8260B*	*Total and Dissolved TAL Metals + Boron and Tin 6010C/7470A*	*Total Hardness SM2340C*	*General Chemistry*
WP11-MP-4-102516	10/25/2016	280-90206-1	X	X	X	X
WP11-MP-3-102516	10/25/2016	280-90206-2	X	X	X	X
WP11-MP-2-102516	10/25/2016	280-90206-3	X	X	X	X
WP11-MP-2-102516 DUP	10/25/2016	280-90206-4	X	X	X	
WP11-WQTB01-102516	10/25/2016	280-90206-5	X			
WP11-WQEB01-102516	10/25/2016	280-90206-6	X	X	X	
WSTPT-01-PXMW-01	10/26/2016	280-90206-7		X	X	

X – Analysis performed

Data Qualification Summary Table

The following data validation qualifiers were applied to field sample data based on WESTON's data review.

Sample ID	Date Sampled	TestAmerica, Denver Lab ID	Data Qualifiers
WP11-MP-4-102516	10/25/2016	280-90206-1	U: methylene chloride U: total iron U: dissolved potassium U: COD UJ: Total phenols
WP11-MP-3-102516	10/25/2016	280-90206-2	U: methylene chloride U: COD J: Total and dissolved calcium J: Total and dissolved magnesium J: Total and dissolved manganese J: Total and dissolved sodium
WP11-MP-2-102516	10/25/2016	280-90206-3	U: methylene chloride U: total iron U: dissolved arsenic U: COD
WP11-MP-2-102516 DUP	10/25/2016	280-90206-4	U: methylene chloride U: total iron
WP11-WQTB01-102516	10/25/2016	280-90206-5	U: methylene chloride
WP11-WQEB01-102516	10/25/2016	280-90206-6	U: methylene chloride U: total sodium U: dissolved sodium

Validation was conducted according to this hierarchy of validation guidance: Department of Defense (DoD) Quality Systems Manual for Environmental Laboratories, v. 4.2 (QSM 4.2), October 2010 (DoD, 2010), United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (USEPA, 2008), and USEPA Contract Laboratory Program National Functional Guidelines for Superfund Inorganic Superfund Data Review (USEPA, 2010). The site Quality Assurance Project Plan (QAPP) (WESTON, 2013) and analytical methods were also consulted during the data validation. Sample results with data validation qualifiers are provided on Tables 1 through 3 as an attachment to this data validation memo.

Data Validation Detail:

- **Data Package Completeness and Correctness**

  The Level IV data package was reviewed to make certain that it contained the data required in the deliverable. This included checking the data package for the results of each analyte requested for each field sample submitted in the analytical batch, along with requested quality control (QC) documentation for the method.

  The following issues were noted during the review of the data package:

  - The results for one VOC analyte, dichlorofluoromethane, were not reported on the laboratory control sample (LCS) and matrix spike/matrix spike duplicate (MS/MSD) forms in the original report. Based on a review of the raw data, these analytes were spiked. The laboratory was contacted regarding this discrepancy and resubmitted Revision 1 of the data package with the corrected forms. No validation action was taken on this basis.
  - The field sample identifier (ID) for the equipment blank was incorrectly listed as WP11-WQEB01-102616 in the original report. The field sample ID was corrected to WP11-WQEB01-102516 in Revision 2 of the data package.
  - The laboratory was asked to investigate why dissolved metals results for calcium, magnesium, manganese, potassium, and sodium were significantly higher than total metals results for these analytes in sample WP11-MP-3-102516. The resolution of this issue is discussed in the Target Analyte Identification and Quantitation section below.

- **Laboratory Case Narrative/Cooler Receipt Form**

  Samples were received in two coolers. Other than issues noted in the sections of this data validation report below, there were no other significant issues noted in the review of the chain-of-custody (COC) documentation, case narrative, and sample receiving documents that affected data quality.

- **Holding Times, Storage, and Preservation**

  Review of the sample collection and analysis dates involved comparing the chain-of-custody, the summary forms, and the data report for holding time compliance. Samples for the analyses validated were received correctly, intact, and properly preserved. All samples were prepared and analyzed within the turnaround time required by the project.

- **Instrument Performance Check**

  <u>VOC</u>

  The instrument met all applicable performance check requirements. The instrument performance check included verification of 4-Bromofluorobenzene (BFB) tunes for VOCs. Samples were analyzed within 12 hours of the BFB tunes.

- **Initial Calibration (ICAL)/Initial Calibration Verification (ICV)**

  <u>VOC</u>

  ICAL and ICV acceptance criteria for relative response factors (RRFs), percent relative standard deviations (%RSD), and/or correlation coefficients (r) were met for all analytes.

Metals

Initial calibration was performed for Methods 6010C and 7470A as per DoD QSM 4.2. The laboratory analyzed high-level ICVs for aluminum, iron, and sodium, and mid-level ICVs well as low-level ICVs for all target analytes required by Method 6010C. The concentration of the target analytes in the mid-level ICVs were at the same concentration as the standard used in the ICAL while the concentration of the target analytes in the low-level ICVs were at or below the LOQ. The percent recoveries (%Rs) of all target analytes in the mid-level ICVs were within DoD QSM 4.2 limits of 90-110 %R. The percent recoveries of all target analytes in the low-level ICVs were within the Method 6010C, and the QAPP criteria of 70-130 %R.

General Chemistry

Initial calibrations and ICVs, as applicable, were performed for Alkalinity, COD, ammonia, TKN, TOC, Sulfides, Total Phenols, and Total Cyanide as per the QAPP and laboratory standard operating procedures (SOPs). All acceptance criteria were met.

- **Continuing Calibration Verification (CCV)**

VOC

CCV acceptance criteria for RRFs and percent difference or percent drift (%D) were met for all parameters.

Metals

The laboratory analyzed high-level CCVs for aluminum, iron, and sodium, and mid-level CCVs as well as low-level CCVs for all target analytes required by Method 6010C. The concentration of the target analytes in the mid-level CCVs were at the same concentration as the standard used in the ICAL while the concentration of the target analytes in the low-level CCVs were at or below the Limit of Quantitation (LOQ). The percent recoveries of all target analytes in the mid-level CCVs were within DoD QSM 4.2 limits of 90-110 %R. The percent recoveries of all target analytes in the low-level CCVs were within the Method 6010C and the QAPP criteria of 70-130 %R.

As per DoD QSM 4.2, the laboratory analyzed low-level check samples (referred to as a "CRQL" check standard) that were associated with all samples. All target analytes were spiked in these low-level check samples and all analytes met the acceptance limits of 80-120 %R specified in DoD QSM 4.2.

General Chemistry

CCVs were analyzed for Alkalinity, COD, Ammonia, TKN, TOC, Sulfides, Total Phenols, and Total Cyanide as per DoD QSM 4.2. All CCVs met the QAPP or Laboratory QC limits.

- **Method Blank and Field Blanks**

VOC

Methylene chloride was detected above ½ the LOQ in the laboratory method blank and 1,2,4-trichlorobenzene and 1,2-dichlorobenzene were detected slightly above the

detection limit (DL) in the method blank (MB) associated with all field samples. Acetone was also detected in equipment blank WP11-WQEB01-102516 above the LOQ. The following table summarizes the contamination detected and sample qualifications based on blank actions.

Blank Type or ID (QC Batch No.)	Analyte	Conc. Detected (µg/L)	Associated Samples	Sample Qualifications
Equipment Blank WP11-WQEB01-102516 Collected 10/25/2016	Acetone	12	WP11-MP-4-102516 WP11-MP-3-102516 WP11-MP-2-102516 WP11-MP-2-102516 Dup	None. Not detected in field samples.
MB 280-350114/6 11/07/2016	1,2,4-tri-chlorobenzene	0.346 J	WP11-MP-4-102516 WP11-MP-3-102516 WP11-MP-2-102516 WP11-MP-2-102516 Dup WP11-WQTB01-102516 WP11-WQEB01-102516	None. Not detected in field samples.
	1,2-dichloro-benzene	0.153 J		None. Not detected in field samples.
	Methylene chloride	3.71 J		Result raised to LOQ and reported as non-detected (U) in all field samples.

MB = Laboratory Method Blank

Metals

All laboratory blanks (method blanks and instrument blanks) and the equipment rinsate blank results were reviewed to assess whether samples may have been contaminated in the laboratory or in the field. Instrument blank contamination was reported for antimony, sodium, arsenic, and potassium. Method blank contamination was reported for total and dissolved sodium and dissolved potassium. The total metals results for the equipment blank included detections for iron, magnesium, and sodium; however, the total sodium results in the equipment blank were attributed to and qualified as non-detected (U) due to laboratory blank contamination. The dissolved metals results for the equipment blank included detections for magnesium and sodium; however, the dissolved sodium results in the equipment blank were attributed to and qualified as non-detected (U) due to laboratory blank contamination.

The following table summarizes the contamination detected and sample qualifications based on blank actions. If the analyte was detected in both the method blank and the CCB, the method blank results were used to qualify results in the associated samples.

Blank Type or ID (QC Batch No.)	Analyte	Conc. Detected (µg/L)	Associated Samples	Sample Qualifications
MB 280-350306/1	total sodium	149 J	WP11-MP-4-102516 WP11-MP-3-102516 WP11-MP-2-102516 WP11-MP-2-102516 DUP WP11-WQEB01-102516 WSTPT-01-PXMW-01	Result raised to LOQ and reported as non-detected (U) in sample WP11-WQEB01-102516. *Not detected in remaining field samples*

Blank Type or ID (QC Batch No.)	Analyte	Conc. Detected (µg/L)	Associated Samples	Sample Qualifications
MB 280-350292/1	dissolved sodium	186 J	WP11-MP-4-102516 WP11-MP-3-102516 WP11-MP-2-102516 WP11-MP-2-102516 DUP WP11-WQEB01-102516 WSTPT-01-PXMW-01	Result raised to LOQ and reported as non-detected (U) in sample WP11-WQEB01-102516. *Not detected in remaining field samples.*
MB 280-350705/1	dissolved potassium	404 J	WP11-MP-4-102516	Result raised to LOQ and reported as non-detected (U).
CCB 280-351153/35	dissolved arsenic	4.54 J	WP11-MP-2-102516	Result raised to LOQ and reported as non-detected (U).
WP11-WQEB01-102516	total iron	27 J	WP11-MP-4-102516 WP11-MP-3-102516 WP11-MP-2-102516 WP11-MP-2-102516 DUP WSTPT-01-PXMW-01	Result raised to LOQ and reported as non-detected (U) in samples WP11-MP-4-102516, WP11-MP-2-102516, WP11-MP-2-102516 DUP. *Not detected in remaining field samples.*

MB = Laboratory Method Blank CCB = continuing calibration blank

General Chemistry

Total phenols, COD, and alkalinity were detected in the laboratory MB or CCBs associated with field samples. The following table summarizes the contamination detected and sample qualifications based on blank actions.

Blank Type or ID (QC Batch No.)	Analyte	Conc. Detected (µg/L)	Associated Samples	Sample Qualifications
MB 280-351881/2-A	Total Phenols	0.00966 J	WP11-MP-4-102516 WP11-MP-3-102516 WP11-MP-2-102516	Result raised to LOQ and reported as non-detected (U) in sample WP11-MP-4-102516. *Not detected in remaining field samples.*
MB 280-351005/5	COD	0.920 J	WP11-MP-4-102516 WP11-MP-3-102516 WP11-MP-2-102516	Result raised to LOQ and reported as non-detected (U) in samples WP11-MP-4-102516, WP11-MP-3-102516, and WP11-MP-2-102516.
CCBs Batch 349858: 11/03/2016 16:32 11/03/2016 17:46	Alkalinity	2.70 J	WP11-MP-4-102516 WP11-MP-3-102516 WP11-MP-2-102516	None. Sample results all >LOQ.
MB 280-349858/5 11/03/2016 15:23	Alkalinity	2.61 J	WP11-MP-4-102516 WP11-MP-3-102516 WP11-MP-2-102516	None. Sample results all >LOQ.

MB = Laboratory Method Blank
CCB = Continuing Calibration Blank

- **Surrogate Spikes**

  VOC

  Surrogates were added to all samples and QC samples as required by the analytical method. All surrogate recoveries were within the QAPP and DoD QSM 4.2 acceptance criteria.

- **Matrix Spike/Matrix Spike Duplicates (MS/MSD)**

  VOC

  MS and MSD analyses were performed on sample WP11-MP-4-102516 in association with these field samples. All recoveries and relative percent differences (RPDs) were within the QAPP and the DoD QSM 4.2 acceptance criteria. No data qualifiers were necessary based on MS and MSD analyses.

  Metals

  MS and MSD analyses were performed on total metals sample WP11-MP-4-102516, and on dissolved metals samples WP11-MP-4-102516 and WP11-MP-3-102516 in association with these field samples. All target analyte recoveries and RPDs were within the QAPP and DoD QSM 4.2 acceptance limits. No data qualifiers were necessary based on MS and MSD analyses.

  General Chemistry

  MS and MSD analyses were only performed for Total Phenols on sample WP11-MP-4-102516 in association with these field samples. MS and MSD were not requested or performed for any other general chemistry analyses. All recoveries and RPDs were within the QAPP and the DoD QSM 4.2 acceptance criteria except for the following:

  - The recoveries for total phenols in the MS (84%R) and MSD (83%R) were less than the QAPP lower QC limit of 90%R. The non-detected result for Total Phenols in sample WP11-MP-4-102516 was qualified as estimated (UJ); remaining sample results for Total Phenols were not qualified because the LCS recovery was acceptable.

- **Laboratory Control Sample (LCS)**

  All LCS recoveries were within the QAPP and the DoD QSM 4.2 acceptance criteria except for one analyte:

  - Recovery for methylene chloride (230%R) exceeded the 140%R upper QC limit. As mentioned previously, all field sample detections for methylene chloride were attributed to laboratory blank contamination and were reported as non-detected at the LOQ. No qualifiers were applied to the methylene chloride results based on the high recovery of methylene chloride in the LCS.

- **Field Duplicates**

  Field duplicates were only collected for VOCs, total and dissolved metals, and total hardness. Samples WP11-MP-2-102516 and WP11-MP-2-102516-DUP were submitted as the field duplicate samples with this SDG.

VOC

Methylene chloride was reported in both field duplicate samples, however, the detected results for methylene chloride were reported as non-detected at the LOQ due to laboratory blank contamination. Field duplicate precision was deemed acceptable.

Metals and Hardness

Results for detections in field duplicate samples are presented below. Field duplicate precision is evaluated by calculating the RPD between the field duplicate results. The NFG has not established acceptance criteria for field duplicate precision; however, the QAPP specified RPD acceptance criteria of ≤30% when both sample results are greater than the reporting limit (RL) (i.e., the LOQ). Additionally, based on professional judgment, the control limit used when either or both field duplicate samples were non-detected or contained analytes at concentrations less than the LOQ was ±2x LOQ.

Analyte	WP11-MP-2-102516 Sample Conc. (µg/L)	WP11-MP-2-102516-Dup Field Duplicate Conc. (µg/L)	RPD	Action
Barium, Total	100	100	0	A
Calcium, Total	120,000	120,000	0	A
Boron, Total	100	100	0	A
Cobalt, Total	2.1 J	1.7 J	21.0	A*
Magnesium, Total	33,000	33,000	0	A
Manganese, Total	300	260	14.3	A
Nickel, Total	3.9 J	3.2 J	19.7	A*
Potassium, Total	3,200	3,300	3.1	A*
Sodium, Total	120,000	120,000	0	A
Hardness	460	460	0	A

A – Accept result without qualification.
A* - Accept result without qualification. Field duplicate results within ±2x LOQ control limit.
RPD = Relative percent difference
µg/L = micrograms per liter

Analyte	WP11-MP-2-102516 Sample Conc. (µg/L)	WP11-MP-2-102516-DUP Field Duplicate Conc. (µg/L)	RPD	Action
Barium, Dissolved	98	100	2.0	A
Cadmium, Dissolved	0.49 J	1.8 U	NC	A
Calcium, Dissolved	120,000	120,000	0	A
Cobalt, Dissolved	1.3 J	1.7 J	26.7	A*
Magnesium, Dissolved	34,000	35,000	2.9	A
Manganese, Dissolved	240	250	4.1	A
Nickel, Dissolved	3.6 J	3.7 J	2.7	A*
Potassium, Dissolved	3,100	3,400	9.2	A*
Sodium, Dissolved	120,000	130,000	8.0	A
Boron, Dissolved	110	110	0	A

A – Accept result without qualification.
A* - Accept result without qualification. Field duplicate results within ±2x LOQ control limit.
NC – Not calculable
RPD = Relative percent difference

Field duplicate criteria were met for the metals field duplicate sample analyses.

- **Internal Standards**

  VOC

  All QC criteria were met for Internal Standards (IS) in all calibrations and field samples.

- **ICP Interference Check Samples**

  Metals

  Although Method 6010C only requires the analysis of an Interference Check Sample A (ICSA) solution and does not require the analysis of an Interference Check Sample AB (ICSAB) solution, the laboratory analyzed both an ICSA and an ICSAB as required by the QAPP and DoD QSM 4.2. The ICSA and ICSAB were analyzed at the proper frequency.

  The ICSAB solution contained all target analytes of interest. Recoveries for the analytes of interest were within QAPP and DoD QSM 4.2 laboratory acceptance limits in the ICSAB analyses.

- **Serial Dilution Results**

  Metals

  Serial dilution analyses were performed on total metals samples WP11-MP-4-102516 (all analytes except selenium) and WP-MP-3-102516 (for selenium only), and on dissolved metals samples WP11-MP-4-102516 (all analytes) and WP-MP-3-102516 (all analytes except arsenic, selenium, and zinc) in association with these field samples. The percent differences for all target analytes exceeding 50 times the LOQ were within the QSM 4.2, QAPP, and Method 6010C acceptance criteria of ≤10%D.

- **Target Analyte Identification and Quantitation**

  Non-detected results were reported to the Limit of Detection (LOD) in accordance with DoD QSM 4.2. The laboratory also reported the LOQ for each analyte on the sample result sheet (Form 1). The laboratory reported target analytes, which were qualitatively identified at concentrations below the LOQs, with a "J" qualifier to indicate that the result is estimated as required by DoD QSM 4.2. The "J" qualifier was retained by the validator.

  VOC

  Target analyte identification followed the analytical method. Retention times and Mass Spectra were consistent with the analytical standards. The LOQs are consistent with the LOQs listed in the QAPP with the exception of 4-isopropyltoluene. The lab reported a lower LOQ and DL than listed in the QAPP. Two analytes, hexachlorobutadiene and n-butylbenzene, were reported with higher DLs (0.36 µg/L and 0.32 µg/L, respectively)

than those listed in the QAPP (0.12 µg/L and 0.14 µg/L, respectively). The Project Action Limit (PAL) for hexachlorobutadiene is 0.5 µg/L. A PAL has not been established for n-butylbenzene. Note: The QAPP listed three analytes, hexachlorobutadiene, 1,2-dibromo-3-chloropropane, and 1,2,3-trichloro-propane which had lower PALs than the reported LODs. All samples were non-detected for these three analytes.

Total and Dissolved Metals

The reported LOQs are consistent with the LOQs listed in the QAPP. Dilutions were not required for any of the samples, therefore, the LOQs, LODs, and DLs were not affected.

The laboratory was asked to investigate why dissolved metals results for several metals were significantly higher than the total metals results for these same analytes in sample WP11-MP-3-102516. On 1/12/2017, the laboratory re-analyzed the undigested contents for the bottle labeled "T" for total metals and the bottle labeled "SOL" for soluble or dissolved metals. The undigested metals results for these five metals were higher in concentration in the bottle labeled "SOL" than in the bottle labeled "T" which confirms that there was not a sample switch in the laboratory. WESTON calculated the percent difference (%D) between the total and dissolved metals and used 10%D as the criterion to qualify the sample data. All sample results for total and dissolved metals were within the 10%D criterion except for the following:

Sample WP11-MP-3-102516				
Analyte	**Total Conc. (µg/L)**	**Dissolved Conc. (µg/L)**	**%D**	**Sample Qualification**
calcium	14,000	28,000	-100%	J
magnesium	5,200	9,900	-90%	J
manganese	160	400	-150%	J
potassium	650 J	1,000 J	-54%	None. Results already qualified J because < LOQ.
sodium	8,800	22,000	-150%	J

These results suggest that the bottles containing the total and dissolved samples may have been mislabeled in the field. Total and Dissolved results for sample WP11-MP-3-102516 were qualified as indicated above.

General Chemistry

The LOQs are consistent with the LOQs listed in the QAPP with the exception of total phenols. The lab reported a lower LOQ [0.01 milligrams per liter (mg/L)] than that listed in the QAPP (0.02 mg/L). The PAL for Total Phenols is 0.002 mg/L, which is lower than the LOD of 0.01 mg/L and DL of 0.0068 mg/L, indicating that project the sensitivity for Total Phenols was not met.

Dilutions were not required for any of the general chemistry samples, therefore LOQs, LODs, and DLs were not affected.

Overall Evaluation

The detected results for methylene chloride in all field samples were attributed to laboratory contamination and the results was raised to the LOQ and reported as non-detected.

The detected results for total and dissolved sodium in the equipment blank, dissolved arsenic in one groundwater sample, dissolved potassium in one sample, and total iron in three groundwater samples were attributed to laboratory contamination and the results were raised to the LOQ and reported as non-detected.

The detected results for total and dissolved calcium, magnesium, manganese, and sodium were qualified as estimated (J) in one sample because the %D between the total and dissolved results exceeded the 10% criterion.

The detected result for Total Phenols in one groundwater sample was attributed to laboratory contamination and the results was raised to the LOQ and reported as non-detected. This sample result was further qualified as estimated (UJ) due to the low recoveries of the MS and MSD prepared from this sample.

The detected results for COD in three groundwater samples were attributed to laboratory contamination and the results was raised to the LOQ and reported as non-detected.

Data Validation Qualifiers

Validation Qualifier	Definition
J	The reported positive result is considered estimated, because the result is less than the LOQ or because certain quality control criteria were not met.
U	The analyte was not detected and is reported as less than the LOD or as defined by the client.
UJ	The analyte was not detected in the sample. The LOD (or LOQ) should be considered estimated and may be inaccurate or imprecise.
R	The result for this analyte is unusable. The analyte may or may not be present.

References

U.S. Department of Defense (DoD). DoD Quality Systems Manual for Environmental Laboratories, Version 4.2, October, 2010. (DoD, 2010).

U.S. Environmental Protection Agency (USEPA). USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June, 2008. (USEPA, 2008).

USEPA Contract Laboratory Program (USEPA), National Functional Guidelines for Superfund Inorganic Superfund Data Review (USEPA, 2010).

Weston Solutions, Inc. (WESTON). Uniform Federal Policy Quality Assurance Project Plan, Annual Monitoring at Former Motor Pool Landfill (WPTST-11) United States Military Academy, West Point, New York, Version 00, June 2013. (WESTON, 2013)

Table 1
West Point Motor Pool Landfill
Volatile Organic Compounds in Water

	Field ID:	WP11-MP-4-102516	WP11-MP-3-102516	WP11-MP-2-102516	WP11-MP-2-102516 DUP
	Lab Sample ID:	280-90206-1	280-90206-2	280-90206-3	280-90206-4
	Date Collected:	10/25/2016	10/25/2016	10/25/2016	10/25/2016
	Sample Type:	Groundwater	Groundwater	Groundwater	FD of WP11-MP-2-102516
Method	Analyte	Qualified Result	Qualified Result	Qualified Result	Qualified Result
8260B	1,1,1,2-Tetrachloroethane	0.80 U	0.80 U	0.80 U	0.80 U
8260B	1,1,1-Trichloroethane	0.40 U	0.40 U	0.40 U	0.40 U
8260B	1,1,2,2-Tetrachloroethane	0.80 U	0.80 U	0.80 U	0.80 U
8260B	1,1,2-Trichloroethane	0.80 U	0.80 U	0.80 U	0.80 U
8260B	1,1-Dichloroethane	0.80 U	0.80 U	0.80 U	0.80 U
8260B	1,1-Dichloroethene	0.80 U	0.80 U	0.80 U	0.80 U
8260B	1,1-Dichloropropene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	1,2,3-Trichlorobenzene	0.80 U	0.80 U	0.80 U	0.80 U
8260B	1,2,3-Trichloropropane	0.80 U	0.80 U	0.80 U	0.80 U
8260B	1,2,4-Trichlorobenzene	0.80 U	0.80 U	0.80 U	0.80 U
8260B	1,2,4-Trimethylbenzene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	1,2-Dibromo-3-chloropropane	1.6 U	1.6 U	1.6 U	1.6 U
8260B	1,2-Dichlorobenzene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	1,2-Dichloroethane	0.40 U	0.40 U	0.40 U	0.40 U
8260B	1,2-Dichloropropane	0.40 U	0.40 U	0.40 U	0.40 U
8260B	1,3,5-Trimethylbenzene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	1,3-Dichlorobenzene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	1,3-Dichloropropane	0.80 U	0.80 U	0.80 U	0.80 U
8260B	1,4-Dichlorobenzene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	1-Chlorohexane	0.40 U	0.40 U	0.40 U	0.40 U
8260B	2,2-Dichloropropane	0.40 U	0.40 U	0.40 U	0.40 U
8260B	2-Butanone	4.0 U	4.0 U	4.0 U	4.0 U
8260B	2-Chlorotoluene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	2-Hexanone	4.0 U	4.0 U	4.0 U	4.0 U
8260B	4-Chlorotoluene	0.80 U	0.80 U	0.80 U	0.80 U
8260B	4-Isopropyltoluene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	4-Methyl-2-pentanone	3.2 U	3.2 U	3.2 U	3.2 U
8260B	Acetone	6.4 U	6.4 U	6.4 U	6.4 U
8260B	Benzene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	Bromobenzene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	Bromodichloromethane	0.40 U	0.40 U	0.40 U	0.40 U
8260B	Bromoform	0.40 U	0.40 U	0.40 U	0.40 U
8260B	Bromomethane	0.80 U	0.80 U	0.80 U	0.80 U
8260B	Carbon disulfide	1.6 U	1.6 U	1.6 U	1.6 U
8260B	Carbon tetrachloride	0.40 U	0.40 U	0.40 U	0.40 U
8260B	Chlorobenzene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	Chlorobromomethane	0.20 U	0.20 U	0.20 U	0.20 U
8260B	Chloroethane	1.6 U	1.6 U	1.6 U	1.6 U
8260B	Chloroform	0.40 U	0.40 U	0.40 U	0.40 U
8260B	Chloromethane	0.80 U	0.80 U	0.80 U	0.80 U
8260B	cis-1,2-Dichloroethene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	cis-1,3-Dichloropropene	0.40 U	0.40 U	0.40 U	0.40 U

Table 1
West Point Motor Pool Landfill
Volatile Organic Compounds in Water

	Field ID:	WP11-MP-4-102516	WP11-MP-3-102516	WP11-MP-2-102516	WP11-MP-2-102516 DUP
	Lab Sample ID:	280-90206-1	280-90206-2	280-90206-3	280-90206-4
	Date Collected:	10/25/2016	10/25/2016	10/25/2016	10/25/2016
	Sample Type:	Groundwater	Groundwater	Groundwater	FD of WP11-MP-2-102516
Method	Analyte	Qualified Result	Qualified Result	Qualified Result	Qualified Result
8260B	Dibromochloromethane	0.40 U	0.40 U	0.40 U	0.40 U
8260B	Dibromomethane	0.40 U	0.40 U	0.40 U	0.40 U
8260B	Dichlorodifluoromethane	0.80 U	0.80 U	0.80 U	0.80 U
8260B	Dichlorofluoromethane	0.80 U	0.80 U	0.80 U	0.80 U
8260B	Ethylbenzene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	Hexachlorobutadiene	0.80 U	0.80 U	0.80 U	0.80 U
8260B	Isopropylbenzene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	Methyl tert-butyl ether	0.80 U	0.80 U	0.80 U	0.80 U
8260B	Methylene chloride	5.0 U	5.0 U	5.0 U	5.0 U
8260B	m-Xylene & p-Xylene	0.80 U	0.80 U	0.80 U	0.80 U
8260B	Naphthalene	0.80 U	0.80 U	0.80 U	0.80 U
8260B	n-Butylbenzene	0.80 U	0.80 U	0.80 U	0.80 U
8260B	N-Propylbenzene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	o-Xylene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	sec-Butylbenzene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	Styrene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	tert-Butylbenzene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	Tetrachloroethene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	Toluene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	trans-1,2-Dichloroethene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	trans-1,3-Dichloropropene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	Trichloroethene	0.40 U	0.40 U	0.40 U	0.40 U
8260B	Trichlorofluoromethane	0.80 U	0.80 U	0.80 U	0.80 U
8260B	Vinylchloride	0.20 U	0.20 U	0.20 U	0.20 U
8260B	Xylenes, Total	0.80 U	0.80 U	0.80 U	0.80 U

Results in micrograms per liter (µg/L).

FD = Field Duplicate
U = Analyte is not detected at the reported concentration.
J = The reported concentration is estimated.
UJ = The detection limit is estimated.

Table 1
West Point Motor Pool Landfill
Volatile Organic Compounds in Water

	Field ID:	WP11-WQTB01-102516	WP11-WQEB01-102516		
	Lab Sample ID:	280-90206-5	280-90206-6		
	Date Collected:	10/25/2016	10/25/2016		
	Sample Type:	Trip Blank	Equipment Blank		
Method	Analyte	Qualified Result	Qualified Result		
8260B	1,1,1,2-Tetrachloroethane	0.80 U	0.80 U		
8260B	1,1,1-Trichloroethane	0.40 U	0.40 U		
8260B	1,1,2,2-Tetrachloroethane	0.80 U	0.80 U		
8260B	1,1,2-Trichloroethane	0.80 U	0.80 U		
8260B	1,1-Dichloroethane	0.80 U	0.80 U		
8260B	1,1-Dichloroethene	0.80 U	0.80 U		
8260B	1,1-Dichloropropene	0.40 U	0.40 U		
8260B	1,2,3-Trichlorobenzene	0.80 U	0.80 U		
8260B	1,2,3-Trichloropropane	0.80 U	0.80 U		
8260B	1,2,4-Trichlorobenzene	0.80 U	0.80 U		
8260B	1,2,4-Trimethylbenzene	0.40 U	0.40 U		
8260B	1,2-Dibromo-3-chloropropane	1.6 U	1.6 U		
8260B	1,2-Dichlorobenzene	0.40 U	0.40 U		
8260B	1,2-Dichloroethane	0.40 U	0.40 U		
8260B	1,2-Dichloropropane	0.40 U	0.40 U		
8260B	1,3,5-Trimethylbenzene	0.40 U	0.40 U		
8260B	1,3-Dichlorobenzene	0.40 U	0.40 U		
8260B	1,3-Dichloropropane	0.80 U	0.80 U		
8260B	1,4-Dichlorobenzene	0.40 U	0.40 U		
8260B	1-Chlorohexane	0.40 U	0.40 U		
8260B	2,2-Dichloropropane	0.40 U	0.40 U		
8260B	2-Butanone	4.0 U	4.0 U		
8260B	2-Chlorotoluene	0.40 U	0.40 U		
8260B	2-Hexanone	4.0 U	4.0 U		
8260B	4-Chlorotoluene	0.80 U	0.80 U		
8260B	4-Isopropyltoluene	0.40 U	0.40 U		
8260B	4-Methyl-2-pentanone	3.2 U	3.2 U		
8260B	Acetone	6.4 U	12		
8260B	Benzene	0.40 U	0.40 U		
8260B	Bromobenzene	0.40 U	0.40 U		
8260B	Bromodichloromethane	0.40 U	0.40 U		
8260B	Bromoform	0.40 U	0.40 U		
8260B	Bromomethane	0.80 U	0.80 U		
8260B	Carbon disulfide	1.6 U	1.6 U		
8260B	Carbon tetrachloride	0.40 U	0.40 U		
8260B	Chlorobenzene	0.40 U	0.40 U		
8260B	Chlorobromomethane	0.20 U	0.20 U		
8260B	Chloroethane	1.6 U	1.6 U		
8260B	Chloroform	0.40 U	0.40 U		
8260B	Chloromethane	0.80 U	0.80 U		
8260B	cis-1,2-Dichloroethene	0.40 U	0.40 U		
8260B	cis-1,3-Dichloropropene	0.40 U	0.40 U		

Table 1
West Point Motor Pool Landfill
Volatile Organic Compounds in Water

	Field ID:	WP11-WQTB01-102516	WP11-WQEB01-102516		
	Lab Sample ID:	280-90206-5	280-90206-6		
	Date Collected:	10/25/2016	10/25/2016		
	Sample Type:	Trip Blank	Equipment Blank		
Method	Analyte	Qualified Result	Qualified Result		
8260B	Dibromochloromethane	0.40 U	0.40 U		
8260B	Dibromomethane	0.40 U	0.40 U		
8260B	Dichlorodifluoromethane	0.80 U	0.80 U		
8260B	Dichlorofluoromethane	0.80 U	0.80 U		
8260B	Ethylbenzene	0.40 U	0.40 U		
8260B	Hexachlorobutadiene	0.80 U	0.80 U		
8260B	Isopropylbenzene	0.40 U	0.40 U		
8260B	Methyl tert-butyl ether	0.80 U	0.80 U		
8260B	Methylene chloride	5.0 U	5.0 U		
8260B	m-Xylene & p-Xylene	0.80 U	0.80 U		
8260B	Naphthalene	0.80 U	0.80 U		
8260B	n-Butylbenzene	0.80 U	0.80 U		
8260B	N-Propylbenzene	0.40 U	0.40 U		
8260B	o-Xylene	0.40 U	0.40 U		
8260B	sec-Butylbenzene	0.40 U	0.40 U		
8260B	Styrene	0.40 U	0.40 U		
8260B	tert-Butylbenzene	0.40 U	0.40 U		
8260B	Tetrachloroethene	0.40 U	0.40 U		
8260B	Toluene	0.40 U	0.40 U		
8260B	trans-1,2-Dichloroethene	0.40 U	0.40 U		
8260B	trans-1,3-Dichloropropene	0.40 U	0.40 U		
8260B	Trichloroethene	0.40 U	0.40 U		
8260B	Trichlorofluoromethane	0.80 U	0.80 U		
8260B	Vinylchloride	0.20 U	0.20 U		
8260B	Xylenes, Total	0.80 U	0.80 U		

Results in micrograms per liter (µg/L).

FD = Field Duplicate
U = Analyte is not detected at the reported concentration.
J = The reported concentration is estimated.
UJ = The detection limit is estimated.

Table 2
West Point Motor Pool Landfill
Total and Dissolved Metals in Water

	Field ID:	WP11-MP-4-102516		WP11-MP-3-102516		WP11-MP-2-102516	
	Lab Sample ID:	280-90206-1		280-90206-2		280-90206-3	
	Date Collected:	10/25/2016		10/25/2016		10/25/2016	
	Sample Type:	Groundwater		Groundwater		Groundwater	
Method	Analyte	Total	Dissolved	Total	Dissolved	Total	Dissolved
6010C	Aluminum	70 U	70 U	70 U	70 U	70 U	70 U
6010C	Antimony	12 U	12 U	12 U	12 U	12 U	12 U
6010C	Arsenic	15 U	15 U	15 U	15 U	15 U	25 U
6010C	Barium	22	19	2.0 U	5.3 J	100	98
6010C	Beryllium	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
6010C	Boron	160	160	15 U	38 J	100	110
6010C	Cadmium	0.74 J	0.46 J	1.8 U	1.8 U	1.8 U	0.49 J
6010C	Calcium	71000	65000	14000 J	28000 J	120000	120000
6010C	Chromium	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
6010C	Cobalt	4.5 U	4.5 U	4.5 U	4.5 U	2.1 J	1.3 J
6010C	Copper	10 U	10 U	10 U	10 U	10 U	10 U
6010C	Iron	100 U	30 J	14000	760	100 U	85 U
6010C	Lead	10 U	10 U	10 U	10 U	10 U	10 U
6010C	Magnesium	24000	23000	5200 J	9900 J	33000	34000
6010C	Manganese	1200	1200	160 J	400 J	300	240
6010C	Nickel	4.2 J	3.4 J	5.0 U	5.0 U	3.9 J	3.6 J
6010C	Potassium	2200 J	3000 U	650 J	1000 J	3200	3100
6010C	Selenium	19 U	19 U	19 U	19 U	19 U	19 U
6010C	Silver	3.5 U	0.95 J	3.5 U	3.5 U	3.5 U	3.5 U
6010C	Sodium	58000	56000	8800 J	22000 J	120000	120000
6010C	Thallium	5.5 J	19 U	19 U	19 U	19 U	19 U
6010C	Tin	20 U	20 U	20 U	20 U	20 U	20 U
6010C	Vanadium	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
6010C	Zinc	15 U	15 U	15 U	15 U	15 U	15 U
7470A	Mercury	0.080 U	0.080 U	0.080 U	0.080 U	0.080 U	0.080 U

Results in micrograms per liter (µg/L).

FD = Field Duplicate
NA = Not analyzed
U = Analyte is not detected at the reported concentration.
J = The reported concentration is estimated.
UJ = The detection limit is estimated.

Table 2
West Point Motor Pool Landfill
Total and Dissolved Metals in Water

	Field ID:	WP11-MP-2-102516 DUP		WP11-WQEB01-102616		WSTPT-01-PXMW-01	
	Lab Sample ID:	280-90206-4		280-90206-6		280-90206-7	
	Date Collected:	10/25/2016		10/25/2016		10/26/2016	
	Sample Type:	FD of WP11-MP-2-102516		Equipment Blank		Groundwater	
Method	Analyte	Total	Dissolved	Total	Dissolved	Total	Dissolved
6010C	Aluminum	70 U	70 U	70 U	70 U	5500	31 J
6010C	Antimony	12 U	12 U	12 U	12 U	12 U	12 U
6010C	Arsenic	15 U	15 U	15 U	15 U	15 U	4.6 J
6010C	Barium	100	100	2.0 U	2.0 U	29	6.3 J
6010C	Beryllium	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
6010C	Boron	100	110	15 U	15 U	10 J	11 J
6010C	Cadmium	1.8 U	1.8 U	1.8 U	1.8 U	0.52 J	1.8 U
6010C	Calcium	120000	120000	140 U	140 U	20000	20000
6010C	Chromium	2.6 U	2.6 U	2.6 U	2.6 U	170	0.76 J
6010C	Cobalt	1.7 J	1.7 J	4.5 U	4.5 U	31	13 J
6010C	Copper	10 U	10 U	10 U	10 U	43	10 U
6010C	Iron	100 U	85 U	27 J	85 U	6400	42 J
6010C	Lead	10 U	10 U	10 U	10 U	40	10 U
6010C	Magnesium	33000	35000	13 J	13 J	4400	3400
6010C	Manganese	260	250	1.0 U	1.0 U	55	5.7 J
6010C	Nickel	3.2 J	3.7 J	5.0 U	5.0 U	33 J	5.0 J
6010C	Potassium	3300	3400	940 U	940 U	2900 J	2400 J
6010C	Selenium	19 U	19 U	19 U	19 U	19 U	5.6 J
6010C	Silver	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	1.1 J
6010C	Sodium	120000	130000	5000 U	5000 U	43000	44000
6010C	Thallium	19 U	19 U	19 U	19 U	19 U	19 U
6010C	Tin	20 U	20 U	20 U	20 U	20 U	20 U
6010C	Vanadium	4.0 U	4.0 U	4.0 U	4.0 U	12 J	3.6 J
6010C	Zinc	15 U	15 U	15 U	15 U	88 J	11 J
7470A	Mercury	0.080 U	0.080 U	0.080 U	0.080 U	0.15 J	0.080 U

Results in micrograms per liter (µg/L). FD = Field Duplicate

NA = Not analyzed

U = Analyte is not detected at the reported concentration.

J = The reported concentration is estimated.

UJ = The detection limit is estimated.

Table 3
West Point Motor Pool Landfill
General Chemistry Results in Water

	Field ID:	WP11-MP-4-102516	WP11-MP-3-102516	WP11-MP-2-102516	WP11-MP-2-102516 DUP
	Lab Sample ID:	280-90206-1	280-90206-2	280-90206-3	280-90206-4
	Date Collected:	10/25/2016	10/25/2016	10/25/2016	10/25/2016
	Sample Type:	Groundwater	Groundwater	Groundwater	FD of WP11-MP-2-102516
Method	Analtye	Qualified Result	Qualified Result	Qualified Result	Qualified Result
EPA 350.1	Ammonia	0.11	0.069 J	0.050 U	NA
EPA 351.2	Total Kjeldahl Nitrogen	0.21 J	0.50 U	0.50 U	NA
EPA 410.4	Chemical oxygen demand	20 U	20 U	20 U	NA
EPA 9012B	Total Cyanide	0.0092 J	0.0050 U	0.0050 U	NA
EPA 9034	Sulfide	1.9 U	1.9 U	1.9 U	NA
EPA 9060A	Total Organic Carbon (Quad)	1.9	0.49 J	2.7	NA
EPA 9066	Phenols, Total	0.010 UJ	0.010 U	0.010 U	NA
SM 2320B	Alkalinity (as CaCO3)	310	63	420	NA
SM 2340C	Total Hardness	290	75	460	460
SM 2540C	Total Dissolved Solids	460	97	750	NA

Results in milligrams per liter (mg/L).

FD = Field Duplicate
NA = Not analyzed
U = Analyte is not detected at the reported concentration.
J = The reported concentration is estimated.
UJ = The detection limit is estimated.

Table 3
West Point Motor Pool Landfill
General Chemistry Results in Water

	Field ID:	WP11-WQEB01-102516	WSTPT-01-PXMW-01		
	Lab Sample ID:	280-90206-6	280-90206-7		
	Date Collected:	10/25/2016	10/26/2016		
	Sample Type:	Equipment Blank	Groundwater		
Method	Analtye	Qualified Result	Qualified Result		
EPA 350.1	Ammonia	NA	NA		
EPA 351.2	Total Kjeldahl Nitrogen	NA	NA		
EPA 410.4	Chemical oxygen demand	NA	NA		
EPA 9012B	Total Cyanide	NA	NA		
EPA 9034	Sulfide	NA	NA		
EPA 9060A	Total Organic Carbon (Quad)	NA	NA		
EPA 9066	Phenols, Total	NA	NA		
SM 2320B	Alkalinity (as CaCO3)	NA	NA		
SM 2340C	Total Hardness	1.5 U	70		
SM 2540C	Total Dissolved Solids	NA	NA		

Results in milligrams per liter (mg/L).

NA = Not analyzed
U = Analyte is not detected at the reported concentration.
J = The reported concentration is estimated.
UJ = The detection limit is estimated.

ATTACHMENT B
LABORATORY DATA PACKAGES