

Supplemental Soil Remedial Investigation Report  
Garfield Avenue Group  
PPG, Jersey City, New Jersey

## **Appendix F**

### **Synthetic Precipitation Leaching Procedure (SPLP) Calculations**

NJDEP SPLP Spreadsheet, V3.1, November 2013

Case name/area of concern: PPG Garfield Avenue Chrome Sites  
 Case number:  
 Sampling date: August - September 2012

**CALCULATE SITE SPECIFIC IGW STANDARD**

Reset Spreadsheet    Print Results    Instructions  
 Print to file    Exit

Contaminant: Antimony (total)  
 CAS No: 7440-36-0  
 Water solubility (mg/L): NA  
 Aqueous reporting limit (µg/L): 3.00E+00  
 Soil reporting limit (mg/kg): 6.00E+00  
 Health-based GWQC (µg/L): 6.00E+00  
 DAF (20, or site-specific if approved): 20  
 Leachate Criterion (µg/L): 1.20E+02  
 Henry's law constant (dimensionless): 0.00E+00

**NOTE:**  
 USE ONE PAGE PER CONTAMINANT, do not leave empty rows between samples  
 Do not enter samples with soil concentrations at or below the reporting limit  
 When leachate concentration is non-detect, enter the aqueous reporting limit  
 Enter site-specific dilution-attenuation factor (DAF) if desired  
 Data entry cells (do not skip rows)  
 Optional data entry  
 Calculated or locked cells  
 Indicates that Alternative Remediation Standard needs to be recalculated

Sample ID	Soil sample weight (kg)	Leachate Volume (L)	Total Soil Concentration (mg/kg)	SPLP Leachate Concentration (µg/L)	Final pH of Leachate (except VOCs)	Optional data			Kd (L/kg)	% Contaminant in Leachate	Field leachate concentration (µg/L)	Pass or fail?
						Sampling Depth (ft)	Soil Type	Organic Carbon (mg/kg)				
EF-B99-0.5-1.0x	0.0864	2	1.2	0.7	8.94	0.5-1.0	Fill		1691.1	1.35	0.70	PASS
EF-B115-2.0-2.5	0.0864	2.002	2.9	1.4	8.3	2.0-2.5	Fill		2048.3	1.12	1.40	PASS
EF-B115-0.5-1.0	0.0839	2.004	2.9	1.5	9.09	0.5-1.0	Fill		1909.4	1.24	1.50	PASS
EF-B117-4.0-4.5	0.084	2	0.38	1.9	8	4.0-4.5	Fill		176.2	11.90	1.90	PASS
EF-B101-2.0-2.5	0.0929	2.01	62.7	2.4	7.61	2.0-2.4	Fill		26103.4	0.08	2.40	PASS
EF-B108-1.0-1.5x	0.0793	2.004	1.6	2.6	7.6	1.0-1.5	Fill		590.1	4.11	2.60	PASS
EF-B108-1.0-1.5	0.0799	2.006	2.3	2.7	8.1	1.0-1.5	Fill		826.7	2.95	2.70	PASS
EF-B122-1.0-1.5	0.0786	2.01	7	2.9	7.18	1.0-1.5	Fill		2388.2	1.06	2.90	PASS
EF-B122-4.5-5.0	0.0738	2.01	37.9	4	7.6	4.5-5.0	Fill		9447.8	0.29	4.01	PASS
EF-B109-1.0-1.5	0.0838	2.008	1	4.4	6.81	1.0-1.5	Fill		203.3	10.54	4.91	PASS
EF-B117-2.0-2.5	0.0895	2	0.57	4.2	8.78	2.0-2.5	Fill		113.4	16.47	5.02	PASS
EF-B123-0.2-0.7	0.0873	2.006	2.7	5.1	9.1	0.2-0.7	Fill		506.4	4.34	5.33	PASS
EF-B115-4.0-4.5	0.0743	2	1.4	5.7	8.27	4.0-4.5	Fill		218.7	10.96	6.40	PASS
EF-B123-3.0-3.5	0.0762	2.01	7.7	7.2	7.77	3.0-3.5	Fill		1043.1	2.47	7.38	PASS
EF-B99-0.5-1.0	0.0879	2.004	1.1	6.9	9.19	0.5-1.0	Fill		136.6	14.30	8.04	PASS
EF-B123-5.0-5.5	0.0693	2.008	5.2	12.8	7.57	5.0-5.5	Fill		377.3	7.13	13.78	PASS
EF-B122-3.0-3.5	0.0723	2.004	7.4	37.1	8.13	3.0-3.5	Fill		171.7	13.90	43.05	PASS

**SPLP RESULTS for**

**OPTION 1a: All adjusted leachate concentrations are below the leachate criterion**

**REMEDIATION STANDARD = 62.7 mg/kg**

**OPTION 1b: Simple inspection of tabulated results to find highest acceptable standard**

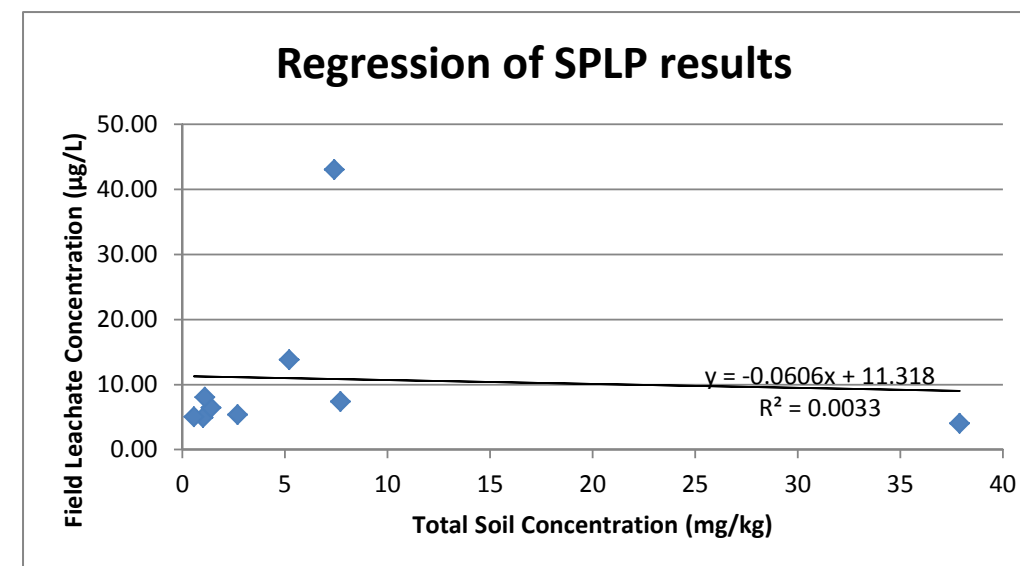
EVERYTHING PASSED, OPTION 1b NOT VALID

**OPTION 2: Remediation standard using site-specific Kd value**

Kd ratio = 230.25, USE MINIMUM Kd  
 Kd USED FOR CALCULATING STANDARD = 113.37 L/kg  
 result before rounding = 13.6226 mg/kg  
**REMEDIATION STANDARD = 14 mg/kg**

**OPTION 3: Remediation standard using linear regression**

Number of points = 9  
 (points were eliminated because leachate concentrations were not above the aqueous reporting limit)  
 Soil concentration midrange = 31.64  
 Number of points above midrange = 1  
 Enough points above midrange? NO  
 R-Square high enough? NO  
 Leachate criterion within range of leachate concentrations? NO  
**OPTION 3 NOT VALID**



NJDEP SPLP Spreadsheet, V3.1, November 2013

Case name/area of concern: PPG Garfield Avenue Chrome Sites  
 Case number:  
 Sampling date: August - September 2012

**CALCULATE SITE SPECIFIC IGW STANDARD**

Reset Spreadsheet    Print Results    Instructions  
 Print to file    Exit

Contaminant: Nickel (total)  
 CAS No: 7440-02-0  
 Water solubility (mg/L): NA  
 Aqueous reporting limit (µg/L): 4.00E+00  
 Soil reporting limit (mg/kg): 4.00E+00  
 Health-based GWQC (µg/L): 1.00E+02  
 DAF (20, or site-specific if approved): 20  
 Leachate Criterion (µg/L): 2.00E+03  
 Henry's law constant (dimensionless): 0.00E+00

**NOTE:**  
 USE ONE PAGE PER CONTAMINANT, do not leave empty rows between samples  
 Do not enter samples with soil concentrations at or below the reporting limit  
 When leachate concentration is non-detect, enter the aqueous reporting limit  
 Enter site-specific dilution-attenuation factor (DAF) if desired  
 Data entry cells (do not skip rows)  
 Optional data entry  
 Calculated or locked cells  
 Indicates that Alternative Remediation Standard needs to be recalculated

Sample ID	Soil sample weight (kg)	Leachate Volume (L)	Total Soil Concentration (mg/kg)	SPLP Leachate Concentration (µg/L)	Final pH of Leachate (except VOCs)	Optional data				Kd (L/kg)	% Contaminant in Leachate	Field leachate concentration (µg/L)	Pass or fail?
						Sampling Depth (ft)	Soil Type	Organic Carbon (mg/kg)	Organic Carbon (%)				
EF-B124-0.6-1.1	0.09	2.006	12.4	0.47	10.52	0.6-1.1	Fill			26360.7	0.08	0.47	PASS
EF-B107-0.5-1.0	0.0864	2.002	25.2	0.47	10.26	0.5-1.0	Fill			53593.8	0.04	0.47	PASS
EF-B125-1.0-1.5	0.0889	2.01	36.6	0.47	11.17	1.0-1.5	Fill			77849.7	0.03	0.47	PASS
EF-B125-1.0-1.5x	0.0891	2.006	38.8	0.47	11.12	1.0-1.5	Fill			82530.7	0.03	0.47	PASS
EF-B91-4.0-4.5	0.0675	2	47.2	0.47	7.75	4.0-4.5	Fill			100395.9	0.03	0.47	PASS
EF-B91-4.0-4.5x	0.0688	2.004	55.5	0.47	8.34	4.0-4.5	Fill			118056.0	0.02	0.47	PASS
EF-B91-2.0-2.5	0.0724	2.006	90	0.47	8.76	2.0-2.5	Fill			191461.7	0.01	0.47	PASS
EF-B120-0.5-1.0	0.0923	2	14.8	1.4	11.39	0.5-1.0	Fill			10549.8	0.20	1.40	PASS
EF-B120-0.5-1.0x	0.0921	2	19.8	1.6	11.39	0.5-1.0	Fill			12353.3	0.18	1.60	PASS
EF-B122-3.0-3.5	0.0723	2.004	21.5	2	8.13	3.0-3.5	Fill			10722.3	0.26	2.00	PASS
EF-B115-2.0-2.5	0.0864	2.002	17.4	2.3	8.3	2.0-2.5	Fill			7542.0	0.31	2.30	PASS
EF-B115-0.5-1.0	0.0839	2.004	22.1	2.8	9.09	0.5-1.0	Fill			7869.0	0.30	2.80	PASS
EF-B122-4.5-5.0	0.0738	2.01	76.8	3	7.6	4.5-5.0	Fill			25572.8	0.11	3.00	PASS
EF-B109-1.0-1.5	0.0838	2.008	15.4	3.1	6.81	1.0-1.5	Fill			4943.8	0.48	3.10	PASS
EF-B108-1.0-1.5x	0.0793	2.004	19.4	3.6	7.6	1.0-1.5	Fill			5363.6	0.47	3.60	PASS
EF-B111-0.1-0.6	0.0852	2.004	31.4	3.6	8.05	0.1-0.6	Fill			8698.7	0.27	3.60	PASS
EF-110-0.2-0.7	0.0875	2.004	32.3	3.6	8.87	0.2-0.7	Fill			8949.3	0.26	3.60	PASS
EF-B108-1.0-1.5	0.0799	2.006	19.4	3.7	8.1	1.0-1.5	Fill			5218.1	0.48	3.70	PASS
EF-B122-1.0-1.5	0.0786	2.01	39.3	4.1	7.18	1.0-1.5	Fill			9559.8	0.27	4.11	PASS
EF-B103-0.5-1.0	0.08193	2.008	166	4.4	7.43	0.5-1.0	Fill			37702.8	0.06	4.40	PASS
EF-B126-1.0-1.5	0.0911	2.004	13.2	4.8	8.02	1.0-1.5	Fill			2728.0	0.80	4.84	PASS
EF-B127-1.0-1.5	0.0849	2	18.9	4.9	8.11	1.0-1.5	Fill			3833.6	0.61	4.93	PASS
EF-B117-4.0-4.5	0.084	2	15.2	5	8	4.0-4.5	Fill			3016.2	0.78	5.04	PASS
EF-B104-0.3-0.8	0.0847	2	48.3	5.3	7.54	0.3-0.8	Fill			9089.6	0.26	5.31	PASS
EF-B117-2.0-2.5	0.0895	2	11.1	6.9	8.78	2.0-2.5	Fill			1586.3	1.39	7.00	PASS

**SPLP RESULTS for**

**OPTION 1a: All adjusted leachate concentrations are below the leachate criterion**  
 REMEDIATION STANDARD = 166 mg/kg

**OPTION 1b: Simple inspection of tabulated results to find highest acceptable standard**  
 EVERYTHING PASSED, OPTION 1b NOT VALID

**OPTION 2: Remediation standard using site-specific Kd value**  
 Kd ratio = 120.69, USE MINIMUM Kd  
 Kd USED FOR CALCULATING STANDARD = 1586.35 L/kg  
 result before rounding = 3173.0052 mg/kg  
 REMEDIATION STANDARD = 170 mg/kg (controlled by maximum soil concentration)

**OPTION 3: Remediation standard using linear regression**  
 Number of points = 7  
 (points were eliminated because leachate concentrations were not above the aqueous reporting limit)  
 Soil concentration midrange = 88.55  
 Number of points above midrange = 1  
 Enough points above midrange? NO  
 R-Square high enough? NO  
 Leachate criterion within range of leachate concentrations? NO  
 OPTION 3 NOT VALID

