

July 29, 2011

Mr. Andrew Fan
US EPA Region III, 3WC23
1650 Arch Street
Philadelphia, PA 19103-2029

Ms. Barbara Brown
Project Coordinator
Maryland Department of the Environment
1800 Washington Blvd.
Baltimore, Maryland 21230

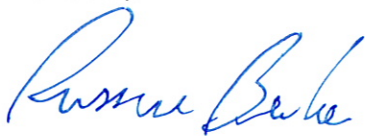
**Re: Consent Decree, Civil Action Nos. JFM-97-558, JFM-97-559
*Coke Oven Area Interim Measures Progress Report July 2011***

Dear Mr. Fan and Ms. Brown:

Enclosed with this correspondence is the ***Coke Oven Area Interim Measures Progress Report July 2011*** completed for the RG Steel (formerly Severstal) Sparrows Point Facility in accordance with the requirements outlined in US EPA's September 2, 2010 approval letter for the Coke Oven Area Interim Measures work associated with the referenced Consent Decree. This report was distributed electronically on August 31st, 2011 in accordance with the outlined reporting requirements; this correspondence provides paper copies for your use.

The report summarizes implementation progress for the approved interim measures (IMs) that have been developed to address identified environmental conditions at the Coke Oven Area through July 31, 2011. Please contact me at (410) 388-6622 should questions arise during your review of the enclosed progress report.

Sincerely,



Russell Becker
Division Manager, Environmental Engineering and Affairs

Enclosure

COKE OVEN AREA INTERIM MEASURES PROGRESS REPORT (JULY 2011)

Prepared for

RG Steel Sparrows Point, LLC
Sparrows Point, Maryland



August 31, 2011

URS

URS Corporation
200 Orchard Ridge Drive, Suite 101
Gaithersburg, MD 20878
Project no. 15302745

Introduction

In accordance with the United States Environmental Protection Agency's (US EPA)'s September 2, 2010 letter, this document is the monthly progress report for July 2011 for the US EPA-approved interim measures (IMs) that have been developed to address identified environmental conditions at the Coke Oven Area (COA) Special Study Area at the RG Steel Sparrows Point Facility (formerly Severstal Sparrows Point Facility) located in Sparrows Point, Maryland. This progress report summarizes IM progress for July 2011.

For mutual ease of understanding, and as agreed during the June 3, 2010 teleconference with US EPA, the following designations are applied in this document to the six (6) IM "Cells" (**Figure 1**) at the COA:

- Cell 1: Prototype Air Sparge/Soil Vapor Extraction (AS/SVE) System in the Former Benzol Processing Area,
- Cell 2: AS/SVE and Dual Phase Groundwater Extraction System in Former Coal Storage Area,
- Cell 3: AS/SVE System in "Cove" Area,
- Cell 4: In-Situ Anaerobic Bio-treatment Area,
- Cell 5: Groundwater Extraction at the Turning Basin Area, and
- Cell 6: Light Non-Aqueous Phase Liquid (LNAPL) Recovery at the Former Benzol Processing Area.

As of July 31, 2011, Cells 1, 3, 4 and 6 are operational. Assembly of in-situ anaerobic bio-treatment system at Cell 4 was completed on July 5, 2011 and the first amendment dosing event occurred on July 6 and 7, 2011. The remaining Cells (Cells 2 and 5) are in various stages of evaluation, design, and under permitting considerations by Maryland Department of the Environment (MDE).

Cell 1: Prototype AS/SVE System in the Former Benzol Processing Area

Cell 1 consists of a prototype IM, which includes AS/SVE coupled with vapor destruction via a new electric catalytic oxidation (CATOX) unit (formerly a temporary CATOX unit, the function of which was replaced by a custom-fabricated CATOX unit on June 24, 2011). The new CATOX unit was installed to improve operational efficiency of the Cell 1 AS/SVE system.

MDE received RG Steel's Air and Radiation Management Administration (ARMA) permit-to-construct application for the new Cell 1 and Cell 3 CATOX units on April 20, 2011 and issued the modified permit-to-construct for the CATOX units (for both Cell 1 and Cell 3) on May 20, 2011. In accordance with the modified permit-to-construct conditions, the CATOX units are operated in accordance with the manufacturer's specifications.

Figure 2 shows the system layout of Cell 1. The major design components for Cell 1 are described in previous monthly progress reports.

July 2011 Operational Performance

Operational performance of Cell 1 during this reporting period is summarized in **Table 1**. In summary, the CATOX unit operated for 580 hours (78%) during this reporting period. Operations were in conformance with the manufacturer's specifications at all times that soil gases were collected in accordance with the May 20, 2011 modified permit-to-construct.

Hydrocarbon removal rates ranged from approximately 0.3 to 1.3 pounds per operating hour (approximately 7.2 to 31.2 pounds per operating day for an estimated monthly total of 532 pounds). **Table 1** also includes a cumulative summary of operational performance since system startup on August 3, 2010. In total, Cell 1 has destroyed approximately 8,475 pounds of recovered hydrocarbons. **Figure 3** presents a graph of the cumulative estimated monthly hydrocarbon recovery in Cell 1 since the startup of the IM system.

Soil gas samples were collected for laboratory and/or field instrument (e.g., photoionization detector [PID]) analysis to further substantiate CATOX unit performance. Untreated soil gas samples were collected in Tedlar[®] bags, which were submitted to TestAmerica Laboratories, Inc. in Knoxville, Tennessee (TestAmerica) for analysis by US EPA Method TO-15. Influent soil gas hydrocarbon concentrations, collected on July 7 and 28, 2011, were 768 and 198 parts per million by volume (ppmv), respectively as summarized in **Table 2**.

Coke Oven Area Interim Remedial Measures Progress Report

Hydrocarbon removal calculations were based entirely on the analytical results and the corresponding field-measured influent flow rate at the time of sampling. The mass removal calculations assume that the average of the two (2) analytical samples is representative of hydrocarbon concentrations for the entire month of July. This assumption is based on the fact that the same sparge wells (AS-1 thru AS-8) and extraction wells (V-1 thru V-6) were online when the system was operational.

July 2011 Groundwater Monitoring Results

Groundwater samples were collected on July 14, 2011 from the following wells:

- BP-MW-09 (upgradient of Cell 1),
- CO18-PZM006 (upgradient of Cell 1 at edge of berm), and
- CO02-PZM006 (downgradient of Cell 1).

The groundwater samples were submitted to Microbac Laboratories, Inc. of Baltimore, Maryland (Microbac) for the analyses shown in **Table 3**. These data indicate benzene is the most prevalent volatile organic compound (VOC) constituent.

Figure 4 presents a graph of the total measured VOC concentration in Cell 1 groundwater for each well by month since the startup of the IM system. A generally decreasing total VOC concentration trend is documented since system startup in August 2010. The identified trend for these monitoring wells will continue to be monitored and assessed during system operation in future months.

Cell 3: AS/SVE System in the “Cove” Area

Cell 3 was designed based upon the evaluation of results from the Cell 1 AS/SVE prototype system. Accordingly, Cell 3 consists of an AS/SVE system coupled with vapor destruction via an electric CATOX unit. Preliminary startup/shutdown of the Cell 3 system was initiated on June 23, 2011. After some adjustments, the system was restarted on June 24, 2011. MDE issued a modified permit-to-construct for the Cell 3 CATOX system on May 20, 2011.

Figure 1 shows the location of the Cell 3 AS/SVE treatment area at the COA. The major design components are described in the Cell 3 final design report (*Coke Oven Area Interim Measures Cell 3 “Cove” Area Air Sparge/Soil Vapor Extraction System Design*), submitted to US EPA on March 1, 2011.

July 2011 Operational Performance

Operational performance of Cell 3 during this reporting period is summarized in **Table 4**. In summary, the CATOX unit operated for 581 hours (78%) during July. Operations were in conformance with the manufacturer’s specifications at all times that soil gases were collected in accordance with the May 20, 2011 modified permit-to-construct.

Hydrocarbon removal rates averaged approximately 0.07 to 0.16 pounds per operating hour (approximately 1.7 to 3.8 pounds per operating day for a total of 80 pounds) during this reporting period. **Table 4** also includes a cumulative summary of operational performance since system startup on June 24, 2011. In total, Cell 3 has destroyed approximately 83 pounds of recovered hydrocarbons. **Figure 3** presents a graph of the cumulative estimated monthly hydrocarbon recovery in Cell 3 since the startup of the IM system.

Soil gas samples were collected for laboratory and/or field instrument (e.g., PID) analysis to further substantiate CATOX unit performance. Untreated soil gas samples were collected in Tedlar[®] bags, which were submitted to TestAmerica. Influent soil gas hydrocarbon concentrations collected on July 7 and 28, 2011, were 64.6 and 27 ppmv, respectively as summarized in **Table 5**.

Hydrocarbon removal calculations were based entirely on the analytical results and the corresponding field-measured influent flow rate at the time of sampling. The mass removal calculations assume that the average of the two (2) analytical samples is representative of hydrocarbon concentrations for the entire month of July. This assumption is based on the fact that the same sparge wells (AS-3 thru AS-13) and extraction wells (V-2 thru V-4) were online when the system was operational.

July 2011 Cell 3 Groundwater Monitoring

Groundwater samples were collected on July 15, 2011 from the following wells (**Figure 1**):

- MW-CELL3-1 (downgradient of Cell 3),
- MW-CELL3-2 (upgradient of Cell 3),
- MW-CELL3-3 (upgradient of Cell 3, and
- CO30-PZM015 (downgradient of Cell 3).

The groundwater samples were submitted to Microbac for the analyses shown in **Table 6**. These data indicate that benzene is the most prevalent VOC constituent.

Figure 5 presents a graph of the total measured VOC concentrations in Cell 3 groundwater in July relative to the baseline concentrations collected in February 2011. VOC concentrations have decreased at each well since the initial sampling event in February. The trend for these monitoring wells will continue to be monitored and assessed during system operation in future months.

Cell 4: In-Situ Anaerobic Bio-treatment Area

Assembly of the Cell 4 in-situ anaerobic bio-treatment system (**Figure 6**) was completed on July 5, 2011. A schematic layout of the Cell 4 system is shown on **Figure 7**. The first amendment dosing event occurred on July 6 and 7, 2011. Sixty (60) pounds of amendment (VB591[®]), along with eight (8) pounds of table sugar were mixed into 300 gallons of Cell 4 groundwater. The amendment mixture was distributed into the groundwater flow from wells OBS-8 and Cell 4-6 and transferred to the five (5) recirculation wells. Overall, a total of approximately 10,000 gallons of groundwater (including the 300 gallons of amendment mixture) were re-circulated in the Cell 4 system.

July 2011 Groundwater Monitoring Results

Groundwater samples were collected on July 12 and 13, 2011 (approximately one [1] week after nutrient amendment) for comparison to the baseline samples collected on June 28 (approximately one [1] week prior to nutrient amendment). Groundwater samples were collected from the following wells (**Figure 7**):

- OBS-6
- OBS-8
- EXT-2
- AS-2
- Cell 4-1
- Cell 4-3
- Cell 4-4
- Cell 4-5
- Cell 4-6
- Cell 4-7

The groundwater samples were submitted to Microbac for the analyses shown in **Table 7**. These data indicate naphthalene is the most prevalent VOC constituent.

Groundwater elevation data was collected from July 5th through July 8th, during the injection event. A cursory review of the data revealed that no noticeable change in water levels occurred as a result of the extraction and injection of groundwater.

Although it is early in the testing, analytical data collected from before, during, and one (1) week after the injection event indicated effects of the VB591[®] dosing. For instance, wells Cell 4-1, Cell 4-3, EXT-2 and nearby monitoring wells Cell 4-5 showed an increase in orthophosphate (PO_4^{3-}), sulfate (SO_4^{2-}), and/or total Kjeldahl Nitrogen (TKN) attributable to the VB591[®] dosing.

Coke Oven Area Interim Remedial Measures Progress Report

Figure 8 presents a graph of the total VOC concentrations in Cell 4 groundwater before and after the dosing event. Each well shows a decrease in VOC concentration (except well Cell 4-5) after nutrient amendment. Trends for these monitoring wells will continue to be monitored and assessed during system operation in future months.

Cell 6: LNAPL Extraction at the Former Benzol Processing Area

The Cell 6 LNAPL monitoring and recovery system was monitored approximately weekly during July (four [4] site visits). **Table 8** summarizes LNAPL occurrence and recovery observed during the reporting period along with the cumulative LNAPL recovery since the beginning of the project. **Figure 9** illustrates the well locations.

During July, approximately 188 gallons (1,379 pounds) of LNAPL was recovered, bringing the total recovered LNAPL to 5,775 gallons (42,318 pounds) as of July 29, 2011. The LNAPL was recovered from the following wells:

Well	LNAPL Recovery (gal / lbs)		Notes
	During July 2011	Total thru July 29, 2011	
BP-MW-05	130 / 953	5,029 / 36,848	
RW-04	44 / 322	504 / 3,693	
BP-MW-08	14 / 105	229 / 1,675	
BP-MW-11	0 / 0	8 / 57	(a)
RW-03	0 / 0	4.0 / 29	(b)
RW-01	0 / 0	1.3 / 10	(b)
RW-02	0 / 0	0.8 / 5	(b)

(a) Recovery system moved from BP-MW-11 to BP-MW-08 on September 8, 2010.

(b) Manual bailing.

The wells are presented in **Table 8** generally in the order of decreasing LNAPL occurrence/recovery. During the reporting period, the range of LNAPL thicknesses varied as summarized below (wells are not listed if LNAPL was not present):

- BP-MW-05 (0.32 to 1.05 ft),
- RW-04 (0.47 to 2.13 ft),
- BP-MW-11 (0.26 to 0.47 ft),
- BP-MW-08 (0.03 to 1.58 ft),
- RW-02 (0.13 to 0.20 ft),
- BP-MW-10 (0.18 to 0.30 ft),
- RW-03 (0.21 to 0.34 ft),

Coke Oven Area Interim Remedial Measures Progress Report

- RW-01 (0.15 to 0.22 ft), and
- BP-MW-07 (0.00 to 0.01 ft).

No LNAPL was observed in wells RW-05, BP-MW-06, BP-MW-09, or CO19-PZM004.

For all wells in which LNAPL accumulated, **Table 9** provides well-specific details concerning the measured depths to LNAPL, the water table, and calculated LNAPL thicknesses. It should be noted that the pumps for both RW-04 and BP-MW-05 did not cycle the week leading up to the July 21, 2011 gauging event, and lack of pumping likely had an effect on product thicknesses in both wells on this date.

Tables

Table 1
Summary of Operating Conditions
Cell 1: Prototype AS/SVE System in Former Benzol Processing Area
Former Coke Oven Area Interim Remedial Measures
RG Steel Sparrows Point, LLC

Cell 1 July 2011 Estimated Hydrocarbon Recovery

Parameter	Units	Quantity
Total CATOX Operating Time (July 1 - July 31, 2011)	hours	580
Overall CATOX Operational Time	%	78
Estimated Total Hydrocarbons Destroyed	pounds	532
Estimated Hydrocarbon Removal Rate	pounds/hour	0.3 to 1.3

Cell 1 Cumulative Summary of Estimated Hydrocarbon Recovery

Parameter	Units	Quantity
Total ICE/CATOX Operating Time (August 3, 2010 - July 31, 2011)	hours	5,371
Overall ICE/CATOX Operational Time	%	67.4
Estimated Total Hydrocarbons Destroyed	pounds	8,475
Estimated Average Hydrocarbon Removal Rate	pounds/hour	1.58

Table 2
Summary of Soil Gas Analytical Results
Cell 1: Prototype AS/SVE System in Former Benzol Processing Area
Former Coke Oven Area Interim Remedial Measures
RG Steel Sparrows Point, LLC

Sample ID		CATOX Influent	CATOX Influent
Date		7/7/2011	7/28/2011
Time		12:40	14:10
Dilution Factor		65544.93	13624.93
Analyte	Units		
TO-15 Volatile Organics			
trans-1,3-Dichloropropene	ppb	< 13,000 U	< 2,700 U
Acetone	ppb	< 330,000 U	< 68,000 U
Ethylbenzene	ppb	< 13,000 U	< 2,700 U
2-Hexanone	ppb	< 33,000 U	< 6,800 U
Methylene Chloride	ppb	< 33,000 U	< 6,800 U
Benzene	ppb	540,000	140,000
1,1,2,2-Tetrachloroethane	ppb	< 13,000 U	< 2,700 U
Tetrachloroethene	ppb	< 13,000 U	32,000^[1]
Toluene	ppb	160,000	37,000
1,1,1-Trichloroethane	ppb	< 13,000 U	< 2,700 U
1,1,2-Trichloroethane	ppb	< 13,000 U	< 2,700 U
Trichloroethene	ppb	< 13,000 U	< 2,700 U
Vinyl Chloride	ppb	< 13,000 U	< 2,700 U
o-Xylene	ppb	17,000	7,200
m-Xylene & p-Xylene	ppb	51,000	14,000
2-Butanone (MEK)	ppb	< 66,000 U	< 14,000 U
4-Methyl-2-pentanone (MIBK)	ppb	< 33,000 U	< 6,800 U
Bromoform	ppb	< 13,000 U	< 2,700 U
Carbon Disulfide	ppb	< 33,000 U	< 6,800 U
Carbon tetrachloride	ppb	< 13,000 U	< 2,700 U
Chlorobenzene	ppb	< 13,000 U	< 2,700 U
Chloroethane	ppb	< 13,000 U	< 2,700 U
Chloroform	ppb	< 13,000 U	< 2,700 U
1,1-Dichloroethane	ppb	< 13,000 U	< 2,700 U
1,2-Dichloroethane	ppb	< 13,000 U	< 2,700 U
1,1-Dichloroethene	ppb	< 13,000 U	< 2,700 U
trans-1,2-Dichloroethene	ppb	< 13,000 U	< 2,700 U
1,2-Dichloropropane	ppb	< 13,000 U	< 2,700 U
cis-1,3-Dichloropropene	ppb	< 13,000 U	< 2,700 U
Total Volatile Organics	ppb	768,000	198,200
Hydrocarbons			
Methane	%		

Notes:

[1] Laboratory error - cross-contamination of PCE; PCE is not a site Compound of concern (COC)

<Blank> = Not Measured

BOLD = Analyte detected

ppb = parts per billion

</U = Analyte not detected above corresponding laboratory reporting limit

Table 3
Summary of Groundwater Analytical Results
Cell 1: Prototype AS/SVE System in Former Benzol Processing Area
Former Coke Oven Area Interim Remedial Measures
RG Steel Sparrows Point, LLC

Analyte	Sample ID	MDE GW Stds	CO02-PZM006	CO18-PZM006	BP-MW-09
	Date Time		7/14/2011 15:40	7/14/2011 13:40	7/14/2011 14:50
Units					
Water Quality Parameters					
Temperature	deg C	NA	25.59	30.86	22.16
pH	std units	NA	8.32	7.13	9.12
ORP	mV	NA	-291	-61	-256
Conductivity	mS/cm	NA	1.58	2.63	6.54
Turbidity	NTU	NA	--	--	--
Dissolved Oxygen	mg/L	NA	0.00	1.95	0.00
Volatile Organics					
Vinyl Chloride	µg/L	2	< 100 U	< 100 U	< 1,000 U
Chloroethane	µg/L	3.6	< 100 U	< 100 U	< 1,000 U
1,1-Dichloroethene	µg/L	7	< 100 U	< 100 U	< 1,000 U
Acetone	µg/L	550	< 2,500 U	< 2,500 U	< 25,000 U
Carbon Disulfide	µg/L	100	< 100 U	< 100 U	< 1,000 U
Methylene Chloride	µg/L	5	< 500 U	< 500 U	< 5,000 U
trans-1,2-Dichloroethene	µg/L	100	< 100 U	< 100 U	< 1,000 U
1,1-Dichloroethane	µg/L	90	< 100 U	< 100 U	< 1,000 U
2-Butanone (MEK)	µg/L	700	< 500 U	< 500 U	< 5,000 U
Chloroform	µg/L	80	< 100 U	< 100 U	< 1,000 U
1,1,1-Trichloroethane	µg/L	200	< 100 U	< 100 U	< 1,000 U
Carbon Tetrachloride	µg/L	5	< 100 U	< 100 U	< 1,000 U
Benzene	µg/L	5	540,000	210,000	56,000
1,2-Dichloroethane	µg/L	5	< 100 U	< 100 U	< 1,000 U
Trichloroethene	µg/L	5	< 100 U	< 100 U	< 1,000 U
1,2-Dichloropropane	µg/L	5	< 100 U	< 100 U	< 1,000 U
Methyl Isobutyl Ketone (MIBK)	µg/L	630	< 500 U	< 500 U	< 5,000 U
cis-1,3-Dichloropropene	µg/L	0.44	< 100 U	< 100 U	< 1,000 U
Toluene	µg/L	1,000	45,000	27,000	15,000
trans-1,3-Dichloropropene	µg/L	0.44	< 100 U	< 100 U	< 1,000 U
1,1,2-Trichloroethane	µg/L	5	< 100 U	< 100 U	< 1,000 U
2-Hexanone (MBK)	µg/L	NA	< 500 U	< 500 U	< 5,000 U
Tetrachloroethene	µg/L	5	< 100 U	< 100 U	< 1,000 U
Chlorobenzene	µg/L	100	< 100 U	< 100 U	< 1,000 U
1,1,1,2-Tetrachloroethane	µg/L	NA	< 100 U	< 100 U	< 1,000 U
Ethylbenzene	µg/L	700	690	130	1,300
Bromoform	µg/L	80	< 100 U	< 100 U	< 1,000 U
1,1,2,2-Tetrachloroethane	µg/L	0.05	< 100 U	< 100 U	< 1,000 U
Total Xylenes	µg/L	10,000	6,000	3,600	11,000
Total Volatile Organics	µg/L	--	591,690	240,730	83,300

Notes:

- = Not Measured
- Bold** = Analyte Detected
- deg C = degrees Celcius
- MDE GW Stds = Maryland Department of the Environment Groundwater Standards
- mg/L = Milligram per liter
- mS/cm = Microsiemens per Centimeter
- mV = Millivolts
- NA = Standard not available or not currently established
- NTU = Nephelometric Turbidity Units
- ORP = Oxidation Reduction Potential
- std units = standard units
- </U = Analyte not detected above corresponding laboratory reporting limit
- µg/L = Micrograms per liter

Table 4
Summary of Operating Conditions
Cell 3: AS/SVE System in the "Cove" Area
Former Coke Oven Area Interim Remedial Measures
RG Steel Sparrows Point, LLC

Cell 3 July 2011 Estimated Hydrocarbon Recovery

Parameter	Units	Quantity
Total CATOX Operating Time (July 1 - July 31, 2011)	hours	581
Overall CATOX Operational Time	%	78.1
Estimated Total Hydrocarbons Destroyed	pounds	80
Estimated Hydrocarbon Removal Rate	pounds/hour	0.07 to 0.16

Cell 3 Cumulative Summary of Estimated Hydrocarbon Recovery

Parameter	Units	Quantity
Total ICE/CATOX Operating Time (June 24, 2011 - July 31, 2011)	hours	156
Overall ICE/CATOX Operational Time	%	83.0
Estimated Total Hydrocarbons Destroyed	pounds	84
Estimated Hydrocarbon Removal Rate	pounds/hour	0.11

Table 5
Summary of Soil Gas Analytical Results
Cell 3: AS/SVE System in the "Cove" Area
Former Coke Oven Area Interim Remedial Measures
RG Steel Sparrows Point, LLC

Analyte	Sample ID Date Time Dilution Factor Units	CATOX Influent	CATOX Influent
		7/7/2011 12:25 6213.5	7/28/2011 13:35 1352.13
TO-15 Volatile Organics			
trans-1,3-Dichloropropene	ppb	< 1,200 U	< 270 U
Acetone	ppb	< 31,000 U	< 6,800 U
Ethylbenzene	ppb	< 1,200 U	< 270 U
2-Hexanone	ppb	< 3,100 U	< 680 U
Methylene Chloride	ppb	< 3,100 U	< 680 U
Benzene	ppb	62,000	25,000
1,1,2,2-Tetrachloroethane	ppb	< 1,200 U	< 270 U
Tetrachloroethene	ppb	< 1,200 U	1,700 ^[1]
Toluene	ppb	2,600	1,600
1,1,1-Trichloroethane	ppb	< 1,200 U	< 270 U
1,1,2-Trichloroethane	ppb	< 1,200 U	< 270 U
Trichloroethene	ppb	< 1,200 U	< 270 U
Vinyl Chloride	ppb	< 1,200 U	< 270 U
o-Xylene	ppb	< 1,200 U	< 270 U
m-Xylene & p-Xylene	ppb	< 1,200 U	420
2-Butanone (MEK)	ppb	< 6,200 U	< 1,400 U
4-Methyl-2-pentanone (MIBK)	ppb	< 3,100 U	< 680 U
Bromoform	ppb	< 1,200 U	< 270 U
Carbon Disulfide	ppb	< 3,100 U	< 680 U
Carbon tetrachloride	ppb	< 1,200 U	< 270 U
Chlorobenzene	ppb	< 1,200 U	< 270 U
Chloroethane	ppb	< 1,200 U	< 270 U
Chloroform	ppb	< 1,200 U	< 270 U
1,1-Dichloroethane	ppb	< 1,200 U	< 270 U
1,2-Dichloroethane	ppb	< 1,200 U	< 270 U
1,1-Dichloroethene	ppb	< 1,200 U	< 270 U
trans-1,2-Dichloroethene	ppb	< 1,200 U	< 270 U
1,2-Dichloropropane	ppb	< 1,200 U	< 270 U
cis-1,3-Dichloropropene	ppb	< 1,200 U	< 270 U
Total Volatile Organics	ppb	64,600	27,020
Hydrocarbons			
Methane	%		

Notes:

[1] Laboratory error - cross-contamination of PCE; PCE is not a site Compound of concern (COC)

<Blank> = Not Measured

BOLD = Analyte detected

ppb = parts per billion

</U = Analyte not detected above corresponding laboratory reporting limit

Table 6
Summary of Groundwater Analytical Results
Cell 3: AS/SVE System in the "Cove" Area
Former Coke Oven Area Interim Remedial Measures
RG Steel Sparrows Point, LLC

Analyte	Sample ID Date Time Units	MDE GW Stds	CO30-PZM015	MW-CELL 3-1	MW-CELL 3-2	MW-CELL 3-3
			7/15/2011 14:41	7/15/2011 13:47	7/15/2011 12:10	7/15/2011 11:19
Water Quality Parameters						
Temperature	deg C	NA	20.48	21.13	20.63	21.98
pH	std units	NA	12.93	12.68	12.88	13.19
ORP	mV	NA	-258	-190	-218	-261
Conductivity	mS/cm	NA	7.71	2.34	2.68	4.30
Turbidity	NTU	NA	--	--	--	--
Dissolved Oxygen	mg/L	NA	1.65	0.00	0.00	0.00
Volatile Organics						
Vinyl Chloride	µg/L	2	< 100 U	< 100 U	< 100 U	< 100 U
Chloroethane	µg/L	3.6	< 100 U	< 100 U	< 100 U	< 100 U
1,1-Dichloroethene	µg/L	7	< 100 U	< 100 U	< 100 U	< 100 U
Acetone	µg/L	550	< 2,500 U	< 2,500 U	< 2,500 U	< 2,500 U
Carbon Disulfide	µg/L	100	< 100 U	< 100 U	< 100 U	< 100 U
Methylene Chloride	µg/L	5	< 500 U	< 500 U	< 500 U	< 500 U
trans-1,2-Dichloroethene	µg/L	100	< 100 U	< 100 U	< 100 U	< 100 U
1,1-Dichloroethane	µg/L	90	< 100 U	< 100 U	< 100 U	< 100 U
2-Butanone (MEK)	µg/L	700	< 500 U	< 500 U	< 500 U	< 500 U
Chloroform	µg/L	80	< 100 U	< 100 U	< 100 U	< 100 U
1,1,1-Trichloroethane	µg/L	200	< 100 U	< 100 U	< 100 U	< 100 U
Carbon Tetrachloride	µg/L	5	< 100 U	< 100 U	< 100 U	< 100 U
Benzene	µg/L	5	55,000	9,100	16,000	36,000
1,2-Dichloroethane	µg/L	5	< 100 U	< 100 U	< 100 U	< 100 U
Trichloroethene	µg/L	5	< 100 U	< 100 U	< 100 U	< 100 U
1,2-Dichloropropane	µg/L	5	< 100 U	< 100 U	< 100 U	< 100 U
Methyl Isobutyl Ketone (MIBK)	µg/L	630	< 500 U	< 500 U	< 500 U	< 500 U
cis-1,3-Dichloropropene	µg/L	0.44	< 100 U	< 100 U	< 100 U	< 100 U
Toluene	µg/L	1,000	5,500	610	1,000	4,000
trans-1,3-Dichloropropene	µg/L	0.44	< 100 U	< 100 U	< 100 U	< 100 U
1,1,2-Trichloroethane	µg/L	5	< 100 U	< 100 U	< 100 U	< 100 U
2-Hexanone (MBK)	µg/L	NA	< 500 U	< 500 U	< 500 U	< 500 U
Tetrachloroethene	µg/L	5	< 100 U	< 100 U	< 100 U	< 100 U
Chlorobenzene	µg/L	100	< 100 U	< 100 U	< 100 U	< 100 U
1,1,1,2-Tetrachloroethane	µg/L	NA	< 100 U	< 100 U	< 100 U	< 100 U
Ethylbenzene	µg/L	700	110	< 100 U	< 100 U	< 100 U
Bromoform	µg/L	80	< 100 U	< 100 U	< 100 U	< 100 U
1,1,2,2-Tetrachloroethane	µg/L	0.05	< 100 U	< 100 U	< 100 U	< 100 U
Total Xylenes	µg/L	10,000	1,800	< 300 U	< 300 U	1,400
Total Volatile Organics	µg/L	--	62,410	9,710	17,000	41,400

Notes:

- = Not Measured
- Bold** = Analyte Detected
- deg C = degrees Celcius
- MDE GW Stds = Maryland Department of the Environment Groundwater Standards
- mg/L = Milligram per liter
- mS/cm = Microsiemens per Centimeter
- mV = Millivolts
- NA = Standard not available or not currently established
- NTU = Nephelometric Turbidity Units
- ORP = Oxidation Reduction Potential
- std units = standard units
- <U = Analyte not detected above corresponding laboratory reporting limit
- µg/L = Micrograms per liter

**Table 7
Summary of Groundwater Analytical Results
Cell 4: In-Situ Anaerobic Bio-Treatment Area
Former Coke Oven Area Interim Remedial Measures
RG Steel Sparrows Point, LLC**

Sample ID	Date	MDE GW Stds	OBS-6 07/09/10	OBS-6 06/27/11	OBS-6 07/06/11 12:15	OBS-6 07/07/11 8:22	OBS-6 07/07/11 12:26	OBS-6 07/08/11 8:37	OBS-6 07/13/11	OBS-7 07/09/10	OBS-7 07/06/11 14:17	OBS-7 07/07/11 10:06	OBS-7 07/07/11 13:52	OBS-7 07/08/11 9:55	OBS-8 06/29/11	OBS-8 07/12/11	OBS-9 07/06/11 13:56	OBS-9 07/07/11 9:47	OBS-9 07/07/11 13:38	OBS-9 07/08/11 9:42
Water Quality Parameters																				
Temperature	deg C	NA	20.85	16.74	21.39	19.78	22.19	19.99	17.22	16.40	19.84	18.83	20.22	19.43	20.73	17.59	19.70	19.00	20.56	19.25
pH	std units	NA	10.67	11.56	11.17	11.23	11.52	11.24	11.33	10.35	10.87	11.07	11.01	11.04	11.61	11.09	10.75	10.88	10.90	10.85
ORP	mV	NA	-169	-255	-146	-125	-150	-154	-82.9	-298	-189	-181	-180	-183	-238	-45.1	-187	-191	-189	-184
Conductivity	mS/cm	NA	2,800	2.39	2,280	2,310	2,280	2,360	2,325	1.32	1,350	1,430	1,520	1,500	1.91	1,647	1,340	1,410	1,520	1,650
Turbidity	NTU	NA	0.0	0.96	1.48	1.48	1.46	1.51	--	0.00	0.867	0.912	0.970	0.959	2.24	--	0.855	0.905	0.972	1.06
Dissolved Oxygen	mg/L	NA	4.90	0.28	1.00	1.46	1.03	1.24	3.96	0.00	0.65	5.37	3.01	0.96	0.21	0.81	0.69	2.50	3.50	0.58
Field Sampling																				
Nitrate	mg/L	NA	--	--	0.1	0.4	0.3	0.4	--	--	0.2	0.3	0.6	0.5	--	--	0.2	0.4	0.5	0.4
Sulfate	mg/L	NA	--	--	> 1,600	400	200-400	400	--	--	200-400	200-400	400-800	400-800	--	--	400-800	400-800	400-800	< 200
Volatile Organics																				
Vinyl Chloride	µg/L	2	< 5.0 U	< 100 U	--	--	--	--	< 100 U	< 5.0 U	--	--	--	--	< 100 U	< 100 U	--	--	--	--
Chloroethane	µg/L	3.6	< 5.0 U	< 100 U	--	--	--	--	< 100 U	< 5.0 U	--	--	--	--	< 100 U	< 100 U	--	--	--	--
1,1-Dichloroethane	µg/L	7	< 5.0 U	< 100 U	--	--	--	--	< 100 U	< 5.0 U	--	--	--	--	< 100 U	< 100 U	--	--	--	--
Acetone	µg/L	550	< 50.0 U	< 2,500 U	--	--	--	--	< 2,500 U	< 50.0 U	--	--	--	--	< 2,500 U	< 2,500 U	--	--	--	--
Carbon Disulfide	µg/L	100	< 5.0 U	< 100 U	--	--	--	--	< 100 U	< 5.0 U	--	--	--	--	< 100 U	< 100 U	--	--	--	--
Methylene Chloride	µg/L	5	< 5.0 U	< 500 U	--	--	--	--	< 500 U	< 5.0 U	--	--	--	--	< 500 U	< 500 U	--	--	--	--
trans-1,2-Dichloroethane	µg/L	100	< 5.0 U	< 100 U	--	--	--	--	< 100 U	< 5.0 U	--	--	--	--	< 100 U	< 100 U	--	--	--	--
1,1-Dichloroethane	µg/L	90	< 5.0 U	< 100 U	--	--	--	--	< 100 U	< 5.0 U	--	--	--	--	< 100 U	< 100 U	--	--	--	--
2-Butanone (MEK)	µg/L	700	< 50.0 U	< 500 U	--	--	--	--	< 500 U	< 50.0 U	--	--	--	--	< 500 U	< 500 U	--	--	--	--
Chloroform	µg/L	80	< 5.0 U	< 100 U	--	--	--	--	< 100 U	< 5.0 U	--	--	--	--	< 100 U	< 100 U	--	--	--	--
1,1,1-Trichloroethane	µg/L	200	< 5.0 U	< 100 U	--	--	--	--	< 100 U	< 5.0 U	--	--	--	--	< 100 U	< 100 U	--	--	--	--
Carbon Tetrachloride	µg/L	5	< 5.0 U	< 100 U	--	--	--	--	< 100 U	< 5.0 U	--	--	--	--	< 100 U	< 100 U	--	--	--	--
Benzene	µg/L	5	1,510	1,500	--	--	--	--	1,400	798	--	--	--	--	700	980	--	--	--	--
1,2-Dichloroethane	µg/L	5	< 5.0 U	< 100 U	--	--	--	--	< 100 U	< 5.0 U	--	--	--	--	< 100 U	< 100 U	--	--	--	--
Trichloroethene	µg/L	5	< 5.0 U	< 100 U	--	--	--	--	< 100 U	< 5.0 U	--	--	--	--	< 100 U	< 100 U	--	--	--	--
1,2-Dichloropropane	µg/L	5	< 5.0 U	< 100 U	--	--	--	--	< 100 U	< 5.0 U	--	--	--	--	< 100 U	< 100 U	--	--	--	--
Methyl Isobutyl Ketone (MIBK)	µg/L	630	< 25.0 U	< 500 U	--	--	--	--	< 500 U	< 25.0 U	--	--	--	--	< 500 U	< 500 U	--	--	--	--
cis-1,3-Dichloropropene	µg/L	0.44	< 5.0 U	< 100 U	--	--	--	--	< 100 U	< 5.0 U	--	--	--	--	< 100 U	< 100 U	--	--	--	--
Toluene	µg/L	1,000	1,140	1,100	--	--	--	--	990	620	--	--	--	--	460	620	--	--	--	--
trans-1,3-Dichloropropene	µg/L	0.44	< 5.0 U	< 100 U	--	--	--	--	< 100 U	< 5.0 U	--	--	--	--	< 100 U	< 100 U	--	--	--	--
1,1,2-Trichloroethane	µg/L	5	< 5.0 U	< 100 U	--	--	--	--	< 100 U	< 5.0 U	--	--	--	--	< 100 U	< 100 U	--	--	--	--
2-Hexanone (MBK)	µg/L	NA	< 25.0 U	< 500 U	--	--	--	--	< 500 U	< 25.0 U	--	--	--	--	< 500 U	< 500 U	--	--	--	--
Tetrachloroethene	µg/L	5	< 5.0 U	< 100 U	--	--	--	--	< 100 U	< 5.0 U	--	--	--	--	< 100 U	< 100 U	--	--	--	--
Chlorobenzene	µg/L	100	< 5.0 U	< 100 U	--	--	--	--	< 100 U	< 5.0 U	--	--	--	--	< 100 U	< 100 U	--	--	--	--
1,1,1,2-Tetrachloroethane	µg/L	NA	< 5.0 U	< 100 U	--	--	--	--	< 100 U	< 5.0 U	--	--	--	--	< 100 U	< 100 U	--	--	--	--
Ethylbenzene	µg/L	700	< 5.0 U	< 100 U	--	--	--	--	< 100 U	38.3	--	--	--	--	< 100 U	< 100 U	--	--	--	--
Bromoform	µg/L	80	< 5.0 U	< 100 U	--	--	--	--	< 100 U	< 5.0 U	--	--	--	--	< 100 U	< 100 U	--	--	--	--
1,1,1,2,2-Tetrachloroethane	µg/L	0.05	< 5.0 U	< 100 U	--	--	--	--	< 100 U	< 5.0 U	--	--	--	--	< 100 U	< 100 U	--	--	--	--
Xylenes, Total	µg/L	10,000	1,130	910	--	--	--	--	820	751	--	--	--	--	590	720	--	--	--	--
Naphthalene	µg/L	0.65	8,930	15,000	--	--	--	--	13,000	2,180	--	--	--	--	6,300	5,500	--	--	--	--
Total Volatile Organics	µg/L	NA	12,710	18,510	--	--	--	--	16,210	4,387	--	--	--	--	8,050	7,820	--	--	--	--
Microbiology																				
Heterotrophic Plate Count	CFU/ml	NA	--	< 1.0 U	--	--	--	--	6.0	--	--	--	--	--	< 1.0 U	< 1.0 U	--	--	--	--
Wet Chemistry																				
Ferric Iron	mg/L	NA	0.26	< 0.025 U	--	--	--	--	0.050	0.29	--	--	--	--	< 0.025 U	0.54	--	--	--	--
Ferrous Iron	mg/L	NA	0.18	0.47	--	--	--	--	0.34	0.19	--	--	--	--	0.68	0.71	--	--	--	--
Nitrite-N	mg/L	NA	0.44	0.28	--	--	--	--	0.24	< 0.20 U	--	--	--	--	0.049	0.088	--	--	--	--
Nitrate-N	mg/L	NA	< 0.20 U	< 0.050 U	--	--	--	--	< 0.050 U	< 0.20 U	--	--	--	--	< 0.050 U	< 0.050 U	--	--	--	--
Nitrate/Nitrite-N	mg/L	NA	0.44	< 0.050 U	--	--	--	--	< 0.050 U	< 0.20 U	--	--	--	--	< 0.050 U	< 0.050 U	--	--	--	--
Orthophosphate as P	mg/L	NA	--	0.013	--	--	--	--	0.014	--	--	--	--	--	0.014	0.022	--	--	--	--
Sulfate as SO4	mg/L	NA	581	580	--	--	--	--	560	335	--	--	--	--	360	450	--	--	--	--
Sulfite as SO3	mg/L	NA	--	< 2.0 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Kjeldahl Nitrogen	mg/L	NA	--	45	--	--	--	--	46	--	--	--	--	--	25	31	--	--	--	--
Metals																				
Iron, Total	mg/L	0.3	0.44	0.28	--	--	--	--	0.39	0.48	--	--	--	--	0.29	1.3	--	--	--	--

Notes:
 -- = Not Measured
 Bold = Analyte Detected
 deg C = degrees Celcius
 E = Exceeds Instrument Calibration
 MDE GW Stds = Maryland Department of the Environment Groundwater Standards
 mg/L = Milligram per liter
 mS/cm = Microsiemens per Centimeter
 mV = Millivolts
 NA = Standard not available or not currently established
 NTU = Nephelometric Turbidity Units
 ORP = Oxidation Reduction Potential
 std units = standard units
 <U = Analyte not detected above corresponding laboratory reporting limit
 µg/L = Micrograms per liter

Table 7
Summary of Groundwater Analytical Results
Cell 4: In-Situ Anaerobic Bio-Treatment Area
Former Coke Oven Area Interim Remedial Measures
RG Steel Sparrows Point, LLC

Sample ID	Date	MDE GW Stds	EXT-2 07/09/10	EXT-2 06/28/11	EXT-2 07/13/11	AS-2 06/28/11	AS-2 07/06/11 13:02	AS-2 07/07/11 9:04	AS-2 07/07/11 12:56	AS-2 07/08/11 9:10	AS-2 07/13/11	Cell 4-1 06/28/11	Cell 4-1 07/12/11	Cell 4-3 06/27/11	Cell 4-3 07/13/11	Cell 4-4 06/28/11	Cell 4-4 07/06/11 12:45	Cell 4-4 07/07/11 8:45	Cell 4-4 07/07/11 12:42	Cell 4-4 07/08/11 8:56
Water Quality Parameters																				
Temperature	deg C	NA	17.23	17.00	17.49	21.00	20.61	19.02	21.30	19.44	18.26	20.25	17.16	16.53	17.13	21.47	20.44	19.01	23.38	19.57
pH	std units	NA	11	11.88	10.46	10.94	10.90	10.82	10.72	10.79	10.77	11.22	9.45	11.75	10.12	11.50	11.04	10.91	10.77	10.98
ORP	mV	NA	-182	-231	10.0	-253	-94	-105	-100	-112	-46.1	-248	100.5	-242	-22.1	-263	-209	-198	-186	-197
Conductivity	mS/cm	NA	3.19	2.90	1.909	2.85	2.720	2.790	2.740	2.780	3.017	1.52	2.259	2.22	1.754	1.65	1.450	1.440	1.350	1.490
Turbidity	NTU	NA	0.00	1.42	--	6.91	1.74	1.79	1.76	1.78	--	9.84	--	3.39	--	5.14	0.928	0.923	0.864	0.952
Dissolved Oxygen	mg/L	NA	1.46	0.44	2.16	0.34	1.74	5.40	1.33	1.12	0.58	1.52	2.02	0.32	1.59	2.05	0.63	0.74	1.26	8.54
Field Sampling																				
Nitrate	mg/L	NA	--	--	--	--	0.6	0.8	0.9	0.4	--	--	--	--	--	--	0.2	0.3	0.2	0.3
Sulfate	mg/L	NA	--	--	--	--	> 1,600	< 200	< 200	< 200	--	--	--	--	--	--	> 1,600	400-800	400-800	400
Volatile Organics																				
Vinyl Chloride	µg/L	2	< 5.0 U	< 100 U	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	--	--	--
Chloroethane	µg/L	3.6	< 5.0 U	< 100 U	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	--	--	--
1,1-Dichloroethane	µg/L	7	< 5.0 U	< 100 U	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	--	--	--
Acetone	µg/L	550	< 50.0 U	< 2,500 U	< 2,500 U	< 2,500 U	--	--	--	--	< 2,500 U	< 2,500 U	< 2,500 U	< 2,500 U	< 2,500 U	< 2,500 U	--	--	--	--
Carbon Disulfide	µg/L	100	< 5.0 U	< 100 U	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	--	--	--
Methylene Chloride	µg/L	5	< 5.0 U	< 500 U	< 500 U	< 500 U	--	--	--	--	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	--	--	--	--
trans-1,2-Dichloroethene	µg/L	100	< 5.0 U	< 100 U	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	--	--	--
1,1-Dichloroethane	µg/L	90	< 5.0 U	< 100 U	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	--	--	--
2-Butanone (MEK)	µg/L	700	< 50.0 U	< 500 U	< 500 U	< 500 U	--	--	--	--	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	--	--	--	--
Chloroform	µg/L	80	< 5.0 U	< 100 U	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	--	--	--
1,1,1-Trichloroethane	µg/L	200	< 5.0 U	< 100 U	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	--	--	--
Carbon Tetrachloride	µg/L	5	< 5.0 U	< 100 U	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	--	--	--
Benzene	µg/L	5	999	1,900	1,100	6,800	--	--	--	--	6,200	1,200	1,100	910	990	950	--	--	--	--
1,2-Dichloroethane	µg/L	5	< 5.0 U	< 100 U	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	--	--	--
Trichloroethene	µg/L	5	< 5.0 U	< 100 U	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	--	--	--
1,2-Dichloropropane	µg/L	5	< 5.0 U	< 100 U	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	--	--	--
Methyl Isobutyl Ketone (MIBK)	µg/L	630	< 25.0 U	< 500 U	< 500 U	< 500 U	--	--	--	--	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	--	--	--	--
cis-1,3-Dichloropropene	µg/L	0.44	< 5.0 U	< 100 U	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	--	--	--
Toluene	µg/L	1,000	874	1,500	730	5,100	--	--	--	--	4,500	810	810	730	680	660	--	--	--	--
trans-1,3-Dichloropropene	µg/L	0.44	< 5.0 U	< 100 U	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	--	--	--
1,1,2-Trichloroethane	µg/L	5	< 5.0 U	< 100 U	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	--	--	--
2-Hexanone (MBK)	µg/L	NA	< 25.0 U	< 500 U	< 500 U	< 500 U	--	--	--	--	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	--	--	--	--
Tetrachloroethene	µg/L	5	< 5.0 U	< 100 U	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	--	--	--
Chlorobenzene	µg/L	100	< 5.0 U	< 100 U	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	--	--	--
1,1,1,2-Tetrachloroethane	µg/L	NA	< 5.0 U	< 100 U	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	--	--	--
Ethylbenzene	µg/L	700	< 5.0 U	< 100 U	< 100 U	110	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	--	--	--
Bromoform	µg/L	80	< 5.0 U	< 100 U	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	--	--	--
1,1,2,2-Tetrachloroethane	µg/L	0.05	< 5.0 U	< 100 U	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	--	--	--
Xylenes, Total	µg/L	10,000	1,220	1,400	800	3,000	--	--	--	--	2,400	840	790	990	730	810	--	--	--	--
Naphthalene	µg/L	0.65	8,120	14,000	9,800	19,000	--	--	--	--	18,000	12,000	9,600	14,000	7,200	9,700	--	--	--	--
Total Volatile Organics	µg/L	NA	11,213	18,800	12,430	34,010	--	--	--	--	31,100	14,850	12,300	16,630	9,600	12,120	--	--	--	--
Microbiology																				
Heterotrophic Plate Count	CFU/ml	NA	--	--	1,100	--	--	--	--	--	--	< 1.0 U	--	280	1.0	> 57,000 E	54	--	--	--
Wet Chemistry																				
Ferric Iron	mg/L	NA	0.19	< 0.05 U	0.92	< 0.025 U	--	--	--	--	0.12	< 0.025 U	2.5	< 0.015 U	0.59	< 0.015 U	--	--	--	--
Ferrous Iron	mg/L	NA	0.22	1.3	0.081	1.6	--	--	--	--	0.50	1.5	0.26	0.21	0.31	0.80	--	--	--	--
Nitrite-N	mg/L	NA	< 0.20 U	0.12	0.090	0.15	--	--	--	--	0.15	0.086	0.083	0.028	0.084	0.045	--	--	--	--
Nitrate-N	mg/L	NA	< 0.20 U	< 0.050 U	< 0.050 U	< 0.050 U	--	--	--	--	< 0.050 U	< 0.050 U	< 0.050 U	< 0.050 U	< 0.050 U	< 0.050 U	--	--	--	--
Nitrate/Nitrite-N	mg/L	NA	< 0.20 U	< 0.050 U	< 0.050 U	< 0.050 U	--	--	--	--	< 0.050 U	< 0.050 U	0.083	< 0.050 U	< 0.050 U	< 0.050 U	--	--	--	--
Orthophosphate as P	mg/L	NA	--	< 0.010 U	0.28	0.025	--	--	--	--	0.026	0.021	0.15	0.020	0.42	0.024	--	--	--	--
Sulfate as SO4	mg/L	NA	549	600	790	1,500	--	--	--	--	1,600	520	1,100	370	850	450	--	--	--	--
Sulfite as SO3	mg/L	NA	--	< 2.0 U	--	< 2.0 U	--	--	--	--	--	< 2.0 U	--	< 2.0 U	--	< 2.0 U	--	--	--	--
Total Kjeldahl Nitrogen	mg/L	NA	--	40	110	270	--	--	--	--	290	30	170	22	73	32	--	--	--	--
Metals																				
Iron, Total	mg/L	0.3	0.41	0.30	1.0	0.30	--	--	--	--	0.61	0.37	2.7	0.17	0.90	0.28	--	--	--	--

Notes:
 -- = Not Measured
 Bold = Analyte Detected
 deg C = degrees Celcius
 E = Exceeds Instrument Calibration
 MDE GW Stds = Maryland Department of the Environment Ground
 mg/L = Milligram per liter
 mS/cm = Microsiemens per Centimeter
 mV = Millivolts
 NA = Standard not available or not currently established
 NTU = Nephelometric Turbidity Units
 ORP = Oxidation Reduction Potential
 std units = standard units
 <U = Analyte not detected above corresponding laboratory report
 µg/L = Micrograms per liter

Table 7
Summary of Groundwater Analytical Results
Cell 4: In-Situ Anaerobic Bio-Treatment Area
Former Coke Oven Area Interim Remedial Measures
RG Steel Sparrows Point, LLC

Sample ID	Date	MDE GW Stds	Cell 4-4	Cell 4-5	Cell 4-5	Cell 4-5	Cell 4-5	Cell 4-5	Cell 4-5	Cell 4-6	Cell 4-6	Cell 4-7	Cell 4-7	Influent	Effluent	Influent	Influent
			07/12/11	06/27/11	07/06/11 13:28	07/07/11 9:30	07/07/11 13:23	07/08/11 9:27	06/29/11	07/12/11	06/29/11	07/12/11	07/06/11 14:55	07/06/11 15:10	07/07/11 10:40	07/07/11 13:08	
Water Quality Parameters																	
Temperature	deg C	NA	17.24	16.97	19.92	20.11	20.71	19.70	17.24	16.76	16.95	20.03	18.24	20.57	21.71	20.39	19.91
pH	std units	NA	11.12	11.63	11.49	11.28	11.18	11.29	11.38	11.77	11.28	11.96	11.35	10.76	10.00	10.86	10.78
ORP	mV	NA	-80.3	-317	-172	-174	-165	-161	-12.5	-192	-19.9	-212	-44.7	-181	-177	-193	-156
Conductivity	mS/cm	NA	1.673	2.88	2.540	1.910	1.790	1.970	2.775	2.61	1.887	3.12	2.615	1.460	1.440	1.450	1.570
Turbidity	NTU	NA	--	1.72	1.63	1.22	1.14	1.26	--	4.87	--	4.42	--	0.934	0.919	0.926	1.00
Dissolved Oxygen	mg/L	NA	0.18	0.20	0.96	0.88	8.20	0.78	0.50	0.44	3.98	0.20	0.31	2.49	8.51	1.16	8.49
Field Sampling																	
Nitrate	mg/L	NA	--	--	0.3	0.4	0.1	0.3	--	--	--	--	--	0.1	0.3	0.7	0.2
Sulfate	mg/L	NA	--	--	1,200-1,600	400-800	400-800	400-800	--	--	--	--	--	400-800	< 200	400-800	400-800
Volatile Organics																	
Vinyl Chloride	µg/L	2	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	< 100 U	--
Chloroethane	µg/L	3.6	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	< 100 U	--
1,1-Dichloroethene	µg/L	7	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	< 100 U	--
Acetone	µg/L	550	< 2,500 U	< 2,500 U	--	--	--	--	< 2,500 U	< 2,500 U	< 2,500 U	< 2,500 U	< 2,500 U	< 2,500 U	--	< 2,500 U	--
Carbon Disulfide	µg/L	100	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	< 100 U	--
Methylene Chloride	µg/L	5	< 500 U	< 500 U	--	--	--	--	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	--	< 500 U	--
trans-1,2-Dichloroethene	µg/L	100	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	< 100 U	--
1,1-Dichloroethane	µg/L	90	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	< 100 U	--
2-Butanone (MEK)	µg/L	700	< 500 U	< 500 U	--	--	--	--	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	--	< 500 U	--
Chloroform	µg/L	80	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	< 100 U	--
1,1,1-Trichloroethane	µg/L	200	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	< 100 U	--
Carbon Tetrachloride	µg/L	5	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	< 100 U	--
Benzene	µg/L	5	940	3,700	--	--	--	--	2,400	890	840	1,400	1,900	1,000	--	940	--
1,2-Dichloroethane	µg/L	5	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	< 100 U	--
Trichloroethene	µg/L	5	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	< 100 U	--
1,2-Dichloropropane	µg/L	5	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	< 100 U	--
Methyl Isobutyl Ketone (MIBK)	µg/L	630	< 500 U	< 500 U	--	--	--	--	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	--	< 500 U	--
cis-1,3-Dichloropropene	µg/L	0.44	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	< 100 U	--
Toluene	µg/L	1,000	610	3,200	--	--	--	--	2,000	770	540	1,000	1,300	670	--	640	--
trans-1,3-Dichloropropene	µg/L	0.44	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	< 100 U	--
1,1,2-Trichloroethane	µg/L	5	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	< 100 U	--
2-Hexanone (MBK)	µg/L	NA	< 500 U	< 500 U	--	--	--	--	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	--	< 500 U	--
Tetrachloroethene	µg/L	5	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	< 100 U	--
Chlorobenzene	µg/L	100	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	< 100 U	--
1,1,1,2-Tetrachloroethane	µg/L	NA	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	< 100 U	--
Ethylbenzene	µg/L	700	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	< 100 U	--
Bromoform	µg/L	80	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	< 100 U	--
1,1,2,2-Tetrachloroethane	µg/L	0.05	< 100 U	< 100 U	--	--	--	--	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	--	< 100 U	--
Xylenes, Total	µg/L	10,000	750	2,100	--	--	--	--	1,500	840	640	1,500	1,600	820	--	740	--
Naphthalene	µg/L	0.65	7,200	14,000	--	--	--	--	19,000	13,000	5,000	18,000	14,000	5,400	--	4,900	--
Total Volatile Organics	µg/L	NA	9,500	23,000	--	--	--	--	24,900	15,500	7,020	21,900	18,800	7,890	--	7,220	--
Microbiology																	
Heterotrophic Plate Count	CFU/ml	NA	< 1.0 U	< 1.0 U	--	--	--	--	< 1.0 U	7.0	< 1.0 U	2.0	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	--
Wet Chemistry																	
Ferric Iron	mg/L	NA	< 0.025 U	< 0.025 U	--	--	--	--	0.18	< 0.015 U	< 0.015 U	< 0.015 U	< 0.055 U	0.34	0.61	0.27	--
Ferrous Iron	mg/L	NA	1.2	0.93	--	--	--	--	0.52	0.67	0.69	0.96	2.7	0.12	0.054	0.17	--
Nitrite-N	mg/L	NA	0.068	0.21	--	--	--	--	0.25	0.023	0.045	0.099	0.14	0.11	0.094	0.084	--
Nitrate-N	mg/L	NA	< 0.050 U	< 0.050 U	--	--	--	--	< 0.050 U	< 0.050 U	< 0.050 U	0.10	< 0.050 U	< 0.050 U	< 0.050 U	< 0.050 U	--
Nitrate/Nitrite-N	mg/L	NA	< 0.050 U	< 0.050 U	--	--	--	--	0.064	< 0.050 U	< 0.050 U	0.20	0.060	< 0.050 U	< 0.050 U	< 0.050 U	--
Orthophosphate as P	mg/L	NA	0.026	0.016	--	--	--	--	0.16	0.013	0.022	0.012	0.020	0.019	0.21	0.029	--
Sulfate as SO4	mg/L	NA	460	1,200	--	--	--	--	980	290	< 0.10 U	660	910	470	520	460	--
Sulfite as SO3	mg/L	NA	--	< 2.0 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Kjeldahl Nitrogen	mg/L	NA	28	70	--	--	--	--	80	27	28	49	68	29	42	31	--
Metals																	
Iron, Total	mg/L	0.3	0.48	0.57	--	--	--	--	0.70	0.097	0.40	0.31	0.89	0.46	0.67	0.44	--

Notes:
 -- = Not Measured
Bold = Analyte Detected
 deg C = degrees Celcius
 E = Exceeds Instrument Calibration
 MDE GW Stds = Maryland Department of the Environment Ground
 mg/L = Milligram per liter
 mS/cm = Microsiemens per Centimeter
 mV = Millivolts
 NA = Standard not available or not currently established
 NTU = Nephelometric Turbidity Units
 ORP = Oxidation Reduction Potential
 std units = standard units
 </U = Analyte not detected above corresponding laboratory report
 µg/L = Micrograms per liter

Table 8
LNAPL Occurrence and Recovery
Cell 6: LNAPL Recovery System in Former Benzol Processing Area
Former Coke Oven Area Interim Remedial Measures
RG Steel Sparrows Point, LLC

Well	LNAPL Occurrence During July 2011 (ft)	Total LNAPL Recovery Period		Cumulative Total LNAPL Recovered thru July 29, 2011		LNAPL Recovered During July 2011	
		Begin	End	(gal)	(lbs) (a)	(gal)	(lbs) (a)
BP-MW-05	0.32 to 1.05	28-Jan-10	On-going (b)	5,029	36,848	130	953
RW-04	0.47 to 2.13	23-Jul-10	On-going (b)	504	3,693	44	322
BP-MW-08	0.03 to 1.58	8-Sep-10	On-going (b)	229	1,675	14	105
BP-MW-11	0.26 to 0.47	23-Jul-10	8-Sep-10	7.8	57	0.0	0.0
RW-01	0.15 to 0.22	28-Oct-10	On-going (c)	1.3	10	0.0	0.0
RW-03	0.21 to 0.34	24-Nov-10	On-going (c)	4.0	29	0.0	0.0
RW-02	0.13 to 0.20	28-Jan-11	On-going (c)	0.8	5.5	0.0	0.0
BP-MW-10	0.18 to 0.30	na	na	0.0	0.0	0.0	0.0
BP-MW-07	0.00 to 0.01	na	na	0.0	0.0	0.0	0.0
RW-05	none	na	na	0.0	0.0	0.0	0.0
BP-MW-06	none	na	na	0.0	0.0	0.0	0.0
BP-MW-09	none	na	na	0.0	0.0	0.0	0.0
CO19-PZM004	none	na	na	0.0	0.0	0.0	0.0
Total Recovery:				5,775	42,318	188	1,379

Notes:

(a) Weight is calculated based on average BP-MW-05 and BP-MW-08 oil density of 0.878 grams per cubic centimeter, measured by EA (2009) by ASTM method D1481.

(b) Skimmer

(c) Bailing

Table 9
Depths (feet) to Water and LNAPL
Cell 6: LNAPL Recovery System in Former Benzol Processing Area
Former Coke Oven Area Interim Remedial Measures
RG Steel Sparrows Point, LLC

Date	RW-01			RW-02			RW-03		
	Depth to LNAPL	Depth to Water	LNAPL Thickness	Depth to LNAPL	Depth to Water	LNAPL Thickness	Depth to LNAPL	Depth to Water	LNAPL Thickness
7/7/2011	11.39	11.55	0.16	11.70	11.85	0.15	9.45	9.66	0.21
7/15/2011	11.05	11.27	0.22	11.26	11.46	0.20	9.13	9.43	0.30
7/21/2011	11.16	11.33	0.17	11.48	11.64	0.16	9.23	9.57	0.34
7/29/2011	11.33	11.48	0.15	11.61	11.74	0.13	9.33	9.67	0.34
Date	RW-04			BP-MW-05			BP-MW-07		
	Depth to LNAPL	Depth to Water	LNAPL Thickness	Depth to LNAPL	Depth to Water	LNAPL Thickness	Depth to LNAPL	Depth to Water	LNAPL Thickness
7/7/2011	10.05	10.52	0.47	11.18	11.92	0.74	11.05	11.06	0.01
7/15/2011	9.32	10.23	0.91	10.93	11.25	0.32	10.75	10.75	0.00
7/21/2011	9.32	11.45	2.13	10.92	11.97	1.05	10.83	10.84	0.01
7/29/2011	9.63	10.21	0.58	11.07	12.03	0.96	10.96	10.97	0.01
Date	BP-MW-08			BP-MW-10			BP-MW-11		
	Depth to LNAPL	Depth to Water	LNAPL Thickness	Depth to LNAPL	Depth to Water	LNAPL Thickness	Depth to LNAPL	Depth to Water	LNAPL Thickness
7/7/2011	12.05	13.63	1.58	9.55	9.73	0.18	11.32	11.58	0.26
7/15/2011	11.90	12.03	0.13	9.15	9.35	0.20	11.25	11.60	0.35
7/21/2011	12.03	12.06	0.03	8.03	8.21	0.18	10.93	11.40	0.47
7/29/2011	12.01	12.76	0.75	8.51	8.81	0.30	11.15	11.55	0.40

Figures

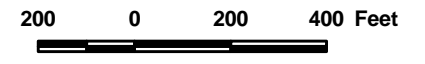


Legend

- ◆ Existing Monitoring Well
- AS/SVE Treatment Area
- Special Study Area

INTERIM MEASURES TREATMENT CELLS

- "Cell 1": Prototype AS/SVE System in Benzol Area
- "Cell 2": AS/SVE and Dual Phase GW Treatment/Injection System in the Former Coal Storage Area
- "Cell 3": AS/SVE System in the "Cove" Area
- "Cell 4": In-Situ Anaerobic Bio-treatment System in the Coal Tar Area
- "Cell 5": Groundwater Extraction/Treatment/Injection at the Turning Basin Area
- "Cell 6": LNAPL Recovery at the Former Benzol Processing Area











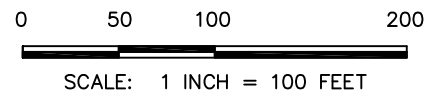
CLIENT: Sparrows Point	LOCATION: Baltimore, MD
DATE: 08/16/2011	FILE: G:\Projects\SparrowsPoint\Projects\2010\CokeOven-and-CokePoint-6Prototype Cells_rev2.mxd
GIS: JK	 12420 Milestone Center Drive Germantown, MD 20876
CHECKED: RL	
SENIOR: BE	

Figure 1
Interim Measures Treatment Areas

Image source: World Imagery, ESRI, GeoEye, 2009.

LEGEND:

- V-1  TRENCH VAPOR EXTRACTION RISER
- EXT-1  SVE PILOT TEST EXTRACTION WELL
- OBS-1  SVE PILOT TEST OBSERVATION WELL
- CO18-PZM006  EXISTING MONITORING WELL
- AS-2  AIR SPARGE WELL
-  VAPOR COLLECTION TRENCHES
-  FORMER STRUCTURES (DEMOLISHED)



URS
 335 COMMERCE DRIVE, SUITE 300
 FORT WASHINGTON, PA 19034
 PHONE: (215) 367-2500 FAX: (215) 367-1000

Job:	15302307.11001
Prepared by:	JES
Checked by:	JH
Date:	10/27/10

AS-BUILT LAYOUT PLAN
 CELL 1: FORMER BENZOL PROCESSING AREA
 RG STEEL SPARROWS POINT, LLC FACILITY
 BALTIMORE, MARYLAND

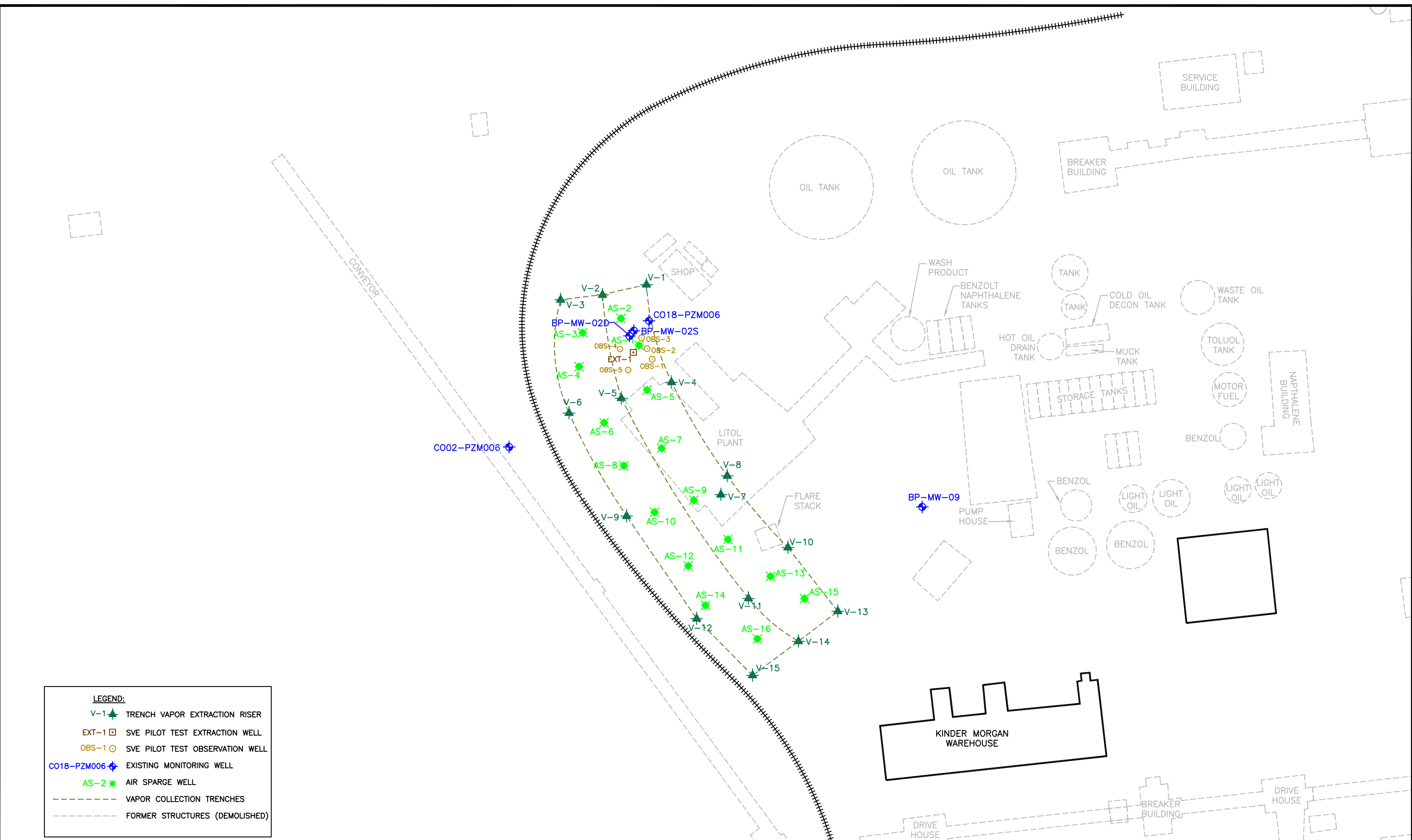


Figure 3
Cumulative Summary of Estimated Hydrocarbon Recovery
Former Coke Oven Area Interim Remedial Measures
RG Steel Sparrows Point, LLC

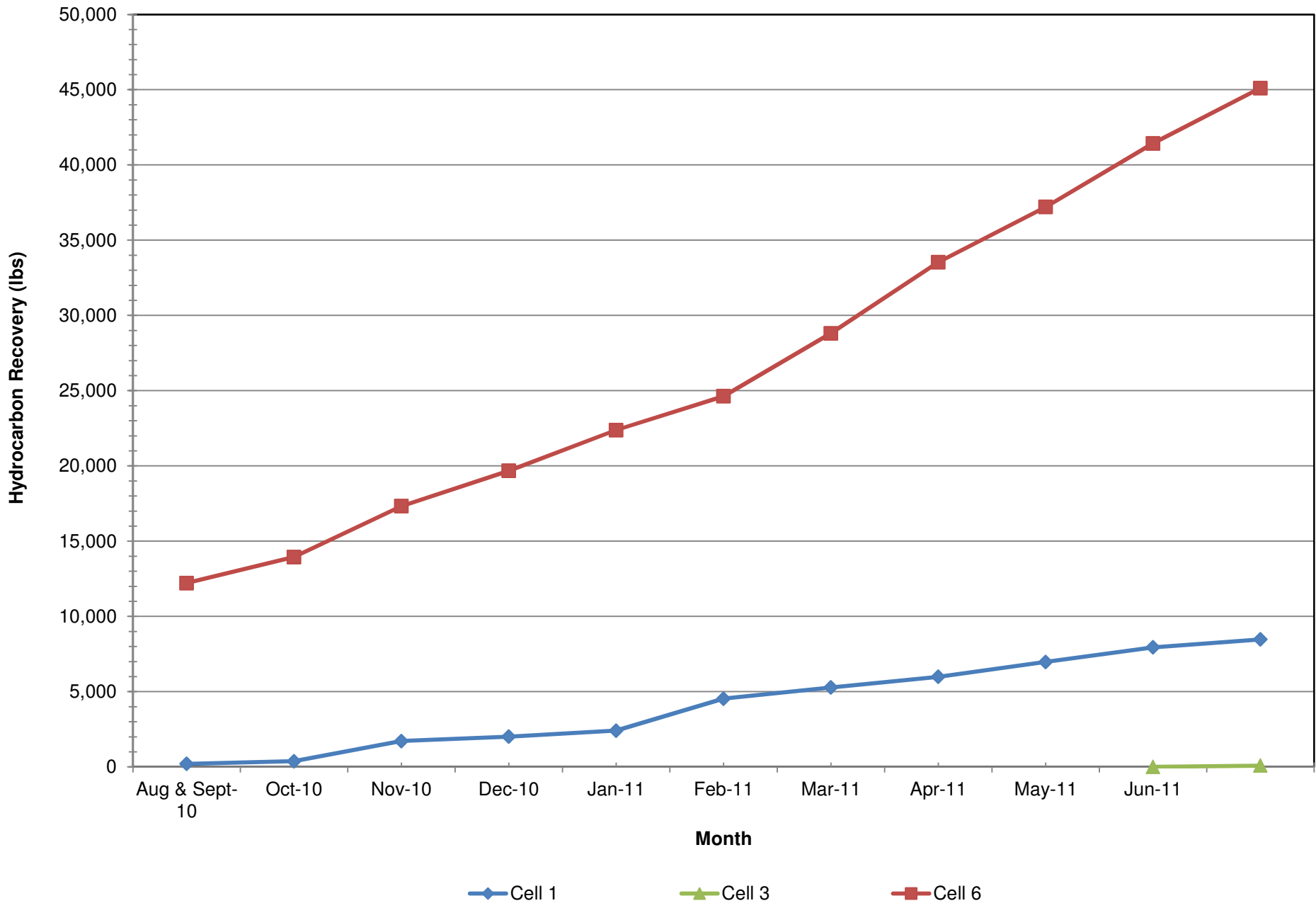


Figure 4
Measured Groundwater VOC Concentration per Month
Cell 1: Prototype AS/SVE System in Former Benzol Processing Area
RG Steel Sparrows Point, LLC

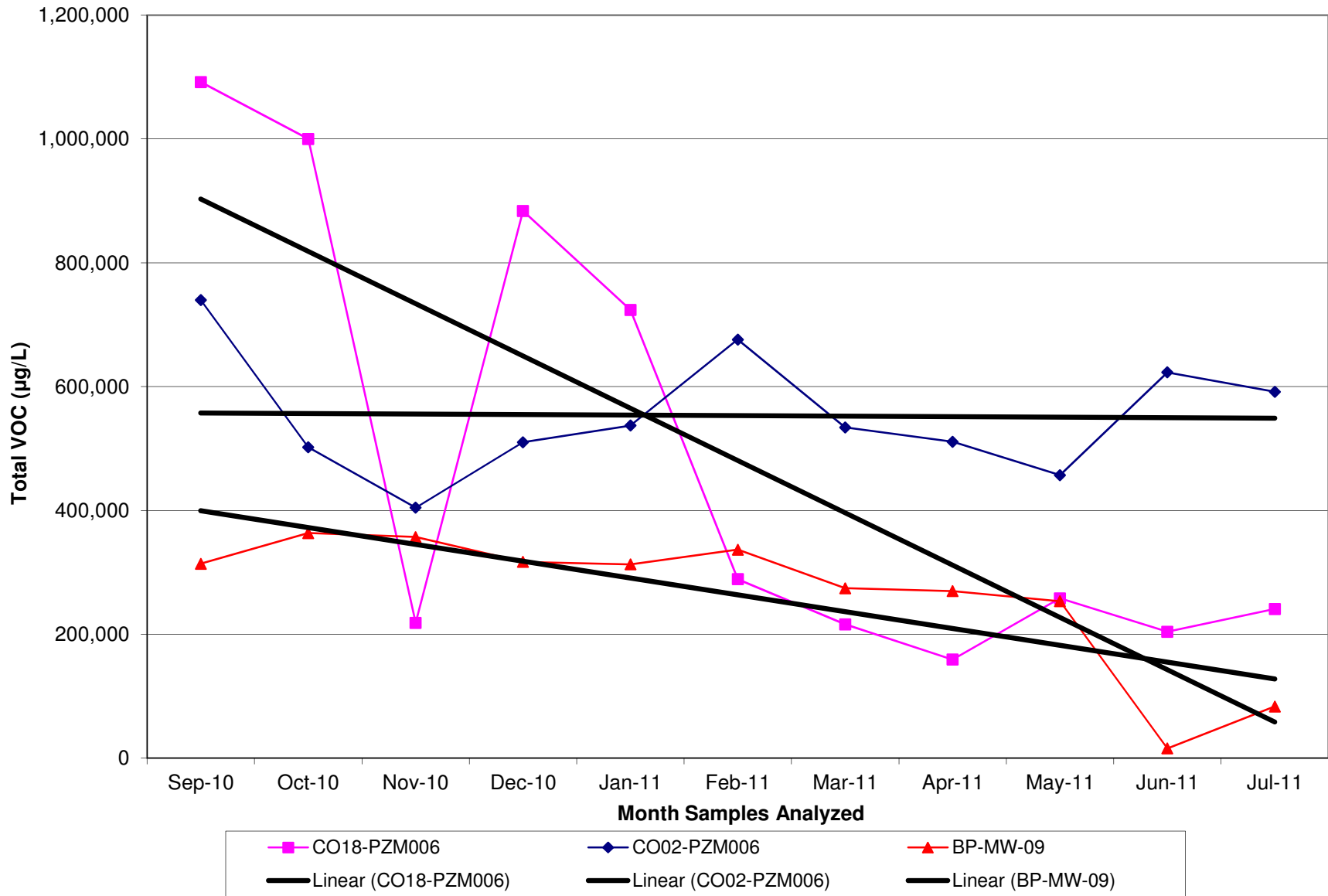
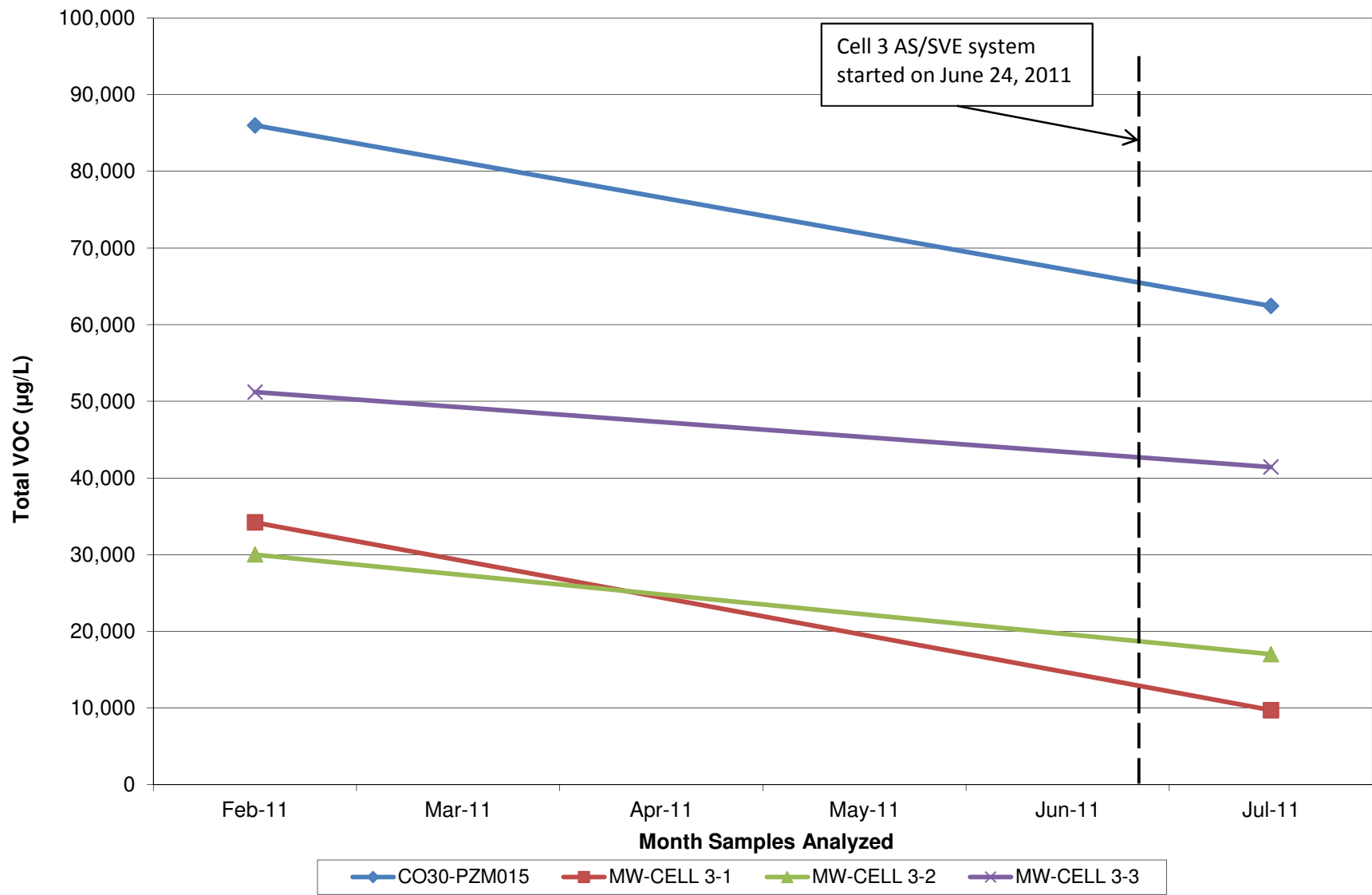


Figure 5
Measured Groundwater VOC Concentration by Month
Cell 3: Prototype AS/SVE System in the "Cove" Area
RG Steel Sparrows Point, LLC



Cell 4

In-Situ Anaerobic
Bio-System



Image source: World Imagery, ESRI, GeoEye, 2009.

Legend

- Extraction Well (Existing)
- Extraction Well (Planned)
- Recirculation Well (Existing)
- Recirculation Well (Planned)
- Monitoring Well (Planned)
- Monitoring Well (Existing)
- Groundwater Flow Direction

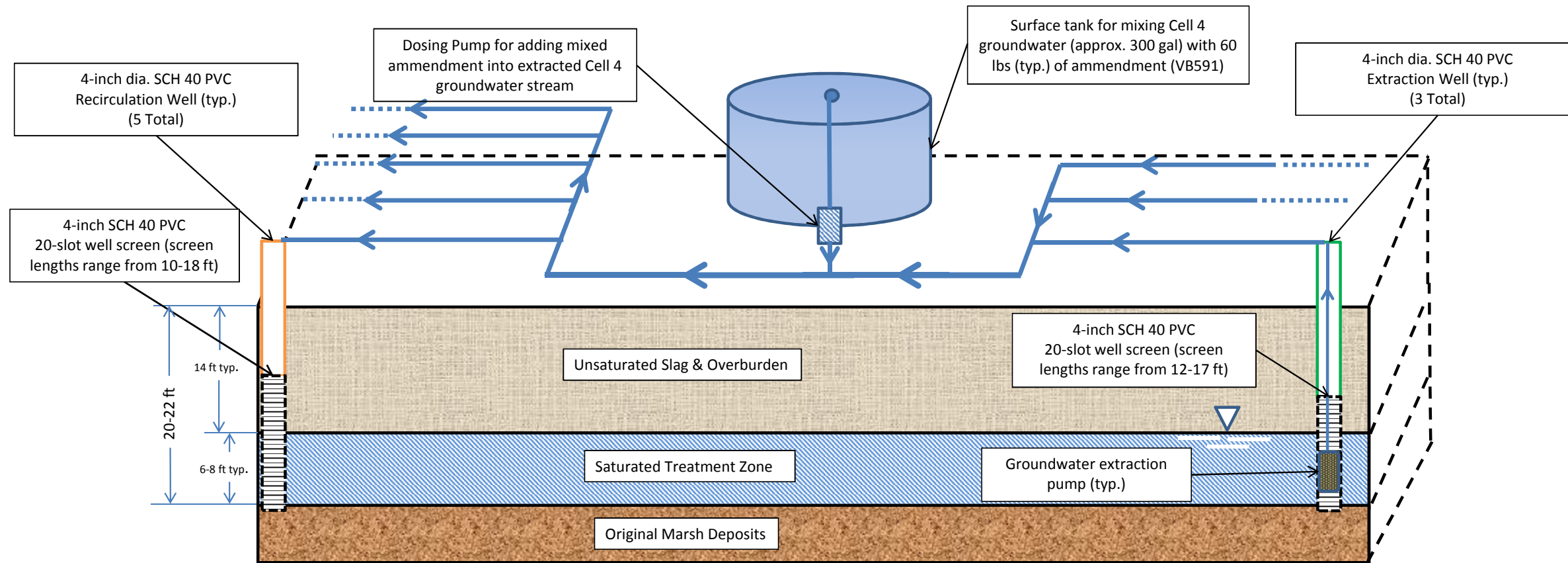
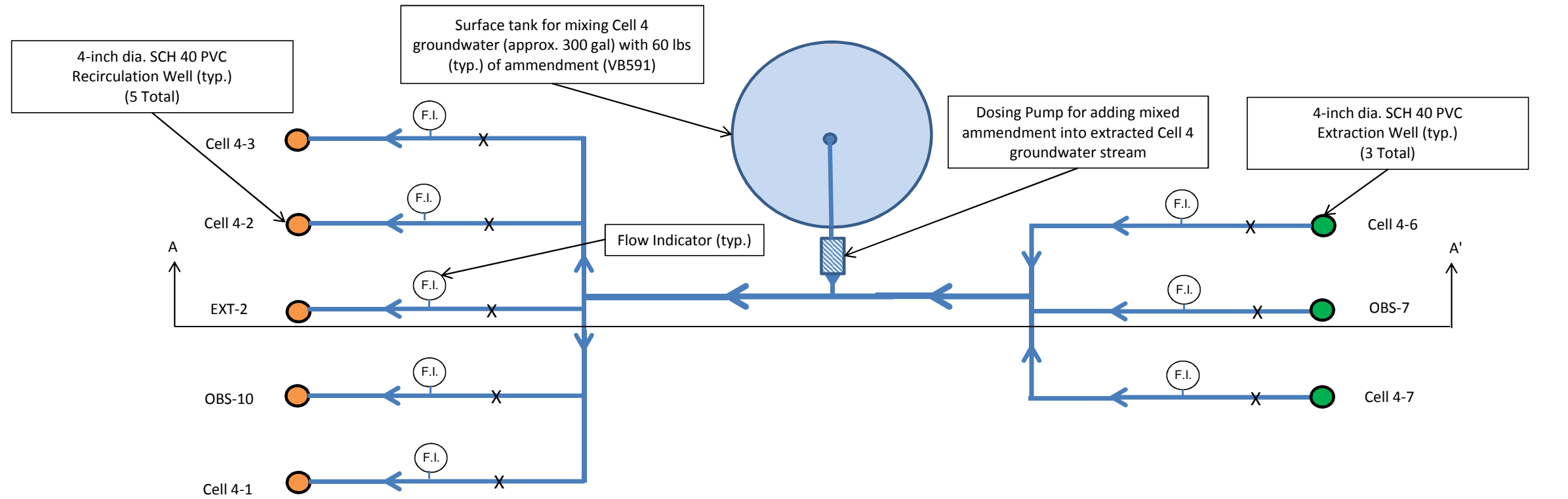
CLIENT	Severstal Sparrows Point, LLC		
LOCATION	Baltimore, MD		
 200 Orchard Ridge Drive Gaithersburg, MD 20878	GIS BY	JK	05/31/2011
	CHK BY	BE	05/31/2011
	PM	BE	05/31/2011



Figure 6
Cell 4 Wells

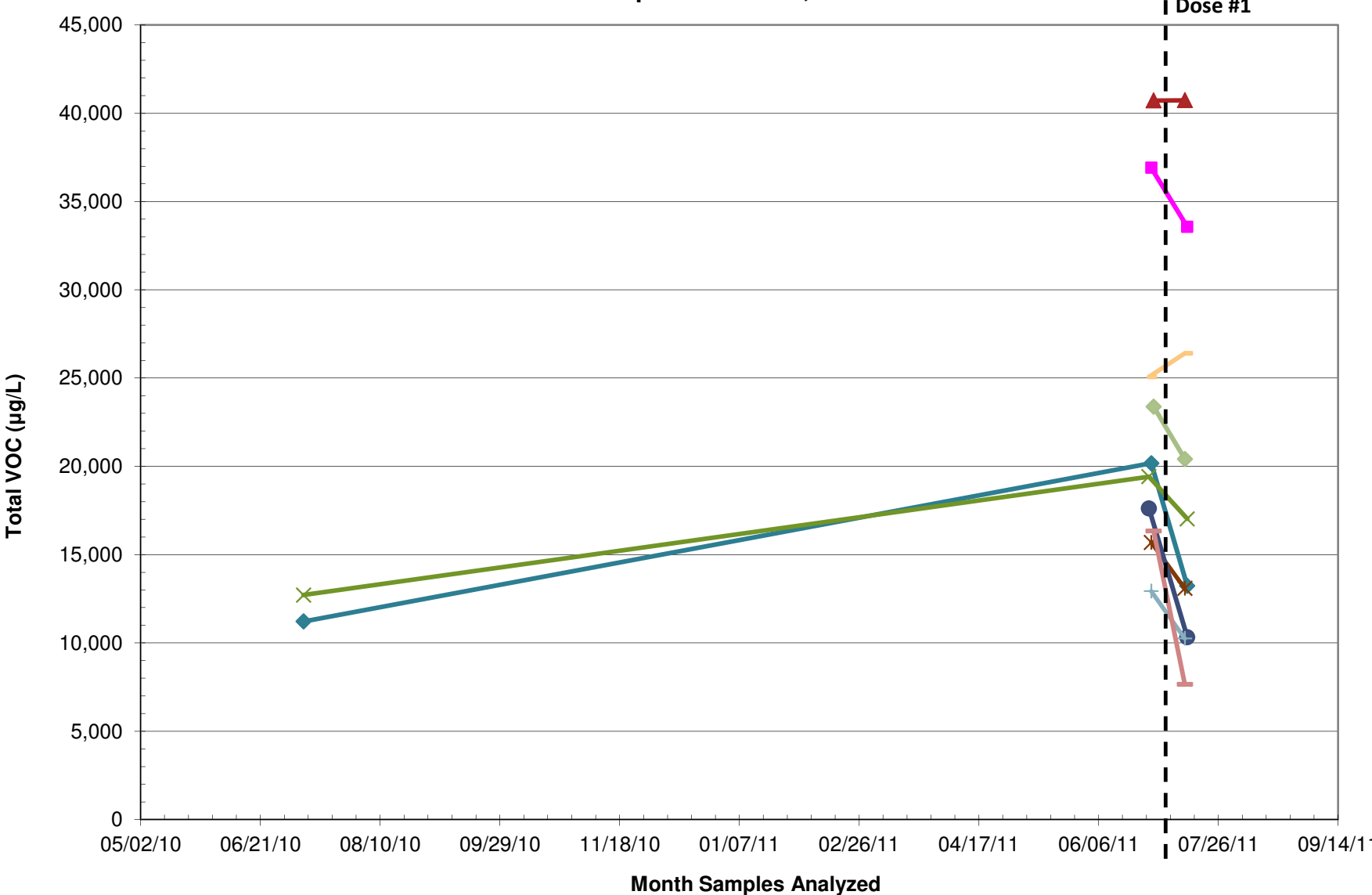
G:\Projects\SparrowsPoint\Projects\2010\CokeOven-and-CokePoint-Cell4closeup_ExistingandPlanned_Wells.mxd

Figure 7
Schematic Layout and Sections
Cell 4 In-Situ Anaerobic Bio-Treatment System
Former Coke Oven Area Interim Remedial Measures
RG Steel Sparrows Point, LLC



Section A-A' (not to scale)

Figure 8
Measured Groundwater VOC Concentration per Month
Cell 4: In-Situ Anaerobic Bio-Treatment Area
RG Steel Sparrows Point, LLC



AS-2 EXT-2 OBS-6 OBS-8 Cell 4-1 Cell 4-3 Cell 4-4 Cell 4-5 Cell 4-6 Cell 4-7



CLIENT Sparrows Point

LOCATION Baltimore, MD

URS
200 Orchard Ridge Drive
Gaithersburg, MD 20878

GIS BY	JK	10/13/10
CHK BY	BE	10/14/10
PM	BE	10/14/10



Figure 9
LNAPL Monitoring and Recovery Wells

G:\Projects\SparrowsPoint\Projects\2010\CokeOven-and-CokePoint-Cell6closeup_rev.mxd