



363 Centennial Parkway  
Suite 210  
Louisville, Colorado 80027

[www.geotransinc.com](http://www.geotransinc.com)

(303) 665-4390; FAX (303) 665-4391

**Via Email**

August 3, 2010

Mr. Scott Miller  
Remedial Project Manager  
U.S. Environmental Protection Agency, Region IV  
4WD-SRTMB  
61 Forsyth Street  
Atlanta, Georgia 30303-3104

Subject: Upper Floridan Aquifer IRM Water Quality Results for Groundwater Extraction at FW-6 and FW-21B

Dear Mr. Miller:

On behalf of Beazer East, Inc. (Beazer), enclosed with this letter are water quality results for implementation of the Upper Floridan (UF) Aquifer Interim Remedial Measures (IRM) workplan (GeoTrans, December 29, 2008). The workplan was approved by the U. S. Environmental Protection Agency (EPA) on July 20, 2009 and implementation of the workplan was initiated on October 14, 2009. This letter is intended to provide draft results for the IRM water quality sampling; however, a comprehensive Performance Monitoring report will be issued within 30 days.

**INTRODUCTION**

Groundwater extraction was proposed for FW-6 and FW-21B to address impacts that are hypothesized to be associated with faulty annular seals outside of the wells. Dissolved-phase organic impacts observed in monitoring wells located downgradient and to the northwest of FW-6 (monitoring wells FW-20B, FW-12B, FW-22B) are hypothesized to be due to a plume originating at the FW-6 location. Dissolved-phase impacts at downgradient monitoring well FW-16B are hypothesized to be due to a plume originating at the FW-21B location.

The IRM work plan described groundwater extraction from wells FW-6 and FW-21B as an IRM for the Upper Floridan Aquifer to hydraulically control organic constituent concentrations in the Upper Floridan Aquifer at the Site. A conventional submersible pump was installed in FW-21B. The 2-inch diameter well completion for FW-6 required the use of a smaller diameter pneumatic pump. Groundwater recovered from these two wells was pumped to the existing groundwater treatment system located on the eastern property boundary.

Monitoring well FW-21B was installed with four 10-foot screened intervals, each separated by 10 feet of blank casing and extending over the assumed thickness of the Upper Transmissive Zone (UTZ). Shortly after construction of well FW-21B, a Westbay Multiport

system was installed to isolate the four well screens. Historically, impacts observed in FW-21B were restricted to the upper two screened intervals and the lower two screened intervals have been non-impacted.

To convert FW-21B to a groundwater extraction well, the Westbay system was removed on October 15, 2009. Groundwater extraction in FW-21B was restricted to the upper two screened intervals by isolating the lower two screened intervals with bentonite plugs. The plugs consisted of 2 feet of bentonite pellets that were placed within the blank well casing at the midpoint between the well screens. Coarse (6/14 mesh) silica sand was placed between the bentonite plugs and opposite the screened intervals, with a 10/20 mesh transition sand adjacent to the bentonite seal. The advantages of isolating the lower screened intervals with a combination of bentonite and sand are the following: 1) The integrity of the lower two screened intervals are maintained for future use if needed; the plug can be readily removed by airlifting; and 2) The sand and bentonite plug provides a more reliable seal than a mechanical bridge plug or packer system.

### Groundwater Monitoring

The groundwater sampling schedule for the IRM wells and surrounding monitoring wells was presented in the workplan. Prior to the start of groundwater extraction, a round of background samples were collected from the extraction wells and monitoring wells HG-12D and HG-16D. The remaining IRM monitoring wells have over 4 years of quarterly historical data representing pre-extraction water quality data.

Figure 1 shows the locations of UF Aquifer extraction and monitoring wells. Sampling at extraction wells (FW-6 and FW-21B) was more frequent than the IRM monitoring wells and consisted of the following:

- 1) Hourly samples for the first 4 hours;
- 2) Daily for the first week;
- 3) Weekly for the first month;
- 4) Monthly for next 2 months; and
- 5) Quarterly until concentration stabilize.

Groundwater sampling frequency for monitoring wells (FW-20B, FW-12B and FW-16B) was monthly for the first 3 months and quarterly thereafter. Groundwater sampling for the two Lower Hawthorn wells (HG-12D and HG-16D) was at an interval of one 2-week sample, one 3-month sample and quarterly thereafter.

### Groundwater Extraction Rates

Groundwater extraction began on October 20, 2009 in wells FW-6 and FW-21B. The average groundwater extraction rate for FW-6 was approximately 1.5 gpm and the average extraction rate for FW-21B was approximately 2 gpm.

## WATER QUALITY RESULTS

Water quality results for the IRM sampling are available for the first 3 months of groundwater extraction (October 2009 through January 2010). The first quarterly groundwater samples were collected in May 2010; however, data validation for this sampling event was not complete at the time of this letter and final results are not currently available for release.

### Extraction Well FW-6 and Monitoring Wells FW-20B and FW-12B

Summary of water quality results for extraction well FW-6 and associated downgradient monitoring wells FW-20B and FW-12B are provided in Tables 1a through 1c. Naphthalene is one of the more mobile organic constituents associated with impacted groundwater at this Site. Naphthalene is also one of the highest concentration constituents present in groundwater at the Site. Therefore, naphthalene concentrations in these wells will be used to evaluate the overall performance of the IRM.

Historical naphthalene concentrations for extraction well FW-6 are shown in Figure 2 with IRM pre- and post-startup concentrations shown in Figure 3. Monitoring at this well began in July 2004 and continues to present. Naphthalene concentrations in this well were over 2,500 µg/L in the first sample collected from this well in 2004 and steadily declined to a low of 110 µg/L in September 2007. Naphthalene concentrations have fluctuated since September 2007, and peaked at a concentration of 2,600 µg/L in August 2009 (Figure 2).

The naphthalene concentration in FW-6 prior to the start of groundwater extraction was 1,500 µg/L. During the first 4 hours of groundwater extraction concentration declined from 1,000 to 920 µg/L. During the first week of groundwater extraction the naphthalene concentrations fluctuated from 1,200 to 580 µg/L. Since the first week of groundwater extractions, naphthalene concentrations have remained fairly stable at around 730 to 850 µg/L, with the exception of a concentration spike of 1,300 µg/L in November 2009 (Figure 3). The most recent sample from May 2010 is reported to be 570 µg/L; however, these data have not yet been validated for release. Naphthalene concentrations in this well have declined by approximately 50 percent since the start of groundwater extraction in October 2009. The trend for this well is positive in terms of reducing UF Aquifer concentrations; however, longer-term monitoring is required to determine if this downward concentration trend will continue.

Temporal trends for downgradient monitoring wells FW-20B and FW-12B are provided in Figures 4 and 5. Constituent impacts in FW-20B are restricted to the upper two screened intervals (Zones 1 and 2). Groundwater impact to the lower two screened intervals (Zones 3 and 4) are minimal to none. Since the start of groundwater extraction naphthalene concentrations in FW-20B have declined, with the exception of an increase in Zone 1 one month after the start of pumping. The concentrations for Zone 1 during the 2<sup>nd</sup> and 3<sup>rd</sup> monthly sampling event have been stable and approximately 50 percent less the 1<sup>st</sup> monthly sampling event. Zone 2 has shown a steady decline for the three monthly post-extraction sampling events. Concentrations in Zone 2 have declined approximately 50 percent since the start of pumping. The non-data validated concentrations for May 2010 are 1,100 and 240 µg/L, respectively for Zones 1 and 2. The apparent increase in concentrations for this most recent sampling event may reflect transient conditions associated with pre-FW-6 plume capture.

The majority of the constituent impacts in monitoring well FW-12B are in the lower two screened intervals (Zones 3 and 4). The upper screened interval (Zone 1) has moderate impacts with naphthalene concentrations averaging approximately 50 µg/L, whereas the second screened interval (Zone 2) has been below detection limits since 2008 (Figure 5). Similar to concentration trends in FW-6, naphthalene concentrations in FW-12B have steadily declined since groundwater extraction began. The pre-groundwater extraction naphthalene concentration for FW-12B (Sampled on August 13, 2009) for Zones 1 (95 µg/L), 2 (0 µg/L), 3 (970 µg/L) and 4 (680 µg/L) were approximately 20-70 percent higher than samples collected post-groundwater extraction. The May 2010 sampling event for this well show a slight increase in naphthalene concentrations from the previous January 2010 sampling event: Zones 1 (86 µg/L), 2 (0 µg/L), 3 (870 µg/L) and 4 (520 µg/L). Again, this concentration trend is positive; however, the concentrations for these zones are within the historical range of observed concentrations for this well.

#### Extraction Well FW-20B and Monitoring Well FW-16B

Summaries of water quality results for extraction well FW-20B and downgradient monitoring well FW-16B are provided in Tables 2a and 2b. Groundwater impacts in FW-21B are primarily restricted to the upper two screened intervals (Zones 1 and 2), with Zone 1 being the most impacted. Naphthalene concentrations in this well have been steadily improving since 2008, averaging less than 150 µg/L in Zone 1 and less than 40 µg/L in Zone 2. Historically, concentrations in Zone 1 have been as high as 4000 µg/L in 2006 (Figure 6). The lower two screened intervals (Zones 3 and 4) have been relatively non-impacted since 2008.

The first 4-hours post groundwater extraction showed fairly stable groundwater concentrations in extraction well FW-21B (Figure 7). Naphthalene concentrations ranged from 210 to 190 µg/L during the first 3 hours and declined to 160 µg/L in the 4<sup>th</sup> hour of pumping. Concentrations remained fairly steady for the next 2 weeks averaging approximately 220 µg/L, with the exception of one sampling event increase to 400 µg/L. Concentrations remained fairly constant for the three post-pumping monthly sampling events ranging from 71 to 170 µg/L. The May 2010 non-validated sampling results show nondetect and 9 µg/L, respectively for Zones 1 and 2; however, these samples were collected under non-pumping conditions after the pump was temporarily removed from the well for the collection of these samples, as per the approved workplan.

Monitoring well FW-16B is located downgradient of extraction well FW-21B. Historically, the uppermost screened interval (Zone 1) in FW-16B is the only impacted zone in this well. The lower three screened intervals (Zones 2, 3 and 4) are essentially non-impacted. In addition, naphthalene concentrations in this well have been relatively low with the highest observed concentration of 36 µg/L (Figure 8). Prior to the start of groundwater extraction in FW-21B, the naphthalene concentration for Zone 1 in FW-16B was 30 µg/L. The post-pumping concentration for Zone 1 ranged from 27 to 30 µg/L. The non-validated May 2010 concentration for Zone 1 was 31 µg/L. Hence, groundwater extraction at FW-21B has had minimal impacts on concentrations in monitoring well FW-16B; however, given the fairly low concentration at this well and the short duration of pumping, significant concentration changes would not yet be anticipated.

### Lower Hawthorn Monitoring Wells HG-12D and HG-16D

Summaries of water quality results for Lower Hawthorn monitoring wells HG-12D and HG-16D are provided in Tables 3a and 3b. Temporal concentration plots for these two monitoring wells are shown in Figures 9 and 10. Monitoring well HG-12D is located in the footprint of the former Drip Track area and HG-16D is located in the footprint of the former North Lagoon. Historically, both of these wells were sampled in 2004 with concentrations that exceeded 10,000 µg/L. No sampling events have been performed in these wells from 2004 until the start of the IRM groundwater extraction. Background samples were collected from both of these wells on October 12, 2010. At that time, the background naphthalene concentrations for HG-12D and HG-16D were 1,700 and 4,400, respectively (using average concentrations from the investigative and duplicate samples). Since the start of groundwater extraction in FW-6 and FW-21B concentrations have declined in these wells. The explanation for the decline in concentrations is unknown; however, it is not believed to be due to the groundwater extraction in the UF Aquifer.

### **CONCLUSIONS**

Groundwater extraction at wells FW-6 and FW-21B appear to correlate with a general decrease in concentrations in both extraction wells and downgradient monitoring wells. Concentration declines of up to 50 percent have been observed; however, it is too early to determine if these declines are entirely due to groundwater extraction or a combination of groundwater extraction and temporal fluctuations in the data.

Sincerely,



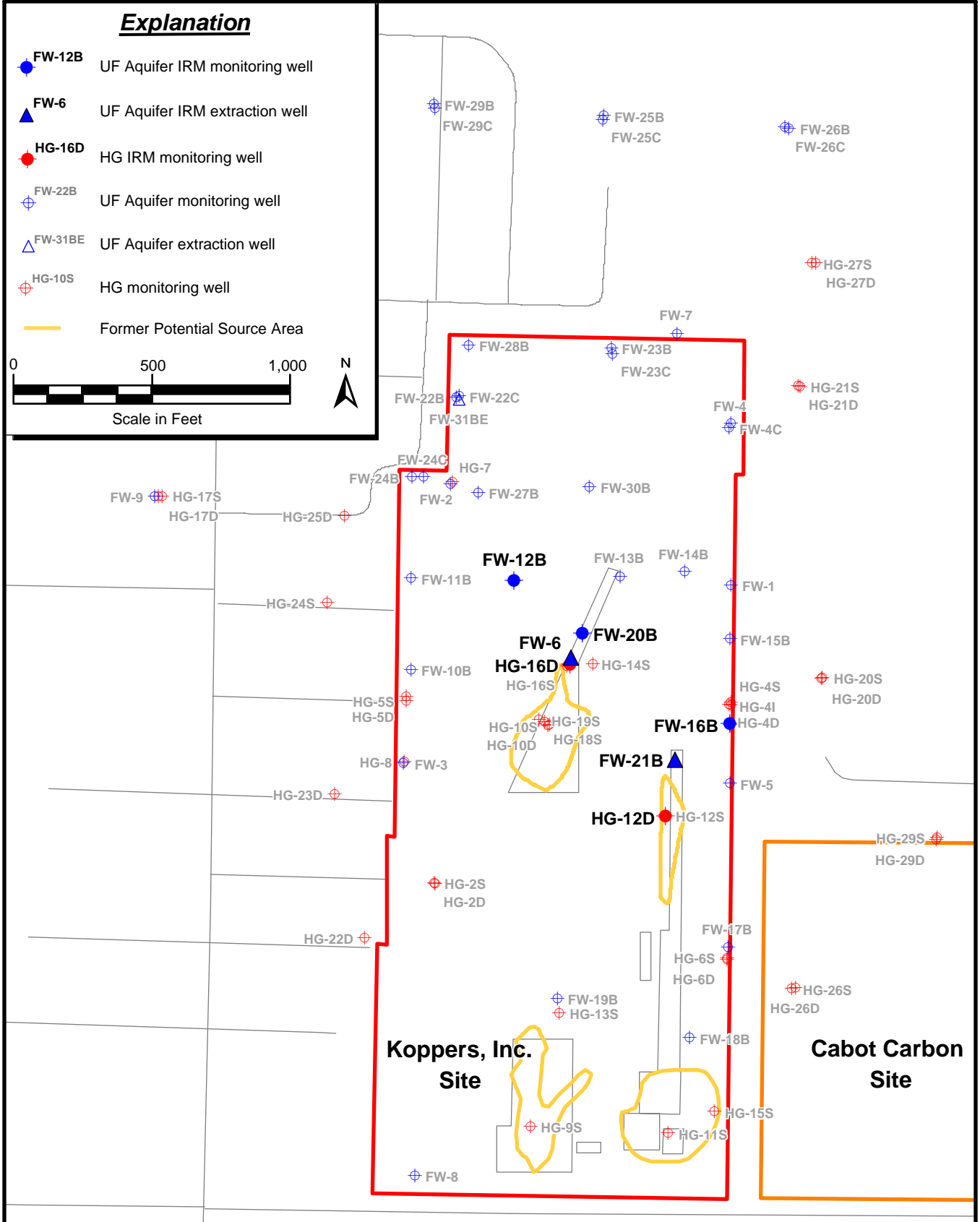
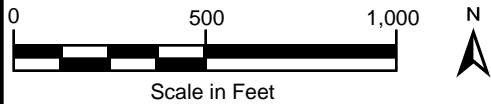
James R. Erickson, P.G.  
Principal Hydrogeologist

Enclosures

cc: W. O'Steen, U.S. EPA  
K. Helton, FDEP  
M. Brouman, BEI  
G. Council, GT

**Explanation**

- FW-12B UF Aquifer IRM monitoring well
- ▲ FW-6 UF Aquifer IRM extraction well
- HG-16D HG IRM monitoring well
- ⊕ FW-22B UF Aquifer monitoring well
- ▲ FW-31BE UF Aquifer extraction well
- ⊕ HG-10S HG monitoring well
- Former Potential Source Area



TITLE:	Locations of Upper Floridan Aquifer and Hawthorn Group IRM Wells		
LOCATION:	Cabot Carbon/Koppers Superfund Site, Gainesville, Florida		
	CHECKED	JRE	FIGURE: <b>1</b>
	DRAFTED	DJB	
	FILE	IRM Wells 080310	
	DATE	08/03/10	

t:\gainesville\mapinfo\wells\IRM Wells 080310.wor



**Figure 3. Temporal Plot of Naphthalene Concentrations in Monitoring Well FW-6**

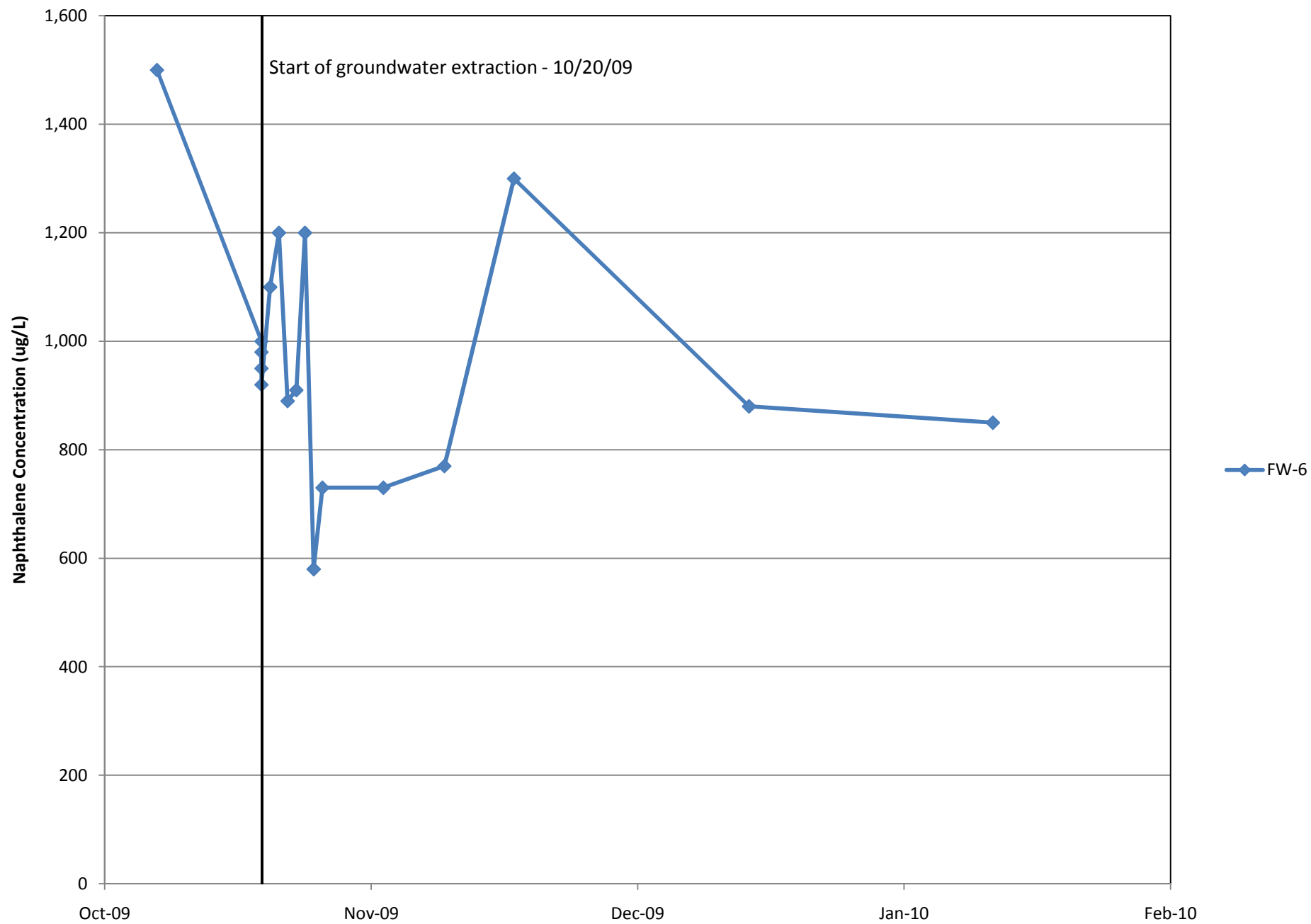




Figure 4. Temporal Plot of Naphthalene Concentrations in Monitoring Well FW-20B

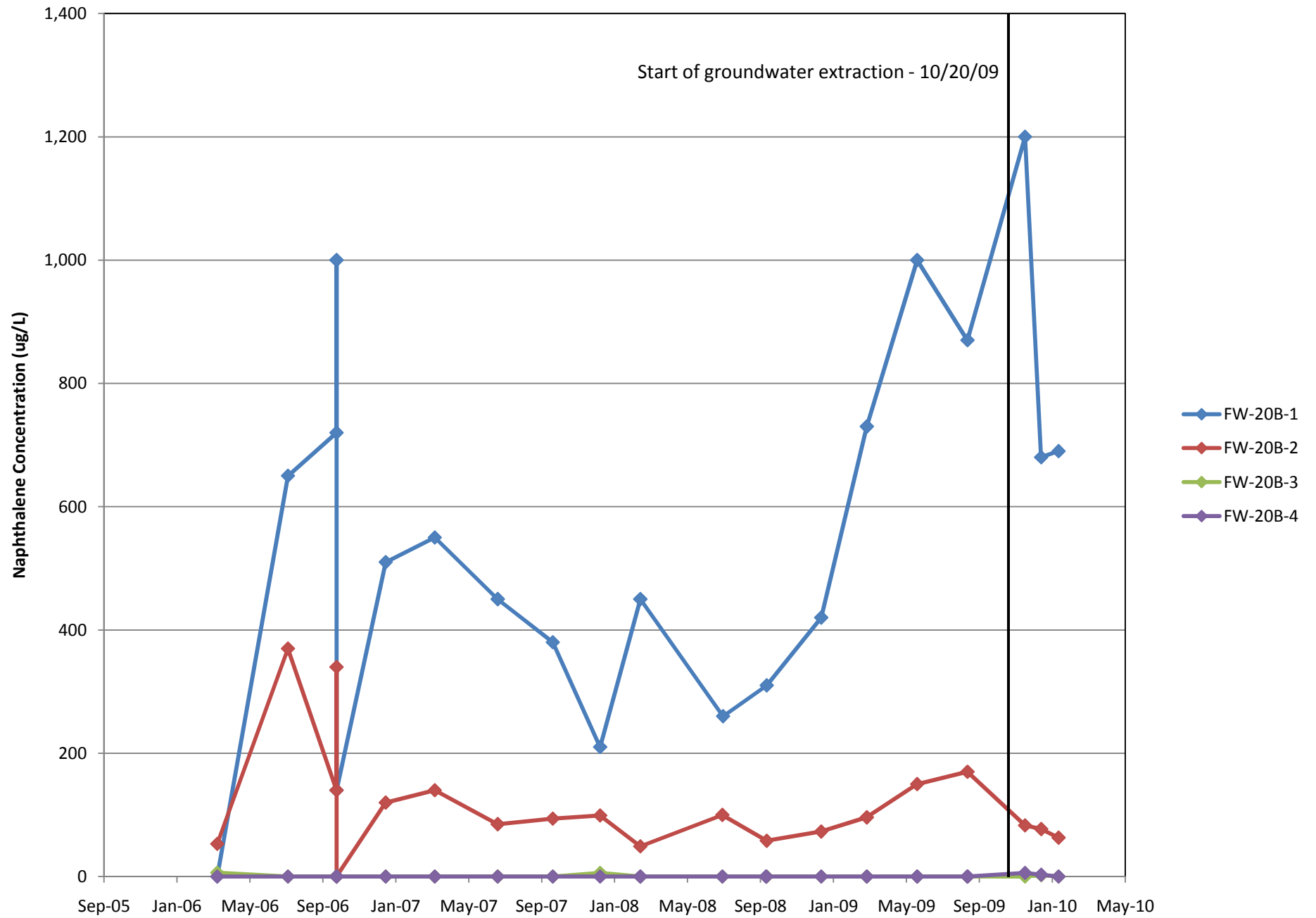


Figure 5. Temporal Plot of Naphthalene Concentrations in Monitoring Well FW-12B

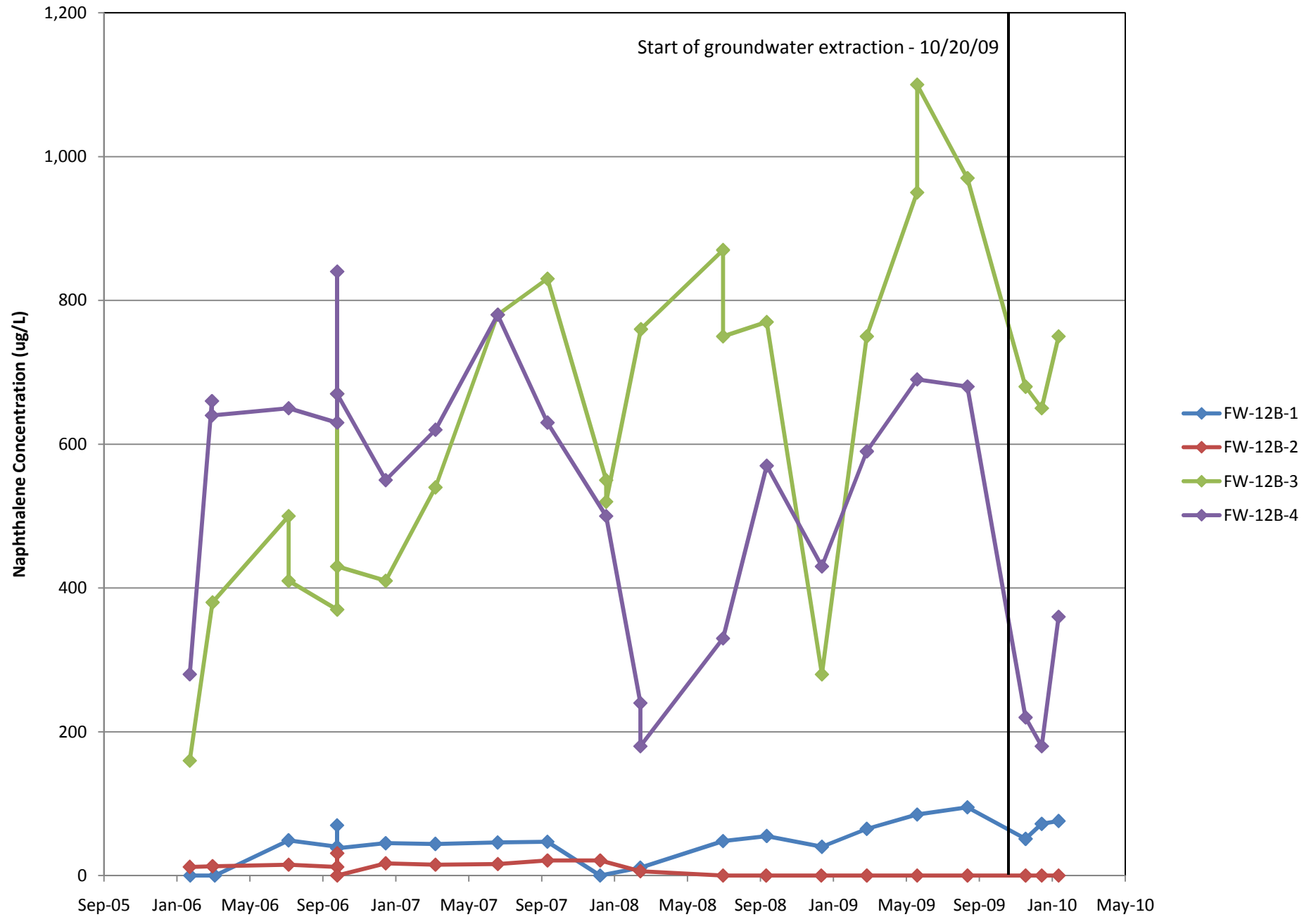
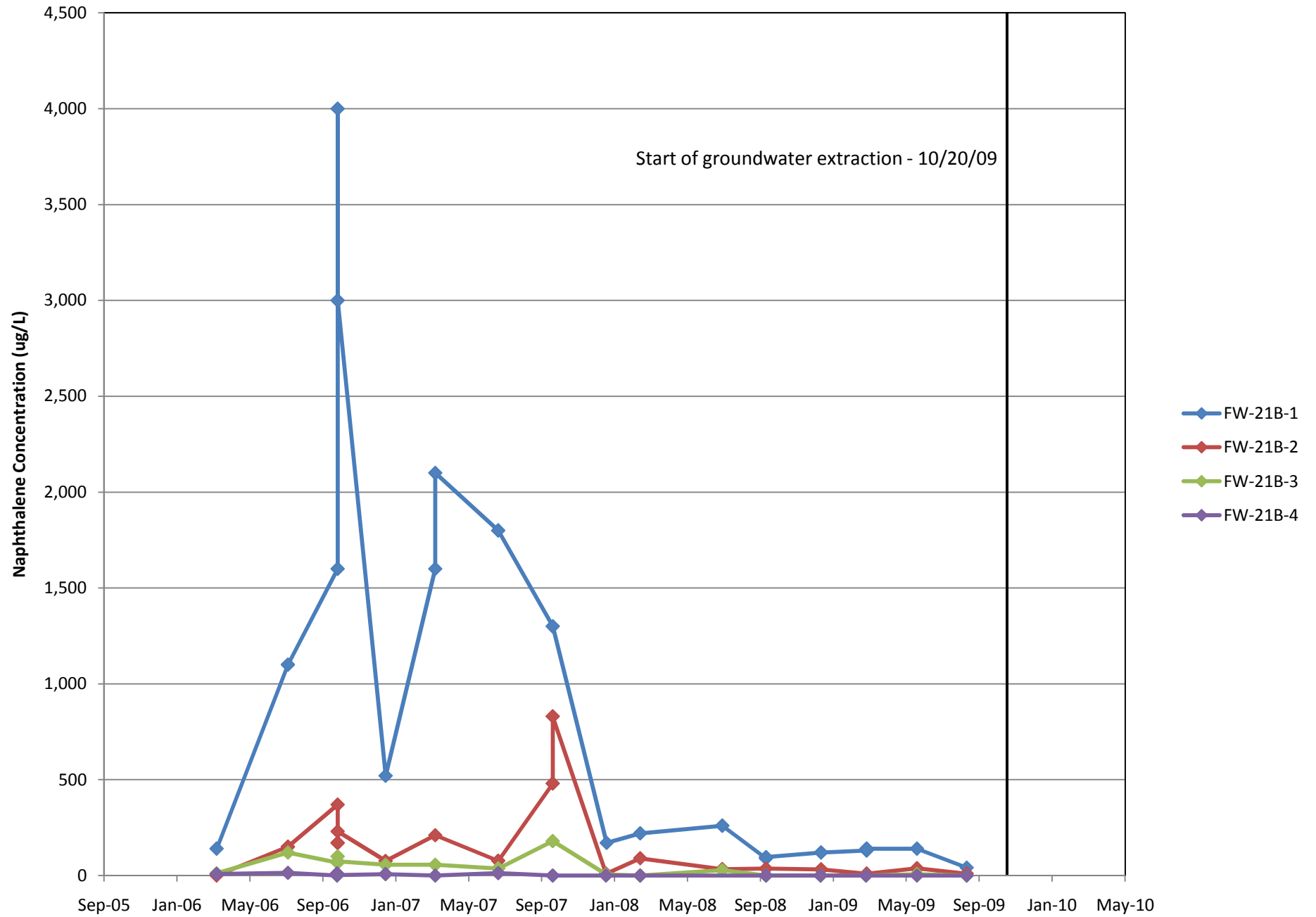


Figure 6. Temporal Plot of Naphthalene Concentrations in Monitoring Well FW-21B



**Figure 7. Temporal Plot of Naphthalene Concentrations in Monitoring Well FW-21B**

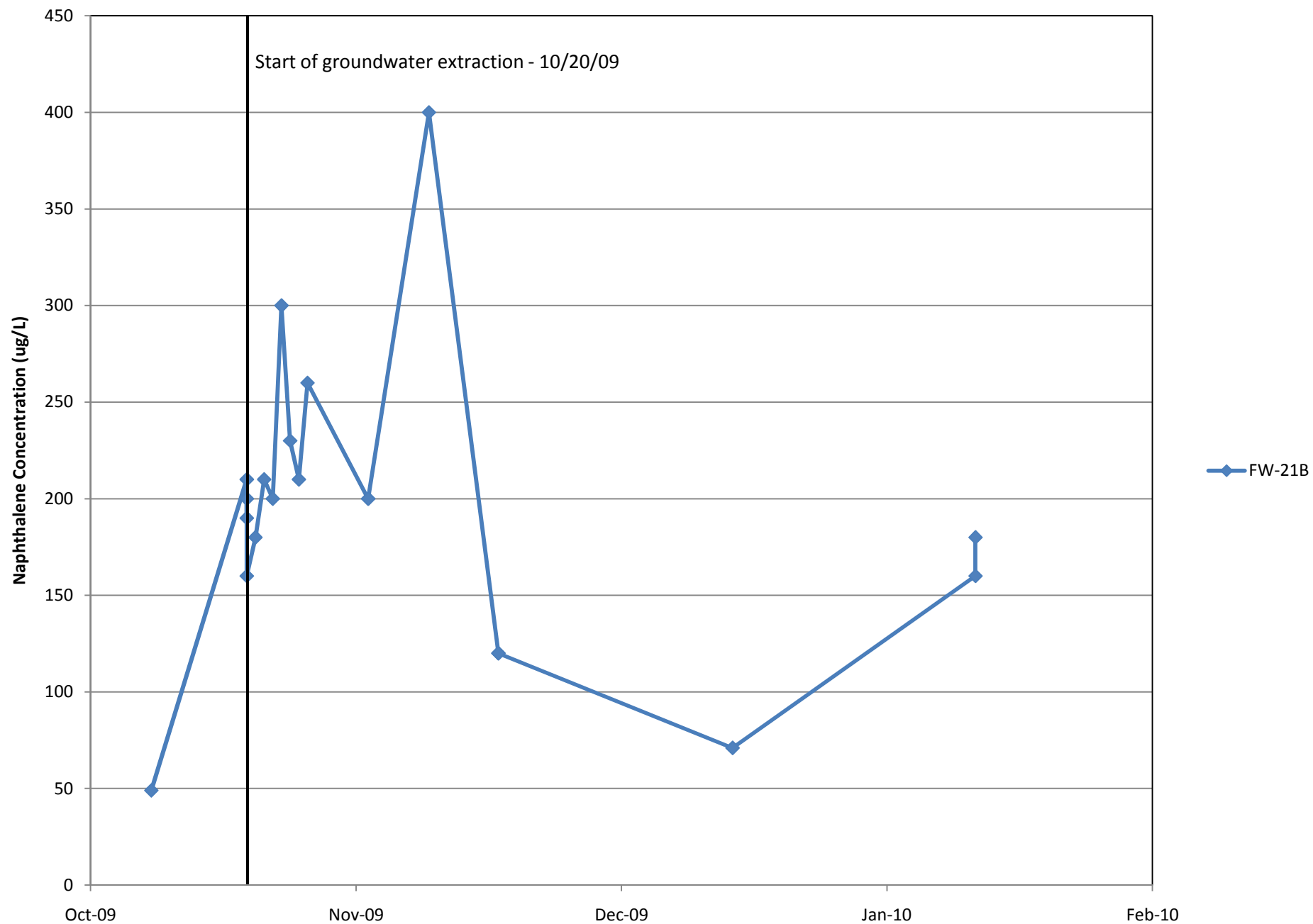
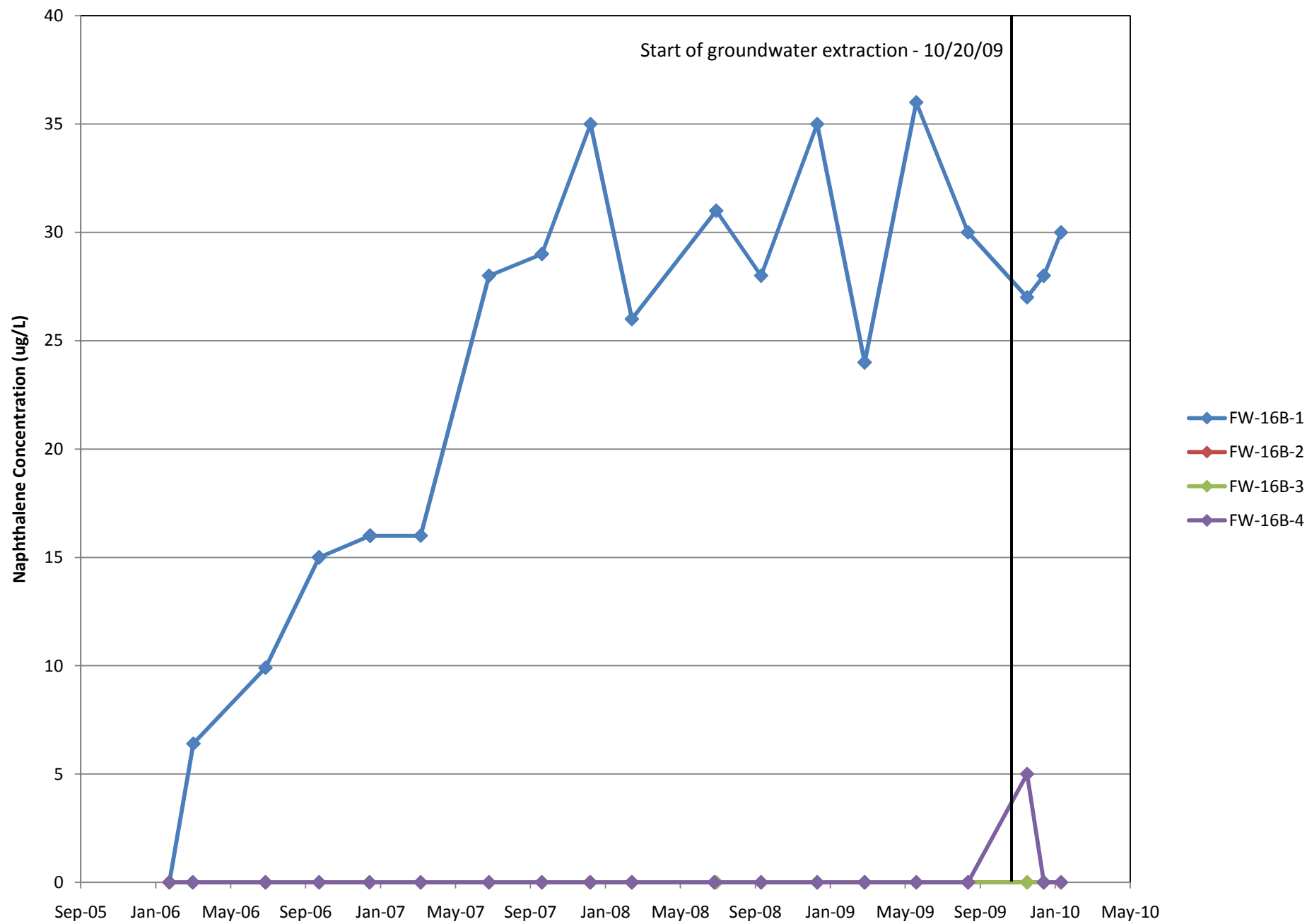
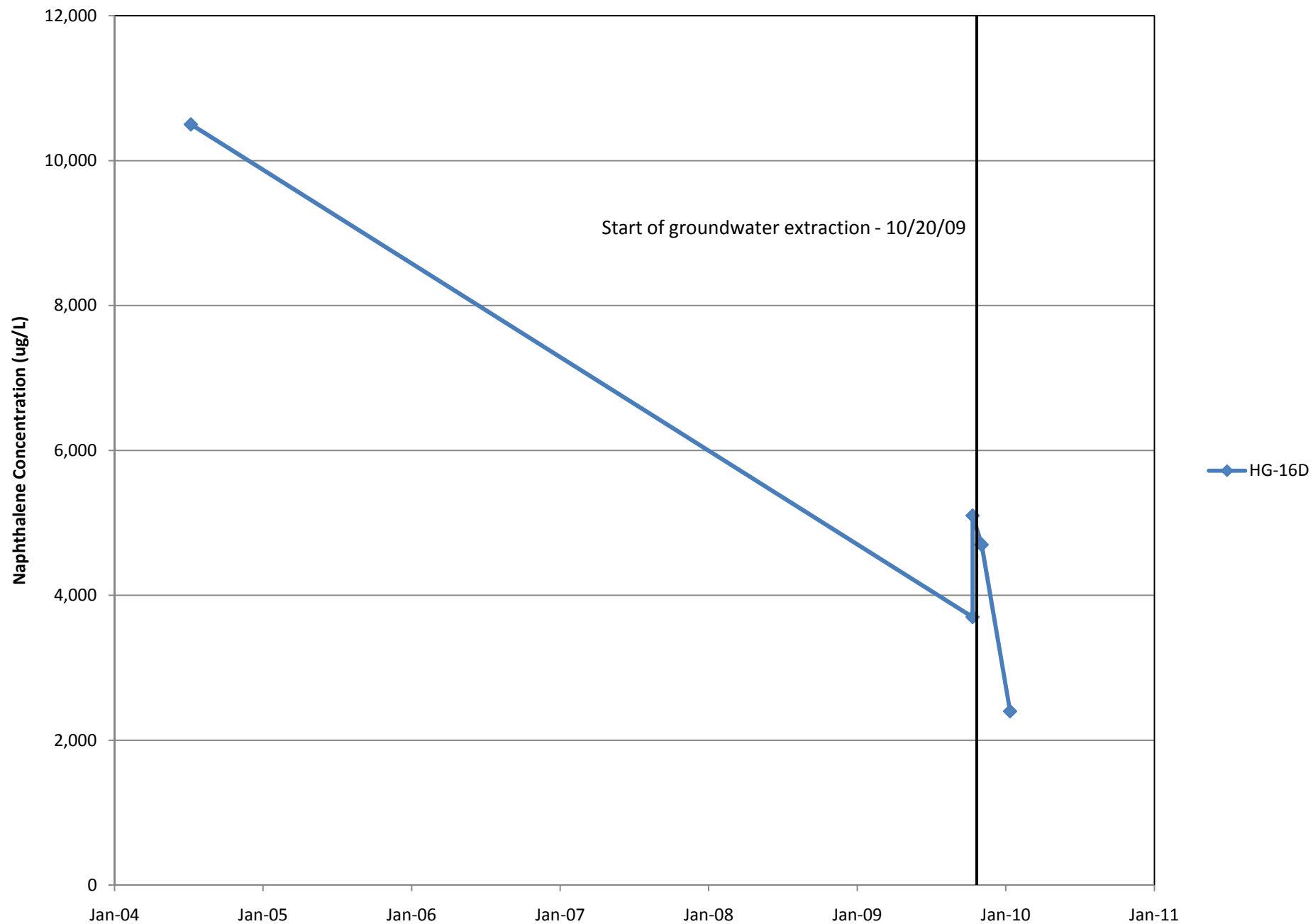


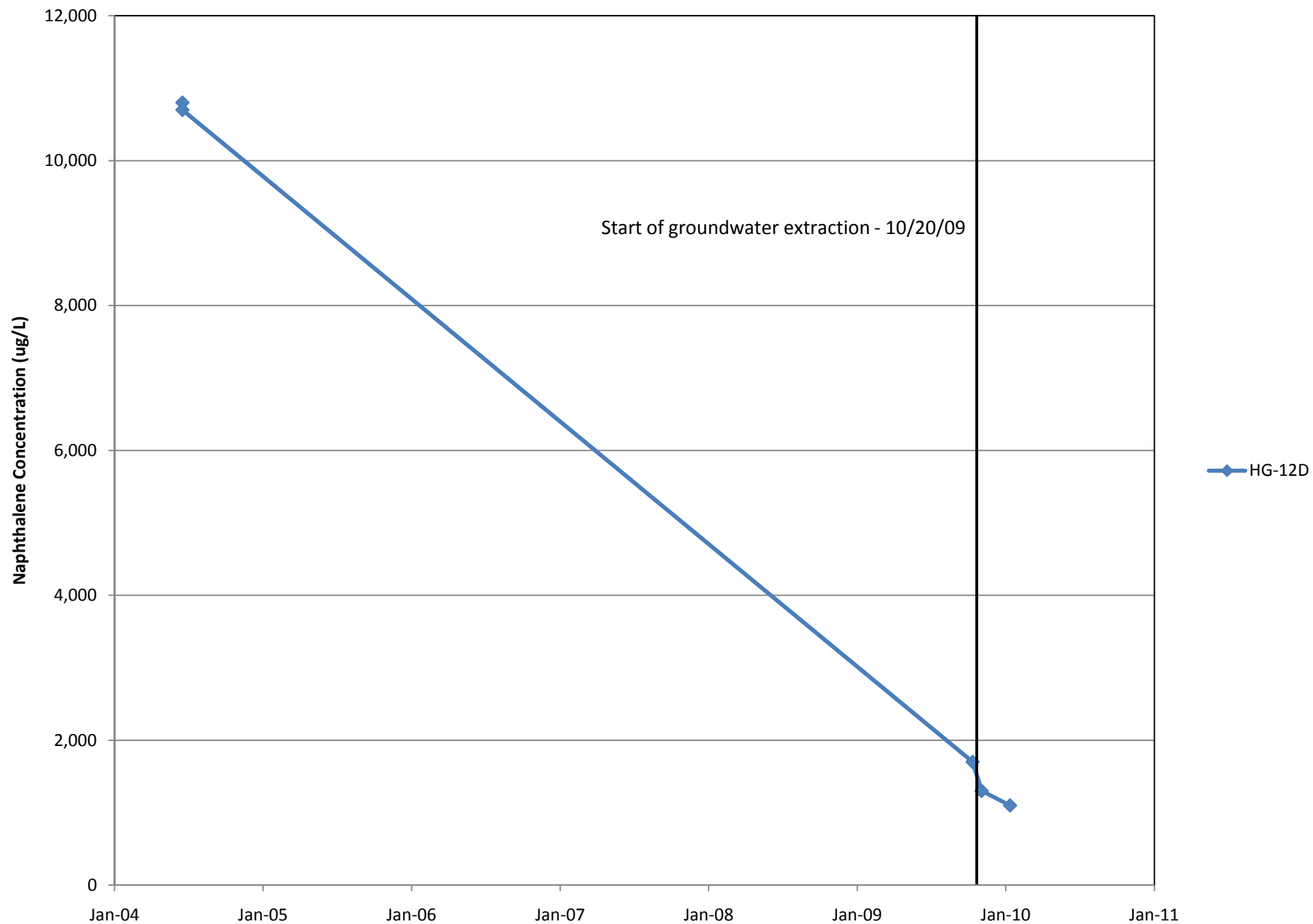
Figure 8. Temporal Plot of Naphthalene Concentrations in Monitoring Well FW-16B



**Figure 9. Temporal Plot of Naphthalene Concentrations in Monitoring Well HG-16D**



**Figure 10. Temporal Plot of Naphthalene Concentrations in Monitoring Well HG-12D**



**Table 1a**  
**Summary of Analytical Data for Well FW-6**  
**IRM Sampling Events**  
**Cabot Carbon/Koppers Superfund Site**  
**Gainesville, Florida**

Well ID Sample Date Sample Type		FW-6 10/8/2009 SMP	FW-6 10/20/2009 SMP #1	FW-6 10/20/2009 SMP #2	FW-6 10/20/2009 SMP #3	FW-6 10/20/2009 SMP #4	FW-6 10/21/2009 SMP	FW-6 10/22/2009 SMP	FW-6 10/23/2009 SMP	FW-6 10/24/2009 SMP	FW-6 10/25/2006 SMP	FW-6 10/26/2009 SMP	FW-6 10/27/2009 SMP	FW-6 11/3/2009 SMP	FW-6 11/10/2009 SMP	FW-6 11/18/2009 SMP	FW-6 12/15/2009 SMP	FW-6 1/12/2010 SMP
Analyte	Florida GCTL (ug/l)																	
<b>Metal (µg/L)</b>																		
ARSENIC - DISSOLVED	10	0.34 I	0.55	NA	NA	0.34 I	0.30 I	NA	NA	NA	NA	NA	0.80	0.87	0.54	0.17 I	0.98	0.83
<b>VOCs (µg/L)</b>																		
BENZENE	1	16	13	NA	NA	13	13	NA	NA	NA	NA	NA	11	10	10	4.8	7.1	6.3
ETHYLBENZENE	30	2.7	240	NA	NA	170	110	NA	NA	NA	NA	NA	17	24	12	3.4	4.1	2.5
M,P-XYLENES	NA	6.3	830	NA	NA	670	380	NA	NA	NA	NA	NA	57	89	43	13	16	10
O-XYLENE	NA	2.3	180	NA	NA	150	91	NA	NA	NA	NA	NA	14	23	11	3.6	4.5	3.2
TOLUENE	20	2.0	3.9	NA	NA	3.2	1.8	NA	NA	NA	NA	NA	0.53 I,J	0.68 I,J	0.56 I,J	U	U	U
<b>SVOCs (µg/L)</b>																		
2,4-DIMETHYLPHENOL	140	29	6.6	3.3 I,J	3.5 I,J	3.8 I,J	U	U	U	U	U	1.2 I,J	1.4 I,J	U	1.5 I,J	U	3.4 I,J	4.9 I,J
2-METHYLNAPHTHALENE	28	57	27	30	26	29	92	110	95	93	110	30	36	52	140	79	120	88
2-METHYLPHENOL	35	13	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4-METHYLPHENOL	3.5	47	U	U	1.3 I,J	1.0 I,J	U	U	U	U	U	U	U	U	3.2 I,V	1.9 I,J	2.3 I,J	U
ACENAPHTHENE	20	89	49	55	50	56	68	73	63	55	68	44	62	51	66	63	75	65
ACENAPHTHYLENE	210	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.72 I,J	U
ANTHRACENE	2,100	6.2 I,J	3.5 I,J	3.3 I,J	U	2.8 I,J	U	2.6 I,J	3.4 I,J	3.5 I,J	4.3 I,J	3.8 I,J	5.5	3.9 I,J	4.3 I,J	3.8 I,J	6.6	3.7 I,J
CARBAZOLE	1.8	90	42	41	34	37	45	37	U	U	U	27	34	30	33	33	40	38
DIBENZOFURAN	28	48	U	U	42	45	U	46	U	U	U	U	U	28	38	35	44	37
FLUORANTHENE	280	11	15	15	12	12	15	10	8.0	7.0	8.4	6.6	9.7	6.2	7.1	7.1	9.3	7.4
FLUORENE	280	53	26	35	31	36	43	45	37	33	42	30	41	31	43	38	54	42
NAPHTHALENE	14	1500 D	950	980	920	1,000	1,100	1,200	890	910	1,200	580	730	730	770	1,300 D	880	850 D
PENTACHLOROPHENOL	1	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
PHENANTHRENE	210	51	36	41	34	39	47	43	37	31	40	25	36	26	37	33	44	35
PHENOL	10	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
PYRENE	210	5.2 I,J	7.6	7.3	6.8	6.5	7.9	5.1 I,J	4.9 I,J	4.1 I,J	5.2 I,J	4.1 I,J	5.7	3.8 I,J	4.3 I,J	4.1 I,J	4.8 I,J	3.8 I,J

**Notes:**  
U - Indicates analytes was not detected above the method reporting limit (MRL)  
J - Indicates result is estimated  
I - Indicates interference in blank  
B - Indicates field blank contamination  
D - Indicates sample diluted for laboratory analysis  
V - Indicates the analyte was detected in both the sample and associated method blank  
Concentration exceeds Florida GCTL



**Table 1b**  
**Summary of Analytical Data for Well FW-20B**  
**IRM Sampling Events**  
**Cabot Carbon/Koppers Superfund Site**  
**Gainesville, Florida**

Analyte	Well ID Sample Date Sample Type	Florida GCTL (µg/l)	FW-20B-1	FW-20B-1	FW-20B-1	FW-20B-2	FW-20B-2	FW-20B-2	FW-20B-3	FW-20B-3	FW-20B-3	FW-20B-4	FW-20B-4	FW-20B-4
			11/17/2009 SMP	12/14/2009 SMP	1/12/2010 SMP	11/17/2009 SMP	12/14/2009 SMP	1/12/2010 SMP	11/17/2009 SMP	12/14/2009 SMP	1/12/2010 SMP	11/17/2009 SMP	12/14/2009 SMP	1/12/2010 SMP
<b>Metal (µg/L)</b>														
ARSENIC, DISSOLVED	10		U	U	0.16	U	0.49 I	U	U	U	U	U	U	U
<b>VOCs (µg/L)</b>														
BENZENE	1		6.3	7.1	7.3	U	U	U	U	U	U	U	U	U
ETHYLBENZENE	30		0.62 I,J	0.7 I,J	0.64 I,J	U	U	U	U	U	U	U	U	U
M,P-XYLENES	NA		3.6	4.1	3.8	0.79 I,J	1 I,J	U	U	U	U	U	U	U
O-XYLENE	NA		0.94 I,J	1.1	1.1	U	U	U	U	U	U	U	U	U
TOLUENE	20		U	U	U	U	U	U	U	U	U	U	U	U
<b>SVOcs (µg/L)</b>														
2,4-DIMETHYLPHENOL	140		U	U	U	U	U	U	U	1.1 I,J	U	U	U	U
2-METHYLNAPHTHALENE	28		73	62	53	4.8 I,J	3.5 I,J	1.9 I,J	U	U	U	U	U	U
2-METHYLPHENOL	35		U	U	U	U	U	U	U	U	U	U	U	U
4-METHYLPHENOL	3.5		2.2 I,J	1.3 I,J	U	1.4 I,J	U	U	U	U	U	U	U	U
ACENAPHTHENE	20		66	54	47	31	32	33	U	U	U	U	U	U
ACENAPHTHYLENE	210		U	U	U	U	U	U	U	U	U	U	U	U
ANTHRACENE	2100		4.6 I,J	4 I,J	3.6 I,J	U	1.6 I,J	1.4 I,J	U	U	U	U	U	U
CARBAZOLE	1.8		7.4	7.3	6.2	U	U	U	U	U	U	U	U	U
DIBENZOFURAN	28		36	31	29	14	15	15	U	U	U	U	U	U
FLUORANTHENE	280		8.8	8	7.3	1.5 I,J	1.5 I,J	1.4 I,J	U	U	U	U	U	U
FLUORENE	280		39	35	33	17	21	21	U	U	U	U	U	U
NAPHTHALENE	14		1200 D	680	690 D	83	77	63	5.9 I,J	2.2 I,J	1.6 I,J	5.8	2.8 I,J	U
PENTACHLOROPHENOL	1		U	U	U	U	U	U	U	U	U	U	U	U
PHENANTHRENE	210		33	30	26	6.4	6.1	3.5 I,J	U	U	U	U	U	U
PHENOL	10		U	U	U	U	U	U	U	U	U	U	U	U
PYRENE	210		4.6 I,J	4 I,J	3.4 I,J	U	U	U	U	U	U	U	U	U

**Notes:**  
U - Indicates analyte was not detected above the method detection limit (MDL)  
J - Indicates result is estimated  
I - Indicates interference in blank  
B - Indicates field blank contamination  
D - Indicates sample diluted for laboratory analysis  
V - Indicates the analyte was detected in both the sample and associated method blank  
Concentration exceeds Florida GCTL

**Table 1c**  
**Summary of Analytical Data for Well FW-12B**  
**IRM Sampling Events**  
**Cabot Carbon/Koppers Superfund Site**  
**Gainesville, Florida**

Well ID Sample Date Sample Type		FW-12B-1 11/18/2009 SMP	FW-12B-1 12/15/2009 SMP	FW-12B-1 1/12/2010 SMP	FW-12B-2 11/18/2009 SMP	FW-12B-2 12/15/2009 SMP	FW-12B-2 1/12/2010 SMP	FW-12B-3 11/18/2009 SMP	FW-12B-3 12/15/2009 SMP	FW-12B-3 1/12/2010 SMP	FW-12B-4 11/18/2009 SMP	FW-12B-4 12/15/2009 SMP	FW-12B-4 1/12/2010 SMP
Analyte	Florida GCTL (µg/l)												
<b>Metal (µg/L)</b>													
ARSENIC, DISSOLVED	10	U	0.5 I	0.53	U	0.34 I	0.49	U	0.33 I	0.25	U	1.1	U
<b>VOCs (µg/L)</b>													
BENZENE	1	2.7	3.1	2.9	1	1.1	0.99 I,J	5.2	5.8	5.6	3.3	3.5	3.5
ETHYLBENZENE	30	1.8	2	1.7	U	U	U	U	0.35 I,J	0.33 I,J	0.53 I,J	0.58 I,J	0.55 I,J
M,P-XYLENES	NA	2.1	2.4	2	U	U	U	5.3	6	5.7	4.5	4.6	4.7
O-XYLENE	NA	1.3	1.5	1.3	U	U	U	1.6	1.8	1.8	1.3	1.4	1.4
TOLUENE	20	4.2	4.9	4.4	U	U	U	U	0.61 I,J	0.57 I,J	U	0.55 I,J	0.53 I,J
<b>SVOCs (µg/L)</b>													
2,4-DIMETHYLPHENOL	140	22	27	29	U	U	U	U	U	U	U	U	U
2-METHYLNAPHTHALENE	28	0.99 I,J	1.4 I,J	1.4 I,J	U	U	U	62	56	58	23	16	18
2-METHYLPHENOL	35	19	23	28	9.8	5.8	7.5	U	U	U	U	U	U
4-METHYLPHENOL	3.5	1.9 I,J	2.8 I,J	2.5 I,J	U	U	U	1 I,J	U	U	U	U	U
ACENAPHTHENE	20	1.4 I,J	1.6 I,J	2 I,J	U	U	U	52	47	54	38	28	32
ACENAPHTHYLENE	210	U	U	U	U	U	U	U	U	U	U	U	U
ANTHRACENE	2100	U	U	U	U	U	U	2.5 I,J	3.3 I,J	3 I,J	U	U	U
CARBAZOLE	1.8	U	U	U	U	U	U	8.8	11	9.9	18	14	15
DIBENZOFURAN	28	U	U	U	U	U	U	23	22	22	25	19	23
FLUORANTHENE	280	U	U	U	U	U	U	U	U	U	U	U	U
FLUORENE	280	U	U	U	U	U	U	26	29	30	25	20	23
NAPHTHALENE	14	51	72	76	1.2 I,J	1.1 I,J	1.4 I,J	680 D	650	750 D	220	180	360
PENTACHLOROPHENOL	1	U	U	U	U	U	U	U	U	U	U	U	U
PHENANTHRENE	210	U	U	U	U	U	1.3 I,J	20	22	23	U	U	U
PHENOL	10	0.98 I,J	U	1.9 I,J	U	U	U	U	U	U	U	U	U
PYRENE	210	U	U	U	U	U	U	U	U	U	U	U	U

**Notes:**  
U - Indicates analyte was not detected above the method detection limit (MDL)  
J - Indicates result is estimated  
I - Indicates interference in blank  
B - Indicates field blank contamination  
D - Indicates sample diluted for laboratory analysis  
V - Indicates the analyte was detected in both the sample and associated method blank  
Concentration exceeds Florida GCTL

**Table 2a**  
**Summary of Analytical Data for Well FW-21B**  
**IRM Sampling Events**  
**Cabot Carbon/Koppers Superfund Site**  
**Gainesville, Florida**

Analyte	Well ID Sample Date Sample Type Florida GCTL (ug/l)	FW-21B	FW-21B	FW-21B	FW-21B	FW-21B	FW-21B	FW-21B	FW-21B	FW-21B	FW-21B	FW-21B	FW-21B	FW-21B	FW-21B	FW-21B	FW-21B	FW-21B	FW-21B	FW-21B	
		10/9/2009 SMP	10/20/2009 SMP #1	10/20/2009 SMP #2	10/20/2009 SMP #3	10/20/2009 SMP #4	10/21/2009 SMP	10/22/2009 SMP	10/23/2009 SMP	10/24/2009 SMP	10/25/2006 SMP	10/26/2009 SMP	10/27/2009 SMP	11/3/2009 SMP	11/10/2009 SMP	11/18/2009 SMP	11/18/2009 DUP	12/15/2009 SMP	1/12/2010 SMP	1/12/2010 DUP	
<b>Metal (µg/L)</b>																					
ARSENIC - DISSOLVED	10	0.84	U	NA	NA	U	U	NA	NA	NA	NA	NA	0.42 I	0.32 I	0.36 I	U	U	U	0.38 I	0.20 I	
<b>VOCs (µg/L)</b>																					
BENZENE	1	U	0.63 I,J	NA	NA	U	0.61 I,J	NA	NA	NA	NA	NA	2.5	1.9	3.0	1.6	1.7	U	1.1	1.0	
ETHYLBENZENE	30	U	U	NA	NA	U	U	NA	NA	NA	NA	NA	1.0	0.66 I,J	1.7	0.53 I,J	U	U	U	U	
M,P-XYLENES	NA	0.58 I,J	1.8 I,J	NA	NA	1.1 I,J	1.3 I,J	NA	NA	NA	NA	NA	2.1	U	2.8	U	U	0.77 I,J	U	U	
O-XYLENE	NA	0.42 I,J	0.74 I,J	NA	NA	0.51 I,J	0.67 I,J	NA	NA	NA	NA	NA	1.1	1.3 I,J	1.5	1.4 I,J	1.4 I,J	0.50 I,J	1.2 I,J	1.1 I,J	
TOLUENE	20	U	U	NA	NA	U	U	NA	NA	NA	NA	NA	U	0.65 I,J	U	0.73 I,J	0.75 I,J	U	0.64 I,J	0.62 I,J	
<b>SVOCs (µg/L)</b>																					
2,4-DIMETHYLPHENOL	140	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
2-METHYLNAPHTHALENE	28	1.7 I,J	10	9.4	9.8	10	10	15	18	24	20	20	21	24	34	17	16	5.7	10	12	
2-METHYLPHENOL	35	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
4-METHYLPHENOL	3.5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	2.8 I,V	U	U	U	U	
ACENAPHTHENE	20	6.7	11	11	11	11	12	14	15	19	15	15	17	19	23	13	13	6.2	10	11	
ACENAPHTHYLENE	210	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
ANTHRACENE	2,100	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
CARBAZOLE	1.8	U	1.4 I,J	1.6 I,J	1.7 I,J	2.0 I,J	2.2 I,J	5.0 I,J	7.4	9.3	6.7	6.8	8.6	10	12	6.1	6.2	1.0 I,J	3.4 I,J	3.4 I,J	
DIBENZOFURAN	28	2.4 I,J	49	40	41	U	43	34	U	U	U	U	U	9.8	12	6.5	6.3	2.7 I,J	4.9 I,J	5.6	
FLUORANTHENE	280	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
FLUORENE	280	2.9 I,J	5.5 I,J	5.4 I,J	5.2 I,J	5.8	5.9	7.6	8.7	9.9	8.1	7.9	9.3	11	13	6.7	6.6	3.2 I,J	5.5	5.8	
NAPHTHALENE	14	49	210	190	200	160	180	210	200	300	230	210	260	200	400	120	120	71	160 D	180 D	
PENTACHLOROPHENOL	1	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
PHENANTHRENE	210	U	1.9 I,J	1.6 I,J	1.4 I,J	2.0 I,J	1.7 I,J	3.1 I,J	3.6 I,J	4.5 I,J	3.7 I,J	3.6 I,J	4.3 I,J	5.1 I,J	5.8	3.1 I,J	3.1 I,J	1.2 I,J	2.2 I,J	2.2 I,J	
PHENOL	10	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
PYRENE	210	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	

**Notes:**  
U - Indicates analytes was not detected above the method reporting limit (MRL)  
J - Indicates result is estimated  
I - Indicates interference in blank  
B - Indicates field blank contamination  
D - Indicates sample diluted for laboratory analysis  
V - Indicates the analyte was detected in both the sample and associated method blank  
Concentration exceeds Florida GCTL

**Table 2b**  
**Summary of Analytical Data for Well FW-16B**  
**IRM Sampling Events**  
**Cabot Carbon/Koppers Superfund Site**  
**Gainesville, Florida**

Well ID Sample Date Sample Type		FW-16B-1 11/17/2009 SMP	FW-16B-1 12/14/2009 SMP	FW-16B-1 1/11/2010 SMP	FW-16B-2 11/17/2009 SMP	FW-16B-2 12/14/2009 SMP	FW-16B-2 1/11/2010 SMP	FW-16B-3 11/17/2009 SMP	FW-16B-3 12/14/2009 SMP	FW-16B-3 1/11/2010 SMP	FW-16B-4 11/17/2009 SMP	FW-16B-4 12/14/2009 SMP	FW-16B-4 1/11/2010 SMP
Analyte	Florida GCTL (µg/l)												
<b>Metal (µg/L)</b>													
ARSENIC, DISSOLVED	10	1.5	0.82	1.3	0.2 I	U	U	U	U	U	U	U	0.28 I
<b>VOCs (µg/L)</b>													
BENZENE	1	4.6	4.8	4.6	U	U	U	U	U	U	U	U	U
ETHYLBENZENE	30	2.2	2.3	2.2	U	U	U	U	U	U	U	U	U
M,P-XYLENES	NA	2.6	2.7	2.7	U	U	U	U	U	U	U	U	U
O-XYLENE	NA	1.6	1.7	1.7	U	U	U	U	U	U	U	U	U
TOLUENE	20	4.1	4.6	4.4	U	U	U	U	U	2.3 I,J	U	U	U
<b>SVOCs (µg/L)</b>													
2,4-DIMETHYLPHENOL	140	100	88	120	U	U	U	U	U	U	2.3 I,J	U	U
2-METHYLNAPHTHALENE	28	U	U	U	U	U	U	U	U	U	U	U	U
2-METHYLPHENOL	35	7.9	7.6	8.8	U	U	U	U	U	U	U	U	U
4-METHYLPHENOL	3.5	U	U	U	U	U	U	U	U	U	U	U	U
ACENAPHTHENE	20	U	U	U	U	U	U	U	U	U	U	U	U
ACENAPHTHYLENE	210	U	U	U	U	U	U	U	U	U	U	U	U
ANTHRACENE	2100	U	U	U	U	U	U	U	U	U	U	U	U
CARBAZOLE	1.8	U	U	U	U	U	U	U	U	U	U	U	U
DIBENZOFURAN	28	U	U	U	U	U	U	U	U	U	U	U	U
FLUORANTHENE	280	U	U	U	U	U	U	U	U	U	U	U	U
FLUORENE	280	U	U	U	U	U	U	U	U	U	U	U	U
NAPHTHALENE	14	27	28	30	4.1 I,J	U	U	1.9 I,J	U	U	5 I,J	U	U
PENTACHLOROPHENOL	1	U	U	U	U	U	U	U	U	U	U	U	U
PHENANTHRENE	210	U	U	U	U	U	U	U	U	U	U	U	U
PHENOL	10	U	U	U	U	U	U	U	U	U	U	U	U
PYRENE	210	U	U	U	U	U	U	U	U	U	U	U	U

**Notes:**

- U - Indicates analyte was not detected above the method detection limit (MDL)
- J - Indicates result is estimated
- I - Indicates interference in blank
- B - Indicates field blank contamination
- D - Indicates sample diluted for laboratory analysis
- V - Indicates the analyte was detected in both the sample and associated method blank
- Concentration exceeds Florida GCTL

**Table 3a**  
**Summary of Analytical Data for Well HG-16D**  
**IRM Sampling Events**  
**Cabot Carbon/Koppers Superfund Site**  
**Gainesville, Florida**

Well ID Sample Date Sample Type		HG-16D 10/12/2009 SMP	HG-16D 10/12/2009 DUP	HG-16D 11/3/2009 SMP	HG-16D 1/12/2010 SMP
Analyte	Florida GCTL (µg/l)				
<b>Metal (µg/L)</b>					
ARSENIC, DISSOLVED	10	1.7	1.8	1.4	1.5
<b>VOCs (µg/L)</b>					
BENZENE	1	20	20	21	19
ETHYLBENZENE	30	28	28	31	19
M,P-XYLENES	NA	60	59	65	40
O-XYLENE	NA	28	28	31	21
TOLUENE	20	36	35	40	30
<b>SVOCs (µg/L)</b>					
2,4-DIMETHYLPHENOL	140	1700 D	690 D	470	470 D
2-METHYLNAPHTHALENE	28	1000 D	440 D	670	310 D
2-METHYLPHENOL	35	150	110	65	93
4-METHYLPHENOL	3.5	950 D	650 D	150	90
ACENAPHTHENE	20	360 D	270 D	300	170 D
ACENAPHTHYLENE	210	13	9.2	11	7.6
ANTHRACENE	2100	23	21	15	12
CARBAZOLE	1.8	190	190	300	240 D
DIBENZOFURAN	28	140	97	130	78
FLUORANTHENE	280	22	22	17	11
FLUORENE	280	140	110	100	84
NAPHTHALENE	14	5100 D	3700 D	4700	2400 D
PENTACHLOROPHENOL	1	U	U	U	5.1 I,J
PHENANTHRENE	210	130	130	100	79
PHENOL	10	20	13	11	16
PYRENE	210	10	9.8	9.1	4.7 I,J

**Notes:**

- U - Indicates analyte was not detected above the method detection limit (MDL)
  - J - Indicates result is estimated
  - I - Indicates interference in blank
  - B - Indicates field blank contamination
  - D - Indicates sample diluted for laboratory analysis
  - V - Indicates the analyte was detected in both the sample and associated method blank
- Concentration exceeds Florida GCTL

**Table 3b**  
**Summary of Analytical Data for Well HG-12D**  
**IRM Sampling Events**  
**Cabot Carbon/Koppers Superfund Site**  
**Gainesville, Florida**

		Well ID	HG-12D	HG-12D	HG-12D
		Sample Date	10/12/2009	11/3/2009	1/12/2010
		Sample Type	SMP	SMP	SMP
Analyte	Florida GCTL (µg/l)				
<b>Metal (µg/L)</b>					
ARSENIC, DISSOLVED	10		U	0.23 I	U
<b>VOCs (µg/L)</b>					
BENZENE	1		8.4	8.1	9
ETHYLBENZENE	30		11	9.5	9.6
M,P-XYLENES	NA		7.4	8.1	7.4
O-XYLENE	NA		5.8	5	4.8
TOLUENE	20		2.3	3.6	3.1
<b>SVOCs (µg/L)</b>					
2,4-DIMETHYLPHENOL	140		23	34	52
2-METHYLNAPHTHALENE	28		65	66	120 D
2-METHYLPHENOL	35		1.3 I,J	7.7	5 I,J
4-METHYLPHENOL	3.5		43	8.3	3.9 I,J
ACENAPHTHENE	20		130	88	79
ACENAPHTHYLENE	210		2.3 I,J	2.1 I,J	1.7 I,J
ANTHRACENE	2100		9.3	6.3 I,J	7.1
CARBAZOLE	1.8		110	100	92
DIBENZOFURAN	28		73	52	48
FLUORANTHENE	280		27	15	25
FLUORENE	280		76	54	52
NAPHTHALENE	14		1700 D	1300	1100 D
PENTACHLOROPHENOL	1		U	U	U
PHENANTHRENE	210		66	44	47
PHENOL	10		U	U	0.81 I,J
PYRENE	210		15	9.1	15

**Notes:**

- U - Indicates analyte was not detected above the method detection limit (MDL)
  - J - Indicates result is estimated
  - I - Indicates interference in blank
  - B - Indicates field blank contamination
  - D - Indicates sample diluted for laboratory analysis
  - V - Indicates the analyte was detected in both the sample and associated method blank
- Concentration exceeds Florida GCTL