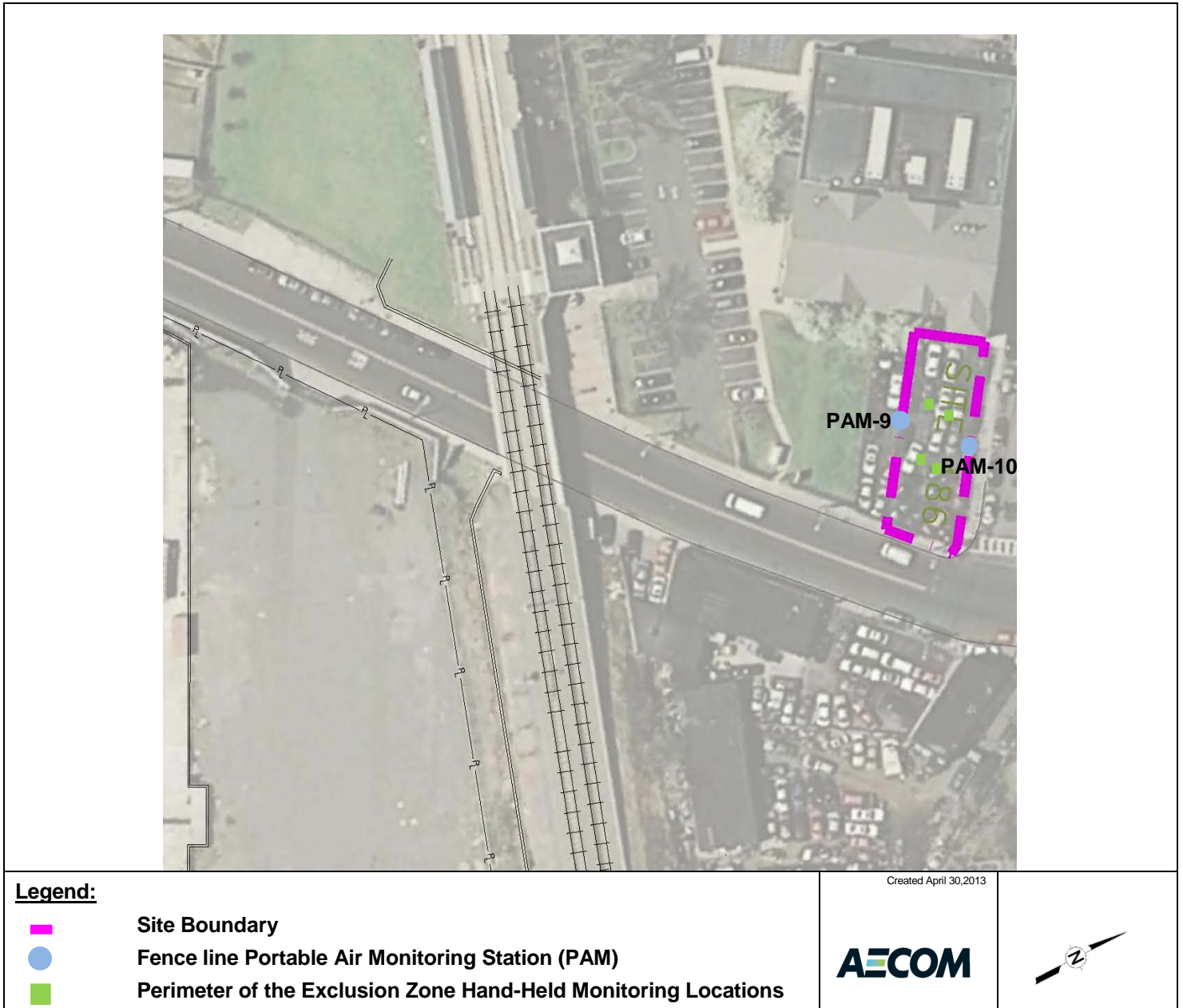


Air Monitoring Plan Amendment 08

Client: PPG Industries	Amendment No.: 08 – Site 186 Excavation
Location: Jersey City, NJ	Date: May 30, 2013
<p>Amendment Description:</p> <p>This Air Monitoring Plan (AMP) amendment describes Air Monitoring to be performed at Site 186 during remedial activities at that site. The Garfield Avenue Sites AMP dated May 2011 was used as a basis for Air Monitoring at Site 186 in accordance with the Remedial Action Work Plan (RAWP) dated May 2013.</p> <p>Excavation of Site 186 is expected to be limited to a short duration (less than 1week); therefore, AECOM has developed a relatively simplistic yet conservative air monitoring approach to address concerns associated with fugitive emissions. AECOM will provide a two tiered approach:</p> <ul style="list-style-type: none"> • Perimeter of the Exclusion Zone Monitoring – Periodic hand-held PM₁₀ monitoring will be recorded every half hour at 4-6 locations during periods of active work. • Fence line Monitoring – Real-time continuous PM₁₀ monitoring plus 8-hour integrated sampling and analyses for Cr6 and PM₁₀ will be performed at two (2) PAM stations located in the upwind and downwind directions. <p>Monitoring as described above plus compliance with site specific alert and action limits (including the no visible dust requirement) will be performed in accordance with the AMP for the Garfield Avenue Sites. A conceptual Site map is provided in Figure 1. Due to the short duration of the excavation activities at Site 186, and the fact that the Site boundary is not contiguous with Site 114, reporting for the Site 186 Air Monitoring program will be performed separately but consistent with the data reporting currently being performed for the Garfield Ave Site. AECOM will provide a final report of the air monitoring results as part of the Construction Completion Report.</p>	
<p>Reason for Amendment:</p> <p>The RAWP includes an area of excavation outside the boundary of the Garfield Ave Site 114 previously defined. The Amendment describes the increased monitoring that is proposed for the remedial work anticipated at Site 186.</p>	

Figure 1: Preliminary Site Map for the Site 186 Excavation



Air Monitoring Summary

Client:	PPG Industries
Location:	Site 186, Garfield Avenue, Jersey City, NJ
Period:	August 19 through November 1, 2013

This air monitoring summary report includes both tabular information and written discussions summarizing the ambient air-quality data collected in accordance with the Garfield Avenue Site 114 Air Monitoring Plan (AMP) Amendment 08 at the PPG Garfield Avenue Site 186 in Jersey City, NJ for the report period.

Introduction

A combination of real-time monitoring and integrated sampling was performed during periods of active work at the fenceline and the perimeter of the exclusion zone. Real-time PM₁₀ monitoring was conducted at two (2) portable air monitoring (PAM) stations along the Site fenceline. Additionally, 8-hour integrated Cr6 and PM₁₀ samples were collected daily at the two (2) PAM stations at the Site fenceline. Periodic hand-held monitoring was performed at four (4) to ten (10) locations at the perimeter of the exclusion zone. Meteorological data measured at Site 114 was used to evaluate the wind conditions during work periods.

Real-Time Air Monitoring Results

Real-time 15-minute average and instantaneous hand-held PM₁₀ monitoring results were compared to the Action Level of **333 µg/m³**. During the report period there were no 15-minute average or instantaneous hand-held PM₁₀ concentrations greater than the Action Level at the fenceline or the perimeter of the exclusion zone, respectively. The results of the real-time air monitoring are summarized in the following tables:

- **Table 1:** Real-time 15-minute average and hand-held PM₁₀ concentration summary; and
- **Table 2:** Elevated real-time PM₁₀ concentration summary.

Integrated Sampling Results

Integrated Cr6 and PM₁₀ samples were collected and submitted to the respective analytical laboratory for analysis. Laboratory results were combined with the appropriate field data to calculate 8-hour average concentration for each sample. The results of the integrated sampling at Site 186 are summarized in the following table.

- **Table 3:** Integrated Cr6 and PM₁₀ concentration summary.

Program Summary

Daily 8-hour integrated Cr6 and PM₁₀ sampling results were compiled into program-average concentrations for each of the air monitoring stations. The program average Cr6 concentrations were compared to the Acceptable Ambient Concentration (AAC) of **49 ng/m³**. A summary of the program

average and program statistics for the integrated sampling at Site 186 is summarized in the following tables:

- **Table 4:** Program Cr6 sampling results statistics;
- **Table 5:** Program PM₁₀ sampling results statistics; and
- **Table 6:** Program-average concentrations.

Additional program information including Site Maps and Activities are included in the following Attachments:

- **Attachment 1:** Site maps;
- **Attachment 2:** Site activities; and
- **Attachment 3:** Wind roses.

Conclusions

Results of the integrated Cr6 sampling and analysis indicate that the program-average airborne Cr6 concentrations are significantly below the AAC at each of the air monitoring stations. The results and calculations document compliance with the AAC set by the New Jersey Department of Environmental Protection (NJDEP), confirm that dust control measures were effective, and indicate that the levels of Cr6 in dust generated at the Site are not likely to pose a significant risk to off-Site receptors.

Table 1: Real-Time PM₁₀ Concentration Summary

Date	Fenceline (15-Minute Average Concentrations)		Perimeter of the Exclusion Zone (Instantaneous Concentrations)
	PAM-9 µg/m ³	PAM-10 µg/m ³	Hand-Held µg/m ³
Mon 8/19/13	58.9	113.7	175
Tue 8/20/13	66.0	97.3	110
Wed 8/21/13	161.5	100.7	170
Thu 8/22/13	76.5	52.3	88
Fri 8/23/13	ND ¹	68.3	96
Mon 9/16/13	32.6	58.2	35
Tue 9/17/13	102.4	53.4	31
Wed 9/18/13	68.0	119.5	70
Thu 9/19/13	46.6	60.3	119
Fri 9/20/13	178.7	75.9	123
Mon 9/23/13	124.2	74.5	48
Tue 9/24/13	73.2	32.7	26
Wed 9/25/13	16.3	56.4	40
Sat 10/12/13	18.5	24.6	39
Wed 10/30/13	71.4	54.1	80
Thu 10/31/13	77.6	53.6	74
Fri 11/1/13	14.9	ND ²	40
Definitions: PAM – Portable Air Monitoring Station PM ₁₀ – Respirable Particulate Matter µg/m ³ – Micrograms per cubic meter		Footnotes: ¹ PM ₁₀ data was measured but could not be recovered from the instrument. ² PM ₁₀ data was measured but could not be recovered from the data logger.	

Table 2: Real-Time Elevated PM₁₀ Summary

Parameter	Date	Time	Location	Wind Conditions	Elevated Concentration	Explanation
<i>Fenceline Air Monitoring (15-Minute Average)</i>						
PM ₁₀	NA	NA	NA	NA	NA	Concentrations remained below the Fenceline Action Level.
<i>Exclusion Zone Air Monitoring (Instantaneous Concentrations)</i>						
PM ₁₀	NA	NA	NA	NA	NA	Concentrations remained below the Early Warning Action Level.
Definitions: PAM – Portable Air Monitoring Station PM ₁₀ – Respirable Particulate Matter measured in micrograms per cubic meter (µg/m ³) NA – Not Applicable ND – No Data				Notes: - PAM reported and PM ₁₀ values represent 15-minute block averages at the fenceline. - Hand-held monitoring values represent instantaneous concentrations.		

Table 3: Integrated Cr6 and PM₁₀ Concentration Summary

	8-Hour Integrated Cr6 Concentrations		8-Hour Integrated PM ₁₀ Concentrations	
	PAM-9 ng/m ³	PAM-10 ng/m ³	PAM-9 µg/m ³	PAM-10 µg/m ³
Mon 8/19/13	10.68	10.98	18	31
Tue 8/20/13	8.05	7.03	80	12
Wed 8/21/13	6.33	6.31	131	209
Thu 8/22/13	10.55	16.61	ND ¹	54
Fri 8/23/13	11.72	14.56	14	17
Mon 9/16/13	7.48	7.60	35	34
Tue 9/17/13	6.35	6.27	27	51
Wed 9/18/13	6.27	6.35	51	42
Thu 9/19/13	8.50	8.50	14	76
Fri 9/20/13	7.06	6.96	70	77
Mon 9/23/13	6.96	6.87	66	39
Tue 9/24/13	6.27	6.19	33	10
Wed 9/25/13	6.69	6.51	93	109
Sat 10/12/13	11.66	11.66	19	19
Wed 10/30/13	7.60	7.48	51	13
Thu 10/31/13	7.06	7.06	73	12
Fri 11/1/13	7.27	7.16	40	38

Definitions:

PAM – Portable Air Monitoring Station

Cr6 – Hexavalent Chromium

PM₁₀ – Respirable Particulate Matterng/m³ – Nanograms per cubic meterµg/m³ – Micrograms per cubic meter

ND – No Data

NA – Not Applicable

Notes:- PAM Cr6 and PM₁₀ concentrations represent integrated 8-hour concentrations at the fenceline.**Footnotes:**¹ Sample duration did not meet method specification.

Table 4: Program Cr6 Results Statistics

	PAM-9	PAM-10
Total Number of Samples Collected	17	17
Rate of Data Collection	100.0%	100.0%
Total Number of Detected Samples¹	0	0
% of Samples Greater than Laboratory Detection Limit	0.0%	0.0%
Total Number of Samples Above the AAC (49 ng/m3)	0	0
Average % Cr6 in Dust	0.027%	0.033%
Maximum % Cr6 in Dust	0.082%	0.087%
Definitions: PAM – Portable Air Monitoring Station Cr6 – Hexavalent Chromium ng/m ³ – Nanograms per cubic meter ND – No Data NA – Not Applicable		
Footnotes: ¹ Total number of sample results reported above the laboratory detection limit.		

Table 5: Program PM₁₀ Results Statistics

	PAM-9	PAM-10
Total Number of Samples Collected	16	17
Rate of Data Collection	94.1%	100.0%
Total Number of Detected Samples	12	10
% of Samples Greater than Laboratory Detection Limit	75.0%	58.8%
Definitions: PAM – Portable Air Monitoring Station PM ₁₀ – Respirable Particulate Matter µg/m ³ – Micrograms per cubic meter ND – No Data NA – Not Applicable		
Footnotes: ¹ Total number of sample results reported above the laboratory detection limit.		

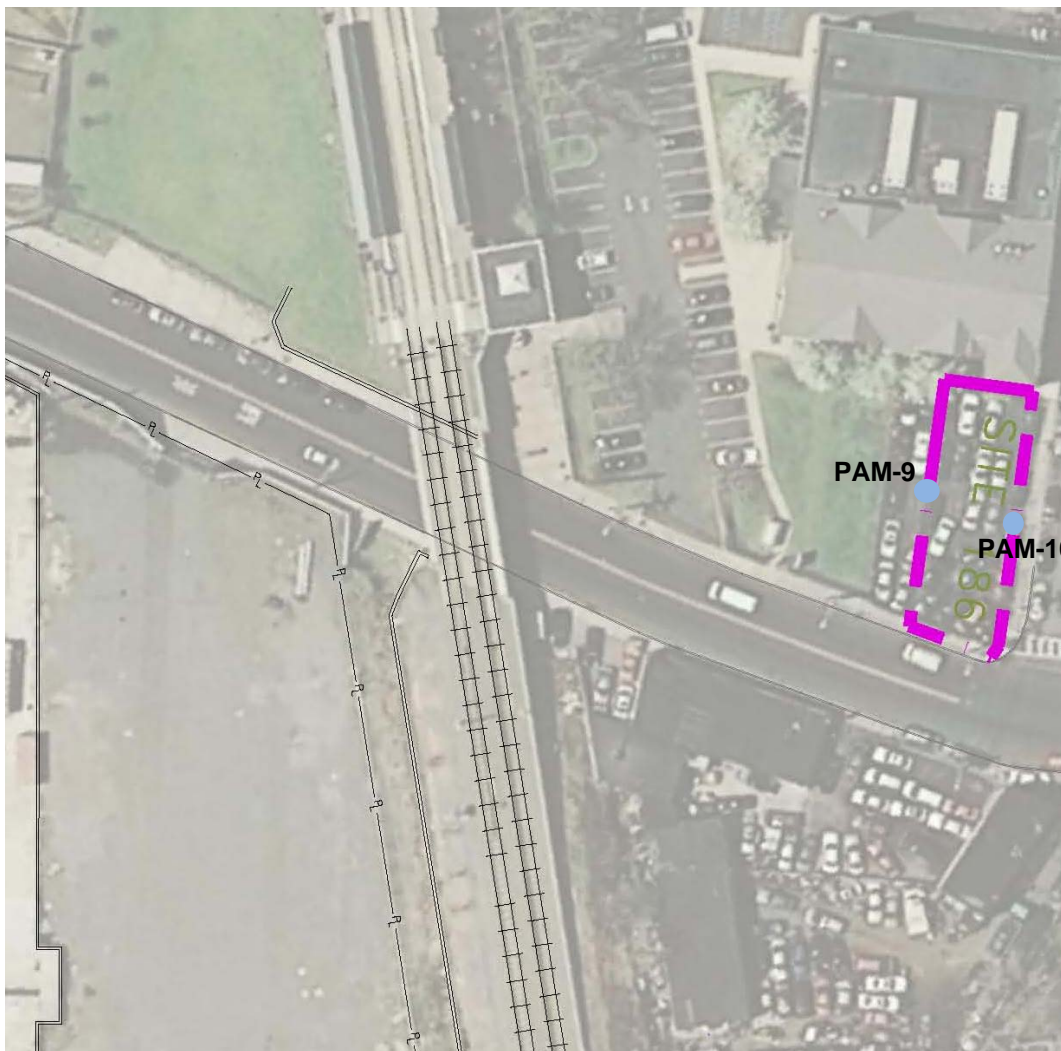
Table 6: Program-Average Concentration Summary

	Program-Average Concentrations		
	AAC	PAM-9	PAM-10
Cr6 Conc. (ng/m³)	49	8.03	8.48
PM₁₀ Conc. (µg/m³)	---	51.00	49.65
Real-Time PM₁₀ Conc. (µg/m³)	---	32.7	34.8
<p>Definitions: PAM – Portable Air Monitoring Station Cr6 – Hexavalent Chromium PM₁₀ – Respirable Particulate Matter Conc. – Concentration ng/m³ – Nanograms per cubic meter µg/m³ – Micrograms per cubic meter ND – No Data</p> <p>Notes: - PAM Cr6 and PM₁₀ concentrations represent integrated 8-hour concentrations at the perimeter. - PAM real-time PM₁₀ concentrations represent 15-minute block averages at the fenceline.</p>			

Attachment 1

Site Maps

Attachment 1: Site 186 Map (8/19/13 – 8/23/13)

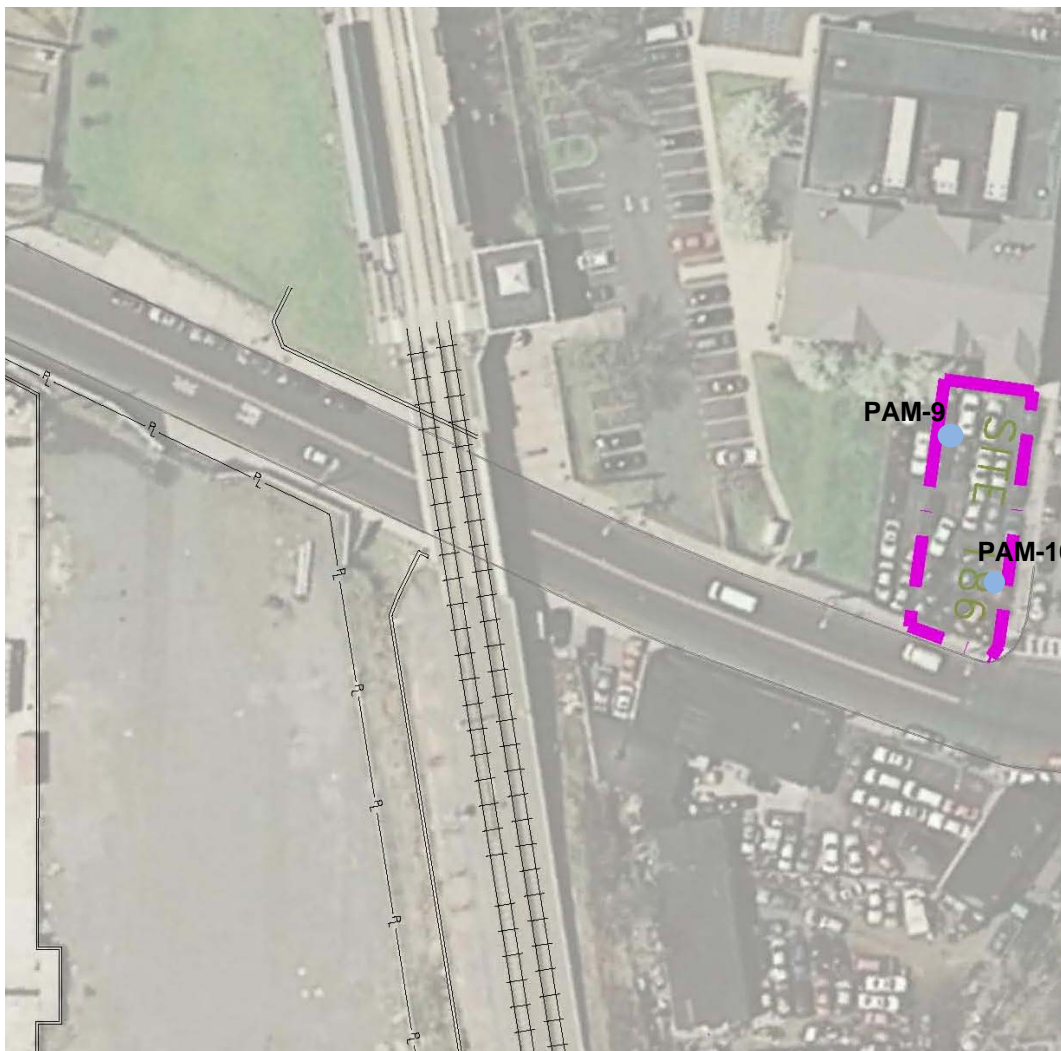


Legend:

-  Site Boundary
-  Fenceline Portable Air Monitoring Station (PAM)



Attachment 1: Site 186 Map (9/16/13 – 9/18/13 1:00PM)



Legend:

-  Site Boundary
-  Fenceline Portable Air Monitoring Station (PAM)

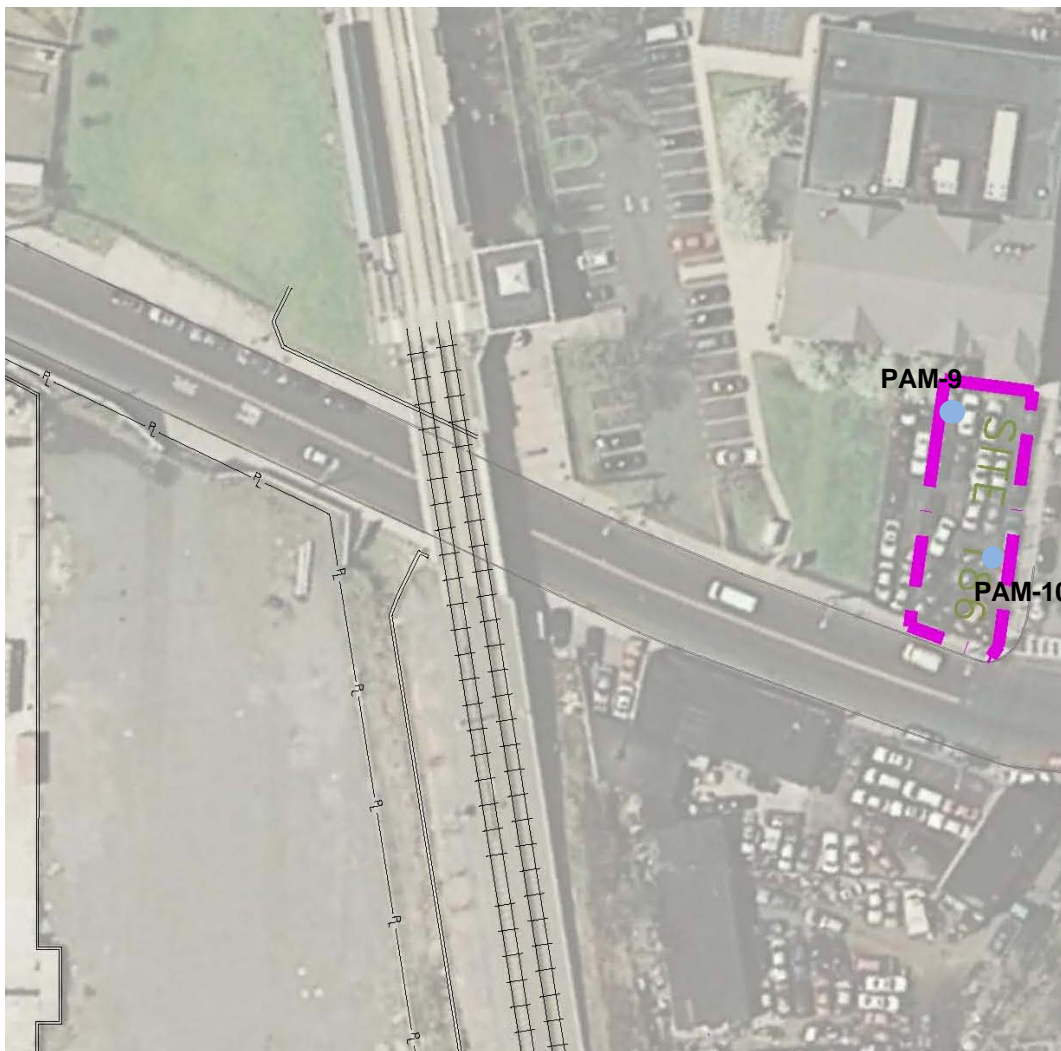




Legend:

-  Site Boundary
-  Fenceline Portable Air Monitoring Station (PAM)





Legend:

-  Site Boundary
-  Fenceline Portable Air Monitoring Station (PAM)



Attachment 1: Site 186 Map (9/23/13 7:30AM – 10:30AM)



Legend:

-  Site Boundary
-  Fenceline Portable Air Monitoring Station (PAM)



Attachment 1: Site 186 Map (9/23/13 10:45AM – 9/24/13 1:00PM)

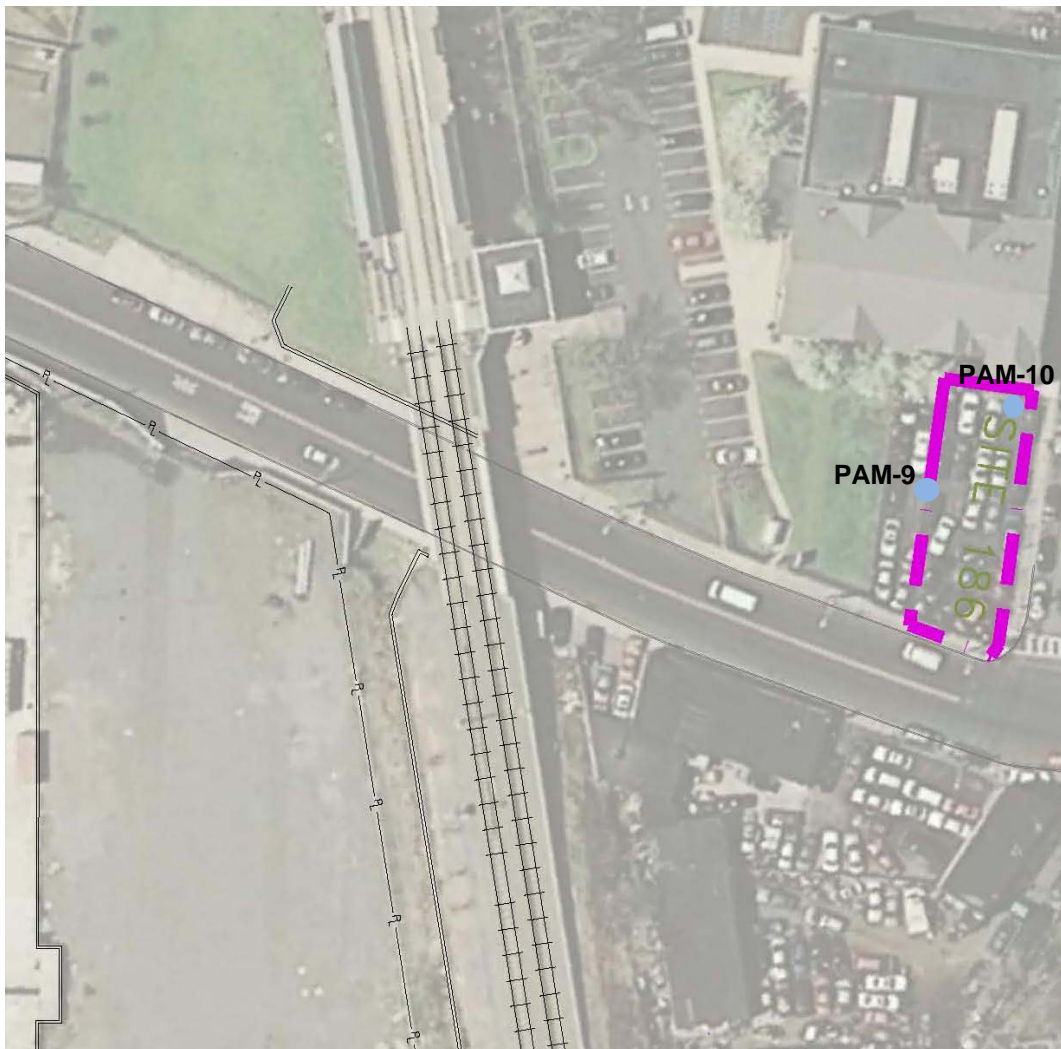


Legend:

-  Site Boundary
-  Fenceline Portable Air Monitoring Station (PAM)



Attachment 1: Site 186 Map (9/24/13 1:15PM – 9/25/13)

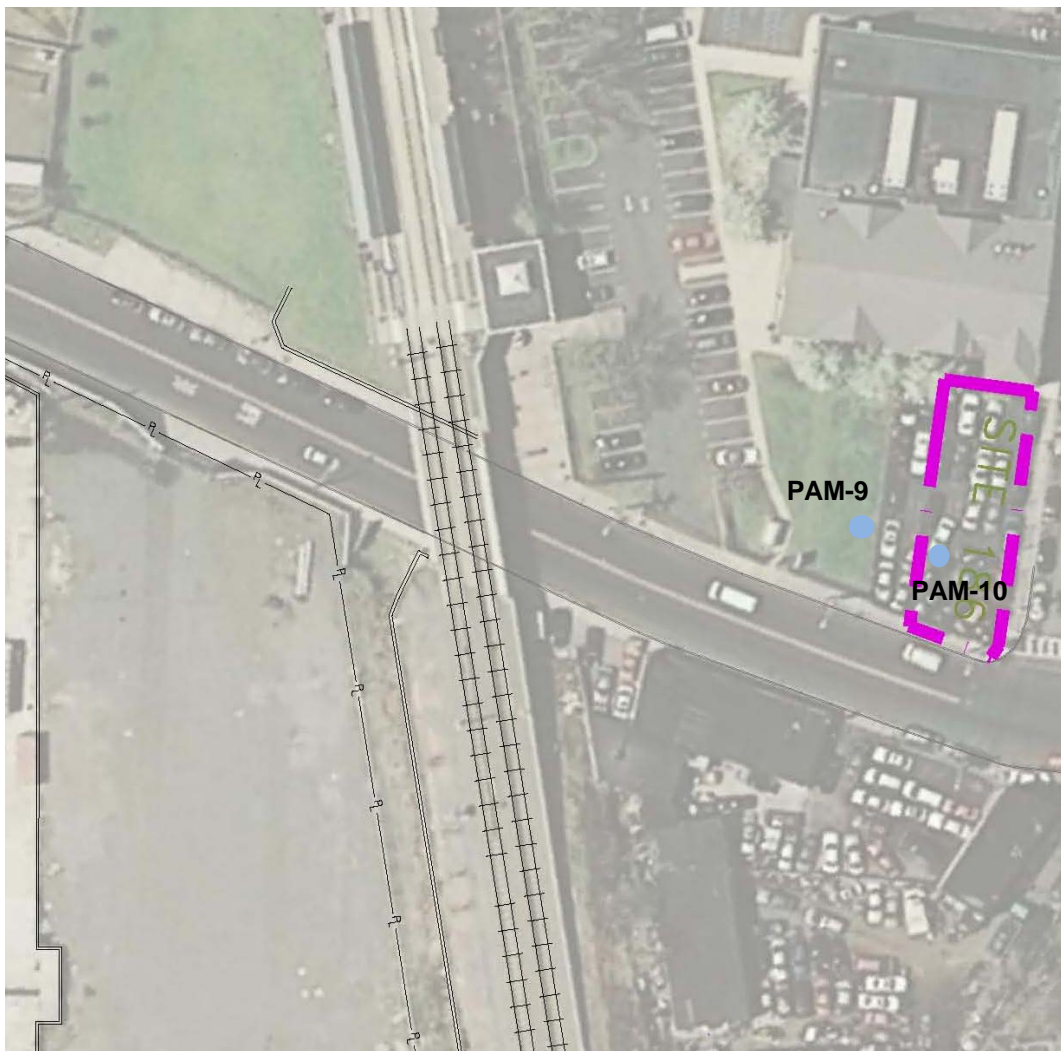


Legend:

-  Site Boundary
-  Fenceline Portable Air Monitoring Station (PAM)



Attachment 1: Site 186 Map (10/12/13)

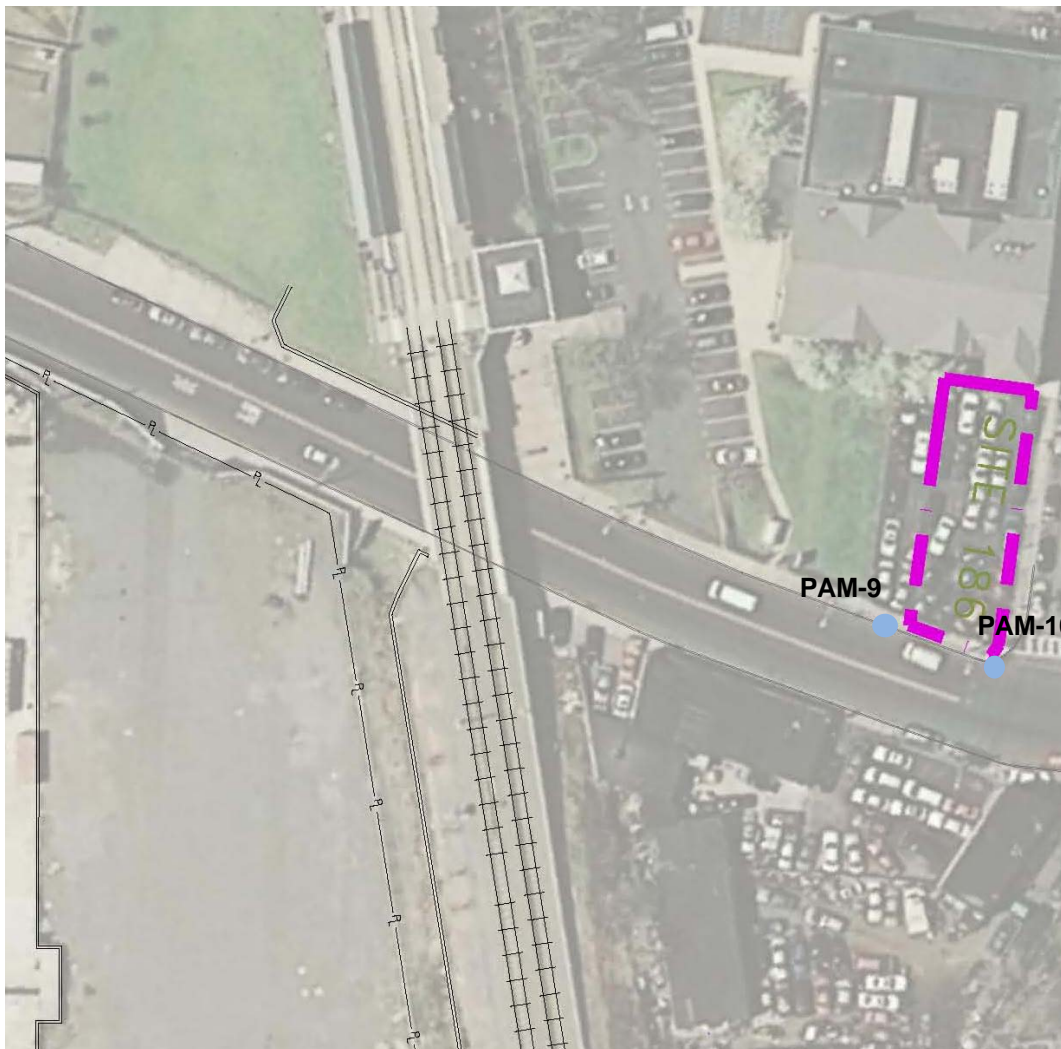


Legend:

-  Site Boundary
-  Fenceline Portable Air Monitoring Station (PAM)



Attachment 1: Site 186 Map (10/29/13 – 10/30/13)

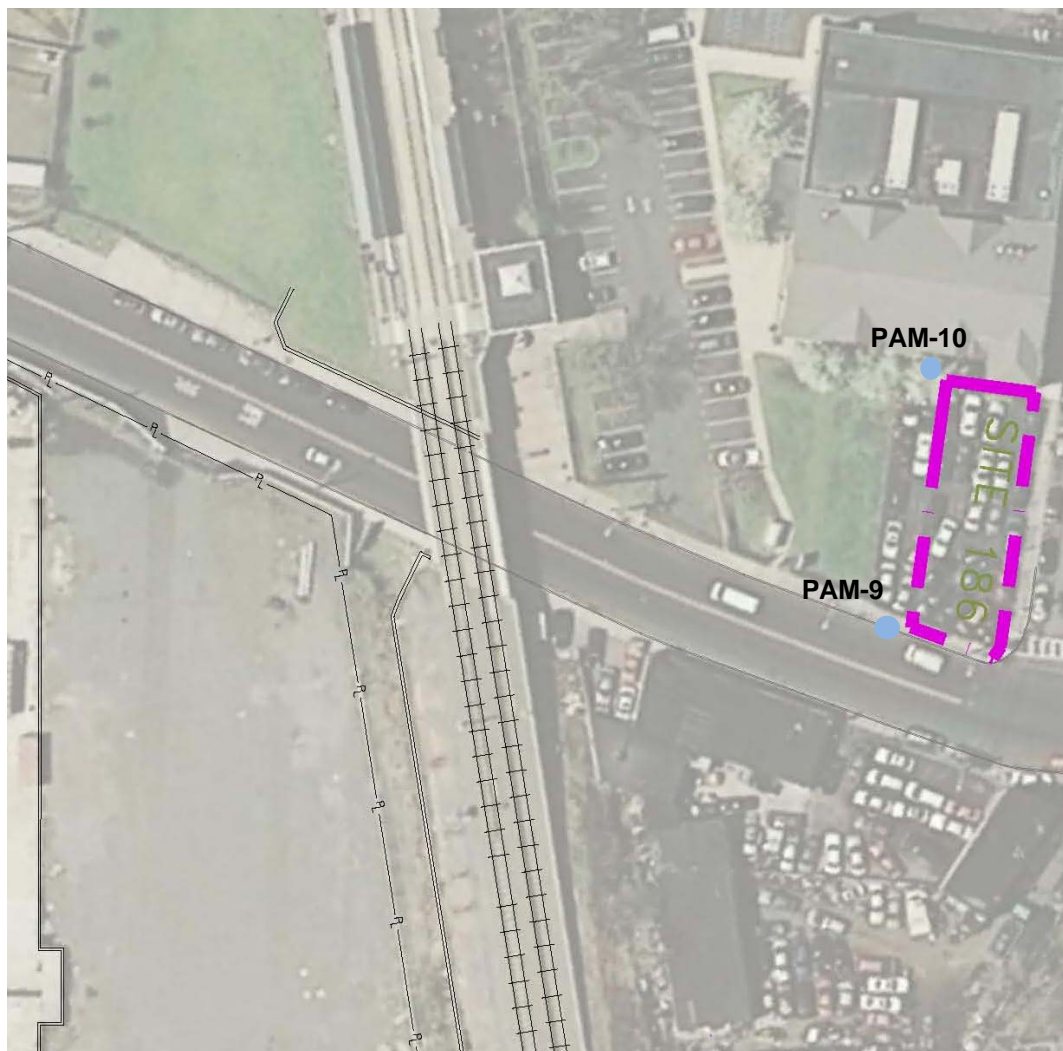


Legend:

-  Site Boundary
-  Fenceline Portable Air Monitoring Station (PAM)



Attachment 1: Site 186 Map (10/31/13 – 11/1/13)



Legend:

-  Site Boundary
-  Fenceline Portable Air Monitoring Station (PAM)



Attachment 2

Site Activities

	Excavation and Hauling					Loadout					Backfill		Concrete Breakdown / Hammering	Sheet Installation	Subsurface Drilling	Soil Sieving	Covering / Uncovering Stockpiles	Vehicles Driving	Vehicles Idling	Water Misting	Site Maintenance	Building Demolition	Air Monitoring	Comments	
	COPR-material	Green-Gray Mud	Comingled-material	Hazardous Concrete	Non-Hazardous Soil	COPR-material	Green-Gray Mud	Comingled-material	Hazardous Concrete	Non-Hazardous Soil / Concrete	Backfill Placement	FerroBlack Ammending													
8/1/2013																								No Site Activity	
8/2/2013																									No Site Activity
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8/4/2013																									Weekend, No Site Activities
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8/17/2013																									Weekend, No Site Activities
8/18/2013																									Weekend, No Site Activities
8/19/2013	X					X					X				X		X		X					X	
8/20/2013	X					X									X		X		X					X	
8/21/2013	X					X									X		X		X					X	
8/22/2013	X			X		X									X		X		X					X	
8/23/2013	X			X		X					X				X		X		X					X	
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8/25/2013																									Weekend, No Site Activities
8/26/2013																									No Site Activity
8/27/2013																									No Site Activity
8/28/2013																									No Site Activity
8/29/2013																									No Site Activity
8/30/2013																									No Site Activity
8/31/2013																									Weekend, No Site Activities

	Excavation and Hauling					Loadout				Backfill		Concrete Breakdown / Hammering	Sheet Installation	Subsurface Drilling	Soil Sieving	Covering / Uncovering Stockpiles	Vehicles Driving	Vehicles Idling	Water Misting	Site Maintenance	Building Demolition	Air Monitoring	Comments	
	COPR-material	Green-Gray Mud	Comingled-material	Hazardous Concrete	Non-Hazardous Soil	COPR-material	Green-Gray Mud	Comingled-material	Hazardous Concrete	Non-Hazardous Soil / Concrete	Backfill Placement													FerroBlack Ammending
9/1/2013																							Weekend, No Site Activities	
9/2/2013																								No Site Activity
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9/4/2013																								No Site Activity
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9/15/2013																								Weekend, No Site Activities
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9/18/2013	X			X		X		X		X					X	X		X	X					X
9/19/2013	X			X		X		X		X					X	X		X	X					X
9/20/2013	X			X		X		X		X					X	X		X	X					X
9/21/2013																								Weekend, No Site Activities
9/22/2013																								Weekend, No Site Activities
9/23/2013	X			X		X		X		X					X	X		X	X					X
9/24/2013	X			X		X		X		X					X	X		X	X					X
9/25/2013	X			X		X		X		X					X	X		X	X					X
9/26/2013																								No Site Activity
9/27/2013																								No Site Activity
9/28/2013																								Weekend, No Site Activities
9/29/2013																								Weekend, No Site Activities
9/30/2013																								No Site Activity

	Excavation and Hauling					Loadout					Backfill		Concrete Breakdown / Hammering	Sheet Installation	Subsurface Drilling	Soil Sieving	Covering / Uncovering Stockpiles	Vehicles Driving	Vehicles Idling	Water Misting	Site Maintenance	Building Demolition	Air Monitoring	Comments		
	COPR-material	Green-Gray Mud	Comingled-material	Hazardous Concrete	Non-Hazardous Soil	COPR-material	Green-Gray Mud	Comingled-material	Hazardous Concrete	Non-Hazardous Soil / Concrete	Backfill Placement	FerroBlack Ammending														
10/1/2013																								No Site Activity		
10/2/2013																									No Site Activity	
10/3/2013																									No Site Activity	
10/4/2013																									No Site Activity	
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10/23/2013																									No Site Activity	
10/24/2013																									No Site Activity	
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10/27/2013																									Weekend, No Site Activities	
10/28/2013																									Site Preparations	
10/29/2013																									Air Monitoring set up at noon - No Excavation	
10/30/2013	X					X					X					X	X		X	X			X		No Site Activity	
10/31/2013																									X	No Site Activity

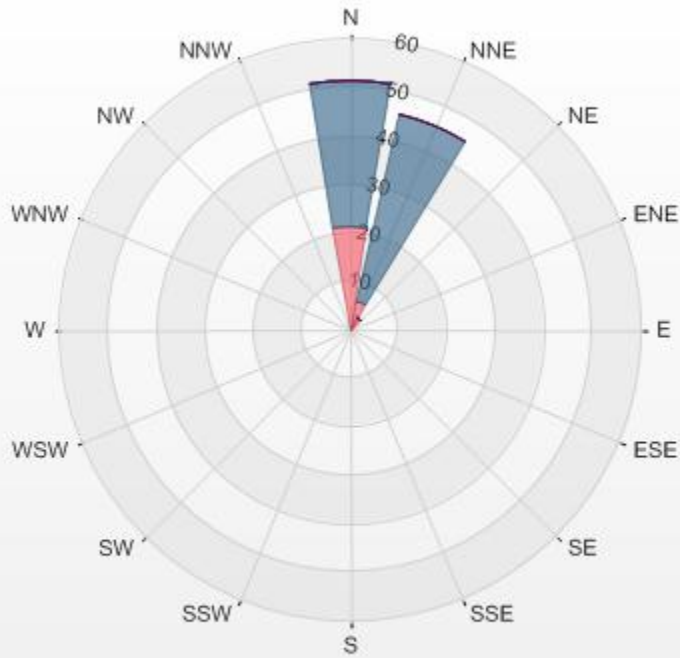
	Excavation and Hauling					Loadout				Backfill		Concrete Breakdown / Hammering	Sheet Installation	Subsurface Drilling	Soil Sieving	Covering / Uncovering Stockpiles	Vehicles Driving	Vehicles Idling	Water Misting	Site Maintenance	Building Demolition	Air Monitoring	Comments
	COPR-material	Green-Gray Mud	Comingled-material	Hazardous Concrete	Non-Hazardous Soil	COPR-material	Green-Gray Mud	Comingled-material	Hazardous Concrete	Non-Hazardous Soil / Concrete	Backfill Placement												
11/1/2013	X					X					X					X	X			X	X		
11/2/2013																							Weekend, No Site Activities
11/3/2013																							Weekend, No Site Activities
11/4/2013																							No Site Activity
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11/27/2013																							No Site Activity
11/28/2013																							No Site Activity
11/29/2013																							No Site Activity
11/30/2013																							Weekend, No Site Activities

Attachment 3

Wind Roses

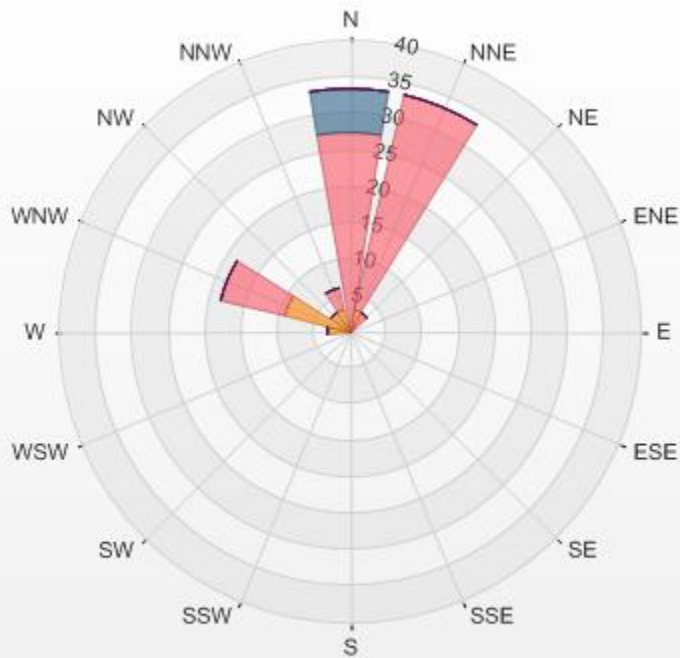
Attachment 3: Wind Roses

PPG MET 8/23/2013 7:00 AM - 8/23/2013 3:00 PM Calm: 0.0%



%	Icon	Classes (mph)
30		3.3-6.7
0		10.0-13.3
0		13.3-16.7
0		16.7-20.0
0		>20.0
0		0.5-3.3
70		6.7-10.0

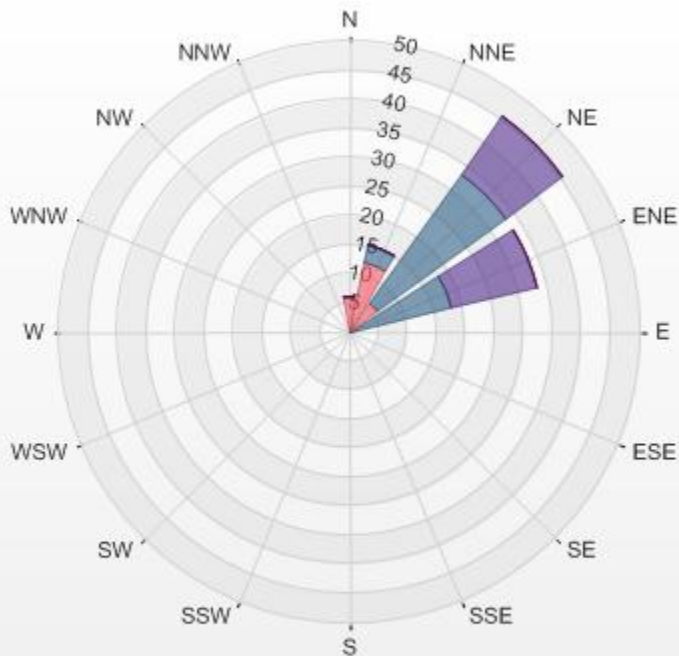
PPG MET 9/16/2013 7:00 AM - 9/16/2013 3:00 PM Calm: 0.0%



%	Icon	Classes (mph)
73		3.3-6.7
0		10.0-13.3
0		13.3-16.7
0		16.7-20.0
0		>20.0
21		0.5-3.3
6		6.7-10.0

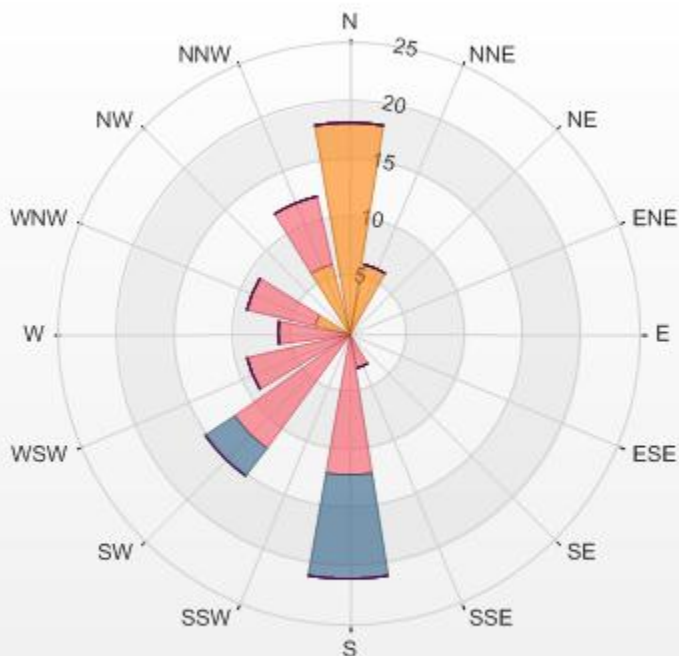
Attachment 3: Wind Roses

PPG MET 9/17/2013 7:00 AM - 9/17/2013 3:00 PM Calm: 0.0%



%	Icon	Classes (mph)	Count	Icon	Classes (mph)	Count	Icon	Classes (mph)	Count	Icon	Classes (mph)	Count
24	[Red]	3.3-6.7	27	[Purple]	10.0-13.3	0	[Pink]	13.3-16.7	0	[Brown]	16.7-20.0	0
0	[Orange]	0.5-3.3	48	[Blue]	6.7-10.0							

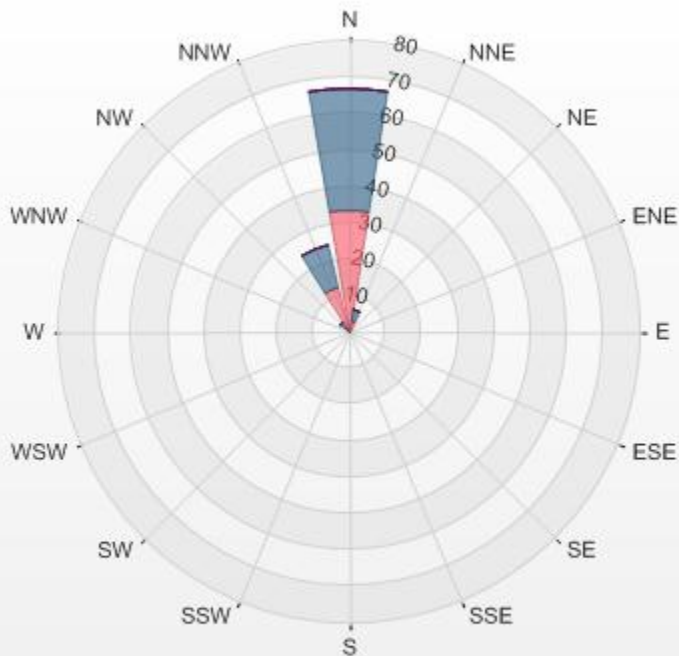
PPG MET 9/18/2013 7:00 AM - 9/18/2013 3:00 PM Calm: 0.0%



%	Icon	Classes (mph)	Count	Icon	Classes (mph)	Count	Icon	Classes (mph)	Count	Icon	Classes (mph)	Count
55	[Red]	3.3-6.7	0	[Purple]	10.0-13.3	0	[Pink]	13.3-16.7	0	[Brown]	16.7-20.0	0
33	[Orange]	0.5-3.3	12	[Blue]	6.7-10.0							

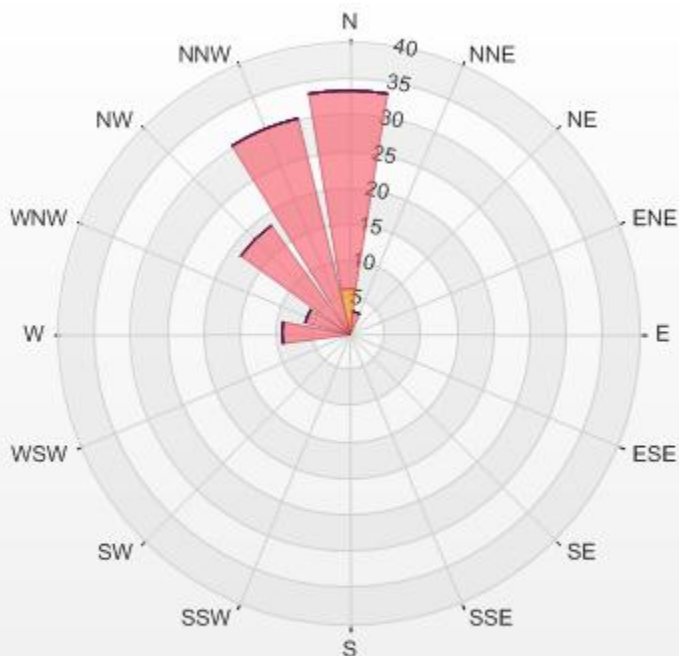
Attachment 3: Wind Roses

PPG MET 9/23/2013 7:00 AM - 9/23/2013 3:00 PM Calm: 0.0%



%	Icon	Classes (mph)	0	52	0	0	0	0
48		3.3-6.7	0		10.0-13.3	0		13.3-16.7
0		0.5-3.3	52		6.7-10.0	0		16.7-20.0
0		>20.0	0			0		>20.0

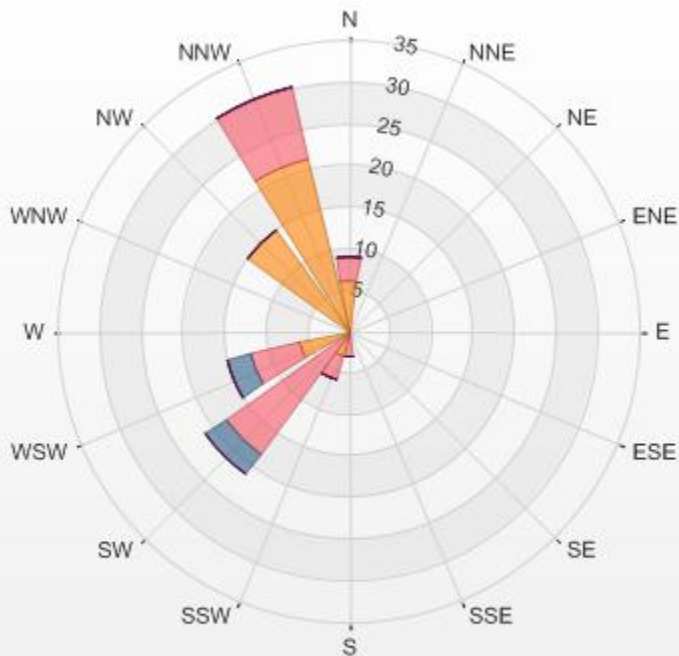
PPG MET 9/24/2013 7:00 AM - 9/24/2013 3:00 PM Calm: 0.0%



%	Icon	Classes (mph)	94	0	0	0	0	
0		0.5-3.3	6		3.3-6.7	0		10.0-13.3
0		6.7-10.0	0		13.3-16.7	0		16.7-20.0
0		>20.0	0			0		>20.0

Attachment 3: Wind Roses

PPG MET 10/30/2013 7:00 AM - 10/30/2013 3:00 PM Calm: 0.0%



PPG MET 10/31/2013 7:00 AM - 10/31/2013 3:00 PM Calm: 0.0%

