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Wetland Delineation and Watercourse Identification Report ET-Braddock Well Pad Project Area North Braddock & East Pittsburgh Boroughs / North Versailles Township, Allegheny County, PA

> Prepared For: Merrion Oil & Gas Corporation 610 Reilly Avenue Farmington, NM

> > September 2017 Revised April 2018

1.0 PROJECT LOCATION AND DESCRIPTION

Ecotune Environmental Consultants was retained by Marion Oil & Gas Corporation to conduct a wetland and watercourse investigation of a portion of the Edgar Thomson Works (the Site), located along the south side of Braddock Avenue in North Braddock and East Pittsburgh Boroughs and North Versailles Township, Allegheny County, PA. The Site consists of the eastern end of the overall Edgar Thomson Works plant. And is the potential future site of a gas well development area.

The vast majority of the Site consists of developed land inclusive of warehouse space, access ways, railroad tracks, stockpile areas and a very small extent of old field habitat.

According to the Braddock, PA USGS Map, no "blue-line" streams are located on the Site. However, it is likely that a stream enclosure is located through the central portion of the Site (flowing from north to south).

The Site is depicted in Figure 1 (Location Map, Braddock, PA, USGS Map), Figure 2 (2016 Google Aerial Image), Figures 3 & 3A (Proposed Conditions Plans), Figures 4 and 4A (USDA Soils Map and Legend), and Figure 5 (National Wetland Inventory Map).

This Report identifies and delineates all jurisdictional watercourses and wetlands within the limits of the Site.

2.0 WETLAND DELINEATION METHODOLOGY

The methodology used to determine the existence and extent of jurisdictional wetlands is set forth in the 1987 <u>Corps of Engineers Wetland Delineation Manual</u>. This manual has been supplemented by a number of regional supplements to more accurately delineate wetland in the United States. Because of its location, the Site was delineated using the *U. S. Army Corps of Engineers. 2012 Regional Supplement to the Corps of Engineers Wetland delineation Manual: Eastern Mountain and Piedmont Region.*

No recent development or earthmoving has occurred within the Site. Therefore, the Routine Onsite Determination Method was invoked due to the undisturbed nature of the Site (the soils, hydrology and/or vegetation have not been recently or significantly disturbed).

Identified wetlands were classified using the Cowardin Classification system and were delineated using the three parameter approach, inclusive of vegetation, hydrology and soil evaluation. According to the three parameter approach, all three criteria must be evaluated and must meet specific standards in order for an area to be considered a wetland. These three criteria are as follows:

<u>1. Hydrophytic Vegetation Indicators</u>: Hydrophytic vegetation in the Region is now identified by using one of four indicators. The indicators are as follows:

- Indicator 1 Rapid Test for Hydrophytic Vegetation all dominant species across all strata are rated OBL or FACW, or a combination of these two categories based on a visual estimation,
- Indicator 2 Dominance Test More than 50% of the dominant plant species (using the 50/20 rule) across all strata are rated OBL, FACW, or FAC,
- Indicator 3 Prevalence Test the Prevalence Index is 3.0 or less, or
- Indicator 4 Morphological Adaptations the plant community passes either the Dominance Test or the Prevalence Test after reconsideration of the indicator status of certain plant species that exhibit morphological adaptations for life in wetlands.

If the plant community passes any one of the four hydrophytic vegetation indicator tests, the vegetation is considered to be hydrophytic.

<u>2. Hydric Soil Indicators:</u> Hydric soil indicators are formed predominantly by the accumulation or loss of iron, manganese, sulfur or carbon compounds in a saturated, anaerobic environment. Hydric soil indicators are presented in three groups:

- All Soils used in any soil regardless of texture,
- Sandy Soils used in soil layers with USDA textures of loamy fine sand or courser, and
- Loamy or Clayey Soils used with soil layers of very fine sand or finer.

If one or more of the hydric soil indicators is present, then the soil is hydric.

3. Wetland Hydrology Indicators

Wetland hydrology indicators are used in conjunction with indicators of hydric soil and hydrophytic vegetation to determine if an area is wetland under the Corps Manual. Hydrology indicators are often the most transitory of the wetland indicators.

Wetland hydrology indicators are presented in four groups:

- Group A based on direct observation of surface water or groundwater during a visit.
- **Group B** consists of evidence that the site is subject to flooding or ponding, although it may not be inundated currently.
- Group C consists of other evidence that the soil is saturated or was saturated recently.
- **Group D** consists of landscape, vegetation and soil features that indicate contemporary rather than historical wet conditions.

Within each group, indicators are categorized into one of two groups – primary and secondary indicators, based on their reliability within the region.

3.0 WETLAND DELINEATION RESULTS

Wetland Determination Data Forms were completed for each habitat type located within the Site and can be seen in Appendix A of this report. Data Forms sampling locations are indicated on Figure 3.

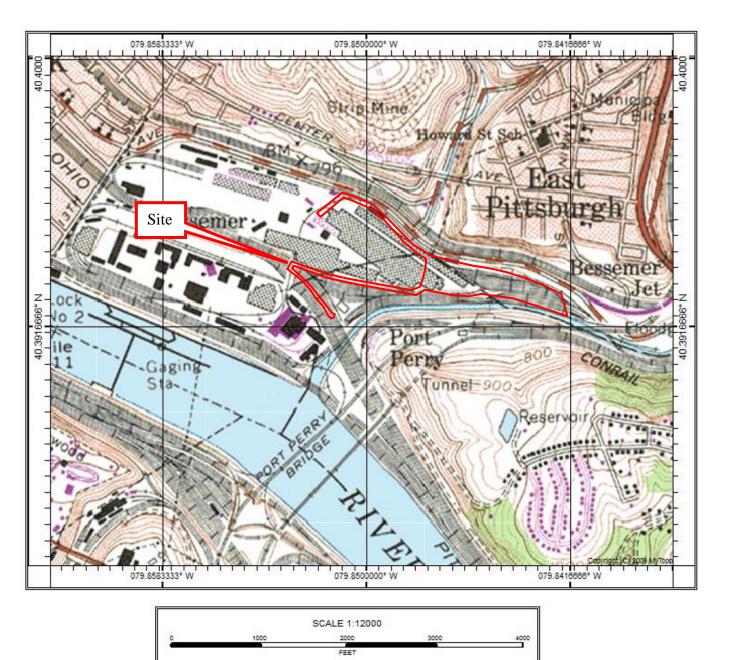
At no point within the limits of the Site were all three required wetland parameters met, therefore, no wetlands exist within the limits of the Site.

4.0 WATERCOURSE DETERMINATION

No defined bed or bank areas exist on the Site. Therefore, no open or natural watercourses are located within the Site boundaries.

However, there appears to be a stream enclosure that bisects the site. The stream enclosure appears to originate north of the Site on the north side of Braddock Avenue near the terminus of O'Connell Boulevard. The stream enclosure proceeds south through the Site and terminates at an end wall along Turtle Creek south of the Site (refer to Figure 3A). It appears that both the proposed water and gas lines to be installed to the west of the pad area will cross the stream enclosure enclosure.

Relevant photographs of the Site are contained in Appendix B and are keyed to Figure 3.



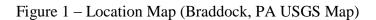






Figure 2 – Location Map (2016 Google Earth)



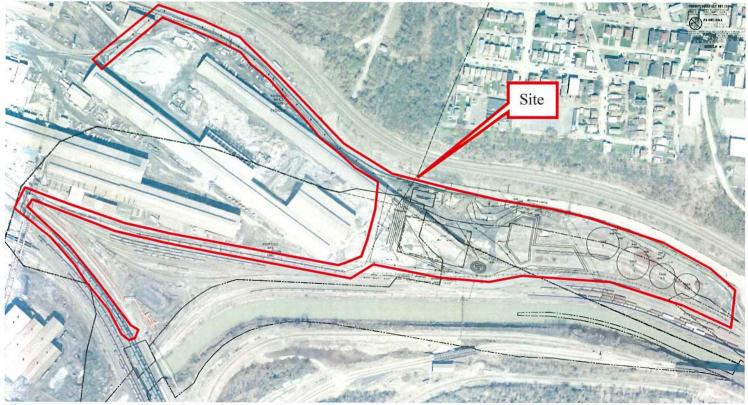


Figure 3 – Proposed Conditions Plan

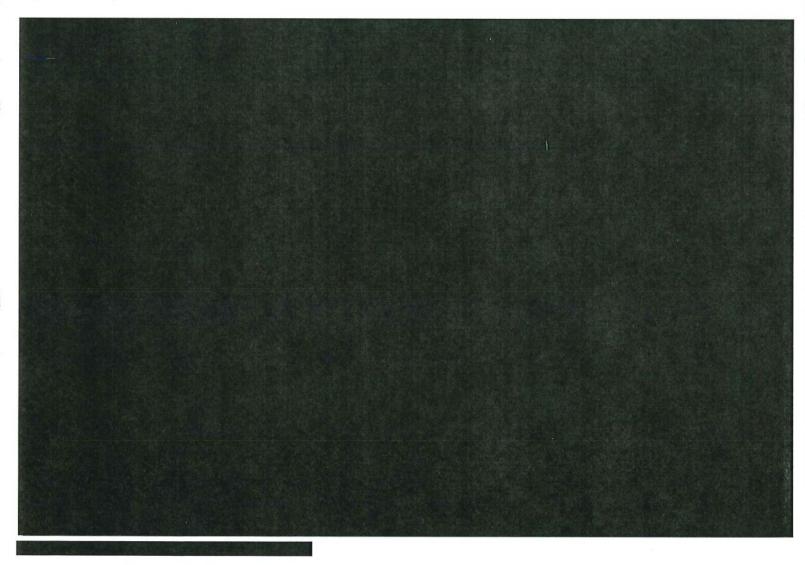






Figure 4 – Site Soils Map USDA Soil Survey



Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CuC	Culleoka channery silt loam, 8 to 15 percent slopes	1.4	0.6%
EvC	Ernest-Vandergrift silt loams, 8 to 15 percent slopes	8.9	4.1%
GQF	Gilpin-Upshur complex, very steep	42.9	19.9%
UB	Urban land	95.8	44.4%
UCB	Urban land-Culleoka complex, gently sloping	0.2	0.1%
URB	Urban land-Rainsboro complex, gently sloping	55.4	25.7%
W	Water	11.0	5.1%
Totals for Area of Interest	·	215.6	100.0%

Figure 4A – Site Soils Legend USDA Soil Survey



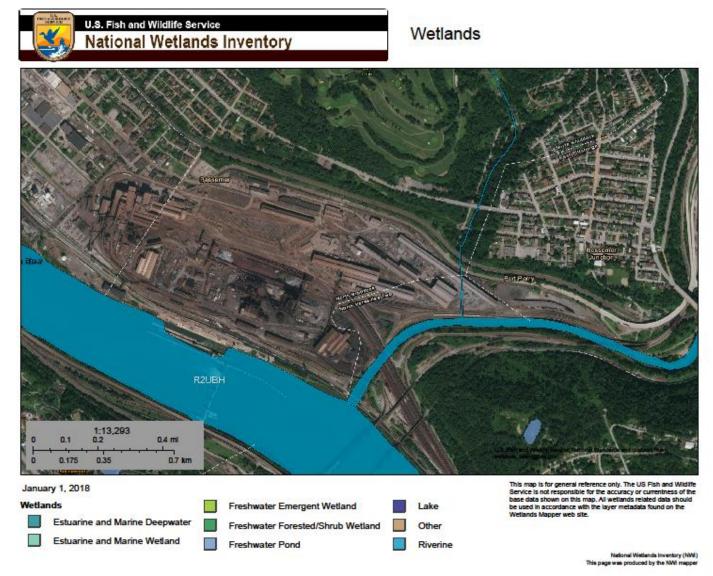


Figure 5 – NWI Map



APPENDIX A WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: ET-braddock Well Pad		City/County: Allegheny		Sampling Date: <u>12-04-2017</u>
Applicant/Owner: Marion Oil & Gas		State	: PA	Sampling Point: DF-1
Investigator(s): ECOTUNE- PG		Section, Township, Range:	Braddock I	Boro
Landform (hillslope, terrace, etc.)	Flat	Local relief (concave, convex	none): None	9
Slope (%): 3	Lat: 40.3936°	Long: <u>-79.8460</u> °	Da	
Soil Map Unit Name: UB		NWI Cla	assification:	Not Mapped
Are climatic / hydrologic conditions on the	e site typical for this time of year?	Yes <u>X</u> No(If	no, explain in	Remarks.)
Are Vegetation, Soil, or H	lydrologysignificantly dist	urbed? Are "Normal Ci	rcumstances"	' present? Yes X No
Are Vegetation, Soil, or H	lydrologynaturally problem	matic? (If needed, exp	lain any answ	vers in Remarks.)
SUMMARY OF FINDINGS – Att	ach site map showing sa	mpling point locations, tra	ansects, in	nportant features, etc.
Hydrophytic Vegetation Present?	Yes <u>No X</u>	Is the Sampled Area		
Hydric Soil Present?	Yes NoX	_ within a Wetland?	Yes	No <u></u>
Wetland Hydrology Present?	Yes NoX	_		
Remarks:				

HYDROLOGY			
Wetland Hydrology Indica Primary Indicators (minimur Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on A Water-Stained Leaves Aquatic Fauna (B13)	<u>m of one is require</u> 2)) Aerial Imagery (B7)	True Aquatic Plants (B14) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on I Presence of Reduced Iron (Recent Iron Reduction in Ti Thin Muck Surface (C7) Other (Explain in Remarks)	Living Roots (C3) Moss Trim Lines (B16) (C4) Dry-Season Water Table (C2) Filled Soils (C6) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9)
Field Observations: Surface Water Present? Water Table Present? Saturation Present? (includes capillary fringe)	Yes No Yes No Yes No	Depth X (inches): Depth	_ Wetland Hydrology Present? Yes No _X
	tream gauge, moni	itoring well, aerial photos, previous	inspections), if available:
Remarks:			

VEGETATION (Four Strata) - Use scientific names of plants.

Sampling Point DF-1

						Dominance Test worksheet:	
		Abo	solute	Dominant	Indicator	Dominance rest worksheet.	
Tree Stratum	(Plot size: 30'		Cover	Species?	Status	Number of Dominant Species	
1.	`					That Are OBL, FACW, or FAC:	0 (A)
2.			<u> </u>				
2						Total Number of Dominant	
						Species Across All Strata:	3 (B)
		· · · · · · · · · · · · · · · · · · ·	<u> </u>	<u> </u>			、 ,
						Percent of Dominant Species	
						That Are OBL, FACW, or FAC:	0 (A/B)
							、 ,
8.						Prevalence Index worksheet:	
50/20=				= Total Cov	er	Total % Cover of:	Multiply by:
						OBL species	x 1 =
Sapling/Shrub Stratum	(Plot size: 15')				FACW species	X 2 =
1.						FAC species	X 3 =
<u>^</u>						· · ·	
3						FACU species	X 4 =
						UPL species	X 5 =
-						Column Totals:	(A) (B)
6							
7							
0						Prevalence Index =	
						1 - Rapid Test for Hydrophytic	Vegetation
50/20= 12.5/5			05	Tatal Car		2 - Dominance Test is > 50%	
50/20= 12.5/5			25	= Total Cov	er	3 - Prevalence Test is ≤ 3.0 ¹	
Lie de Otretune		`				4 - Morphological Adaptations	¹ (Provide supporting
Herb Stratum	(Plot size: 5')	-	X		data in Remarks or on a se	
1. Verbesina alternifol	lia		5	<u> </u>	FAC	Problematic Hydrophytic Vege	tation ¹ (Evaluin)
2. Dipsacus fullonum			5	<u> </u>	FACU		
3. Solidago altissima			3	Χ	FACU	¹ Indicators of hydric soil and wet	land hydrology must
4. Alliaria petiolata			2		FACU	be present, unless disturbed or p	
5.							<u></u>
6.						Definitions of Vegetation Strata	•
7.				. <u></u> ,		Deminions of Vegetation of ata	-
8.						Tree – Woody plants, excluding v	
9.						more in diameter at breast height	(DBH), regardless of
10						height.	
4.4						Sapling/Shrub – Woody plants, e	aveluding vinos loss
12.						than 3 in. DBH and greater than 3	
50/20 = 7.5 / 3			15	= Total Cov	er		
						Herb – All herbaceous (non-wood	
Woody Vine Stratum	(Plot size: 30')				size, and woody plants less than	3.28 ft tall.
1.	`					Woody vine – All woody vines gr	contor than 2 28 ft in
			<u> </u>			height.	
4							
5			<u> </u>			Hydrophytic	
6						Vegetation	
		·	<u> </u>		·	Present? Yes	No <u>X</u>
50/20 = 22.5/9				= Total Cov	er		
Remarks: (Include pho	oto numbers here or on a	a separate sheet.))			1	

SOIL

Samplir	ig Point:	DF
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SOIL						5	Sampling F	oint: DF-	1		
	Profile Des Depth	Matrix		R	edox Featu	ires			absence of indica	ators.)	
	(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture		marks	
	0-3	NA 10YR5/5	100					Mineral	Coal Spoil		
	3-16	10185/5	100					Mineral	·		
							·		·		
		·,									
	¹ Type: C=0 M=Matrix.	Concentration, D=	Depletion,	RM=Reduced Ma	atrix, CS=C	overed o	r Coated S	and Grains	² Location:	PL=Pore Li	ining,
	-	I Indicators:						India	ators for Problem	-	
	Histo	osol (A1)			rface (S7) ie Below Si	irface (S	8) (MI R A	147	2 cm Muck (A10)	(MLRA 147)
	Histic	c Epipedon (A2)		148)			o) (_ , (· · · , 	Coast Prairie Rec	dox (A16)	
		k Histic (A3)			rk Surface	· · ·	RA 147, 14	48)	(MLRA 147, 1		
		ogen Sulfide (A4)			Gleyed Mat	. ,			Piedmont Floodp		19)
		ified Layers (A5) Muck (A10) (LRR	NI)		d Matrix (F3 Dark Surfac				(MLRA 136, 1 Red Parent Mate	•	
		eted Below Dark S			d Dark Surf				Very Shallow Dar		[F12)
		Dark Surface (A1			Depressions				Other (Explain in		,
	Sand	ly Mucky Mineral (S1) (LRR	N, Iron Ma	nganese Ma	asses (F1	12) (LRR N	۱,			
		ILRA 147, 148)			A 136)						
	Sand	ly Gleyed Matrix (s	54)		Surface (F1 nt Floodplai				a a ta wa a ƙ l li salwa a li s		
	Sand	ly Redox (S5)		148)	it i locupia		(iii _it	we	cators of Hydrophy tland hydrology mι	ust be prese	
		ped Matrix (S6)						un	less disturbed or pr	oblematic.	
Restrictive Lay Type:	ver (if observe	ed):									
Depth						Hy	dric Soil F	Present?	Yes	No	X
(inches):	Remarks:										
	Remarks.										

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: ET-braddock Well Pad	City/County: Allegheny Sampling Date: 12-04-2017
Applicant/Owner: Marion Oil & Gas	State: PA Sampling Point: DF-2
Investigator(s): ECOTUNE- PG	Section, Township, Range: Braddock Boro
Landform (hillslope, terrace, etc.) Flat	Local relief (concave, convex, none): None
Slope (%): <u>3</u> Lat: <u>40.3937°</u>	Long: <u>-79.8461</u> ° Datum:
Soil Map Unit Name: UB	NWI Classification: Not Mapped
Are climatic / hydrologic conditions on the site typical for this time of ye	ar? Yes X No (If no, explain in Remarks.)
Are Vegetation, Soil, or Hydrologysignificantly of	disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrologynaturally prob	blematic? (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showing	sampling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes No	X hate Complete Area
Hydric Soil Present? Yes No	Is the Sampled Area X within a Wetland? Yes NoX
Wetland Hydrology Present? Yes No	<u>x</u>
Remarks:	
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two

Water Marks (B1) Presence of Reduce	dor (C1) Drainage Patterns (B10) eres on Living Roots (C3) Moss Trim Lines (B16) ed Iron (C4) Dry-Season Water Table (C2) ion in Tilled Soils (C6) Crayfish Burrows (C8) (C7) Saturation Visible on Aerial Imagery (C9)
Field Observations: Surface Water Depth Present? Yes No X (inches):	Wetland Hydrology Present? Yes No _X
Describe Recorded Data (stream gauge, monitoring well, aerial photos, pr Remarks:	revious inspections), if available:

VEGETATION (Four Strata) - Use scientific names of plants.

Sampling Point DF-2

					Dominance Test worksheet:	
		Absolute	Dominant	Indicator	Dominance rest worksheet.	
Tree Stratum	(Plot size: 30') % Cover	Species?	Status	Number of Dominant Species	
1.			<u>_</u>		That Are OBL, FACW, or FAC:	0 (A)
2.						
3					Total Number of Dominant	
					Species Across All Strata:	<u> </u>
F			·			
6			·		Percent of Dominant Species	
7			·		That Are OBL, FACW, or FAC:	0 (A/B)
8.			·		Prevalence Index worksheet:	
50/20=			= Total Cov	/er	Total % Cover of:	Multiply by:
00/20-			- 10101 001	01	OBL species	x 1 =
Sapling/Shrub Stratum) (Plot size: 15')				
1		/			FACW species	X 2 =
2					FAC species	X 3 =
3					FACU species	X 4 =
			·		UPL species	X 5 =
			·		Column Totals:	(A) (B)
6			·			(-)
7			·			
0					Prevalence Index =	
					1 - Rapid Test for Hydrophytic	c Vegetation
50/20=			= Total Cov		2 - Dominance Test is > 50%	
50/20=					3 - Prevalence Test is $\leq 3.0^{1}$	
Herb Stratum	(Plot size: 5')			4 - Morphological Adaptations	s ¹ (Provide supporting
1. Polygonatum biflor)2		FACU	data in Remarks or on a se	eparate sheet)
 Polystichum acrost 		23	X	FACU	Problematic Hydrophytic Veg	etation ¹ (Explain)
3. Datylis glomerata		5	<u> </u>	FACU		(] - ,
4. Solidago altissima		5	<u> </u>	FACU	¹ Indicators of hydric soil and we	tland hydrology must
4. <u>Solidago altissima</u> 5.				FACU	be present, unless disturbed or	
5 6.						
-					Definitions of Vegetation Strata	a:
·			·		The subscription of the state o	·····
					Tree – Woody plants, excluding wore in diameter at breast height	/Ines, 3 In. (7.6 cm) or
10					height.	(DDII), regardless of
			·		Sapling/Shrub – Woody plants,	excluding vines, less
12.					than 3 in. DBH and greater than 3	3.28 ft (1 m) tall.
50/20 = 7.5 / 3		15	= Total Cov	/er	Herb – All herbaceous (non-woo	dv) plants, regardless of
Woody Vine Stratum	(Plot size: 30')			size, and woody plants less than	
)				
			·		Woody vine – All woody vines gui height.	reater than 3.28 ft in
<u> </u>					neight.	
4			·			
					Hydrophytic	
			·		Vegetation	
					Present? Yes	<u>No X</u>
50/20 =5/2			= Total Cov	ver		
Remarks: (Include ph	oto numbers here or on a	separate sheet.)			·	

SOIL

Sampling Point: DF-2	Sampling	Point:	DF-2
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(inches) Color (moist) % Color (moist) % Type! Loc ² Texture Remarks 0-2		Depth	Matrix			lox Featu		ator or c	•••••	absence of indica	1015.)	
2-16 10YR5/6 98 10YR4/4 2 Mineral		(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Re	marks	
Image: Structure Layer (if observed): Image: Structure Layer (if observed): Structure Layer (if observed): Structure Layer (if observed): Type: Structure Layer (if observed): Type: Lambar (Structure Layer (Structure Layer (If observed): Type: Lambar (Structure Layer (Structure Layer (If observed): Type: Lambar (Structure Layer (If observed):		0-2								Coal Spoil		
M=Matrix. Hydric Soil Indicators: Indicators for Problematic Hydric S Histosol (A1) Dark Surface (S7) 2 cm Muck (A10) (MLRA 147) Histic Epipedon (A2) 148) Coast Prairie Redox (A16) Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) (MLRA 147, 148) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Piedmont Floodplain Soils (F19) Stratified Layers (A5) Depleted Matrix (F3) (MLRA 136, 147) Depleted Below Dark Surface (A11) Depleted Dark Surface (F6) Red Parent Material (TF2) Depleted Below Dark Surface (A12) Redox Depressions (F8) Other (Explain in Remarks) Sandy Mucky Mineral (S1) (LRR N, Iron Manganese Masses (F12) (LRR N, Other (Explain in Remarks) Sandy Redox (S5) Umbric Surface (F13) (MLRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA Stripped Matrix (S6) Umbric Surface (F13) (MLRA 136, 122) Piedmont Ploodplain Soils (F19) (MLRA Strictive Layer (if observed): Hydric Soil Present? Yes No Type: Hydric Soil Present? Yes No		2-16	10YR5/6	98	10YR4/4	2			Mineral			
M=Matrix. Hydric Soil Indicators: Indicators for Problematic Hydric S Histosol (A1) Dark Surface (S7) 2 cm Muck (A10) (MLRA 147) Histic Epipedon (A2) 148) Coast Prairie Redox (A16) Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) (MLRA 147, 148) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Piedmont Floodplain Soils (F19) Stratified Layers (A5) Depleted Matrix (F3) (MLRA 136, 147) Depleted Below Dark Surface (A11) Depleted Dark Surface (F6) Red Parent Material (TF2) Depleted Below Dark Surface (A12) Redox Depressions (F8) Other (Explain in Remarks) Sandy Mucky Mineral (S1) (LRR N, Iron Manganese Masses (F12) (LRR N, Other (Explain in Remarks) Sandy Redox (S5) Umbric Surface (F13) (MLRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA Stripped Matrix (S6) Umbric Surface (F13) (MLRA 136, 122) Piedmont Ploodplain Soils (F19) (MLRA Strictive Layer (if observed): Hydric Soil Present? Yes No Type: Hydric Soil Present? Yes No										. <u> </u>		
M=Matrix. Hydric Soil Indicators: Indicators for Problematic Hydric S Histosol (A1) Dark Surface (S7) 2 cm Muck (A10) (MLRA 147) Histic Epipedon (A2) 148) Coast Prairie Redox (A16) Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) (MLRA 147, 148) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Piedmont Floodplain Soils (F19) Stratified Layers (A5) Depleted Matrix (F3) (MLRA 136, 147) Depleted Below Dark Surface (A11) Depleted Dark Surface (F6) Red Parent Material (TF2) Depleted Below Dark Surface (A12) Redox Depressions (F8) Other (Explain in Remarks) Sandy Mucky Mineral (S1) (LRR N, Iron Manganese Masses (F12) (LRR N, Other (Explain in Remarks) Sandy Redox (S5) Umbric Surface (F13) (MLRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA Stripped Matrix (S6) Umbric Surface (F13) (MLRA 136, 122) Piedmont Ploodplain Soils (F19) (MLRA Strictive Layer (if observed): Hydric Soil Present? Yes No Type: Hydric Soil Present? Yes No												
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Image: Second Strictive Layer (if observed): Thick Dark Surface (A12) Redox Depressions (F8) Other (Explain in Remarks) Image: Second Strictive Layer (if observed): Type: MLRA 147, 148) MLRA 136) Strictive Layer (if observed): Type: Hydric Soil Present? Yes No			· / ·							•	· ·	ΓF12
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APPENDIX B SITE PHOTOGRAPHS

All Photographs Taken On December 4, 2017

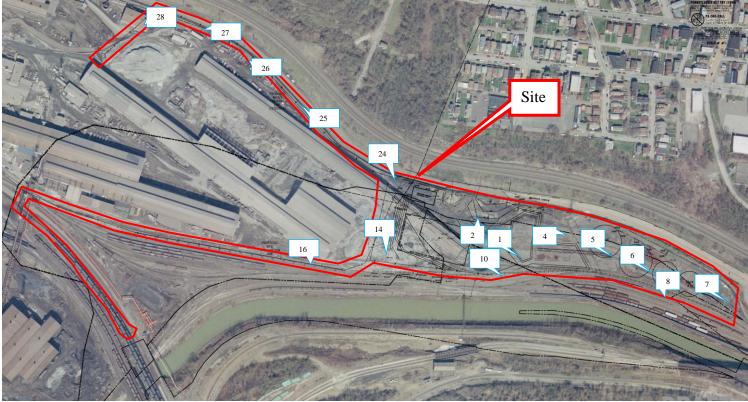
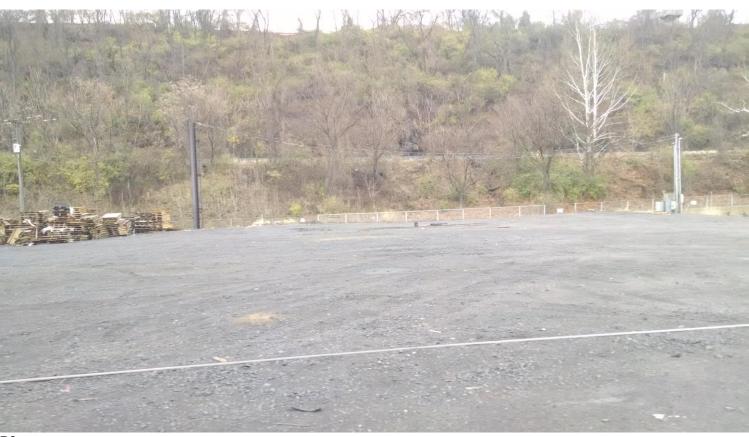


Figure 3 – Photograph Location Plan



P1















P14

