



January 10, 2017

Mr. Paul Grittner  
Hydrogeologist, Bureau for Remediation and Redevelopment  
Wisconsin Department of Natural Resources  
2300 N. Dr. Martin Luther King, Jr. Dr.  
Milwaukee, WI 53212

RE: Former D-F Property  
2517 E. Norwich Avenue  
St. Francis, Wisconsin  
BRRTS# 02-41-097173  
FID# 241239460

Dear Mr. Grittner:

LF Green has prepared the enclosed tables and figure to summarize modifications to the Site Investigation Work Plan dated October 6, 2016 in accordance with the recommendations you provided in your letter dated November 16, 2016. Attached please find the following:

- Figure 2: SIGMA Groundwater Contour Map depicting areas of proposed site investigation, summarized in Table 2. This figure has been revised to depict the approximate location of the underground concrete culvert and the approximate location of a monitoring well to define the northerly extent of contamination north of MW-7. We have also added a temporary monitoring well to be installed and sampled near the outfall of the concrete culvert as it discharges to the Norwich Avenue drainage ditch.
- Table 1: Contaminant Distribution Summary – this table has not been revised but is included for your ease of review.
- Table 2: Additional Site Investigation Summary - revised to reflect your recommendations for 1) installation of a piezometer near SB-20; 2) a monitoring well north of MW-7, to be installed on the west side of the concrete culvert; and 3) installation and sampling of a temporary well near the outfall of the below-grade concrete culvert.
- Table 3: Site Investigation Work Plan Summary and Schedule – summarizes specific details and a schedule for sampling and analysis of soil and groundwater.

All historic soil data will be tabulated to better assess contaminant distribution relative to source areas. We will also prepare isoconcentration maps of the saturated and unsaturated soil impacts.

As indicated in the March 8, 1999 site investigation report prepared by Environmental Resources Management (ERM), the unsaturated zone is nearly absent in the southerly portion of the lower parking lot. Therefore, unsaturated soil samples collected from the lower parking lot will be limited to the upper 2 feet of soil just beneath the pavement section. We are also proceeding with preparing two cross-sections, one depicting the Subject Site and the Kitzinger and properties and one depicting the site and upgradient wells



along Pennsylvania Avenue, to demonstrate the off-site contribution of contamination from the Kitzinger and Auto Wreckers sites. These drawings will also include soil and groundwater contamination isoconcentrations to better identify source areas and contaminant migration pathways.

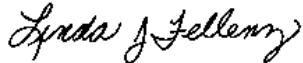
These figures are being completed for internal review prior to mobilizing to the Site in the coming weeks. We will make every attempt to share these figures with you prior to conducting the additional investigation, but since the City of St. Francis received a Site Assessment Grant (SAG) with a spring deadline, we need to proceed with the investigation at the earliest possible date. After this phase of the investigation is completed, we will update the figures with the new site information for inclusion in the site investigation report.

While we recognize the need for continued groundwater monitoring to evaluate remedial alternatives in the future, our initial site investigation work will include one sampling event. An updated groundwater contaminant contour map will be prepared from these findings. The sampling event will include sampling and analysis of the Kitzinger wells pending property access. The City of St. Francis is currently pursuing access from the current property owner.

Considering that the on-site buildings will be demolished, a vapor investigation will not be conducted at part of this investigation. The City of St. Francis has no plans to allow occupancy of the existing buildings given their deteriorated state. A potential purchaser intends to use the site for outdoor storage. If a building is proposed for construction on site in the future, the vapor pathway will be evaluated prior to construction and appropriate remediation will be recommended.

Thank you for your guidance with this project. If you have any questions or comments please feel free to call me at 414-254-4813 or email me a [Lfellenz@lfgreendevlopment.com](mailto:Lfellenz@lfgreendevlopment.com).

Sincerely,

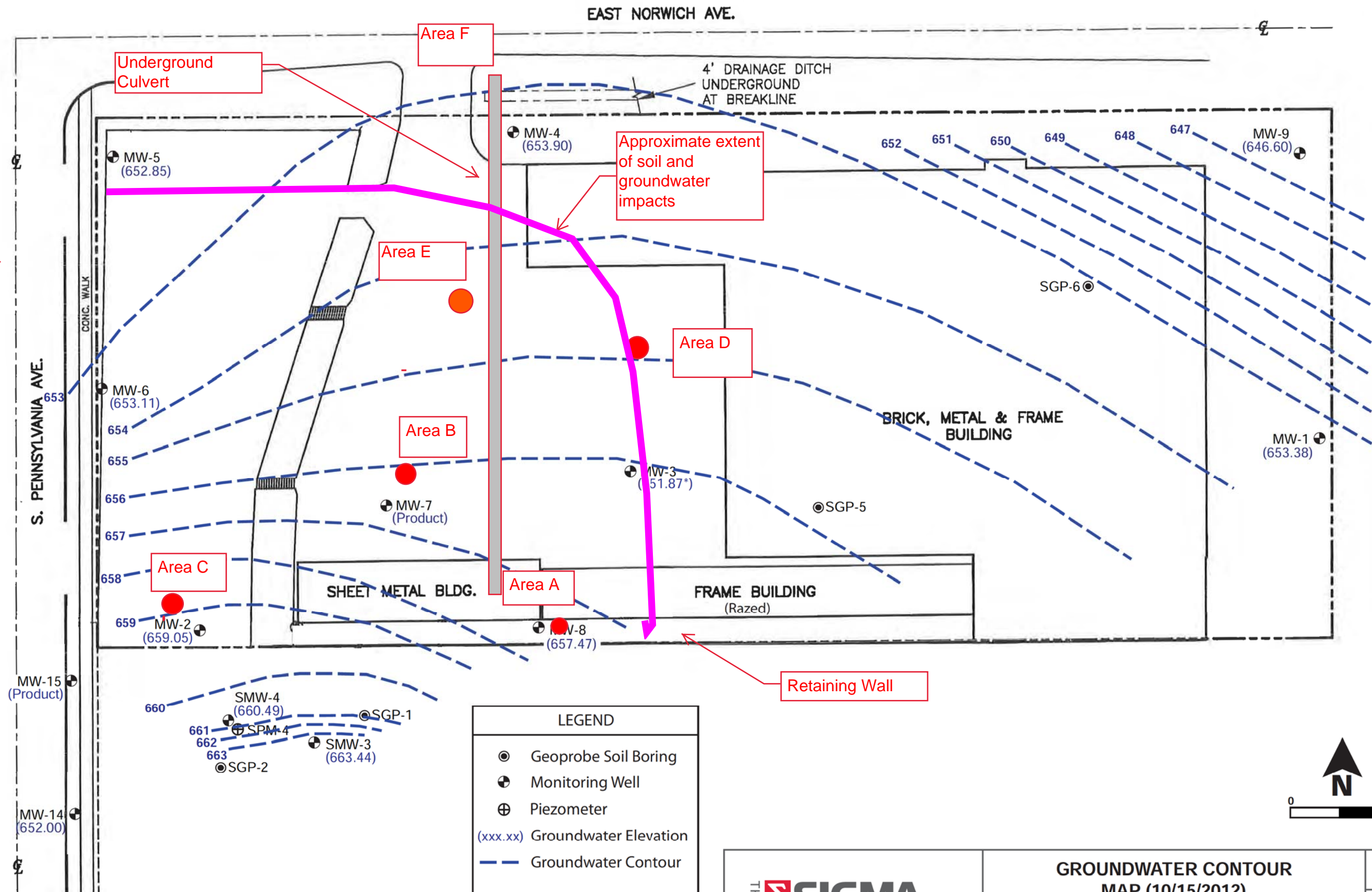


LF Green Development, LLC  
Linda J. Fellenz, President

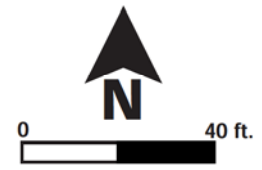
CC: Mr. Mark Johnsrud, City of St. Francis

# ATTACHMENT A

## FIGURES



LEGEND	
⊙	Geoprobe Soil Boring
⊕	Monitoring Well
⊕	Piezometer
(xxx.xx)	Groundwater Elevation
- - -	Groundwater Contour
Note: * indicates elevation not taken into account for contours	



	<b>GROUNDWATER CONTOUR MAP (10/15/2012)</b> 2517 EAST NORWICH ST. FRANCIS, WISCONSIN	FIGURE <b>2</b>
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# ATTACHMENT B

## TABLES

**Table 1: Groundwater Contaminant Distribution Summary**

Monitoring Well Identification	Date	Ground Surface Elevation (feet MSL)	Top of Casing Elevation (feet MSL)	Depth to Groundwater (feet from TOC)	Depth to Groundwater (feet bgs)	Groundwater Elevation (feet MSL)	Well Screen Interval (ft bgs and ft MSL)	Screen Interval Formation (Descending)	TCE	cis 1,2-DCE	VC	Projected Piezometer Depth and Probable Screen Formation (ft bgs and ft MSL)
SMW-3	10/15/12	668.98	668.32	4.88	5.54	663.44	8-18 660.98 - 650.98	1 ft Fill, silt, f-m sand, silt	1600	31100	9700	
SMW-4	10/15/12	667.78	667.24	6.75	7.29	660.49	8-18 659.78 - 649.78	1 ft of product-saturated fill, silt	36	640	122	
SPM-4	10/15/12	667.72	667.60	15.70	15.82	651.90	25-35 642.72 - 632.72	f-c sandy gravel, silt (bottom foot)	26000	283000	12600	
MW-1	10/15/12	657.10	659.23	5.85	3.72	653.38	4 - 14 654.90 - 644.90	(inferred from MW-9) 2 ft silty clay, 4 ft sand and gravelly sand, 4 ft silty clay	<0.47	<0.74	1.27	
MW-2	10/15/12	666.17	665.55	6.50	7.12	659.05	4 - 14 662.12 - 652.12	4.5 ft fill, 5.5 ft silty clay	1820	120000	1820	23 - 28 643 - 638 (SG)
MW-3	10/15/12	659.30	658.87	7.00	7.43	651.87	4 - 14 655.32 - 645.32	(inferred from SB-20) 2 ft fill, 4 ft silty clay, 4 ft sand and gravelly sand	<0.47	6.4	35	
MW-4	10/15/12	658.47	660.75	6.85	4.57	653.90	4 - 14 654.57 - 644.37	(inferred from SB-20) 2 ft fill, 4 ft silty clay, 4 ft sand and gravelly sand	6.5	1.75	2.73	
MW-5	10/15/12	662.64	662.16	9.31	9.79	652.85	4 - 14 658.66 - 648.66	1 ft fill, silty clay, sand and gravelly sand (bottom 3 ft)	35	30.7	17.5	
MW-6	10/15/12	663.83	663.61	10.50	10.72	653.11	5 - 15 658.85 - 648.85	2 ft fill, silty clay, sandy clay (bottom ft)	<4.7	<7.4	2.2	
MW-7	10/15/12	659.10	658.97	3.92	4.05	655.05	3 - 13 656.13 - 646.13	1 ft fill, 4 ft silty clay, 4 ft sand and gravelly sand, 1 ft silty clay	Free Petroleum Product (0.04 feet thick)			16 - 21 643 - 638 (SG) 29 - 34 630 - 625 (CL)
MW-8	10/15/12	659.76	663.40	5.93	2.29	657.47	3 - 13 656.96 - 646.96	1 ft fill, 4 ft silty clay, 4 ft sand and gravelly sand, 1 ft silty clay	3	21.6	160	17-22 643 - 638 (SG)
MW-9	10/15/12	656.94	659.17	12.57	10.34	646.60	5 - 15 653.29 - 643.29	2 ft silty clay, 4 ft sand and gravelly sand, 4 ft silty clay	<0.47	<0.74	<0.18	
MW-11	10/15/12	Not Located										
MW-12	10/15/12	Not Located										
MW-13	10/15/12	Not Located										
MW-14	10/15/12	667.23	666.76	14.76	15.23	652.00	6 - 16 661.22 - 651.22	Clayey silt, sand and gravelly sand	102	<74	<18	
MW-15	10/15/12	665.60	665.00	11.70	12.30	653.30	5.5 - 15.5 660.11 - 650.11	4 ft fill, 1 ft silty clay, sand and gravelly sand	Free Product (0.07 ft thick)			

**Table 2: Additional Site Investigation Summary**

Location	Map ID	Description	Additional Site Investigation Needs	Proposed Soil Investigation	Proposed Groundwater Investigation	Contingent Groundwater Investigation
South Property Boundary	A	CVOCs were detected at concentrations exceeding Enforcement Standards in this location, including high levels of vinyl chloride. Other than historic fill, there is no specific source area in this location. MW-8 is immediately downgradient of the Kitzinger site.	Monitoring Well MW-8 was installed by ERM to assess contaminant migration from the Kitzinger site to the south. Need to assess contamination in the sand and gravel layer to determine potential upgradient migration within sand and gravel layer.	Soil probe to 35 feet bgs to evaluate vertical extent of impacts through PID screening and visual/olfactory observations.	Piezometer at 17 to 22 ft bgs at approximate Elevation 643 - 638 to assess contaminant migration through the lower sand and gravel layer.	
Lower Parking Lot North of Metal Shed (Former Solvent AST Area)	B	A thin layer of LNAPL (assumed to be petroleum) was encountered in MW-7. There is no known source of petroleum use or storage on the site.	Groundwater at MW-7 has not been analyzed. LNAPL must be characterized and groundwater sampled to determine groundwater quality and relationship to LNAPL. Need to assess contamination in the lower sand and gravel layer to determine vertical extent of groundwater impacts and to evaluate the possible contribution of upgradient contamination from the Kitzinger site.	Soil probe to 35 feet bgs to evaluate vertical extent of impacts through PID screening and visual/olfactory observations.	Sample and characterize LNAPL in MW-7. Install piezometer at approximately 16-21 feet bgs in the sand and gravel layer at at approximate Elevation 644-649, which is approximately the same elevation that the CVOCs were found in Kitzinger SPM-4.	Depending on groundwater findings in sand and gravel layer, potentially install a deeper piezometer in the lower confining clay - if clay is not impacted, this shows that the lower massive clay is confining vertical flow from the contaminated sand and gravel layer.
Upper Parking Lot	C	The highest concentrations of CVOCs occur in upgradient wells on the Kitzinger site and on-site well MW-2. Petroleum free product was detected in upgradient MW-15.	Monitoring Well MW-2 was installed by ERM to evaluate contaminant migration from the west. CVOC contaminants were detected at high concentrations. Need to assess the vertical extent of contamination in the sand and gravel layer below the clay layer to assess the potential for off-site contribution of contaminant loads from the west and south.	Soil probe to 35 feet bgs to evaluate vertical extent of impacts through PID screening and visual/olfactory observations.	Piezometer at 23 to 28 feet bgs in the sand and gravel layer at approximate elevation 643 - 638.	Depending on groundwater findings in sand and gravel layer, potentially install a deeper piezometer in the lower confining clay - if clay is not impacted, this shows that the lower massive clay is confining vertical flow from the contaminated sand and gravel layer from upgradient source areas.
Lower Parking Lot - West Side of Main Manufacturing Plant	D	This area is near SB-20 where ERM terminated at 22 feet due to evidence of product. This is also the approximate northeast edge of the plume.	Soil boring SB-20 found evidence of a highly contaminated layer at approximately 20 to 22 feet bgs.	Soil Probe to 35 feet to document probable deep confining clay layer.	Install a monitoring well at approximately 3 - 13 bgs at approximate Elevation 656.13 - 646.13 to confirm the lateral extent of groundwater impacts. Install a piezometer here in sand and gravel layer at approximately 17 to 22 feet bgs at approximate Elevation 643 - 638 to assess contaminant migration through the lower sand and gravel layer.	Possibly install a piezometer here in sand and gravel layer at approximately 17 to 22 feet bgs at approximate Elevation 643 - 638 to assess contaminant migration through the lower sand and gravel layer.

Lower Parking Lot - West Side of Main Manufacturing Plant	E	The extent of free product north of MW-7 is not defined.	The extent of soil and groundwater impacts is inferred to be between MW-7 and MW-4. Additional monitoring of this area may be useful in assessing the extent of free product at MW-7.	Situate a soil probe between MW-7 and MW-4 adjacent to the west side of the below-grade culvert. Soil Probe to 35 feet to profile stratigraphy and document probable deep confining clay layer. Sample soil at approximately 16-21 feet bgs in the sand and gravel layer at at approximate Elevation 644-649, which is approximately the same elevation that the CVOCs were found in Kitzinger SPM-4.	Install a monitoring well at approximately 3 - 13 feet bgs at approximate Elevation 656.13 - 646.13 to confirm the lateral extent of groundwater impacts.	
Culvert Outfall at Norwich Avenue Ditch	F	The underground culvert that extends from south to north may be transporting contaminated surface water or groundwater to the outfall.	The culvert that runs through the site may be directing CVOC impacted groundwater to the north.	Sample groundwater near the outfall to determine if the culvert is a contaminant migration pathway.	Install a temporary monitoring well near the culvert outfall at approximately 3-13 feet bgs	

**Culvert Outfall at Norwich Avenue Ditch**

**Note:** One sample will be collected from 0-4 feet bgs to determine the direct contact conditions. The sample in the 0-2 foot section will be used unless it is topsoil or gravel. A second unsaturated sample will be collected to verify the soil conditions between 4 and 15 feet bgs, depending on the depth of the water table.

Soil and groundwater samples will be submitted for analysis of VOCs by method 8260B, SVOCs by method 8270, and RCRA Metals by method 6010B.



**Table 3: Work Plan Summary and Schedule**

Task	Task Detail	Subsurface Exploration Needs	Soil Sampling Plan	Groundwater Sampling Plan	Schedule
Tables	Table 1 - Groundwater Elevations Table 2 - Soil Analytical Summary Table 3 - Groundwater Analytical Summary				January with March Updates
Figures	Base Map (ERM, Sigma, LF Green Sampling Locations) Soil Isoconcentration Maps - Saturated and Unsaturated Zones Two Cross-Sections Depicting North-South and Southeast-Northeast Flow Components				January with March Updates
Interim Groundwater Investigation	<ul style="list-style-type: none"> <li>- Locate and mark all existing monitoring wells on the site and in the Pennsylvania Avenue ROW</li> <li>- Evaluate well integrity for sampling; identify damaged wells that require abandonment</li> <li>- Measure groundwater levels and free product thickness</li> <li>- Sample free product if encountered for possible future analysis</li> <li>- Purge all monitoring wells</li> </ul>			Sample and characterize LNAPL in MW-7, MW-15, and MW-2 (if free product detected)	Early February, concurrent with Soil Investigation
Soil Investigation	Install 5 35-foot soil probes and one 15 foot soil probe (Area F) Collect soil samples at 0 to 4 foot and groundwater interface (based on lowest historical water level measurement) per work plan.	Soil probe -6 locations (Area A through F); 200 feet total	5 soil samples, VOCs 8260, SVOCs 8270, RCRA Metals 6010B; 6 soil samples VOCs only		Early February
Groundwater Investigation	Install 2 monitoring wells and 4 piezometers. Sample existing and new wells using low flow unless free product recharges to the well; measure free product recharge, if applicable. Install a shallow temporary well near the outfall of the underground culvert at Norwich Avenue and sample groundwater for VOCs.	<p>Drill Rig - No Soil Sampling; 119 feet total</p> <p><u>Area A:</u> Piezometer at 17 to 22 ft bgs</p> <p><u>Area B:</u> Piezometer at approximately 16-21 feet bgs</p> <p><u>Area C:</u> Piezometer at 23 to 28 feet bgs</p> <p><u>Area D:</u> Monitoring well at approximately 3 - 13 bgs; Piezometer at approximately 17 to 22 feet bgs</p> <p><u>Area E:</u> Monitoring well at approximately 3 - 13 bgs</p> <p><u>Area F:</u> Temporary monitoring well at outfall of culvert</p>		11 Existing Monitoring Wells and 5 New Monitoring Well/Piezometers; Two Duplicates, Two Trip Blanks; 18VOCs by EPA Method 8260	3
Site Investigation Report	Update all tables and figures with new data				March
<b>Total Estimated Cost and Duration:</b>					<b>Duration: 8 weeks</b>

**Note:** One sample will be collected from 0-4 feet bgs to determine the direct contact conditions. The sample in the 0-2 foot section will be used unless it is topsoil or gravel. A second unsaturated sample will be collected to verify the soil conditions between 4 and 15 feet bgs, depending on the depth of the water table.

Soil and groundwater samples will be submitted for analysis of VOCs by method 8260B, SVOCs by method 8270, and RCRA Metals by method 6010B.