

**Phase II Environmental Site Assessment  
Sampling and Analysis Plan  
Blackhawk Junction  
Prairie du Chien, Wisconsin**

January 22, 2020

Prepared for:



**Wisconsin Department of Natural Resources**  
101 South Webster Street – RR/5  
P.O. Box 7921  
Madison, WI 53707-7921

Prepared by:



**Bay West LLC**  
5 Empire Drive  
St. Paul, MN 55103

## **Table of Contents**

<b>1.0</b>	<b>INTRODUCTION</b> .....	<b>1-1</b>
<b>2.0</b>	<b>SITE BACKGROUND AND OBJECTIVES</b> .....	<b>2-2</b>
2.1	Site Background .....	2-2
2.2	Phase II ESA Objectives .....	2-3
2.3	Safety and Security.....	2-3
<b>3.0</b>	<b>SCOPE AND RATIONALE OF PHASE II ASSESSMENT</b> .....	<b>3-1</b>
<b>4.0</b>	<b>FIELD INVESTIGATION PROTOCOLS</b> .....	<b>4-1</b>
4.1	Sample Mapping.....	4-1
4.2	Sampling Equipment and Procedures.....	4-1
4.2.1	Soil Borings and Soil Sampling.....	4-1
4.2.2	Groundwater Sampling.....	4-1
4.2.3	Soil Vapor Sampling.....	4-1
4.2.4	Geophysical Survey .....	4-2
4.2.5	Field Documentation .....	4-2
4.2.6	Sample Numbering System.....	4-3
4.3	Laboratory Analytical Procedures .....	4-3
4.3.1	Soil Sample Analytical Methods .....	4-3
4.3.2	Soil Vapor Sample Analytical Methods .....	4-3
4.3.3	Groundwater Sample Analytical Methods.....	4-3
4.3.4	Quality Control Samples.....	4-4
4.3.5	Chain-of-Custody and Sample Shipping Procedures.....	4-5
4.4	Investigation Derived Waste .....	4-6
<b>5.0</b>	<b>REPORTING</b> .....	<b>5-1</b>
<b>6.0</b>	<b>COST ESTIMATE</b> .....	<b>6-1</b>
<b>7.0</b>	<b>SCHEDULE</b> .....	<b>7-1</b>
<b>8.0</b>	<b>REFERENCES</b> .....	<b>8-1</b>

### **List of Tables**

Table 3-0	Sampling Rationale
Table 4-1	Soil Sample Container, Preservation, and Holding Times
Table 4-2	Groundwater Sample Container, Preservation, and Holding Times
Table 4-3	Quality Assurance/Quality Control Sample Collection

### **List of Figures**

Figure 1	Site Location Map
Figure 2	Site Map
Figure 3	Proposed Boring Location Map

## **Acronyms and Abbreviations**

°C .....	degrees Celsius	QAPP .....	Quality Assurance Project Plan
Bay West .....	Bay West LLC	REC .....	Recognized Environmental Condition
CFR .....	Code of Federal Regulations	RCRA.....	Resource Conservation and Recovery Act
CoC .....	chain of custody	SAP.....	Sampling and Analysis Plan
ESA .....	Environmental Site Assessment	SOP .....	standard operating procedure
eV .....	electron-Volt	SSHP .....	Site Safety and Health Plan
GPS.....	global positioning system	USCS .....	United Soil Classification System
HCL .....	Hydrochloric Acid	USEPA.....	U.S. Environmental Protection Agency
HDPE.....	High Density Polyethylene	UST.....	Underground Storage Tank
HNO <sub>3</sub> .....	Nitric Acid	VEC .....	Vapor Encroachment Concern
ID.....	identification	VOA .....	Volatile Organic Analysis
IDW.....	investigation-derived waste	VOCs .....	Volatile Organic Compounds
mL.....	milliliters	WDNR.....	Wisconsin Department of Natural Resources
MS/MSD .....	matrix spike/matrix spike duplicate		
NTP .....	Notice to Proceed		
OSHA .....	Occupational Safety and Health Administration		
oz.....	ounce		
PID.....	photoionization detector		
PVC .....	Polyvinyl Chloride		

## 1.0 INTRODUCTION

Bay West LLC (Bay West) has prepared this Sampling and Analysis Plan (SAP) to conduct a Phase II Environmental Site Assessment (ESA) at the Blackhawk Junction property (the Site) located in Prairie du Chien, Wisconsin. This Phase II proposal is based on the Phase I ESA conducted by Bay West (Bay West, 2019) for the Wisconsin Department of Natural Resources (WDNR).

This SAP is intended to be implemented in conjunction with Bay West's approved programmatic Quality Assurance Project Plan (QAPP) developed to describe the personnel, procedures, and methods for ensuring the quality, accuracy, and precision of data associated with sites assessed through the WDNR Brownfields Assessment Monies (WAM) program.

This SAP summarizes the Site background and problem definition, sample network design, and field investigation and sampling protocols.

This SAP is organized as follows:

- Section 1 – Introduction
- Section 2 – Site Background and Objectives
- Section 3 – Scope and Rationale of Phase II Assessment
- Section 4 – Field Investigation Protocols
- Section 5 – Reporting
- Section 6 – Cost Estimate
- Section 7 – Schedule
- Section 8 – References

### **Interested Parties:**

<u>Property Owner Representative:</u> Mr. Garth Frable Planner, City of Prairie du Chien 214 East Blackhawk Avenue Prairie du Chien, Wisconsin 53821 Phone: (608) 326-8024	<u>Consultant:</u> Bay West 5 Empire Drive St. Paul, MN 55103 Contact: Rick Van Allen rickv@baywest.com
<u>Regulatory Agency (Project Manager):</u> WDNR 1300 W Clairemont Ave Crawford, WI 54701 Contact: Matt Vitale Matthew.Vitale@wisconsin.gov	<u>Regulatory Agency (Project Coordinator):</u> WDNR 101 South Webster Street – RR/5 Madison, WI 53707-7921 Contact: Tom Coogan Thomas.Coogan@wisconsin.gov

## **2.0 SITE BACKGROUND AND OBJECTIVES**

### **2.1 Site Background**

The Site property is located at 700 East Blackhawk Avenue, Prairie du Chien, Crawford County, Wisconsin 54738 (**Figure 1**), and is approximately 9.13 acres in size. The Property is a largely vacated site that was built over a 20-year period beginning in 1962. It has historically operated with multiple commercial, service and retail operations, with multiple drycleaners functioning onsite. The Property is currently improved with two buildings: one approximately 60,000 square foot vacant building and one approximately 20,000 square foot commercial building occupied by H & R Block, Mississippi Meats, and Associated Bank (**Figure 2**).

Per the Crawford County Interactive Parcel Application Map, the parcel identification numbers (PIDs) for the Property are 27107490000 & 27107500000. The center of the Property is located at latitude 43.0512140° and longitude -91.1368730° (decimal degrees). The Property is not platted through the Public Land Survey System based on its location in the un-platted City of Prairie du Chien.

The Property is predominantly flat, with slight gradient to the west. The topography of the surrounding area is predominantly flat with a general gradient westward towards the Mississippi River. The surrounding area consists of residential and municipal properties. Specific adjacent property uses are described below:

<b>North</b>	East Blackhawk Avenue followed by single and multi-family residences.
<b>South</b>	East Wisconsin Street followed by single-family residences.
<b>East</b>	NE adjoining single-family residence, remaining east Property boundary bound by alley way, followed by Fire Department building, single & multi-family residences, and Blackhawk Junction Park.
<b>West</b>	S Dousman St followed by single-family residential and vacant land.

The property is improved with a shopping center and parking lots, with one of the two remaining on-site buildings currently occupied, addressed as 700 E Blackhawk Ave. Current Property tenants in the 700 E Blackhawk Ave building include Associated Bank, H & R Block, Mississippi Meats, and Suppz Gym. The other building was vacant at the time of the Bay West Phase I ESA in October 2019.

Available historical information indicates the Property has been improved by commercial retail buildings since the 1960s. It has historically operated with multiple commercial, service and retail operations, including a car wash/gasoline service station and several dry cleaning tenants.

In 1991, tetrachloroethene (PCE) was detected in the soil and groundwater on the site after chlorinated volatile organic compound (CVOC) contamination was detected in two nearby municipal wells. Limited assessments were conducted in 2009-2010, but the nature, degree, and extent of contamination is unknown; providing a barrier to redevelopment. A fire destroyed a significant part of the larger building in 2014 including the area where the drycleaners had been located. Crawford County acquired the Site through tax forfeiture in June 2019.

In October 2019 Bay West conducted a Phase I ESA on the Site on behalf of the WDNR. Bay West's Phase I report identified the following recognized environmental conditions (RECs) and vapor encroachment concerns (VECs) associated with the Site:

**Phase II Environmental Site Assessment Sampling and Analysis Plan**  
*Blackhawk Junction, Prairie du Chien, Wisconsin*

---

- The documented presence of PCE and other CVOCs in soil, groundwater, and soil vapor at locations onsite and in the surrounding area represents a REC and a VEC for the Property.
- The potential for a release from USTs associated with a former gasoline service station/car wash and associated pump island located in the northeastern portion of the Property represent a REC and VEC for the Property.

Bay West identified the following environmental concerns associated with the property that do not constitute RECs; however, may require assessment prior to demolition of the structure and Property redevelopment:

- The presence of asbestos was previously reported at the Property building by the WDNR Asbestos Notification Listing database; and
- Poly-chlorinated biphenyls (PCBs) may be present in the fluorescent light ballasts observed in the Property buildings.

## **2.2 Phase II ESA Objectives**

The primary objective of this Phase II ESA is to assess for the presence or absence of contaminants potentially associated with the former gasoline USTs and with the former dry cleaning operations. Previous investigations have detected PCE in soil, groundwater, and soil vapor, although their vertical and horizontal extents have not yet been determined. Based on the time of operations of the former car wash and filling station, leaded gasoline impacts to soil and groundwater may exist.

Bay West has developed a sampling design and protocol to provide aerial coverage of the assumed location of the reported USTs and former dry cleaning operations to assess for contaminants of concern associated with the RECs and VECs identified in the Phase I ESA (Bay West, 2019).

Specifics of the sampling design are provided in **Section 3.0** and the soil, groundwater, and soil gas sampling methods are provided in **Section 4.0**.

## **2.3 Safety and Security**

Site safety and security is addressed in the Site Safety and Health Plan (SSHP). All field staff will maintain health and safety training to ensure compliance with Occupational Safety and Health Administration (OSHA) as established in 29 Code of Federal Regulations (CFR) 1910.120 and 29 CFR 1910.126 (as applicable).

### **3.0 SCOPE AND RATIONALE OF PHASE II ASSESSMENT**

The Phase I ESA (Bay West, 2019) identified known chlorinated solvent contamination and identified a potential source of petroleum contamination at the Property. To assess these areas of the property, Bay West will complete the following scope of work:

- Perform a geophysical survey in the location of the historical gasoline service station to evaluate the presence or absence of the two gasoline USTs noted in the City of Prairie du Chien Building Department blueprints. Bay West is unaware of any documentation indicating that these tanks were removed or that post-removal confirmation soil sampling was conducted. The geophysical survey will be non-intrusive and utilize electromagnetic technologies to identify potential subsurface targets representative of the USTs. The results of the geophysical survey will be used to further narrow the scope and location of soil borings advanced at the Property, as described in the following bullet point. Bay West proposes to hire a subcontractor to complete the geophysical survey over the approximately 7,500 square foot area depicted on **Figure 3**.
- Advance up to eight (8) soil borings on the Property in the vicinity of the former car wash/filling station and dry cleaners. The eight proposed boring locations are depicted on **Figure 3** and summarized below:
  - Advance four soil borings (SB-1 through SB-4) to a depth of 30 feet bg in the vicinity of the former dry cleaning in order to complete horizontal and vertical delineation of previously-identified PCE impacts to soil. Proposed soil boring locations include to the east, west, and south of GP-1 through GP-7 (Ayers, 2009 and 2010) and down-gradient of the former washer, northwest of GP-6 and southwest of GP-7.
  - Advance four soil borings (SB-5 through SB-8) to a depth of 15 feet below grade (bg) in the vicinity of the former car wash/filling station based on the results of the geophysical survey. Potential subsurface sample targets of interest include USTs, former pump island(s), and fill/return product lines. If evidence of former or remaining UST system features are not detected during the geophysical survey, borings will be placed by the 1,000-gallon UST (1 boring), the 2,000-gallon UST (1 boring), and the pump island (2 borings) as depicted on the available blueprint (Bay West, 2019).

Soil samples will be collected continuously from the ground surface to the termination depth of the boring at each boring location for sample logging, field screening, soil classification, and laboratory analysis. The soil samples will be screened in the field for the presence of organic vapors using a photoionization detector (PID) by the ziplock bag headspace screening technique.

Additional soil analytical samples will be collected from the depth interval of greatest PID reading (and/or visual/olfactory evidence of release) if impacts are evident; if elevated PID readings or other evidence of release are evident, a sample will be collected from either the interval just above the groundwater interface (SB-1 through SB-4) or the native/fill soil interface (SB-5 through SB-8). The expected depth of the water table is approximately 25 feet below grade based on previous investigations conducted at the Property (Ayers, 2009 and 2010).

Soil analytical samples collected from each boring will be submitted for laboratory analysis of VOCs; samples collected from the former car wash/filling station (SB-5 through SB-8) will additionally be analyzed for diesel-range organics (DRO) and the Resource Conservation and Recovery Act (RCRA) metals.

**Phase II Environmental Site Assessment Sampling and Analysis Plan**  
*Blackhawk Junction, Prairie du Chien, Wisconsin*

- Collect groundwater samples at proposed borings SB-1 through SB-4 (see **Figure 3**). Groundwater samples will be collected by advancing the direct push boring to the local water table depth (assumed to be approximately 25 feet bg) and placing a temporary disposable polyvinyl chloride (PVC) well screen in the open borehole. The groundwater samples will be submitted for laboratory analysis of VOCs by US EPA Method 8260.
- Advance six soil vapor borings to 8 feet below grade and collect soil vapor samples in close proximity (within 5 lateral feet) from SB-1 through SB-4 (SV-1 through SV-4, see **Figure 3**) to assess general soil vapor conditions in the southern portion of the Property where historically elevated PCE detections in soil vapor were reported. The soil vapor samples will be submitted for laboratory analysis of VOCs by US EPA Method TO-15.

**Table 3-0** provides a summary of boring locations, sample matrices, sample depths, and rationale.

**Table 3-0 Sampling Rationale**

Boring ID	Rationale	Matrix	Depth (ft)	Analysis
SB-1	Assess soil quality east of previously-advanced GP-1 through GP-7	Soil	Highest PID or ~23-25	VOCs
	Assess groundwater quality east of previously-advanced GP-1 through GP-7	Water	~25-30	VOCs
SV-1	Assess soil vapor quality near SB-1	Soil Vapor	8	VOCs
SB-2	Assess soil quality south of previously-advanced GP-1 through GP-7	Soil	Highest PID or ~23-25	VOCs
	Assess groundwater quality south of previously-advanced GP-1 through GP-7	Water	~25-30	VOCs
SV-2	Assess soil vapor quality near SB-2	Soil Vapor	8	VOCs
SB-3	Assess soil quality west of previously-advanced GP-1 through GP-7	Soil	Highest PID or ~23-25	VOCs
	Assess groundwater quality west of previously-advanced GP-1 through GP-7	Water	~25-30	VOCs
SV-3	Assess soil vapor quality near SB-3	Soil Vapor	8	VOCs
SB-4	Assess shallow soil quality near assumed former dry cleaning washer	Soil	Highest PID or ~23-25	VOCs
	Assess groundwater quality near assumed former dry cleaning washer	Water	~25-30	VOCs
SV-4	Assess soil vapor quality near SB-4	Soil Vapor	8	VOCs
SB-5	Assess soil quality at the assumed location of former 1,000-gallon UST	Soil	Highest PID or ~4-8	RCRA metals, VOCs, DRO
SV-5	Assess soil vapor quality near SB-5	Soil Vapor	8	VOCs
SB-6	Assess soil quality at the assumed location of former 2,000-gallon UST	Soil	Highest PID or ~4-8	RCRA metals, VOCs, DRO
SB-7	Assess soil quality at the assumed location of former pump island north terminus	Soil	Highest PID or ~4-8	RCRA metals, VOCs, DRO
SV-6	Assess soil vapor quality near SB-7	Soil Vapor	8	VOCs
SB-8	Assess soil quality at the assumed location of former pump island south terminus	Soil	Highest PID or ~4-8	RCRA metals, VOCs, DRO



## **4.0 FIELD INVESTIGATION PROTOCOLS**

The field investigation activities/procedures presented within the following sections will be conducted in accordance with the approved WDNR programmatic QAPP (Bay West, 2017), and applicable Bay West SOPs (attached as Appendix 1 to the programmatic QAPP), and this SAP.

### **4.1 Sample Mapping**

A sub-meter global positioning system (GPS) unit will be used to identify and map all sample locations. If other significant features of environmental concern are noted on the Site during the field work, these features will be mapped as well with a description, photograph, and comments in the field log.

### **4.2 Sampling Equipment and Procedures**

#### 4.2.1 Soil Borings and Soil Sampling

Soil borings will be completed using a direct push drill rig equipped with a 5-foot long, 2-inch diameter stainless-steel core sampler fitted with disposable acetate liners. The sampler will be hydraulically advanced at 5-foot intervals to the termination depth of the boring.

The Bay West field technician will remove the disposable acetate liner from the sampler and cut the liner open with a utility knife. Immediately upon opening the acetate liner, soil samples will be collected for laboratory analysis at the depths and for the analytes as described in **Section 3.0**. Bay West staff will place soil immediately into laboratory supplied sample containers, label the samples and store them on ice for transport to the analytical laboratory.

Following lab sample collection, soil from the liner will be collected at 2.5-foot intervals for field headspace screening using a photoionization detector (PID) equipped with a 10.6 eV lamp. Following headspace screening the field technician will log the boring which will consist of describing soil type, grain size, moisture content, field indications of contamination (staining, odors, or the presence of slag, cinders, etc.) in accordance with Unified Soil Classification System (USCS). Soil sampling activities will be completed in accordance with the Bay West SOPs contained in Appendix 1 of the programmatic QAPP.

#### 4.2.2 Groundwater Sampling

Groundwater samples will be collected at the boring locations described in **Section 3.0** by setting a temporary, 1-inch diameter, PVC screen and casing in the borehole. The samples will be collected using a peristaltic pump equipped with dedicated polyethylene sample tubing that will be discarded between groundwater sampling locations.

Bay West staff will transfer groundwater immediately into laboratory supplied sample containers, label the samples and store them on ice for transport to the analytical laboratory. Field sampling datasheets and the field log will be completed by the Bay West field technician documenting the sample collection activities. Groundwater sampling activities will be completed in accordance with the Bay West SOPs contained in Appendix 1 of the programmatic QAPP.

#### 4.2.3 Soil Vapor Sampling

Soil vapor samples will be collected using direct-push technology at depths of approximately 8-9 fbg to assess the risk to residential receptors with basements. Soil vapor samples will be collected using 1-liter Summa canisters fitted with flow controllers set to collect approximately 0.2 liters per minute. The samples will be submitted to Pace Analytical for analysis of VOCs by EPA method TO-15.

#### 4.2.4 Geophysical Survey

The geophysical survey will be employed to attempt to locate signs of tank-related items such as product piping, vent pipes, or former tank pits. The 7,500 square foot area will be scanned in a grid pattern. The exact methods and scan spacing will be determined onsite depending on the conditions and the types of objects being searched for. The findings will be painted on the ground surface at the time of the scanning and detailed in a final report. The area of the scan will be laid out, marked, and cleared of obstructions prior to completion of the data collection.

Geophysical data will be collected utilizing one or more of the technologies summarized below<sup>1</sup>:

400 MHz Ground Penetrating Radar (GPR). The antenna is mounted in a stroller frame which rolls over the surface. The surface needs to be reasonably smooth and unobstructed in order to obtain readable scans. Obstructions such as curbs, landscaping, and vegetation will limit the feasibility of GPR. The data is displayed on a screen and marked in the field in real time. GPR works by sending pulses of energy into a material and recording the strength and the time required for the return of the reflected signal. Reflections are produced when the energy pulses enter into a material with different electrical properties from the material it left. The strength of the reflection is determined by the contrast in signal speed between the two materials. The total depth achieved can be as much as 8' or more with this antenna but can vary widely depending on the conductivity of the materials. Conductive soil types such as clay may limit depths to 3 feet or less.

Magnetometer. The magnetometer detects the magnetic field of a ferromagnetic object. It responds to the difference in the magnetic field between two sensors. It is interpreted in the field by listening to changes in frequency as emitted by a speaker on the device.

Electromagnetic Pipe Locator. The EM locator can passively detect the electromagnetic fields from live AC power or radio signals travelling along some conductive utilities. It can also be used in conjunction with a transmitter to connect directly to accessible, metallic pipes, risers, or tracer wires. A current is sent through the pipe or tracer wire at a specific frequency and the resulting EM field can then be detected by the receiver. A utility's ability to be located depends on a variety of factors including access to the utility, conductivity, grounding, interference from other fields, and many others. Depths provided should always be treated as estimates as their accuracy can be affected by multiple factors. This technology will only be employed at the Site if piping suspected of being tank system related is present and accessible above the ground surface.

Concurrent with the geophysical survey, a private utility locate will be conducted in the vicinity of each on-site boring location prior to drilling activities. The private utility locate will employ similar methods as the geophysical survey in locating buried utility features.

#### 4.2.5 Field Documentation

A field notebook or electronic log will be used to record field-collected data. Data to be recorded includes the following:

- The date, names of sampling crew members, and general weather conditions will be recorded on a daily basis;
- A description of daily field activities, sample collection information, other pertinent observations, and any deviations from the approved SAP.

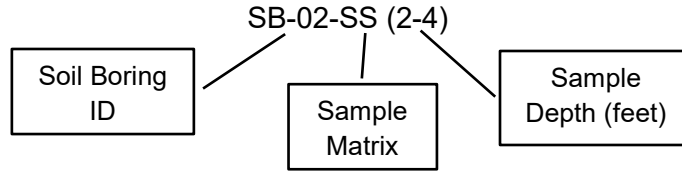
---

<sup>1</sup> Ground Penetrating Radar Systems, LLC. Proposal provided to Bay West LLC, dated December 10, 2019.

**Phase II Environmental Site Assessment Sampling and Analysis Plan**  
*Blackhawk Junction, Prairie du Chien, Wisconsin*

**4.2.6 Sample Numbering System**

Soil and groundwater samples collected during the Phase II assessment will be identified using a sample identification protocol consisting of the boring identification number, the sample matrix, and the sample depth in feet below grade. An example is shown below:



Sample matrix: SS – soil sample, GW – groundwater sample, SV – soil vapor

**4.3 Laboratory Analytical Procedures**

**4.3.1 Soil Sample Analytical Methods**

Bay West will submit all soil samples for analysis of VOCs, with samples collected adjacent the assumed former car wash/filling station for additional analysis of RCRA metals, and DRO. Laboratory analytical methods, container requirements, preservation, and holding times are summarized in the **Table 4-1**:

**Table 4-1 Soil Sample Container, Preservation, and Holding Times**

Analysis (EPA Method)	Container	Preservation	Holding Time
Metals (6010C & 7471B)	1 – 4 oz amber glass jar	Cool to < 6° C, but not frozen	6 months; mercury 28 days;
VOCs (8260B)	2 - tared 40 mL VOA vials; 1 – 50 mL plastic jar – percent moisture	10 mL methanol, < 6° C, but not frozen	14 days
DRO (8015)	2 – tared 4 oz amber glass jars	Cool to < 6° C, but not frozen	14 days

**4.3.2 Soil Vapor Sample Analytical Methods**

Bay West will submit soil vapor samples collected near the area of previously-identified PCE impacts to soil gas for analysis of VOCs. Laboratory analytical methods, container requirements, preservation, and holding times are summarized in **Table 4-2**.

**Table 4-2 Soil Vapor Sample Container, Preservation, and Holding Times**

Analysis	Container	Preservation	Holding Time
VOCs (TO-15)	1 Liter Summa Cannister	None	14 days

**4.3.3 Groundwater Sample Analytical Methods**

Bay West will submit groundwater samples collected in the vicinity of the former dry cleaning operations for analysis of VOCs. Laboratory analytical methods, container requirements, preservation, and holding times are summarized in **Table 4-3**.

**Phase II Environmental Site Assessment Sampling and Analysis Plan**  
*Blackhawk Junction, Prairie du Chien, Wisconsin*

---

**Table 4-3 Groundwater Sample Container, Preservation, and Holding Times**

<b>Analysis</b>	<b>Container</b>	<b>Preservation</b>	<b>Holding Time</b>
VOCs (8260B)	3 – 40 mL level 2 glass VOA vials	HCl to pH <2, cool to < 6° C, but not frozen	14 days

**4.3.4 Quality Control Samples**

In accordance with the programmatic QAPP and updates (Bay West, 2017), Bay West will collect field duplicate samples for analysis using identical recovery techniques and treated in an identical manner during storage, transportation, and analysis. Field duplicate samples will be collected at a frequency of 1 per 20 samples per matrix per analyte. Since less than twenty samples of each matrix (soil and groundwater) will be collected, one field duplicate will be collected for each matrix.

Matrix spike/matrix spike duplicate (MS/MSDs) samples will be collected at a frequency of 1 per 20 samples per matrix per analyte. Field equipment rinsate blanks will not be collected because all disposable sampling equipment will be used, instead Bay West will submit one field blank for the project, per matrix per analyte.

One trip blank will be analyzed per cooler containing groundwater samples for VOC analysis.

**Phase II Environmental Site Assessment Sampling and Analysis Plan**  
*Blackhawk Junction, Prairie du Chien, Wisconsin*

**Table 4-3 Quality Assurance/Quality Control Sample Collection**

	QC Sample Type	Frequency of Sample/Analysis	Details
<b>Field Samples</b>	Duplicate Samples	1 duplicate per 20 samples per matrix, or 1 duplicate per sample matrix if fewer than 20 samples	Duplicate sample to be collected by the same methods at the same time as the original sample. Used to verify sample and analytical reproducibility.
	Field Blanks	1 field blank per bottle lot used, or one per site, whichever is more frequent	For all disposable equipment/single use sampling equipment, field blanks will be collected at a rate of 1 per bottle lot or per site, whichever is more frequent.
	Trip Blanks	1 trip blank per cooler containing samples for VOC analysis for water samples	Laboratory prepared organic-free blank to assess potential contamination during sample container shipment and storage, for VOCs in water only.
		1 trip blank per field sampling event, or per lot of bottles for soils, whichever is more frequent	If soil VOC samples are to be preserved with methanol and/or sodium bisulfate, one set of preserved vials will be included to assess potential contamination during sample container shipment and storage.
	Matrix Spike/ Matrix Spike Duplicate	1 MS/MSD per 20 or fewer samples per matrix	Laboratory spiked sample to evaluate matrix and measurement methodology.

**4.3.5 Chain-of-Custody and Sample Shipping Procedures**

Chain of custody (CoC) forms will be used to track all samples from the time of sampling to the arrival of samples at the laboratory. Every sample container being shipped, hand delivered to, or picked up by the laboratory will contain a CoC form. Field personnel will maintain their copy while the other copies are enclosed in a waterproof enclosure within the shipping container. The laboratory, upon receiving the samples, will sign the remaining copies and keep one copy for its records. Additional information on the CoC is included in the Bay West SOP *Sample Custody* included in **Appendix 1** of the programmatic QAPP.

To ensure that samples will arrive at the laboratory without breakage and the CoC intact, packaging and shipping of all samples will be completed in accordance with Bay West SOP *Packaging and Shipping of Environmental Samples* included in **Appendix 1** of the programmatic QAPP.

#### **4.4 Investigation Derived Waste**

Soil cuttings generated during drilling activities will be minimal due to the direct push soil coring methodology. Soil remaining following analytical sampling will be returned to the borehole or thin-spread on the ground surface at the boring location.

Groundwater sampling will occur immediately following boring advancement and will not result in the generation of excess purge water or development water.

Spent personal protective equipment such as sampling gloves, excess glassware, paper towels, etc. will be placed in trash bags and disposed of as municipal solid waste in a trash receptacle at Bay West's office in St. Paul, Minnesota.

## **5.0 REPORTING**

Following completion of field activities and receipt of the final laboratory data, Bay West will prepare a comprehensive report presenting the results of the Phase II ESA. Laboratory results for soil samples collected on the Site will be compared to Wis. Admin. Code § NR 720 residual contaminant levels (RCLs). Laboratory results for groundwater samples collected on the Site will be compared to Wis. Admin. Code § NR 140 Enforcement Standards (ES) and Preventive Action Limits (PAL). Soil vapor results will be compared to WDNR Sub-Slab Vapor Risk Screening Levels (VRSLs) for Residential and Small Commercial property uses.

The report will include sections on the Site background describing the site history and previous environmental assessment work, the scope of the field work, the results of field screening and laboratory analysis, quality assurance/quality control data (including preparation of a Data Assessment Report), and conclusions with recommendations for the path forward.

A draft report in electronic format will be submitted to the WDNR Program Manager/Project Manager for their review and comment prior to submitting a final report. We anticipate that bound copies and electronic copies of the final report will be submitted to the WDNR. Specifically, final copies of the report will be forwarded to:

1. Property Owner – Garth Frable / City of Prairie du Chien (1 bound copy and CD)
2. WDNR Project Coordinator – Tom Coogan (1 bound copy plus 2 CDs)
3. WDNR Project Manager – Matt Vitale (1 bound copy and CD)

## **6.0 COST ESTIMATE**

This cost proposal has been prepared based upon information currently available to Bay West and includes the tasks described above. Bay West will complete the Phase II ESA on a time & materials basis for a fee of **\$22,208.03** in accordance with the fee schedule contained in our response to the WDNR's June 2016 Request for Statements of Qualification. A summary of our costs by task is presented below. A detailed cost breakdown is also attached for your review.

### **Cost Estimate Summary**

<b>Task</b>	<b>Fee</b>
Phase II ESA	\$17,623.03
Final Report	\$4,585.00
<b>Project Total:</b>	<b>\$22,208.03</b>



## 7.0 SCHEDULE

The schedule below presents estimated timeframes to complete the project work. Actual calendar dates are dependent on the date that Bay West receives an executed contract and notice to proceed.

<b>Task</b>	<b>Typical Duration</b>
Field Work Coordination, Scheduling, and Preparation	30 calendar days upon receipt of executed contract and NTP
Phase II ESA	2 calendar days including prep, mob, field work, and demob
Final Report	30 calendar days upon receipt of final laboratory data

If you have any questions or concerns regarding this Sampling and Analysis Plan, please contact me at [rkv@baywest.com](mailto:rkv@baywest.com) or Erik Nimlos at [enimlos@baywest.com](mailto:enimlos@baywest.com).

Respectfully,



Rick Van Allen, PG (MN)  
Senior Project Manager



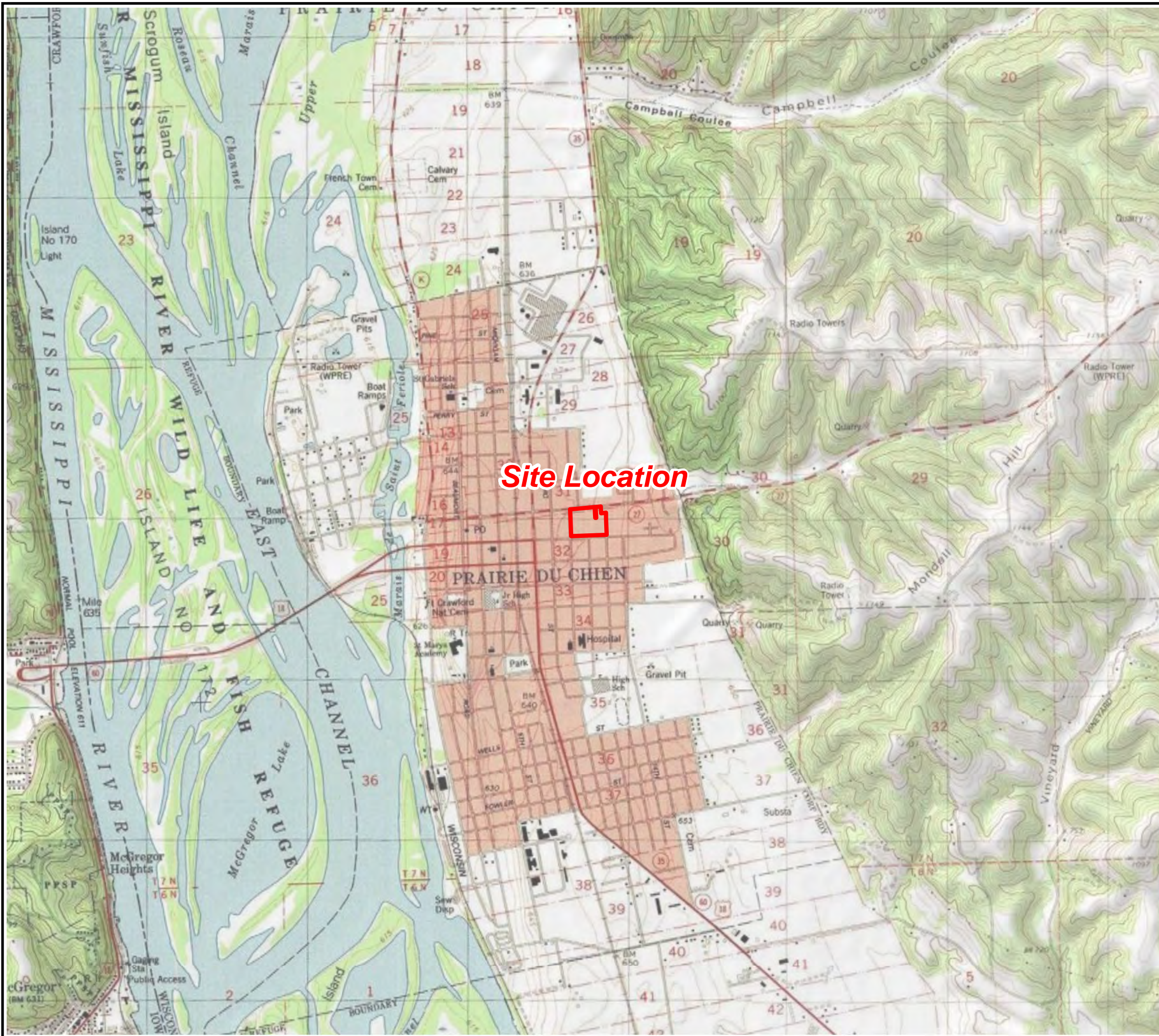
Erik Nimlos, PG (MN)  
Project Geologist

## **8.0 REFERENCES**

- Bay West LLC (Bay West), 2019. Phase I Environmental Site Assessment, Blackhawk Junction, S10405 County Road HHI, Prairie du Chien, WI 54738. August.
- Bay West, 2017. U.S. Environmental Protection Agency, Hazardous Substances and Petroleum. Wisconsin Department of Natural Resources, Wisconsin DNR Brownfields Program, Quality Assurance Project Plan, August.

## **Figures**

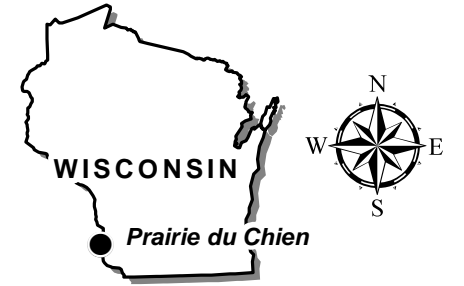
Y:\Clients\WISCONSIN\_DEPT\_OF\_NATURAL\_RESOURCES\Blackhawk\_Junction\MapDocs\190732\001\_Phase\_I\_ESA\190732\FIG 1 Site Location Map.mxd



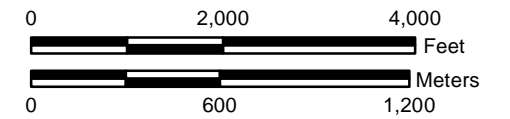
# Figure 1 Site Location Map

## Blackhawk Junction Phase I ESA

700 East Blackhawk Avenue  
Prairie du Chien, WI 53821



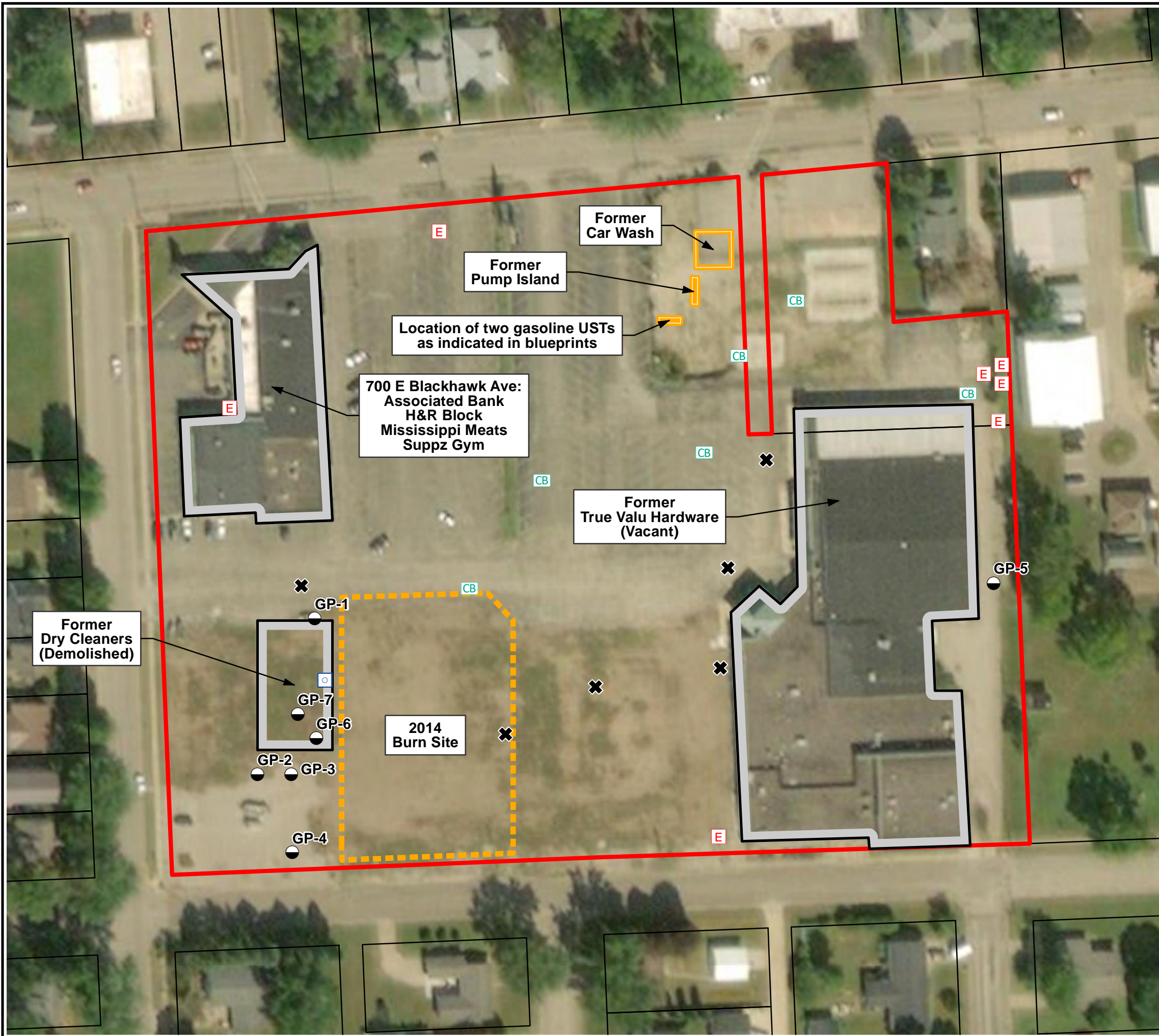
Map Projection: NAD 1983 UTM Zone 15N, Meters  
Basemap: National Geographic Society, i-cubed



 Site Location



Y:\Clients\WISCONSIN\_DEPT\_OF\_NATURAL\_RESOURCES\Blackhawk\_Junction\MapDocs\190732\1001\_Phase\_I\_ESA\190732 FIG 2 Site Map.mxd

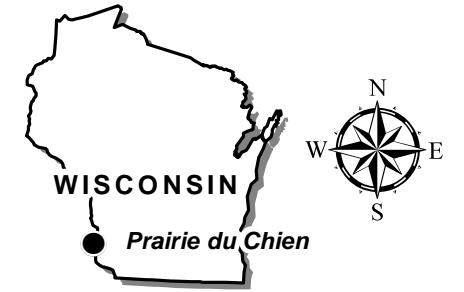


# Figure 2

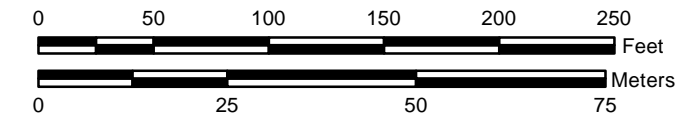
## Site Map

### Blackhawk Junction Phase I ESA

700 East Blackhawk Avenue  
Prairie du Chien, WI 53821



Map Projection: NAD 1983 UTM Zone 15N, Meters  
Basemap: ESRI World Imagery WMS, 9/17/2018



- Previous Soil Borings (Ayres 2009/2010)
- Catch Basin
- Electrical Transformer
- PVC Clean Out
- Debris Pile
- Site Features
- 2014 Burn Site (Approximate)
- Site Boundary
- Parcel Boundaries



Y:\Clients\WISCONSIN\_DEPT\_OF\_NATURAL\_RESOURCES\Blackhawk\_Junction\MapDocs\P191231\1001\_Phase\_II\_ESAP\P1912311001\_FIG 3 Proposed Sampling Locations.mxd

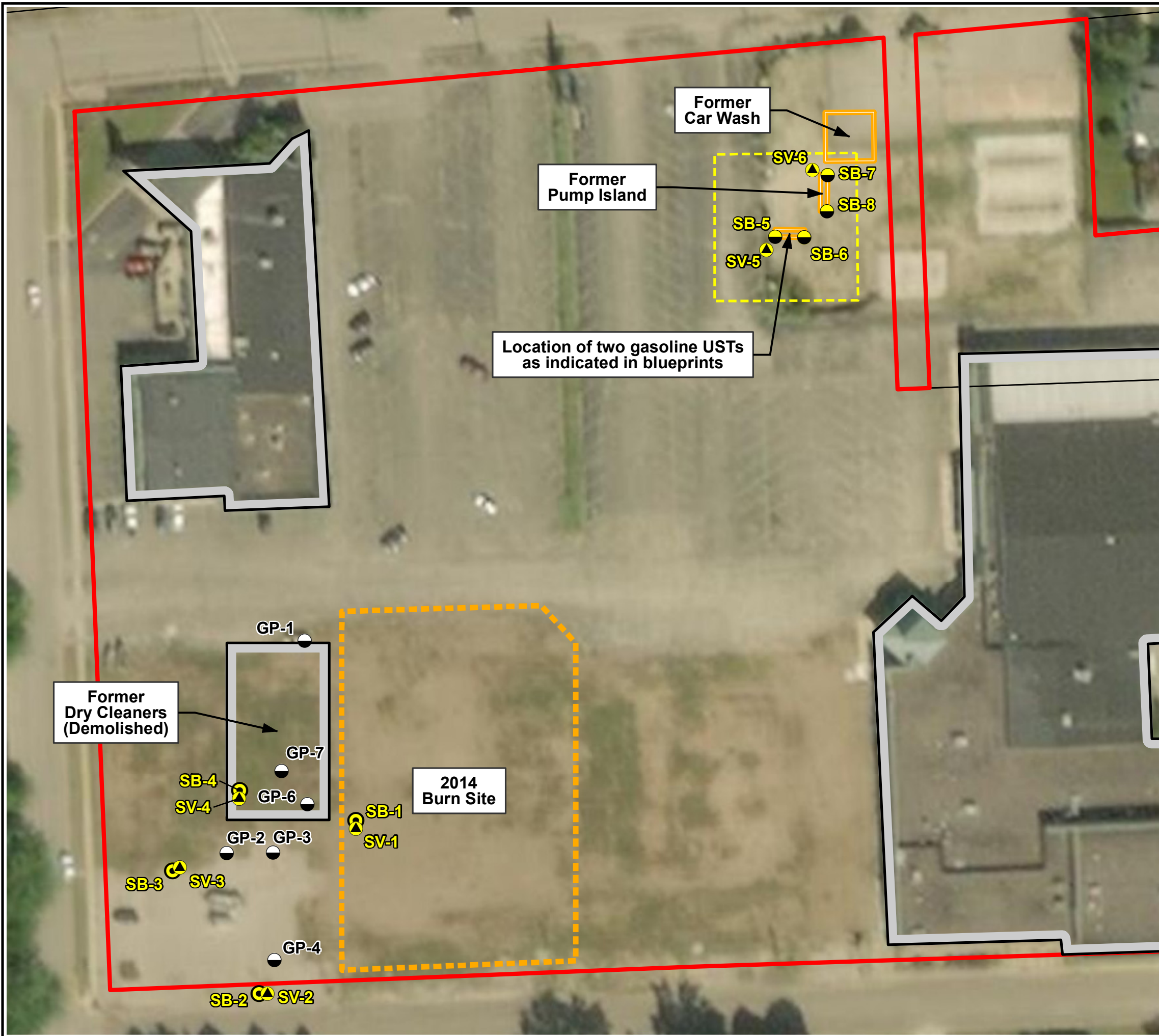
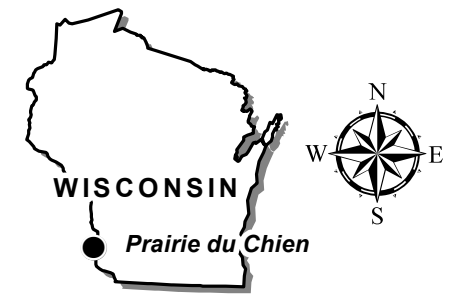


Figure 3

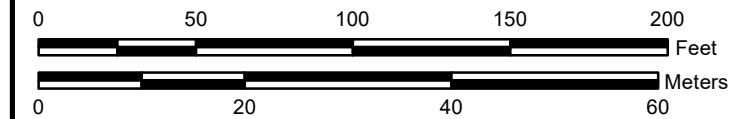
Proposed Sampling Locations

Blackhawk Junction Phase II ESA

700 East Blackhawk Avenue  
Prairie du Chien, WI 53821



Map Projection: NAD 1983 UTM Zone 15N, Meters  
Basemap: ESRI World Imagery WMS, 9/17/2018



- Previous Soil Borings (Ayres 2009/2010)
- Proposed Soil Boring (Bay West)
- Proposed Soil and Groundwater Sample (Bay West)
- Proposed Soil Vapor Sample (Bay West)
- Geophysical Investigation Area of Concern
- Site Features
- 2014 Burn Site (Approximate)
- Site Boundary
- Parcel Boundaries



## **Cost Estimate**

**Bay West LLC**  
**Work Plan / Cost Proposal Spreadsheet**

Site Name: Blackhawk Junction  
 Site Location: Prairie du Chien, Wisconsin  
 Bay West Proposal #: P191231

TASK	Unit Rate	Frequency	Hours							Other	Contractors	Total Value	Time Total	Comments
			Project Manager	Staff Professional II	Staff Professional I	CADD Specialist	Field Technician III	Field Technician II	Office Support	Owned Equipment and Inventory	Sub-Contractors			
			\$110.00	\$80.00	\$70.00	\$60.00	\$65.00	\$55.00	\$45.00	(\$)	(\$)			
<b>Task 1 - Phase II Assessment</b>														
L		Project Coordination, field prep, mob, demob, field work		10.00		30.00	2.00	30.00				\$ 5,270.00	72.00	two field staff mobilized from St. Paul
T		Meals	\$55.00	3.0								\$ 165.00		Estimated, actual expenses incurred with receipts
		Lodging	\$96.00	2								\$ 192.00		
E	3300m	Service Vehicle, Truck Mileage - federal IRS rate	\$0.575	425.0							\$ 244.38	\$ 244.38		~210 miles round trip plus local travel
	2000	Meter, P.I.D.	\$100.00	1.5							\$ 150.00	\$ 150.00		
	2755	Pump, Peristaltic	\$50.00	1.0							\$ 50.00	\$ 50.00		
	5670	Tubing, Sample - Well Development	\$0.50	140.0							\$ 70.00	\$ 70.00		4 borings to water, 35 feet per boring
	2300	Meter, Water Level	\$30.00	1.0							\$ 30.00	\$ 30.00		
	6502	GPS, Sub-meter accuracy	\$75.00	1.0							\$ 75.00	\$ 75.00		
	159	Soil Sampling Equipment	\$65.00	1.0							\$ 65.00	\$ 65.00		sampling equipment, gloves, ziplocks, etc
S		Drilling Contractor	\$5,561.00	1								\$ 5,561.00	\$ 5,561.00	
		Geophysical Contractor	\$2,200.00	1								\$ 2,200.00	\$ 2,200.00	
		Lab (Soil - VOCs)	\$70.00	8								\$ 560.00	\$ 560.00	
		Lab (Soil - RCRA Metals)	\$65.00	4								\$ 260.00	\$ 260.00	
		Lab (Soil - DRO)	\$21.00	4								\$ 84.00	\$ 84.00	
		Lab (Soil - GRO)	\$27.00	4								\$ 108.00	\$ 108.00	
		Lab (Soil Vapor - VOCs)	\$215.00	6								\$ 1,290.00	\$ 1,290.00	
		Lab (Soil Vapor - flow controller)	\$25.00	6								\$ 150.00	\$ 150.00	
		Lab (Groundwater - VOCs)	\$70.00	8								\$ 560.00	\$ 560.00	
		5% markup on subcontractors	\$538.65	1								\$ 538.65	\$ 538.65	
<b>Total Task 1 - Phase II Assessment</b>				\$ 1,100.00	\$ -	\$ 2,100.00	\$ 120.00	\$ 1,950.00	\$ -	\$ -	\$ 684.38	\$ 11,311.65	\$ 17,623.03	72.00
<b>Task 2 - Final Report</b>														
L		Final Report Prep		8.00	40.00		4.00		4.00	1.00		\$ 4,585.00	57.00	Staff pro time includes chemist time to complete data validation and prepare the Data Assessment Report
<b>Total Task 2 - Final Report</b>				\$ 880.00	\$ 3,200.00	\$ -	\$ 240.00	\$ -	\$ 220.00	\$ 45.00	\$ -	\$ -	\$ 4,585.00	57.00
<b>Total Cost Estimate</b>				\$ 1,980.00	\$ 3,200.00	\$ 2,100.00	\$ 360.00	\$ 1,950.00	\$ 220.00	\$ 45.00	\$ 684.38	\$ 11,311.65	\$ 22,208.03	129.00