

Materials Management Plan

700 East Blackhawk Avenue
Prairie du Chien, Wisconsin
BRRTS #02-12-552357

Prepared for:

Redevelopment Authority (RDA)
City of Prairie du Chien
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SCS ENGINEERS

25221094.00 | September 29, 2021

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1.0 INTRODUCTION

This Materials Management Plan (MMP) provides guidance for the management of chlorinated solvent-contaminated soil and vapor during the redevelopment of the Property at 700 East Blackhawk Avenue, Prairie du Chien (**Figures 1 and 2**). This MMP relates specifically to the southwest portion of the Property being redeveloped in the vicinity of the former Blackhawk Drycleaners. The redevelopment plans, former dry cleaner location, and soil sampling results are shown on **Figure 3**.

1.1 SITE HISTORY

The following site history is from the Bay West, LLC (Bay West) 2019 Phase 1 Environmental Site Assessment (ESA):

...the Property, comprising approximately 9.13 acres, 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.

Several historical Property tenant entities operated a dry cleaner, collectively referred to as Blackhawk Dry Cleaners, in Suite 4 of the former Property south building since at least January 1997 until April 2014, although city directory records indicate that dry cleaning operations may have existed at the Property as early as 1969.

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.

2.0 PREVIOUS INVESTIGATIONS

2.1 CITY OF PRAIRIE DU CHIEN

Work for the City in 1991 was performed by Advent Environmental Services, Inc. (AESI) to evaluate potential sources of CVOCs in the area due to the presence of PCE discovered in two municipal wells located to the east of the subject Property. Work included the following:

- Sampling of municipal wells for PCE.
- Advancement of hollow stem auger soil borings for construction of monitoring wells MW-1 through MW-5. Soil samples and groundwater samples were collected from the monitoring well borings and wells. We understand that the AESI wells were subsequently abandoned.
- Performing water level measurements at monitoring wells to evaluate groundwater flow and the influence of municipal well pumping.
- Installation and sampling of 56 soil gas probes for analysis of PCE.

Work for the City in 2009 and 2010 was performed by Ayres Associates (Ayres) to evaluate for the presence of CVOCs in soil and groundwater near Blackhawk Drycleaners. Work included advancement of direct push borings GP-1 through GP-7 for collection of soil and groundwater samples.

2.2 WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Work for the Wisconsin Department of Natural Resources (WDNR) was performed by Bay West under a U.S. Environmental Protection Agency (USEPA) brownfield grant beginning in 2019 and included the following:

- Phase 1 Environmental Site Assessment (ESA).
- Phase 2 ESA, including:
 - Advancement of eight direct push borings SB-1 through SB-8 for soil and groundwater sampling. Soil and groundwater samples were collected from borings SB-1 through SB-4, which were advanced near the former Blackhawk Drycleaners. The samples were analyzed for volatile organic compounds (VOCs). Soil samples were collected from borings SB-5 through SB-8, which were advanced at the northeast side of the subject Property near a former auto filling station and car wash. The soil samples were analyzed for VOCs, diesel range organics (DRO), and metals.
 - Advancement of borings SV-1 through SV-6 for soil gas sampling. Borings SV-1 through SV-4 were advanced near the former Blackhawk Drycleaners. Borings SV-5 and SV-6 were advanced near the former filling station and car wash. All soil gas samples were analyzed for VOCs.
- Limited Site Investigation, including installation and sampling of five additional groundwater monitoring wells, identified as MW-01 through MW-05.

The City subsequently contracted with SCS Engineers (SCS) for additional work, including installation of additional monitoring wells, continued groundwater sampling to further evaluate the extent of CVOCs in groundwater, soil sampling to further define the extent of CVOCs on site, off-site vapor intrusion assessment sampling, vapor mitigation system design, and preparation of this MMP.

SCS submitted a Site Investigation Work Plan (SIWP) to the WDNR on May 12, 2021 and an SIWP Addendum on July 12, 2021. On September 13, 2021 SCS submitted a site investigation update with August 2021 groundwater monitoring results and an emerging contaminants assessment. On September 17, 2021, SCS submitted a proposed scope of work to evaluate a utility corridor for the presence of CVOC vapors.

To date, SCS has completed additional soil sampling to further evaluate the extent of CVOCs at the source property, sampling of monitoring wells MW-01 through MW-05, and installation and sampling of additional monitoring wells MW-06P, MW-07, MW-08, and MW-08P.

2.3 INVESTIGATION FINDINGS

- The Bay West Phase 1 ESA notes the presence of PCE and other CVOCs in soil, groundwater, and soil vapor at locations onsite and in the surrounding area as

recognized environmental conditions and vapor encroachment conditions for the Property.

- Groundwater is present at a depth of approximately 20 feet below ground surface (bgs) within unconsolidated sand. Sandstone bedrock is present at a depth of approximately 134 feet bgs.
- Groundwater flow is to the west-southwest at a horizontal gradient of approximately 0.0003 to 0.0008 feet/foot as reported by AESI in 1991 and Bay West in 2021. A vertical downward gradient of 0.0004 feet/foot was reported by AESI in 1991 for AESI well nest MW2/MW3.
- PCE is present in groundwater at concentrations in excess of the NR 140 enforcement standard (ES). No other CVOCs have been detected in groundwater in excess of ESs. PCE concentrations in excess of the ES appear to extend from the source Property and off-site to the west-southwest in the direction of groundwater flow. PCE has been detected in in downgradient monitoring well MW-5, located approximately 250 feet west of the subject Property. However, CVOCs have not been detected in any of the new off-site wells installed further south and southwest of the subject Property. Based on sampling of the new subject Property piezometer MW-6P, PCE is present in groundwater to a depth of approximately 57 feet bgs, however, the concentration is less than the preventive action limit (PAL).
- PCE is present in unsaturated soil at concentrations in excess of the NR 720 residual contaminant level (RCL) for groundwater protection, but has not been observed at concentrations in excess of the direct contact RCL. No other CVOCs have been identified in soil at concentrations in excess of RCLs. The extent of soil contamination appears mostly limited to the source Property (**Figure 3**).
- PCE soil impacts were not detected from samples collected in a proposed utility corridor at the site.
- PCE is present in soil gas in excess of the WDNR's shallow soil gas vapor risk screening level (VRSL) for residential settings. No other CVOCs have been detected in soil gas at concentrations in excess of residential VRSLs.

3.0 REDEVELOPMENT PLANS

Phase 1 of redevelopment of the Property is planned to begin in late 2021. Planned site redevelopment activities will begin with construction of 3 apartment buildings and 2 parking garages in the southwest portion of the Property (see **Figure 3**). The new buildings will be slab-on-grade. Additional apartment buildings and parking garages are planned for the southeast portion of the Property (Phase 2).

As approved by WDNR in an April 15, 2021 email to SCS, building vapor ventilation systems will be constructed beneath the apartment buildings and parking garages constructed in the southwest portion of the Property to address soil vapor identified in the vicinity of the former dry cleaners. Vapor mitigation systems are not required for the remaining proposed buildings to be constructed in the southeast portion of the Property.

4.0 MATERIALS MANAGEMENT

Phase 1 of the site redevelopment plan requires soil excavation related to construction of the new building foundation and parking structures and underground utilities. The proposed buildings will not have basements. It is unlikely that more than 2 feet of excavation will be required for most of the building footprint and parking areas, although excavation for the frost wall around the perimeter of the buildings will extend approximately 5 feet below the elevation of the proposed building ground floor. Some undercutting may be necessary for foundation and utility construction if soil is not geotechnically suitable.

The excavated soils may include CVOC-contaminated soil. Phase 1 material management activities related to contaminated soil, groundwater, and vapor are summarized below.

4.1 SOIL MANAGEMENT

Two classes of soil have been identified for management during Phase 1 construction at the site. Definitions of the material classes and a brief outline of the management approach for each are provided below. The soil classes are identified using existing analytical data.

4.1.1 Class I Soil Management

Class I soils are soils in the vicinity of the former dry cleaner which testing has shown to contain CVOCs, or show signs of contamination, such as discoloration, or odors. The assumed limit of Class I soil is shown on **Figure 3**.

Excavated Class I soils can be reused on site if structurally suitable and placed within the Class 1 soils area shown on **Figure 3**. The excavated soil will be placed under the proposed asphalt parking area or buildings to the extent practicable. If Class I soils are excavated and cannot be reused on site they will be transported by a licensed hauler to an approved landfill.

Unexcavated Class I soils may remain in place.

4.1.2 Class II Soil Management

Class II soils are soils outside the Class I soil area shown on **Figure 3**, and do not show signs of contamination, such as discoloration, or odors. If structurally suitable, Class II soil can be reused on site or hauled off site with no restrictions.

4.2 GROUNDWATER MANAGEMENT

Groundwater management is not anticipated as groundwater is present at a depth of approximately 20 feet bgs, which is greater than the anticipated depth of Phase 1 excavations.

4.3 VAPORS

Vapors associated with impacts to groundwater and any remaining soil will be addressed by construction of a vapor barrier system under the five buildings to be constructed in Phase 1.

A Stego® (or comparable) vapor barrier (with a minimum thickness of 15-mil) will be installed below the floors to prevent migration of vapors through the concrete floor slabs. Adjoining vapor barrier sheets will be overlapped and the joints will be taped to ensure a good seal between sheets. The

vapor barrier will be placed on a layer of sand or a geotextile cushion if a gravel venting layer is installed below the vapor barrier.

A venting system located below the vapor barrier will create a preferential pathway for potential CVOC vapors below the buildings. The venting system will exhaust outside of the building above the roof level. The venting system will include:

- A minimum 6-inch layer of granular material
- Four-inch diameter horizontal perforated polyethylene vapor collection pipe
- Four-inch diameter vertical PVC exhaust riser

The vertical riser(s) will be located in an area that is easily accessible. The horizontal piping will be installed under the building perimeters and at 20-foot spacing under the building floor slabs. Actual locations of the horizontal piping and the vertical exhaust risers will be selected as building design is finalized.

The venting systems for the two western-most apartment buildings will be active sub-slab depressurization systems which will use blowers to create vacuum underneath the slab. Venting systems for the remaining buildings located in Phase 1 will be constructed as passive sub-slab ventilation systems, capable of being upgraded to active systems if needed.

Post-construction testing will be performed to evaluate the effectiveness of the vapor mitigation systems. Passive mitigation systems will be upgraded to active systems if warranted based on test results.

5.0 UNUSUAL CONDITIONS

If any underground tanks, unusual odors, staining, fluids, or piping are found, work will stop in that area, and the contractor will notify the owner and SCS of the conditions. SCS will inspect the site to assess the situation.

If potentially contaminated or hazardous material is encountered that is significantly different than what has been previously identified, it will be evaluated by SCS, or other environmental professional, as appropriate for the material encountered.

6.0 ROLES AND RESPONSIBILITIES DURING CONSTRUCTIONS

The following roles and responsibilities have been identified for the project:

Owner or General Contractor

- Performs overall project scheduling and retains civil engineer/architect, environmental consultants, and contractor.
- Develops plans and specifications for project earthwork incorporating the requirements of the soil and groundwater management plan.

Civil Engineer/Architect

- Develops development plans incorporating the building vapor barrier and venting system.

- Develops utility and storm water management plans compatible with site conditions.

Environmental Consultant (SCS Engineers)

- Provides on-site observation and documentation of soil management as necessary.
- Obtains soil profile approval for landfill disposal at an approved landfill.
- Manages special or unanticipated environmental conditions encountered during construction.
- Documents extent of remaining soil contamination at the completion of the excavation activities.
- Documents reuse of excavated soils under NR 718 exemption, as necessary.
- Documents the installation of the vapor barrier and venting system.

Contractor

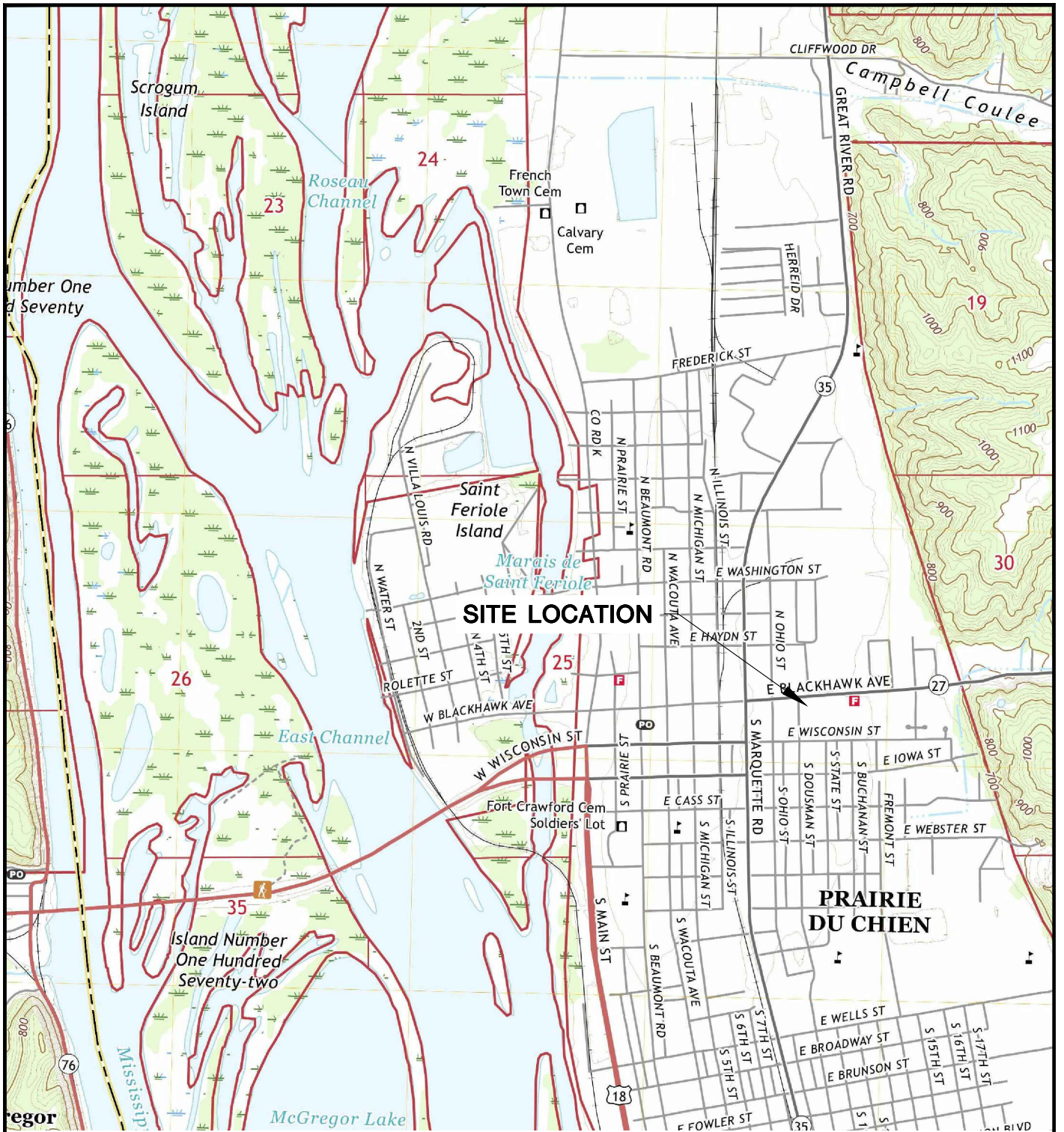
- Performs earthwork in accordance with the project construction plans and specifications.
- Informs environmental engineer of schedule and any unusual conditions encountered during development.

7.0 REPORTING

Upon completion of all activities, SCS will provide to the WDNR a written report of site activities, including documentation of materials disposal, vapor barrier installation, and analytical reports for confirmation soil sampling if any is performed.

Figures

- 1 Site Location Map
- 2 Site Plan
- 3 Materials Management



PRAIRIE DU CHIEN QUADRANGLE
 WISCONSIN-IOWA
 7.5 MINUTE SERIES (TOPOGRAPHIC)
 2018
 SCALE: 1" = 2,000'



| | | | | | | | | | |
|--------|--|-------------|-------------|--|----|----------|---|----------------|-------------|
| CLIENT | PRAIRIE DU CHIEN REDEVELOPMENT AUTHORITY | | SITE | BLACKHAWK JUNCTION REDEVELOPMENT 700 EAST BLACKHAWK AVENUE PRAIRIE DU CHIEN, WISCONSIN | | ENGINEER | SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830 | | FIGURE 1 |
| | PROJECT NO. | 25221094.00 | | DRAWN BY: | KP | | APPROVED BY: | REL 04/20/2021 | |
| | DRAWN: | 04/05/2021 | CHECKED BY: | MRH | | | | | |
| | REVISED: | 04/05/2021 | | | | | | | |



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| PROJECT NO. 2522094.00 | DRAWN BY: KP |
| DRAWN: 04/05/2021 | CHECKED BY: MRH |
| REVISED: 09/23/2021 | APPROVED BY: REL 09/29/2021 |
| CLIENT: PRAIRIE DU CHIEN REDEVELOPMENT AUTHORITY | |
| ENGINEER: SCS ENGINEERS 2830 DARTY DRIVE MADISON, WI 53718-6751 PHONE: (608) 244-2838 | |
| SITE PLAN | |
| FIGURE 2 | |

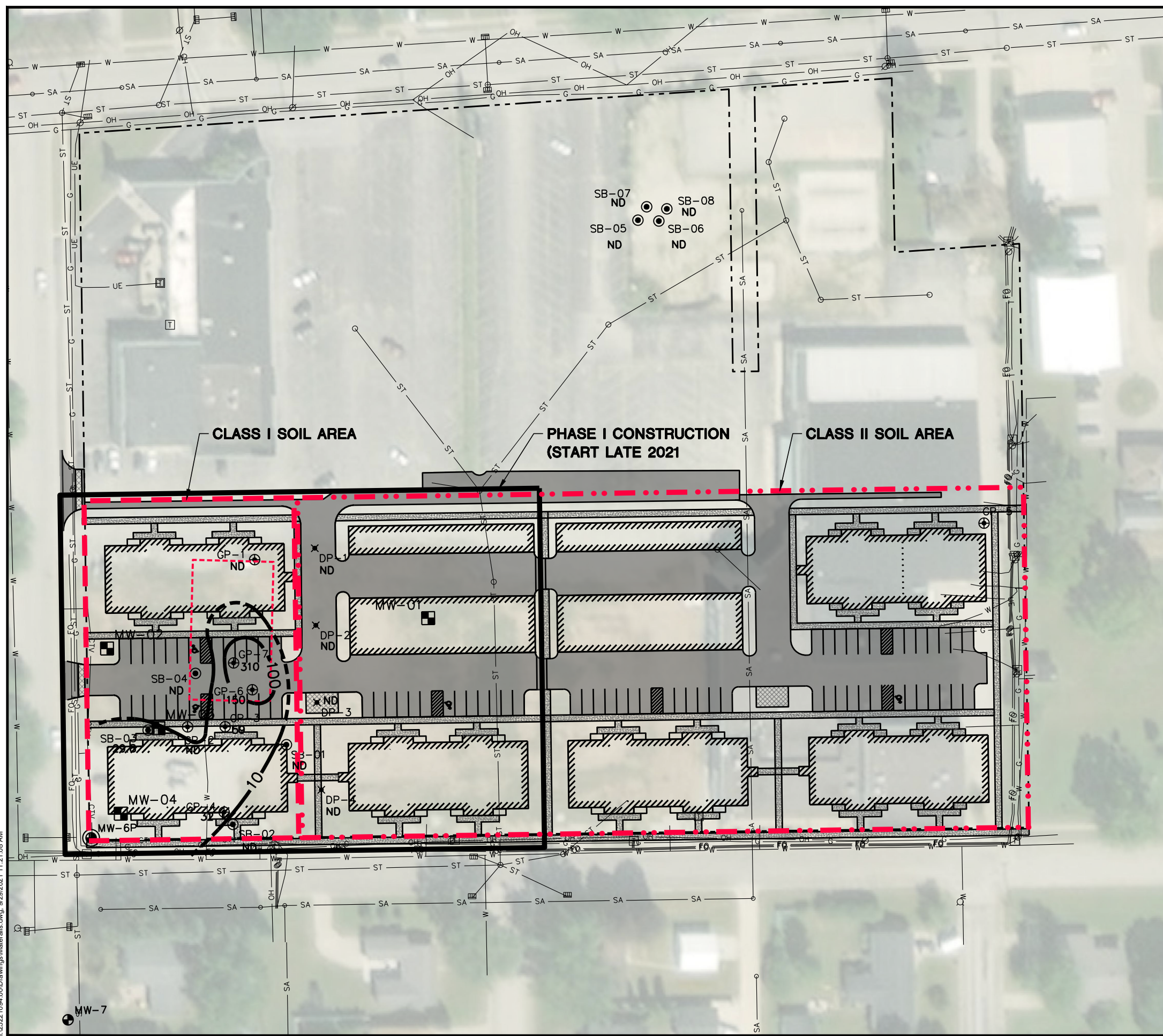
LEGEND

- SITE BOUNDARY
- - - FORMER DRY CLEANERS BUILDING (APPROXIMATE)
- CTV CABLE TELEVISION (BURIED)
- UE ELECTRIC (BURIED)
- FO FIBER OPTIC (BURIED)
- G GAS MAIN (BURIED)
- OH OVERHEAD UTILITY
- SA SANITARY SEWER (BURIED)
- ST STORM SEWER (BURIED)
- T TELEPHONE (BURIED)
- W WATER MAIN (BURIED)
- MANHOLE
- ⊕ STORM INLET
- ⊕ UTILITY POLE
- ⊕ TELEPHONE PEDESTAL
- ⊕ TRANSFORMER
- ⊕ FIRE HYDRANT
- ⊕ SOIL BORING (BAY WEST, 2020)
- ⊕ SOIL BORING (AYRES, 2009/2010)
- ⊕ SOIL BORING (SCS, 2021)
- ⊕ MONITORING WELL (BAY WEST, 2020)
- ⊕ ABANDONED MONITORING WELL (ADVENT, 1991)
- ⊕ MONITORING WELL (SCS, 2021)
- ⊕ PIEZOMETER (SCS, 2021)

NOTES:

1. SEPTEMBER 2018 AERIAL PHOTOGRAPH SOURCES: ESRI, DIGITALGLOBE, GEOEYE, I-CUBED, USDA FSA, USGS, AEX, GETMAPPING, AERGRID, IGN, IGP, SWISSTOPO, AND THE GIS USER COMMUNITY.
2. BAY WEST MONITORING WELLS AND AYRES AND BAY WEST SOIL BORINGS BASED ON BAY WEST FIGURE 1, SITE MAP WITH MONITORING WELL LOCATIONS DATED JANUARY 27, 2021.
3. ABANDONED MONITORING WELLS (ADVENT) FROM ADVENT ENVIRONMENTAL SERVICES OVERLAY OF WELL LOCATION MAP DATED SEPTEMBER 13, 1991.
4. UTILITY LOCATIONS FROM VERBICHER EXISTING CONDITIONS DRAWING DATED MARCH 7, 2021, STORM SEWER SYSTEM DRAWING DATED MARCH 18, 2019, AND SANITARY LATERAL SYSTEM DRAWING DATED MARCH 2, 2020.
5. BORING AND WELL LOCATIONS ARE APPROXIMATE.

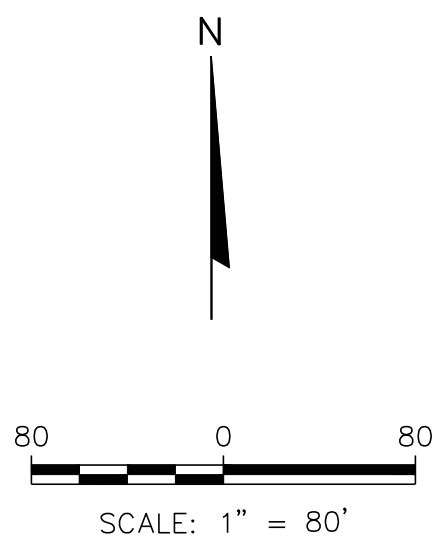
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LEGEND

- ⊙ SOIL BORING (BAY WEST, 2020)
- ⊕ SOIL BORING (AYRES, 2009/2010)
- ✕ SOIL BORING (SCS, 2021)
- MONITORING WELL (BAY WEST, 2020)
- ⊕ MONITORING WELL (SCS, 2021)
- ⊕ PIEZOMETER (SCS, 2021)
- - - - - FORMER DRY CLEANERS BUILDING (APPROXIMATE)
- 32 SOIL PCE CONCENTRATION (ug/kg)
- ND NOT DETECTED
- 10 PCE ISOCONCENTRATION
- ▨ PROPOSED BUILDING
- ▒ PROPOSED ASPHALT PAVEMENT
- ▓ PROPOSED CONCRETE PAVEMENT

- NOTES:**
1. SEE FIGURE 2 FOR BASE MAP NOTES AND LEGEND ITEMS.
 2. HIGHEST CONCENTRATION DETECTED AT EACH BORING IS SHOWN.
 3. ISOCONCENTRATION LINES DEVELOPED BY SCS ENGINEERS FROM BAY WEST AND AYRES ENVIRONMENTAL DATA.
 4. ALL BUILDINGS WITHIN PHASE 1 TO BE CONSTRUCTED WITH MITIGATION SYSTEMS.



| | | | | |
|---|----------------------------------|--|--|-------------|
| CLIENT PRAIRIE DU CHIEN REDEVELOPMENT AUTHORITY | MATERIALS MANAGEMENT | | | FIGURE 3 |
| | BLACKHAWK JUNCTION REDEVELOPMENT | | | ENGINEER |
| PROJECT NO. 25221094.00 | DRAWN BY: KP | SCS ENGINEERS 2830 DAIRY DRIVE, MADISON, WI 53718-6751 PHONE: (608) 224-2830 | | |
| DRAWN: 09/23/2021 | CHECKED BY: MRH | REL: 09/29/2021 | | |
| REVISED: | APPROVED BY: | | | |