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Corrective Action Plan

MAPCO 5167

1401 Glenn Boulevard | Fort Payne, Dekalb County, Alabama
UST21-05-04, Facility ID No. 15420-049-000392, ATTF CP #6
PM Project Number 70-820-G

Prepared for:

MAPCO Express, Inc.

801 Crescent Centre, Suite 300
Franklin, Tennessee 37067

Prepared by:

PM Environmental, Inc.

717 Highway 67 South, Suite 26
Decatur, Alabama 35603

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January 28, 2022

Mr. Emil Johnson
Alabama Department of Environmental Management
UST Corrective Action Unit
Post Office Box 301463
Montgomery, Alabama 36130-1463

RE: Corrective Action Plan
MAPCO #5167
1401 Glenn Boulevard
Fort Payne, Dekalb County, Alabama
Facility I.D. No. 15420-049-000392
Incident No. UST21-05-04
PM Project No. 70-820-G-006
ATTF Cost Proposal No. 6

Dear Mr. Johnson:

On behalf of MAPCO Express Inc., PM Environmental, Inc. (PM) is pleased to present this Corrective Action Plan for MAPCO #5167, located in Fort Payne, Dekalb County, Alabama.

If you have any questions, please feel free to contact L. Gregory Stephenson at (931) 432-5552 or Wesley Henson at (256) 445-6145.

Sincerely,
PM Environmental, Inc.

Wesley P. Henson, P.G.
Project Manager/Geologist
Alabama P.G. No. 1385

L. Gregory Stephenson, P.G.
Vice President/Senior Geologist
Alabama P.G. No. 742

Peter S. Bosanic, P.E.
Principal/Senior Project Engineer
Alabama P.E. No. 29882

cc: MAPCO Express, Inc.

PM ENVIRONMENTAL, INC.
RISK WELL MANAGED

PROJECT NO. 70-820-G
CORRECTIVE ACTION PLAN

MAPCO #5167
1401 GLENN BOULEVARD
FORT PAYNE, DEKALB COUNTY, ALABAMA
FACILITY I.D. NO. 15420-049-000392
UST INCIDENT NO. UST21-05-04
COST PROPOSAL NO. 6
JANUARY 28, 2022

Prepared for:

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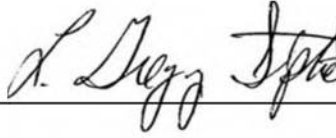
CERTIFICATION PAGE

"I certify under penalty of law that this Corrective Action Plan and all plans, specifications, and technical data submitted within were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiring of the person or persons who directly gathered the enclosed information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information."




Peter S. Bosanic, P.E.
Alabama P.E. No. 29882
Date: January 27, 2022





L. Gregory Stephenson, P.G.
Alabama P.G. No. 742
Date: January 18, 2022



Corrective Action Plan for MAPCO #5167
Located at 1401 Glenn Boulevard, Fort Payne, Dekalb County, Alabama
Facility I.D. No. 15420-049-000392; UST Incident No. UST21-05-04

ADEM GROUNDWATER BRANCH
 UST SITE CLASSIFICATION SYSTEM
 CHECKLIST

Please read all of the following statements and mark either yes or no if the statement applies to your site. If you have conducted a Preliminary or Secondary Investigation, all questions should be answered. Closure site assessment reports may not provide you with all the necessary information, but answer the statements with the knowledge obtained during the closure site assessment.

SITE NAME: MAPCO #5167
 SITE ADDRESS: 1401 Glenn Boulevard
Fort Payne, Dekalb County, Alabama

FACILITY I.D. NO.: 15420-049-000392
 UST INCIDENT NO.: UST21-05-04

OWNER NAME: MAPCO Express, Inc.
 OWNER ADDRESS: 801 Crescent Centre, Suite 300
Franklin, Tennessee 37067

NAME & ADDRESS OF PERSON COMPLETING THIS FORM: Wesley P. Henson
PM Environmental, Inc.
717 Highway 67 South, Suite 26
Decatur, Alabama 35603

CLASSIFICATION	DESCRIPTION	YES	NO
CLASS A	IMMEDIATE THREAT TO HUMAN HEALTH, HUMAN SAFETY OR SENSITIVE ENVIRONMENTAL RECEPTOR		
A.1	Vapor concentrations at or approaching explosive levels that could cause health effects, are present in a residence or building.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
A.2	Vapor concentrations at or approaching explosive levels are present in subsurface utility system(s), but no buildings or residences are impacted.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
CLASS B	IMMEDIATE THREAT TO HUMAN HEALTH, HUMAN SAFETY OR SENSITIVE ENVIRONMENTAL RECEPTOR		
B.1	An active public water supply well, public water supply line, or public surface water intake is impacted or immediately threatened.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
B.2	An active domestic water supply well, domestic water supply line or domestic surface water intake is impacted or immediately threatened.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
B.3	The release is located within a designated Wellhead Protection Area I.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
CLASS C	IMMEDIATE THREAT TO HUMAN HEALTH, HUMAN SAFETY OR SENSITIVE ENVIRONMENTAL RECEPTOR		
C.1	Ambient vapor/particulate concentrations exceed concentrations of concern from an acute exposure, or safety viewpoint.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
C.2	Free product is present on the groundwater, at ground surface, on surface water bodies, in utilities other than water supply lines, or in surface water runoff.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Corrective Action Plan for MAPCO #5167
Located at 1401 Glenn Boulevard, Fort Payne, Dekalb County, Alabama
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CLASSIFICATION	DESCRIPTION	YES	NO
CLASS D	SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS		
D.1	There is a potential for explosive levels, or concentrations of vapors that could cause acute effects, to accumulate in a residence or other building.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
D.2	A non-potable water supply well is impacted or immediately threatened.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
D.3	Shallow contaminated surface soils are open to public access, and dwellings, parks, playgrounds, day care centers, schools or similar use facilities are within 500 feet of those soils.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
CLASS E	SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS		
E.1	A sensitive habitat or sensitive resources (sport fish, economically important species, threatened and endangered species, etc.) are impacted and affected.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
CLASS F	SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS		
F.1	Groundwater is impacted and a public well is located within 1 mile of the site.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
F.2	Groundwater is impacted and a domestic well is located within 1,000 feet of the site.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
F.3	Contaminated soils and/or groundwater are located within designated Wellhead Protection Areas (Areas II or III).	<input type="checkbox"/>	<input checked="" type="checkbox"/>
CLASS G	SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS		
G.1	Contaminated soils and/or groundwater are located within areas vulnerable to contamination from surface sources.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
CLASS H	SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS		
H.1	Impacted surface water, stormwater or groundwater discharges within 500 feet of a surface water body used for human drinking water, whole body water-contact sports, or habitat to a protected or listed endangered plant and animal species.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
CLASS I	LONG TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS		
I.1.	Site has contaminated soils and/or groundwater but does not meet any of the above mentioned criteria.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ADDITIONAL COMMENTS:

Free phase hydrocarbon (fph) is present in multiple recovery wells and is intermittently present at the creek bank (Dye Creek, tributary of Big Wills Creek) along the northern property boundary.

Complete the classification evaluation questions listed above. Upon completion, determine the highest rank of the site (A.1 is the highest rank) based on the statements answered with a yes.

Enter the determined classification ranking:	C.2
--	-----

ADEM GROUNDWATER BRANCH
 SITE CLASSIFICATION CHECKLIST (5/8/95)

2.0 INTRODUCTION

This Corrective Action Plan (CAP) has been prepared in response to a directive provided by the Alabama Department of Environmental Management (ADEM) and was developed in accordance with the CAP requirements of the ADEM Administrative Code R. 335-6-15-29. ADEM requires that corrective actions be taken when soil and/or groundwater contamination is found to exceed the established corrective action limits. Measured concentrations of gasoline constituents in the soils and groundwater at the subject property exceed the established corrective action limits and free product is present intermittently. The objective of this CAP is to:

- Present an alternative remediation technology which will result in soil and groundwater contaminants below the corrective action limits in an effective, cost-efficient, and timely manner;
- Present the measures to be taken to control concentrations of chemicals of concern (COCs) above the Alabama Risked Based Corrective Actions (ARBCA) Tier II Site Specific Target Levels (SSTLs) that will be determined in the near future;
- Provide a proposed schedule for a monitoring plan.

The current ARBCA SSTL's for soil and groundwater constituents present at the subject property have not been calculated. At this time soil and groundwater concentrations are being compared to the ARBCA Initial Screening Levels (ISLs).

2.1 Geographic Location

MAPCO #5167 (subject property) is located within the NW $\frac{1}{4}$ of the SE $\frac{1}{4}$, of Section 12, Township 7 South, Range 8 East on the Chavies Quadrangle of Alabama, United States Geological Survey (USGS) 7.5 Minute Series Topographic Map (Figure 1- Property Vicinity Map). The physical address of the site is 1401 Glenn Boulevard, Fort Payne, Dekalb County, Alabama. Figure 1 (Property Vicinity Map) shows the topography of the area as recorded in 2013.

2.2 Site Description

The site is an active retail fuel/convenience store. The site consists of approximately 1.1 acres of property at the northwestern corner of the intersection of Interstate 59 and Glenn Boulevard in Fort Payne, Alabama. The site is approximately 95% covered with asphalt, concrete, or building foundations. Figure 2 (Generalized Diagram of the Subject Property) illustrates the site layout.

Three underground storage tanks (USTs) are located at the site. The UST system is registered as having three 10,000-gallon USTs for regular gasoline, premium gasoline, and diesel situated in a common tank pit east of the store and dispenser islands.

2.3 Site History and Status

During the late afternoon of May 17, 2021, PM technicians arrived at the site to temporarily park equipment in the truck parking area north of the store and adjacent to Dye Creek (tributary to Big Wills Creek) bordering the site to the north. While walking to a neighboring restaurant the technicians noted an unusually strong petroleum odor next to the creek and upon further examination observed what appeared to be free product emanating from the

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Located at 1401 Glenn Boulevard, Fort Payne, DeKalb County, Alabama
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creek bank at the water line. The PM technicians notified PM management who promptly contacted MAPCO management, who in turn instructed the store to immediately shut down all fuel operations while investigations were underway. Four observation wells installed in the tank hold were gauged for depth to water and for the presence of product utilizing an oil/water interface probe. The maximum product thickness in the observation wells ranged from 0.20 feet to 1.00 feet.

MAPCO contacted Southern Petroleum and Tank Company (SPATCO) to investigate the issue. Upon arrival later that evening SPATCO personnel observed product in the Regular gasoline submersible turbine pump (STP) sump. PM personnel mobilized a 500-gallon vacuum trailer and brought back absorbent booms and pads to the site. The vacuum trailer was utilized to remove water and product from the Regular STP sump so the SPATCO technician could further evaluate the issue. It was determined that a gasket on the functional element of the STP had failed allowing product to fill the sump whenever the pump was energized. SPATCO was able to repair the issue by the next morning on May 18, 2021. On May 18, 2021, the UST Release Report (Form 480) was submitted to ADEM by PM on behalf of MAPCO.

PM personnel and emergency response contractors, Reliable Service and Brown Remediation contained the release with absorbent booms, floating containment boom, absorbent pads, and free product recovery activities. Brown Remediation's MEME truck set up on newly installed interceptor trench extraction points in the afternoon of May 25, 2021 and began extraction. The cumulative totals recovered during these eight MEME events are 18,256.72 pounds of hydrocarbon, 3,101.39 equivalent gallons of gasoline, and 24,509 gallons of petroleum contaminated water (PCW).

Throughout the duration of the MEME events PM personnel and Reliable Service personnel worked daily shifts to provide continuous (days, nights, and weekends) oversight of the MEME events, monitor the creek for product seeps, replace absorbent booms/pads, and maintain the floating containment boom through June 14, 2021. A string of secondary absorbent boom was added to the creek downstream from the seep locations to catch any residual product that could be potentially flushed out of the containment boom during intense rain events.

PM obtained approval under CP 3 to conduct a High Resolution Site Characterization event to guide the placement of monitoring and recovery wells installed under CP 1 (Preliminary Investigation). The Preliminary Investigation field activities were conducted on June 16-18, 2021, June 30, 2021, and July 2, 2021. Four monitoring wells (MW-1 through MW-4) were installed as two-inch Type II monitoring wells to depths of 9.20-11.24 feet bgs at bedrock refusal. The monitoring wells were constructed using a two-inch diameter schedule 40 PVC casing with 0.010-inch slotted screen and completed at the surface with eight-inch diameter bolt-down manhole covers. Recovery wells RW-1 through RW-9 were successfully installed as four-inch Type II recovery wells to depths of 8.80-10.23 feet bgs at bedrock refusal. The recovery wells were constructed using a four-inch diameter schedule 40 PVC casing with 0.010-inch slotted screen. Of the soil samples collected during well installation concentrations of Benzene exceeded the ARBCA ISL (0.00845 ppm) in the soil samples collected from MW-1 (4'-6') at 0.0243 ppm, RW-1 (0'-2') at 0.0171 ppm, RW-2 (0'-2') at 0.0181 ppm, RW-2 (4'-6') at 0.00861 ppm, RW-3 (4'-6') at 0.0543 ppm, RW-4 (4'-6') at 0.789 ppm, RW-7 (2'-4') at 0.0328 ppm, RW-7 (4'-6') at 0.0104 ppm, RW-8 (0'-2') at 0.0138 ppm, RW-9 (0'-2') at 0.110 ppm, and RW-9 (4'-6') at 0.0458 ppm. Concentrations of Toluene exceeded the ARBCA ISL (3.6 ppm) in the soil sample collected from RW-4 (4'-6') at 3.84 ppm. All other analytes were detected at

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levels below the ARBCA ISLs or method detection limits. Of the groundwater samples collected from the newly installed monitoring and recovery wells concentrations of Benzene exceeded the ARBCA ISLs (0.005 ppm) in groundwater samples collected from MW-1 at 0.886 ppm, RW-1 at 20.7 ppm, RW-2 at 10.5 ppm (duplicate = 7.96 ppm), RW-3 at 13.4 ppm, RW-5 at 0.0143 ppm, RW-6 at 0.0833 ppm, RW-7 at 1.33 ppm, RW-8 at 14.3 ppm, and RW-9 at 5.19 ppm. Concentrations of Toluene exceeded the ARBCA ISL (1 ppm) in the groundwater samples collected from MW-1 at 2.78 ppm, RW-1 at 37.7 ppm, RW-2 at 31.4 ppm (duplicate at 27.8 ppm), RW-3 at 31.0 ppm, RW-4 at 3.81 ppm, RW-7 at 9.49 ppm, RW-8 at 40.5 ppm, and RW-9 at 15.5 ppm. Concentrations of Ethylbenzene exceeded the ARBCA ISL (0.7 ppm) in the groundwater samples collected from RW-1 at 2.95 ppm, RW-2 at 4.05 ppm (duplicate = 3.62 ppm), RW-3 at 2.24 ppm, RW-8 at 3.57 ppm, and RW-9 at 1.34 ppm. Concentrations of Total Xylenes exceeded the ARBCA ISL (10 ppm) in the groundwater samples collected from RW-1 at 16.1 ppm, RW-2 at 25.4 ppm (duplicate = 21.1 ppm), RW-3 at 12.3 ppm, and RW-8 at 19.9 ppm. Concentrations of Naphthalene exceeded the ARBCA ISL (0.02 ppm) in the groundwater samples collected from RW-2 at 1.16 ppm (duplicate = <5.00 ppm). Potential exceedances of the ARBCA ISL for MTBE (0.02 ppm) were noted in the groundwater samples from RW-1, RW-2, RW-3, RW-8, and RW-9. Potential exceedances of the ARBCA ISL for Naphthalene were noted in the groundwater samples from MW-1, RW-1, duplicate of RW-2, RW-3, RW-4, RW-7, RW-8, and RW-9. A potential exceedance occurs when the detection limit is greater than the screening levels (ARBCA ISLs). All other analytes were detected at levels below the ARBCA ISLs or method detection limits.

CP 4 provided for continued daily site visits to gauge the interceptor trench extraction points and site wells for product and conduct Free Product Recovery MEME events as needed. CAP development under Cost Proposal 6 was approved under emergency conditions to expedite remediation after the site stabilization was completed. Based on site conditions ADEM and PM agreed that a dual-phase vacuum extraction (DPVE) system was appropriate and the requirement for a CAP Evaluation was waived. ADEM approved Cost Proposal 7 for the purchase of a DPVE system, and the system was ordered from MK Environmental. ADEM then approved CP 8 which provides for the installation activities associated with the DPVE system. The process of gathering materials and scheduling field work began immediately. Unbeknownst to PM, as well as the Fort Payne city officials contacted about the planned system installation, the City of Fort Payne has a flood ordinance overseen by the Federal Emergency Management Agency (FEMA) that places the subject property within the designated floodway. Per the flood ordinance no structures are permitted to be installed or constructed within the floodway, below the base flood elevation (BFE), without FEMA approval. Installation activities were halted while the City's Building Department graciously assisted PM with navigating the previously unchallenged flood ordinance.

PM, ADEM, and the City's Building Department decided to undertake a stepped approach to obtain approval. The first step involved developing a plan to elevate the DPVE system and its components above the BFE of 5.1 feet above ground surface in the area planned for the DPVE system. PM located Kabtech, a company specializing in elevated equipment platforms, to provide plans for 20 feet wide by 25 feet long by 6.5 feet tall structure to support the DPVE system and components. The second step was to have a licensed engineer conduct a flood study based on Kabtech's preliminary design and site plans that resulted in a "no-rise certification", meaning that the system and its components to be installed at the subject property would not contribute to a net rise in flood elevation throughout the floodway in the event of a catastrophic weather event. With the services of Phillips Engineering a No-Rise Certification was issued and approved by the City's Building Department on December 8,

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Located at 1401 Glenn Boulevard, Fort Payne, Dekalb County, Alabama
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2021. The next step involved obtaining engineer sealed structural drawings of the platform, footers, and DPVE system that would be used to conduct wind load calculations to certify that the equipment and platform would withstand 90 mile per hour sustained winds. Kabtech provided the required drawings and calculations certified by an Alabama Professional Engineer as required by the City's Building Department. As of January 21, 2022 PM received approval of the wind load calculations by the City's Building Department. The building permit from the City of Fort Payne was approved on January 27, 2022, and an additional addendum has been submitted to ADEM for the cost of the building permit, equipment platform, and assembly of the equipment platform. There is an estimated 16-week lead time from the order date to receiving the platform components onsite. PM will schedule the system installation once the equipment platform has been ordered.

A Secondary Investigation was required to delineate the extent of impact on the subject property and adjoining properties and was subsequently approved by ADEM as CP 9. The Secondary Investigation field activities were conducted on November 2-5, 2021. Nine monitoring wells (MW-5 through MW-13) were installed to depths of 9.0-45.0 feet bgs as Type II monitoring wells, with the exception of MW-5 which was installed as a Type III monitoring well. The monitoring wells were constructed using a two-inch diameter schedule 40 PVC casing with 0.010-inch slotted screen and completed at the surface with eight-inch diameter bolt-down manhole covers. Of the soil samples collected the ARBCA ISLs for Benzene in soil were exceeded in MW-5 (2'-4') at 0.6350 ppm, MW-5 (5'-7') at 21.0 ppm, MW-8 (2'-4') at 0.0705 ppm, MW-8 (5'-6.8') at 1.480 ppm, MW-13 (2'-4') at 11.5 ppm, and MW-13 (4'-5') at 17.1 ppm. The ARBCA ISLs for Toluene in soil were exceeded in MW-5 (5'-6') at 135.0 ppm, MW-8 (5'-6.8') at 9.41 ppm, MW-13 (2'-4') at 114.0 ppm, and MW-13 (4'-5') at 159.0 ppm. The ARBCA ISLs for Ethylbenzene in soil were exceeded in MW-5 (5'-6') at 29.8 ppm, MW-13 (2'-4') at 27.2 ppm, and MW-13 (4'-5') at 32.7 ppm. The ARBCA ISLs for Xylenes in soil were exceeded in MW-5 (5'-6') at 164.0 ppm, MW-13 (2'-4') at 148.0 ppm, and MW-13 (4'-5') at 177.0 ppm. The ARBCA ISLs for MTBE in soil were exceeded in MW-13 (2'-4') at 0.024 ppm and a potential exceedance in MW-13 (4'-5') at <0.0200 ppm. The ARBCA ISLs for Naphthalene in soil were exceeded in MW-5 (5'-6') at 6.23 ppm, MW-13 (2'-4') at 9.27 ppm, and MW-13 (4'-5') at 8.06 ppm.

Of the groundwater samples collected concentrations of Benzene exceeded the ARBCA ISLs (0.005 ppm) in groundwater samples collected from MW-1 at 0.526 ppm, MW-5 at 0.1 ppm, MW-8 at 5.00 ppm, MW-11 at 0.194 ppm, MW-13 at 3.62 ppm, RW-1 at 14.7 ppm (duplicate = 16.3 ppm), RW-2 at 15.6 ppm, RW-3 at 13.2 ppm, RW-4 at 6.22 ppm, RW-5 at 0.00651 ppm, RW-6 at 0.405 ppm, RW-7 at 2.14 ppm, RW-8 at 15.5 ppm, and RW-9 at 7.28 ppm. Concentrations of Toluene exceeded the ARBCA ISL (1 ppm) in the groundwater samples collected from MW-8 at 8.58 ppm, MW-13 at 10.3 ppm, RW-1 at 30.8 ppm (duplicate = 37.9 ppm), RW-2 at 39.4 ppm, RW-3 at 32.3 ppm, RW-4 at 27.1 ppm, RW-7 at 2.96 ppm, RW-8 at 38.2 ppm, and RW-9 at 17.7 ppm. Concentrations of Ethylbenzene exceeded the ARBCA ISL (0.7 ppm) in the groundwater samples collected from MW-8 at 1.17 ppm, MW-13 at 0.87 ppm, RW-1 at 2.28 ppm (duplicate = 2.92 ppm), RW-2 at 2.64 ppm, RW-3 at 3.11 ppm, RW-4 at 3.04 ppm, RW-8 at 2.97 ppm, and RW-9 at 1.55 ppm. Concentrations of Total Xylenes exceeded the ARBCA ISL (10 ppm) in the groundwater samples collected from RW-1 at 12.8 ppm (duplicate = 16.6 ppm), RW-2 at 13.8 ppm, RW-3 at 17.1 ppm, RW-4 at 12.9 ppm, and RW-8 at 15.2 ppm. Concentrations of Naphthalene exceeded the ARBCA ISL (0.02 ppm) in the groundwater sample collected from RW-4 at 0.757 ppm. Potential exceedances of the ARBCA ISL for MTBE (0.02 ppm) were noted in the groundwater samples from MW-1, MW-8, MW-13, RW-1, RW-2, RW-3,

RW-7, RW-8, and RW-9. Potential exceedances of the ARBCA ISL for Naphthalene were noted in the groundwater samples from MW-1, MW-8, MW-13, RW-1, RW-2, RW-3, RW-7, RW-8, and RW-9. A potential exceedance occurs when the detection limit is greater than the screening levels (ARBCA ISLs). All other analytes were detected at levels below the ARBCA ISLs or method detection limits.

Refer to Tables 1 through 4 of Appendix A for summaries of soil and groundwater data.

While the Secondary Investigation activities were underway, ADEM approved CP 10 for twice weekly site checks to monitor for free product and conduct Free Product Recovery MEME events as needed.

2.4 Surrounding Development

The subject property is located at the northwestern corner of the intersection of Interstate 59 and Glenn Boulevard. The subject property is bordered by Interstate 59 to the east with commercial beyond, to the west by an unnamed cut-through to Cracker Barrel Road with vacant property currently serving as a parking lot beyond, to the north by Dye Creek (tributary of Big Wills Creek) with commercial property beyond, and to the south by Glenn Boulevard with commercial properties beyond. Please refer to Figure 3, the 500 Foot Radius Map, Figure 4, the Surrounding Property Owners Map, and Table 5 in Appendix A for surrounding development details.

2.5 Water Well Inventory

No public water supply wells were identified within a one-mile radius of the site. Public water to the site is supplied by the City of Fort Payne Water Board. According to Mr. Robert Parker, City Clerk, Fort Payne acquires its drinking water supply from a surface water reservoir on the north end of town, approximately four miles north of the subject property. As a backup source during times of drought water is piped into the city from the Tennessee River.

In an effort to obtain accurate information on the location and number of residential water supply wells within 1,000 feet, a Water Supply Well Survey was sent to each property owner within 500 feet of the subject property. Additionally, a roadside survey of the area did not identify any likely water supply wells.

2.6 Utilities

Underground gas, electric, and communications lines enter the on-site convenience store on the north side of the building. The water and sewer lines enter from Glenn Boulevard on the southern side of the store. Due to the depth of groundwater at 0.61 feet to 6.48 feet below top of casing (TOC) in the shallow Type II wells during the recent Secondary Investigation field activities, it is possibly for underground utilities to become a conduit for migration.

2.7 Regional Geology and Hydrology

The subject property is located in Big Wills Valley, one of four valleys that are found in the breach of the Wills Valley anticline. The state geologic map indicates the site is underlain by the Ordovician Chickamauga Limestone. The Chickamauga Limestone consists of medium to dark-gray thick to thin bedded, partly argillaceous, locally fossiliferous limestone.

It is restricted to the western part of the Valley and Ridge Province and Murphrees Valley and Wills Valley anticlines. Locally it includes a thin interval of Attalla Chert Conglomerate Member at its base.

The subject property is located in the Tuscumbia-Fort Payne Aquifer. In this aquifer groundwater tends to flow in discrete conduits along fractures or bedding planes due to the low primary permeability of the rock. However, groundwater flow may occur in soil or residuum above the soil-bedrock interface.

2.8 Local Geology and Hydrology

The soil samples collected during drilling activities indicate that the subject site is underlain by brown clay with limestone and chert fragments with varying amounts of silt and fine-grained sand. Bedrock refusal was encountered at depths ranging from 9.0 feet below ground surface (bgs) to 12.0 feet bgs. The Stratigraphic Cross Section Location Map is provided as Figure 5. Stratigraphic cross section maps depicting the geology encountered are illustrated on Figure 6 and Figure 7. Approximately one day after construction of the new monitoring wells was completed static water level readings were recorded at depths ranging from 0.61 to 6.48 feet below TOC in the shallow Type II wells. The potentiometric surface map derived from the groundwater elevations recorded on November 4-5, 2021, is presented as Figure 8. Please refer Table 2 for a Summary of Groundwater Elevation Data and refer to Table 3 for a Summary of Groundwater Intrinsic Parameters recorded at the time of groundwater sample collection.

There are no known uses of groundwater from the uppermost-saturated zone at the site. Interconnection of this zone with the underlying aquifer is likely on a local basis as evidenced by the depth to water measured in Type III bedrock well MW-5 (42.53 feet below TOC) compared to the depth to water measurements of the Type II overburden monitoring wells (0.61 to 6.48 feet below TOC). This interconnection is controlled by the presence of secondary porosity features, such as fracturing and/or dissolution. The presence of such secondary porosity features at the site is suspected as evidenced by the initial creek impact that triggered the current incident. Groundwater contamination was discovered in the Type III bedrock well MW-5.

2.9 Groundwater Flow

Figure 8 illustrates the Potentiometric Surface Map based on groundwater elevations recorded on November 4-5, 2021 in the monitoring wells screened in the silty to sandy clay soils. The inferred direction of groundwater flow is generally to the north and northeast. The hydraulic gradient based on data collected on November 4-5, 2021 is 0.027 feet/foot.

2.10 Surface Water Drainage

Local drainage patterns were assessed through field reconnaissance and a review of available USGS topographic maps. The site is situated approximately 812 feet above mean sea level (msl) according to the USGS topographic map (Figure 1). Surface drainage at the site is toward Dye Creek to the north.

3.0 SUMMARY OF PREVIOUSLY CONDUCTED SITE ASSESSMENTS

Corrective Action Plan for MAPCO #5167
Located at 1401 Glenn Boulevard, Fort Payne, Dekalb County, Alabama
Facility I.D. No. 15420-049-000392; UST Incident No. UST21-05-04

This section summarizes the chronology since the release was discovered and the previously conducted site assessments including the Preliminary Investigation, the Secondary Investigation, High Resolution Site Characterization, and Free Product Recovery.

Date:	Chronology Of Events
May 17, 2021	Release discovered at bank of Dye Creek.
June 24, 2021	Site Stabilization and Initial Abatement Report submitted to ADEM by PM.
July 9, 2021	High Resolution Site Characterization Report submitted to ADEM by PM.
July 21, 2021	Preliminary Investigation Report submitted to ADEM by PM.
September 17, 2021	Free Product Recovery Report submitted to ADEM by PM.
December 15, 2021	Secondary Investigation Report submitted to ADEM by PM.

3.1 Hydraulic Conductivity and Groundwater Velocity

On November 5, 2021, PM Environmental conducted three rising head slug tests on MW-1, MW-2, and MW-4 to estimate the hydraulic conductivity (K). The slug test data was evaluated to determine the horizontal K of the saturated clay zone using the AQTESOLV software developed by HydroSOLV, Inc., Reston, Virginia. Slug test input parameters, type curve matches, and field data are included in Appendix E.

The results of the rising head slug test indicate the calculated horizontal K ranged from 3.451 x10⁻⁴ feet per minute (0.497 feet per day) to 1.526 x10⁻³ feet per minute (2.197 feet per day), with an average of 7.916 x10⁻⁴ feet per minute (1.140 feet per day) or 12,681 cm per year.

Well ID	Analysis Methods (Unconfined)	Hydraulic Conductivity (K)	
		ft/min	ft/day
MW-1 Test 1	Bouwer-Rice	7.171E-04	1.033
MW-1 Test 1	Hvorslev	9.591E-04	1.381
MW-1 Test 1	Hyder (KGS Model)	1.526E-03	2.197
MW-1 Test 2	Bouwer-Rice	8.256E-04	1.189
MW-1 Test 2	Hvorslev	9.545E-04	1.374
MW-1 Test 2	Hyder (KGS Model)	1.160E-03	1.670
MW-1 Test 3	Bouwer-Rice	1.214E-03	1.748
MW-1 Test 3	Hvorslev	1.402E-03	2.019
MW-1 Test 3	Hyder (KGS Model)	1.324E-03	1.907
MW-2 Test 1	Bouwer-Rice	5.467E-04	0.787
MW-2 Test 1	Hvorslev	6.412E-04	0.923
MW-2 Test 1	Hyder (KGS Model)	4.455E-04	0.642
MW-2 Test 2	Bouwer-Rice	5.393E-04	0.777
MW-2 Test 2	Hvorslev	6.330E-04	0.912

Corrective Action Plan for MAPCO #5167
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Well ID	Analysis Methods (Unconfined)	Hydraulic Conductivity (K)	
		ft/min	ft/day
MW-2 Test 2	Hyder (KGS Model)	4.960E-04	0.714
MW-2 Test 3	Bouwer-Rice	5.304E-04	0.764
MW-2 Test 3	Hvorslev	6.225E-04	0.896
MW-2 Test 3	Hyder (KGS Model)	4.791E-04	0.690
MW-4 Test 1	Bouwer-Rice	3.451E-04	0.497
MW-4 Test 1	Hvorslev	4.982E-04	0.717
MW-4 Test 1	Hyder (KGS Model)	1.026E-03	1.477
MW-4 Test 2	Bouwer-Rice	4.730E-04	0.681
MW-4 Test 2	Hvorslev	6.873E-04	0.990
MW-4 Test 2	Hyder (KGS Model)	1.016E-03	1.463
MW-4 Test 3	Bouwer-Rice	5.281E-04	0.760
MW-4 Test 3	Hvorslev	7.680E-04	1.106
MW-4 Test 3	Hyder (KGS Model)	1.015E-03	1.462
Average		7.916E-04	1.140

The observed groundwater horizontal hydraulic gradient (i) was 0.027 feet/feet in the silty to sandy clay residuum as calculated based on the November 4-5, 2021 potentiometric surface contour map (Figure 8) between wells MW-6 and MW-10. Using an average K of 7.916 x10-4 feet per minute (1.140 feet per day) and an effective porosity (ne) of 0.365 as measured in the physical properties boring analysis (Table 2) the estimated groundwater velocity at the site was calculated using Darcy's Law as follows:

$$V = KI/n_e$$

V = flow velocity
K = hydraulic conductivity (1.14 ft/day)
I = hydraulic gradient (0.027 ft/ft)
n_e = effective porosity (0.365)
V = 1.14*(0.027) / 0.365
V = 0.0843 feet per day
V = 30.78 feet per year

3.2 ARBCA Tier-2 Risk Based Assessment

The ARBCA Evaluation for this incident has not been conducted. For this CAP the ARBCA ISLs will be the cleanup criteria until an ARBCA Evaluation has been conducted and the calculated Site-Specific Target Levels (SSTLs) approved.

3.3. Soil and Groundwater Investigation

The extent of groundwater and soil impact to the north, south, northeast, southeast, and west are fully delineated by data collected during the previous investigations conducted at this site. The analytical results from these soil and groundwater sampling events are summarized in the following sections.

3.4 Horizontal Extent of Groundwater Contamination

Results of groundwater sampling activities on November 4-5, 2021, indicate that concentrations of Benzene exceeded the ARBCA ISLs (0.005 ppm) in groundwater samples collected from MW-1 at 0.526 ppm, MW-5 at 0.1 ppm, MW-8 at 5.00 ppm, MW-11 at 0.194 ppm, MW-13 at 3.62 ppm, RW-1 at 14.7 ppm (duplicate = 16.3 ppm), RW-2 at 15.6 ppm, RW-3 at 13.2 ppm, RW-4 at 6.22 ppm, RW-5 at 0.00651 ppm, RW-6 at 0.405 ppm, RW-7 at 2.14 ppm, RW-8 at 15.5 ppm, and RW-9 at 7.28 ppm. Concentrations of Toluene exceeded the ARBCA ISL (1 ppm) in the groundwater samples collected from MW-8 at 8.58 ppm, MW-13 at 10.3 ppm, RW-1 at 30.8 ppm (duplicate = 37.9 ppm), RW-2 at 39.4 ppm, RW-3 at 32.3 ppm, RW-4 at 27.1 ppm, RW-7 at 2.96 ppm, RW-8 at 38.2 ppm, and RW-9 at 17.7 ppm. Concentrations of Ethylbenzene exceeded the ARBCA ISL (0.7 ppm) in the groundwater samples collected from MW-8 at 1.17 ppm, MW-13 at 0.87 ppm, RW-1 at 2.28 ppm (duplicate = 2.92 ppm), RW-2 at 2.64 ppm, RW-3 at 3.11 ppm, RW-4 at 3.04 ppm, RW-8 at 2.97 ppm, and RW-9 at 1.55 ppm. Concentrations of Total Xylenes exceeded the ARBCA ISL (10 ppm) in the groundwater samples collected from RW-1 at 12.8 ppm (duplicate = 16.6 ppm), RW-2 at 13.8 ppm, RW-3 at 17.1 ppm, RW-4 at 12.9 ppm, and RW-8 at 15.2 ppm. Concentrations of Naphthalene exceeded the ARBCA ISL (0.02 ppm) in the groundwater sample collected from RW-4 at 0.757 ppm. Potential exceedances of the ARBCA ISL for MTBE (0.02 ppm) were noted in the groundwater samples from MW-1, MW-8, MW-13, RW-1, RW-2, RW-3, RW-7, RW-8, and RW-9. Potential exceedances of the ARBCA ISL for Naphthalene were noted in the groundwater samples from MW-1, MW-8, MW-13, RW-1, RW-2, RW-3, RW-7, RW-8, and RW-9. Refer to Summary of Groundwater Analytical Data (Table 3) of Appendix A for analytical data information compared to the ARBCA ISLs.

The Secondary Investigation groundwater concentration maps for Benzene, Toluene, Ethylbenzene, Xylenes, MTBE, and Naphthalene are depicted in Figures 9, 10, 11, 12, 13, and 14, respectively.

3.5 Horizontal Extent of Soil Contamination

Cumulative results of soil sampling activities from June 16-18, 2021, and November 2-3, 2021, indicate that concentrations of Benzene exceeded the ARBCA ISL (0.00845 ppm) in the soil samples collected from MW-1 (4'-6') at 0.0243 ppm, RW-1 (0'-2') at 0.0171 ppm, RW-2 (0'-2') at 0.0181 ppm, RW-2 (4'-6') at 0.00861 ppm, RW-3 (4'-6') at 0.0543 ppm, RW-4 (4'-6') at 0.789 ppm, RW-7 (2'-4') at 0.0328 ppm, RW-7 (4'-6') at 0.0104 ppm, RW-8 (0'-2') at 0.0138 ppm, RW-9 (0'-2') at 0.110 ppm, RW-9 (4'-6') at 0.0458 ppm, MW-5 (2'-4') at 0.6350 ppm, MW-5 (5'-7') at 21.0 ppm, MW-8 (2'-4') at 0.0705 ppm, MW-8 (5'-6.8') at 1.480 ppm, MW-13 (2'-4') at 11.5 ppm, and MW-13 (4'-5') at 17.1 ppm. Concentrations of Toluene exceeded the ARBCA ISL (3.6 ppm) in the soil samples collected from RW-4 (4'-6') at 3.84 ppm, MW-5 (5'-6') at 135.0 ppm, MW-8 (5'-6.8') at 9.41 ppm, MW-13 (2'-4') at 114.0 ppm, and MW-13 (4'-5') at 159.0 ppm. The ARBCA ISLs for Ethylbenzene in soil were exceeded in MW-5 (5'-6') at 29.8 ppm, MW-13 (2'-4') at 27.2 ppm, and MW-13 (4'-5') at 32.7 ppm. The ARBCA ISLs for Xylenes in soil were exceeded in MW-5 (5'-6') at 164.0 ppm, MW-13 (2'-4') at 148.0 ppm, and MW-13 (4'-5') at 177.0 ppm. The ARBCA ISLs for MTBE in soil were exceeded in MW-13 (2'-4') at 0.024 ppm and a potential exceedance in MW-13 (4'-5') at <0.0200 ppm. The ARBCA ISLs for Naphthalene in soil were exceeded in MW-5 (5'-6') at 6.23 ppm, MW-13 (2'-4') at 9.27 ppm, and MW-13 (4'-5') at 8.06 ppm. The Soil Data Map is included as Figure 15. The soil analytical data is presented on Table 1.

3.6 Vertical Extent of Soil Contamination

Based on the available site history data the confirmed soil impact is located in the surficial and subsurface soils at depths of 0-6.8 feet bgs. Vertical definition has been defined at 0-6.8 feet bgs, which is the deepest soil sample collected above the observed water table. Refer to Figure 15, the Soil Concentration Data Map, for Benzene, BTEX, MTBE, and Naphthalene concentrations in soil samples submitted for laboratory analysis. Refer to Appendix B for boring logs of all soil borings, monitoring wells, and recovery wells installed at this site

3.7 Free Product Extent

Free phase hydrocarbons (fph) were observed in RW-2 (0.01') and RW-3 (0.03') during the groundwater monitoring event on November 5, 2021 as part of the Secondary Investigation field activities. Since the current incident began in May 2020 fph has been observed in each of the four observation wells (OW-NW, OW-NE, OW-SW, OW-SE), each of the five interceptor trench points (RT-1 through RT-5), and eight of the nine installed recovery wells (RW-1 through RW-8). It is anticipated that free product will be recovered by the DPVE system, therefore requiring a free product tank.

3.8 MEME Pilot Test Conclusions

Due to the emergency nature of this CAP a MEME Pilot Test was not conducted; however, during the site stabilization phase of the emergency response multiple MEME events were conducted. Based on these events, a conservative radius of influence of 30 feet was used for spacing of the recovery wells installed during the Preliminary Investigation field activities.

4.0 EXPOSURE ASSESSMENT

An ARBCA Evaluation has not been conducted for the subject property under the current incident. Until an ARBCA Evaluation is conducted the ARBCA ISLs will be the preliminary cleanup goals for this remedial effort.

The ARBCA Evaluation considers the pathways for the resident (adult and child) for surficial soil (outdoor inhalation, ingestion, and dermal contact), subsurface soil (indoor inhalation and outdoor inhalation), and groundwater (indoor inhalation, outdoor inhalation, and ingestion of water). It evaluates the pathways for the commercial worker for surficial soil (outdoor inhalation, ingestion, and dermal contact), subsurface soil (indoor inhalation and outdoor inhalation), and groundwater (indoor inhalation, outdoor inhalation, and ingestion of water). It evaluates the pathways for the construction worker for surficial soil (outdoor inhalation, ingestion, and dermal contact) and subsurface soil (indoor inhalation and outdoor inhalation). In addition to human risk factors, the ARBCA Evaluation considers groundwater resource protection, utility corridors, and stream protection. Utility corridors were deemed to be complete due to the depth of soil contamination (0 feet to 6 feet bgs) and the depth to groundwater (average 3 feet bgs). Stream protection will be evaluated when the ARBCA Evaluation is conducted due to Dye Creek located along the northern property boundary.

5.0 PROPOSED REMEDIATION METHOD

The design of this system of remediation was based on the data collected during the ADEM approved Preliminary and Secondary Investigations, Free Product Recovery events, High Resolution Site Characterization event, and the Initial Abatement/Site Stabilization field activities conducted on the subject property. The goal for this project is to reduce the concentrations of gasoline constituents in the source area to below the applicable cleanup levels within a reasonable amount of time and also prevent contamination of Dye Creek along the northern property boundary. The asymptotic levels of contaminants will be determined by the ADEM guidelines as defined in Rule 335-6-15.32 Alternative Corrective Action Limits (ACALs).

To address this situation, PM is proposing to install a dual phase vacuum extraction (DPVE) system. This system will actively remediate the contaminated groundwater and soils in the source area in a timely and cost-effective manner. Due to the horizontal extent of groundwater contamination at the site, PM proposes to actively remediate the onsite source area only. Utilizing this methodology will remove the acute hazards to human health and safety and reduce the overall cost of the project. If the concentrations in the source area are reduced to asymptotic levels, the risk of contamination reaching the identified potential receptors is greatly reduced because of the effects of bio-remediation and natural attenuation on the contaminant plume.

Utilizing the ARBCA ISL as the cleanup goal, the estimated treatment volume of this site is approximately 4,650 cubic yards of saturated soils. The estimated recovery well pumping rate for each proposed vacuum extraction well is 1 gallon per minute. A 30-foot radius of influence will be used for planning purposes. Given the moderate groundwater recovery rates and the width of the plume, nine extraction wells adequately cover the plume and utilizing the interceptor trench recovery points will provide additional protection of Dye Creek. These nine extraction wells are already installed at the site (RW-1 through RW-9) as four-inch wells with screened intervals at 2-10.5 feet bgs; however, they will require conversion to larger access vaults at ground surface during installation of the recovery lines. This well configuration will adequately address the soil and groundwater contamination within the source area. The location of the proposed groundwater extraction wells with a 30-foot radius of influence and the general layout of the DPVE system is presented in Figure 16.

6.0 RATIONAL FOR SELECTION OF REMEDIATION

The rational for selecting the remediation system discussed in section 5.0 considered the effectiveness, feasibility, and cost of alternative remediation technologies. Due to the volume of the May 2021 release and how it migrated quickly, an aggressive remediation approach is required to protect Dye Creek and cleanup the subject property. The MEME events utilized during the initial abatement/site stabilization phase were extremely effective at controlling the plume's movement; however, it is cost prohibitive to maintain an extended regimen of continuous MEME events. Therefore, PM proposed the implementation of a DPVE system to clean up the site.

6.1 Dual Phase Vacuum Extraction

Dual phase vacuum extraction with a low-profile air stripper was selected for this site because this technology will:

- Address both the contaminated groundwater and soils at the site with one system.
- Stimulate bioremediation in the soils and groundwater by introducing oxygen into the plume. Thus reducing the overall remediation time,
- Very effective at removing contaminants from clay, silty clay, and silty sand type soils,
- The proposed system design does not require a stable groundwater table, aquifer comprised of a sandy type soil, or a thick zone of saturated soil to operate effectively.
- Has considerably less maintenance costs and achieves the remediation goals in a shorter time frame than conventional pump and treat systems.

6.2 DPVE System Sizing

The DPVE system will utilize nine extraction wells (RW-1 through RW-9) and the five interceptor trench recovery points (RT-1 through RT-5) to remediate the subject property. It is understood that all 14 of these recovery points will not be utilized simultaneously; however, the multiple recovery points will be utilized to control movement of the plume and maximize recovery as the remedial effort progresses. The 40 hp liquid ring pump proposed for this site can recover 490 ACFM. Based on the data collected during the 2021 MEME events, the extraction wells utilized each yielded an average flow rate of 75 ACFM as measured onsite.

Accounting for the utilization of up to six recovery wells simultaneously, the calculated airflow will be 450 ACFM, which is well within the 490 ACFM capacity of the 40 hp DPVE system. This will also allow for the addition of extraction wells into the active configuration should the need arise.

6.3 Life Expectancy of the Proposed Remediation Method

Estimation of the clean-up time is dependent on several factors, namely the groundwater extraction rate and end-point clean-up goals, which are currently the ARBCA ISLs. To calculate the approximate clean-up time of the dissolved phase hydrocarbon plume on the subject property, PM utilizes the approach published by Zheng, Bennet, and Andrews (1991). This method assumes that no fph is present in the vadose zone to act as a continuing source of dissolved hydrocarbon concentrations and that the water entering the hydrocarbon affected region has a zero concentration which adjusts rapidly to a concentration in equilibrium with the remaining sorbed hydrocarbon mass after entering that region. Since we know fph is present throughout the subject property the calculations typically offered are useless and unreliable. A conservative estimate of runtime will be three years. PM will be able to more accurately define the length of the project as real time data becomes available and the ARBCA SSTLs are approved. The cleanup time will be re-evaluated on an ongoing basis.

7.0 WELL INSTALLATION AND REMEDIATION ACTIVITIES

7.1 Site Preparation Activities

Site preparation activities will be conducted prior to arrival at the property. These activities will include discussions with operators of the business at the subject property to allow their input on the time frames of the work. The goal is to minimize disturbance of regular business activities. Considering proposed location of the equipment platform and DPVE system, business interruptions are expected to be minimal.

At the time the CAP is submitted, PM will submit the necessary application for a NPDES discharge permit for the treated effluent water. The ADEM Air Division application will also be submitted. Due to the presence of free product a thermal oxidizer has been ordered along with the DPVE system.

7.2 Installation of Extraction Piping and Wellheads

The nine extraction wells (RW-1 through RW-9) each contain 5-8 feet of 4-inch diameter PVC circum-slot screen with a maximum terminal depth of 10.5 feet bgs. The down-hole stinger, or drop tube, will be constructed of a section of 1½-inch diameter reinforced flexible tubing (ie: Tigerflex). The stinger will initially be set one foot into the water table and gradually lowered as needed. Each extraction well will be enclosed in a two-foot by two-foot by two-foot steel vault that will be outfitted with air bleed valves and quick-connects to attach vacuum gauges.

The process piping will be installed in trenches at a depth of approximately 2-feet bgs to protect them from vehicular traffic. The piping trenches will be backfilled with sand, crushed gravel or equivalent material, and the pavement material (when present) will be restored to its original or better condition. All the trenches will be sloped away from the remediation building to insure proper drainage back toward the wells. Each well will be individually connected from the well heads to the vacuum manifold located outside equipment building with 2-inch diameter schedule 40 PVC piping. This configuration allows the operator to focus the remedial effort in specific areas of the site. Refer to Figure 20 for inlet piping manifold details. PM will also install a 2-inch diameter PVC discharge line from the equipment building through the trenches to Dye Creek at the northeastern corner of the subject property. Refer to Figures 17 and 18 for extraction well vault details, Figure 19 for the DPVE Equipment Platform Detail, and Figure 20 for the Inlet Piping Manifold Detail.

7.3 Placement of Equipment

The DPVE system and the air pollution control device will be placed on an elevated equipment platform along the east-central portion of the subject property immediately north of the UST tankhold. Refer to Figure 16 for the placement of the DPVE system compound on the subject property and Figure 19 for a conceptual layout of the system components on the equipment platform. These pieces of equipment will be offloaded from the delivery truck with a mobile crane. After the equipment is staged onsite, a security fence will be constructed around the perimeter.

7.4 Remediation System

At the vacuum manifold, each well will be connected to a section of clear PVC pipe and a ball valve. The clear hose will be used as a flow site glass that will allow the operator to

Corrective Action Plan for MAPCO #5167
Located at 1401 Glenn Boulevard, Fort Payne, Dekalb County, Alabama
Facility I.D. No. 15420-049-000392; UST Incident No. UST21-05-04

view the water production in each well. The vacuum manifold is connected to the DPVE system. Refer to Figure 16 for the inlet piping manifold details. This system will include an oil-sealed liquid ring pump capable of extracting 490 ACFM at 20 inches of mercury, a 40 horsepower (hp) explosion proof motor, 200-gallon air-water separator tank, air cooled heat exchanger, an electric oxidizer for vapor treatment, a 1.5 hp progressive cavity transfer pump, and oil-water separator (OWS), and a SA-15B air stripper.

The extracted liquids and air from the wells will enter the air-water separator (AWS-1) tank where the liquids will be separated from the vapors. The liquids will be treated using the OWS and air stripper in the groundwater treatment system and the vapors will be combined with the vapor effluent of the groundwater treatment system, treated with an electric oxidizer, and discharged to the atmosphere. Additionally, the DPVE system will be equipped with a free product recovery tank to collect free product isolated in the OWS. The free product recovery tank will be fitted with level switches that will notify the operator when the fluid in the free product tank reaches a pre-determined full level.

As the aquifer becomes de-watered the DPVE system will transition from primarily removing gasoline contaminated groundwater from the saturated zone to removing BTEX laden vapors from the pore spaces of the soils. As the air moves through the soil matrix, the volatile organic compounds that are surrounding the soil particles will be transferred to the air stream throughout the process of volatilization. This process also introduces oxygen into the system (from surface leakage), which stimulates bioremediation in the soils and groundwater, and reduces the overall time to achieve the remediation goals for the site.

Air flow sample ports will be installed between discharge of the vacuum pump and the discharge stack and between the discharge of the air stripper and the discharge stack.

Quick connect fittings for vacuum gauges will be installed on each well head and the extraction piping within the well vault. A vacuum gauge will be installed on the AWS-1 tank to display the applied vacuum at all times. Pressure gauges will be in place between at the AWS, OWS, effluent transfer pump, and after the bag filter assembly where the effluent water will enter the discharge line.

Air temperature indicators will be installed on the vacuum manifold, before the AOS, and the vacuum pump discharge. Vapor sampling ports will be installed between the vacuum manifold and the vacuum pump, the effluent side of the vacuum pump, the vapor discharge of the air stripper, and the discharge stack. Water sampling ports will be installed on the influent and effluent of the air-stripping unit and bag filter vessels. Please refer to the process flow diagram in Appendix C for the proposed locations of the temperature, pressure, air, and water sampling ports.

Due to the anticipated high concentrations of vapors at this site, an electric catalytic oxidizer unit with a 300 SCFM capacity has been scoped to treat the effluent vapors prior to discharging to the atmosphere.

The remediation system enclosure will be approximately 12'L x 8'W x 10'H and constructed of structural steel with an aluminum exterior. Walls and roof will be insulated (noise dampening), and the floor will be constructed of structural steel where the major components will be attached. Wood flooring (1-inch plywood) will be attached to the platform. Additionally, this building will be equipped with an access door, and will have

removable wall panels to access other parts of the building from the outside. The proposed location of this building will be on the east-central portion of the property north of the UST tankhold (Figure 16). A security fence will be installed around the system after installation. In addition, a sign with emergency phone numbers will be posted on the outside of the security fence.

PM and the system manufacturer, MK Environmental, have also designed this remediation system with an inter-locking fail safe control system. This system will incorporate pressure, vacuum, temperature, and water level switches that will shut down the remediation system when an alarm condition exists. These alarm conditions will include the following monitoring points:

- Low air stripper pressure;
- Effluent sump high water level;
- Liquid ring oil high temperature;
- DPE system building high temperature;
- AWS-1 high water level;
- Oil level too high or low; and
- Phase monitor for electric issues.

This fail-safe system will reduce the occurrence of equipment failure and an accidental release of contaminated water. All monitoring equipment and electrical switches will be explosion proof or intrinsically safe. Additionally, the remediation equipment will be equipped with a wireless telemetry system, which will remotely inform the operators of the current status of the system. When one of the alarm conditions has been tripped, the telemetry system will automatically call the operator's telephone number, send a text message or email, and report the status of the system. Under most conditions the DPVE system will be capable of remote restart and shutdown without requiring a site visit.

7.5 DPVE System Startup and O&Ms

The PM project manager and/or at least one PM technician will be onsite to complete the MK pre-startup checklist (required before MK will schedule startup) and for startup day for the DPVE system. A technician trained in the operation of the DPVE system will be onsite for every O&M visit scheduled and unscheduled. A PID, a Fluke clamp meter, a vacuum gauge, an anemometer, and a manometer will be used during regular O&M activities.

At startup the stinger inlet for the extraction wells will initially be placed one foot below the static groundwater surface then gradually lowered to a depth of no less than one foot above the bottom of the well. The lowering of the drop tube will be dependent on the presence or lack of presence of very high vapor emissions, the presence of free product, and the volume of water recovered.

The DPVE system will be operated and maintained to ensure maximum efficiency and to reduce down time. During the first week of operation PM will conduct daily site visits. Bi-weekly (twice per month or every other week) site visits will be conducted for system monitoring and routine maintenance for the duration of operation. Operation and

maintenance of the DPVE system will include monthly NPDES discharge sampling per the NPDES permit requirements, system adjustments, recording pressure gauges, vacuum gauges, and flow meter readings. The field notes and recorded system measurements will be maintained for all O&M activities.

A telemetry unit will be used to monitor system run times, liquid ring vacuum, and treated water totalizer readings. If the system is shut down due to power outages, the telemetry can be used to remote restart the system. If during operation of the system it becomes necessary to shut down, the telemetry can be used to cease operation. Emission Monitoring will be conducted during each routine O&M visit.

After the initial startup week, two site visits per month will be conducted to perform routine necessary cleanings, collect system performance data, conduct routine maintenance, and collect discharge samples, as needed. The system components will be checked for parts wear and proper operation. Transfer pumps will be cleaned of mineralization. Liquid ring oil levels will be maintained, filters will be checked and changed as needed, and motors will be lubricated. Filters and the air stripper will be examined for the effects of iron and mineral fouling in general. All lines and connections will be checked for leaks and repaired or replaced as needed. Effluent vapor monitoring will be conducted. The air water separator and air stripper will be cleaned of sediment and mineral encrustations using a pressure washer and drum vacuum, monthly. Smaller equipment parts that are worn will be replaced during routine visits to eliminate unnecessary contingency trips. Required unscheduled trips due to minor parts failure will be completed on a timely basis, typically within 72 hours of telemetry notification of system failure. An inventory of minor parts and expendable items will be maintained to ensure timely repair and minimal downtime. The system enclosure, which will be insulated, is equipped with an electric heater rated for hazardous locations. Power outage is anticipated to be the primary reason for unscheduled O&M visits. ADEM will be notified of any downtime periods of more than 72 hours. The appropriate O&M logs and repair logs will be maintained for all O&M activities, both scheduled and unscheduled.

8.0 GROUNDWATER MONITORING PROGRAM

8.1 Monitoring Wells

Treatment effectiveness sampling will be demonstrated through analytical testing of the soil and groundwater. Groundwater monitoring for gasoline constituents (BTEX, MTBE, and Naphthalene) will be conducted by PM representatives once per quarter from selected monitoring wells and extraction wells after the DPVE system startup. PM recommends that groundwater samples for gasoline constituents be collected from the monitoring wells MW-1, MW-5, MW-8, MW-11, and MW-13, and all nine extraction wells (RW-1 through RW-9) during the first three quarters, and sample all monitoring wells and extraction wells during the fourth quarter. The monitoring well samples will be analyzed for BTEX, MTBE, and Naphthalene utilizing EPA approved methods. PM will also collect one duplicate and one trip blank sample during each sampling event in accordance with the QA/QC plan (Section 8.4 below). The results of these sampling events will be summarized in the quarterly System Effectiveness Monitoring Reports (SEMR).

8.2 Determination of Static Water Level/Free Product Thickness

Static water level and free product thickness, if any, measurements will be recorded using an electronic interface probe, accurate to 0.01-feet from each monitoring well prior to purging and sampling activities. To avoid the potential for cross contamination, the interface probe will be decontaminated by washing and rinsing between each use. All groundwater level measurements will be recorded within a 24-hour time period to avoid any temporal variations which may occur in groundwater flow systems. Measurements will be made from the top of the casing that are surveyed relative benchmark or feet above mean sea level.

8.3 Sampling Procedures

Sample Collection: Groundwater samples will be collected by personnel who have thoroughly reviewed this monitoring program and are familiar with the sampling procedures. Care will be taken to avoid the potential for cross contamination between samples and to prevent loss of volatiles to the atmosphere. Groundwater samples will be collected using either a new disposable bailer with new nylon cord or by using a peristaltic pump at low flow equipped with new polyethylene tubing. Prior to sample collection, wells will be purged until a minimum of three well casing volumes are evacuated. Groundwater sampling will proceed from the least contaminated well to the most contaminated well. Equipment decontamination fluids and groundwater evacuated from each monitoring well will be drummed on-site for future disposal or processed through the DPE system.

Sample Preservation: Groundwater samples will be collected in the designated size and type of containers required for specific parameters. Sample containers will be filled in such a manner as not to lose any preservative chemicals from the containers.

Sample Shipment: The samples will be stored in an ice-packed cooler and transported, with appropriate trip blanks and chain-of-custody forms, to the laboratory for chemical analysis within the appropriate holding times.

Chain-of-Custody: Chain-of-custody procedures will be used to allow for the tracing of possession and handling of samples from the time of collection to the completion of laboratory analysis. A chain-of-custody form will accompany each set of samples transported to the laboratory.

Detection Limits: Laboratory analysis of all test parameters listed as part of the groundwater monitoring plan will meet or exceed the target method detection limits in accordance with ADEM guidance documents such as the following: benzene (1 µg/L), Toluene (1 µg/L), ethyl-benzene (1 µg/L), Total Xylenes (3 µg/L), MTBE (5 µg/L). Due to high groundwater concentrations it may be necessary for the laboratory to perform dilutions will increased the method detection limits. In the case that dilution is required to perform an analysis the chromatogram and bench sheets can be requested from the laboratory if additional information is needed by PM or ADEM.

Well Maintenance: The condition of each monitoring well will be evaluated for integrity during each monitoring event. All monitoring wells at the subject site will be clearly labeled, securely capped, locked, and covered with protective casings. ADEM will be notified in advance of replacing or repairing any monitoring well.

8.4 Quality Assurance/Quality Control

Field QA/QC: A trip blank of distilled or deionized water will accompany each shipment cooler of samples for volatile organic analysis to the laboratory to evaluate the potential for cross contamination during shipment or storage of samples. The trip blank will be analyzed for VOCs using USEPA approved methods if sample cross-contamination is suspected.

Laboratory QA/QC: At least one duplicate sample from a monitoring well within the contaminant plume will be submitted to the laboratory for analysis of VOCs. This will be done to evaluate sampling and analysis reproducibility. The sample duplicate will be labeled Duplicate-#. Sampling personnel will record the actual well number of the duplicate in their field notes. The duplicate location and sample results will be reported in each monitoring report.

9.0 CLEAN-UP GOALS

The subject site-specific clean-up goals will be determined by the Rule 335-6-15.32 which allows for the development of alternative corrective action limits through a Risk Assessment (Rule 335-6-15.33) or when the concentrations of groundwater contamination has reached asymptotic levels. The ARBCA SSTLs will become the applicable cleanup criteria once they have been calculated and approved by ADEM. Until the ARBCA SSTLs are approved the ARBCA ISLs will be the applicable cleanup criteria.

Verification of clean-up goals sampling will be initiated when the concentrations in the source area monitoring wells have demonstrated a 99% reduction of contaminants from pre-treatment groundwater concentrations or are below the ISLs (or SSTLs, whichever is applicable) for the subject site, for a minimum period of 12 months. Remediation of contaminated soils will be demonstrated by advancing soil borings in the vicinity of previous soil contamination once the groundwater goals have been reached.

10.0 PROPOSED REPORTING REQUIREMENTS

A report of the effectiveness of corrective action activities will be submitted to ADEM each quarter by means of a System Effectiveness Monitoring Report (SEMR). The report will include analytical results, water level data, contaminant plume maps, and amount of contaminant reduction.

When monitoring reports indicate the remediation activities have achieved the clean-up goals or the remaining contamination has reached asymptotic levels below the SSTLs, a request for cessation of groundwater monitoring will be submitted to the ADEM. It will include data indicating that the clean-up goals have been achieved or the remaining contamination has reached asymptotic levels, and proposed methods to abandon the monitoring and extraction wells.

Upon approval of the request for cessation of the corrective action from ADEM, a site closure report summarizing closure activities will be prepared and submitted to the ADEM. This report will include the details of the well abandonment, clean-up of the subject site, and demobilization of the equipment.

11.0 SCHEDULE OF IMPLEMENTATION

The following is a preliminary schedule of corrective action implementation for this site:

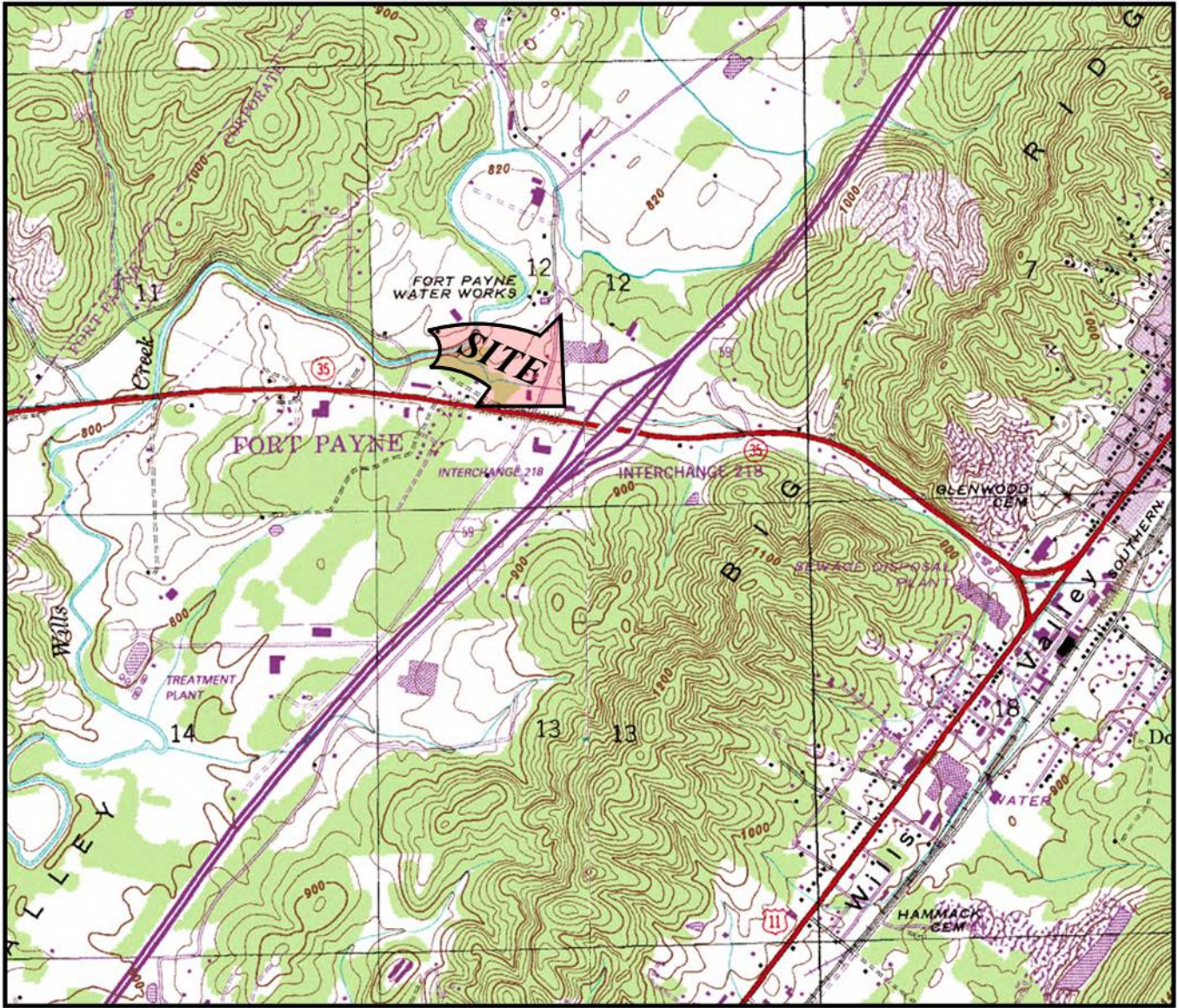
TASK	Scheduled Dates
Submittal of Modified CAP to ADEM	January 2022
ADEM approval of the CAP	February 2022
Submit CAP Implementation CP	*approved June 2021*
NPDES Discharge Permit application	January 2022
ADEM Air Division application	January 2022
Order DPVE System from MK Environmental	*completed June 2021*
Order equipment platform (16 week lead time)	Within 5 days of building permit approval and ADEM addendum approval (CP 8 Addendum 4)
Conduct system piping, wellhead, and equipment platform foundation installation	Within 30 days of building permit approval
Take delivery of equipment platform and assemble platform	Estimated 16 weeks from order date
Take delivery of DPVE System and ancillary equipment	Upon construction of equipment platform
DPVE System startup	Within 30 days of NPDES permit approval, Air Division approval, system delivery, and system installation (May 2022 estimated)
Groundwater monitoring and SEMRs	Once per quarter following each groundwater monitoring event
Request for cessation to ADEM	2025 (estimated)
Site Closure Report to ADEM	2026 (estimated)

12.0 CONCLUSIONS AND RECOMMENDATIONS

This CAP has summarized previous investigations, presented an exposure assessment, evaluated existing data, presented potential remediation alternatives, developed a remediation alternative for the impacted groundwater and soils at the subject site, and developed tentative implementation schedules for testing, operations, and reporting to be conducted at the subject site.

PM recommends implementing the selected remediation alternative for this site which includes converting nine existing four-inch wells to extraction wells, converting five existing interceptor trench recovery points into extraction wells, installing underground piping and a DPVE system, and operation of the DPE system to effectively remediate the contaminated soil and groundwater at the site. PM is awaiting final building permit approval from the City of Fort Payne before installation activities commence.

Figures



DEKALB COUNTY



ALABAMA COUNTY LOCATIONS



FIGURE 1
 PROPERTY VICINITY MAP
 USGS, 7.5 MINUTE SERIES
 CHAVIES, AL QUADRANGLE, 1946. PHOTO REVISED 1983.
 FORT PAYNE, AL QUADRANGLE, 1946. PHOTO REVISED 1983.



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PROJ: MAPCO # 5167
 1401 GLENN BOULEVARD
 FORT PAYNE, AL

THIS IS NOT A LEGAL
 SURVEY

VERIFY SCALE
 0 2,000'

IF NOT 1" ON THIS
 SHEET, ADJUST
 SCALES ACCORDINGLY.

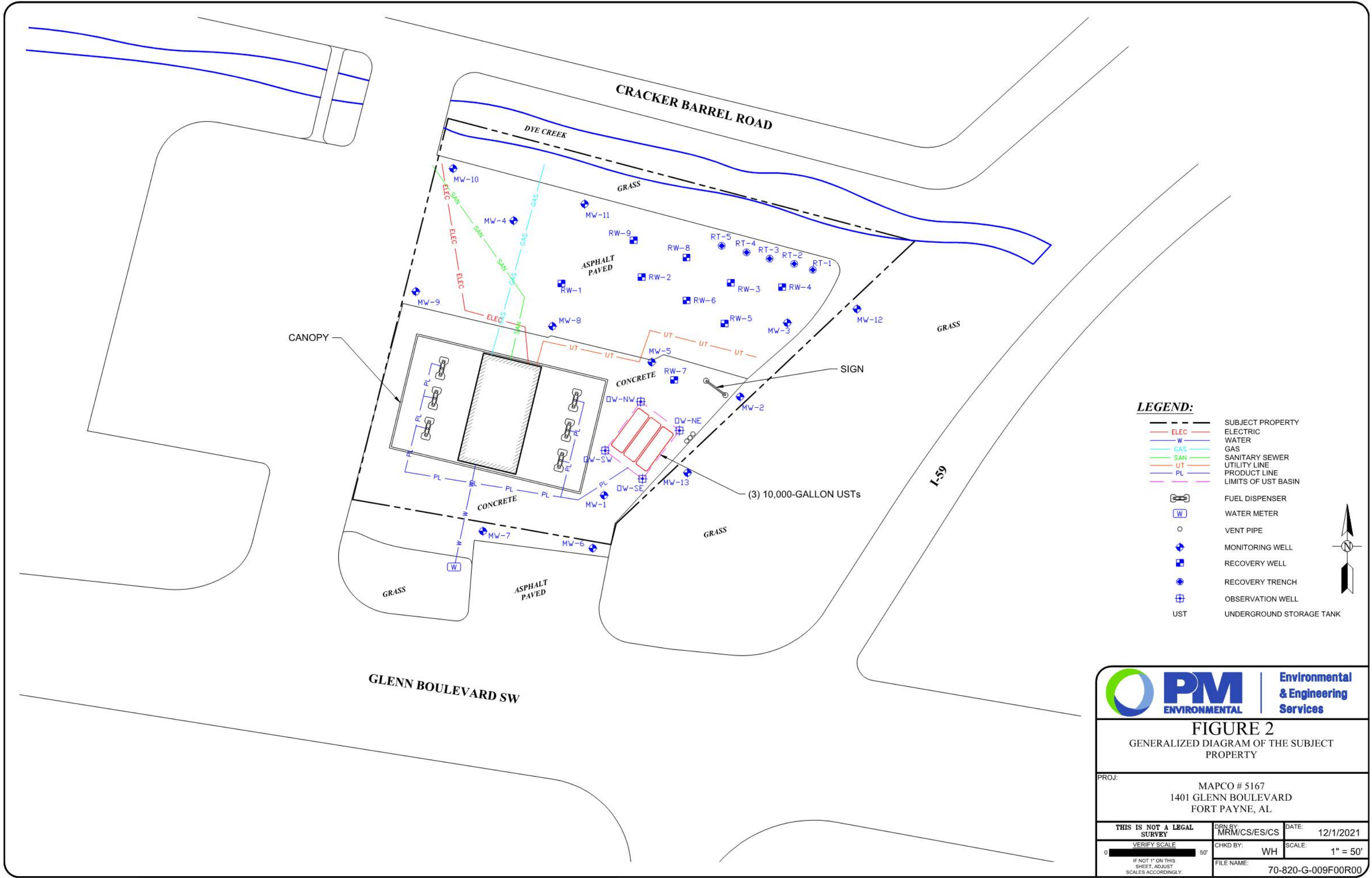
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





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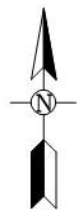
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 70-820-G-009F00R00


DATE: 12/1/2021

SCALE: 1" = 2,000'



- LEGEND:**
- ELEC --- SUBJECT PROPERTY
 - W --- ELECTRIC
 - GAS --- WATER
 - SAN --- GAS
 - UT --- SANITARY SEWER
 - PL --- UTILITY LINE
 - --- PL PRODUCT LINE
 - LIMITS OF UST BASIN
 -  FUEL DISPENSER
 -  WATER METER
 -  VENT PIPE
 -  MONITORING WELL
 -  RECOVERY WELL
 -  RECOVERY TRENCH
 -  OBSERVATION WELL
 -  UST UNDERGROUND STORAGE TANK






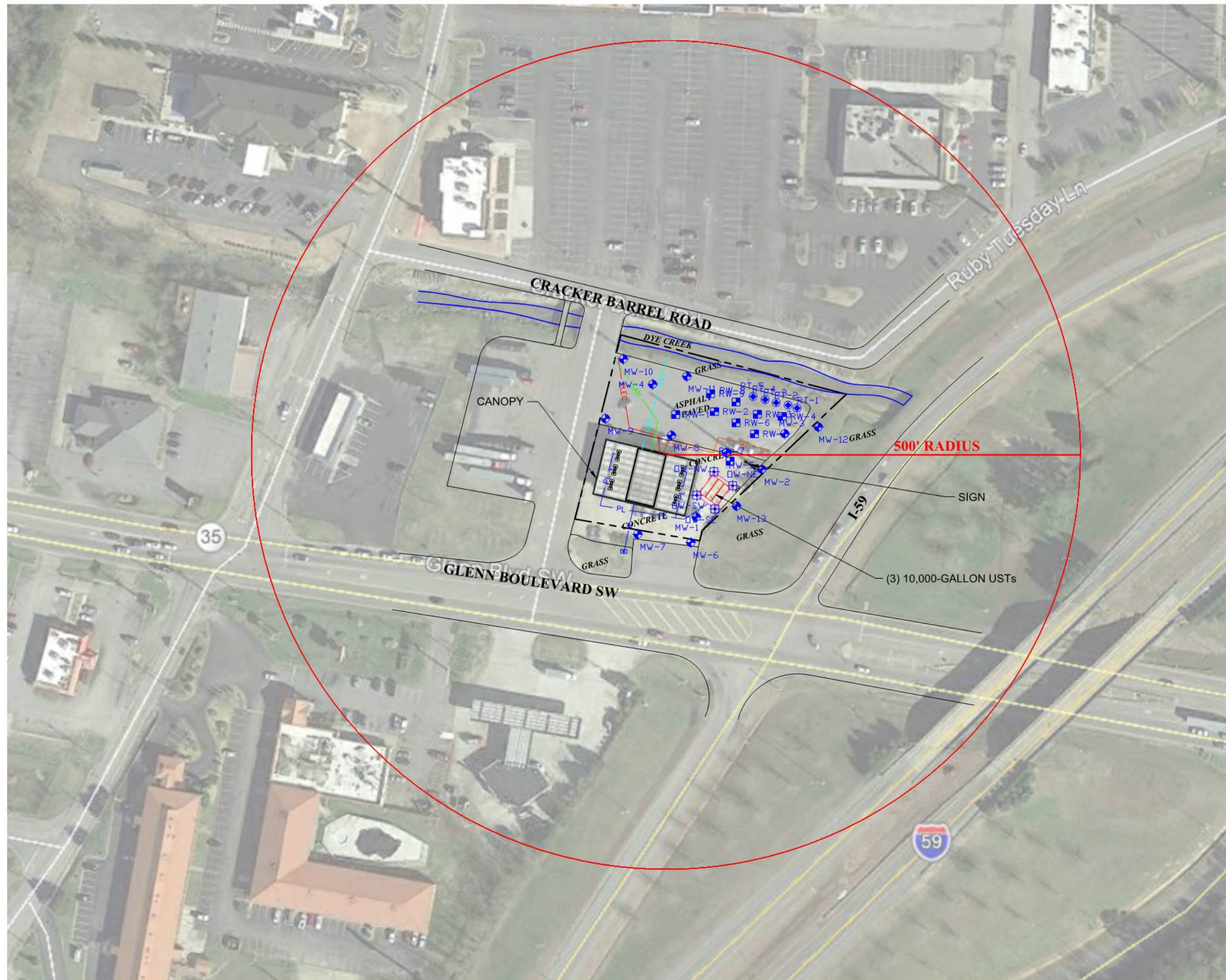
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FIGURE 2
GENERALIZED DIAGRAM OF THE SUBJECT PROPERTY

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1401 GLENN BOULEVARD
FORT PAYNE, AL

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LEGEND:

- SUBJECT PROPERTY
- ELEC --- ELECTRIC
- W --- WATER
- GAS --- GAS
- SAN --- SANITARY SEWER
- UT --- UTILITY LINE
- PL --- PRODUCT LINE
- LIMITS OF UST BASIN

- FUEL DISPENSER
- WATER METER
- VENT PIPE
- MONITORING WELL
- RECOVERY WELL
- RECOVERY TRENCH
- OBSERVATION WELL
- UST UNDERGROUND STORAGE TANK

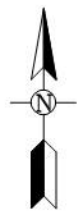
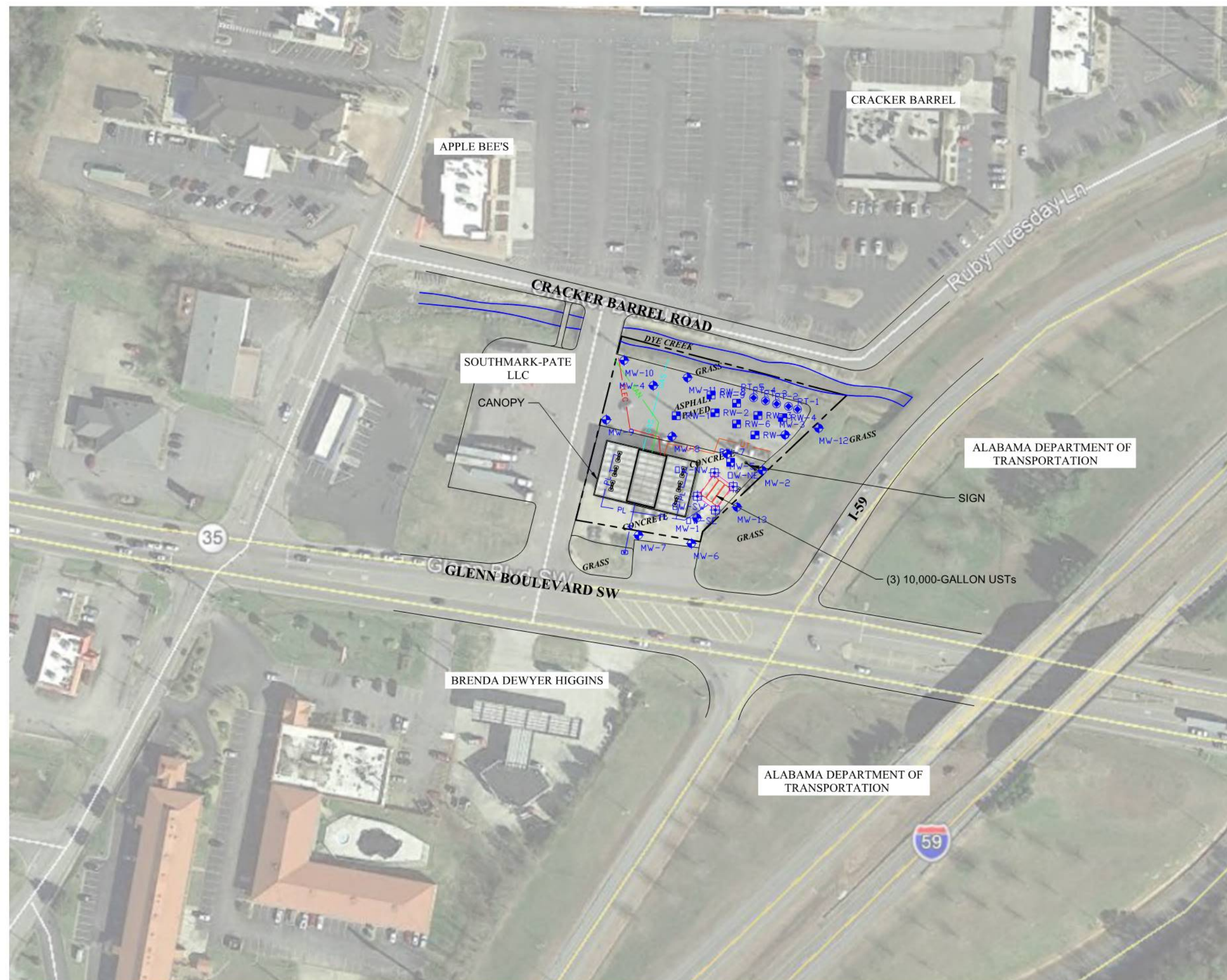


FIGURE 3
FIVE HUNDRED FOOT RADIUS MAP

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PROPERTY OWNER	CONTACT INFORMATION & PROPERTY LOCATION	DIRECTION FROM SITE	CURRENT USAGE
Brenda Dewyer Higgins	1900 Dalrock Rd Rowlett, TX 75088	SITE	COMMERCIAL
	Property Address: 1401 Glenn Blvd, Fort Payne, AL		
Second Street Plaza LLC	1000 Highland Colony Pkwy, Suite 9004 Ridgeland, MS 39157	NORTH	COMMERCIAL
Shopping Center	158 Airport Rd, Fort Payne, AL		
Bewajobe Corporation	PO Box 787 Lebanon, TN 37088	NORTHEAST	COMMERCIAL
Cracker Barrel	201 Cracker Barrel Rd, Fort Payne, AL		
Alabama Department of Transportation	Interstate 59: Exit 218	EAST	COMMERCIAL
Brenda Dewyer Higgins	1900 Dalrock Rd Rowlett, TX 75088	SOUTH	COMMERCIAL
	Property Address: 1402 Glenn Blvd, Fort Payne, AL		
Southmark-Pate LLC	PO Box 20828 Tuscaloosa, AL 35402	WEST	COMMERCIAL
Parking area	1405 Glenn Blvd, Fort Payne, AL		

LEGEND:

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- PL — UTILITY LINE
- LIMITS OF UST BASIN
- FUEL DISPENSER
- WATER METER
- VENT PIPE
- MONITORING WELL
- RECOVERY WELL
- RECOVERY TRENCH
- OBSERVATION WELL
- UST UNDERGROUND STORAGE TANK

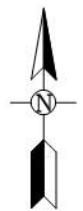
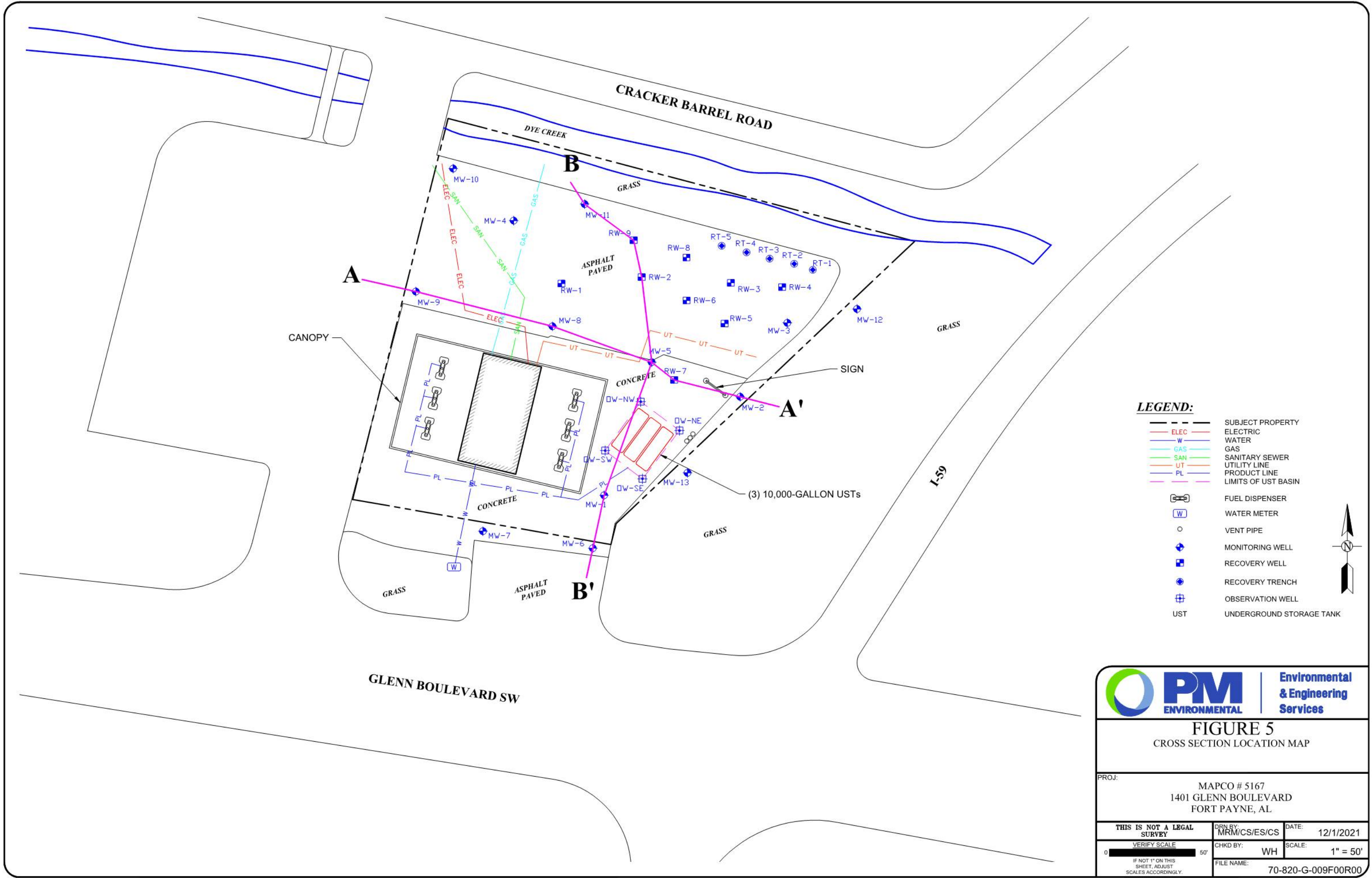


FIGURE 4
SURROUNDING PROPERTY OWNERS MAP

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LEGEND:

---	SUBJECT PROPERTY
ELEC	ELECTRIC
W	WATER
GAS	GAS
SAN	SANITARY SEWER
UT	UTILITY LINE
PL	PRODUCT LINE
---	LIMITS OF UST BASIN
[Fuel Dispenser Symbol]	FUEL DISPENSER
[Water Meter Symbol]	WATER METER
[Vent Pipe Symbol]	VENT PIPE
[Monitoring Well Symbol]	MONITORING WELL
[Recovery Well Symbol]	RECOVERY WELL
[Recovery Trench Symbol]	RECOVERY TRENCH
[Observation Well Symbol]	OBSERVATION WELL
[UST Symbol]	UNDERGROUND STORAGE TANK

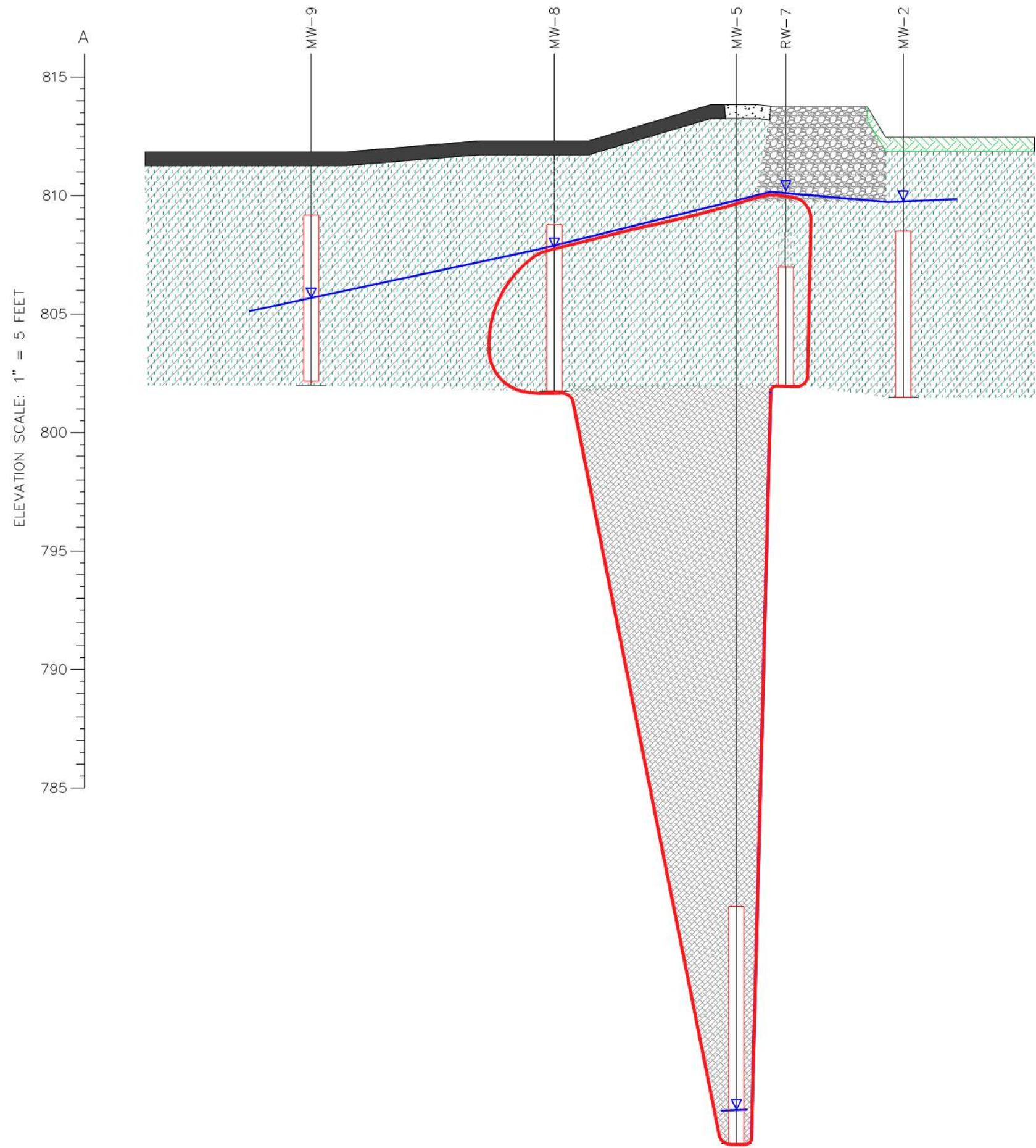


FIGURE 5
CROSS SECTION LOCATION MAP

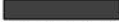
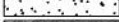
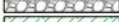






PROJ: MAPCO # 5167
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FORT PAYNE, AL


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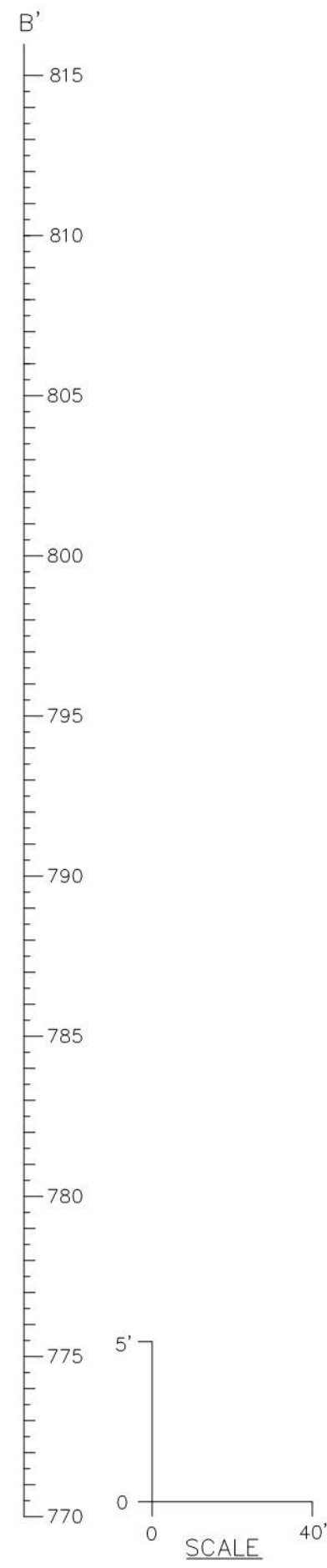
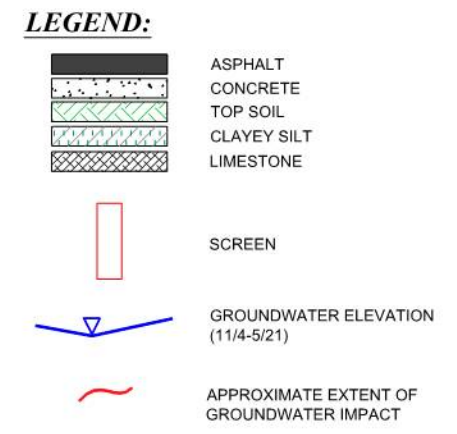
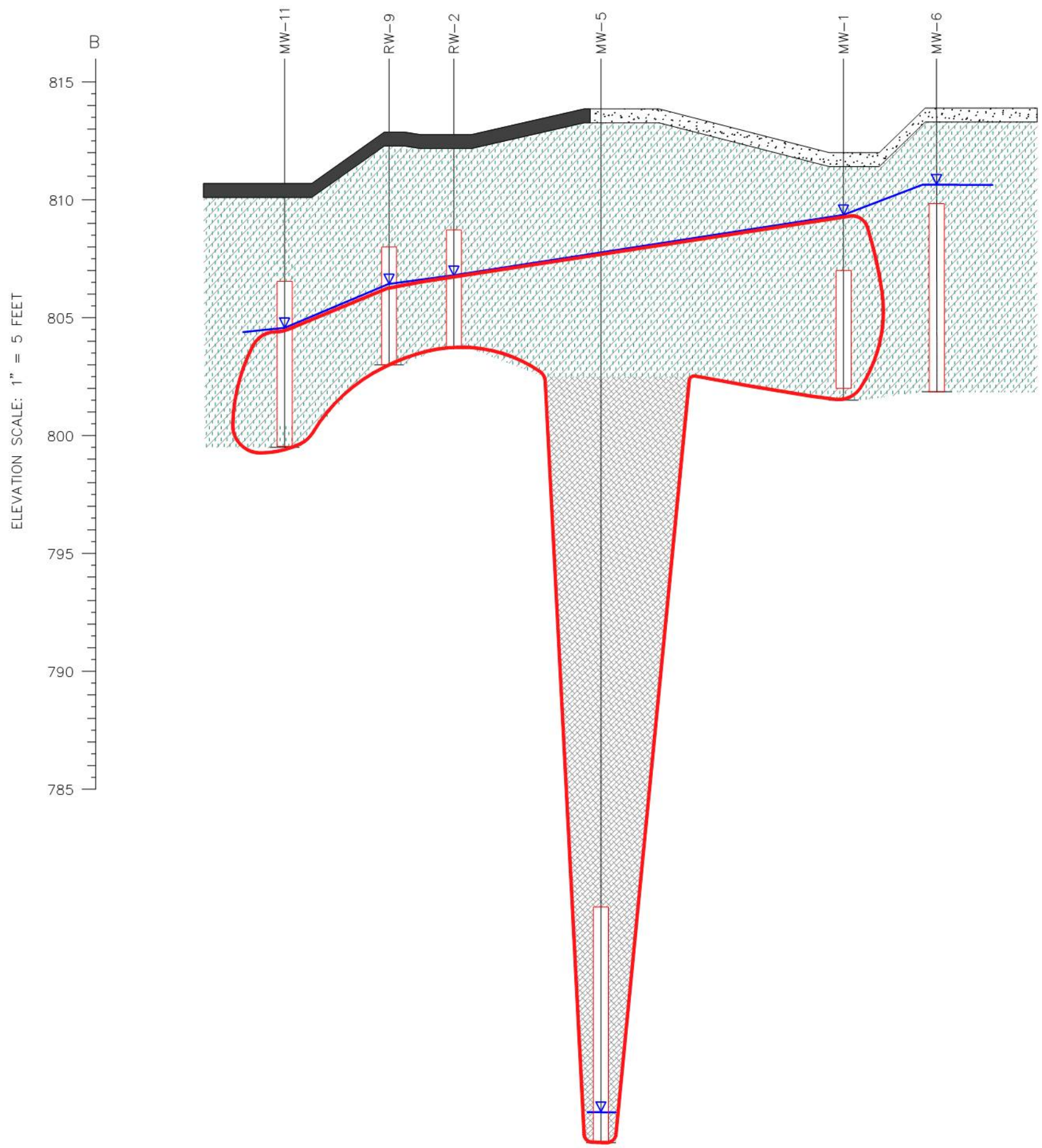
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LEGEND:

-  ASPHALT
-  CONCRETE
-  GRAVEL
-  TOP SOIL
-  CLAYEY SILT
-  LIMESTONE
-  SCREEN
-  GROUNDWATER ELEVATION (11/4-5/21)
-  APPROXIMATE EXTENT OF GROUNDWATER IMPACT

		Environmental & Engineering Services
FIGURE 6 GEOLOGICAL CROSS SECTION A ~ A'		
PROJ: MAPCO # 5167 1401 GLENN BOULEVARD FORT PAYNE, AL		
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		Environmental & Engineering Services	
FIGURE 7 GEOLOGICAL CROSS SECTION B ~ B'			
PROJ: MAPCO # 5167 1401 GLENN BOULEVARD FORT PAYNE, AL			
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LEGEND:

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- GAS
- SAN
- UT
- PL
- LIMITS OF UST BASIN
- FUEL DISPENSER
- WATER METER
- VENT PIPE
- MONITORING WELL
- RECOVERY WELL
- RECOVERY TRENCH
- OBSERVATION WELL
- UNDERGROUND STORAGE TANK
- TOLUENE GROUNDWATER CONTOUR
- TOLUENE ISOCONCENTRATION
- MW-5-DATA NOT CONTOURED
WELL SCREENED IN A DEEPER INTERVAL.

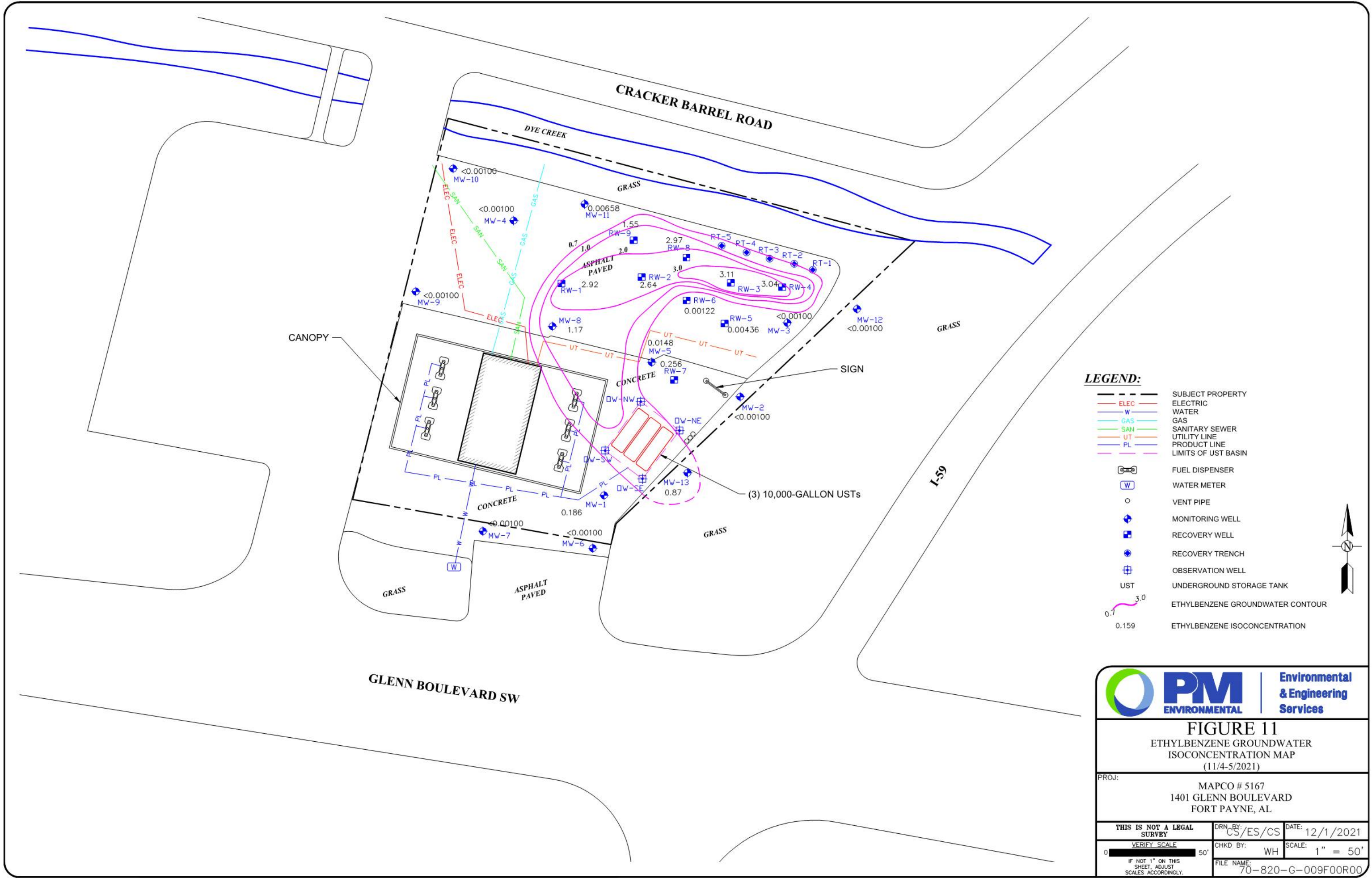


FIGURE 10
 TOLUENE GROUNDWATER ISOCONCENTRATION
 MAP
 (11/4-5/2021)

PROJ: MAPCO # 5167
 1401 GLENN BOULEVARD
 FORT PAYNE, AL

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- WATER METER
- VENT PIPE
- MONITORING WELL
- RECOVERY WELL
- RECOVERY TRENCH
- OBSERVATION WELL
- UST
- ETHYLBENZENE GROUNDWATER CONTOUR
- ETHYLBENZENE ISOCONCENTRATION



FIGURE 11
 ETHYLBENZENE GROUNDWATER
 ISOCONCENTRATION MAP
 (11/4-5/2021)

PROJ: MAPCO # 5167
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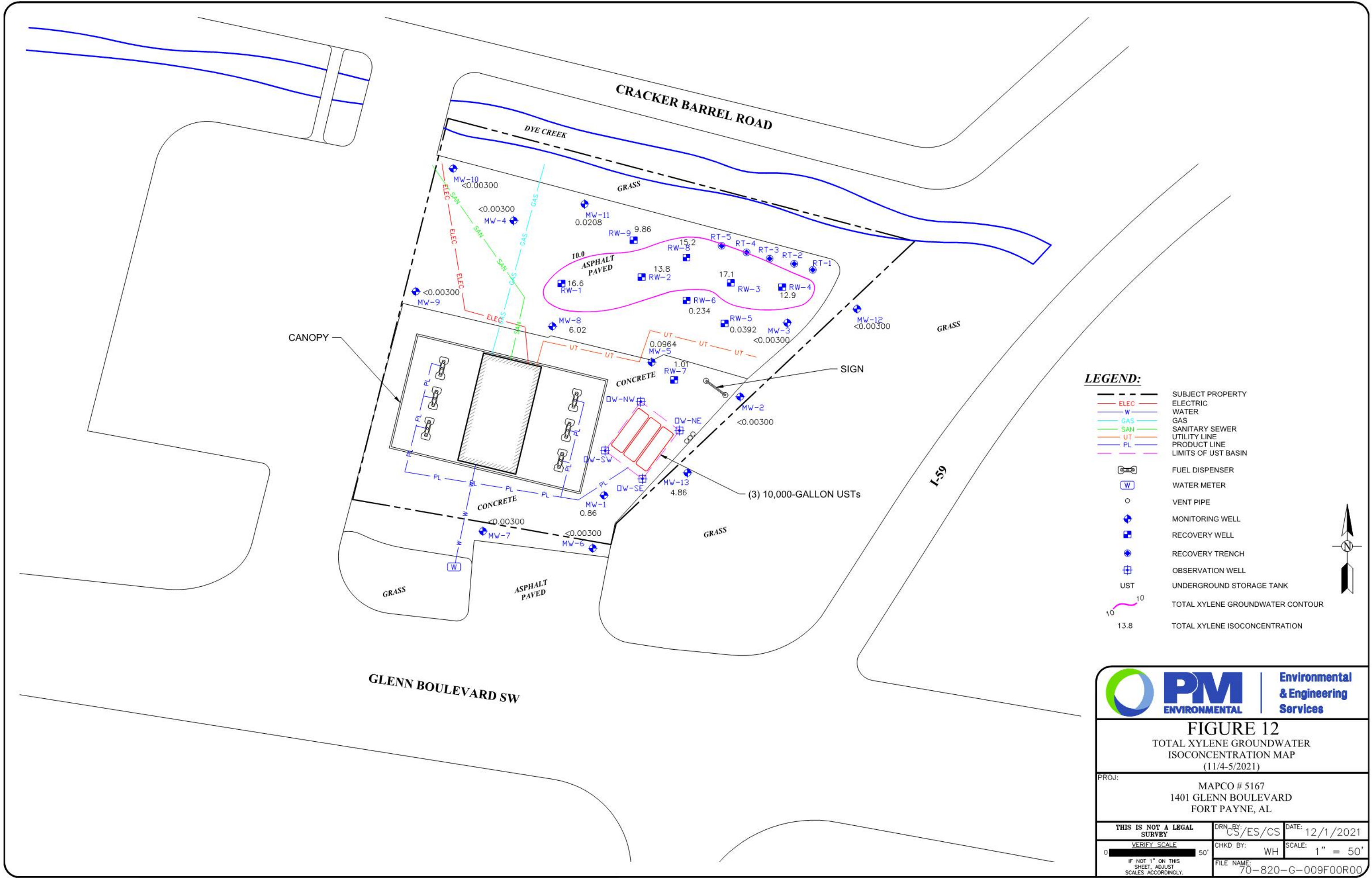
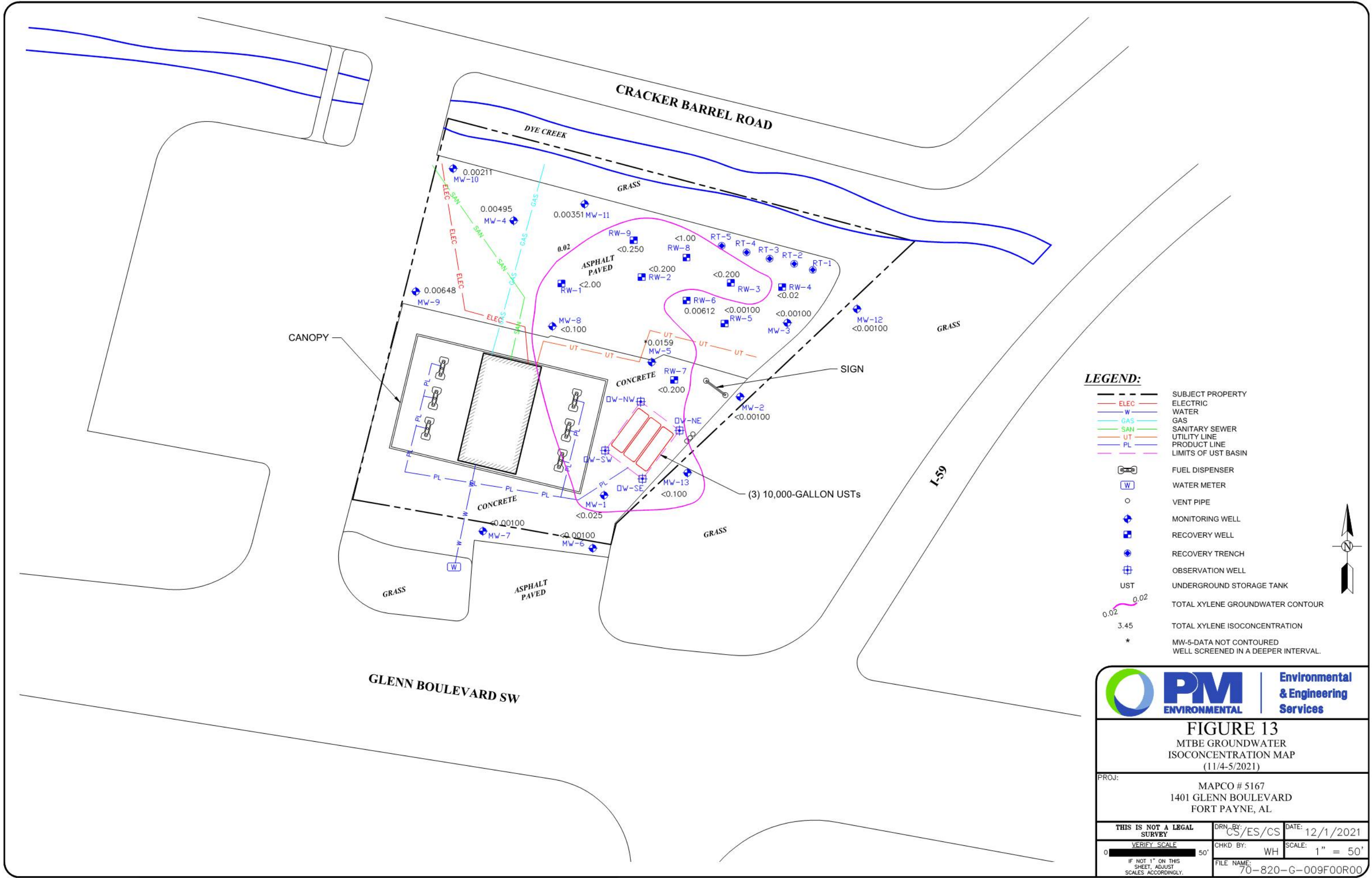


FIGURE 12
 TOTAL XYLENE GROUNDWATER
 ISOCONCENTRATION MAP
 (11/4-5/2021)

PROJ: MAPCO # 5167
 1401 GLENN BOULEVARD
 FORT PAYNE, AL

THIS IS NOT A LEGAL SURVEY	DRN. BY: CS/ES/CS	DATE: 12/1/2021
VERIFY SCALE	CHKD BY: WH	SCALE: 1" = 50'
IF NOT 1" ON THIS SHEET, ADJUST SCALES ACCORDINGLY.		
FILE NAME: 70-820-G-009F00R00		



- LEGEND:**
- SUBJECT PROPERTY
 - ELEC ELECTRIC
 - W WATER
 - GAS GAS
 - SAN SANITARY SEWER
 - UT UTILITY LINE
 - PL PRODUCT LINE
 - LIMITS OF UST BASIN
 - ⊞ FUEL DISPENSER
 - ⊞ WATER METER
 - VENT PIPE
 - ⊕ MONITORING WELL
 - ⊞ RECOVERY WELL
 - ⊕ RECOVERY TRENCH
 - ⊞ OBSERVATION WELL
 - ⊞ UST UNDERGROUND STORAGE TANK
 - 0.02 0.02 TOTAL XYLENE GROUNDWATER CONTOUR
 - 3.45 TOTAL XYLENE ISOCONCENTRATION
 - * MW-5-DATA NOT CONTOURED WELL SCREENED IN A DEEPER INTERVAL.



FIGURE 13
 MTBE GROUNDWATER
 ISOCONCENTRATION MAP
 (11/4-5/2021)

PROJ: MAPCO # 5167
 1401 GLENN BOULEVARD
 FORT PAYNE, AL

THIS IS NOT A LEGAL SURVEY	DRN. BY: CS/ES/CS	DATE: 12/1/2021
VERIFY SCALE	CHKD BY: WH	SCALE: 1" = 50'
IF NOT 1" ON THIS SHEET, ADJUST SCALES ACCORDINGLY.		
FILE NAME: 70-820-G-009F00R00		

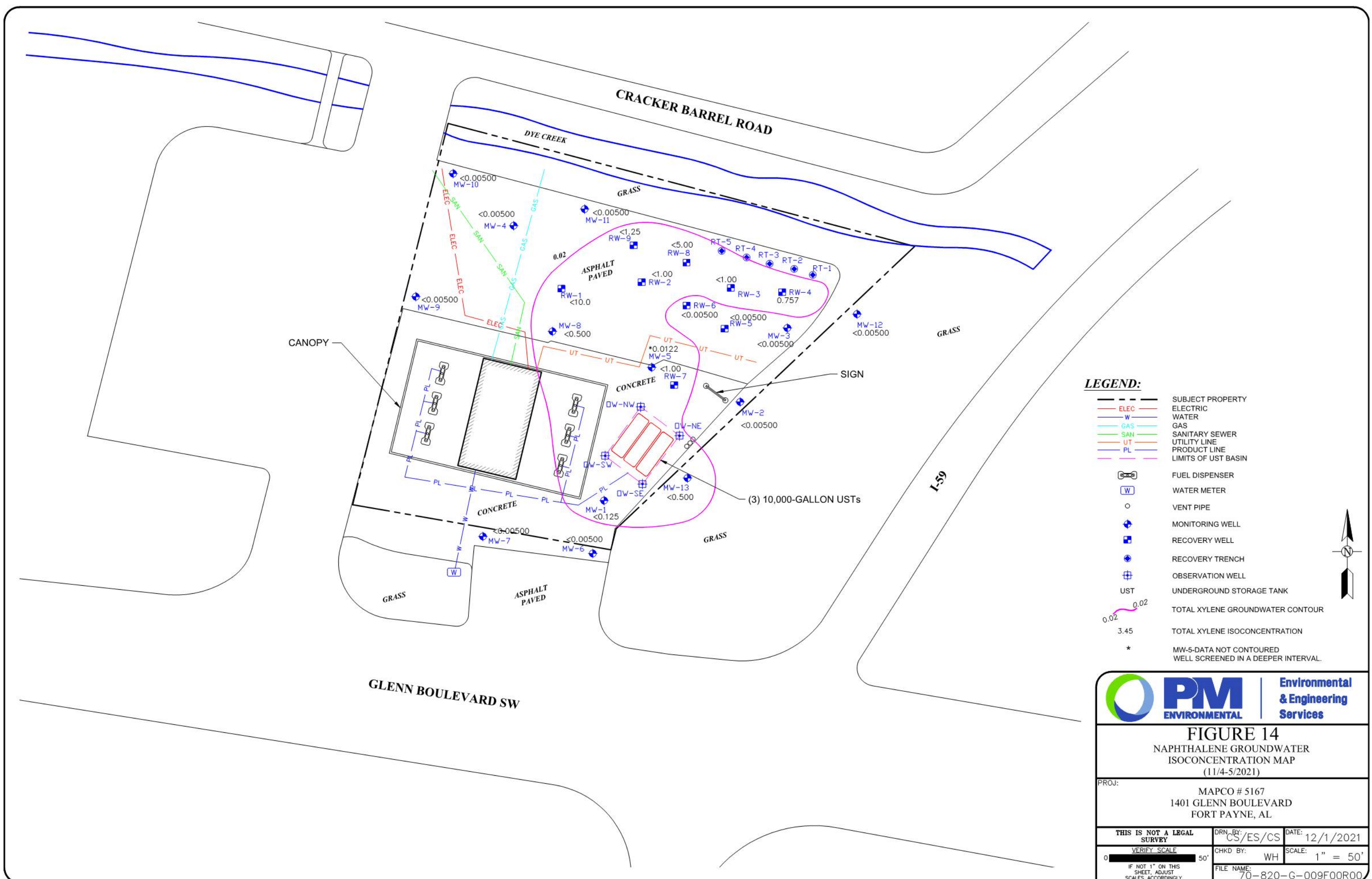
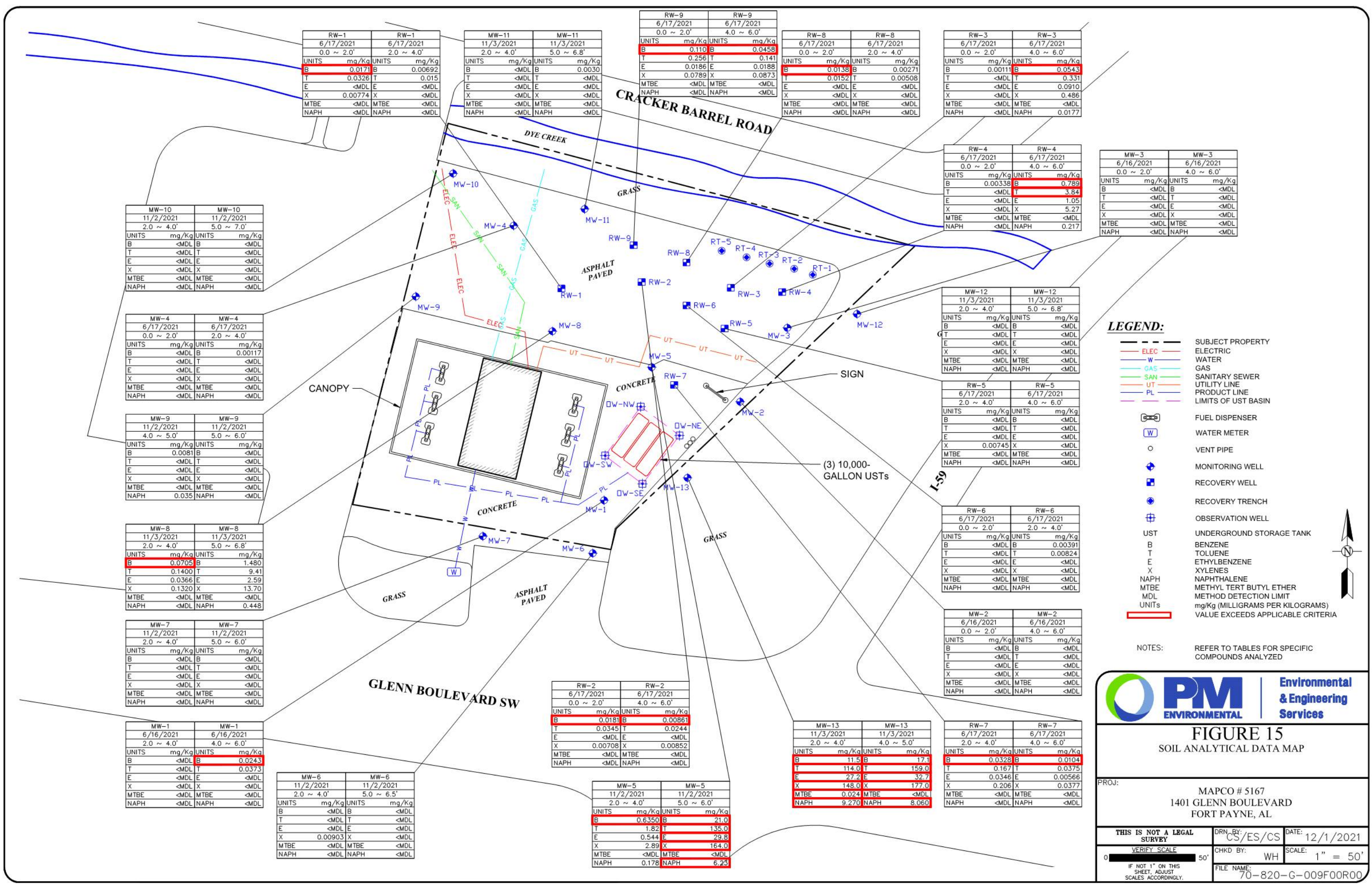


FIGURE 14
 NAPHTHALENE GROUNDWATER
 ISOCONCENTRATION MAP
 (11/4-5/2021)

PROJ: MAPCO # 5167
 1401 GLENN BOULEVARD
 FORT PAYNE, AL

THIS IS NOT A LEGAL SURVEY	DRN. BY: CS/ES/CS	DATE: 12/1/2021
VERIFY SCALE	CHKD BY: WH	SCALE: 1" = 50'
IF NOT 1" ON THIS SHEET, ADJUST SCALES ACCORDINGLY.		
FILE NAME: 70-820-G-009F00R00		



RW-1		RW-1	
6/17/2021		6/17/2021	
0.0 ~ 2.0'		2.0 ~ 4.0'	
UNITS	mg/Kg	UNITS	mg/Kg
B	0.0171	B	0.00692
T	0.0326	T	0.015
E	<MDL	E	<MDL
X	0.00774	X	<MDL
MTBE	<MDL	MTBE	<MDL
NAPH	<MDL	NAPH	<MDL

MW-10		MW-10	
11/2/2021		11/2/2021	
2.0 ~ 4.0'		5.0 ~ 7.0'	
UNITS	mg/Kg	UNITS	mg/Kg
B	<MDL	B	<MDL
T	<MDL	T	<MDL
E	<MDL	E	<MDL
X	<MDL	X	<MDL
MTBE	<MDL	MTBE	<MDL
NAPH	<MDL	NAPH	<MDL

MW-4		MW-4	
6/17/2021		6/17/2021	
0.0 ~ 2.0'		2.0 ~ 4.0'	
UNITS	mg/Kg	UNITS	mg/Kg
B	<MDL	B	0.00117
T	<MDL	T	<MDL
E	<MDL	E	<MDL
X	<MDL	X	<MDL
MTBE	<MDL	MTBE	<MDL
NAPH	<MDL	NAPH	<MDL

MW-9		MW-9	
11/2/2021		11/2/2021	
4.0 ~ 5.0'		5.0 ~ 6.0'	
UNITS	mg/Kg	UNITS	mg/Kg
B	0.0081	B	<MDL
T	<MDL	T	<MDL
E	<MDL	E	<MDL
X	<MDL	X	<MDL
MTBE	<MDL	MTBE	<MDL
NAPH	0.035	NAPH	<MDL

MW-8		MW-8	
11/3/2021		11/3/2021	
2.0 ~ 4.0'		5.0 ~ 6.8'	
UNITS	mg/Kg	UNITS	mg/Kg
B	0.0705	B	1.480
T	0.1400	T	9.41
E	0.0366	E	2.59
X	0.1320	X	13.70
MTBE	<MDL	MTBE	<MDL
NAPH	<MDL	NAPH	0.448

MW-7		MW-7	
11/2/2021		11/2/2021	
2.0 ~ 4.0'		5.0 ~ 6.0'	
UNITS	mg/Kg	UNITS	mg/Kg
B	<MDL	B	<MDL
T	<MDL	T	<MDL
E	<MDL	E	<MDL
X	<MDL	X	<MDL
MTBE	<MDL	MTBE	<MDL
NAPH	<MDL	NAPH	<MDL

MW-1		MW-1	
6/16/2021		6/16/2021	
2.0 ~ 4.0'		4.0 ~ 6.0'	
UNITS	mg/Kg	UNITS	mg/Kg
B	<MDL	B	0.0243
T	<MDL	T	0.0373
E	<MDL	E	<MDL
X	<MDL	X	<MDL
MTBE	<MDL	MTBE	<MDL
NAPH	<MDL	NAPH	<MDL

MW-6		MW-6	
11/2/2021		11/2/2021	
2.0 ~ 4.0'		5.0 ~ 6.5'	
UNITS	mg/Kg	UNITS	mg/Kg
B	<MDL	B	<MDL
T	<MDL	T	<MDL
E	<MDL	E	<MDL
X	0.00903	X	<MDL
MTBE	<MDL	MTBE	<MDL
NAPH	<MDL	NAPH	<MDL

MW-11		MW-11	
11/3/2021		11/3/2021	
2.0 ~ 4.0'		5.0 ~ 6.8'	
UNITS	mg/Kg	UNITS	mg/Kg
B	<MDL	B	0.0030
T	<MDL	T	<MDL
E	<MDL	E	<MDL
X	<MDL	X	<MDL
MTBE	<MDL	MTBE	<MDL
NAPH	<MDL	NAPH	<MDL

RW-9		RW-9	
6/17/2021		6/17/2021	
0.0 ~ 2.0'		4.0 ~ 6.0'	
UNITS	mg/Kg	UNITS	mg/Kg
B	0.110	B	0.0458
T	0.256	T	0.141
E	0.0186	E	0.0188
X	0.0789	X	0.0873
MTBE	<MDL	MTBE	<MDL
NAPH	<MDL	NAPH	<MDL

RW-8		RW-8	
6/17/2021		6/17/2021	
0.0 ~ 2.0'		2.0 ~ 4.0'	
UNITS	mg/Kg	UNITS	mg/Kg
B	0.0138	B	0.00271
T	0.0152	T	0.00508
E	<MDL	E	<MDL
X	<MDL	X	<MDL
MTBE	<MDL	MTBE	<MDL
NAPH	<MDL	NAPH	<MDL

RW-3		RW-3	
6/17/2021		6/17/2021	
0.0 ~ 2.0'		4.0 ~ 6.0'	
UNITS	mg/Kg	UNITS	mg/Kg
B	0.00111	B	0.0543
T	<MDL	T	0.331
E	<MDL	E	0.0910
X	<MDL	X	0.486
MTBE	<MDL	MTBE	<MDL
NAPH	<MDL	NAPH	0.0177

RW-4		RW-4	
6/17/2021		6/17/2021	
0.0 ~ 2.0'		4.0 ~ 6.0'	
UNITS	mg/Kg	UNITS	mg/Kg
B	0.00338	B	0.789
T	<MDL	T	3.84
E	<MDL	E	1.05
X	<MDL	X	5.27
MTBE	<MDL	MTBE	<MDL
NAPH	<MDL	NAPH	0.217

MW-12		MW-12	
11/3/2021		11/3/2021	
2.0 ~ 4.0'		5.0 ~ 6.8'	
UNITS	mg/Kg	UNITS	mg/Kg
B	<MDL	B	<MDL
T	<MDL	T	<MDL
E	<MDL	E	<MDL
X	<MDL	X	<MDL
MTBE	<MDL	MTBE	<MDL
NAPH	<MDL	NAPH	<MDL

RW-5		RW-5	
6/17/2021		6/17/2021	
2.0 ~ 4.0'		4.0 ~ 6.0'	
UNITS	mg/Kg	UNITS	mg/Kg
B	<MDL	B	<MDL
T	<MDL	T	<MDL
E	<MDL	E	<MDL
X	0.00745	X	<MDL
MTBE	<MDL	MTBE	<MDL
NAPH	<MDL	NAPH	<MDL

RW-6		RW-6	
6/17/2021		6/17/2021	
0.0 ~ 2.0'		2.0 ~ 4.0'	
UNITS	mg/Kg	UNITS	mg/Kg
B	<MDL	B	0.00391
T	<MDL	T	0.00824
E	<MDL	E	<MDL
X	<MDL	X	<MDL
MTBE	<MDL	MTBE	<MDL
NAPH	<MDL	NAPH	<MDL

MW-2		MW-2	
6/16/2021		6/16/2021	
0.0 ~ 2.0'		4.0 ~ 6.0'	
UNITS	mg/Kg	UNITS	mg/Kg
B	<MDL	B	<MDL
T	<MDL	T	<MDL
E	<MDL	E	<MDL
X	<MDL	X	<MDL
MTBE	<MDL	MTBE	<MDL
NAPH	<MDL	NAPH	<MDL

RW-2		RW-2	
6/17/2021		6/17/2021	
0.0 ~ 2.0'		4.0 ~ 6.0'	
UNITS	mg/Kg	UNITS	mg/Kg
B	0.0181	B	0.00861
T	0.0345	T	0.0244
E	<MDL	E	<MDL
X	0.00708	X	0.00852
MTBE	<MDL	MTBE	<MDL
NAPH	<MDL	NAPH	<MDL

MW-13		MW-13	
11/3/2021		11/3/2021	
2.0 ~ 4.0'		4.0 ~ 5.0'	
UNITS	mg/Kg	UNITS	mg/Kg
B	11.5	B	17.1
T	114.0	T	159.0
E	27.2	E	32.7
X	148.0	X	177.0
MTBE	0.024	MTBE	<MDL
NAPH	9.270	NAPH	8.060

RW-7		RW-7	
6/17/2021		6/17/2021	
2.0 ~ 4.0'		4.0 ~ 6.0'	
UNITS	mg/Kg	UNITS	mg/Kg
B	0.0328	B	0.0104
T	0.167	T	0.0375
E	0.0346	E	0.00566
X	0.206	X	0.0377
MTBE	<MDL	MTBE	<MDL
NAPH	<MDL	NAPH	<MDL

MW-5		MW-5	
11/2/2021		11/2/2021	
2.0 ~ 4.0'		5.0 ~ 6.0'	
UNITS	mg/Kg	UNITS	mg/Kg
B	0.6350	B	21.0
T	1.82	T	135.0
E	0.544	E	29.8
X	2.89	X	164.0
MTBE	<MDL	MTBE	<MDL
NAPH	0.178	NAPH	6.23

LEGEND:

- SUBJECT PROPERTY
- ELEC ELECTRIC
- W WATER
- GAS GAS
- SAN SANITARY SEWER
- UT UTILITY LINE
- PL PRODUCT LINE
- LIMITS OF UST BASIN

- FUEL DISPENSER
- WATER METER
- VENT PIPE
- MONITORING WELL
- RECOVERY WELL
- RECOVERY TRENCH
- OBSERVATION WELL
- UNDERGROUND STORAGE TANK
- B BENZENE
- T TOLUENE
- E ETHYLBENZENE
- X XYLENES
- NAPH NAPHTHALENE
- MTBE METHYL TERT BUTYL ETHER
- MDL METHOD DETECTION LIMIT
- UNITS mg/Kg (MILLIGRAMS PER KILOGRAMS)
- Value in red box VALUE EXCEEDS APPLICABLE CRITERIA

NOTES: REFER TO TABLES FOR SPECIFIC COMPOUNDS ANALYZED

PM ENVIRONMENTAL | Environmental & Engineering Services

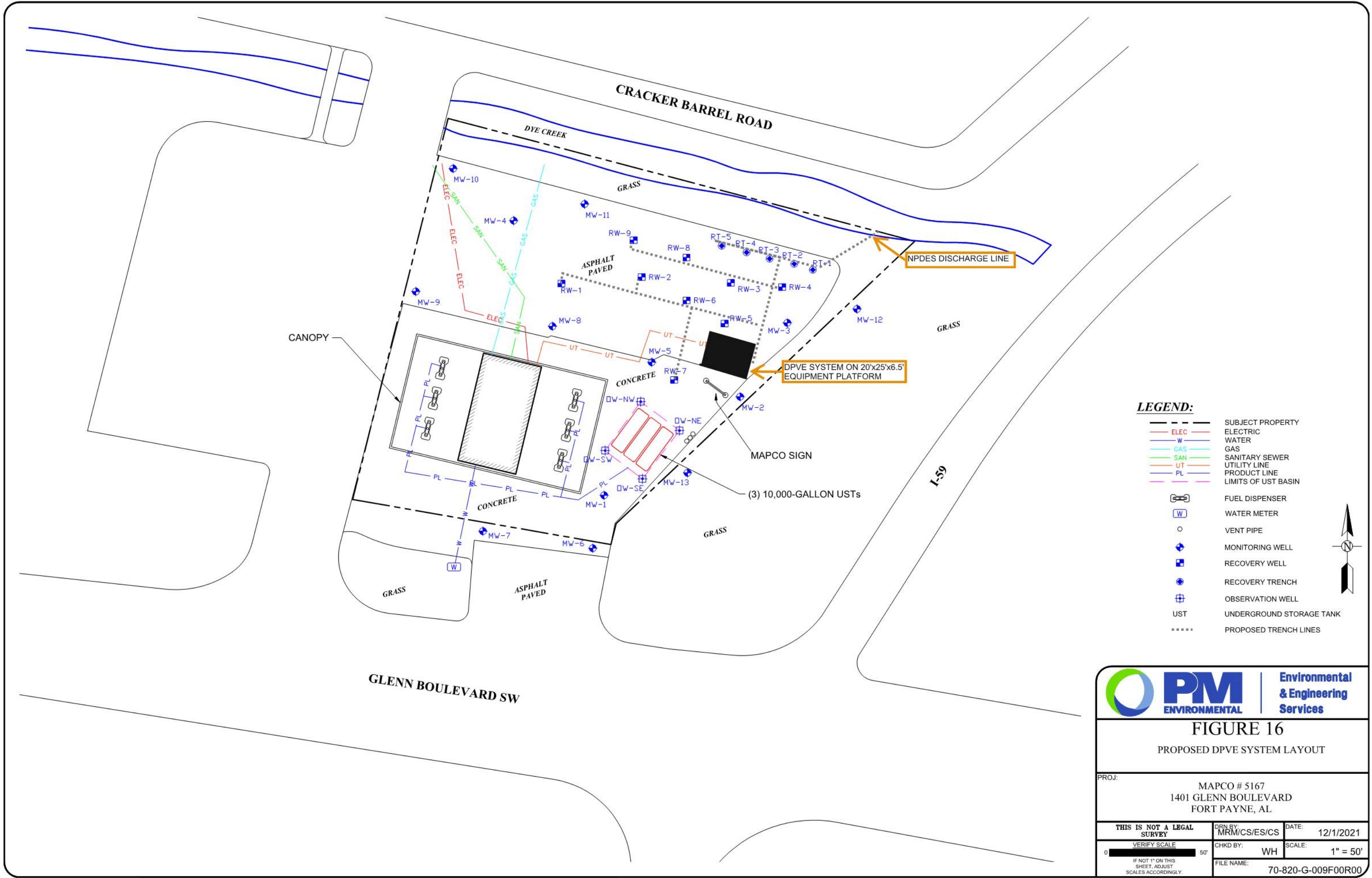
FIGURE 15
SOIL ANALYTICAL DATA MAP

PROJ: MAPCO # 5167
1401 GLENN BOULEVARD
FORT PAYNE, AL

THIS IS NOT A LEGAL SURVEY
VERIFY SCALE
IF NOT 1" ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRN. BY: CS/ES/CS
CHKD BY: WH
FILE NAME: 70-820-G-009F00R00

DATE: 12/1/2021
SCALE: 1" = 50'



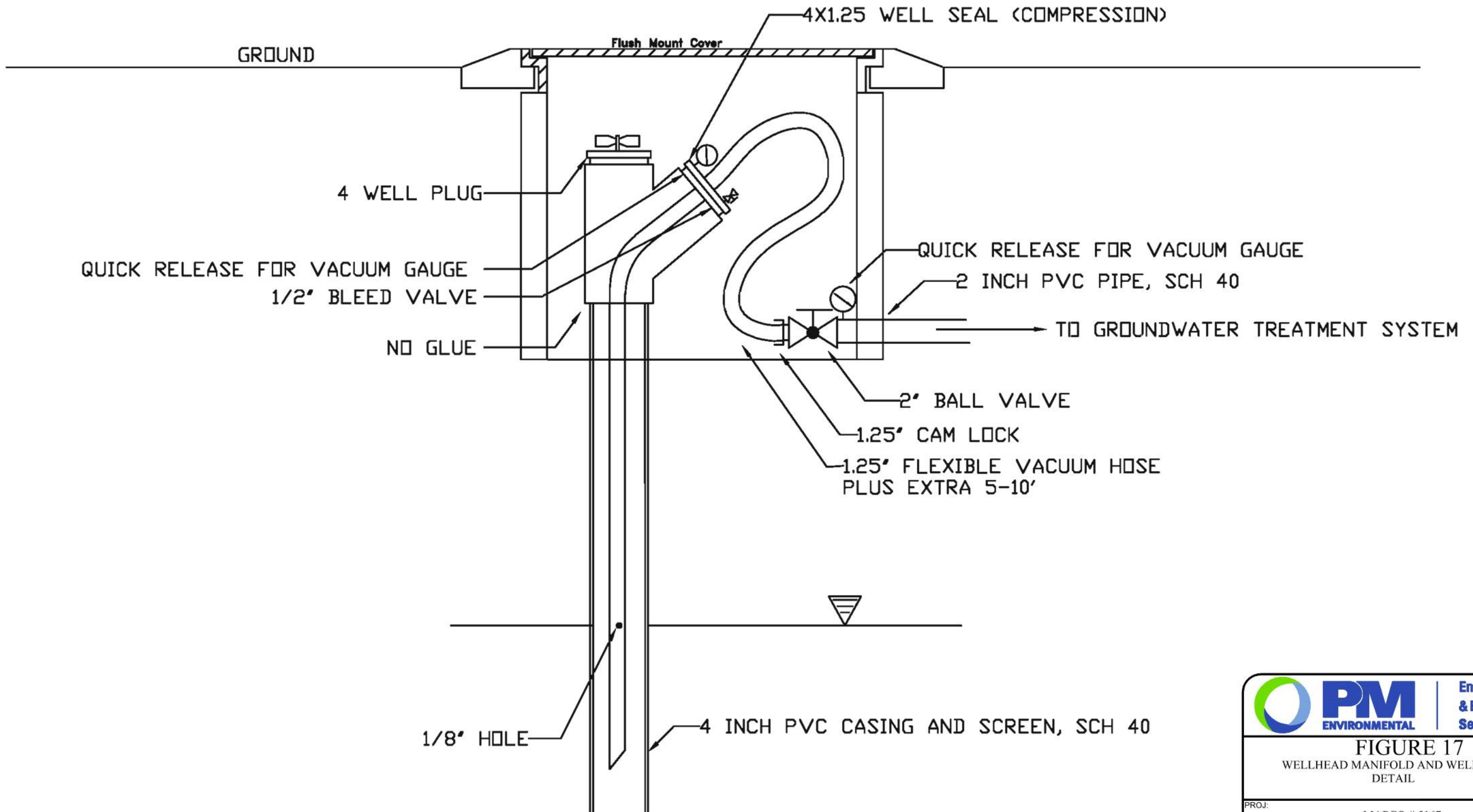
- LEGEND:**
- SUBJECT PROPERTY
 - ELEC
 - WATER
 - GAS
 - SANITARY SEWER
 - UTILITY LINE
 - PRODUCT LINE
 - LIMITS OF UST BASIN
 - FUEL DISPENSER
 - WATER METER
 - VENT PIPE
 - MONITORING WELL
 - RECOVERY WELL
 - RECOVERY TRENCH
 - OBSERVATION WELL
 - UST
 - PROPOSED TRENCH LINES




FIGURE 16
PROPOSED DPVE SYSTEM LAYOUT

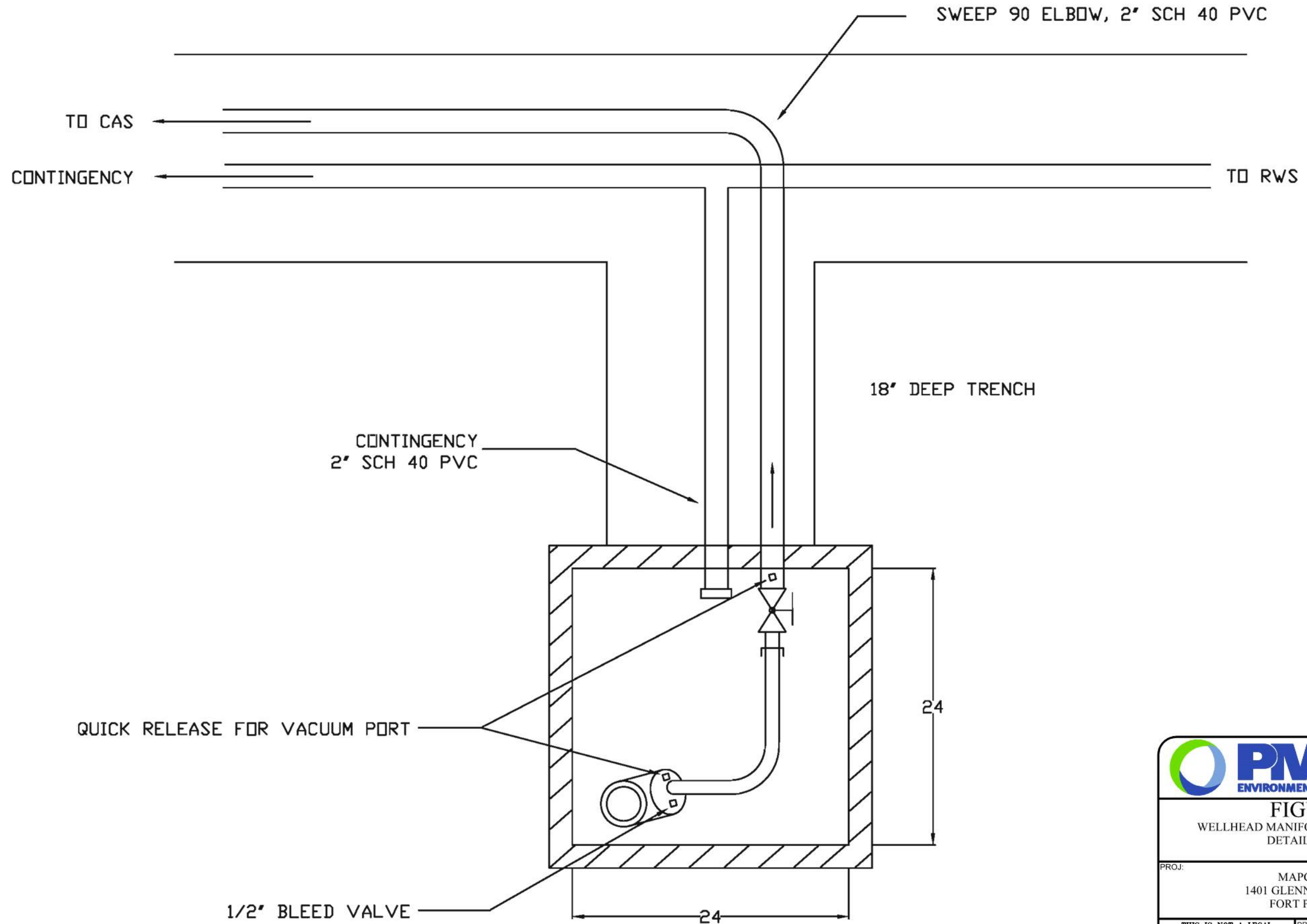
PROJ: MAPCO # 5167
1401 GLENN BOULEVARD
FORT PAYNE, AL

THIS IS NOT A LEGAL SURVEY	DRN BY: MRM/CS/ES/CS	DATE: 12/1/2021
VERIFY SCALE	CHKD BY: WH	SCALE: 1" = 50'
IF NOT 1" ON THIS SHEET, ADJUST SCALES ACCORDINGLY.		FILE NAME: 70-820-G-009F00R00




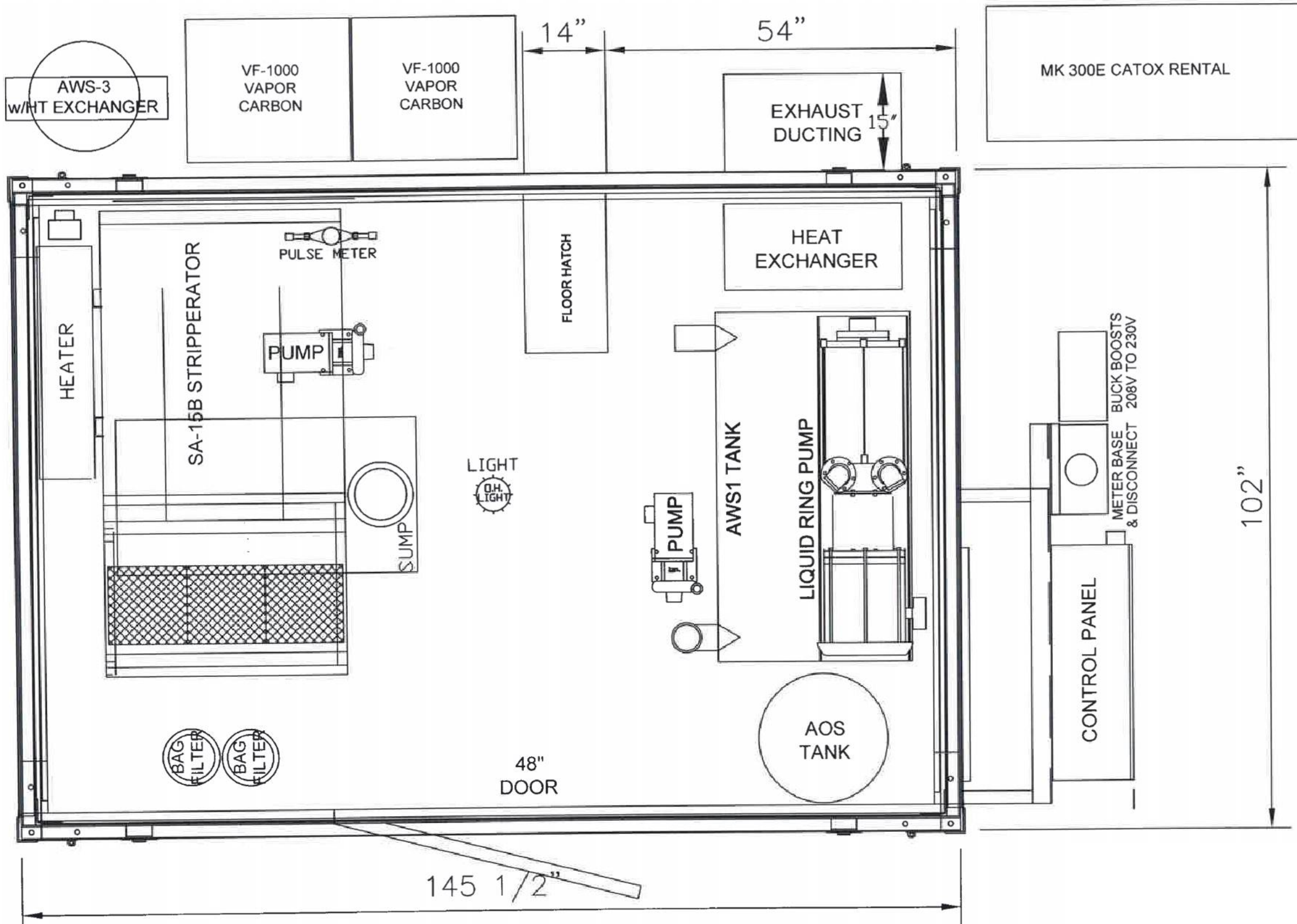
*Figure taken from MK Environmental Standard Equipment

		Environmental & Engineering Services
FIGURE 17 WELLHEAD MANIFOLD AND WELL VAULT DETAIL		
PROJ: MAPCO # 5167 1401 GLENN BOULEVARD FORT PAYNE, AL		
THIS IS NOT A LEGAL SURVEY	DRN BY: MRM/CS/ES/CS	DATE: 12/1/2021
NOT TO SCALE	CHKD BY: WH	SCALE: 1" = 50'
FILE NAME: 70-820-G-009F00R00		




*Figure taken from MK Environmental Standard Equipment

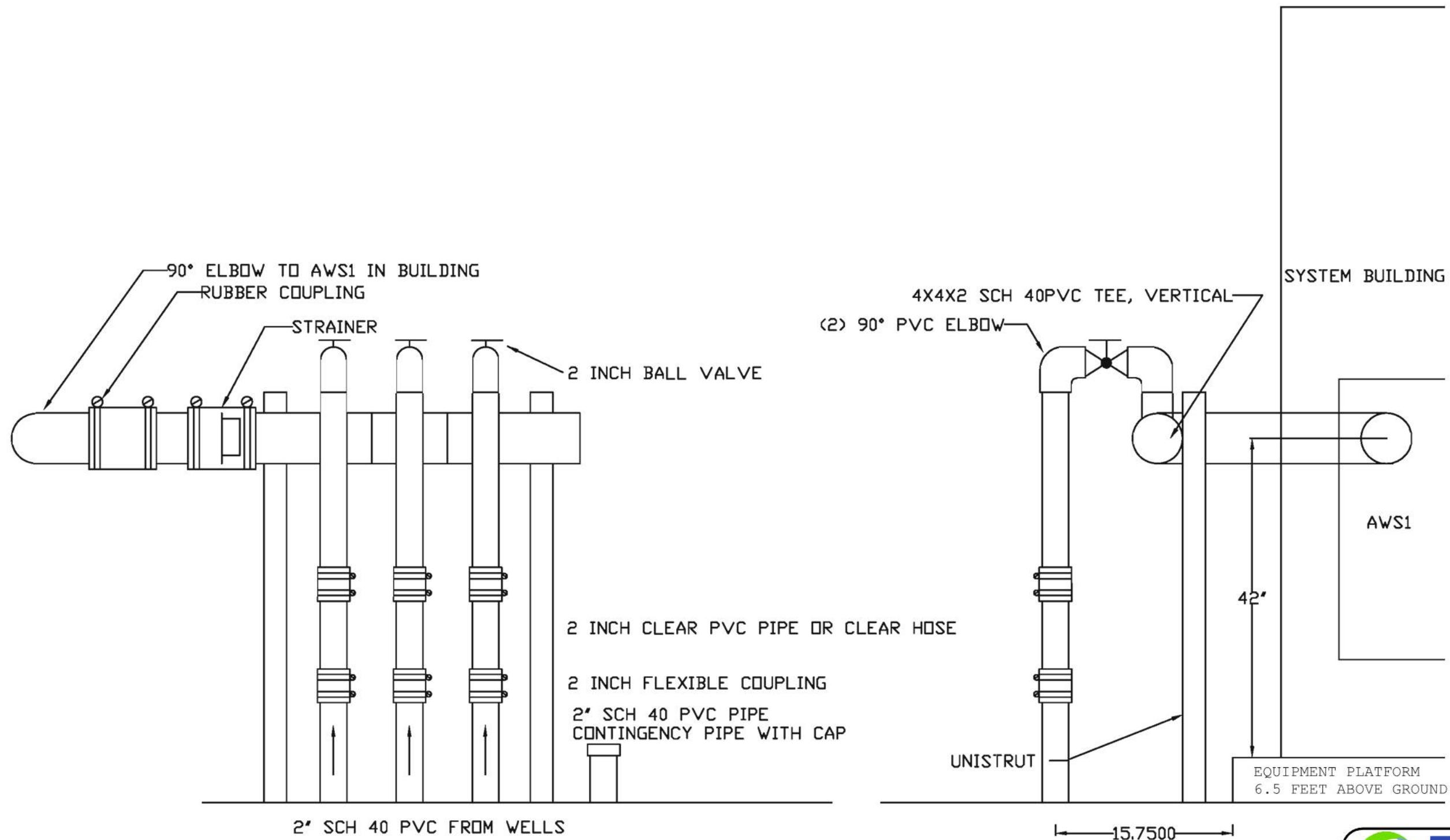
 PM ENVIRONMENTAL		Environmental & Engineering Services
FIGURE 18 WELLHEAD MANIFOLD AND WELL VAULT DETAIL (TOP VIEW)		
PROJ: MAPCO # 5167 1401 GLENN BOULEVARD FORT PAYNE, AL		
THIS IS NOT A LEGAL SURVEY	DRN BY: MRM/CS/ES/CS	DATE: 12/1/2021
NOT TO	CHKD BY: WH	SCALE: 1" = 50'
FILE NAME: 70-820-G-009F00R00		




Notes:
 Equipment depicted in this figure will be arranged on the equipment platform to maximize operational efficiency while maintaining sufficient room for personnel to safely work within the elevated space.

 PM ENVIRONMENTAL		Environmental & Engineering Services
FIGURE 19 DPVE EQUIPMENT PLATFORM DETAIL		
PROJ: MAPCO # 5167 1401 GLENN BOULEVARD FORT PAYNE, AL		
THIS IS NOT A LEGAL SURVEY	DRN BY: MRM/CS/ES/CS CHKD BY: WH	DATE: 12/1/2021 SCALE: 1" = 50'
NOT TO SCALE		FILE NAME: 70-820-G-009F00R00

*Figure taken from MK Environmental Standard Equipment Diagrams



 PM ENVIRONMENTAL		Environmental & Engineering Services
FIGURE 20 INLET PIPING MANIFOLD DETAIL		
PROJ: MAPCO # 5167 1401 GLENN BOULEVARD FORT PAYNE, AL		
THIS IS NOT A LEGAL SURVEY	DRN BY: MRM/CS/ES/CS	DATE: 12/1/2021
NOT TO SCALE	CHKD BY: WH	SCALE: 1" = 50'
FILE NAME: 70-820-G-009F00R00		

*Figure taken from MK Environmental Standard Equipment Diagrams

Appendix A



TABLE 1
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
MAPCO #5167
1401 GLENN BOULEVARD, FORT PAYNE, DEKALB COUNTY, ALABAMA
FACILITY ID #15420-049-000392; UST INCIDENT #UST21-05-04

SAMPLE ID	DEPTH	DATE	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLENES	MTBE	NAPHTHALENE
			<i>Concentrations in mg/Kg or ppm</i>					
MW-1	2-4'	6/16/2021	<0.001	<0.005	<0.0025	<0.0065	<0.001	<0.0125
	4-6'		0.0243	0.0373	<0.0025	<0.0065	<0.001	<0.0125
MW-2	0-2'	6/16/2021	<0.001	<0.005	<0.0025	<0.0065	<0.001	<0.0125
	4-6'		<0.001	<0.005	<0.0025	<0.0065	<0.001	<0.0125
MW-3	0-2'	6/16/2021	<0.001	<0.005	<0.0025	<0.0065	<0.001	<0.0125
	4-6'		<0.001	<0.005	<0.0025	<0.0065	<0.001	<0.0125
MW-4	0-2'	6/17/2021	<0.001	<0.005	<0.0025	<0.0065	<0.001	<0.0125
	2-4'		0.00117	<0.005	<0.0025	<0.0065	<0.001	<0.0125
MW-5	2-4'	11/2/2021	0.6350	1.82	0.544	2.89	<0.00100	0.178
	5-6'		21.0	135.0	29.8	164.0	<0.00800	6.23
MW-6	2-4'	11/2/2021	<0.00100	<0.00500	<0.00250	0.00903	<0.00100	<0.0125
	5-6.5'		<0.00100	<0.00500	<0.00250	<0.00650	<0.00100	<0.0125
MW-7	4-5'	11/2/2021	<0.00100	<0.00500	<0.00250	<0.00650	<0.00100	<0.0125
	5-6'		<0.00100	<0.00500	<0.00250	<0.00650	<0.00100	<0.0125
MW-8	2-4'	11/3/2021	0.0705	0.1400	0.0366	0.1320	<0.00100	<0.0125
	5-6.8'		1.480	9.41	2.59	13.70	<0.00100	0.448
MW-9	4-5'	11/2/2021	0.0081	<0.00500	<0.00250	<0.00650	<0.00100	0.035
	5-6'		<0.00100	<0.00500	<0.00250	<0.00650	<0.00100	<0.0125
MW-10	2-4'	11/2/2021	<0.00100	<0.00500	<0.00250	<0.00650	<0.00100	<0.0125
	5-7'		<0.00100	<0.00500	<0.00250	<0.00650	<0.00100	<0.0125
MW-11	2-4'	11/3/2021	<0.00100	<0.00500	<0.00250	<0.00650	<0.00100	<0.0125
	5-6.8'		0.0030	<0.00500	<0.00250	<0.00650	<0.00100	<0.0125
MW-12	2-4'	11/3/2021	<0.00100	<0.00500	<0.00250	<0.00650	<0.00100	<0.0125
	5-6.8'		<0.00100	<0.00500	<0.00250	<0.00650	<0.00100	<0.0125
MW-13	2-4'	11/3/2021	11.5	114.0	27.2	148.0	0.024	9.270
	4-5'		17.1	159.0	32.7	177.0	<0.0200	8.060
ARBCA ISLs			0.00845	3.6	3.61	62.4	0.00862	0.579

TABLE 1
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
MAPCO #5167
1401 GLENN BOULEVARD, FORT PAYNE, DEKALB COUNTY, ALABAMA
FACILITY ID #15420-049-000392; UST INCIDENT #UST21-05-04

SAMPLE ID	DEPTH	DATE	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLENES	MTBE	NAPHTHALENE
			<i>Concentrations in mg/Kg or ppm</i>					
RW-1	0-2'	6/17/2021	0.0171	0.0326	<0.0025	0.00774	<0.001	<0.0125
	2-4'		0.00692	0.015	<0.0025	<0.0065	<0.001	<0.0125
RW-2	0-2'	6/17/2021	0.0181	0.0345	<0.0025	0.00708	<0.001	<0.0125
	4-6'		0.00861	0.0244	<0.0025	0.00852	<0.001	<0.0125
RW-3	0-2'	6/17/2021	0.00111	<0.005	<0.0025	<0.0065	<0.001	<0.0125
	4-6'		0.0543	0.331	0.0910	0.486	<0.001	0.0177
RW-4	0-2'	6/17/2021	0.00338	<0.005	<0.0025	<0.0065	<0.001	<0.0125
	4-6'		0.789	3.84	1.05	5.27	<0.001	0.217
RW-5	2-4'	6/17/2021	<0.001	<0.005	<0.0025	0.00745	<0.001	<0.0125
	4-6'		<0.001	<0.005	<0.0025	<0.0065	<0.001	<0.0125
RW-6	0-2'	6/17/2021	<0.001	<0.005	<0.0025	<0.0065	<0.001	<0.0125
	2-4'		0.00391	0.00824	<0.0025	<0.0065	<0.001	<0.0125
RW-7	2-4'	6/17/2021	0.0328	0.167	0.0346	0.206	<0.001	<0.0125
	4-6'		0.0104	0.0375	0.00566	0.0377	<0.001	<0.0125
RW-8	0-2'	6/17/2021	0.0138	0.0152	<0.0025	<0.0065	<0.001	<0.0125
	2-4'		0.00271	0.00508	<0.0025	<0.0065	<0.001	<0.0125
RW-9	0-2'	6/17/2021	0.110	0.256	0.0186	0.0789	<0.001	<0.0125
	4-6'		0.0458	0.141	0.0188	0.0873	<0.001	<0.0125
ARBCA ISLs			0.00845	3.6	3.61	62.4	0.00862	0.579
NOTES: 1. ID - Identification; mg/kg - milligrams per kilogram; ppm - parts per million 2. ARBCA ISLs - Alabama Risk Based Corrective Action Initial Screening Levels 3. Bolded and italicized values indicate potential exceedances of the ISLs where the detection limit is greater than the ISL. 4. Bolded and Shaded Values Exceed the ISLs								

TABLE 2
SUMMARY OF SOIL PHYSICAL PROPERTY ANALYSIS
MAPCO #5167

1401 GLENN BOULEVARD, FORT PAYNE, DEKALB COUNTY, ALABAMA
FACILITY ID #15420-049-000392; UST INCIDENT #UST21-05-04

DATE		November 5, 2021			
SAMPLE ID		MW-6 ST-1		MW-6 ST-2	
DEPTH		2-4'		7-9'	
PARAMETER	UNITS	SHELBY TUBE ANALYSIS			
Fractional Organic Carbon	g/g	0.007		0.086	
Average Bulk Dry Density	g/cm ³	1.940		1.721	
Moisture Content by weight	g/g	9.2		21.5	
Volumetric Moisture Content	cm ³ /cm ³	0.1790		0.348	
Soil Porosity	cm ³ /cm ³	0.2810		0.365	
Grain Size Distribution	Gravel (>Sieve #4)	27.6%		5.7%	
	Sand (Sieve 4 to 200)	48.3%		57.2%	
	Clay (<Sieve #200)	24.1%		37.1%	
Capillary Fringe (calculated see formula below)		Description	Grain Size	Percent	Calculation
$\frac{0.15}{0.2 \times \text{grain size in cm}} \times \text{grain size distribution \%} =$		Gravel	0.475 cm	16.7%	0.3
		Sand	0.0425 cm	52.8%	9.3
		Clay	0.0075 cm	30.6%	30.6
		Total Calculated Capillary Fringe Height in Centimeters			

TABLE 3
SUMMARY OF MONITORING WELL CONSTRUCTION, GROUNDWATER ELEVATION, AND GROUNDWATER
ANALYTICAL RESULTS
MAPCO #5167
1401 GLENN BOULEVARD, FORT PAYNE, DEKALB COUNTY, ALABAMA
FACILITY ID #15420-049-000392; UST INCIDENT #UST21-05-04

DATE	DEPTH TO WATER feet below TOC	FREE PRODUCT feet	WATER TABLE ELEVATION feet above msl	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	TOTAL BTEX	MTBE	NAPHTHALENE
				Concentrations in mg/L (ppm)						
MW-1		Date of Installation: June 16, 2021			Well Type			2" Type II		
		TOC Elevation in feet above msl: 812.00			Screened Interval in feet below TOC: 5-10					
7/2/2021	1.99	ND	810.01	0.886	2.78	0.159	1.00	4.825	0.00208	<0.125
11/4/2021	2.55	ND	809.45	0.526	0.0907	0.186	0.86	1.660	<0.025	<0.125
ARBCA ISLs				0.005	1	0.7	10	---	0.02	0.02
MW-2		Date of Installation: June 16, 2021			Well Type			2" Type II		
		TOC Elevation in feet above msl: 812.45			Screened Interval in feet below TOC: 4-11					
7/2/2021	2.42	ND	810.03	<0.001	<0.001	<0.001	<0.003	<0.006	<0.001	<0.005
11/4/2021	2.60	ND	809.85	<0.00100	<0.00100	<0.00100	<0.00300	<0.006	<0.00100	<0.00500
ARBCA ISLs				0.005	1	0.7	10	---	0.02	0.02
MW-3		Date of Installation: June 17, 2021			Well Type			2" Type II		
		TOC Elevation in feet above msl: 813.89			Screened Interval in feet below TOC: 3-10					
7/2/2021	3.38	ND	810.51	<0.001	<0.001	<0.001	<0.003	<0.006	<0.001	<0.005
11/4/2021	3.86	ND	810.03	<0.00100	<0.00100	<0.00100	<0.00300	<0.006	<0.00100	<0.00500
ARBCA ISLs				0.005	1	0.7	10	---	0.02	0.02
MW-4		Date of Installation: June 17, 2021			Well Type			2" Type II		
		TOC Elevation in feet above msl: 814.07			Screened Interval in feet below TOC: 4-11					
7/2/2021	4.88	ND	809.19	0.00133	<0.001	<0.001	<0.003	0.001	0.00351	<0.005
11/4/2021	5.72	ND	808.35	0.00139	<0.00100	<0.00100	<0.00300	<0.0639	0.00495	<0.00500
ARBCA ISLs				0.005	1	0.7	10	---	0.02	0.02
MW-5		Date of Installation: November 2, 2021			Well Type			2" Type III		
		TOC Elevation in feet above msl: 813.86			Screened Interval in feet below TOC: 34.94-44.94					
11/5/2021	42.53	ND	771.33	0.1	0.134	0.0148	0.0964	0.35	0.0159	0.0122
ARBCA ISLs				0.005	1	0.7	10	---	0.02	0.02
MW-6		Date of Installation: November 3, 2021			Well Type			2" Type II		
		TOC Elevation in feet above msl: 813.91			Screened Interval in feet below TOC: 4.4-12.4					
11/5/2021	3.30	ND	810.61	<0.00100	<0.00100	<0.00100	<0.00300	<0.006	<0.00100	<0.00500
ARBCA ISLs				0.005	1	0.7	10	---	0.02	0.02
MW-7		Date of Installation: November 2, 2021			Well Type			2" Type II		
		TOC Elevation in feet above msl: 813.74			Screened Interval in feet below TOC: 4.67-12.67					
11/5/2021	4.28	ND	809.46	<0.00100	<0.00100	<0.00100	<0.00300	<0.006	<0.00100	<0.00500
ARBCA ISLs				0.005	1	0.7	10	---	0.02	0.02
MW-8		Date of Installation: November 3, 2021			Well Type			2" Type II		
		TOC Elevation in feet above msl: 812.38			Screened Interval in feet below TOC: 3.87-10.87					
11/5/2021	4.46	ND	807.92	5.00	8.58	1.17	6.02	20.77	<0.100	<0.500
ARBCA ISLs				0.005	1	0.7	10	---	0.02	0.02
MW-9		Date of Installation: November 2, 2021			Well Type			2" Type II		
		TOC Elevation in feet above msl: 811.85			Screened Interval in feet below TOC: 2.89-9.89					
11/5/2021	5.20	ND	806.65	<0.00100	<0.00100	<0.00100	<0.00300	<0.006	0.00648	<0.00500
ARBCA ISLs				0.005	1	0.7	10	---	0.02	0.02
MW-10		Date of Installation: November 2, 2021			Well Type			2" Type II		
		TOC Elevation in feet above msl: 810.01			Screened Interval in feet below TOC: 4.44-11.44					
11/5/2021	5.82	ND	804.19	<0.00100	<0.00100	<0.00100	<0.00300	<0.006	0.00211	<0.00500
ARBCA ISLs				0.005	1	0.7	10	---	0.02	0.02

TABLE 3
SUMMARY OF MONITORING WELL CONSTRUCTION, GROUNDWATER ELEVATION, AND GROUNDWATER
ANALYTICAL RESULTS
MAPCO #5167
1401 GLENN BOULEVARD, FORT PAYNE, DEKALB COUNTY, ALABAMA
FACILITY ID #15420-049-000392; UST INCIDENT #UST21-05-04

DATE	DEPTH TO WATER feet below TOC	FREE PRODUCT feet	WATER TABLE ELEVATION feet above msl	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	TOTAL BTEX	MTBE	NAPHTHALENE
Concentrations in mg/L (ppm)										
MW-11		Date of Installation: November 3, 2021		Well Type			2" Type II			
		TOC Elevation in feet above msl: 810.73		Screened Interval in feet below TOC:			3.68-10.68			
11/5/2021	6.18	ND	804.55	0.194	0.0218	0.00658	0.0208	0.243	0.00351	<0.00500
ARBCA ISLs				0.005	1	0.7	10	---	0.02	0.02
MW-12		Date of Installation: November 3, 2021		Well Type			2" Type II			
		TOC Elevation in feet above msl: 814.71		Screened Interval in feet below TOC:			2.35-8.35			
11/5/2021	5.20	ND	809.51	<0.00100	<0.00100	<0.00100	<0.00300	<0.006	<0.00100	<0.00500
ARBCA ISLs				0.005	1	0.7	10	---	0.02	0.02
MW-13		Date of Installation: November 3, 2021		Well Type			2" Type II			
		TOC Elevation in feet above msl: 810.78		Screened Interval in feet below TOC:			2.16-9.16			
11/5/2021	0.61	ND	810.17	3.62	10.3	0.87	4.86	19.650	<0.100	<0.500
ARBCA ISLs				0.005	1	0.7	10	---	0.02	0.02
RW-1		Date of Installation: June 17, 2021		Well Type			4" Type II			
		TOC Elevation in feet above msl: 813.53		Screened Interval in feet below TOC:			5.5-10.5			
7/2/2021	7.32	1.95	804.65	20.7	37.7	2.95	16.1	77.45	<0.200	<1.00
11/5/2021	5.98	ND	807.55	14.7	30.8	2.28	12.8	60.58	<2.00	<10.0
	Duplicate			16.3	37.9	2.92	16.6	73.72	<0.250	<1.25
ARBCA ISLs				0.005	1	0.7	10	---	0.02	0.02
RW-2		Date of Installation: June 17, 2021		Well Type			4" Type II			
		TOC Elevation in feet above msl: 812.86		Screened Interval in feet below TOC:			4-9			
7/2/2021	6.47	0.79	805.76	10.5	31.4	4.05	25.4	71.350	<0.200	1.16
	Duplicate			7.96	27.8	3.62	21.1	60.480	<1.00	<5.00
11/5/2021	6.14	0.01	806.71	15.6	39.4	2.64	13.8	71.440	<0.200	<1.00
ARBCA ISLs				0.005	1	0.7	10	---	0.02	0.02
RW-3		Date of Installation: June 17, 2021		Well Type			4" Type II			
		TOC Elevation in feet above msl: 813.02		Screened Interval in feet below TOC:			5-10			
7/2/2021	6.10	0.01	806.91	13.4	31.0	2.24	12.3	58.940	<0.200	<1.0
11/4/2021	6.40	0.01	806.61	13.2	32.3	3.11	17.1	65.710	<0.200	<1.00
ARBCA ISLs				0.005	1	0.7	10	---	0.02	0.02
RW-4		Date of Installation: June 17, 2021		Well Type			4" Type II			
		TOC Elevation in feet above msl: 811.63		Screened Interval in feet below TOC:			3.5-8.5			
7/2/2021	5.08	ND	806.55	1.36	3.81	0.316	1.74	7.226	<0.020	<0.100
11/4/2021	5.46	ND	806.17	6.22	27.1	3.04	12.9	49.260	<0.0200	0.757
ARBCA ISLs				0.005	1	0.7	10	---	0.02	0.02
RW-5		Date of Installation: June 17, 2021		Well Type			4" Type II			
		TOC Elevation in feet above msl: 812.36		Screened Interval in feet below TOC:			4.4-9.4			
7/2/2021	4.09	ND	808.27	0.0143	0.0203	0.0013	0.00899	0.0449	<0.001	<0.005
11/5/2021	4.71	ND	807.65	0.00651	0.0196	0.00436	0.0392	0.0697	<0.00100	<0.00500
ARBCA ISLs				0.005	1	0.7	10	---	0.02	0.02
RW-6		Date of Installation: June 17, 2021		Well Type			4" Type II			
		TOC Elevation in feet above msl: 812.76		Screened Interval in feet below TOC:			5.3-10.3			
7/2/2021	3.73	ND	809.03	0.0833	0.106	0.00779	0.0477	0.245	0.00217	<0.005
11/5/2021	4.53	ND	808.23	0.405	0.0671	0.00122	0.234	0.707	0.00612	<0.00500
ARBCA ISLs				0.005	1	0.7	10	---	0.02	0.02

TABLE 3
SUMMARY OF MONITORING WELL CONSTRUCTION, GROUNDWATER ELEVATION, AND GROUNDWATER ANALYTICAL RESULTS
MAPCO #5167
1401 GLENN BOULEVARD, FORT PAYNE, DEKALB COUNTY, ALABAMA
FACILITY ID #15420-049-000392; UST INCIDENT #UST21-05-04

DATE	DEPTH TO WATER feet below TOC	FREE PRODUCT feet	WATER TABLE ELEVATION feet above msl	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	TOTAL BTEX	MTBE	NAPHTHALENE	
<i>Concentrations in mg/L (ppm)</i>											
RW-7		<i>Date of Installation: June 17, 2021</i>			<i>Well Type 4" Type II</i>						
		<i>TOC Elevation in feet above msl: 813.42</i>			<i>Screened Interval in feet below TOC: 5.5-10.5</i>						
7/2/2021	1.81	ND	811.61	1.33	9.49	0.48	3.45	14.750	<0.020	<1.0	
11/5/2021	3.18	ND	810.24	2.14	2.96	0.256	1.01	6.366	<0.200	<1.00	
ARBCA ISLs				0.005	1	0.7	10	---	0.02	0.02	
RW-8		<i>Date of Installation: June 17, 2021</i>			<i>Well Type 4" Type II</i>						
		<i>TOC Elevation in feet above msl: 813.82</i>			<i>Screened Interval in feet below TOC: 5-10</i>						
7/2/2021	6.64	0.89	806.47	14.3	40.5	3.57	19.9	78.270	<1.0	<5.0	
11/4/2021	6.12	0.01	807.69	15.5	38.2	2.97	15.2	71.870	<1.00	<5.00	
ARBCA ISLs				0.005	1	0.7	10	---	0.02	0.02	
RW-9		<i>Date of Installation: June 17, 2021</i>			<i>Well Type 4" Type II</i>						
		<i>TOC Elevation in feet above msl: 812.94</i>			<i>Screened Interval in feet below TOC: 5-10</i>						
7/2/2021	4.90	ND	808.04	5.19	15.5	1.34	9.38	31.410	<0.250	<1.25	
11/4/2021	6.48	ND	806.46	7.28	17.7	1.55	9.86	36.390	<0.250	<1.25	
ARBCA ISLs				0.005	1	0.7	10	---	0.02	0.02	
NOTES:											
1. TOC - Top of Casing; msl - mean sea level; mg/L - milligrams per liter; ppm - parts per million; ND - Non Detect; NS - Not Sampled; NA - Not Applicable; FPH - Free Phase Hydrocarbons											
2. ARBCA ISLs - Alabama Risk Based Corrective Action Initial Screening Levels											
3. The top of casing data was obtained using a Trimble Geo7x and Zephyr antenna.											
4. Bolded and italicized values indicate potential exceedances of the ISLs where the detection limit is greater than the ISL.											
5. Bolded and Shaded Values Exceed the ISLs											

**TABLE 4
SUMMARY OF GROUNDWATER INTRINSIC PARAMETERS
MAPCO #5167**

**1401 GLENN BOULEVARD, FORT PAYNE, DEKALB COUNTY, ALABAMA
FACILITY ID #15420-049-000392; UST INCIDENT #UST21-05-04**

Date	Static Water Level	Temperature	Conductivity	Dissolved Oxygen	pH	ORP
	feet below TOC	Celcius	mS/cm	mg/L		mV
MW-1	<i>Date of Installation:</i>		June 16, 2021	<i>Size and Type of Well</i>		2" Type II
	<i>TOC Elevation in feet above msl:</i>		812.00	<i>Screened Interval in feet bgs:</i>		5-10
07/02/21	1.99	25.15	0.515	0.17	4.74	520.0
11/04/21	2.55	17.80	0.430	0.43	7.59	0.50
MW-2	<i>Date of Installation:</i>		June 16, 2021	<i>Size and Type of Well</i>		2" Type II
	<i>TOC Elevation in feet above msl:</i>		812.45	<i>Screened Interval in feet bgs:</i>		4-11
07/02/21	2.42	24.10	0.754	2.63	4.89	590.6
11/04/21	2.60	15.70	0.850	1.17	7.22	0.70
MW-3	<i>Date of Installation:</i>		June 17, 2021	<i>Size and Type of Well</i>		2" Type II
	<i>TOC Elevation in feet above msl:</i>		813.89	<i>Screened Interval in feet bgs:</i>		3-10
07/02/21	2.38	25.20	0.829	6.80	4.73	710.4
11/04/21	3.86	20.20	0.690	0.96	7.31	0.77
MW-4	<i>Date of Installation:</i>		June 17, 2021	<i>Size and Type of Well</i>		2" Type II
	<i>TOC Elevation in feet above msl:</i>		814.07	<i>Screened Interval in feet bgs:</i>		4-11
07/02/21	4.88	26.16	0.715	0.64	4.99	580.9
11/04/21	5.72	23.4	0.740	0.39	7.33	0.77
MW-5	<i>Date of Installation:</i>		November 2, 2021	<i>Size and Type of Well</i>		2" Type III
	<i>TOC Elevation in feet above msl:</i>		813.86	<i>Screened Interval in feet bgs:</i>		34.94-44.94
11/05/21	42.53	17.30	1.830	1.25	7.92	0.71
MW-6	<i>Date of Installation:</i>		November 3, 2021	<i>Size and Type of Well</i>		2" Type II
	<i>TOC Elevation in feet above msl:</i>		813.91	<i>Screened Interval in feet bgs:</i>		4.4-12.4
11/05/21	3.30	18.80	0.600	0.68	7.68	0.53
MW-7	<i>Date of Installation:</i>		November 2, 2021	<i>Size and Type of Well</i>		2" Type II
	<i>TOC Elevation in feet above msl:</i>		813.74	<i>Screened Interval in feet bgs:</i>		4.67-12.67
11/05/21	4.28	19.30	0.640	1.11	7.46	0.57
MW-8	<i>Date of Installation:</i>		November 3, 2021	<i>Size and Type of Well</i>		2" Type II
	<i>TOC Elevation in feet above msl:</i>		812.38	<i>Screened Interval in feet bgs:</i>		3.87-10.87
11/05/21	4.46	20.6	0.690	0.71	7.54	0.76

TABLE 4
SUMMARY OF GROUNDWATER INTRINSIC PARAMETERS
MAPCO #5167

1401 GLENN BOULEVARD, FORT PAYNE, DEKALB COUNTY, ALABAMA
FACILITY ID #15420-049-000392; UST INCIDENT #UST21-05-04

Date	Static Water Level	Temperature	Conductivity	Dissolved Oxygen	pH	ORP
	feet below TOC	Celcius	mS/cm	mg/L		mV
MW-9	<i>Date of Installation:</i>		November 2, 2021	<i>Size and Type of Well</i>		2" Type II
	<i>TOC Elevation in feet above msl:</i>		811.85	<i>Screened Interval in feet bgs:</i>		2.89-9.89
11/05/21	5.20	20.2	0.650	0.80	7.66	0.72
MW-10	<i>Date of Installation:</i>		November 2, 2021	<i>Size and Type of Well</i>		2" Type II
	<i>TOC Elevation in feet above msl:</i>		810.01	<i>Screened Interval in feet bgs:</i>		4.44-11.44
11/05/21	5.82	21.10	0.770	0.76	7.72	0.71
MW-11	<i>Date of Installation:</i>		November 3, 2021	<i>Size and Type of Well</i>		2" Type II
	<i>TOC Elevation in feet above msl:</i>		810.73	<i>Screened Interval in feet bgs:</i>		3.68-10.68
11/05/21	6.18	22.20	0.590	0.50	7.43	0.64
MW-12	<i>Date of Installation:</i>		November 3, 2021	<i>Size and Type of Well</i>		2" Type II
	<i>TOC Elevation in feet above msl:</i>		814.71	<i>Screened Interval in feet bgs:</i>		2.35-8.35
11/05/21	5.20	17.20	0.810	0.99	7.57	0.89
MW-13	<i>Date of Installation:</i>		November 3, 2021	<i>Size and Type of Well</i>		2" Type II
	<i>TOC Elevation in feet above msl:</i>		810.78	<i>Screened Interval in feet bgs:</i>		2.16-9.16
11/05/21	0.61	16.40	0.860	1.04	7.46	0.72
RW-1	<i>Date of Installation:</i>		June 17, 2021	<i>Size and Type of Well</i>		4" Type II
	<i>TOC Elevation in feet above msl:</i>		813.53	<i>Screened Interval in feet bgs:</i>		5.5-10.5
07/02/21	7.32	25.85	1.131	1.42	6.61	-63.1
11/05/21	5.98	17.50	0.150	0.85	7.27	0.013
RW-2	<i>Date of Installation:</i>		June 17, 2021	<i>Size and Type of Well</i>		4" Type II
	<i>TOC Elevation in feet above msl:</i>		812.86	<i>Screened Interval in feet bgs:</i>		4-9
07/02/21	6.47	25.29	0.844	4.11	4.26	676.1
11/05/21	6.14	22.40	1.110	0.30	7.48	1.18
RW-3	<i>Date of Installation:</i>		June 17, 2021	<i>Size and Type of Well</i>		4" Type II
	<i>TOC Elevation in feet above msl:</i>		813.02	<i>Screened Interval in feet bgs:</i>		5-10
07/02/21	6.10	24.52	0.722	4.34	4.99	583.3
11/04/21	6.40	15.60	0.550	1.24	7.64	0.68

**TABLE 4
SUMMARY OF GROUNDWATER INTRINSIC PARAMETERS
MAPCO #5167**

**1401 GLENN BOULEVARD, FORT PAYNE, DEKALB COUNTY, ALABAMA
FACILITY ID #15420-049-000392; UST INCIDENT #UST21-05-04**

Date	Static Water Level	Temperature	Conductivity	Dissolved Oxygen	pH	ORP
	feet below TOC	Celcius	mS/cm	mg/L		mV
RW-4	<i>Date of Installation:</i>		June 17, 2021	<i>Size and Type of Well</i>		4" Type II
	<i>TOC Elevation in feet above msl:</i>		811.63	<i>Screened Interval in feet bgs:</i>		3.5-8.5
	07/02/21	5.08	25.65	0.835	4.63	7.06
11/04/21	5.46	20.4	0.970	0.99	7.38	0.88
RW-5	<i>Date of Installation:</i>		June 17, 2021	<i>Size and Type of Well</i>		4" Type II
	<i>TOC Elevation in feet above msl:</i>		812.36	<i>Screened Interval in feet bgs:</i>		4.4-9.4
	07/02/21	4.09	25.25	0.763	2.03	6.87
11/05/21	4.71	21.2	0.650	0.42	7.22	0.71
RW-6	<i>Date of Installation:</i>		June 17, 2021	<i>Size and Type of Well</i>		4" Type II
	<i>TOC Elevation in feet above msl:</i>		812.76	<i>Screened Interval in feet bgs:</i>		5.3-10.3
	07/02/21	3.73	25.61	0.996	2.35	4.64
11/05/21	4.53	21.80	0.640	0.38	7.44	0.69
RW-7	<i>Date of Installation:</i>		June 17, 2021	<i>Size and Type of Well</i>		4" Type II
	<i>TOC Elevation in feet above msl:</i>		813.42	<i>Screened Interval in feet bgs:</i>		5.5-10.5
	07/02/21	1.81	24.17	0.892	2.72	4.56
11/05/21	3.18	20.20	0.740	0.57	7.63	0.62
RW-8	<i>Date of Installation:</i>		June 17, 2021	<i>Size and Type of Well</i>		4" Type II
	<i>TOC Elevation in feet above msl:</i>		813.82	<i>Screened Interval in feet bgs:</i>		5-10
	07/02/21	6.64	26.76	0.865	5.09	4.61
11/04/21	6.12	19.70	0.950	0.63	7.25	0.86
RW-9	<i>Date of Installation:</i>		June 17, 2021	<i>Size and Type of Well</i>		4" Type II
	<i>TOC Elevation in feet above msl:</i>		812.94	<i>Screened Interval in feet bgs:</i>		5-10
	07/02/21	4.90	56.80	0.928	1.64	4.77
11/04/21	6.48	20.20	0.760	0.94	7.38	0.69
NOTES: 1. TOC - Top Of Casing; MSL - Mean Sea Level; ppm - Parts Per Million; NS - Not Sampled; & mS/cm - Millisiemens Per Centimeter						

TABLE 5
SUMMARY OF SURROUNDING PROPERTY OWNERS
MAPCO #5167
1401 GLENN BOULEVARD, FORT PAYNE, DEKALB COUNTY, ALABAMA
FACILITY ID #15420-049-000392; UST INCIDENT #UST21-05-04

PROPERTY OWNER	CONTACT INFORMATION & PROPERTY LOCATION	DIRECTION FROM SITE	CURRENT USAGE
Brenda Dewyer Higgins Property Address:	1900 Dalrock Rd Rowlett, TX 75088 1401 Glenn Blvd, Fort Payne, AL	SITE	COMMERCIAL
Second Street Plaza LLC Shopping Center Property Address:	1000 Highland Colony Pkwy, Suite 9004 Ridgeland, MS 39157 158 Airport Rd, Fort Payne, AL	NORTH	COMMERCIAL
Bewajobe Corporation Cracker Barrel Property Address:	PO Box 787 Lebanon, TN 37088 201 Cracker Barrel Rd, Fort Payne, AL	NORTHEAST	COMMERCIAL
Alabama Department of Transportation	Interstate 59: Exit 218	EAST	COMMERCIAL
Brenda Dewyer Higgins Property Address:	1900 Dalrock Rd Rowlett, TX 75088 1402 Glenn Blvd, Fort Payne, AL	SOUTH	COMMERCIAL
Southmark-Pate LLC Parking area Property Address:	PO Box 20828 Tuscaloosa, AL 35402 1405 Glenn Blvd, Fort Payne, AL	WEST	COMMERCIAL
NOTES: Data collected from the Dekalb County Public GIS website.			

Appendix B





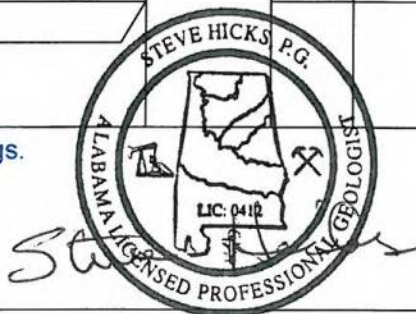
Project No.: 70-820-G-001
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 6/16/2021
Logged By: SH

Well Log

Well No.: MW-1
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: TDS

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
0		Ground Surface				
		FILL- (Loose) GRAVEL, SAND, SILT (damp) fill		-	0.0	
2		FILL- (Loose) GRAVEL, SAND, SILT (damp) fill, silty	MW-1	-	2.9	
4		SM- (Soft) SILT (wet) Olive Green, sandy	MW-1 2.0 ~ 4.0'	-	07	
6			MW-1 4.0 ~ 6.0'	-	-	
8				-	-	
10		SM- (Soft) SILT (wet) Olive Green, sandy, with minor large gravel		-	1.1	
		REFUSAL @ 10' bgs.				

Completion Notes: EOB @ 10' bgs.



Legend:

- EOB End of Boring
- bgs Below Ground Surface
- NR No Recovery
- NA Not Applicable
- ft Feet
- in Inches



Project No.: 70-820-G-001
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 6/16/2021
Logged By: SH

Well Log

Well No.: MW-2
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: TDS

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
0		Ground Surface				
		FILL- (Loose) GRAVEL, SAND, SILT (damp) Brown, fill, with minor chert fragments	MW-2	-	0.4	
2			0.0 ~ 2.0'			
		CL- (Firm) CLAY (damp) Reddish Brown, fill, with minor chert fragments		-	0.0	
4						
		CL- (Firm) CLAY (damp) Reddish Brown, silty, with minor chert fragments	MW-2	-	0.2	
6			4.0 ~ 6.0'			
8						
		CL- (Soft) CLAY (damp), SILTY Olive Green		-	0.6	
10						
		REFUSAL @ 11' bgs.				
12						

Completion Notes: EOB @ 11' bgs.



Legend:

- EOB End of Boring
- bgs Below Ground Surface
- NR No Recovery
- NA Not Applicable
- ft Feet
- in Inches



Project No.: 70-820-G-001
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 6/16/2021
Logged By: SH

Well Log

Well No.: MW-3
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: TDS

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
0		Ground Surface				
		FILL- (Firm) CLAY (damp) Reddish Brown, silty	MW-3	-	0.0	
2			0.0 - 2.0'			
		SC- (Firm) CLAY (damp) silty Olive Green		-	0.0	
4		CL- (Soft) SILT (damp) clayey Olive Green	MW-3	-	0.2	
6			4.0 - 6.0'			
8						
		CL- (Soft) SILT (wet) clayey Olive Green				
10		REFUSAL @ 9.8' bgs.			0.0	

Completion Notes: EOB @ 9.8' bgs.



Legend:

- EOB End of Boring
- bgs Below Ground Surface
- NR No Recovery
- NA Not Applicable
- ft Feet
- in Inches



Project No.: 70-820-G-001
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 6/17/2021
Logged By: SH

Well Log

Well No.: MW-4
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: TDS

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
0		Ground Surface				
		FILL- (Firm) CLAY (damp) Yellowish Orange, very sandy, with minor limestone gravel	MW-4	-	4.5	
2			0.0 - 2.0'			
			MW-4	-	2.5	
4			2.0 - 4.0'			
		CL- (Firm) CLAY (damp) Yellowish Orange, sandy, with minor limestone gravel		-	1.4	
6						
8						
		SL- (Soft) SILT (wet) Olive Green, sandy, strong fresh petroleum odor		-	0.3	
10						
		REFUSAL @ 10.9' bgs.				

Completion Notes: EOB @ 10.9' bgs.



Legend:

- EOB End of Boring
- bgs Below Ground Surface
- NR No Recovery
- NA Not Applicable
- ft Feet
- in Inches



Project No.: 70-820-G-001
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 6/17/2021
Logged By: SH

Well Log

Well No.: RW-1
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: TDS

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
0		Ground Surface				
0 - 2.0		FILL- (Firm) CLAY (damp) Yellowish Orange, fine, with limestone gravel	RW-1	-	8.7	
2.0 - 4.0		NO RECOVERY	RW-1	-	8.0	
4.0 - 6.0				-	0.0	
6.0 - 10.0		MH- (Soft) SILT (wet) Olive Green to Greenish Gray, with fine chert gravel		-	46.1	
10.0 - 10.9		REFUSAL @ 10.5' bgs.				

Completion Notes: EOB @ 10.9' bgs.



Legend:

- EOB End of Boring
- bgs Below Ground Surface
- NR No Recovery
- NA Not Applicable
- ft Feet
- in Inches



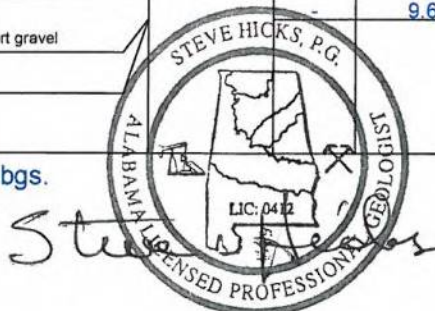
Project No.: 70-820-G-001
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 6/17/2021
Logged By: SH

Well Log

Well No.: RW-2
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: TDS

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
0		Ground Surface				
		FILL- (Firm) CLAY (damp) Yellowish Orange, sandy, with abundant chert gravel	RW-2	-	10.5	
2			0.0 - 2.0'			
				-	9.2	
4		CL- (Firm) CLAY (damp) Yellowish Orange, sandy, with abundant chert gravel	RW-2	-	12.6	
6			4.0 - 6.0'			
8				-	-	
9.6		CL- (Firm) CLAY (wet) Yellowish Orange, sandy, with abundant chert gravel			9.6	
10		REFUSAL @ 9.2' bgs.				

Completion Notes: EOB @ 10.9' bgs.



Legend:

- EOB End of Boring
- bgs Below Ground Surface
- NR No Recovery
- NA Not Applicable
- ft Feet
- in Inches



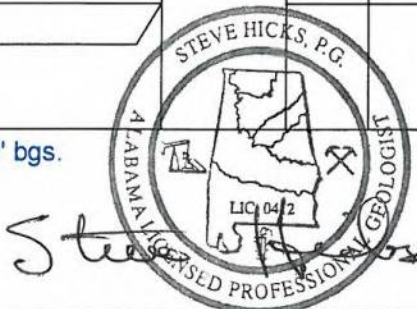
Project No.: 70-820-G-001
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 6/17/2021
Logged By: SH

Well Log

Well No.: RW-3
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: TDS

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
0		Ground Surface				
0 - 2.0'	FILL- (Firm) CLAY (damp) Yellowish Orange, with abundant fine chert fragments, sandy	RW-3	-	9.4		
2.0 - 4.0'		RW-3	-	8.3		
4.0 - 6.0'		RW-3	-	22.9		
6.0 - 10.0'		RW-3	-	-		
10.0'	MH- (Soft) SILT (wet) Olive Green		-	29.5		
10.0'		REFUSAL @ 10.0' bgs.				

Completion Notes: EOB @ 10.0' bgs.



Legend:

- EOB End of Boring
- bgs Below Ground Surface
- NR No Recovery
- NA Not Applicable
- ft Feet
- in Inches



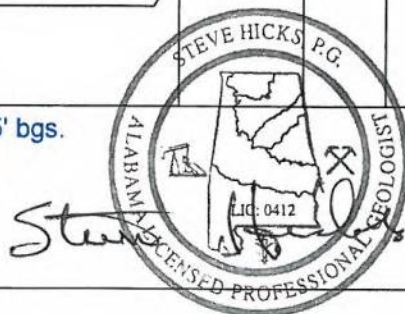
Project No.: 70-820-G-001
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 6/17/2021
Logged By: SH

Well Log

Well No.: RW-4
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: TDS

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
0		Ground Surface FILL- (Firm) CLAY (damp) Yellowish Orange, sandy with abundant fine chert fragments	RW-4	-	14.1	<p> Ground Surface 2.00' 4" PVC Casing Bentonite 2.00' 4" 10-Slot PVC Screen Sand 8.50' </p>
0.0 - 2.0'						
2						
4		MH- (Soft) SILT (damp) Olive Green, with abundant chert fragments	RW-4	-	347.2	
4.0 - 6.0'						
6		MH- (Soft) SILT (wet) Olive Green, with abundant fine chert fragments			365.6	
8		REFUSAL @ 8.5' bgs.				

Completion Notes: EOB @ 8.5' bgs.



Legend:

- EOB End of Boring
- bgs Below Ground Surface
- NR No Recovery
- NA Not Applicable
- ft Feet
- in Inches



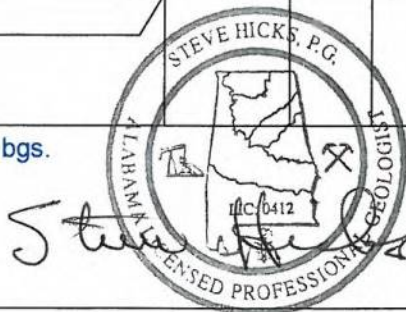
Project No.: 70-820-G-001
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 6/17/2021
Logged By: SH

Well Log

Well No.: RW-5
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: TDS

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
0		Ground Surface FILL- (Firm) CLAY (damp) Yellowish Orange, sandy with abundant fine chert fragments,		-	0.0	
2		MH- (Soft) SILT (damp) Dark Olive Green, with minor fine chert fragments	RW-5	-	2.1	
4		MH- (Soft) SILT (damp) Brown to Olive Green, sandy	RW-5	2.0 ~ 4.0'	-	
6			4.0 ~ 6.0'			
8					1.2	
9.4		REFUSAL @ 9.4' bgs.				

Completion Notes: EOB @ 9.4' bgs.



Legend:

- EOB End of Boring
- bgs Below Ground Surface
- NR No Recovery
- NA Not Applicable
- ft Feet
- in Inches



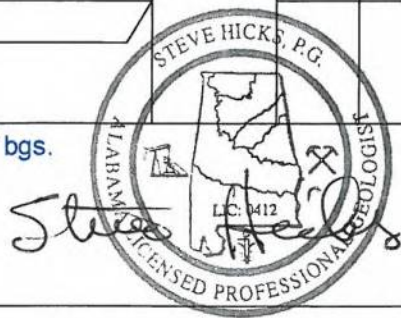
Project No.: 70-820-G-001
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 6/17/2021
Logged By: SH

Well Log

Well No.: RW-6
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: TDS

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
0		Ground Surface				
		FILL- (Firm) CLAY (damp) Yellowish Orange, sandy, with abundant fine chert gravel,	RW-6	-	5.7	
2			0.0 - 2.0'			
			RW-6	-	34.5	
4			2.0 - 4.0'			
6				-	1.3	
8				-	-	
10		MH- (Soft) SILT (wet) Olive Green		*	1.3	
		REFUSAL @ 9.4' bgs.				

Completion Notes: EOB @ 10.3' bgs.



Legend:

- EOB End of Boring
- bgs Below Ground Surface
- NR No Recovery
- NA Not Applicable
- ft Feet
- in Inches



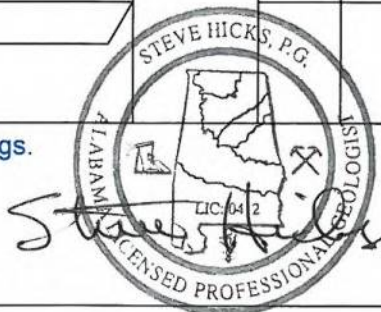
Project No.: 70-820-G-001
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 6/17/2021
Logged By: SH

Well Log

Well No.: RW-7
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: TDS

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
0		Ground Surface				
		SW- GRAVEL fill, large		-	0.0	
2			RW-7	-	0.0	
		SW- GRAVEL/CLAY fill, large	2.0 ~ 4.0'	-	0.0	
4			RW-7	-	3.1	
		CL- (Soft) CLAY (damp) Yellowish Orange, sandy with minor fine chert/gravel	4.0 ~ 6.0'	-	3.1	
6				-	-	
					-	
8				*	0.2	
		MH- (Soft) SILT (wet) Olive Green			*	
10		REFUSAL @ 10.5' bgs.				

Completion Notes: EOB @ 10.5' bgs.



Legend:

- EOB End of Boring
- bgs Below Ground Surface
- NR No Recovery
- NA Not Applicable
- ft Feet
- in Inches



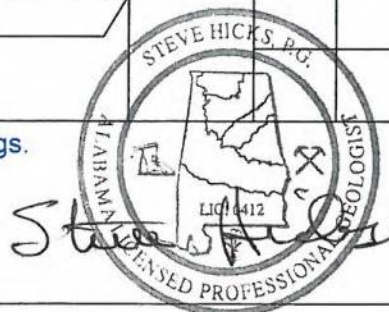
Project No.: 70-820-G-001
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 6/17/2021
Logged By: SH

Well Log

Well No.: RW-8
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: TDS

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
0		Ground Surface				
0.0 - 2.0'	FILL- (Firm) CLAY (damp) Yellowish Orange, with abundant fine chert fragments	RW-8	-	7.1		
2.0 - 4.0'		RW-8	-	8.3		
4.0 - 6.0'			-	6.1		
6.0 - 8.0'			-	-		
8.0 - 10.0'	MH- (Firm) SILT (wet) Yellowish Orange, with abundant chert grave, clayey		*	15.9		
10.0'	REFUSAL @ 10.0' bgs.					

Completion Notes: EOB @ 10.0' bgs.



Legend:

EOB End of Boring
 bgs Below Ground Surface
 NR No Recovery
 NA Not Applicable
 ft Feet
 in Inches



Project No.: 70-820-G-001
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 6/17/2021
Logged By: SH

Well Log

Well No.: RW-9
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: TDS

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
0		Ground Surface				
0 - 2.0'	FILL- (Firm) CLAY (damp) Yellowish Orange, with abundant fine chert gravel, sandy	RW-9	-	18.6		
2.0 - 4.0'		RW-9	-	3.2		
4.0 - 6.0'		RW-9	-	16.2		
6.0 - 10.0'						
10.0'	MH- (Loose) SILT (wet) Olive Green, with abundant fine chert gravel, strong petroleum odor		*	326.6		
10.0'	REFUSAL @ 10.0' bgs.					

Completion Notes: EOB @ 10.0' bgs.



Legend:

- EOB End of Boring
- bgs Below Ground Surface
- NR No Recovery
- NA Not Applicable
- ft Feet
- in Inches



Project No.: 70-820-G-009
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 11/2/2021
Logged By: JH

Well Log

Well No.: MW-5
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: PM

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
0		Ground Surface				
0 - 2	CONCRETE					
2 - 4	CL- (Firm) CLAY (damp)	Light Brown, silty with abundant chert gravel fill moderate old petroleum odor	MW-5 2.0 - 4.0'	-	591.6	
4 - 5					733.0	
5 - 6					720.7	
6 - 8	CL- (Soft) CLAY (wet)	Olive Gray, silty, strong old petroleum odor	MW-5 5.0 - 6.0'	-	877	
8 - 10					995.1	
10 - 11.5	CL- (Soft) CLAY (wet)	Olive Gray, silty, moderate old petroleum odor				
11.5 - 12					79.8	
12 - 18	AUGER REFUSAL @ 11.5'					
18 - 17.8	SHALE					
17.8 - 20	LIMESTONE	Minor water @ 17.6~17.8'				
20 - 22	SHALE					
22 - 38.0	LIMESTONE	Wet @ 38.0'				



Completion Notes: EOB @ 45.0' bgs.

Legend:
 EOB End of Boring
 bgs Below Ground Surface
 NR No Recovery
 NA Not Applicable
 ft Feet
 in Inches



Project No.: 70-820-G-009
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 11/2/2021
Logged By: JH

Well Log

Well No.: MW-5
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: PM

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
24						
26						
28						
30						
32						
34						
36						
38						
40						
42			SHALE			
44		LIMESTONE				
46						



Completion Notes: EOB @ 45.0' bgs.

Legend:
 EOB End of Boring
 bgs Below Ground Surface
 NR No Recovery
 NA Not Applicable
 ft Feet
 in Inches



Project No.: 70-820-G-009
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 11/3/2021
Logged By: JH

Well Log

Well No.: MW-6
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: PM

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
0		Ground Surface				
		CONCRETE				
		CL- (Firm) CLAY (damp) Light Brown, silty with abundant chert gravel and limestone block fill		-	0.0	
2			MW-6	-	0.0	
4			2.0 - 4.0'	-	0.0	
6		CL- (Firm) CLAY (damp) Light Brown, silty with abundant small chert gravel	MW-6	-	0.4	
8		CL- (Firm) CLAY (wet) Light Brown, silty with abundant small chert gravel	5.0 - 6.5'	-	-	
10		CL- (Firm) CLAY (wet) Olive Gray, silty with abundant coarse limestone gravel		-	0.0	
12		REFUSAL @ 12.0' bgs.				

Completion Notes: EOB @ 12.0' bgs.



Legend:

- EOB End of Boring
- bgs Below Ground Surface
- NR No Recovery
- NA Not Applicable
- ft Feet
- in Inches



Project No.: 70-820-G-009
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 11/3/2021
Logged By: SH

Well Log

Well No.: MW-7
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: PM

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
0		Ground Surface				
		CONCRETE				
		CL- (Firm) CLAY (damp) Light Brown, with abundant small chert gravel fill		-	0.6	
2				-	2.2	
4			MW-7 4.0 - 5.0'	-	3.5	
6			MW-7 5.0 - 6.0'	-	1.8	
		CL- (Firm) CLAY (wet) Light Brown, with abundant small chert gravel		-	-	
8				-	0.0	
		CL- (Soft) CLAY (damp) Olive Gray, silty		-	0.0	
10				-	0.0	
		LIMESTONE GRAVEL Light Gray		-	0.0	
12		REFUSAL @ 12.0' bgs.				

Completion Notes: EOB @ 12.0' bgs.



Legend:

- EOB End of Boring
- bgs Below Ground Surface
- NR No Recovery
- NA Not Applicable
- ft Feet
- in Inches



Project No.: 70-820-G-009
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 11/3/2021
Logged By: SH

Well Log

Well No.: MW-8
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: PM

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
0		Ground Surface				
		ASPHALT				
		CL- (Firm) CLAY (damp) Light Brown, with abundant small chert gravel fill		-	18.6	
2			MW-8	-	31.3	
4			2.0 - 4.0'	-	26.7	
6			MW-8	-	70.5	
		CL- (Firm) CLAY (wet) Light Brown, with abundant small chert gravel	5.0 - 6.5	-		
8				-	-	
10		CL- (Firm) CLAY (wet) Light Brown, with abundant small chert gravel		-	1,069	
12						

Completion Notes: EOB @ 11.0' bgs.



Legend:

- EOB End of Boring
- bgs Below Ground Surface
- NR No Recovery
- NA Not Applicable
- ft Feet
- in Inches



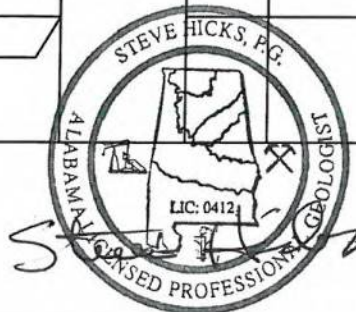
Project No.: 70-820-G-009
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 11/2/2021
Logged By: SH

Well Log

Well No.: MW-9
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: PM

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
0		Ground Surface				
		ASPHALT				
		CL- (Stiff) CLAY (damp) Light Brown, with abundant fine chert gravel fill		-	0.6	
2				-	1.3	
4			MW-9 4.0 - 5.0'	-	2.0	
6			MW-9 5.0 - 6.0'	-	0.0	
		CL- (Firm) CLAY (wet) Light Brown, silty		-	0.0	
8				-	-	
		CL- (Soft) CLAY (damp) Light Brown/Olive Gray, silty, ~40% fractured chert gravel		-	0.0	
10		REFUSAL @ 10.0' bgs.				

Completion Notes: EOB @ 10.0' bgs.



Legend:

- EOB End of Boring
- bgs Below Ground Surface
- NR No Recovery
- NA Not Applicable
- ft Feet
- in Inches



Project No.: 70-820-G-0019
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 11/3/2021
Logged By: SH

Well Log

Well No.: MW-10
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: PM

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
0		Ground Surface				
	ASPHALT					
	CL- (Firm) CLAY (damp)	Light Brown, with abundant fine chert gravel fill		-	0.0	
2			MW-10		0.0	
4			2.0 - 4.0'		0.0	
6			MW-10		0.0	
	ML- (Soft) CLAY (damp)	Greenish-Gray and Greenish-Brown, silty clay -wet at 6.5'		-	0.0	
			5.0 - 7.0'			
8						
	ML- (Soft) CLAY (damp)	Greenish-Gray, silty clay with chert gravel		-	0.0	
10						
		REFUSAL @ 11.0' bgs.				
12						

Completion Notes: EOB @ 11.0' bgs.



Legend:

- EOB End of Boring
- bgs Below Ground Surface
- NR No Recovery
- NA Not Applicable
- ft Feet
- in Inches



Project No.: 70-820-G-009
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 11/3/2021
Logged By: SH

Well Log

Well No.: MW-11
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: PM

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
0		Ground Surface				
		ASPHALT				
		CL- (Firm) CLAY (damp) Light Brown, with abundant small chert gravel fill		-	3.2	
2			MW-11	-	7.5	
			2.0 - 4.0'			
4			MW-11	-	6.1	
			5.0 - 6.8'			
6		ML- (Soft) SILT (moist) Green/Gray, sandy, wet @ 6.8'		-	51.2	
8				-	-	
		ML- (Soft) SILT (moist) Green/Gray, sandy, with minor wood fragments		-	3.2	
10		REFUSAL @ 10.0' bgs.				

Completion Notes: EOB @ 10.0' bgs.



Legend:

- EOB End of Boring
- bgs Below Ground Surface
- NR No Recovery
- NA Not Applicable
- ft Feet
- in Inches



Project No.: 70-820-G-009
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 11/3/2021
Logged By: SH

Well Log

Well No.: MW-12
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: PM

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
0		Ground Surface				
		GRASS				
		CL- (Firm) CLAY (damp) Light Brown, sandy, silty, with abundant small chert gravel fill		-	0.0	
2			MW-12		0.0	
			2.0 - 4.0'		0.0	
4				-	0.0	
		ML- (Soft) SILT (moist) Light Brown, sandy, clayey	MW-12		0.0	
6			5.0 - 6.8'		0.0	
		ML- (Soft) SILT (wet) Light Brown, sandy, clayey			0.0	
8						
		REFUSAL @ 9.0' bgs.				
10						

Completion Notes: EOB @ 9.0' bgs.



Legend:

- EOB End of Boring
- bgs Below Ground Surface
- NR No Recovery
- NA Not Applicable
- ft Feet
- in Inches



Project No.: 70-820-G-009
Project Name: MAPCO #5167
Address: 1401 GLENN BOULEVARD
Facility ID#: 15420-049-00392
Date Drilled: 11/3/2021
Logged By: SH

Well Log

Well No.: MW-13
Drill Rig: CME-75
Drilling Method: DIRECT
Sampling Method: PHD/SS
Drilling Contractor: PM

SUBSURFACE PROFILE			SAMPLE			Completion Details
Depth (ft)	Soil Type Graphic	Description and Comments	Sample Interval	% Recovery	PID (ppm)	
0		Ground Surface				
		GRASS				
		CL- (Soft) CLAY (damp) Light Brown, sandy, silty, with abundant small gravel, strong raw petroleum odor, fill		-	889	
2			MW-13	-	1,345	
4			2.0 - 4.0'			
		OL- (Soft) SILT (wet) Olive/Gray and Light Brown, strong petro. odor	MW-13	-	1,280	
		OL- (Soft) SILT (saturated) Olive/Gray and Light Brown, petro. odor	4.0 - 5.0'			
6				-	295	
8				-	73.9	
10		REFUSAL @ 9.5' bgs.				

Completion Notes: EOB @ 9.5' bgs.



Legend:

- EOB End of Boring
- bgs Below Ground Surface
- NR No Recovery
- NA Not Applicable
- ft Feet
- in Inches

Appendix C



MK ENVIRONMENTAL INC.

765 Springer Drive
 Lombard, IL. 60148-6412
 615-392-7737 (direct)

igiltz@mkenv.com

SOLD TO:	SHIP TO:
Greg Stephenson PM Environmental, Inc. 1053 Oak Hill Drive Cookeville, TN. 38501 931-432-5552	UST21-05-04 Mapco No. 5167 1401 Glen Blvd. Ft. Payne, AL.

QUOTATION

Date 5/28/2021
 Quote No. 221040
 Reference Mapco #5167
 Page No. 1 of 4
 Freight Included
 Terms Net 180
 Ship Via FLATBED
 F.O.B. Factory

Quotation valid for 60 days

QUANTITY		UNIT PRICE	AMOUNT
	400 amp 3/60/230 volt 4 wire plus ground electrical service Brought to NEMA 3R control Panel Interior electrical will comply with NEC requirements for Class 1, Division 2, Group D Hazardous locations Motors will be TEFC construction MK REFURBISHMENT PACKAGED REMEDIATION SYSTEM INCLUDING:		
1	40.0 HP single stage oil sealed liquid ring blower ~490 ACFM @ 20"Hg. Capacity 3/60/230-460 volt, TEFC motor ← 208V Direct drive motor Oil Scavenge line Backpressure gauge Multistage filtration system Temperature gauge Y strainer with clean out plug High temperature switch low and high oil level switches inlet filter inlet check valve Includes extra 5 gallon bucket of replacement seal oil LRP heat exchanger recirculation sound box with hardware	89,980.00	\$89,980.00
1	200 gallon Air/water separator with conductivity probe level switches 10" diameter clean out ports with vacuum rated quick release lid Clear PVC sight glass piping to liquid ring pump, to check for water carryover Liquid filled vacuum gauge Vacuum assist hose 2" drain valves Vacuum relief valve Dilution valve with filter/silencer Inlet screen		
1	1.5 hp transfer pump, 3450 rpm, TEFC motor Cast Iron housing with composite impeller, anti air lock design manual "Pump ON" button inside building for sampling		
1	MKE Model SA15B STRIPPERATOR 15 GPM oil/water Separator and Air stripper treatment system Coalescing separator with skimming weir and water sump tank Low profile air stripping system with nylon aeration tubes and dual pattern diffusers 2.0 HP aluminum blower, AMCA B rated spark resistant Air pressure gauge Intrinsically safe high-high sump level and low blower pressure alarm switches Stainless steel construction Blower silencer		
1	1.5 hp transfer pump, 3450 rpm, TEFC motor Cast Iron housing with composite impeller, anti air lock design manual "Pump ON" button inside building for sampling		
1	Groundwater flow totalizer with pulse output for remote totalization Flow calibration button		

MK ENVIRONMENTAL INC.

Greg Stephenson
PM Environmental, Inc.

Date 5/28/2021
Quote No. 221040
Reference Mapco #5167
Page No. 2 of 4

QUANTITY		UNIT PRICE	AMOUNT
1	<p>Master Control Panel System, Including: NEMA 3R control panel with blank front cover Swing out sub panel for gauges, control operators, and switches IEC Magnetic motor starters, safety switches, H-O-A controls Control transformer (8) intrinsically safe relays, (8) alarm indicator LED's, (16) output channels Hard wired relay logic (1) exterior GFCI utility outlet System run time totalizing hour meter Blower low pressure alarm Anti-falsing alarm circuit to prevent nuisance tripping Auto-release restart timer for remote restarts via telemetry Three phase voltage and phase monitor Emergency E-stop LED red indicator light located on swing out sub panel</p> <p><u>Liquid ring automatic shut down upon:</u> AWS1 high liquid level Oil resevoir tank low and high level alarms Liquid ring High temperature alarm Air stripper blower low pressure Air stripper sump High liquid level alarm Phase fault condition Interior Emergency Stop Mushroom button with twist to release detent CatOx alarm</p>		
1	<p>Fused Main Disconnect system for liquid ring and oxidizer Includes: (1) 200 amp disconnect box for LRP & (1) 100 amp disconnect box for 300E. (1) Weatherhead with extension pole and bracket support (1) 400 amp Electric meter socket base installed</p>		
1	<p>MK Site Optimization Software (SOS) - Wireless Monitoring Unit. MK Cloud based monitoring capabilities with Email & SMS alarming notification Includes: Cellular antenna, wiring diagrams, setup forms. Digital Inputs, Analog inputs, and Digital Outputs for remote operation capabilities Flow and Vacuum graphing and data export capabilities Alarm counters for increased troubleshooting efficiency Wireless service will be supported and billed through MKE @ \$120/mo. (subject to change) Billed monthly on the first of the month following successful delivery. NO more need for telephone company analog landline installation and its long distance monthly fees.</p>		
1	<p>Vacuum transducer integrated into telemetry system for real time monitoring, 4-20mA</p>		
1	<p>System building 8.5'W x 12'L x 9.5'H aluminum/steel enclosure, fully insulated with Removable sliding wall panels for ease of maintenance Exterior grade plywood floor, structural steel frame Includes 100 watt XP interior light, and removable center grate for ease of maintenance The breaker panel and control panel will be mounted on a vertical steel bracket attached to platform end. The bracket, panels and all conduits will allow for the removal of the enclosure panels by one person.</p> <p>10" structural steel base with 4" steel cross members Steel corner posts and roof frame Continuous sheet aluminum roof for superior protection</p>		

MK ENVIRONMENTAL INC.

Greg Stephenson
PM Environmental, Inc.

Date 5/28/2021
Quote No. 221040
Reference Mapco #5167
Page No. 3 of 4

QUANTITY		UNIT PRICE	AMOUNT
1	12,000 BTU XP heater with XP thermostat. All components fully piped, wired and factory tested		
1	Equipment Electrical Installation Includes XP wiring, XP seal off connectors, liquid tight flexible conduit UL listed equipment.		
1	Equipment Mechanical Installation Includes mounting, piping and connectors Brass fittings, sample ports, pressure gauges and sight glasses		
1	Third Party MET Certification The entire remediation building to be third party certified at MK Environmental factory. National Recognized Testing Lab (NRL)		
OPTIONAL GROUNDWATER POLISHING FILTRATION (ADD TO THE NET TOTAL):			
2	Size 2 Bag Filter Housings 304 s.s. construction with pressure gauge & hoses piped in parallel	ADD, \$ 1750 per filter x 2 = \$ 3,500	3500
2	Liquid Phase Carbon Vessels 200 lbs initial load each or reactivated liquid phase carbon media 1" FNPT process connections Carbon camlock fittings, hoses, sample ports and pressure gauges included	ADD, \$ 2,250 per vessel x 2 = \$ 4,500	4500
1	Upgrade effluent transf pump from 1.5hp to 3hp for the above groundwater filtration option.	ADD, \$ 500	500
1	Free Product Drum 55-gallon drum with high level product drum switch with 30 feet of so cord to wire into the master control panel by others. Includes 15' of 1" rubber red hose for product collection.	ADD, 1,500	
1	Free Product Tank 150 or 300 gallon with high level product tank switch with 30 feet of so cord to wire into the master control panel by others. Includes 15' of 1" rubber red hose for product collection. Size/volume based on availability of the time of order.	ADD, 2,500	2500
<p>Notes:</p> <p>1. Current lead time approximately 4-6 weeks after receipt of order. Subject to change.</p> <p>2. 12-month manufacturer's refurbishment warranty. Warranty clock starts the day the remediation system ships MK Environmental factory.</p>			

70-820-G-007



Does not include permits, fees, etc...
Offloading & placement by others.

1-day of startup & training)

Jerry Giltz,
MK ENVIRONMENTAL, INC.

EQUIP. SUB TOTAL	\$69,980.00	\$100,980
EQUIP. SALES TAX		
START UP/TRAINING	\$2,500.00	70-820-G-011
FREIGHT	\$2,500.00	70-820-G-007
NET TOTAL	\$34,980.00	

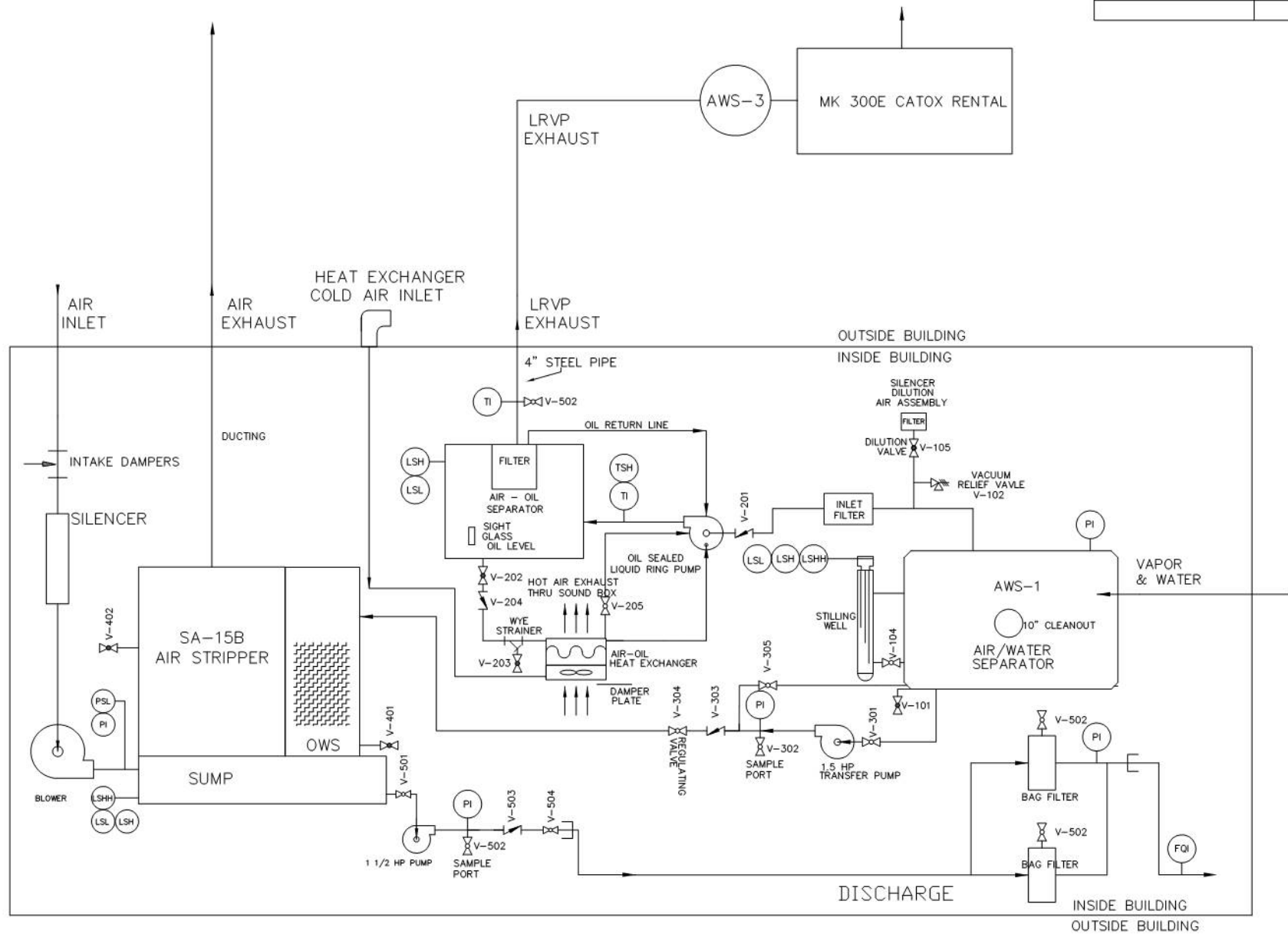
			AMOUNT	
<u>MK Offgas Treatment Page: (Add to the Net Total)</u>				
3	Month minimum rental of the Catalytic oxidizer unit, 300 SCFM capacity Electric oxidizer provided, based on availability at time of order. CatOx rental will include a sound box or equal around the process inlet blower to help decrease noise levels during normal operation. Month to month rental thereafter at the same monthly rate until successfully returned to MK.	4,500.00	\$13,500.00	70-820-G-011
1	MK rental oxidizer freight (before and after rental) Freight to site, off loading by others Return freight to MK factory after rental in completed, on loading & supervision by others	5,000.00	\$5,000.00	70-820-G-007
1	AWS3 knock out tank prior to oxidizer to minimize condensed liquids from entering burner or vapor phase carbon bed.	1,250.00	\$1,250.00	70-820-G-007
2	Vapor phase carbon vessels after CatOx rental (2) VF-1000 vapor carbon vessels (1,000 lbs initial load each) 4" plain pipe fitting Off loading, placement & piping provided by others Installed outside the system building by others after CatOx rental is complete.	8,335.00	\$16,670.00	70-820-G-007
1	Air to air heat exchanger (dual phase exhaust stream) for the offgas treatment prior to the carbon drums. To reduce the outlet temperature of the dual phase offgas stream to help knockout the condensate in the air stream. Includes an elevated stand to mount the heat exchanger and fit over the AWS-3 knockout drum. Includes starter controls for the heat exchanger motor in the master control panel. Wiring from the heat exchanger starter to the heat exchanger motor at time of startup Located outside the system building.	6,790.00	\$6,790.00	70-820-G-007
1	MK CatOx rental startup and training services. Includes an extra day of startup services for the CatOx unit.	1,000.00	\$1,000.00	70-820-G-011
1	Freight for vapor phase carbon vessels and air to air heat exchanger at a later date. Lead time may be several weeks longer than the refurbished DPVE system and CatOx rental.	2,500.00	\$2,500.00	70-820-G-007
Note:				
1. Please allow 2 weeks after power is installed for MK startup and training to be scheduled.				
2. Oxidizer power terminations and interlock conduits w/wires will require to be ran prior to MK startup services. MK will provide a detailed wiring and conduit schedule.				
3. Oxidizer rental contact may apply.				
4. MK will allow up to 2-weeks after shipment for power to be installed before the oxidizer rental clock starts. The rental clock will stop upon successful return and inspected by MK factory.				

Does not include permits, fees, etc...
Offloading & placement by others.

Jerry Giltz,
MK ENVIRONMENTAL, INC.

EQUIP. SUB TOTAL	\$46,740.00
EQUIP. SALES TAX	
START UP/TRAINING	Included
FREIGHT	Included
NET TOTAL	\$46,740.00

REVISION:	BY:	DATE:



LABEL	DESCRIPTION	VALVE TYPE	LABEL	DESCRIPTION	VALVE TYPE	LABEL	DESCRIPTION	VALVE TYPE	LABEL	DESCRIPTION	VALVE TYPE	LABEL	DESCRIPTION	VALVE TYPE
V-101	AWS-1 DRAIN	1" BALL VALVE	V-201	AIR/OIL FLOW CHECK	4" CHECK VALVE	V-301	AWS-1 PUMP ON/OFF	1-1/4" BALL VALVE	V-401	OWS DRAIN	1" BALL VALVE	V-501	SUMP PUMP ON/OFF	1-1/4" BALL VALVE
V-102	VACUUM RELIEF	2" VACUUM RELIEF	V-202	SEAL OIL ON/OFF	4" BUTTERFLY	V-302	INFLUENT SAMPLE PORT	1/4" BALL VALVE	V-402	AIR STRIPPER DRAIN	1" BALL VALVE	V-502	EFFLUENT SAMPLE PORT	1/4" BALL VALVE
V-103		1/4" BALL VALVE	V-203	1/2" SEAL OIL DRAIN	1/2" BALL VALVE	V-303	AWS-1 CHECK VALVE	1" BALL CHECK				V-503	SUMP CHECK VALVE	1" BALL CHECK
V-104	STILLING WELL ON/OFF	1" GATE VALVE	V-204	SEAL OIL CHECK VALVE	1" SWING CHECK	V-304	AWS-1 FLOW REGULATOR	1" BALL CHECK				V-504	SUMP FLOW REGULATOR	1" BALL VALVE
V-105	DILUTION VALVE	2" BALL VALVE	V-205	SEAL OIL VENT VALVE	1/4" BALL VALVE	V-305	AWS-1 RECIRCULATION	1/2" BALL VALVE				V-505	ANTI-SIPHON VALVE	3/4" VAC RELIEF

V VACUUM
 P PRESSURE
 S SWITCH
 L LIQUID LEVEL OR LOW T

I INDICATOR
 FQI FLOW QTY IND. (TOTALIZER)
 FRI FLOW RATE INDICATOR
 T TEMPERATURE



DATE: 10.2.18
 DRAWN BY: JAG
 JOB NUMBER: 218080
 FACILITY ID/TAG#

DRAWING NUMBER
PM ENVIRONMENTAL



Environmental Inc.

MK Environmental Inc.
7150 S. Madison Street
Willowbrook, IL. 60527
630-920-1104 Phone
630-920-8013 Fax

MK ON-SITE REMEDIATION EQUIPMENT



SYSTEM DESCRIPTION

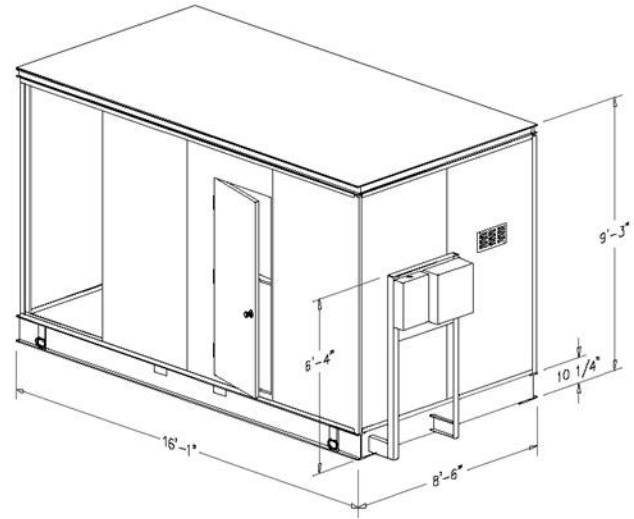
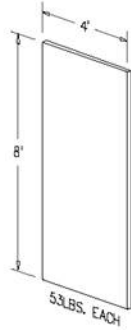
MK Environmental is your single source manufacturer for all your remediation needs. Designed to save time, space and money - Engineering for maximum UPTIME. All the room needed for maintenance, without taking up a lot of room.

- All equipment fully piped, wired and tested
- Completely Integrated remediation system
- Factory built equipment stand alone building
- Structural steel construction with aluminum exterior for low maintenance
- Removable sliding wall panels; fully insulated and faced inside and out with aluminum sheeting
- All panels removable for full accessibility and maintenance to all equipment within
- MK Environmental manufactures all process components
- Dimensions: 8, 12, 16, 20, 24 or 28' long x 8.5' wide x 9.5' high
- Off gas treatment with oxidizer or carbon for purchase or rent

MK ENVIRONMENTAL ON-SITE PLATFORM

INSULATED, REMOVABLE WALL PANELS

TYPICAL OF AN 8' X 16' PLATFORM.
OTHER SIZES AVAILABLE.



MK Building Specifications:

- 10" structural steel I beam base, 4" steel corner posts, 2" steel roof frame
- 100 MPH rated construction. PE stamped design. 150 MPH available
- Roof constructed of a single sheet of aluminum for watertight construction
- Roof and walls are insulated with minimum 1.5" urethane insulation (R10)
- Removable 4'x 8' sliding aluminum wall panels (53 lbs/ea) for ease of maintenance
- Class 1, Division 2, Group D XP electrical interior
- 3/4" plywood flooring with I beams on 12" centers
- Man door and 100 watt interior explosion-proof light fixture is standard
- White interior and exterior
- Single source for equipment, service and support

Optional Building Features:

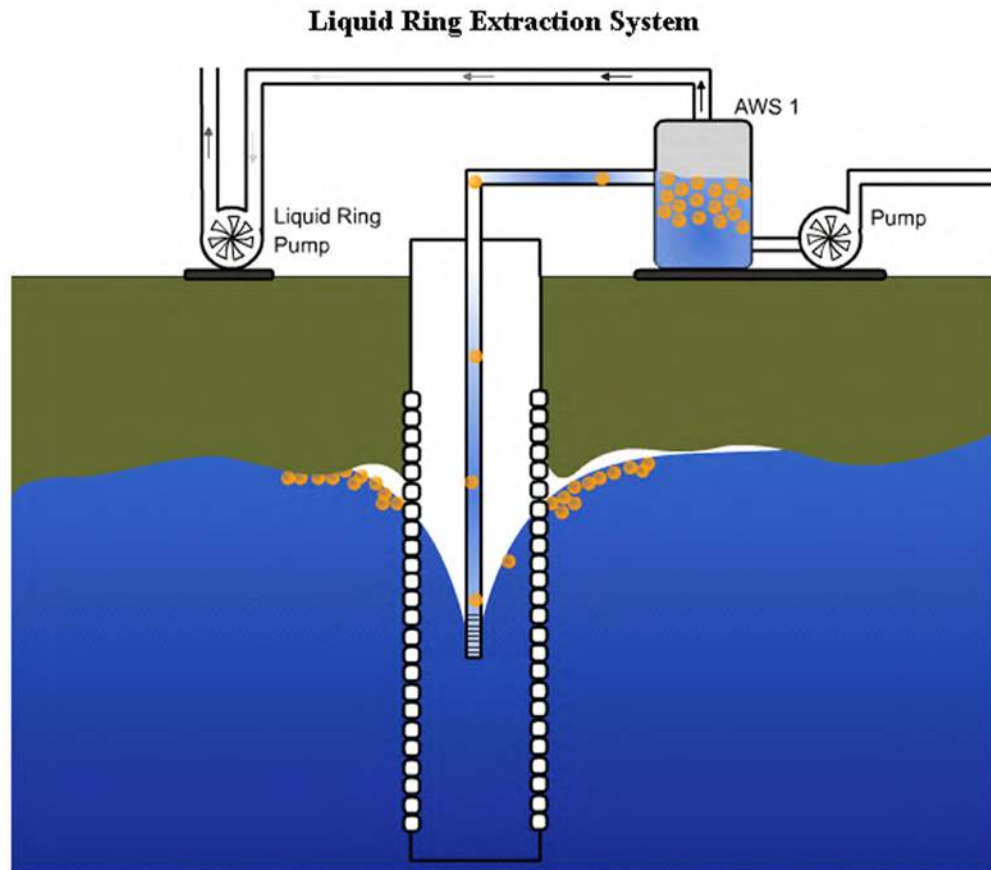
- Flatbed trailer mount building (enclosed)
- XP heater with thermostat
- XP ventilation fan
- *Noise Issues: Sound insulation packages*
- Factory installed fused main disconnect, meter base and weatherhead
- Factory UL listed control panel & entire MK buildings by MET Labs (NRTL)



MK Environmental Inc.
7150 S. Madison Street
Willowbrook, IL. 60527
630-920-1104 Phone
630-920-8013 Fax

Environmental Inc.

OIL SEAL DUAL EXTRACTION SYSTEM



HOW IT WORKS

Dual extraction is a method by which both groundwater and vapors can be extracted from the same well with a single vacuum pump located in the equipment compound. The recovered groundwater is then typically treated with an oil/water separator and air stripper, and the air discharged to atmosphere. The typical limit for dual extraction is from wells less than 25' deep. Extraction from deeper wells is possible, but requires some additional fittings. Most systems utilize a liquid ring vacuum pump as the vacuum source because they can achieve the high levels of vacuum required, typically 18-22 inches of mercury.

Oil Seal Dual Extraction System Continue

In most dual extraction systems, a high vacuum is applied to a suction tube placed down an extraction well, below the static groundwater table, with the bottom end of the tube at the elevation in which draw down is desired. The top of the well casing is sealed to atmosphere. The vacuum applied to the tube then begins to extract the groundwater from the well until the well is drawn down and the water surface in the well reaches the bottom of the tube. At this point, the tube "breaks suction" and begins to apply the vacuum to the air space in the well and surrounding soil. As additional groundwater flows into the well, it is sucked up the tube until it again breaks suction. This process then continues indefinitely, with alternating slugs of groundwater and vapors pulled up the suction tube, out of the well and on to the process equipment. The extracted vapors and groundwater then flow through piping from the well to the first Air/Water Separator, AWS1. There, the liquids, groundwater and product are separated from the vapors by cyclonic action. The liquid flows into a sump where it is then pumped to the oil/water separator and air stripper for treatment. The contaminated vapors continue on into the liquid ring vacuum pump. It is then discharged, under pressure, out of the liquid ring pump to atmosphere.

MK Environmental Inc.

7150 S. Madison Street, Willowbrook, IL. 60527

630-920-1104

630-920-8013 fax

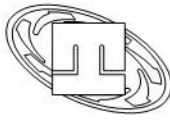
mkenv.com

DIAGRAMMA DI FUNZIONAMENTO
Performance curves

POMPA PER VUOTO AD ANELLO DI LIQUIDO
Liquid ring vacuum pump

TIPO
Type

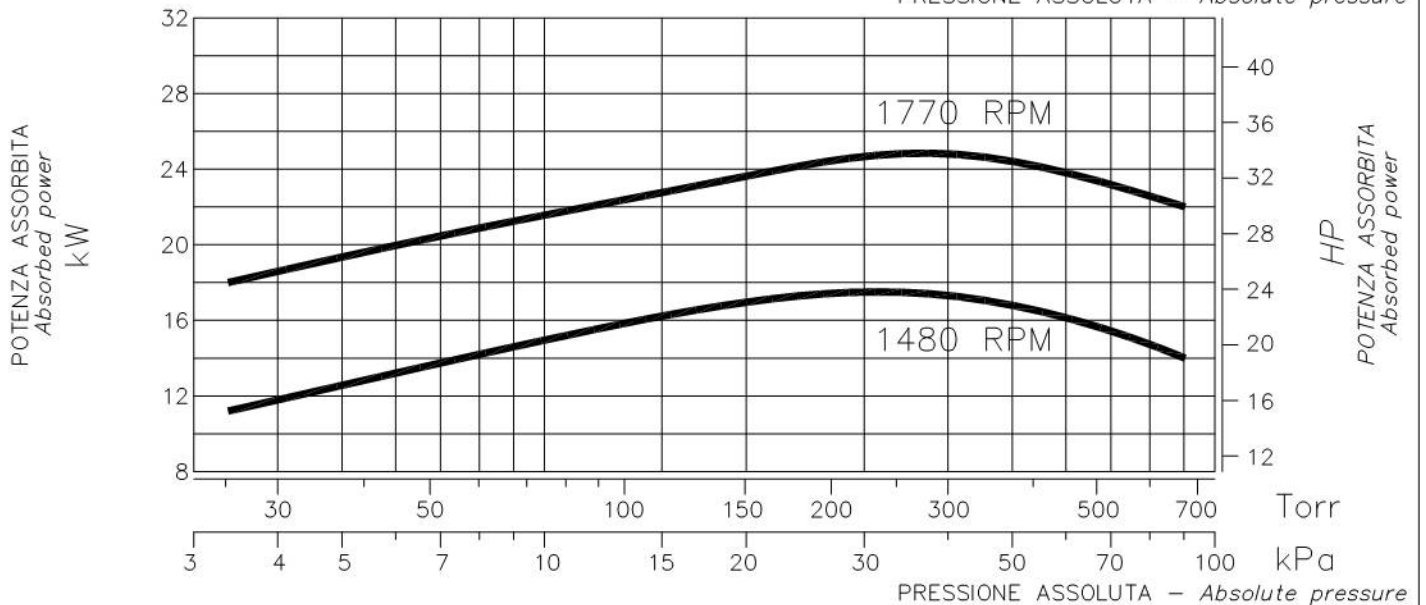
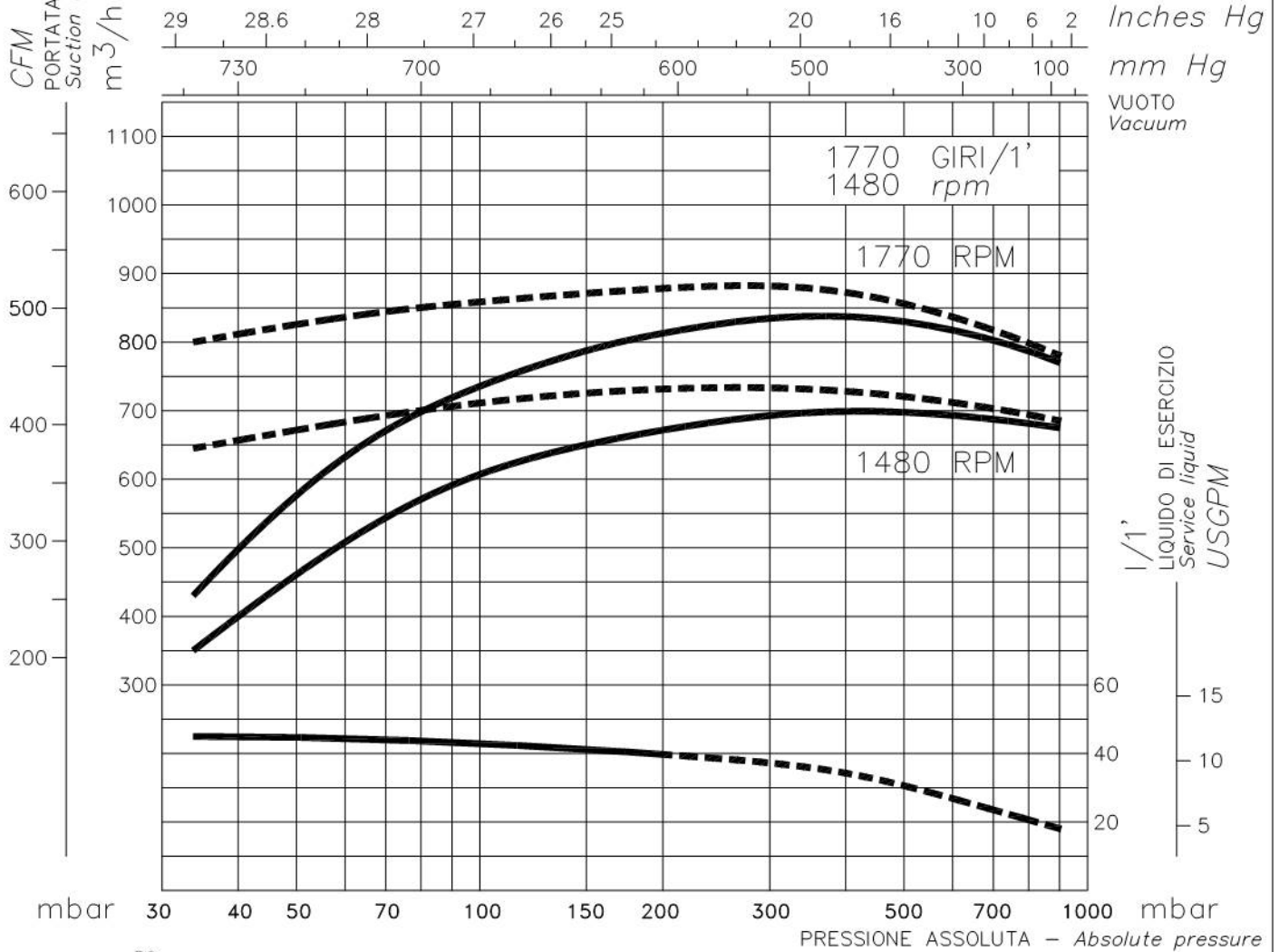
TRVX 1005



pompetravaini S.p.A.

CASTANO PRIMO (MILANO)

I DATI RIPORTATI SONO RIFERITI A - Data refers to :
 ARIA SECCA A 20 °C — Dry air at 20 °C (68 °F)
 ARIA SATURA A 20 °C — Saturated air at 20 °C (68 °F)
 LIQUIDO DI ESERCIZIO — ACQUA - Water Service liquid
 TEMPERATURA LIQUIDO DI ESERCIZIO 15 °C - (59 °F) Service liquid temperature
 PRESSIONE DI SCARICO 1013 mbar Discharge pressure
 TOLLERANZE 10% Tolerance
 PORTATA PER COSTR. IN ACC. INOX -10% Capacity for S.S. construction





Environmental Inc.

**MK Environmental Inc.
7150 S. Madison Street
Willowbrook, IL. 60527
630-920-1104 Phone
630-920-8013 Fax**

STRIPPERATOR SA15B



The Stripperator SA15B is a complete process treatment unit for hydrocarbon-contaminated water. It integrates both coalescing oil/water separator and the Cascade low profile Air Stripper into one component. The unit will separate free product, coalesce suspended hydrocarbons and settle solids.

- Integrates a coalescing oil/water separator and cascade low profile air stripper and effluent sump into a single component (3 tanks built into 1)
- Gravity flow from oil/water separator to the air stripper (NO PUMP REQUIRED)
- Fully gasketed lids with quick release adjustable latches
- Small footprint 37" W X 71" L X 37" H
- 304 Stainless Steel construction
- Fits through a double door – minimal space required
- Easy access to separator and air stripper as well as simple to maintain
- Allows quick inspection and viewing of operation
- 15 GPM capacity

CT Series

High Pressure Centrifugal Pumps
 $\frac{1}{2}$ - $2\frac{1}{2}$ HP
 Heads to 140 Feet
 Capacities to 95 GPM



MYERS CT SERIES LINE OF HIGH PRESSURE CENTRIFUGAL PUMPS PROVIDES QUALITY AT A COMPETITIVE PRICE. The complete line of $\frac{1}{2}$ to $2\frac{1}{2}$ HP units provide strong pressures up to 140 feet and flows up to 95 gpm.

The rugged cast iron body construction is available with either a corrosion resistant composite or brass impeller. The brass impeller unit is equipped with a high temperature, viton seal for more demanding applications. The heavy duty motor features a double ball bearing, 50° C ambient, dual voltage design for dependable service. The compact, back pullout design provides easy installation and serviceability.

The quality features of the CT series will provide dependable service for a wide variety of applications.

SPECIFICATIONS

HP	Catalog No.		Pipe Tapping Sizes		Motor Voltage	Phase	Approx. Wt. Lbs.
	Composite Impeller	Brass Impeller	Suction (NPT)	Discharge (NPT)			
$\frac{1}{2}$	CT05	CT05B	1 $\frac{1}{4}$ "	1"	115/230	1	30
	CT053	CT05B3	1 $\frac{1}{4}$ "	1"	208/230/460	3	30
$\frac{3}{4}$	CT07	CT07B	1 $\frac{1}{4}$ "	1"	115/230	1	32
	CT073	CT07B3	1 $\frac{1}{4}$ "	1"	208/230/460	3	32
1	CT10	CT10B	1 $\frac{1}{2}$ "	1"	115/230	1	35
	CT103	CT10B3	1 $\frac{1}{2}$ "	1"	208/230/460	3	35
1 $\frac{1}{2}$	CT15	CT15B	1 $\frac{1}{2}$ "	1"	115/230	1	40
	CT153	CT15B3	1 $\frac{1}{2}$ "	1"	208/230/460	3	40
2	CT20	CT20B	1 $\frac{1}{2}$ "	1 $\frac{1}{2}$ "	115/230	1	57
	CT203	CT20B3	1 $\frac{1}{2}$ "	1 $\frac{1}{2}$ "	208/230/460	3	57
2 $\frac{1}{2}$	CT25	CT25B	2"	1 $\frac{1}{2}$ "	115/230	1	62
	CT253	CT25B3	2"	1 $\frac{1}{2}$ "	208/230/460	3	62

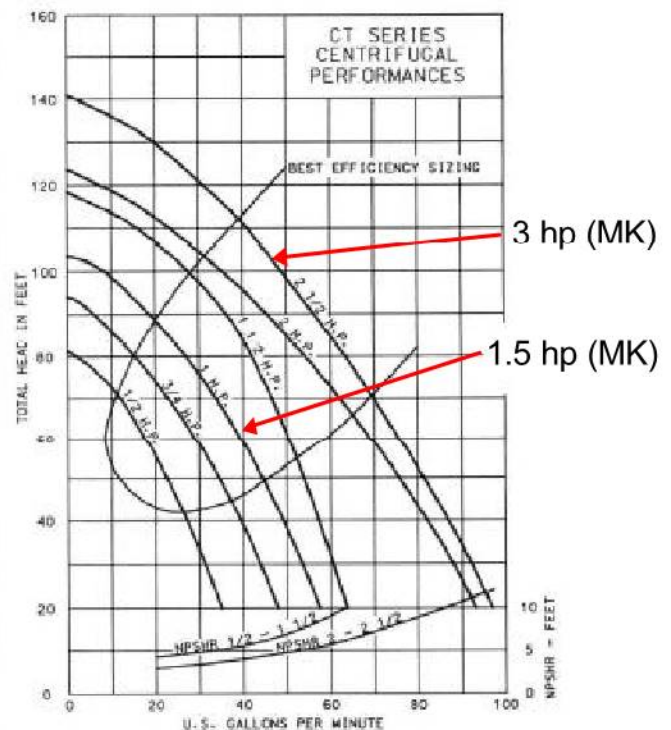
ADVANTAGES BY DESIGN

- Heavy duty cast iron construction.
- Back pull-out design.
- Dependable double ball bearing motor
- Continuous duty rating motor.
- Choice of brass or composite impeller.
- Brass impeller pumps rated 212° F.
- Composite impeller pumps rated 140° F.
- Maximum working pressure of 125 psi.
- CSA listed.

Applications

- Booster service
 - Irrigation
 - Circulating
 - Cooling towers
 - Air conditioning
 - Liquid transfer
 - Sprinkling systems
 - General industrial service
- Note: MK Environmental uses oversized pump motors. See below

PUMP PERFORMANCE



WHERE INNOVATION MEETS TRADITION

Myers

ISO 9001 Certified Company

CT Series

High Pressure Centrifugal Pumps

1/2 - 2 1/2 HP

Heads to 140 Feet

Capacities to 95 GPM

1. MOTOR MK standard is TEFC construction

- NEMA standard
- Double ball bearing
- Open drip proof
- 60 Hz, 3450 rpm
- Stainless steel shaft
- Single phase with built-in overload protection
- Three phase require overload protection in starter unit
- Non-overloading
- Continuous duty
- Strong capacitor start design

2. SEAL PLATE

- Heavy duty cast iron for dependable service and long life

3. IMPELLER

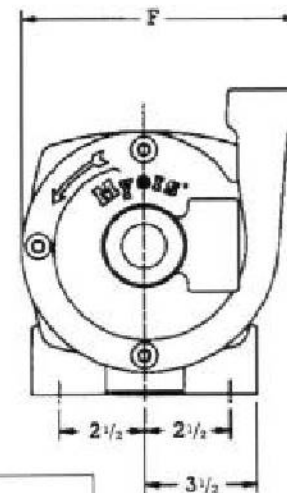
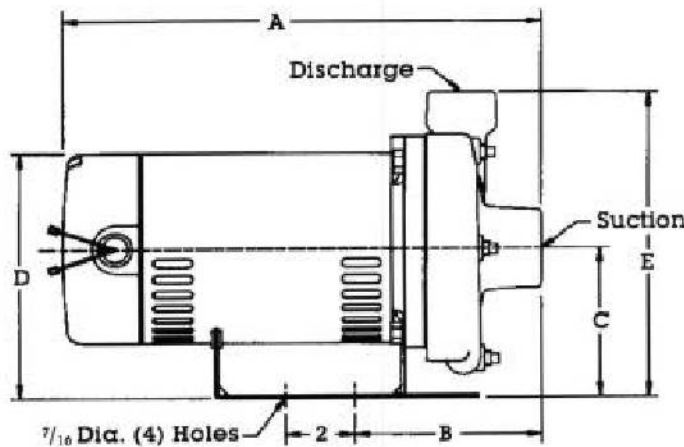
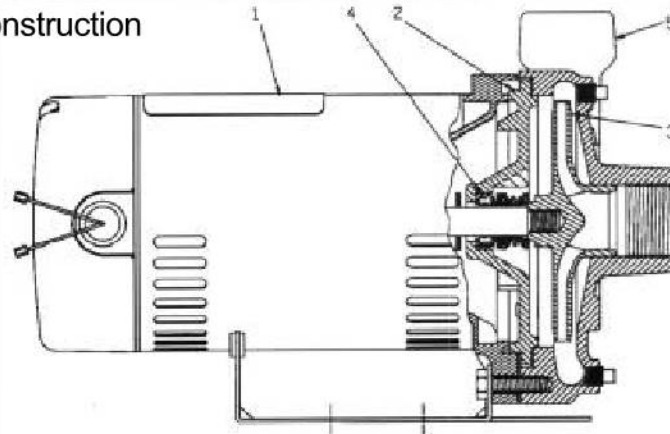
- Reinforced composite for applications to 140° F.
- Threaded SST insert on composite impellers
- Brass for applications to 212° F.
- Enclosed design for high efficiencies
- Balanced for smooth operation

4. MECHANICAL SEAL

- Standard carbon/ceramic faces, Buna elastomers, 300 series SST components (standard for pumps with composite impellers)
- High temperature carbon/ceramic faces, viton elastomers, 300 series SST components (standard for pumps with brass impellers)

5. CASING

- Heavy duty cast iron construction
- Back pull-out design
- Discharge can be rotated in four positions
- Tapped openings for priming, venting and draining.
- Vertical discharge standard



HP	Dimensions, inches							
	A	B	C	D	E	F	Suct.	Disch.
1/2	13 7/8	5 1/2	4 3/8	7 1/4	9	8	1 1/4	1
3/4	14 3/8	5 1/2	4 3/8	7 1/4	9	8	1 1/4	1
1	15 1/8	5 1/2	4 3/8	7 1/4	9	8	1 1/4	1
1 1/2	15 1/8	5 1/2	4 3/8	7 1/4	9	8	1 1/4	1
2	16 1/2	6 1/4	4 1/2	7 1/2	9 1/2	8 7/8	1 1/2	1 1/4
2 1/2	16 1/2	6 1/4	4 1/2	7 1/2	9 1/2	8 7/8	2	1 1/2



FZ300

Cellular Monitoring System

Overview:

The FZ300 is a compact cellular transceiver for monitoring industrial equipment that sends live data to the monitoring web site, providing real-time status and alarms. It features 14 digital inputs, 4 digital outputs and 2 analog inputs. In addition to alarming on status changes, the system keeps track of on-time and cycles for the digital inputs; useful for monitoring pump, fan, or compressor run times and duty cycles. Analog inputs can alarm on high or low conditions and are useful for monitoring temperatures, pressures, tank levels or flow rates. The unit monitors input power voltage and provides an optional battery backup which enables the system to alarm on main power voltage level or failure and continue operating without main power.

The easy to use web site updates continuously, displaying location and operating status for all of your monitored equipment. Alarms are immediately displayed on the web site and trigger messages sent to interested personnel in your organization via SMS text messages and emails. Every event is permanently logged in the web site allowing powerful historical analysis using the built in reporting features to give equipment owners detailed insight into the operation and readiness of their equipment fleets.

Proactive service reminders are automatically generated and sent as equipment reaches service intervals based on run-time. Service logs and manuals available over the secure web site reduce paperwork and automate record keeping while providing up to the minute service records for all of your monitored equipment.

Features:

Easy to install cellular monitoring system. A variety of optional enclosures and mounting options provide for a clean and professional installation. Unit includes a quad magnet bracket for quick mounting and templates for mounting with included standoffs.

Advanced power management employing low power idle modes enable the unit to operate in solar powered applications with minimal power draw.

No software to buy, install or maintain; all mapping and data features are accessible over the secure web site from any computer with Internet access.

Technical Specifications:

Size	4.0" x 4.3" x 2.3" in.	Power	9 - 32 Volts DC
Radio	Quad Band GPRS GSM	Battery Backup	Internal
Transmit Power		Current Consumption	
850 / 900 MHz	Class 4, 2 Watts	Idle	65 mA
1800 / 1900 MHz	Class 2, 1 Watt	Transmit, Average	250 mA
Digital Inputs	14	Peak	2.1 A
Digital Outputs	4	Temperature	
Analog Inputs	2, 0-5 Volt or 0 to 20 mA	Operating	-30°C to +70°C
Connectors	5mm Terminal Blocks	Storage	-40°C to +85°C
GSM Connector	SMA	Max. Humidity	95% Non-Condensing

Radio Agency Approvals:

FCC	Part 15 Part 22 Part 24
GCF	Version 3.21.1
PTCRB	Version 3.7.1
Industry Canada	Yes
CE Mark	Yes
RoHS Compliant	Yes
Emark	Yes

Each Complete Monitoring System Includes:



Digital Cellular Monitoring Unit:

- 14 Digital Inputs
- 4 Digital Outputs
- 2 Analog Inputs
- Connected 24x7x365



Low Profile or High Gain Cellular Antenna:

- 4" (Low Profile)
- 12.4" (High Gain)
- 12' Cable Length
- Magnet Mount



Mapping & Reporting:

- Web Accessible
- Graphical Map Overview
- Simple User Interface
- Run Service Reports
- Monitor Equipment Use



Alarming & Notifications:

- Equipment Status Change
- Equipment Service Needed
- SMS Text Message
- BlackBerry, PDA Message
- Email

Appendix D



KAB Tech Corp.

105 Thackston Rd
Duncan, SC 29334

On the web: www.kabtechusa.com
E-Mail: r.fisher@kabtechusa.com

Customer: PM Environmental

November 12, 2021

Quotes#: 600-1454

Location: Fort Payne, AL

Attention: Wesley Henson

Subject: Platform

Wesley,

Thank you for giving us the opportunity to put a proposal together for you. Below is a proposal based on our conversation. If any additional information is needed please contact me.

- A. **Platform:** 20'0" x 25' 0"
Load Rating: 125psf
Deck Height: 6'6"
Clear Height: 5' 5"
Column Size: 6"
Column Spacing: 12'6" x 20'
Support Beams: 12"
Deck Beams: 12"
Handrail: 86 LF 2-Rail Handrail 42" High w/ Kickplate
Stairway: 1ea IBC Stair
Landing: 1ea 4'x4'
Finish: Galvanized
Decking Layer: Bar-Grating

Fabrication and Freight: \$ 41,377.00

Design Package: \$ 11,380.00

Includes: Full Design Drawings, Structural PE Stamps, Footing Design, and Wind Load Calculations

Contingency For Bracing: \$ 1,000.00

-Additional Bracing as Required By PE

Customer: PM Environmental
Quotes#: 600-1454
Location: Fort Payne, AL
Attention: Wesley Henson
Subject: Platform

November 12, 2021

Our prices exclude installation, sales taxes, freight, consumables, and wire (materials and labor) unless noted differently. Fabrication schedule is currently 12 weeks ARO. Freight costs will vary depending upon the final order combination. Freight and shipping costs are subject to adjustment due final weight and changes in fuel prices.

Shipment Schedule: 12-16 weeks from signed approval drawings.

Should you have any questions, please call. You can see similar projects on our web site, visit us online www.kabtechusa.com
Thank you for the opportunity to work with you on this project.

Best Regards,
Reid Fisher.
KAB Tech Corp.

Terms and Conditions TBD

All orders must be requested on numbered purchase orders along with an approved, signed copy of these Terms & Conditions to place an order. Terms: Net 20 Days, 25% progress payment invoiced upon receipt of an order. Balance due on delivery. All orders subject to 20% cancellation charge. Labor prices are based on straight time pay scale and exclude holidays, week-ends or night shift operations. All unpaid balances subject to 1 1/2% per month on declining balances unpaid for more than 30 days after invoice date. Each aspect of the work is supported by workmanship quality compliance for a period of one (1) year after delivery at the site. All materials are covered under manufacturer's warranty for replacement and/or repair. This quotation is extended for 25 days. Note: Quotations using steel products are subject to change within 5 days due volatile wholesale prices. Above prices specifically exclude sales tax (if applicable), excise import/export taxes and accessorial freight charges. All sales tax exemptions require state issued certification. Material Prices are F.O.B.;

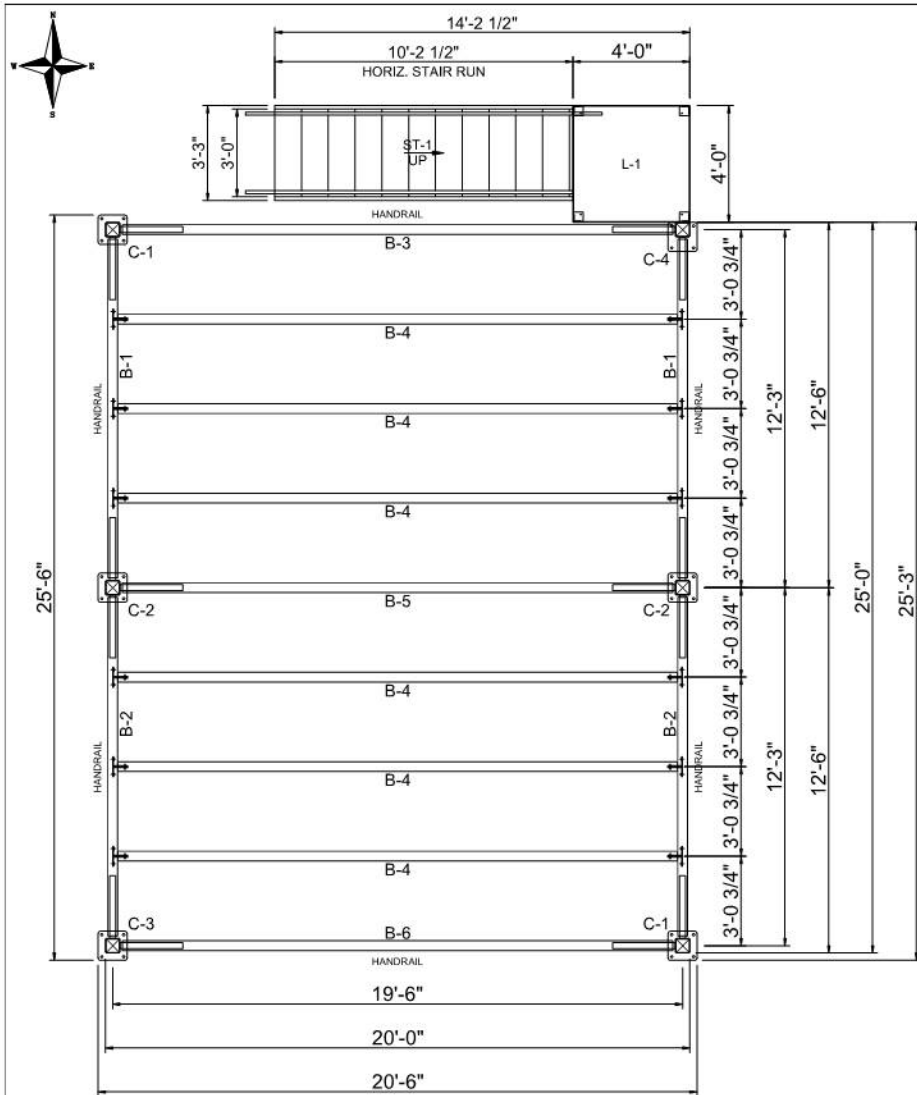
Installation offered within this proposal conforms to the Fair Labor Act and E.O.E. Statutes. Buyer assumes liability for paying any and all sales taxes due in the state of jurisdiction in accordance with this contract. This proposal is submitted under South Carolina law and, if accepted, the resulting contract will be governed by South Carolina law. It is agreed by both parties that jurisdiction and venue for any dispute will be in Greenville, South Carolina. Payment for services rendered will be paid within 30 days of invoice date. If any invoice is not timely paid, the customer agrees to pay interest at the rate of 1 and 1/2 percent per month plus all costs of collection incurred by KAB Tech Corp., including reasonable attorney fees.

Accepted by: _____ on behalf of _____

Please print name: _____ Title: _____

Dated this ____ day of _____, 2021 P.O. #: _____ Dated: ____/____/2021

KAB TECH End of Document



Framing Plan View
1/2"=1'-0"

Specifications for Material (When Needed)

All Structural Steel shall conform to the latest issue of the American Institute of Steel Construction Standards Weld Specification for the Design, Fabrication & Erection of Structural Steel for Buildings. All Structural Bolts shall be A-325 and meet the Specifications for Structural Joints using A.S.T.M. A-325 or A-490 Bolts.

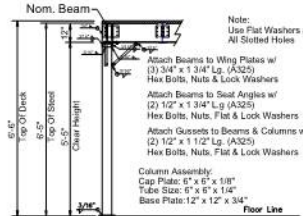
Bar Grating shall meet the Requirements of the Load Tables for "Steel Grating-Type W-19," as Specified in "Metal Bar Grating Manual" (Latest Edition), Published by the National Association of Architectural Metal Manufacturers.
Anchor Bolts shall be "HRK Hawk Bolts" or approved equal. Diameter shall be as specified.

Steel for Columns and Handrail shall be Cold Formed and Meet A.S.T.M. Specification A500, Grade B, with a Yield Strength of 49,000 P.S.I. Steel for Beams shall have a Minimum Yield Strength of 50,000 P.S.I., and meet Requirements of A.S.T.M. Specification A992.

Bar Joist shall meet the Requirements of "Standard Specifications for Open Web Steel Joist" Series, as adopted by the Steel Joist Institute. All holes at Structural Connections are to be at least 1/16" larger than the Diameter of the Bolt.

Computed Metal Sub-Floor shall meet the Requirements of the Load Tables for "Wide Rib Deck Type B909 Roof Deck," as specified by the American Iron & Steel Institute. All Welds to BE E 71 OR Better.

Special Notes:
Landing is to have Bar Grating Deck
All Material is to be Galvanized



Typical Column Detail

Attach Columns to Floor w/ (4) 5/8" x 4 1/2" Long HILTI "TZ" Expansion Anchors or ICC Approved Equal (HILTI Part #3412532) (2 1/4" Minimum Embedment)
Please Note that to Allow for Beam Depth Variances, a Nominal 1/8" Gap has been Allowed Between the Beam and the Column Seat Angle. The Wing Plate Bolts are to be Installed and Tightened before the Seat Angle Bolts.

ALL GUARDRAIL POSTS TO BE MADE OF 1 1/2" x 11 GA. SQ. TUBE RAIL TO BE MADE OF 1 1/2" SQ. x 14 GA. SQ. TUBE w/ 1 1/4" SCH. 40 PIPE FOR HANDRAIL Ø 35" FROM TOP OF TREAD

INSTALLER TO FIELD DRILL HOLES IN DECK AFTER LOCATION OF STAIR IS DETERMINED

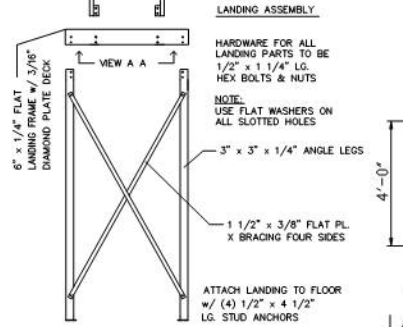
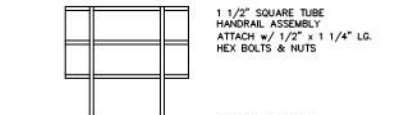
ATTACH 1 1/2" x 2" x 1/4" STAIR ANGLE TO DECK w/ 3/8" x 4" LG. CARRIAGE BOLT & NUT (1-PER SIDE)

ATTACH GUARDRAIL TO TOP OF STRINGER w/ 3/8" x 1 1/4" LG. HEX BOLTS & NUTS

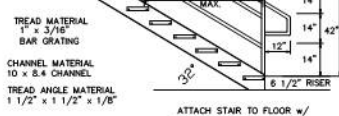
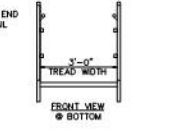
ATTACH TREADS TO STRINGERS w/ 3/8" x 1" LG. GRADE 5 HEX BOLTS & NUTS

ICC STAIR DESIGNED FOR 100 PSF UNIFORM LOAD 300 LBS CONCENTRATED LOAD

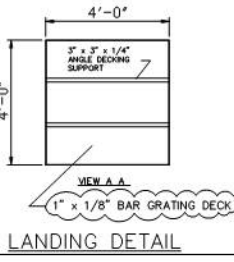
STAIR INSTALLATION DETAIL FOR BOLT TOGETHER TYPE STAIR



PLAN VIEW
INSTALL BLACK CAPS @ END OF 1 1/2" SQ. GUARDRAIL (12) PER STAIR REVD.



ATTACH STAR TO FLOOR w/ (2) 1/2" x 4 1/2" LG. HLTI HB 12 Expansion Anchors w/ 2 1/4" Minimum Embedment



LANDING DETAIL

Design Specifications

Deck Height: 6'-6"	Clear Height: 6'-6"
Maximum Uniform Load Allowable: 125 p.s.f.	Maximum Vertical Deflection: L/200
Seismic Design Category: C	Type of Use: Platform
Decking Layer 1: 1" x 1/8" Bar Grating	Decking Layer 2: N/A
Guardrail: Number of Rails Req'd: 2 Rail	Linear Feet of Guardrail: 80 L.F.
Engineering Seals Required: Yes	Engineering Calcs Required: No

Floor Load:		
Maximum Load: 17,578 lb.	Base Plate: 12" x 12" x 3/4"	Floor Load: 122 p.s.f.

Stairs:			
Star: ST-1	Quantity: 1	Code: IBC	Type of Treads: 1" Bar Grating
Star Width: 3'-0"	Star Height: 6'-6"	No. of Treads: 11	Horizontal Run: 16'-2 1/2"
Riser Height: 6'-1/2"	Guardrail: 3 Rail	Type of Star: Open Tread & Riser	

Paint:	
Beams: Galvanized	Bar Joists: N/A
Columns: Galvanized	Stairs: Galvanized
Guardrail: Galvanized	Star Guardrail: Galvanized
Decking: Galvanized	B-Deck: Galvanized

- Note:
- The Customer is responsible to assure that the requirements of local building codes are met.
 - Existing Floor Slab or Footing foundation design is by Others. Column Loads are show above.
 - The Customer is responsible to assure that Drawing Dimensions are verified against actual Job Site Conditions.
 - The Customer is responsible to obtain Permits, if required.

Approval of this drawing, signed by a Customer's Authorized Representative, shall constitute a final interpretation of all other documents relating to the subject matter with all enclosed drawings
Final Fabrication cannot proceed until ALL signed Drawings are received by Kab Tech, Inc.
Approval is based on acceptance of Dimensions and Height Only. Design Components and Spacing of Structural Members may vary.

Drawings: Approved Approved as Noted Revise & Resubmit

Approved By: _____ Date: _____
Company: _____ Position: _____
Job Site Supervisor: _____
Lift Equipment Supplied By: _____
Installation of Material By: _____
Note: The above signature has reviewed and approves these Drawings.

Field Measurements:
Field Checked By: Kab Tech Others Name: _____ Date: _____
Company: _____

- Erector's Notes:
- Review Drawings carefully before start of installation.
 - Briding must be completely installed before placing any construction loads on bar joist.
 - All Structural Bolts must be tightened to a minimum of 80 ft. lb. of torque.
 - Anchor Bolts must have a Minimum Embedment of 2 1/4".
 - Columns & Framing must be Plumb and Square.
 - Remove all trash from Ground Floor and Deck Surface.

Erector's Note
Any Modifications to this structure Must be Approved by Kab Tech, Inc. in writing.

General Notes:
This Drawing is loaned with the expressed agreement that the Drawing & Information herein contained are the property of Kab Tech, Inc., & will not be reproduced, copied or otherwise disposed of, directly or indirectly. And this Drawing will not be used in whole or in part to assist in making, or furnishing any information for the making of drawings, print or other reproductions hereof, or for the making of apparatus of parts thereof, except upon written permission of Kab Tech, Inc., specific to each case.

Approval of this Drawing by the Customer's Authorized Representative shall constitute a final interpretation of all other Documents relating to the subject matter of this Drawing. The acceptance of this Drawing will be construed as acceptance of the foregoing agreement.

REVISIONS			
No.	Description	Date	By/Checked

Kab Tech, Inc.

Drawn By: A.R.S. T.B.D.
Scale: As Noted Fort Payne, AL

Date: 7-29-2021
Checked By: FHB
Quote: 3490 Drawing Number: D-103490 Sheet: 1 of 1