30181 State Hwy 59
Suite 1A
Loxley, AL 36551
Telephone 251-447-0944
Fax 251-447-0942

February 8, 2025

Mr. Jim Heller
Alabama Department of Environmental Management
Underground Storage Tank Corrective Action Section
1400 Coliseum Boulevard
Montgomery, Alabama 36130-1463

RE: Corrective Action Plan Review Response
Former Spectrum No. 40 (Circle K No. 2706697)
588 Fob James Drive
Valley, Chambers County, Alabama
Facility ID No. 14543-017-013879
UST Incident No. UST91-04-08

Dear Mr. Heller:

Atlas Technical (Atlas), on behalf of Circle K Stores, Inc. (Circle K), has received the review letter dated September 13, 2024, from the Alabama Department of Environmental Management (ADEM) for the Corrective Action Plan (CAP) submitted by Atlas in June 2024. The review letter requested a time to achieve clean-up and associated cost proposals for implementation of the CAP. Atlas included the proposed clean-up time in Section 5.10 of the CAP submitted June 24, 2024. The time to achieve objectives is included below:

5.10 Estimated Time to Achieve Objectives

Atlas has designed this remediation system to achieve the remedial objectives over a duration of approximately 2 years (24 months) operational time. This time estimation is based on Atlas' performance of similar petroleum hydrocarbon remedial projects located within the Piedmont Plateau of Alabama and Georgia. Atlas currently performs petroleum hydrocarbon remedial projects for the Georgia Environmental Protection Division under the guidance of designing remediation systems to be active for a duration of approximately 2 years. This similar design guidance, consisting of well spacing, ROI calculations, extraction/injection flow rates, were similarly used for the remedial design for this site. It is understood, that upon achieving remedial objectives, a groundwater monitoring period of approximately 1 year (12 months) will be conducted, in which remedial objectives must be maintained. Atlas will confer with ADEM concerning possible amendments to the remediation system, in order to expedite the time to achieve remedial objectives.

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Fax 251-447-0942

Cost Proposal for the Equipment, Installation and Startup, and Operation and Monitoring activities are being submitted to ADEM separately.

If you have any questions or comments regarding this submittal, please contact us.

Sincerely,
ATLAS TECHNICAL CONSULTANTS, LLC

Kenneth J. Perignat, P.E.
Senior Engineer

Paul Naman, P.G.
Project Manager

Attachment

c: Scott Janashak, Circle K

9078 Merrit Lane,
Suite A
Daphne, AL 36526
Telephone 251-447-0944
Fax 251-607-1191
www.oneatlas.com

June 25, 2024

Mr. Jim Heller
ADEM, UST Corrective Action Section
Groundwater Branch, Land Division
1400 Coliseum Boulevard
Montgomery, Alabama 36130-1463

RE: Corrective Action Plan
Circle K No. 2706697
588 Fob James Drive
Valley, Chambers County, Alabama
Facility ID No. 14543-017-013879; UST Incident No. UST91-04-08
Cost Proposal No. 83
ATC Project No. Z021000649

Dear Mr. Heller:

Atlas Technical Consultants, LLC (Atlas) on behalf of Circle K Stores Inc. (Circle K), is pleased to submit the following Corrective Action Plan for the above-referenced site for your review and approval. This report presents the design of a remediation system for the mitigation of petroleum hydrocarbon impact to the subsurface, via soil vapor extraction and air sparge. Preparation of this report was performed in accordance with the above-mentioned approved cost proposal.

If you have any questions or comments regarding this submittal, please contact Paul Naman at 251.447.0944, or by email at paul.naman@oneatlas.com.

Sincerely,

ATLAS TECHNICAL CONSULTANTS, LLC

Paul M. Naman, P.G.
Senior Project Manager

Darren Moore
Senior Vice President

c: Scott Janashak, Circle K Stores Inc., Pensacola, FL

CORRECTIVE ACTION PLAN

CIRCLE K NO. 2706697
588 FOB JAMES DRIVE
VALLEY, CHAMBERS COUNTY, ALABAMA

UST INCIDENT NO. UST91-04-08
ATC PROJECT NO. Z021000649

Prepared for
Mr. Scott Janashak
Environmental Manager
Circle K Stores Inc.
25 W. Cedar St., Suite M
Pensacola, Florida 32502

Prepared by
Atlas Technical Consultants, LLC
30181 State Highway 59, Ste. 1A
Loxley, Alabama 36551
Phone: 251.447.0944
Fax: 251.447.0942
www.oneatlas.com

June 26, 2024

Paul M. Naman, P.G.
Project Manager

Jonathan Evens
Staff Engineer

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FIGURES

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APPENDICES

SITE INFORMATION

Date of Report:	June 26, 2024

SITE IDENTIFICATION

Facility ID:	14543-017-013879
UST Incident No:	UST91-04-08
Agency Contact:	Jim Heller, ADEM, UST Corrective Action Unit
Site Name:	Circle K No. 2706697
Site Street Address:	588 Fob James Drive Valley, Chambers County, Alabama 36854
Latitude / Longitude:	N 32° 49’ 12.49” / W 85° 12’ 39.55”

SITE CONTACT INFORMATION

UST Owner/Operator:	Circle K Stores Inc. (Circle K)
Address:	25 W. Cedar Street, Suite M, Pensacola, FL 32502
Telephone:	(850) 549-2879
Contact:	Scott Janashak, Environmental Manager
Property Owner:	Circle K Stores Inc.
Address:	25 W. Cedar Street, Suite M, Pensacola, FL 32502
Telephone:	(850) 549-2879
Consultant/Contractor:	Atlas Technical Consultants, LLC (Atlas)
Address:	9078 Merritt Lane, Daphne, AL 36526
Telephone:	(251) 447-9044
Contact Name:	Paul M. Naman
Analytical Laboratory:	SGS Accutest Laboratories
Address:	500 Ambassador Caffery Pkwy, Scott, LA 70583
Telephone:	(337) 237-4775

INFORMATION ABOUT CURRENT RELEASE

Date Discovered:	1991
Estimated Quantity of Release:	Unknown
Source of Release:	Unknown
Current UST(s) Size & Contents:	(3) 10,000-gallon Gasoline; (1) 10,000-gallon Diesel; (1) 1,000-gallon Kerosene

REPORT CERTIFICATION

I, certify under penalty of law that I am an Alabama Licensed Professional Engineer experienced in hydrogeological investigations. The investigation and corrective action described in this report was performed at the direction of an Alabama Licensed Professional Geologist(s) and/or Professional Engineer(s) experienced in hydrogeological investigations and environmental remedial efforts. The information submitted herein, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information.

Kenneth J. Perignat, P.E.
Alabama Licensed Professional Engineer No. 33747

Atlas Technical Consultants, LLC
Alabama Certificate of Authorization (Engineering Company) No. ECA-5753

1.0 UST RELEASE FACT SHEET & SITE CLASSIFICATION FORM

UST RELEASE FACT SHEET

GENERAL INFORMATION:

SITE NAME: Circle K Store #2706697

ADDRESS: 588 Fob James Drive, Valley, Chambers County, Alabama 36854

FACILITY I.D. NO.: 14543-017-013879

UST INCIDENT NO.: UST 91-04-08

RESULTS OF EXPOSURE ASSESSMENT:

How many private drinking water wells are located within 1,000 ft. of site?	None
How many public water supply wells are located within 1 mile of the site?	None
Have any drinking water supply wells been impacted by contamination from this release?	{ } Yes {X} No
Is there an imminent threat of contamination to any drinking water wells?	{ } Yes {X} No
Have vapors or contaminated groundwater posed a threat to the public?	{ } Yes {X} No
Are any underground utilities impacted or imminently threatened by the release?	{ } Yes {X} No
Have surface waters been impacted by the release?	{ } Yes {X} No
Is there an imminent threat of contamination to surface waters?	{ } Yes {X} No
What is the type of surrounding population?	Commercial/Residential

CONTAMINATION DESCRIPTION:

Type of contamination at site:{ X} Gasoline { } Diesel { } Waste Oil
{ } Kerosene { } Other _____

Free product present in wells? { } Yes { X } No Maximum thickness measured: NA

Maximum TPH concentrations measured in soil: N/A

Maximum BTEX or PAH concentrations measured in groundwater: BTEX 93.4 mg/L in RW-1 on 4/8/11

ADEM Form 479 8/02

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:	Circle K Store #2706697
SITE ADDRESS:	588 Fob James Drive
	Valley, Chambers County, Alabama 36854
FACILITY I.D. NO.:	14543-017-013879
UST INCIDENT NO.:	03-03-01
OWNER NAME:	Circle K Stores Inc.
OWNER ADDRESS:	2440 Whitehall Park Drive, Suite 800, Charlotte, NC 28273
NAME & ADDRESS OF PERSON COMPLETING THIS FORM:	Paul Naman Atlas Technical Consultants LLC
	30181 State Highway 59, Ste. 1A
	Loxley, Alabama 36551

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.	☐	☒
A.2	Vapor concentrations at or approaching explosive levels are present in subsurface utility system(s), but no buildings or residences are impacted.	☐	☒
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.	☐	☒
B.2	An active domestic water supply well, domestic water supply line or domestic surface water intake is impacted or immediately threatened.	☐	☒

CLASSIFICATION	*DESCRIPTION*	*YES*	*NO*
B.3	The release is located within a designated Wellhead Protection Area I.	☐	☒
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.	☐	☒
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.	☐	☒

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.	☐	☒
D.2	A non-potable water supply well is impacted or immediately threatened.	☐	☒
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.	☐	☒
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.	☐	☒
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.	☐	☒
F.2	Groundwater is impacted and a domestic well is located within 1,000 feet of the site.	☐	☒
F.3	Contaminated soils and/or groundwater are located within designated Wellhead Protection Areas (Areas II or III).	☐	☒
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.	☐	☒
GLASS 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.	☒	☐
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.	☐	☒

ADDITIONAL COMMENTS:

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:	I.1

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

2.0 INTRODUCTION

On behalf of Circle K Stores Inc. (Circle K), Atlas Technical Consultants, LLC (Atlas), formerly known as ATC Group Services, LLC (ATC), and Environmental Compliance Services, LLC (ECS), presents the following Correction Action Plan (CAP) Report to the Alabama Department of Environmental Management (ADEM) for the Circle K No. 2706697 facility located at 588 Fob James Drive in Valley, Chambers County, Alabama. As of February 28, 2015, Circle K has contracted Atlas, formerly ECS, to perform environmental contractor duties related to this site. Preparation of the CAP has been prepared under Cost Proposal No. 83 (CP-83), as issued by ADEM, dated March 5, 2024. The following report presents information and designs for implementing the corrective action at this site.

2.1 Site Location and Description

The Circle K No. 2706697 facility is located at 588 Fob James Drive, within the city limits of Valley, Chambers County, Alabama, and the site location is illustrated on **Figure 1** (henceforth referred to as the "site") and in **Table 1**. The site is currently owned and operated by the Gulf Coast business unit of Circle K, based out of Pensacola, Florida. The site is developed with a one-story building, five petroleum underground storage tanks (USTs), and associated fuel canopies with dispensers. The existing UST information is summarized in the site information section of this report, with locations illustrated on the Site Map presented as **Figure 2**.

3.0 SITE HISTORY AND CHARACTERIZATION

Initial environmental assessment of the property began in July 1989, due to an overfilling release of the diesel UST. Emergency response activities were performed, which included removal of impacted soils from the UST pit and installation of monitoring wells MW-1 and MW-2, to monitor and recover free-phase petroleum product (free product). A Secondary investigation was conducted in 1990, which included assessment of groundwater conditions through the installation of monitoring wells MW-3 through MW-11. During groundwater assessment activities conducted in 1991, dissolved-phase benzene was reported to exceed initial screening levels (ISLs) concentration of 0.005 parts per million (ppm) in monitoring wells MW-5, MW-7, MW-10, and MW-11, which would be conclusive of a release associated with the gasoline UST system.

In March 2000, a soil assessment was performed by Gulf Atlantic Drilling, in which soil borings were installed around the UST pit and adjacent to the gasoline dispenser islands. During these activities, gasoline free product was observed for the first time in monitoring well MW-4, at a thickness of 0.76 feet. Two free product recovery events were performed in September and December 2000, using Mobile Enhanced Multi-phase Extraction (MEME). A total of approximately 125 gallons of free product were recovered during these events.

In January 2001, an Alabama Risk Based Corrective Action (ARBCA) Evaluation was submitted to ADEM, with subsequent revisions submitted in November 2001 and December 2002. The ARBCA established Site-Specific Target Levels (SSTLs) for source and perimeter wells. The SSTLs for select wells are presented in conjunction with the groundwater analytical data in **Table 2**.

In October 2001, monitoring wells MW-12 and MW-13 were installed. MW-12 was installed to monitor the source area groundwater near the gasoline dispenser island west of the store building and MW-13 was installed off site to replace MW-11, which was destroyed during repaving of the southwestern off-site (operating as King Chevrolet) parking area.

An 8-hour dual-phase extraction (DPE) pilot test study was conducted in April 2004 to evaluate DPE as a site-specific remedial technology. Monitoring well MW-12 was utilized as the extraction point. Vapor-phase petroleum hydrocarbon recovery was calculated to be 0.225 pounds per hour (PPH) for a total of 1.8 pounds (~0.29 equivalent gallons).

In May 2004, an 8-hour aquifer pumping pilot test study was conducted to evaluate the use of groundwater pumps as a site-specific remedial technology. Monitoring well MW-6 was utilized as the extraction point and an approximate total of 200 gallons of groundwater were recovered.

Upon completion and evaluation of the pilot test studies, a CAP was submitted by PPM Consultants in March 2005, recommending Remediation through Natural Attenuation (RNA), and was approved by ADEM in August 2005. Groundwater monitoring, along with MEME events, have been conducted at the site since approval of the CAP in 2005.

Based on a review of historical monitoring and free product recovery reports, ATC understands that thirteen MEME events were reported to have been performed at the site between September 2000 and August 2013. MEME durations were reported to have ranged from 8 to 24 hours in duration and recovered a total of approximately 975 equivalent gallons of vapor-phase hydrocarbons.

In February 2011, previous environmental consultant S&ME Inc. (S&ME) oversaw the installation of recovery wells RW-1 and RW-2, which were installed east and southeast of MW-4.

In August 2014, S&ME oversaw the installation of MW-14 and MW-15 at the off-site property (Waffle House® property). These monitoring wells were installed to delineate the dissolved-phase hydrocarbon plume east/southeast of RW-1 and RW-2.

An additional six 8-hour MEME events were performed by Brown Remediation at the site between May to July 2016. Site wells RW-1, RW-2, MW-4, and MW-15 were utilized as extraction points. A total of approximately 213 pounds (34.23 equivalent gallons) of vapor-phase hydrocarbons and

approximately 10,850 gallons of groundwater were reported to have been recovered during the 2016 MEME events.

In November and December 2016, ATC oversaw the installation of wells MW-8R, MW-9R, MW-16, MW-17, MW-18, and RW-3. During these activities, monitoring well MW-4 was abandoned and RW-3 was installed in proximity to the former MW-4 location. Monitoring wells MW-8R and MW-9R were installed as replacement wells for the former wells MW-8 and MW-9. Monitoring wells MW-16, MW-17, and MW-18 were installed on an adjacent southeastern property, to further delineate the dissolved-phase hydrocarbons east/southeast of the site.

An environmental chronological history summarizing activities and submitted/received documents for this release is summarized in **Appendix A**.

3.1 Receptors/Potential Receptors

Results of historical sensitive-receptor surveys completed by previous environmental consultants reported that private water supply wells were not identified as being located within 1,000 feet of the site and public water supply wells were not identified as being located within 1 mile of the site.

According to the USGS Topographical Map, the nearest surface water body is an unnamed lake, located approximately 3,300 feet south of the source area.

3.2 Groundwater Assessment

The most recent groundwater sampling and gauging event was conducted on March 27, 2024. Depths to groundwater were detected to have ranged from 6.10 feet below top of casing (TOC) in MW-9R to 16.73 feet below TOC in MW-16, with an interpreted groundwater gradient of approximately 0.028 feet per foot (ft/ft) in the south-southeasterly direction. Free product was not detected during the March 2024, gauging event. A summary of gauging data is presented in **Table 1**. Potentiometric surface maps for the gauging events conducted on March 2024, November 2023, and July 2023 events are illustrated as **Figures 3A, 3B**, and **3C,** respectively.

A review of available groundwater analytical data indicates that laboratory analysis of groundwater samples has been performed for constituents of concern (COCs) consisting of dissolved-phase benzene, toluene, ethylbenzene, and total xylenes (BTEX), methyl tertiary-butyl ether (MTBE), and naphthalene. The recent March 2024 data reports that dissolved-phase COCs exceeded applicable SSTLs in groundwater samples obtained from monitoring wells MW-7 (SSTL exceeded for benzene), MW-12 (benzene), MW-14 (benzene), MW-15 (benzene and MTBE), RW-1 (benzene and MTBE), RW-2 (benzene and MTBE), and RW-3 (benzene).

A summary of groundwater analytical data is presented in **Table 2**. Groundwater field parameters obtained during the sampling activities are summarized in **Table 3**. Iso-concentration maps depicting the extent of dissolved-phase benzene data obtained during the March 2024, November 2023, and July 2023 sampling events are presented as **Figures 4A, 4B**, and **4C,** respectively. Iso-concentration maps depicting the extent of dissolved-phase MTBE data obtained during the March 2024, November 2023, and July 2023 sampling events are presented as **Figures 5A, 5B**, and **5C**, respectively.

4.0 PROPOSED REMEDIAL OBJECTIVES

The primary remedial objective for this site is the mitigation of dissolved-phase COC concentrations to less than applicable SSTLs.

Groundwater remediation is deemed warranted to mitigate the dissolved-phase benzene and MTBE reported to have exceeded the calculated SSTLs in groundwater. Dissolved-phase benzene has exceeded the current source well SSTLs of 0.219 milligrams per liter (mg/L) in source wells MW-4 (this well has been abandoned), MW-12, MW-14, MW-15, RW-1, RW-2, and RW-3; and point of compliance (POC) SSTL of 0.168 mg/L in POC well MW-7. Dissolved-phase MTBE has been reported to have exceeded the current source well SSTL of 0.877 mg/L in source wells MW-15, RW-1, and RW-2.

Historically, free product was detected in former monitoring well MW-4, at thicknesses ranging between 0.02 and 2.49 feet. Free product was last detected in MW-4 during the January 11, 2013, groundwater gauging event in MW-4, at a thickness of 0.23 feet. This well was abandoned in 2017. Free product has not been detected in other site wells. A summary of the free product thicknesses are presented with the groundwater gauging data in **Table 1**.

5.0 REMEDIATION SYSTEM DESIGN

A total of nineteen MEME events have been conducted at the site. The MEME’s have been effective in recovering vapor-phase hydrocarbons and reducing free product thicknesses; however, the continued use of MEME's to remediate to the applicable SSTLs is not considered a cost effective remedial strategy for the site.

Data gathered during the performance of the MEMEs, as well as knowledge of other remedial technologies employed at nearby sites, were utilized in this site-specific remediation design.

In order to mitigate elevated dissolved-phase benzene and MTBE concentrations in site wells, the remedial technologies selected to be employed at this site is soil vapor extraction (SVE) coupled with air sparging (AS).

SVE technology utilizes a blower to impress a vacuum on the subsurface lithology. This encourages the recovery of petroleum vapors from the exposed vadose zone. Air sparge technology introduces compressed ambient air at depths below the dissolved-phase impact zone. The introduction of air into the groundwater provides a two-fold benefit: the stripping of dissolved-phase and adsorbed-phase petroleum hydrocarbons from the subsurface, which is then recovered via the SVE system, and increases the dissolved-oxygen (DO) content of the saturated zone, which stimulates the aerobic degradation potential of naturally existing petroleum degradation microbes.

Site-specific pilot testing of remedial technologies was not performed. The remedial design is based on Atlas' knowledge of effective remedial technologies employed at similar lithological sites in the near vicinity, and data collected from the 2016 MEME events. Based on the MEME event data, the following SVE design parameters were calculated as follows:

- A wellhead vacuum application of approximately 10 inches of mercury-gauge (inHgg) corresponded with an extraction rate of approximately 22 standard cubic feet per minute (SCFM) per extraction well, which corresponds to approximately 77 actual cubic feet per minute (ACFM);

- Based on observation well data, an effective radius of influence (ROI) of approximately 38.7 feet was calculated as corresponding with minimal capture vacuum of 1.0 inches of water column (inWC);

- The average petroleum hydrocarbon removal rate was calculated to be approximately 4.4 PPH for four wells, corresponding to approximately 1.1 PPH per well;

- Groundwater recovery was calculated to average approximately 1,808.3 gallons per 8-hour event for four wells, corresponding to approximately 0.94 gallons per minute (GPM) per well;

- For SVE design, assuming a 10% reduction in effective ROI for design averaging, an effective ROI of 35 feet may be utilized, corresponding to an effective wellhead vacuum of 10 inHgg and extraction rate of 22 SCFM; and

- A site-specific air sparge pilot test was not conducted; however, air sparge technology was pilot tested and utilized for similar sites located in the City of Valley. Based on review of the relevant pilot test reports and remedial designs, ATC utilized an air sparge ROI of 20 feet for the purposes of this remedial design. Typical air sparge operational conditions are 5 to 10 SCFM, at pressures ranging from 10 to 20 pounds per square inch – gauge (psig).

5.1 Free Product Recovery

As free product has not been detected in site wells since 2013, free product recovery was not integrated into the remedial design for this site. Should instances arise where free product is encountered in site wells in the future, recovery will be performed via manual recovery techniques during site visits and groundwater sampling activities.

5.2 Milestones

The anticipated operational time for active remediation system (SVE/AS events) is approximately 24 months (2 years). Submittal of reports and adherence to periods will comply with this CAP, pending ADEM approval.

5.3 Permitting

The following permits are deemed to be required, prior to conducting remediation system installation activities. These permits include the following:

Permit Type	Permitting Agency
Class V Injection Well System – Air Sparge	ADEM – UIC Program
Air Discharge Permit – SVE blower	ADEM – Air Division
Building Permit – Land Disturbance	City of Valley, Alabama
Electrical Permit	City of Valley, Alabama

Upon approval of this CAP Addendum, Atlas will commence with obtaining the appropriate permits. Atlas anticipates that permit approval process to require approximately 60 days to complete.

5.4 Remediation System Design

This remedial approach will consist of the use of SVE and air sparge technologies. Vapor extraction will be conducted utilizing a high-volume extraction blower. Air sparging will be conducted through the use of an air compressor.

Atlas proposes to utilize seven vapor extraction (VE) wells for the recovery of subsurface vapors. These VE wells will be comprised of three existing site wells (RW-1, RW-2, and RW-3) and four proposed VE wells (proposed SVE-1, SVE-2, SVE-3, and SVE-4).

Eleven air sparge wells will be installed for the injection of ambient compressed air into the subsurface (proposed sparge wells AS-1, AS-2, AS-3, AS-4, AS-5, AS-6, AS-7, AS-8, AS-9, AS-10, and AS-11). The proposed air sparge wells have been positioned within the vicinity of the dissolved-benzene plume, in order to maximize their efficiency.

Operation of the system will commence with recovery of soil vapors from the seven vapor extraction wells. Recovered soil vapors will be treated through the use of an oxidizer unit, as based on emission calculations, prior to discharge to atmosphere. As vapor concentrations diminish over the duration of the vapor recovery efforts, the use of vapor treatment is typically utilized for the initial 6 to 12 months of operation.

Air sparging will consist of injecting compressed ambient air into the eleven proposed air sparge wells, to accelerate recovery of dissolved-phase petroleum hydrocarbons and promote aerobic subsurface conditions.

Proposed vapor extraction wells and air sparge well locations, with subsurface pipe trench locations, are identified on **Figure 6** and an ROI Map is presented on **Figure 7A-C**. A conceptual process flow and instrumentation diagram is presented as **Figure 8**.

5.5 Proposed Recovery Well Installation

Proposed vapor extraction wells SVE-1, SVE-2, SVE-3, and SVE-4 are to be installed on the southeastern portion of the site. Atlas proposes to install these recovery wells to total depths of 20 feet below ground surface (BGS). The lower 15 feet of the wells will be completed with 4-inch nominal diameter Schedule 40 polyvinyl chloride (PVC) 0.02-inch slotted screen pipe, with the remaining 5 feet comprised of 4-inch nominal diameter Schedule 40 PVC riser pipe. The well annulus will be completed with filter sand and will be placed approximately 0.5 - 1 feet above the top of screen depth; followed by a 1- to 2-feet thick layer of hydrated bentonite seal; and the remainder of the well annulus completed with Portland cement grout. The well will be completed inside a traffic-rated weight-bearing manhole installed inside a concrete pad. The well will be developed to remove all particulate materials as required.

5.6 Proposed Air Sparge Well Installation

Proposed air sparge wells (AS-1 through AS-11) will be installed on the southeastern portions of the site. Air sparge wells will be set at a total depth of approximately 35 feet BGS (air sparge wells are typically installed approximately 20 feet below average groundwater depth). Air sparge wells will be constructed with the lower 2 feet consisting of 2-inch nominal diameter, Schedule 40 PVC, 0.010-inch slotted screen, with the remainder of the well comprised of 2-inch nominal diameter, Schedule 40 PVC solid riser pipe. The well annulus will be completed with filter sand placed approximately 2 feet above the top of screen depth; followed by 2-foot thick layer of hydrated bentonite seal; and the remainder of the well annulus completed with Portland cement grout.

5.7 Trenching and Piping

Piping between the remediation system compound and the remediation and sparge wells will be constructed in subsurface trenches. Trenches will be excavated to a depth of approximately 24 inches below grade and widths not to exceed 36 inches. SVE piping will be constructed utilizing 4-inch nominal diameter, PVC Schedule 40 header pipes with individual branch piping consisting of minimum 2-inch nominal diameter, PVC Schedule 40 pipe. Ball valves will be installed at the SVE manifold within the remediation system compound to provide overall zone control and at each recovery wellhead for individual well operation.

Air sparge delivery piping (compressed air delivery to each air sparge well) will consist of 1-inch nominal diameter, PVC Schedule 80 pipe installed between the air sparge delivery manifold and each air sparge wellhead. Sparge air delivery will be controlled at a manifold with appropriate valve control, pressure gauge, and a volumetric flow meter installed.

Piping connections will consist of solvent welded PVC couplings and elbows. Trenches will be backfilled and compacted utilizing a suitable fill material with the top 2 to 6 inches finished to match existing grade (concrete, asphalt, or grass cover).

Pressure testing of the compressed air piping (air sparge), utilizing a minimum pressure of 50 psig, is recommended prior to completing the trench installation activities.

The proposed trench and pipe locations are identified on **Figure 6**.

5.8 Remediation System Components

The following presents a list of recommended major remedial equipment, with their minimum operational capabilities, which should be employed to ensure efficient operation of the remedial technologies:

SVE Blower: the SVE blower shall be capable of providing a minimum of 200 CFM at a vacuum of 10 inHgg. A minimum 80-gallon air/water separator will be installed prior to the blower inlet for the removal of liquids from within the SVE stream. Appropriate sensors, alarms, and gauges will be installed to allow for automatic operation and collection of operational parameters during operation and maintenance (O&M) visits.

Air Compressor – Sparge Air Delivery: It is anticipated that each sparge well will be operated at a flow rate of approximately 5 CFM. Typical sustained application pressures, based on remedial activities within similar lithology, are approximately 10 to 20 psig. Breaking pressures of up to 30 psig may be experienced during initial operation. As such, the air sparge air compressor should be capable of supplying a minimum flow rate of approximately 55 CFM at 100 psig.

Oxidizer Unit – SVE Blower Emission Treatment: Based on emission measurements conducted during the previous MEME events, vapor concentrations in excess of 2,500 ppm are anticipated during initial operation of the remediation system. Site-specific air emission standards will be provided to Atlas by ADEM Air Division, upon review and approval of the air emission permit application. The air emission permit application will be submitted upon approval of this CAP Modification, as part of the permit application process for the remediation system installation activities.

The oxidizer should be sized to handle the appropriate inflow per the specification of the SVE blower utilized, assumed to be capable of a minimum flow rate of 200 CFM. As SVE emissions typically diminish exponentially over the operational period, Atlas recommends utilizing an oxidizer capable of operating in both thermal and catalytic methods. Atlas estimates that the oxidizer will be required for the initial 6 to 12 months of operation of the remediation system. Additional use of the oxidizer will be determined on a quarterly basis, as based on emissions calculations and communications with ADEM personnel.

Control Panel: A National Electrical Manufacturers Association (NEMA) 4 rated control panel will be installed within the remediation compound. The control panel will house applicable controls, relays, motor starts, and other logic controls required for the operation of the remediation system equipment.

Telemetric Connectivity: Atlas recommends providing telemetric communication connection to the remediation system control panel, to allow for remote surveillance and operation.

Equipment Enclosure: In order to provide security of equipment, protection of inclement weather, and reduce noise emission from energized equipment, an equipment enclosure may be utilized. Typical equipment enclosures consist of enclosed trailers, MK® style walled skids, or intermodal storage containers (i.e., conex).

Compound Fencing: In order to provide protection of the remediation equipment and general public, a fence will be constructed along the perimeter of the remediation system compound (assumed 20-feet by 40-feet compound area, to be situated northeast of the existing Circle K building and next to the wall at the edge of the property). Fencing will consist of 8-foot-high chain-link construction with privacy slats/fabric installed around the perimeter of the compound (20 feet by 40 feet area). Two 10 feet chain-link gates will be installed to allow for personnel and equipment egress during the system operational period. Appropriate safety placards (e.g., Authorized Personnel Only, Electric Shock Warning, Emergency Contacts, etc.) will be installed on the fencing during operation.

Installation of Utilities: In order to properly operate the remediation equipment, Atlas will procure utility services consisting of electrical, natural or propane gas, and telecommunications.

5.9 Remediation System Operation and Maintenance

Remediation system O&M visits will be conducted as required to fulfill sampling and operational data collection requirements. Personnel are expected to be on site daily during the initial 5 to 7 days of startup activities. O&M visits will then be conducted weekly during the first month of operation, twice monthly for the next 2 months, and once monthly thereafter during system operation. Upon notification from the telemetry system that an alarm condition exists, personnel will be dispatched to the site within 24 to 48 hours of notification, for troubleshooting, repair, and restart of the system. Should the system become inoperable during this time, information will be relayed to the ADEM personnel concerning the exact cause of the malfunction/breakage, current status of repair, and expected date of system restart.

On-site personnel will obtain system readings to include, but not limited to:

SVE blower operational status, runtime, flow gauge readings, vacuum gauge readings, pressure gauge readings;

Concentration measurements of recovered vapors by the SVE blower utilizing an organic vapor analyzer;

Air sparge and/or pump air delivery compressor(s) status, runtime, flow gauge readings, pressure gauge readings, cycling of air sparge well operation, and adjust as necessary to maintain consistent operation;

Operational parameters for the sparge system, including water level gauging data and air sparging operational parameter field screening from surrounding monitoring wells to observe groundwater mounding and sparge ROI measurements;

Recording of vacuum measurements and groundwater depths from monitoring wells of various radial distances from the extraction wells, in order to calculate observed ROI. Perimeter wells utilized for vacuum and groundwater gauging will be determined at the direction of the project engineer;

Conduct groundwater sampling and gauging as required;

Maintain equipment and compound to ensure safe and continuous operation. Equipment cleaning and maintenance will be conducted on an “as-needed-basis” and per the applicable manufacturer’s maintenance guidelines; and

Conduct system optimization activities, as directed by the project engineer.

5.10 Estimated Time to Achieve Objectives

Atlas has designed this remediation system to achieve the remedial objectives over a duration of approximately 2 years (24 months) operational time. This time estimation is based on Atlas' performance of similar petroleum hydrocarbon remedial projects located within the Piedmont Plateau of Alabama and Georgia. Atlas currently performs petroleum hydrocarbon remedial projects for the Georgia Environmental Protection Division under the guidance of designing remediation systems to be active for a duration of approximately 2 years. This similar design guidance, consisting of well spacing, ROI calculations, extraction/injection flow rates, were similarly used for the remedial design for this site. It is understood, that upon achieving remedial objectives, a groundwater monitoring period of approximately 1 year (12 months) will be conducted, in which remedial objectives must be maintained. Atlas will confer with ADEM concerning possible amendments to the remediation system, in order to expedite the time to achieve remedial objectives.

6.0 PROPOSED SAMPLING REQUIREMENTS

6.1 Air Emissions

Upon approval of this CAP Modification, Atlas will procure an air emission permit from ADEM Air Division. In order to ensure compliance with ADEM Air Division emissions guidelines, Atlas will monitor the effluent blower emissions. Air samples will be collected from the blower effluent (pre-treatment) and following processing through the oxidizer (post-treatment) on a monthly basis. Air samples will be submitted to an approved laboratory, under chain-of-custody protocol, for analysis of vapor-phase benzene via EPA Method TO-3. Additional constituents may be monitored, pending approval of the air emission permit.

6.2 Groundwater Monitoring Events

Groundwater monitoring events will be conducted on a triannual basis. Each event will consist of collecting groundwater levels, detection of free phase product, and purging and sampling of select site wells. Monitoring wells MW-1, MW-2, MW-5, MW-7, MW-9R, MW-10D, and MW-12 through MW-15 are proposed to be sampled on a triannual basis and analyzed for BTEX, MTBE, and naphthalene via EPA Method 8260. Samples will be submitted to an ADEM approved laboratory for analysis.

7.0 SCHEDULE AND REPORTING

7.1 Schedule

Upon confirmation of ADEM approval of this CAP Modification, Atlas will commence with the installation of the proposed remediation system. It is anticipated that approximately 120 days will be required to complete the installation activities required for this site-specific system. Installation activities are to include (but not limited to):

- Procurement of necessary permits;
- Installation of additional recovery and air sparge wells;
- Procurement of applicable equipment;
- Trench and pipe construction;
- Wellhead and manifold assembly;
- Equipment placement and connections within the system compound;
- Utility connections; and
- Final permitted activities review and permissions.

Upon completion of the installation activities, a 1-day "bump test" will be performed, which ensures that all connections and equipment are operating correctly and efficiently. The anticipated duration of remediation system operation is 12 to 24 months. Upon achieving remedial objectives, Atlas will request a cessation of corrective action. Following cessation of corrective action, post-remedial site monitoring will be conducted for a duration of approximately 1 year. Should site remedial objectives be maintained during the post-remedial monitoring period, then a request for no further action (NFA) required will be submitted. Upon confirmation of an NFA status, abandonment, removal, and site closure activities will be conducted, which are anticipated to require 3 weeks to complete.

A summation of the projected schedule is as follows:

SCOPE	DURATION
Installation Activities	120 days following approval of the CAP Modification
Bump Test	1 day
Remediation System Activation	Within 3 days following sign-off of all permitting regulations.
Remediation System Operation	Approximately 12 - 24 months
Post-Remediation Monitoring	12 months following ADEM approval of cessation of corrective action
Request for NFA	30 days following final post-remediation monitoring quarterly groundwater sampling event
Site Closure Activities	To be completed within 3 weeks of NFA notification.

7.2 Reporting

The following reporting schedule will be adhered to upon confirmation of this CAP Modification:

REPORT	SUBMITTAL DATE AND NOTES
Remediation System Delivery Notification	15 days following delivery of remediation equipment to site.
Remediation System Activation Notification	15 days following remediation system activation.
Report of Corrective Action Implementation	30 days following completion of remediation system installation activities and startup. To include as-built drawings, equipment specifications, and copies of approved permits.
Triannual Report of Corrective Action Effectiveness	Reports to be submitted 30 days following completion of triannual (4 months) operation.
Request for Cessation of Corrective Action	To be submitted 30 days following groundwater monitoring event, which confirms achievement of remedial objectives.
Post-Remedial Monitoring Report	To be submitted 30 days following triannual groundwater monitoring event(s).
Request for NFA Status	To be submitted 30 days following triannual groundwater monitoring event(s).

7.3 Compliance

Following 24 months of system operation, system and groundwater data will be evaluated for recommendations towards achieving an NFA or Natural Attenuation Monitoring (NAM) status.

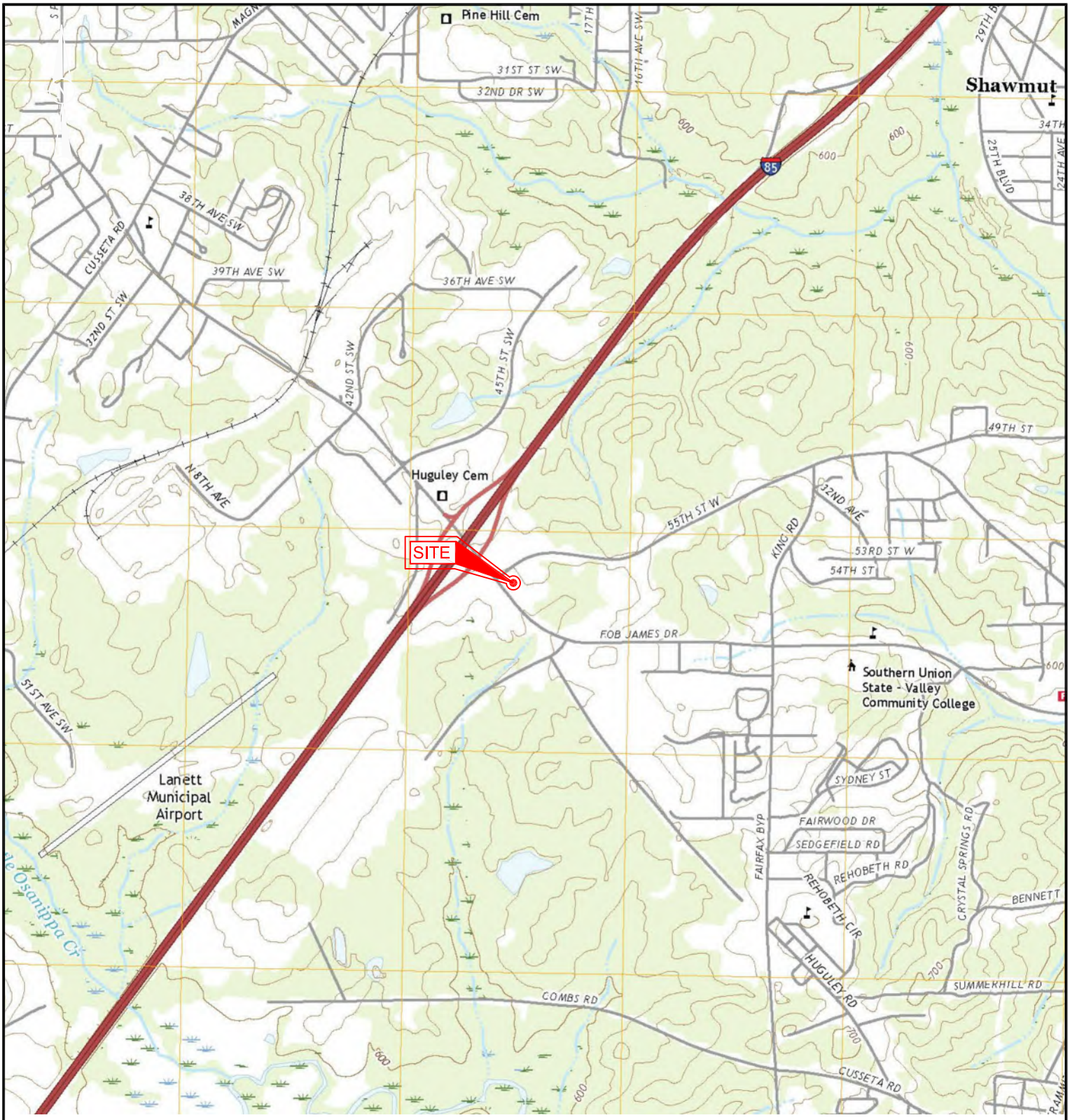
8.0 SITE HEALTH AND SAFETY PLAN

A Health and Safety Plan (HASP) has been developed for Atlas projects requiring personnel to be on site. A site-specific HASP has been included with this report and is presented in **Appendix B**. SDS's for applicable materials will be available on site in the HASP.

9.0 COSTS

Cost proposals for remediation equipment, system installation, startup operations, an Underground Injection Control (UIC) permit application, and initial quarter of O&M are being submitted to ADEM under separate Cover. In order to reduce equipment costs for this site, Atlas will also provide system rental options in addition to the purchase of new equipment for comparison.

FIGURES



GRAPHIC SCALE

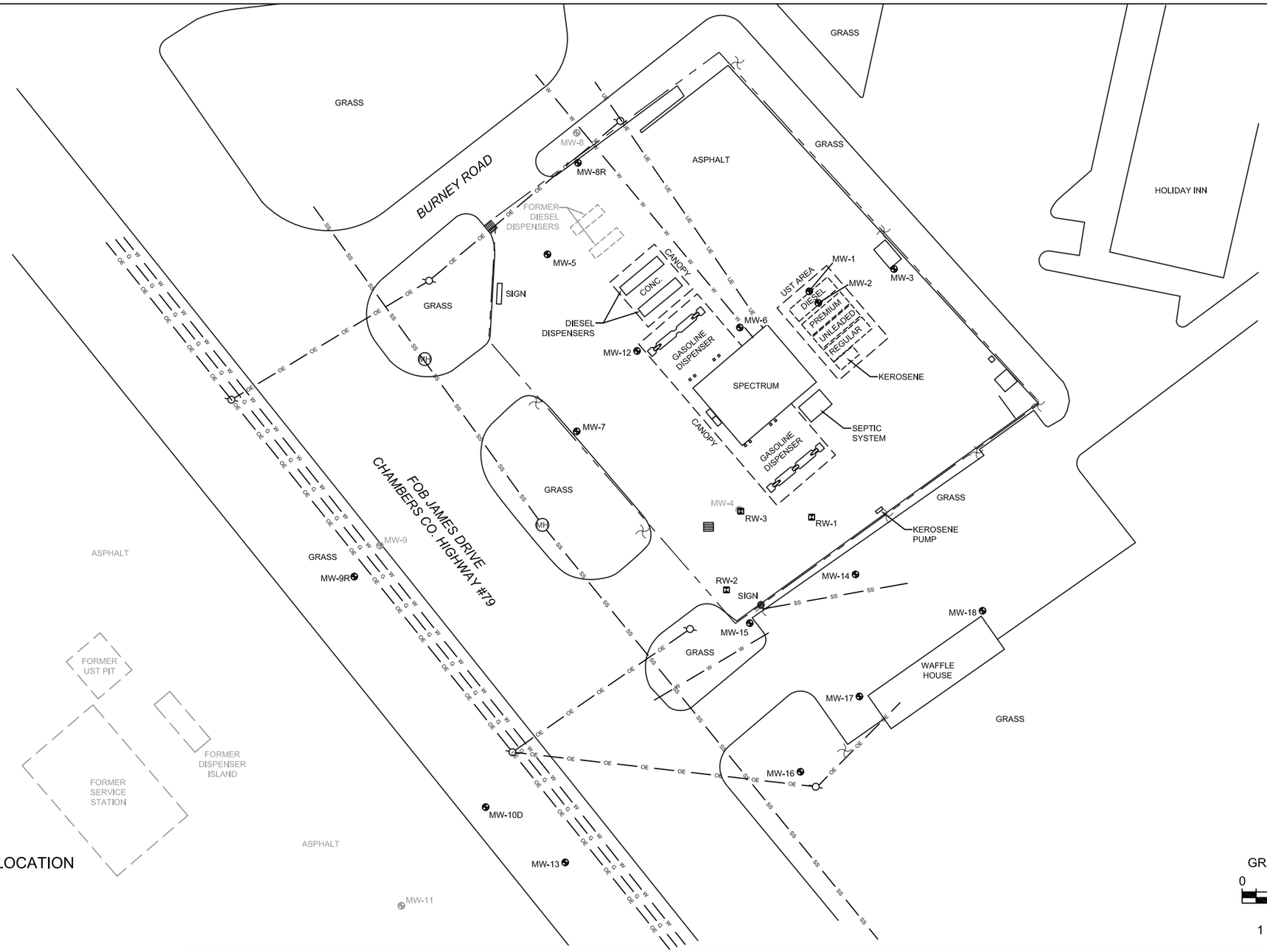
0 1,000 2,000

(IN FEET)

1 INCH ≈ 2,000 ft.

SOURCE: 7.5 MINUTE SERIES USGS QUADRANGLE MAP;
LANETT SOUTH, ALABAMA, DATED 2020.

Project: CIRCLE K STORE NO.2706697 588 FOB JAMES DRIVE VALLEY, ALABAMA	FIGURE 1 SITE LOCATION MAP	Drawn By: CR Checked By: PN Date: 5/28/2024	ATLAS
Job No.: Z021000639			



LEGEND:

- MONITORING WELL LOCATION
- ABANDONED MONITORING WELL LOCATION
- RECOVERY WELL LOCATION
- UE — UNDERGROUND ELECTRIC LINE
- OE — OVERHEAD ELECTRIC LINE
- G — GAS LINE
- SS — SANITARY SEWER LINE
- W — WATER LINE

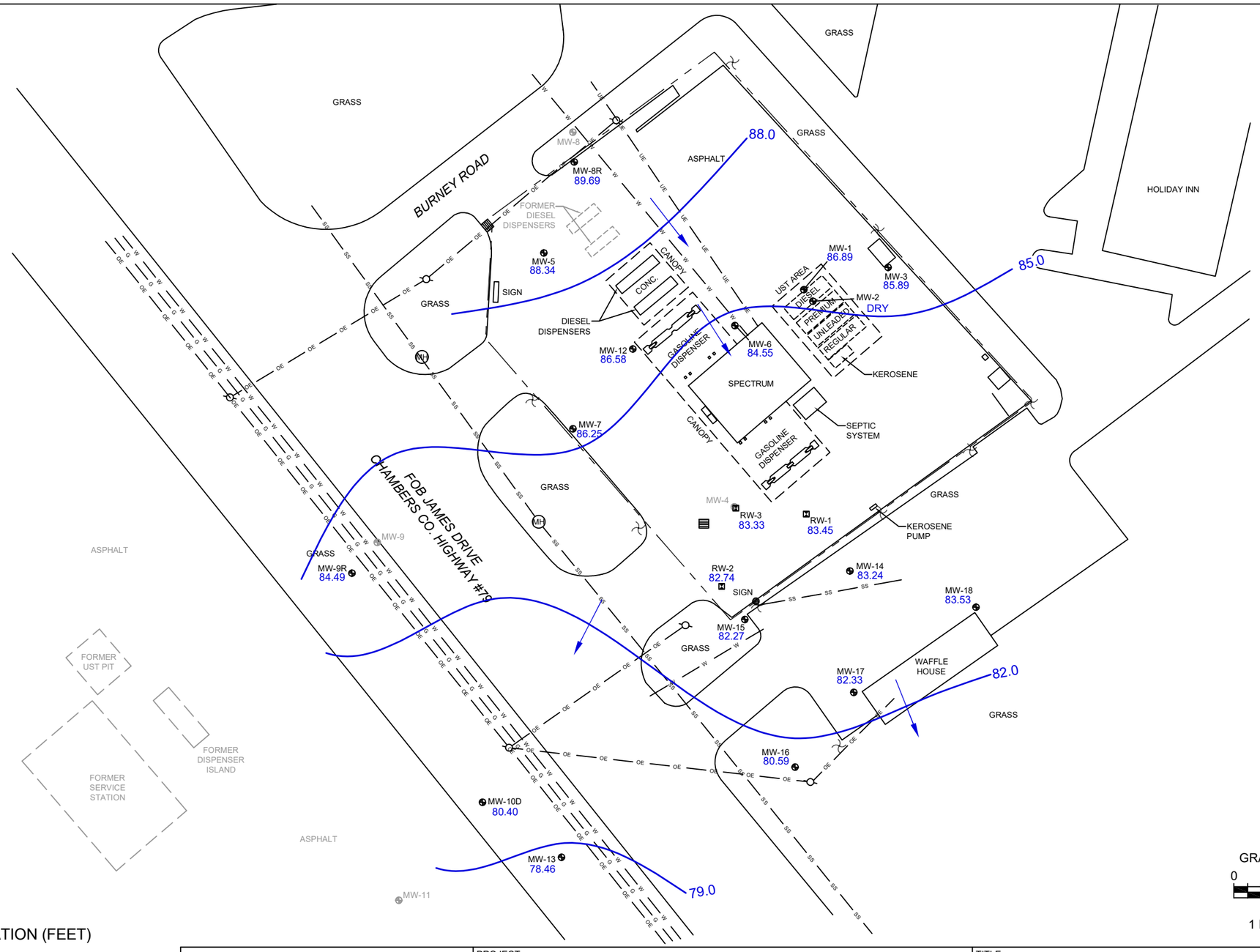
GRAPHIC SCALE
0 30 60
(IN FEET)
1 INCH ≈ 60 ft.

ATLAS

PROJECT:
CIRCLE K STORE NO.2706697
588 FOB JAMES DRIVE
VALLEY, ALABAMA

TITLE:
SITE MAP

DRAWN BY:	DATE:	PROJECT NO.:	SCALE:	PAGE/FIG. NO.:
CR	5/28/2024	Z021000639	1" ≈ 60'	2
CHECKED BY: PN	DATE:	REPORT NO.:		



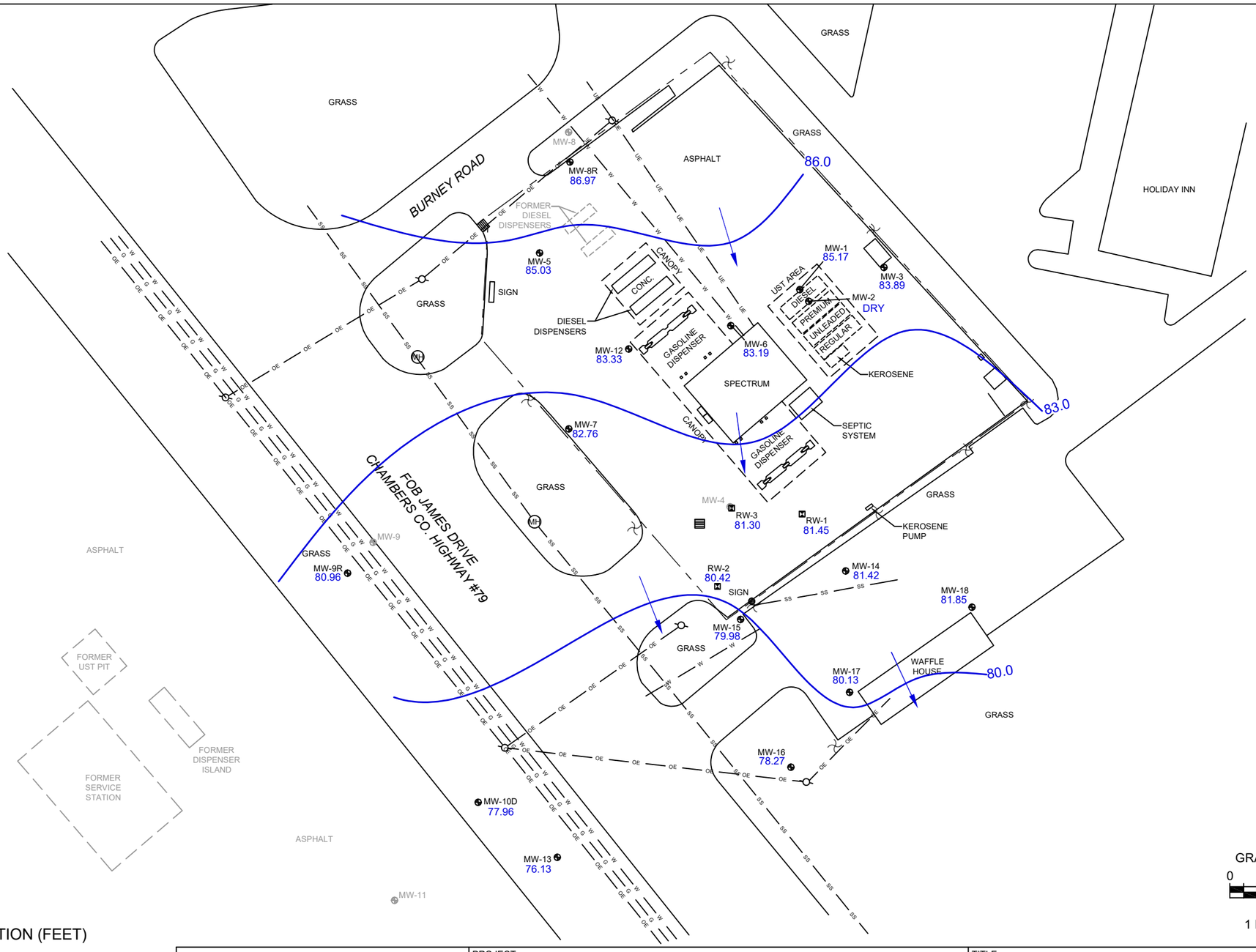
LEGEND:

- MONITORING WELL LOCATION
- RECOVERY WELL LOCATION
- 80.25 — POTENTIOMETRIC SURFACE ELEVATION (FEET)
- NM — NOT MEASURED
- NU — NOT USED FOR CONTOURING
- 82.0 — POTENTIOMETRIC SURFACE ELEVATION CONTOUR (FEET)
- ESTIMATED DIRECTION OF GROUNDWATER FLOW

GRAPHIC SCALE
0 30 60
(IN FEET)
1 INCH ≈ 60 ft.

ATLAS

PROJECT: CIRCLE K STORE NO.2706697 588 FOB JAMES DRIVE VALLEY, ALABAMA				TITLE: POTENTIOMETRIC SURFACE MAP MARCH 27, 2024	
DRAWN BY: CR	DATE: 5/28/2024	PROJECT NO.: Z021000639		SCALE: 1" ≈ 60'	PAGE/FIG. NO.: 3A
CHECKED BY: PN	DATE:	REPORT NO.:			



LEGEND:

- MONITORING WELL LOCATION
- RECOVERY WELL LOCATION
- 80.25 — POTENTIOMETRIC SURFACE ELEVATION (FEET)
- NM — NOT MEASURED
- NU — NOT USED FOR CONTOURING
- 82.0 — POTENTIOMETRIC SURFACE ELEVATION CONTOUR (FEET)
- ESTIMATED DIRECTION OF GROUNDWATER FLOW

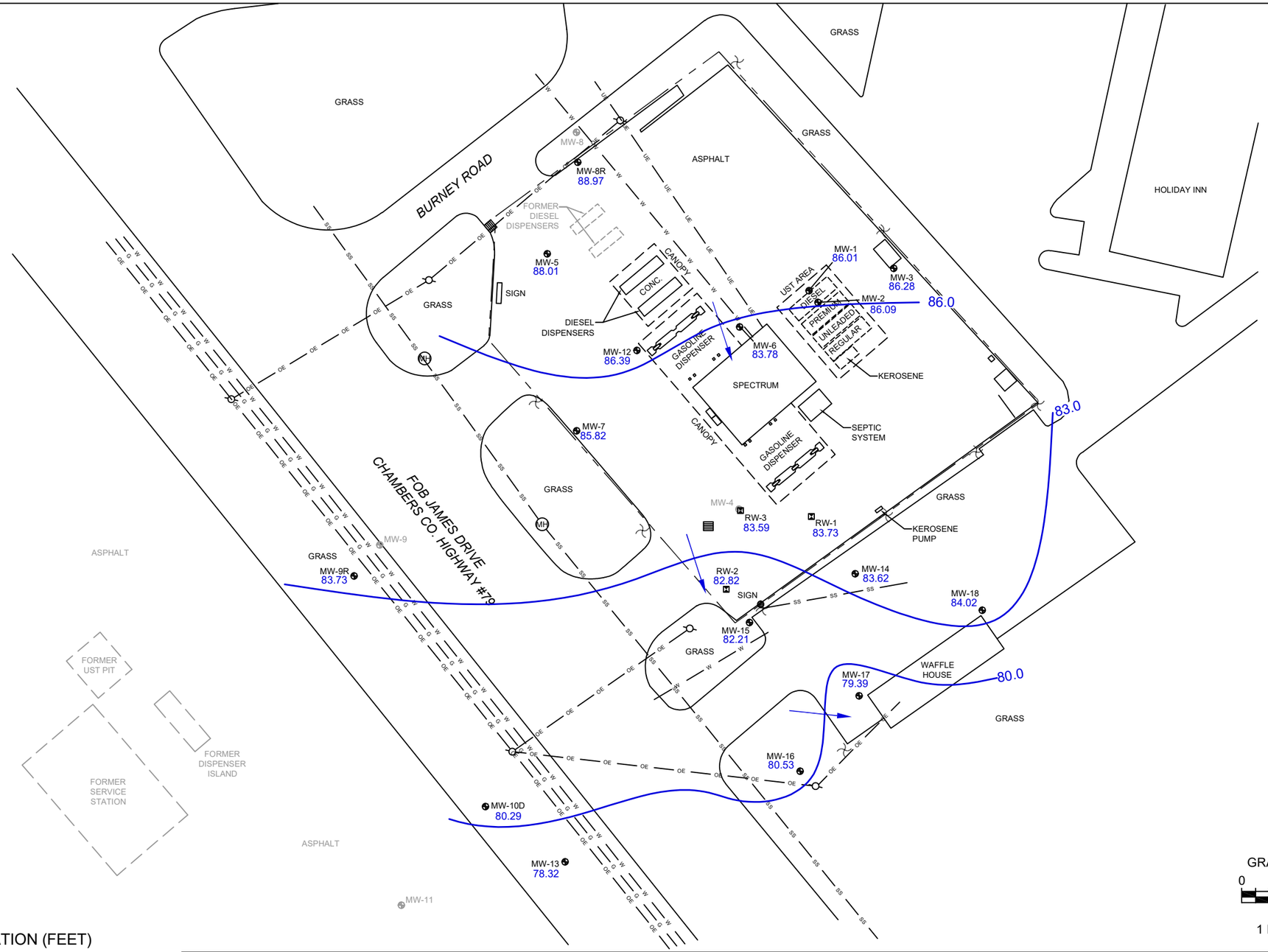
GRAPHIC SCALE
0 30 60
(IN FEET)
1 INCH ≈ 60 ft.

ATLAS

PROJECT:
CIRCLE K STORE NO.2706697
588 FOB JAMES DRIVE
VALLEY, ALABAMA

TITLE:
POTENTIOMETRIC SURFACE MAP
NOVEMBER 22, 2023

DRAWN BY:	CR	DATE:	1/8/2024	PROJECT NO.:	30-223218.00	SCALE:	1" ≈ 60'	PAGE/FIG. NO.:	3B
CHECKED BY:	PN	DATE:		REPORT NO.:					



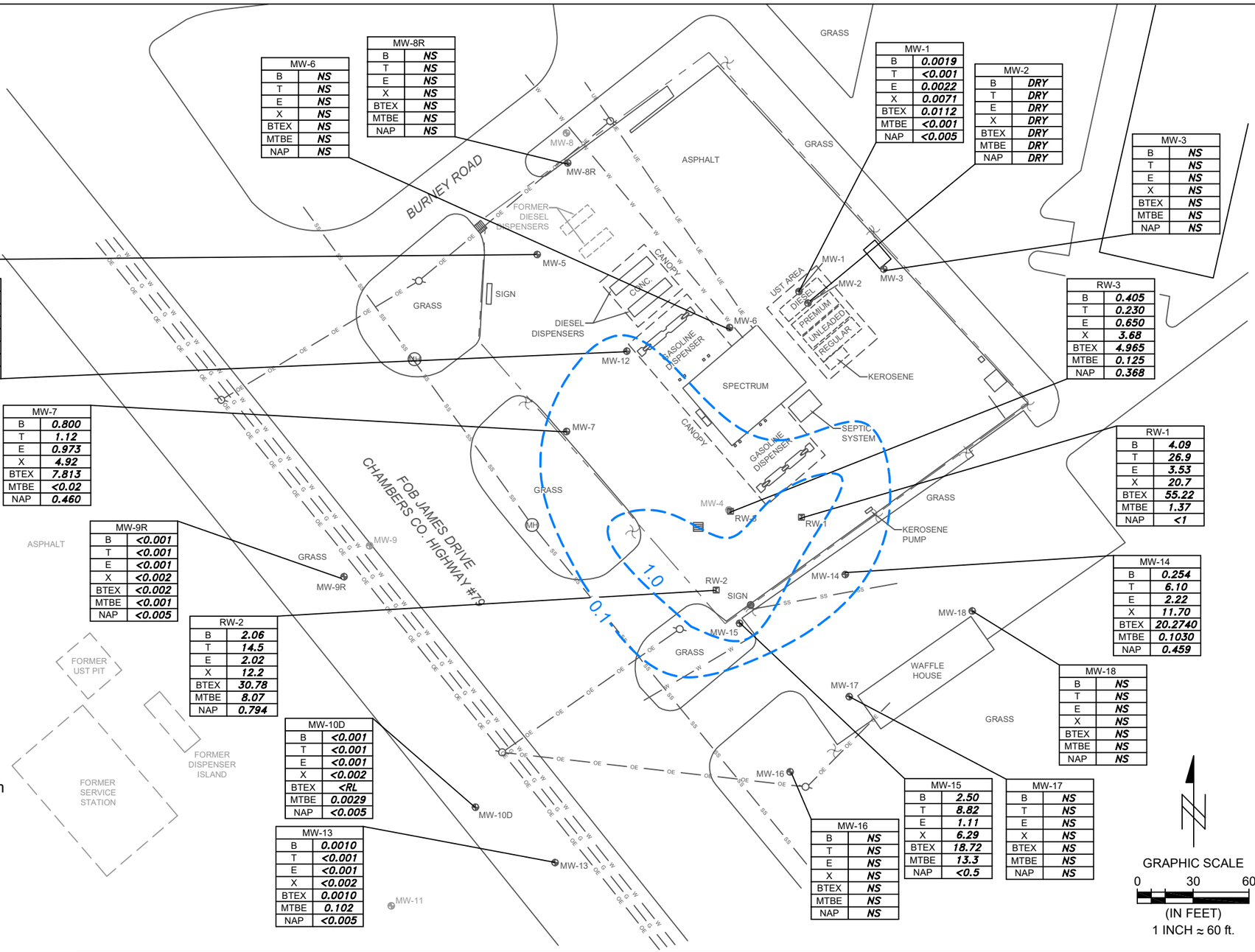
LEGEND:

⊕	MONITORING WELL LOCATION
⊠	RECOVERY WELL LOCATION
80.25	POTENTIOMETRIC SURFACE ELEVATION (FEET)
NM	NOT MEASURED
NU	NOT USED FOR CONTOURING
82.0 ———	POTENTIOMETRIC SURFACE ELEVATION CONTOUR (FEET)
←———	ESTIMATED DIRECTION OF GROUNDWATER FLOW

GRAPHIC SCALE
0 30 60
(IN FEET)
1 INCH ≈ 60 ft.

ATLAS

PROJECT: CIRCLE K STORE NO.2706697 588 FOB JAMES DRIVE VALLEY, ALABAMA				TITLE: POTENTIOMETRIC SURFACE MAP JULY 13, 2023	
DRAWN BY: CR	DATE: 9/13/2023	PROJECT NO.: 30-223218.00		SCALE: 1" ≈ 60'	PAGE/FIG. NO.: 3C
CHECKED BY: PN	DATE:	REPORT NO.:			



MW-6	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-8R	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-1	
B	0.0019
T	<0.001
E	0.0022
X	0.0071
BTEX	0.0112
MTBE	<0.001
NAP	<0.005

MW-2	
B	DRY
T	DRY
E	DRY
X	DRY
BTEX	DRY
MTBE	DRY
NAP	DRY

MW-3	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-5	
B	<0.001
T	<0.001
E	<0.001
X	<0.002
BTEX	<RL
MTBE	<0.001
NAP	<0.005

MW-12	
B	0.412
T	1.46
E	1.77
X	7.52
BTEX	11.162
MTBE	<0.02
NAP	0.736

RW-3	
B	0.405
T	0.230
E	0.650
X	3.68
BTEX	4.965
MTBE	0.125
NAP	0.368

MW-7	
B	0.800
T	1.12
E	0.973
X	4.92
BTEX	7.813
MTBE	<0.02
NAP	0.460

RW-1	
B	4.09
T	26.9
E	3.53
X	20.7
BTEX	55.22
MTBE	1.37
NAP	<1

MW-9R	
B	<0.001
T	<0.001
E	<0.001
X	<0.002
BTEX	<0.002
MTBE	<0.001
NAP	<0.005

MW-14	
B	0.254
T	6.10
E	2.22
X	11.70
BTEX	20.2740
MTBE	0.1030
NAP	0.459

RW-2	
B	2.06
T	14.5
E	2.02
X	12.2
BTEX	30.78
MTBE	8.07
NAP	0.794

MW-18	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-10D	
B	<0.001
T	<0.001
E	<0.001
X	<0.002
BTEX	<RL
MTBE	0.0029
NAP	<0.005

MW-15	
B	2.50
T	8.82
E	1.11
X	6.29
BTEX	18.72
MTBE	13.3
NAP	<0.5

MW-17	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-13	
B	0.0010
T	<0.001
E	<0.001
X	<0.002
BTEX	0.0010
MTBE	0.102
NAP	<0.005

MW-16	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

GRAPHIC SCALE
0 30 60
(IN FEET)
1 INCH ≈ 60 ft.

LEGEND:

- MONITORING WELL LOCATION
- RECOVERY WELL LOCATION

MW-5	
B	4.5
T	2.1
E	1.8
X	5.1
BTEX	13.5
MTBE	1.1
NAP	<1

SAMPLE ID
BENZENE CONCENTRATION IN ppm
TOLUENE CONCENTRATION IN ppm
ETHYLBENZENE CONCENTRATION IN ppm
XYLENES CONCENTRATION IN ppm
TOTAL BTEX CONCENTRATION IN ppm
MTBE CONCENTRATION IN ppm
NAPHTHALENE CONCENTRATION IN ppm

BTEX — BENZENE TOLUENE ETHYLBENZENE XYLENE

MTBE — METHYL TERTIARY BUTYL ETHER

ppm — PARTS PER MILLION (mg/L)

NS — NOT SAMPLED

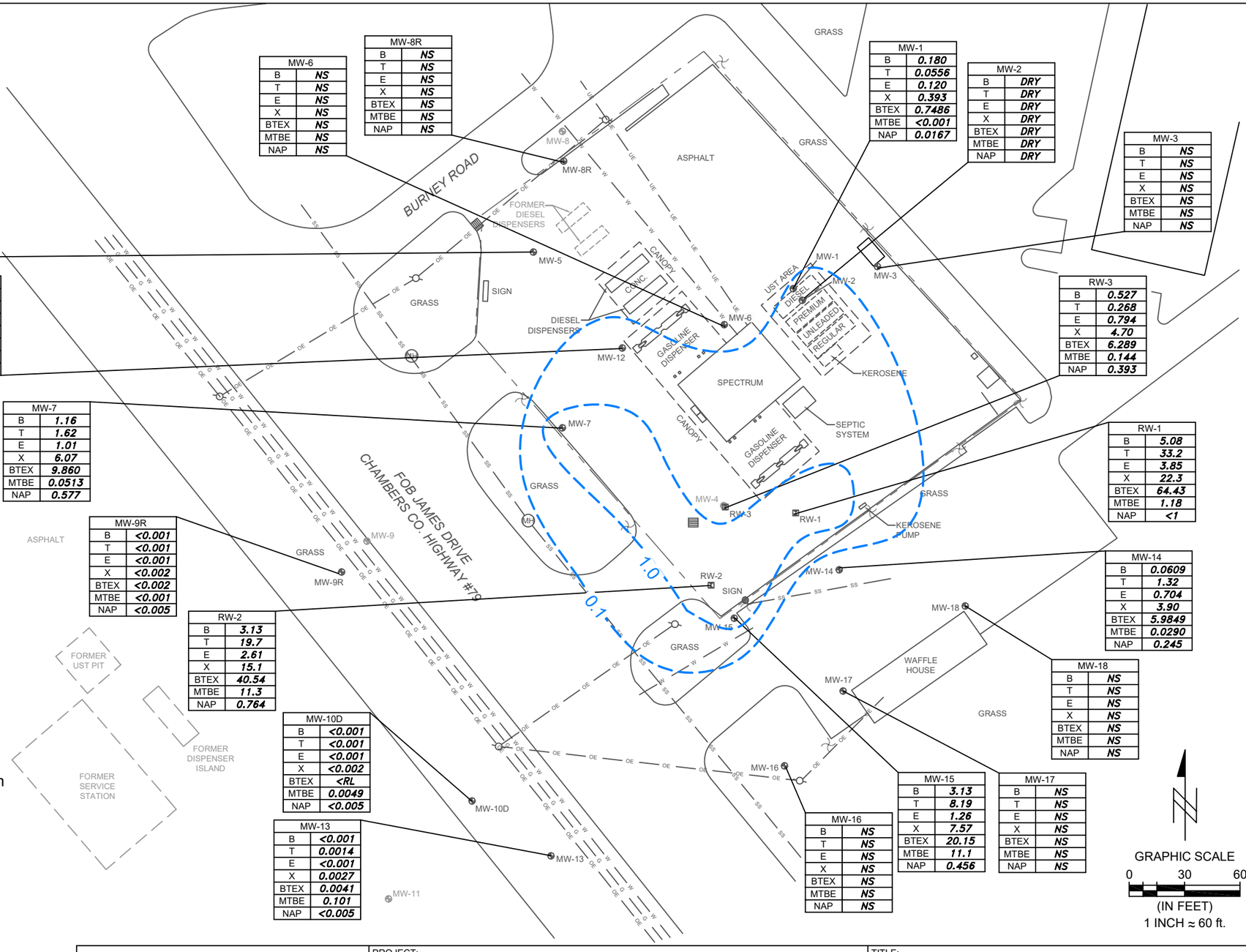
0.5 — ESTIMATED CONCENTRATION CONTOUR OF BENZENE IN GROUNDWATER IN ppm

ATLAS

PROJECT:
CIRCLE K STORE NO.2706697
588 FOB JAMES DRIVE
VALLEY, ALABAMA

TITLE:
BENZENE ISOCONCENTRATION MAP MARCH 27, 2024

DRAWN BY:	CR	DATE:	5/28/2024	PROJECT NO.:	Z021000639	SCALE:	1" ≈ 60'	PAGE/FIG. NO.:	4A
CHECKED BY:	PN	DATE:		REPORT NO.:					



MW-6	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-8R	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-1	
B	0.180
T	0.0556
E	0.120
X	0.393
BTEX	0.7486
MTBE	<0.001
NAP	0.0167

MW-2	
B	DRY
T	DRY
E	DRY
X	DRY
BTEX	DRY
MTBE	DRY
NAP	DRY

MW-3	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-5	
B	0.0013
T	<0.001
E	0.0010
X	<0.002
BTEX	0.0023
MTBE	<0.001
NAP	<0.005

MW-12	
B	0.194
T	1.00
E	1.51
X	6.13
BTEX	8.834
MTBE	<0.02
NAP	0.744

RW-3	
B	0.527
T	0.268
E	0.794
X	4.70
BTEX	6.289
MTBE	0.144
NAP	0.393

MW-7	
B	1.16
T	1.62
E	1.01
X	6.07
BTEX	9.860
MTBE	0.0513
NAP	0.577

RW-1	
B	5.08
T	33.2
E	3.85
X	22.3
BTEX	64.43
MTBE	1.18
NAP	<1

MW-9R	
B	<0.001
T	<0.001
E	<0.001
X	<0.002
BTEX	<0.002
MTBE	<0.001
NAP	<0.005

MW-14	
B	0.0609
T	1.32
E	0.704
X	3.90
BTEX	5.9849
MTBE	0.0290
NAP	0.245

RW-2	
B	3.13
T	19.7
E	2.61
X	15.1
BTEX	40.54
MTBE	11.3
NAP	0.764

MW-18	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-10D	
B	<0.001
T	<0.001
E	<0.001
X	<0.002
BTEX	<RL
MTBE	0.0049
NAP	<0.005

MW-15	
B	3.13
T	8.19
E	1.26
X	7.57
BTEX	20.15
MTBE	11.1
NAP	0.456

MW-17	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-13	
B	<0.001
T	0.0014
E	<0.001
X	0.0027
BTEX	0.0041
MTBE	0.101
NAP	<0.005

MW-16	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

GRAPHIC SCALE
0 30 60
(IN FEET)
1 INCH ≈ 60 ft.

LEGEND:

- MONITORING WELL LOCATION
- RECOVERY WELL LOCATION

MW-5	
B	4.5
T	2.1
E	1.8
X	5.1
BTEX	13.5
MTBE	1.1
NAP	<1

SAMPLE ID
BENZENE CONCENTRATION IN ppm
TOLUENE CONCENTRATION IN ppm
ETHYLBENZENE CONCENTRATION IN ppm
XYLENES CONCENTRATION IN ppm
TOTAL BTEX CONCENTRATION IN ppm
MTBE CONCENTRATION IN ppm
NAPHTHALENE CONCENTRATION IN ppm

BTEX — BENZENE TOLUENE ETHYLBENZENE XYLENE

MTBE — METHYL TERTIARY BUTYL ETHER

ppm — PARTS PER MILLION (mg/L)

NS — NOT SAMPLED

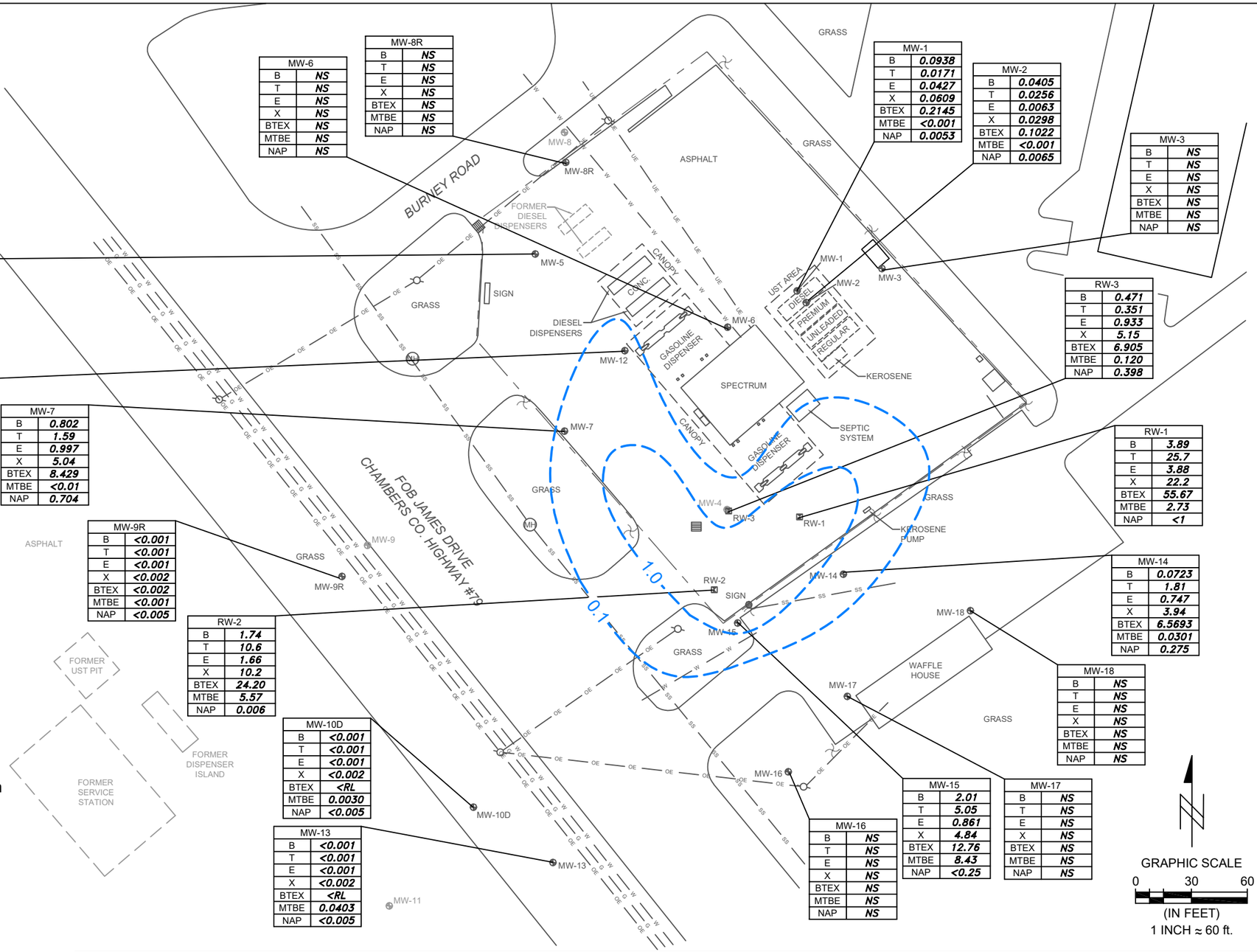
0.5 — ESTIMATED CONCENTRATION CONTOUR OF BENZENE IN GROUNDWATER IN ppm

ATLAS

PROJECT:
CIRCLE K STORE NO.2706697
588 FOB JAMES DRIVE
VALLEY, ALABAMA

TITLE:
BENZENE ISOCONCENTRATION MAP NOVEMBER 22, 2023

DRAWN BY:	CR	DATE:	1/8/2024	PROJECT NO.:	30-223218.00	SCALE:	1" ≈ 60'
CHECKED BY:	PN	DATE:		REPORT NO.:		PAGE/FIG. NO.:	4B



MW-6	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-8R	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-1	
B	0.0938
T	0.0171
E	0.0427
X	0.0609
BTEX	0.2145
MTBE	<0.001
NAP	0.0053

MW-2	
B	0.0405
T	0.0256
E	0.0063
X	0.0298
BTEX	0.1022
MTBE	<0.001
NAP	0.0065

MW-3	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-5	
B	<0.001
T	<0.001
E	<0.001
X	<0.002
BTEX	<RL
MTBE	<0.001
NAP	<0.005

MW-12	
B	0.218
T	1.1
E	1.62
X	6.20
BTEX	9.138
MTBE	<0.02
NAP	1.090

RW-3	
B	0.471
T	0.351
E	0.933
X	5.15
BTEX	6.905
MTBE	0.120
NAP	0.398

MW-7	
B	0.802
T	1.59
E	0.997
X	5.04
BTEX	8.429
MTBE	<0.01
NAP	0.704

RW-1	
B	3.89
T	25.7
E	3.88
X	22.2
BTEX	55.67
MTBE	2.73
NAP	<1

MW-9R	
B	<0.001
T	<0.001
E	<0.001
X	<0.002
BTEX	<0.002
MTBE	<0.001
NAP	<0.005

RW-2	
B	1.74
T	10.6
E	1.66
X	10.2
BTEX	24.20
MTBE	5.57
NAP	0.006

MW-14	
B	0.0723
T	1.81
E	0.747
X	3.94
BTEX	6.5693
MTBE	0.0301
NAP	0.275

MW-10D	
B	<0.001
T	<0.001
E	<0.001
X	<0.002
BTEX	<RL
MTBE	0.0030
NAP	<0.005

MW-18	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-13	
B	<0.001
T	<0.001
E	<0.001
X	<0.002
BTEX	<RL
MTBE	0.0403
NAP	<0.005

MW-15	
B	2.01
T	5.05
E	0.861
X	4.84
BTEX	12.76
MTBE	8.43
NAP	<0.25

MW-17	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-16	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

GRAPHIC SCALE
0 30 60
(IN FEET)
1 INCH ≈ 60 ft.

LEGEND:

- MONITORING WELL LOCATION
- RECOVERY WELL LOCATION

MW-5	
B	4.5
T	2.1
E	1.8
X	5.1
BTEX	13.5
MTBE	1.1
NAP	<1

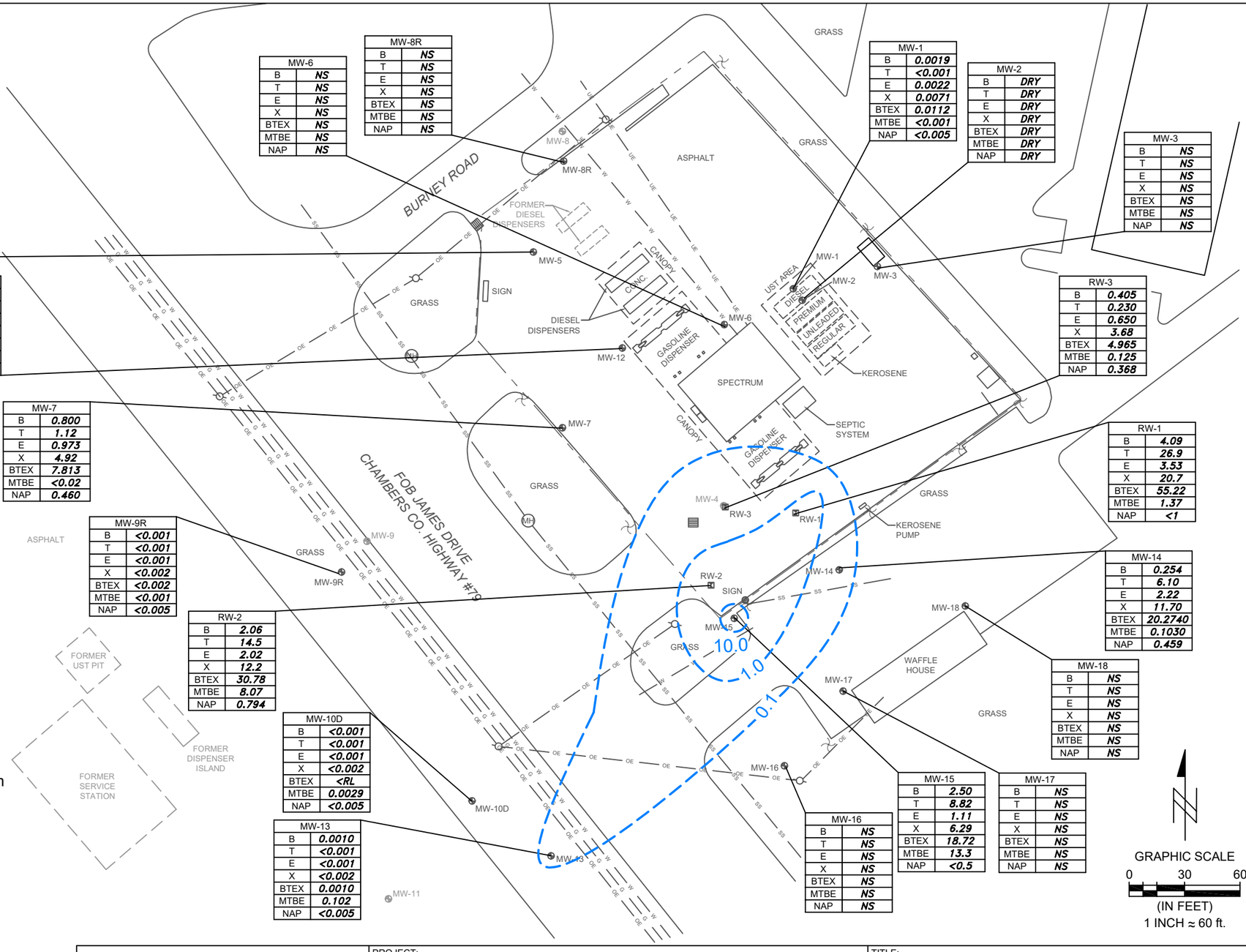
- MW-5 / B 4.5 — SAMPLE ID
- B — BENZENE CONCENTRATION IN ppm
- T — TOLUENE CONCENTRATION IN ppm
- E — ETHYLBENZENE CONCENTRATION IN ppm
- X — XYLENES CONCENTRATION IN ppm
- BTEX — TOTAL BTEX CONCENTRATION IN ppm
- MTBE — MTBE CONCENTRATION IN ppm
- NAP — NAPHTHALENE CONCENTRATION IN ppm
- BTEX — BENZENE TOLUENE ETHYLBENZENE XYLENE
- MTBE — METHYL TERTIARY BUTYL ETHER
- ppm — PARTS PER MILLION (mg/L)
- NS — NOT SAMPLED
- 0.5 — ESTIMATED CONCENTRATION CONTOUR OF BENZENE IN GROUNDWATER IN ppm

ATLAS

PROJECT:
CIRCLE K STORE NO.2706697
588 FOB JAMES DRIVE
VALLEY, ALABAMA

TITLE:
BENZENE ISOCONCENTRATION MAP JULY 13, 2023

DRAWN BY:	CR	DATE:	9/13/2023	PROJECT NO.:	30-223218.00	SCALE:	1" ≈ 60'	PAGE/FIG. NO.:	4C
CHECKED BY:	PN	DATE:		REPORT NO.:					



MW-6	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-8R	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-1	
B	0.0019
T	<0.001
E	0.0022
X	0.0071
BTEX	0.0112
MTBE	<0.001
NAP	<0.005

MW-2	
B	DRY
T	DRY
E	DRY
X	DRY
BTEX	DRY
MTBE	DRY
NAP	DRY

MW-3	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-5	
B	<0.001
T	<0.001
E	<0.001
X	<0.002
BTEX	<RL
MTBE	<0.001
NAP	<0.005

MW-12	
B	0.412
T	1.46
E	1.77
X	7.52
BTEX	11.162
MTBE	<0.02
NAP	0.736

RW-3	
B	0.405
T	0.230
E	0.650
X	3.68
BTEX	4.965
MTBE	0.125
NAP	0.368

MW-7	
B	0.800
T	1.12
E	0.973
X	4.92
BTEX	7.813
MTBE	<0.02
NAP	0.460

RW-1	
B	4.09
T	26.9
E	3.53
X	20.7
BTEX	55.22
MTBE	1.37
NAP	<1

MW-9R	
B	<0.001
T	<0.001
E	<0.001
X	<0.002
BTEX	<0.002
MTBE	<0.001
NAP	<0.005

MW-14	
B	0.254
T	6.10
E	2.22
X	11.70
BTEX	20.2740
MTBE	0.1030
NAP	0.459

RW-2	
B	2.06
T	14.5
E	2.02
X	12.2
BTEX	30.78
MTBE	8.07
NAP	0.794

MW-18	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-10D	
B	<0.001
T	<0.001
E	<0.001
X	<0.002
BTEX	<RL
MTBE	0.0029
NAP	<0.005

MW-15	
B	2.50
T	8.82
E	1.11
X	6.29
BTEX	18.72
MTBE	13.3
NAP	<0.5

MW-17	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-16	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-13	
B	0.0010
T	<0.001
E	<0.001
X	<0.002
BTEX	0.0010
MTBE	0.102
NAP	<0.005

LEGEND:

- MONITORING WELL LOCATION
- RECOVERY WELL LOCATION

MW-5	
B	4.5
T	2.1
E	1.8
X	5.1
BTEX	13.5
MTBE	1.1
NAP	<1

SAMPLE ID
BENZENE CONCENTRATION IN ppm
TOLUENE CONCENTRATION IN ppm
ETHYLBENZENE CONCENTRATION IN ppm
XYLENES CONCENTRATION IN ppm
TOTAL BTEX CONCENTRATION IN ppm
MTBE CONCENTRATION IN ppm
NAPHTHALENE CONCENTRATION IN ppm

BTEX — BENZENE TOLUENE ETHYLBENZENE XYLENE

MTBE — METHYL TERTIARY BUTYL ETHER

ppm — PARTS PER MILLION (mg/L)

NS — NOT SAMPLED

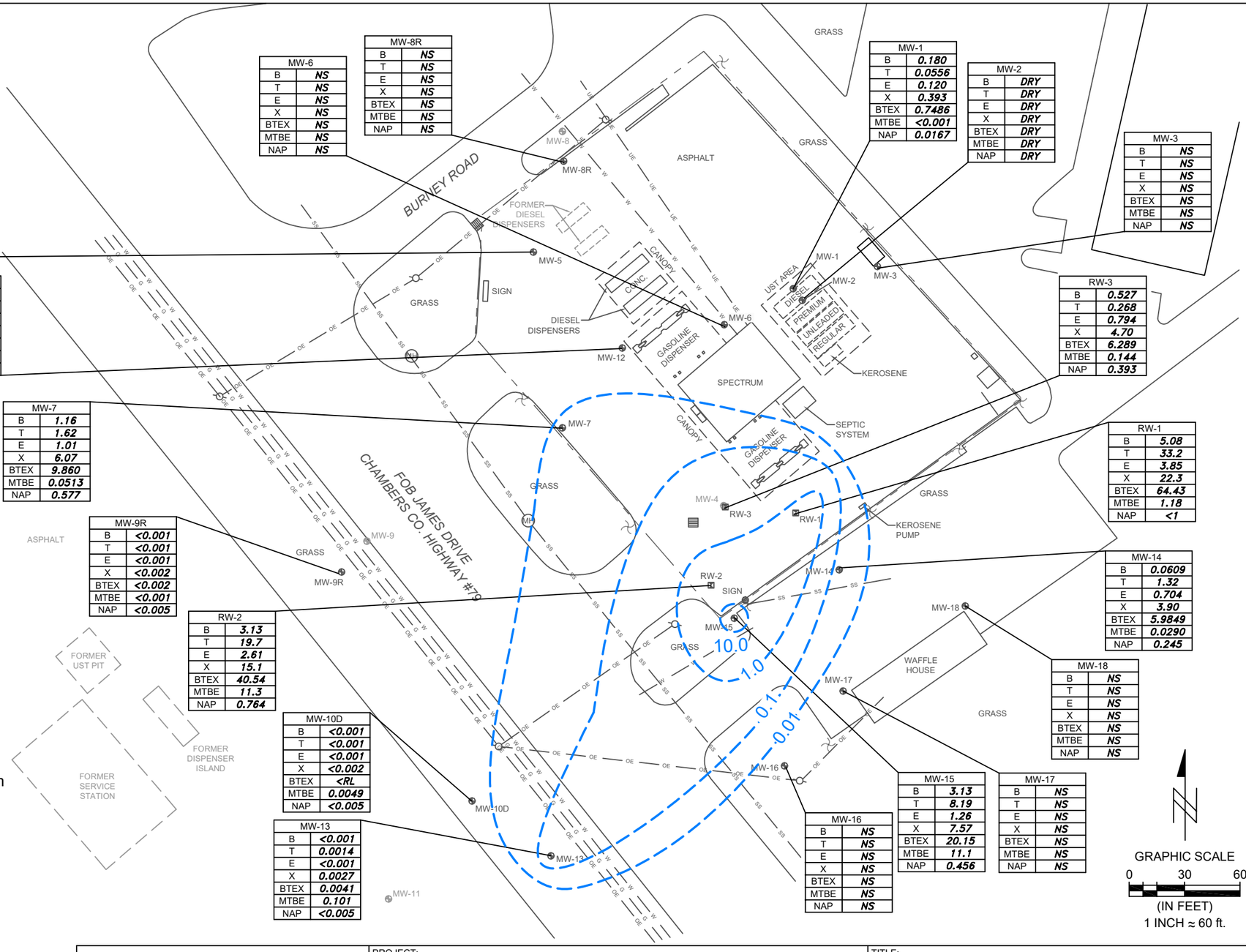
0.5 — ESTIMATED CONCENTRATION CONTOUR OF MTBE IN GROUNDWATER IN ppm

ATLAS

PROJECT:
CIRCLE K STORE NO.2706697
588 FOB JAMES DRIVE
VALLEY, ALABAMA

TITLE:
MTBE ISOCONCENTRATION MAP MARCH 27, 2024

DRAWN BY:	CR	DATE:	5/28/2024	PROJECT NO.:	Z021000639	SCALE:	1" ≈ 60'
CHECKED BY:	PN	DATE:		REPORT NO.:		PAGE/FIG. NO.:	5A



MW-6	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-8R	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-1	
B	0.180
T	0.0556
E	0.120
X	0.393
BTEX	0.7486
MTBE	<0.001
NAP	0.0167

MW-2	
B	DRY
T	DRY
E	DRY
X	DRY
BTEX	DRY
MTBE	DRY
NAP	DRY

MW-3	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-5	
B	0.0013
T	<0.001
E	0.0010
X	<0.002
BTEX	0.0023
MTBE	<0.001
NAP	<0.005

MW-12	
B	0.194
T	1.00
E	1.51
X	6.13
BTEX	8.834
MTBE	<0.02
NAP	0.744

RW-3	
B	0.527
T	0.268
E	0.794
X	4.70
BTEX	6.289
MTBE	0.144
NAP	0.393

MW-7	
B	1.16
T	1.62
E	1.01
X	6.07
BTEX	9.860
MTBE	0.0513
NAP	0.577

RW-1	
B	5.08
T	33.2
E	3.85
X	22.3
BTEX	64.43
MTBE	1.18
NAP	<1

MW-9R	
B	<0.001
T	<0.001
E	<0.001
X	<0.002
BTEX	<0.002
MTBE	<0.001
NAP	<0.005

MW-14	
B	0.0609
T	1.32
E	0.704
X	3.90
BTEX	5.9849
MTBE	0.0290
NAP	0.245

RW-2	
B	3.13
T	19.7
E	2.61
X	15.1
BTEX	40.54
MTBE	11.3
NAP	0.764

MW-18	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-10D	
B	<0.001
T	<0.001
E	<0.001
X	<0.002
BTEX	<RL
MTBE	0.0049
NAP	<0.005

MW-15	
B	3.13
T	8.19
E	1.26
X	7.57
BTEX	20.15
MTBE	11.1
NAP	0.456

MW-17	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-13	
B	<0.001
T	0.0014
E	<0.001
X	0.0027
BTEX	0.0041
MTBE	0.101
NAP	<0.005

MW-16	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

LEGEND:

- MONITORING WELL LOCATION
- RECOVERY WELL LOCATION

MW-5	
B	4.5
T	2.1
E	1.8
X	5.1
BTEX	13.5
MTBE	1.1
NAP	<1

SAMPLE ID
BENZENE CONCENTRATION IN ppm
TOLUENE CONCENTRATION IN ppm
ETHYLBENZENE CONCENTRATION IN ppm
XYLENES CONCENTRATION IN ppm
TOTAL BTEX CONCENTRATION IN ppm
MTBE CONCENTRATION IN ppm
NAPHTHALENE CONCENTRATION IN ppm

BTEX — BENZENE TOLUENE ETHYLBENZENE XYLENE

MTBE — METHYL TERTIARY BUTYL ETHER

ppm — PARTS PER MILLION (mg/L)

NS — NOT SAMPLED

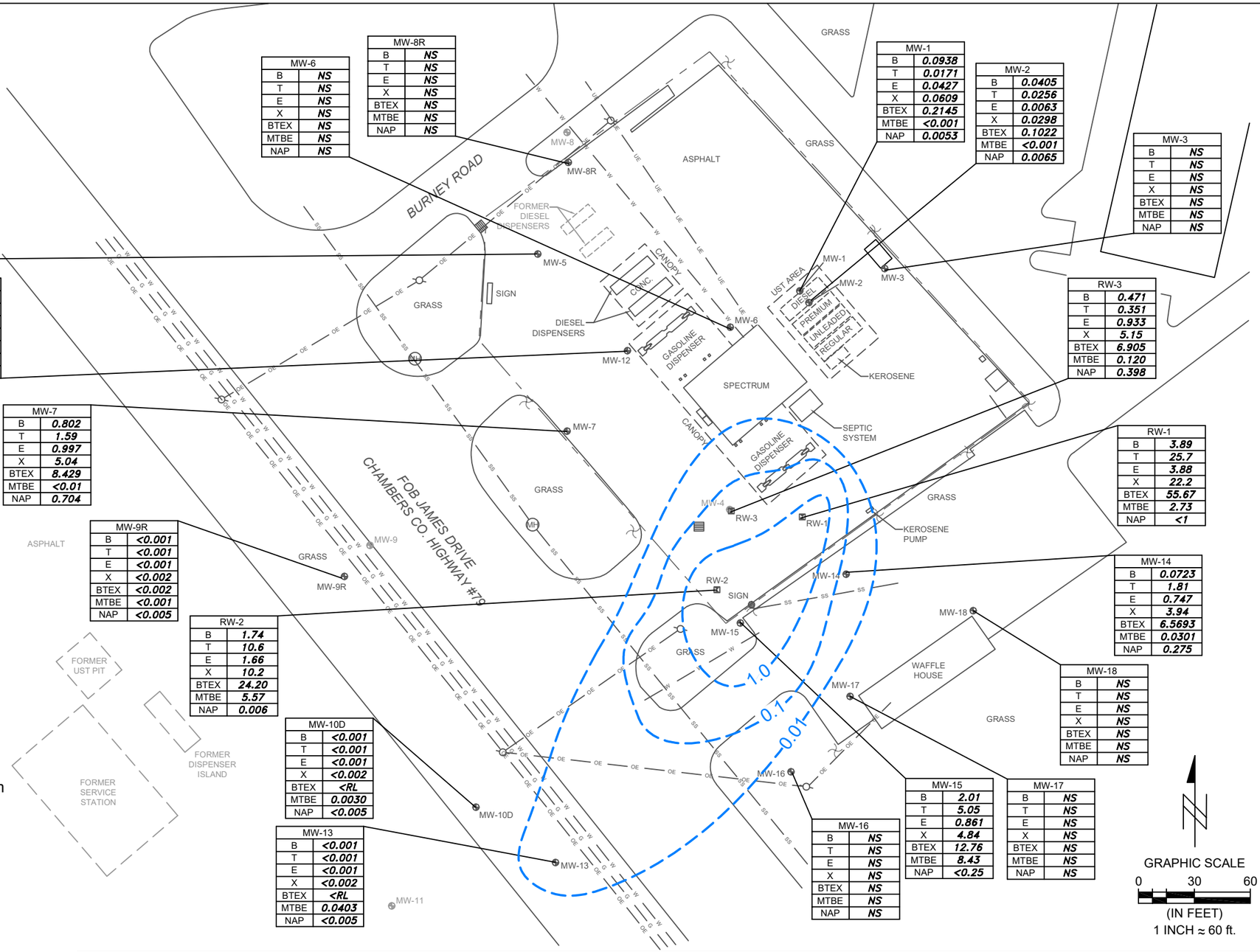
0.5 — ESTIMATED CONCENTRATION CONTOUR OF MTBE IN GROUNDWATER IN ppm

ATLAS

PROJECT:
CIRCLE K STORE NO.2706697
588 FOB JAMES DRIVE
VALLEY, ALABAMA

TITLE:
MTBE ISOCONCENTRATION MAP NOVEMBER 22, 2023

DRAWN BY:	CR	DATE:	1/8/2024	PROJECT NO.:	30-223218.00	SCALE:	1" ≈ 60'
CHECKED BY:	PN	DATE:		REPORT NO.:		PAGE/FIG. NO.:	5B



MW-6	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-8R	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-1	
B	0.0938
T	0.0171
E	0.0427
X	0.0609
BTEX	0.2145
MTBE	<0.001
NAP	0.0053

MW-2	
B	0.0405
T	0.0256
E	0.0063
X	0.0298
BTEX	0.1022
MTBE	<0.001
NAP	0.0065

MW-3	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-5	
B	<0.001
T	<0.001
E	<0.001
X	<0.002
BTEX	<RL
MTBE	<0.001
NAP	<0.005

MW-12	
B	0.218
T	1.1
E	1.62
X	6.20
BTEX	9.138
MTBE	<0.02
NAP	1.090

RW-3	
B	0.471
T	0.351
E	0.933
X	5.15
BTEX	6.905
MTBE	0.120
NAP	0.398

MW-7	
B	0.802
T	1.59
E	0.997
X	5.04
BTEX	8.429
MTBE	<0.01
NAP	0.704

RW-1	
B	3.89
T	25.7
E	3.88
X	22.2
BTEX	55.67
MTBE	2.73
NAP	<1

MW-9R	
B	<0.001
T	<0.001
E	<0.001
X	<0.002
BTEX	<0.002
MTBE	<0.001
NAP	<0.005

RW-2	
B	1.74
T	10.6
E	1.66
X	10.2
BTEX	24.20
MTBE	5.57
NAP	0.006

MW-14	
B	0.0723
T	1.81
E	0.747
X	3.94
BTEX	6.5693
MTBE	0.0301
NAP	0.275

MW-10D	
B	<0.001
T	<0.001
E	<0.001
X	<0.002
BTEX	<RL
MTBE	0.0030
NAP	<0.005

MW-18	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-13	
B	<0.001
T	<0.001
E	<0.001
X	<0.002
BTEX	<RL
MTBE	0.0403
NAP	<0.005

MW-15	
B	2.01
T	5.05
E	0.861
X	4.84
BTEX	12.76
MTBE	8.43
NAP	<0.25

MW-17	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

MW-16	
B	NS
T	NS
E	NS
X	NS
BTEX	NS
MTBE	NS
NAP	NS

GRAPHIC SCALE
0 30 60
(IN FEET)
1 INCH ≈ 60 ft.

LEGEND:

- MONITORING WELL LOCATION
- RECOVERY WELL LOCATION

MW-5	
B	4.5
T	2.1
E	1.8
X	5.1
BTEX	13.5
MTBE	1.1
NAP	<1

SAMPLE ID
BENZENE CONCENTRATION IN ppm
TOLUENE CONCENTRATION IN ppm
ETHYLBENZENE CONCENTRATION IN ppm
XYLENES CONCENTRATION IN ppm
TOTAL BTEX CONCENTRATION IN ppm
MTBE CONCENTRATION IN ppm
NAPHTHALENE CONCENTRATION IN ppm

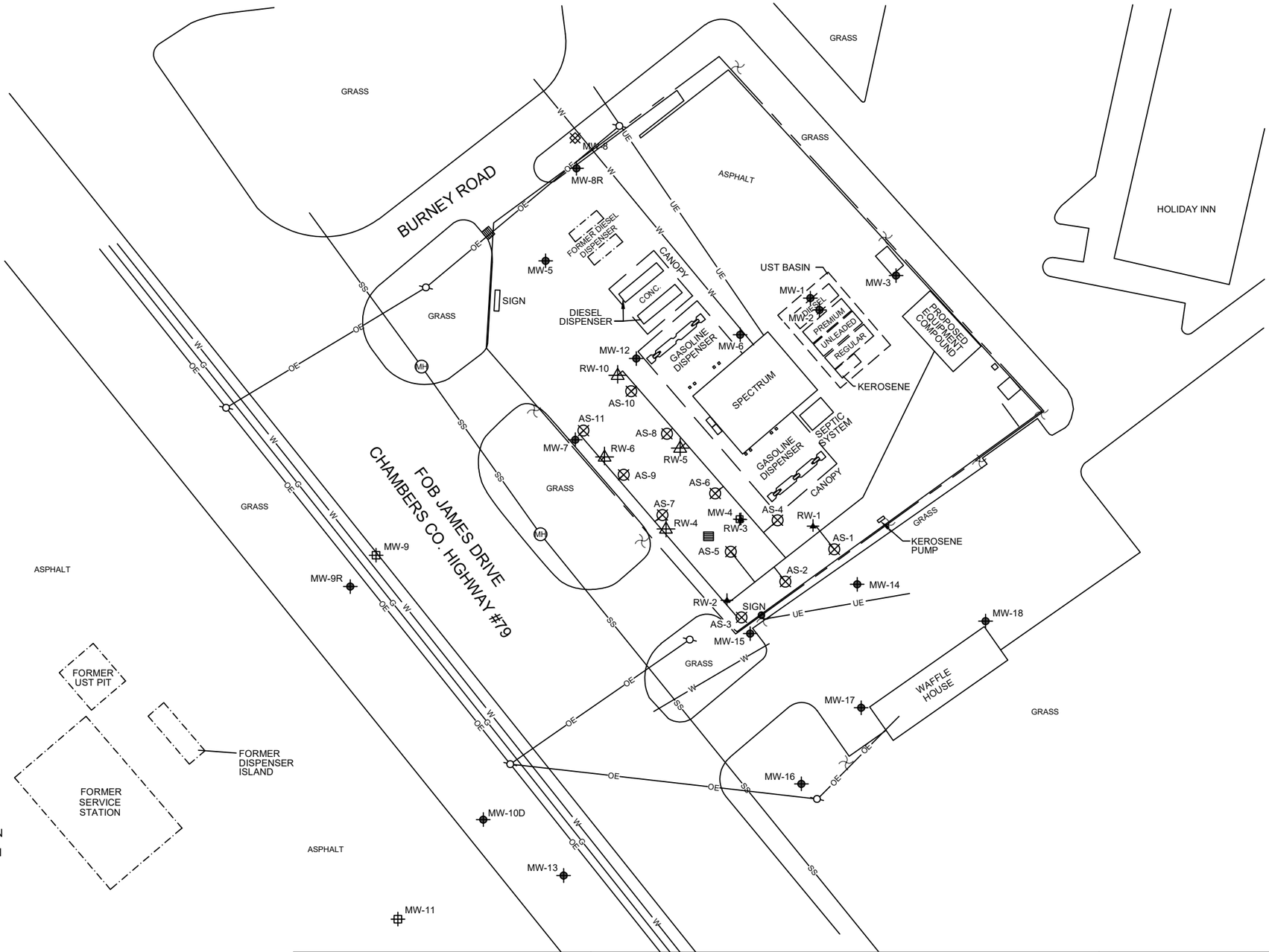
BTEX — BENZENE TOLUENE ETHYLBENZENE XYLENE
MTBE — METHYL TERTIARY BUTYL ETHER
ppm — PARTS PER MILLION (mg/L)
NS — NOT SAMPLED
0.5 — ESTIMATED CONCENTRATION CONTOUR OF MTBE IN GROUNDWATER IN ppm

ATLAS

PROJECT:
CIRCLE K STORE NO.2706697
588 FOB JAMES DRIVE
VALLEY, ALABAMA

TITLE:
MTBE ISOCONCENTRATION MAP JULY 13, 2023

DRAWN BY:	CR	DATE:	9/13/2023	PROJECT NO.:	30-223218.00	SCALE:	1" ≈ 60'	PAGE/FIG. NO.:	5C
CHECKED BY:	PN	DATE:		REPORT NO.:					



LEGEND:

- MONITORING WELL LOCATION
- ABANDONED MONITORING WELL LOCATION
- DESTROYED MONITORING WELL LOCATION
- RECOVERY WELL LOCATION
- PROPOSED AIR SPARGE WELL LOCATION
- PROPOSED PIPING TRENCH
- OE — OVERHEAD ELECTRIC LINE
- UE — UNDERGROUND ELECTRIC LINE
- SS — STORM WATER SEWER LINE
- G — GAS LINE
- W — WATER LINE
- POWER POLE
- LIGHT POLE
- MH — MANHOLE
- DROP INLET

GRAPHIC SCALE

0 30 60

(IN FEET)

1 INCH ≈ 60 ft.

ATLAS

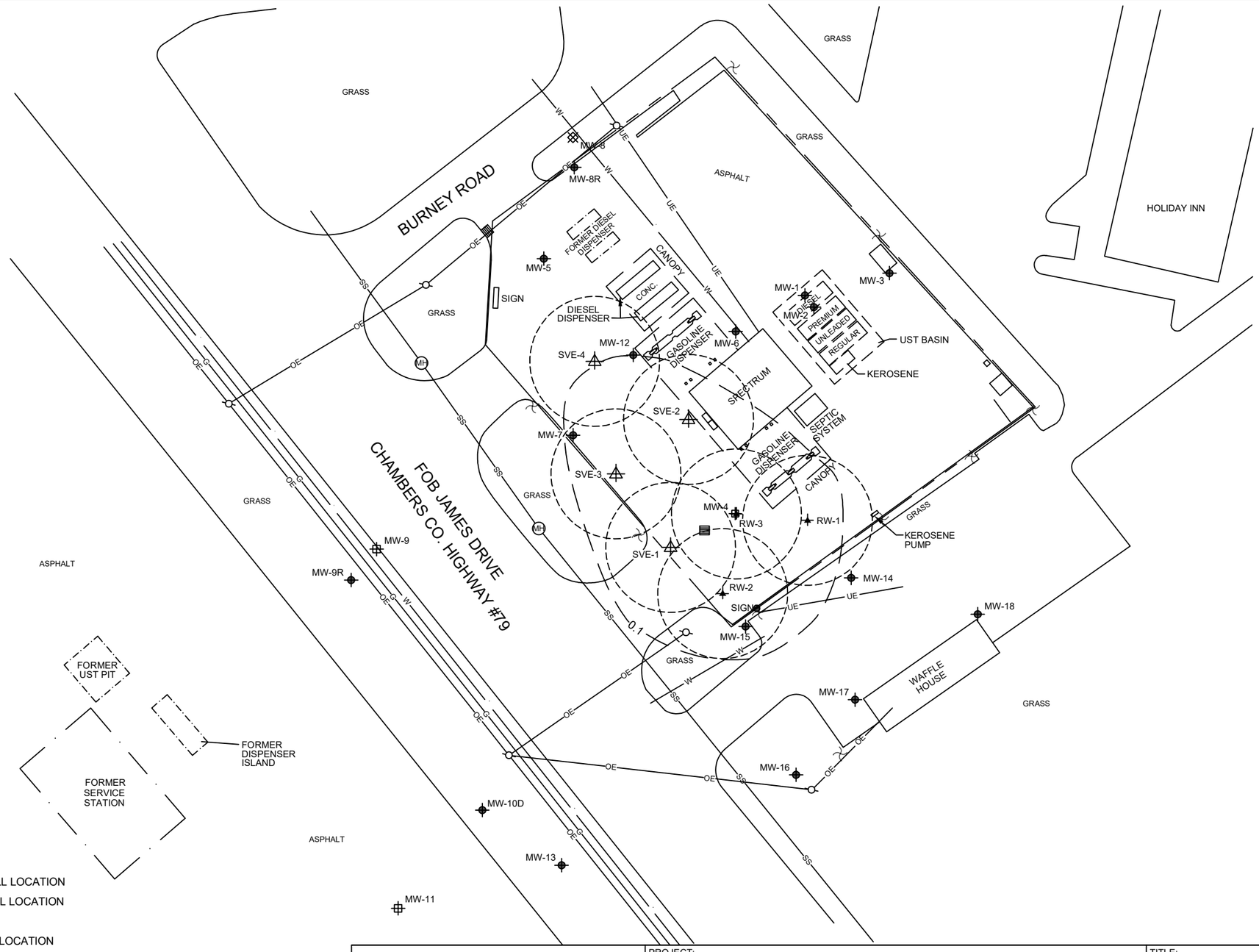
PROJECT:

CIRCLE K STORE NO.2706697
588 FOB JAMES DRIVE
VALLEY, ALABAMA

TITLE:

PROPOSED MPE AND AIR SPARGE WELL TRENCHING MAP

DRAWN BY:	KD	DATE:	6/24/2024	PROJECT NO.:	Z021000639	SCALE:	1" ≈ 60'	PAGE/FIG. NO.:	6
CHECKED BY:	PN	DATE:		REPORT NO.:					



LEGEND:

- MONITORING WELL LOCATION
- ABANDONED MONITORING WELL LOCATION
- DESTROYED MONITORING WELL LOCATION
- RECOVERY WELL LOCATION
- PROPOSED AIR SPARGE WELL LOCATION
- OE — OVERHEAD ELECTRIC LINE
- UE — UNDERGROUND ELECTRIC LINE
- SS — STORM WATER SEWER LINE
- G — GAS LINE
- W — WATER LINE
- POWER POLE
- LIGHT POLE
- MH — MANHOLE
- DROP INLET
- MPE 35 FT RADUIS OF INFLUENCE
- 0.1 — ESTIMATED BENZENE CONCENTRATION DISTRIBUTION IN mg/L FOR 2/7-8/18

GRAPHIC SCALE

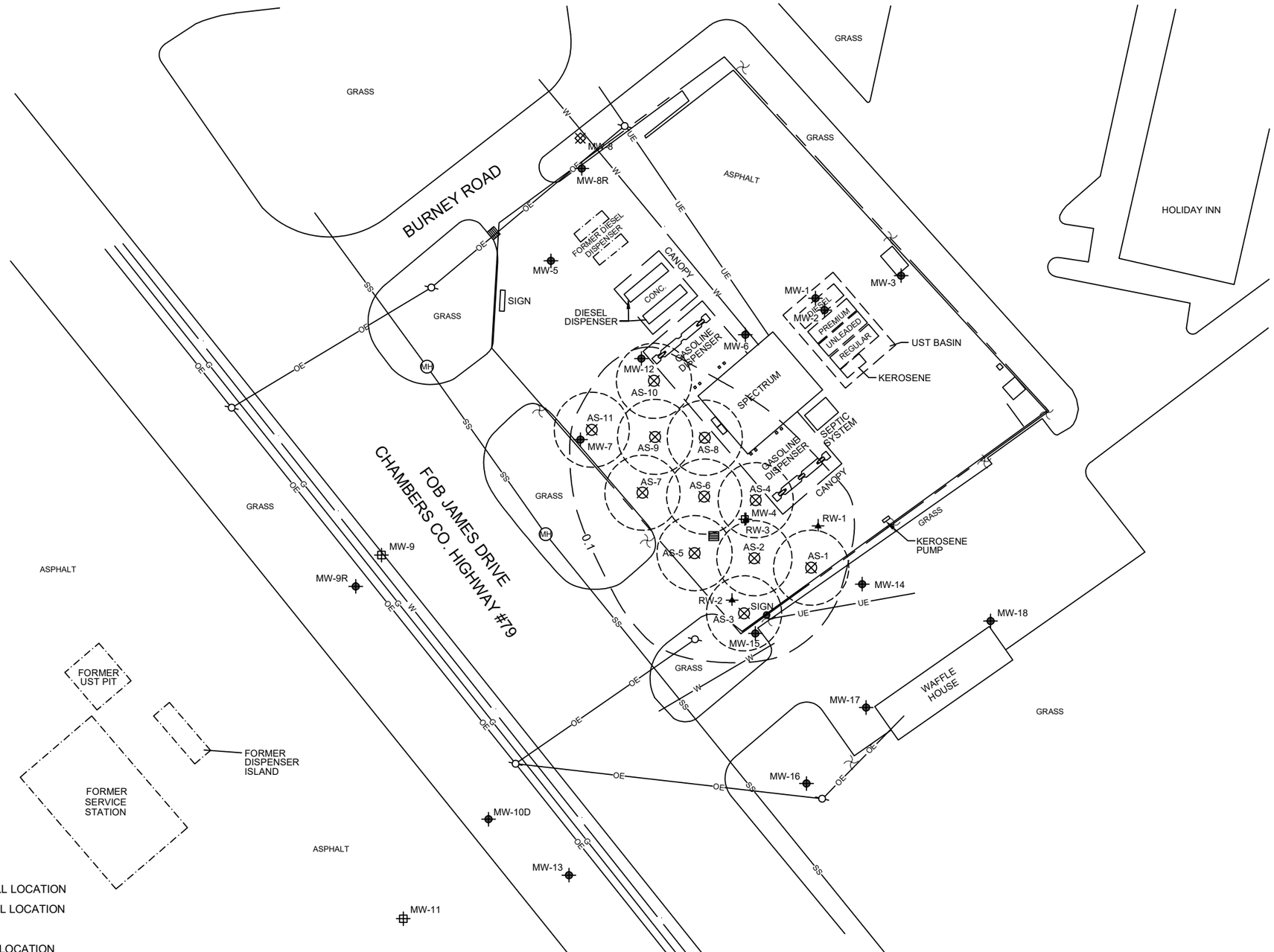
0 30 60

(IN FEET)

1 INCH ≈ 60 ft.

ATLAS

PROJECT: CIRCLE K STORE NO.2706697 588 FOB JAMES DRIVE VALLEY, ALABAMA				TITLE: **PROPOSED SVE SYSTEM RADIUS OF INFLUENCE MAP**	
DRAWN BY: KD	DATE: 6/24/2024	PROJECT NO.: Z021000639		SCALE: 1" ≈ 60'	PAGE/FIG. NO.: 7A
CHECKED BY: PN	DATE:	REPORT NO.:			



LEGEND:

- MONITORING WELL LOCATION
- ABANDONED MONITORING WELL LOCATION
- DESTROYED MONITORING WELL LOCATION
- RECOVERY WELL LOCATION
- PROPOSED AIR SPARGE WELL LOCATION
- OE — OVERHEAD ELECTRIC LINE
- UE — UNDERGROUND ELECTRIC LINE
- SS — STORM WATER SEWER LINE
- G — GAS LINE
- W — WATER LINE
- POWER POLE
- LIGHT POLE
- MH — MANHOLE
- DROP INLET
- AS 20 FT RADUIS OF INFLUENCE
- 0.1 — ESTIMATED BENZENE CONCENTRATION DISTRIBUTION IN mg/L FOR 2/7-8/18

GRAPHIC SCALE

0 30 60

(IN FEET)

1 INCH ≈ 60 ft.

ATLAS

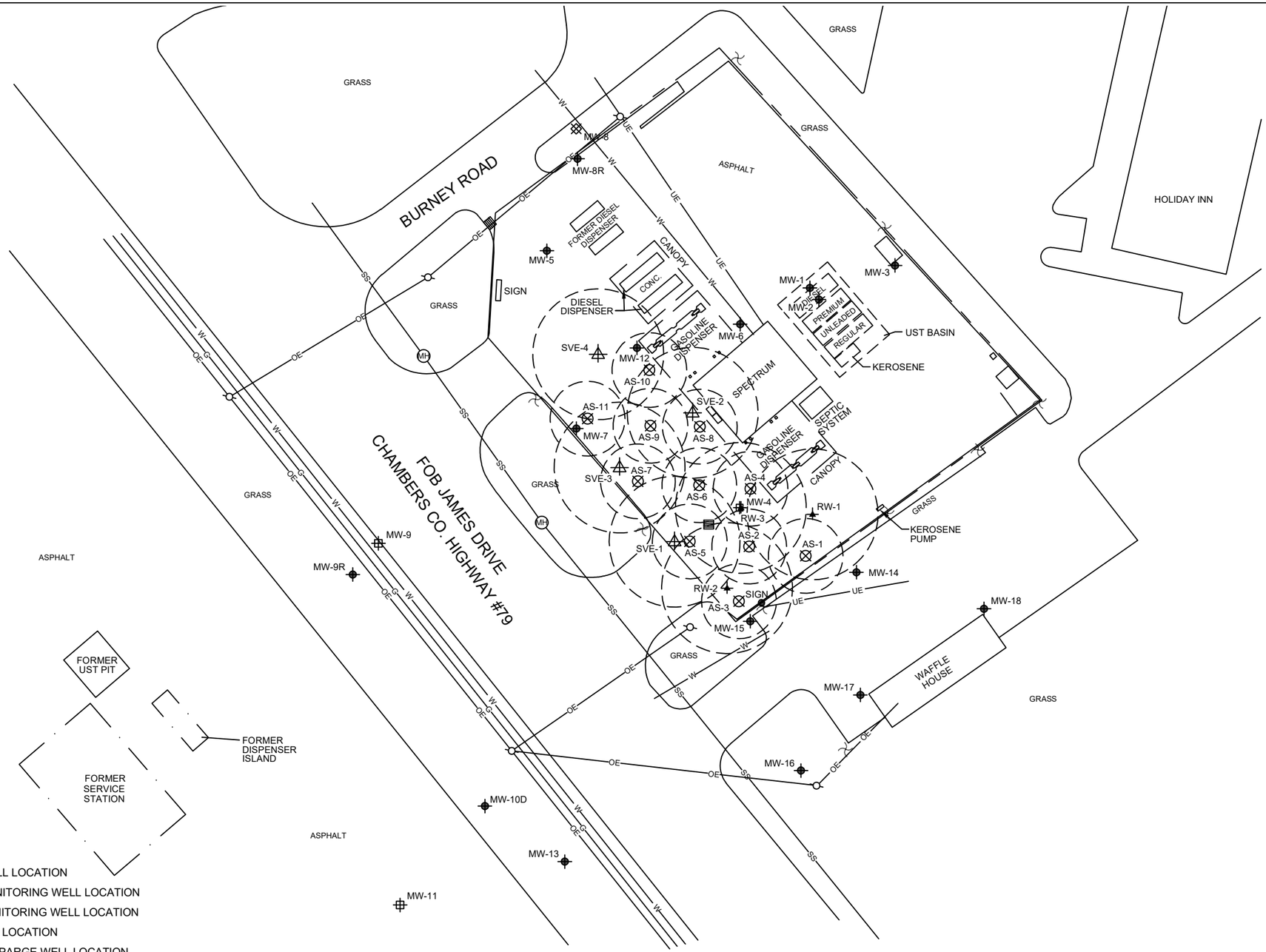
PROJECT:

CIRCLE K STORE NO.2706697
588 FOB JAMES DRIVE
VALLEY, ALABAMA

TITLE:

PROPOSED AIR SPARGE SYSTEM
RADIUS OF INFLUENCE MAP

DRAWN BY:	KD	DATE:	6/24/2024	PROJECT NO.:	Z021000639	SCALE:	1" ≈ 60'	PAGE/FIG. NO.:	7B
CHECKED BY:	PN	DATE:		REPORT NO.:					



LEGEND:

- MONITORING WELL LOCATION
- ABANDONED MONITORING WELL LOCATION
- DESTROYED MONITORING WELL LOCATION
- RECOVERY WELL LOCATION
- PROPOSED AIR SPARGE WELL LOCATION
- OE — OVERHEAD ELECTRIC LINE
- UE — UNDERGROUND ELECTRIC LINE
- SS — STORM WATER SEWER LINE
- G — GAS LINE
- W — WATER LINE
- POWER POLE
- LIGHT POLE
- MH — MANHOLE
- DROP INLET
- AS 20 FT RADUIS OF INFLUENCE
- MPE 35 FT RADUIS OF INFLUENCE

GRAPHIC SCALE

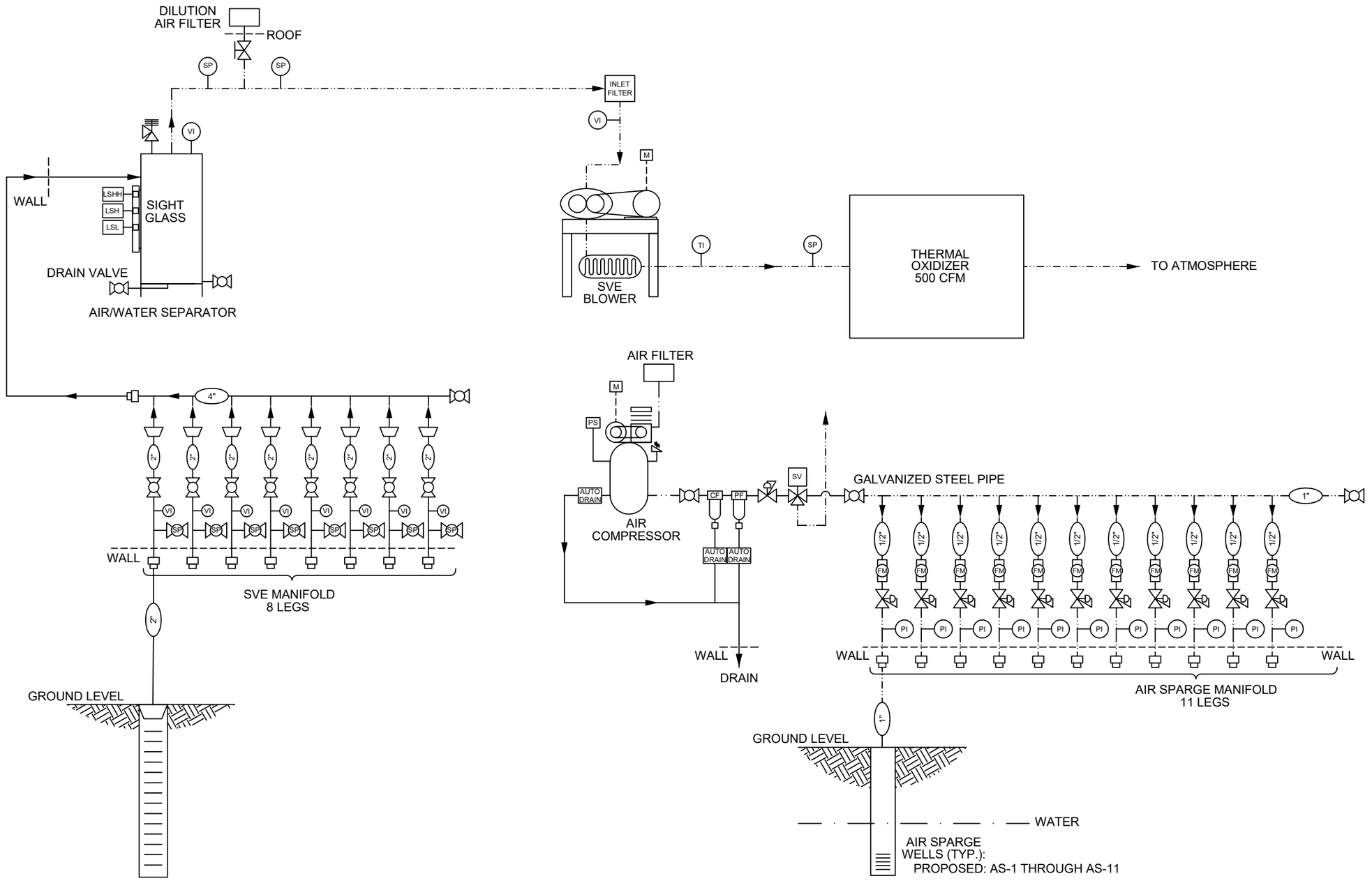
0 30 60

(IN FEET)

1 INCH ≈ 60 ft.

ATLAS

PROJECT: CIRCLE K STORE NO.2706697 588 FOB JAMES DRIVE VALLEY, ALABAMA			TITLE: **PROPOSED SVE AND AIR SPARGE RADIUS OF INFLUENCE MAP**
DRAWN BY: KD	DATE: 6/24/2024	PROJECT NO.: Z021000639	SCALE: 1" ≈ 60'
CHECKED BY: PN	DATE:	REPORT NO.:	PAGE/FIG. NO.: 7C



LEGEND:

CF	COALESCING FILTER
FI	FLOW INDICATOR
FM	FLOW METER
LSH	LEVEL SWITCH HIGH
LSHH	LEVEL SWITCH HIGH HIGH
LSL	LEVEL SWITCH LOW
M	MOTOR
PF	PARTICULATE FILTER
PI	PRESSURE INDICATOR
PS	PRESSURE SWITCH
PSL	PRESSURE SWITCH LOW
SP	SAMPLE PORT
SV	SOLENOID VALVE
TI	TEMPERATURE INDICATOR
VI	VACUUM INDICATOR
	BALL VALVE
	BARBED FITTING
	CHECK VALVE
	GATE VALVE
	PRESSURE REGULATOR
	VACUUM RELIEF VALVE
	SIPHON BREAKER
	REDUCER BUSHING
	WYE STRAINER
	AIR LINE
	WATER LINE
FM	FLOW METER
1"	PIPE/HOSE SIZE (NPT)
	PRESSURE RELIEF VALVE
SV	SOLENOID VALVE

ATLAS

PROJECT:
CIRCLE K STORE NO.2706697
588 FOB JAMES DRIVE
VALLEY, ALABAMA

TITLE:
PROCESS AND INSTRUMENTATION: PROCESS FLOW DIAGRAM

DRAWN BY:	KD	DATE:	6/24/2024	PROJECT NO.:	Z021000639	SCALE:	1" ≈ 60'
CHECKED BY:	PN	DATE:		REPORT NO.:		PAGE/FIG. NO.:	8

TABLES

TABLE 1: Summary of Liquid Level Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Well ID	Date Liquid Level Measured	Screen Interval (feet)	Top of Casing Elevation (feet)	Depth to Free Product (feet)	Depth to Water (feet)	Free Product Thickness (feet)	* Groundwater Elevation (feet)
MW-1	01/07/02	5.38 - 15.60	98.83		DRY		
	04/12/04			-	12.81	-	86.02
	05/06/04			-	14.18	-	84.65
	06/08/07				DRY		
	06/21/07				DRY		
	07/06/07				DRY		
	07/20/07				DRY		
	08/03/07				DRY		
	08/31/07				DRY		
	09/14/07			-	13.78	-	85.05
	09/28/07			-	13.70	-	85.13
	11/08/07				DRY		
	12/07/07				DRY		
	04/18/08				DRY		
	09/30/08			-	14.11	-	84.72
	11/18/09			-	14.21	-	84.62
	03/18/10			-	11.76	-	87.07
	07/15/10			-	13.30	-	85.53
	04/08/11			-	15.62	-	83.21
	10/03/12				DRY		
	01/11/13				DRY		
	06/05/13				DRY		
	08/20/14			-	14.61	-	84.22
	01/13/15				DRY		
	05/19/15			-	15.16	-	83.67
	10/06/15			-	DRY		
	03/17/16			-	13.20	-	85.63
	07/11/16			-	13.93	-	84.90
	11/22/16			-	DRY		
	03/23/17			-	DRY		
	07/28/17			-	DRY		
	02/07/18			-	15.65	-	83.18
	06/06/18			-	15.61	-	83.22
	09/26/18			-	15.40	-	83.43
	10/28/19			-	15.00	-	83.83
	03/16/20			-	11.58	-	87.25
	07/26/21			-	12.49	-	86.34
	06/27/22			-	13.10	-	85.73
	11/07/22			-	14.86	-	83.97
	03/27/23			-	9.57	-	89.26
	07/13/23			-	12.82	-	86.01
	11/22/23			-	13.66	-	85.17
	03/27/24			**-**	**11.94**	**-**	**86.89**

TABLE 1: Summary of Liquid Level Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Well ID	Date Liquid Level Measured	Screen Interval (feet)	Top of Casing Elevation (feet)	Depth to Free Product (feet)	Depth to Water (feet)	Free Product Thickness (feet)	* Groundwater Elevation (feet)
MW-2	01/07/02	5.40 - 15.60	98.99				
	04/12/04			-	14.95	-	84.04
	05/06/04				DRY		
	06/08/07				DRY		
	06/21/07				DRY		
	07/06/07				DRY		
	07/20/07				DRY		
	08/03/07				DRY		
	08/31/07				DRY		
	09/14/07				DRY		
	11/08/07				DRY		
	12/07/07				DRY		
	04/18/08				DRY		
	09/30/08			-	14.23	-	84.76
	11/18/09			-	14.49	-	84.50
	03/18/10			-	11.98	-	87.01
	07/15/10			-	13.53	-	85.46
	04/08/11			-	16.57	-	82.42
	10/03/12				DRY		
	01/11/13				DRY		
	06/05/13				DRY		
	08/20/14			-	14.85	-	84.14
	01/13/15			-	15.44	-	83.55
	05/19/15			-	15.46	-	83.53
	10/06/15			-	DRY		
	03/17/16			-	13.48	-	85.51
	07/11/16			-	14.08	-	84.91
	11/22/16			-	DRY		
	03/23/17			-	DRY		
	07/28/17			-	DRY		
	02/07/18			-	14.32	-	84.67
	06/06/18			-	15.60	-	83.39
	09/26/18			-	DRY		
	10/28/19			-	15.40	-	83.59
	03/16/20			-	11.84	-	87.15
	07/26/21			-	12.69	-	86.30
	06/27/22			-	13.38	-	85.61
	11/07/22			-	15.17	-	83.82
	03/27/23			-	9.92	-	89.07
	07/13/23			-	12.90	-	86.09
	11/22/23			-	DRY		
	03/27/24			-	DRY		

TABLE 1: Summary of Liquid Level Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Well ID	Date Liquid Level Measured	Screen Interval (feet)	Top of Casing Elevation (feet)	Depth to Free Product (feet)	Depth to Water (feet)	Free Product Thickness (feet)	* Groundwater Elevation (feet)
MW-3	05/06/04	7.72 - 22.72	98.14	-	12.75	-	85.39
	05/01/07			-	14.52	-	83.62
	05/15/07			-	15.00	-	83.14
	06/08/07				DRY		
	06/21/07			-	14.75	-	83.39
	07/06/07			-	14.69	-	83.45
	07/20/07			-	14.33	-	83.81
	08/03/07			-	14.02	-	84.12
	08/31/07			-	15.00	-	83.14
	09/14/07			-	13.72	-	84.42
	09/28/07			-	13.25	-	84.89
	11/08/07			-	16.79	-	81.35
	12/07/07			-	17.39	-	80.75
	05/27/08			-	15.38	-	82.76
	09/30/08			-	11.98	-	86.16
	11/18/09			-	12.86	-	85.28
	03/18/10			-	10.21	-	87.93
	07/15/10			-	11.81	-	86.33
	04/08/11			-	15.09	-	83.05
	10/03/12			-	16.86	-	81.28
	01/11/13			-	NOT ACCESSIBLE		
	06/05/13			-	NOT ACCESSIBLE		
	08/20/14			-	NOT ACCESSIBLE		
	01/13/15			-	NOT ACCESSIBLE		
	05/19/15			-	NOT ACCESSIBLE		
	10/06/15			-	NOT ACCESSIBLE		
	03/17/16			-	NOT ACCESSIBLE		
	07/11/16			-	NOT ACCESSIBLE		
	11/22/16			-	NOT ACCESSIBLE		
	03/23/17			-	NOT ACCESSIBLE		
	07/28/17			-	NOT ACCESSIBLE		
	02/07/18			-	NOT ACCESSIBLE		
	06/06/18			-	NOT ACCESSIBLE		
	09/26/18			-	NOT ACCESSIBLE		
	10/28/19			-	14.51	-	83.63
	03/16/20			-	10.35	-	87.79
	07/26/21			-	11.41	-	86.73
	06/27/22			-	11.84	-	86.30
	11/07/22			-	13.65	-	84.49
	03/27/23			-	12.03	-	86.11
	07/13/23			-	11.86	-	86.28
	11/22/23			-	14.25	-	83.89
	03/27/24			**-**	**12.25**	**-**	**85.89**

TABLE 1: Summary of Liquid Level Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Well ID	Date Liquid Level Measured	Screen Interval (feet)	Top of Casing Elevation (feet)	Depth to Free Product (feet)	Depth to Water (feet)	Free Product Thickness (feet)	* Groundwater Elevation (feet)
MW-4	08/07/90	? - 24.13	97.55	-	13.85	-	83.70
	03/20/91			-	14.30	-	83.25
	04/21/93			-	15.15	-	82.40
	01/11/95			-	15.16	-	82.39
	07/03/95			-	16.10	-	81.45
	11/06/95			-	16.42	-	81.13
	06/07/96			-	13.90	-	83.65
	01/27/97			-	16.18	-	81.37
	03/15/00			16.62	17.38	0.76	80.74
	06/01/00			16.89	17.74	0.85	80.45
	08/10/00			16.04	17.54	1.50	81.14
	08/24/00			17.65	19.01	1.36	79.56
	09/08/00			17.96	18.44	0.48	79.47
	12/06/00			18.50	18.80	0.30	78.98
	05/07/01			-	15.15	-	82.40
	08/30/01			-	15.70	-	81.85
	10/25/01			-	16.74	-	80.81
	01/07/02			-	17.95	-	79.60
	01/07/03			18.20	18.23	0.03	79.34
	04/07/03			-	16.24	-	81.31
	07/08/03			-	13.53	-	84.02
	10/01/03			-	12.91	-	84.64
	04/12/04			-	14.21	-	83.34
	05/06/04			-	14.84	-	82.71
	12/01/05				DRY		
	03/08/06			13.98	14.09	0.10	83.54
	05/01/07			15.97	16.47	2.49	82.95
	05/15/07			16.69	16.96	0.00	80.59
	06/08/07				DRY		
	06/21/07			17.55	19.29	1.74	79.57
	07/06/07			17.44	19.19	1.75	79.67
	07/20/07			17.54	18.46	0.92	79.78
	08/03/07			18.32	20.34	2.02	78.73
	08/31/07			18.15	19.45	1.30	79.08
	09/14/07			18.27	19.01	0.74	79.10
	09/28/07			18.15	19.50	1.35	79.06
	11/08/07			18.49	20.64	2.15	78.52
	12/07/07			18.98	19.95	0.97	-19.22
	02/22/08			17.6	18.06	0.46	79.84
	03/27/08			17.00	17.15	0.15	80.51
	04/18/08			16.74	16.83	0.09	80.79
	05/27/08			16.78	16.84	0.06	80.76
	06/30/08			16.98	17.04	0.06	80.56
	07/29/08			16.68	17.60	0.92	80.64
	09/08/08			15.95	15.97	0.02	81.60
	09/30/08			-	15.00	-	82.55
	10/07/08			-	15.02	-	82.53
	11/18/09			-	14.65	-	82.90
	03/18/10			-	12.63	-	84.92
	07/15/10			-	14.05	-	83.50
	04/08/11			16.70	16.72	0.02	80.85
	10/03/12			17.81	17.96	0.15	79.70
	12/12/13			18.65	19.67	1.02	78.65
	01/11/13			18.22	18.45	0.23	79.27
	06/05/13			-	15.55	-	82.00
	08/20/14			-	15.09	-	82.46
	01/13/15			-	17.06	-	80.49
	05/19/15			-	15.08	-	82.47
	10/06/15			-	16.64	-	80.91
	03/17/16			-	13.86	-	83.69
	07/11/16			-	14.72	-	82.83
	11/22/16			-	18.12	-	79.43
	03/23/17				ABANDONED		

TABLE 1: Summary of Liquid Level Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Well ID	Date Liquid Level Measured	Screen Interval (feet)	Top of Casing Elevation (feet)	Depth to Free Product (feet)	Depth to Water (feet)	Free Product Thickness (feet)	* Groundwater Elevation (feet)
MW-5	03/08/06	9.21 - 24.21	99.00	-	12.49	-	86.51
	05/01/07			-	12.75	-	86.25
	05/15/07			-	12.22	-	86.78
	06/08/07			-	DRY	-	DRY
	06/21/07			-	12.72	-	86.28
	07/06/07			-	12.21	-	86.79
	07/20/07			-	12.25	-	86.75
	08/03/07			-	12.56	-	86.44
	08/31/07			-	13.26	-	85.74
	09/14/07			-	12.36	-	86.64
	09/28/07			-	12.72	-	86.28
	11/08/07			-	18.48	-	80.52
	12/07/07			-	18.77	-	80.23
	05/30/08			-	16.78	-	82.22
	09/30/08			-	16.64	-	82.36
	10/07/08			-	16.88	-	82.12
	11/18/09			-	11.86	-	87.14
	03/18/10			-	9.97	-	89.03
	07/15/10			-	13.40	-	85.60
	04/08/11			-	14.98	-	84.02
	10/03/12			-	17.45	-	81.55
	01/11/13			-	17.55	-	81.45
	06/05/13			-	14.52	-	84.48
	08/20/14			-	13.81	-	85.19
	01/13/15			-	14.79	-	84.21
	05/19/15			-	13.16	-	85.84
	10/06/15			-	14.60	-	84.40
	03/17/16			-	11.04	-	87.96
	07/11/16			-	12.95	-	86.05
	11/22/16			-	17.43	-	81.57
	03/23/17			-	14.56	-	84.44
	07/28/17			-	15.14	-	83.86
	02/07/18			-	14.52	-	84.48
	06/06/18			-	11.84	-	87.16
	09/26/18			-	14.29	-	84.71
	10/28/19			-	14.49	-	84.51
	03/16/20			-	8.75	-	90.25
	07/26/21			-	10.57	-	88.43
	06/27/22			-	12.13	-	86.87
	11/07/22			-	14.37	-	84.63
	03/27/23			-	10.10	-	88.90
	07/13/23			-	10.99	-	88.01
	11/22/23			-	13.97	-	85.03
	03/27/24			**-**	**10.66**	**-**	**88.34**

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Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Well ID	Date Liquid Level Measured	Screen Interval (feet)	Top of Casing Elevation (feet)	Depth to Free Product (feet)	Depth to Water (feet)	Free Product Thickness (feet)	* Groundwater Elevation (feet)
MW-6	03/08/06	? - 37.16	98.99	-	14.54	-	84.45
	05/01/07			-	16.66	-	82.33
	05/15/07			-	17.09	-	81.90
	06/08/07				DRY		
	06/21/07			-	16.29	-	82.70
	07/06/07				DRY		
	07/20/07			-	17.07	-	81.92
	08/03/07			-	16.13	-	82.86
	08/31/07			-	17.09	-	81.90
	09/14/07			-	15.75	-	83.24
	09/28/07			-	15.75	-	83.24
	11/08/07			-	18.26	-	80.73
	12/07/07			-	18.81	-	80.18
	05/27/08			-	17.26	-	81.73
	07/29/08			-	17.77	-	81.22
	09/30/08			-	14.81	-	84.18
	11/18/09			-	14.63	-	84.36
	03/18/10			-	12.34	-	86.65
	07/15/10			-	13.33	-	85.66
	04/08/11			-	16.89	-	82.10
	10/03/12			-	18.14	-	80.85
	01/11/13			-	18.51	-	80.48
	06/05/13			-	16.02	-	82.97
	08/20/14			-	15.27	-	83.72
	01/13/15			-	17.40	-	81.59
	05/19/15			-	15.58	-	83.41
	10/06/15			-	16.49	-	82.50
	03/17/16			-	13.69	-	85.30
	07/11/16			-	14.35	-	84.64
	11/22/16			-	18.12	-	80.87
	03/23/17			-	17.44	-	81.55
	07/28/17			-	17.55	-	81.44
	02/07/18			-	18.30	-	80.69
	06/06/18			-	16.63	-	82.36
	09/26/18			-	16.19	-	82.80
	10/28/19			-	16.02	-	82.97
	03/16/20			-	12.45	-	86.54
	07/26/21			-	13.15	-	85.84
	06/27/22			-	13.42	-	85.57
	11/07/22			-	15.35	-	83.64
	03/27/23			-	13.91	-	85.08
	07/13/23			-	15.21	-	83.78
	11/22/23			-	15.80	-	83.19
	03/27/24			**-**	**14.44**	**-**	**84.55**

TABLE 1: Summary of Liquid Level Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Well ID	Date Liquid Level Measured	Screen Interval (feet)	Top of Casing Elevation (feet)	Depth to Free Product (feet)	Depth to Water (feet)	Free Product Thickness (feet)	* Groundwater Elevation (feet)
MW-7	03/08/06	? - 23.91	96.64	-	11.82	-	84.82
	05/01/07			-	12.58	-	84.06
	05/15/07			-	13.01	-	83.63
	06/08/07				DRY		
	06/21/07			-	12.78	-	83.86
	07/06/07			-	12.89	-	83.75
	07/20/07			-	13.01	-	83.63
	08/03/07			-	12.05	-	84.59
	08/31/07			-	13.05	-	83.59
	09/14/07			-	12.65	-	83.99
	09/28/07			-	12.65	-	83.99
	11/08/07			-	17.41	-	79.23
	12/07/07			-	17.65	-	78.99
	03/27/08			-	18.95	-	77.69
	07/29/08			-	16.26	-	80.38
	09/08/08			-	14.53	-	82.11
	09/30/08			-	14.27	-	82.37
	10/07/08			-	14.48	-	82.16
	11/18/09			-	11.50	-	85.14
	03/18/10			-	9.71	-	86.93
	07/15/10			-	12.56	-	84.08
	04/08/11			-	14.15	-	82.49
	10/03/12			-	16.58	-	80.06
	01/11/13			-	16.28	-	80.36
	06/05/13			-	13.38	-	83.26
	08/20/14			-	13.24	-	83.40
	01/13/15			-	14.04	-	82.60
	05/19/15			-	12.09	-	84.55
	10/06/15			-	14.19	-	82.45
	03/17/16			-	10.60	-	86.04
	07/11/16			-	12.62	-	84.02
	11/22/16			-	16.50	-	80.14
	03/23/17			-	14.00	-	82.64
	07/28/17			-	14.84	-	81.80
	02/07/18			-	14.34	-	82.30
	06/06/18			-	12.08	-	84.56
	09/26/18			-	13.59	-	83.05
	10/28/19			-	14.10	-	82.54
	03/16/20			-	8.52	-	88.12
	07/26/21			-	10.19	-	86.45
	06/27/22			-	11.44	-	85.20
	11/07/22			-	13.46	-	83.18
	03/27/23			-	10.29	-	86.35
	07/13/23			-	10.82	-	85.82
	11/22/23			-	13.88	-	82.76
	03/27/24			**-**	**10.39**	**-**	**86.25**

TABLE 1: Summary of Liquid Level Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Well ID	Date Liquid Level Measured	Screen Interval (feet)	Top of Casing Elevation (feet)	Depth to Free Product (feet)	Depth to Water (feet)	Free Product Thickness (feet)	* Groundwater Elevation (feet)
MW-8	03/08/06	11.70 - 22.70	99.47	-	12.06	-	87.41
	05/01/07			-	12.18	-	87.29
	05/15/07			-	12.49	-	86.98
	06/08/07				DRY		
	06/21/07			-	12.25	-	87.22
	07/06/07			-	12.75	-	86.72
	07/20/07			-	12.48	-	86.99
	08/03/07			-	12.37	-	87.10
	08/31/07			-	12.45	-	87.02
	09/14/07			-	12.62	-	86.85
	09/28/07			-	12.56	-	86.91
	11/08/07				DRY		
	12/07/07			-	18.25	-	81.22
	06/30/08			-	16.32	-	83.15
	09/30/08			-	16.26	-	83.21
	10/07/08			-	16.59	-	82.88
	11/18/09			-	11.09	-	88.38
	03/18/10			-	9.12	-	90.35
	07/15/10			-	12.86	-	86.61
	04/08/11			-	14.15	-	85.32
	10/03/12				NOT LOCATED		
	01/11/13			-	16.74	-	82.73
	06/05/13			-	14.05	-	85.42
	08/20/14			-	NOT LOCATED		
	01/13/15			-	NOT LOCATED		
	05/19/15			-	NOT LOCATED		
	10/06/15			-	DESTROYED		
MW-8R	03/23/17	7 - 22	99.46	-	14.23	-	85.23
	07/28/17			-	14.65	-	84.81
	02/07/18			-	13.43	-	86.03
	06/06/18			-	11.15	-	88.31
	09/26/18			-	14.08	-	85.38
	10/28/19			-	13.73	-	85.73
	03/16/20			-	8.37	-	91.09
	07/26/21			-	10.08	-	89.38
	06/27/22			-	11.77	-	87.69
	11/07/22			-	14.07	-	85.39
	03/27/23			-	6.13		93.33
	07/13/23			-	10.49	-	88.97
	11/22/23			-	12.49	-	86.97
	03/27/24			**-**	**9.77**	**-**	**89.69**

TABLE 1: Summary of Liquid Level Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Well ID	Date Liquid Level Measured	Screen Interval (feet)	Top of Casing Elevation (feet)	Depth to Free Product (feet)	Depth to Water (feet)	Free Product Thickness (feet)	* Groundwater Elevation (feet)
MW-9	10/01/03	10.73 - 20.73	69.54	-	11.89	-	57.65
	05/01/07			-	14.09	-	55.45
	05/15/07			-	14.53	-	55.01
	06/08/07				DRY		
	06/21/07			-	14.21	-	55.33
	07/06/07			-	14.25	-	55.29
	07/20/07			-	14.23	-	55.31
	08/03/07			-	14.15	-	55.39
	08/31/07			-	14.55	-	54.99
	09/14/07			-	14.02	-	55.52
	09/28/07			-	14.20	-	55.34
	11/08/07				NOT LOCATED		
	09/30/08				NOT LOCATED		
	11/18/09				DESTROYED		
MW-9R	03/23/17	7 - 22	90.59	-	9.61	-	80.98
	07/28/17			-	10.48	-	80.11
	02/07/18			-	9.77	-	80.82
	06/06/18			-	7.84	-	82.75
	09/26/18			-	9.18	-	81.41
	10/28/19			-	9.89	-	80.70
	03/16/20			-	4.42	-	86.17
	07/26/21			-	6.39	-	84.20
	06/27/22			-	7.64	-	82.95
	11/07/22			-	9.34	-	81.25
	03/27/23			-	5.94	-	84.65
	07/13/23			-	6.86	-	83.73
	11/22/23			-	9.63	-	80.96
	03/27/24			**-**	**6.10**	**-**	**84.49**

TABLE 1: Summary of Liquid Level Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Well ID	Date Liquid Level Measured	Screen Interval (feet)	Top of Casing Elevation (feet)	Depth to Free Product (feet)	Depth to Water (feet)	Free Product Thickness (feet)	* Groundwater Elevation (feet)
MW-10D	03/08/06	9.92 - 19.92	91.57	-	12.05	-	79.52
	05/01/07			-	13.71	-	77.86
	05/15/07			-	14.19	-	77.38
	06/08/07				DRY		
	06/21/07			-	13.75	-	77.82
	07/06/07			-	13.35	-	78.22
	07/20/07			-	13.75	-	77.82
	08/03/07			-	13.16	-	78.41
	08/31/07			-	14.19	-	77.38
	09/14/07			-	13.05	-	78.52
	09/28/07			-	13.12	-	78.45
	11/08/07			-	16.30	-	75.27
	12/07/07			-	16.64	-	74.93
	09/30/08			-	14.51	-	77.06
	11/18/09			-	12.32	-	79.25
	03/18/10			-	10.51	-	81.06
	07/15/10			-	12.40	-	79.17
	04/08/11			-	14.00	-	77.57
	10/03/12			-	DRY		
	01/11/13			-	15.97	-	75.60
	06/05/13			-	13.21	-	78.36
	08/21/14			-	13.99	-	77.58
	01/13/15			-	14.00	-	77.57
	05/19/15			-	12.33	-	79.24
	10/06/15			-	BLOCKED BY TRUCK		
	03/17/16			-	10.99	-	80.58
	07/11/16			-	12.45	-	79.12
	11/22/16			-	DRY		
	03/23/17			-	13.85	-	77.72
	07/28/17			-	14.45	-	77.12
	02/07/18			-	14.97	-	76.60
	06/06/18			-	12.82	-	78.75
	09/26/18			-	13.32	-	78.25
	10/28/19			-	13.74	-	77.83
	03/16/20			-	9.30	-	82.27
	07/26/21			-	10.86	-	80.71
	06/27/22			-	11.76	-	79.81
	11/07/22			-	13.18	-	78.39
	03/27/23			-	10.85	-	80.72
	07/13/23			-	11.28	-	80.29
	11/22/23			-	13.61	-	77.96
	03/27/24			**-**	**11.17**	**-**	**80.40**
MW-11	03/15/00	9.44 - 19.44	86.75	-	12.33	-	74.42
	06/01/00			-	13.71	-	73.04
	08/10/00			-	DESTROYED		

TABLE 1: Summary of Liquid Level Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Well ID	Date Liquid Level Measured	Screen Interval (feet)	Top of Casing Elevation (feet)	Depth to Free Product (feet)	Depth to Water (feet)	Free Product Thickness (feet)	* Groundwater Elevation (feet)
MW-12	03/08/06	17 - 27	98.49	-	13.23	-	85.26
	05/01/07			-	14.82	-	83.67
	05/15/07			-	15.33	-	83.16
	06/08/07				DRY		
	06/21/07			-	14.89	-	83.60
	07/06/07				DRY		
	07/20/07			-	15.02	-	83.47
	08/03/07			-	14.63	-	83.86
	08/31/07			-	15.23	-	83.26
	09/14/07			-	14.43	-	84.06
	09/28/07			-	14.65	-	83.84
	11/08/07			-	18.58	-	79.91
	03/27/08			-	16.60	-	81.89
	07/29/08			-	17.39	-	81.10
	09/08/08			-	15.86	-	82.63
	09/30/08			-	15.95	-	82.54
	10/07/08			-	16.15	-	82.34
	11/18/09			-	13.03	-	85.46
	03/18/10			-	11.15	-	87.34
	07/15/10			-	13.62	-	84.87
	04/08/11			-	15.17	-	83.32
	10/03/12			-	17.83	-	80.66
	01/11/13			-	17.95	-	80.54
	06/05/13			-	14.83	-	83.66
	08/20/14			-	14.37	-	84.12
	01/13/15			-	15.78	-	82.71
	05/19/15			-	14.17	-	84.32
	10/06/15			-	14.73	-	83.76
	03/17/16			-	12.46	-	86.03
	07/11/16			-	13.25	-	85.24
	11/22/16			-	17.51	-	80.98
	03/23/17			-	15.72	-	82.77
	07/28/17			-	16.15	-	82.34
	02/07/18			-	16.25	-	82.24
	06/06/18			-	13.91	-	84.58
	09/26/18			-	15.01	-	83.48
	10/28/19			-	14.86	-	83.63
	03/16/20			-	10.24	-	88.25
	07/26/21			-	11.82	-	86.67
	06/27/22			-	12.48	-	86.01
	11/07/22			-	14.64	-	83.85
	03/27/23			-	12.15	-	86.34
	07/13/23			-	12.10	-	86.39
	11/22/23			-	15.16	-	83.33
	03/27/24			**-**	**11.91**	**-**	**86.58**

TABLE 1: Summary of Liquid Level Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Well ID	Date Liquid Level Measured	Screen Interval (feet)	Top of Casing Elevation (feet)	Depth to Free Product (feet)	Depth to Water (feet)	Free Product Thickness (feet)	* Groundwater Elevation (feet)
MW-13	03/08/06	10 - 20	91.03	-	13.16	-	77.87
	05/01/07			-	13.63	-	77.40
	05/15/07			-	14.04	-	76.99
	06/08/07				DRY		
	06/21/07			-	13.46	-	77.57
	07/06/07			-	13.66	-	77.37
	07/20/07			-	14.01	-	77.02
	08/03/07			-	13.34	-	77.69
	08/31/07			-	14.25	-	76.78
	09/14/07			-	13.27	-	77.76
	09/28/07			-	13.62	-	77.41
	11/08/07				NOT LOCATED		
	12/07/07			-	17.38	-	73.65
	09/30/08			-	15.45	-	75.58
	11/18/09			-	13.37	-	77.66
	03/18/10			-	11.68	-	79.35
	07/15/10			-	14.47	-	76.56
	04/08/11			-	15.01	-	76.02
	10/03/12			-	16.60	-	74.43
	01/11/13			-	16.92	-	74.11
	06/05/13			-	14.28	-	76.75
	08/20/14			-	14.05	-	76.98
	01/13/15			-	15.19	-	75.84
	05/19/15			-	13.68	-	77.35
	10/06/15			-	15.14	-	75.89
	03/17/16			-	12.39	-	78.64
	07/11/16			-	13.75	-	77.28
	11/22/16			-	16.71	-	74.32
	03/23/17			-	15.11	-	75.92
	07/28/17			-	15.67	-	75.36
	02/07/18			-	15.84	-	75.19
	06/06/18			-	14.25	-	76.78
	09/26/18			-	14.62	-	76.41
	10/28/19			-	15.04	-	75.99
	03/16/20			-	10.78	-	80.25
	07/26/21			-	12.81	-	78.22
	06/27/22			-	13.15	-	77.88
	11/07/22			-	14.51	-	76.52
	03/27/23			-	12.60	-	78.43
	07/13/23			-	12.71	-	78.32
	11/22/23			-	14.90	-	76.13
	03/27/24			**-**	**12.57**	**-**	**78.46**
MW-14	08/20/14	8 - 28	97.67	-	14.71	-	82.96
	08/21/14			-	14.71	-	82.96
	01/13/15			-	17.21	-	80.46
	05/19/15			-	15.55	-	82.12
	10/06/15			-	16.79	-	80.88
	03/17/16			-	14.02	-	83.65
	07/11/16			-	14.74	-	82.93
	11/22/16			-	18.10	-	79.57
	03/23/17			-	17.36	-	80.31
	07/28/17			-	17.69	-	79.98
	02/07/18			-	18.33	-	79.34
	06/06/18			-	16.65	-	81.02
	09/26/18			-	16.37	-	81.30
	10/28/19			-	16.41	-	81.26
	03/16/20			-	12.80	-	84.87
	07/26/21			-	13.58	-	84.09
	06/27/22			-	14.04	-	83.63
	11/07/22			-	15.64	-	82.03
	03/27/23			-	14.34	-	83.33
	07/13/23			-	14.05	-	83.62
	11/22/23			-	16.25	-	81.42
	03/27/24			**-**	**14.43**	**-**	**83.24**

TABLE 1: Summary of Liquid Level Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Well ID	Date Liquid Level Measured	Screen Interval (feet)	Top of Casing Elevation (feet)	Depth to Free Product (feet)	Depth to Water (feet)	Free Product Thickness (feet)	* Groundwater Elevation (feet)
MW-15	08/20/14	8 - 28	96.74	-	16.12	-	80.62
	08/21/14			-	15.61	-	81.13
	01/13/15			-	17.26	-	79.48
	05/19/15			-	15.59	-	81.15
	10/06/15			-	17.10	-	79.64
	03/17/16			-	14.15	-	82.59
	07/11/16			-	15.33	-	81.41
	11/22/16			-	18.61	-	78.13
	03/23/17			-	17.33	-	79.41
	07/28/17			-	17.94	-	78.80
	02/07/18			-	18.21	-	78.53
	06/06/18			-	16.45	-	80.29
	09/26/18			-	16.74	-	80.00
	10/28/19			-	16.86	-	79.88
	03/16/20			-	12.54	-	84.20
	07/26/21			-	14.05	-	82.69
	06/27/22			-	14.76	-	81.98
	11/07/22			-	16.27	-	80.47
	03/27/23			-	14.57	-	82.17
	07/13/23			-	14.53	-	82.21
	11/22/23			-	16.76	-	79.98
	03/27/24			**-**	**14.47**	**-**	**82.27**
MW-16	03/23/17	8 - 28	97.32	-	18.05	-	79.27
	07/28/17			-	18.77	-	78.55
	02/07/18			-	18.91	-	78.41
	06/06/18			-	17.12	-	80.20
	09/26/18			-	17.59	-	79.73
	10/28/19			-	19.17	-	78.15
	03/16/20			-	14.92	-	82.40
	07/26/21			-	16.33	-	80.99
	06/27/22			-	17.13	-	80.19
	11/07/22			-	18.60	-	78.72
	03/27/23			-	16.79	-	80.53
	07/13/23			-	16.79	-	80.53
	11/22/23			-	19.05	-	78.27
	03/27/24			**-**	**16.73**	**-**	**80.59**

TABLE 1: Summary of Liquid Level Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Well ID	Date Liquid Level Measured	Screen Interval (feet)	Top of Casing Elevation (feet)	Depth to Free Product (feet)	Depth to Water (feet)	Free Product Thickness (feet)	* Groundwater Elevation (feet)
MW-17	03/23/17	8 - 28	97.92	-	18.37	-	79.55
	07/28/17			-	18.99	-	78.93
	02/07/18			-	19.24	-	78.68
	06/06/18			-	17.50	-	80.42
	09/26/18			-	17.79	-	80.13
	10/28/19			-	17.90	-	80.02
	03/16/20			-	13.76	-	84.16
	07/26/21			-	15.06	-	82.86
	06/27/22			-	15.77	-	82.15
	11/07/22			-	17.29	-	80.63
	03/27/23			-	15.62	-	82.30
	07/13/23			-	18.53	-	79.39
	11/22/23			-	17.79	-	80.13
	03/27/24			**-**	**15.59**	**-**	**82.33**
MW-18	03/23/17	8 - 28	99.20	-	18.58	-	80.62
	07/28/17			-	18.90	-	80.30
	02/07/18			-	19.60	-	79.60
	06/06/18			-	17.79	-	81.41
	09/26/18			-	17.53	-	81.67
	10/28/19			-	17.55	-	81.65
	03/16/20			-	14.09	-	85.11
	07/26/21			-	14.66	-	84.54
	06/27/22			-	15.12	-	84.08
	11/07/22			-	16.76	-	82.44
	03/27/23			-	15.49	-	83.71
	07/13/23			-	15.18	-	84.02
	11/22/23			-	17.35	-	81.85
	03/27/24			**-**	**15.67**	**-**	**83.53**
RW-1	04/08/11	9 - 24	97.76	-	16.82	-	80.94
	10/03/12			-	17.96	-	79.80
	01/11/13			-	18.43	-	79.33
	06/05/13			-	15.72	-	82.04
	08/20/14			-	15.13	-	82.63
	01/13/15			-	17.27	-	80.49
	05/19/15			-	15.44	-	82.32
	10/06/15			-	16.78	-	80.98
	03/17/16			-	13.95	-	83.81
	07/11/16			-	14.78	-	82.98
	11/22/16			-	18.27	-	79.49
	03/23/17			-	17.37	-	80.39
	07/28/17			-	17.75	-	80.01
	02/07/18			-	18.29	-	79.47
	06/06/18			-	16.55	-	81.21
	09/26/18			-	16.44	-	81.32
	10/28/19			-	16.46	-	81.30
	03/16/20			-	12.51	-	85.25
	07/26/21			-	13.56	-	84.20
	06/27/22			-	14.13	-	83.63
	11/07/22			-	15.74	-	82.02
	03/27/23			-	14.17	-	83.59
	07/13/23			-	14.03	-	83.73
	11/22/23			-	16.31	-	81.45
	03/27/24			**-**	**14.31**	**-**	**83.45**

TABLE 1: Summary of Liquid Level Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Well ID	Date Liquid Level Measured	Screen Interval (feet)	Top of Casing Elevation (feet)	Depth to Free Product (feet)	Depth to Water (feet)	Free Product Thickness (feet)	* Groundwater Elevation (feet)
RW-2	04/08/11	9 - 24	96.62	-	16.53	-	80.09
	10/03/12			-	17.89	-	78.73
	01/11/13			-	18.12	-	78.50
	06/05/13			-	15.37	-	81.25
	08/20/14			-	14.98	-	81.64
	01/13/15			-	16.03	-	80.59
	05/19/15			-	14.73	-	81.89
	10/06/15			-	16.55	-	80.07
	03/17/16			-	13.54	-	83.08
	07/11/16			-	14.70	-	81.92
	11/22/16			-	18.16	-	78.46
	03/23/17			-	16.89	-	79.73
	07/28/17			-	17.49	-	79.13
	02/07/18			-	17.81	-	78.81
	06/06/18			-	16.04	-	80.58
	09/26/18			-	16.18	-	80.44
	10/28/19			-	16.30	-	80.32
	03/16/20			-	11.97	-	84.65
	07/26/21			-	13.23	-	83.39
	06/27/22			-	13.88	-	82.74
	11/07/22			-	15.52	-	81.10
	03/27/23			-	13.81	-	82.81
	07/13/23			-	13.80	-	82.82
	11/22/23			-	16.20	-	80.42
	03/27/24			**-**	**13.88**	**-**	**82.74**
RW-3	03/23/17	10-25	97.64	-	17.28	-	80.36
	07/28/17			-	17.71	-	79.93
	02/07/18			-	18.20	-	79.44
	06/06/18			-	16.50	-	81.14
	09/26/18			-	16.40	-	81.24
	10/28/19			-	16.47	-	81.17
	03/16/20			-	12.46	-	85.18
	07/26/21			-	13.56	-	84.08
	06/27/22			-	14.06	-	83.58
	11/07/22			-	15.71	-	81.93
	03/27/23			-	14.15	-	83.49
	07/13/23			-	14.05	-	83.59
	11/22/23			-	16.34	-	81.30
	03/27/24			**-**	**14.31**	**-**	**83.33**

Notes: NM = Not Measured
Bold = Recent gauging event

TABLE 2: Summary of Groundwater Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Monitoring Well No.	Date Sampled	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	MTBE	Naphthalene
MW-1	07/16/90	<RL	0.002	0.004	0.014	0.020	<RL	NA
	09/30/08	1.400	0.210	0.580	3.500	5.69	6.400	NA
	11/18/09	1.100	0.140	0.650	4.140	6.030	4.200	NA
	03/18/10	0.170	0.025	0.450	3.185	3.830	0.570	NA
	07/15/10	0.670	0.210	0.310	2.330	3.520	3.600	NA
	04/08/11	NOT SAMPLED						
	10/03/12	NOT SAMPLED						
	01/11/13	NOT SAMPLED						
	06/05/13	NOT SAMPLED						
	08/21/14	NOT SAMPLED						
	01/14/15	DRY						
	05/19/15	DRY						
	10/06/15	DRY						
	03/17/16	0.0022	0.0019	0.0011	0.0214	0.0266	<0.001	<0.005
	07/11/16	0.0022	0.0013	<0.001	0.0126	0.0161	<0.001	<0.005
	11/22/16	DRY						
	03/23/17	DRY						
	07/28/17	DRY						
	02/07/18	DRY						
	06/06/18	DRY						
	09/26/18	DRY						
	10/28/19	DRY						
	03/16/20	0.0099	0.0035	0.005	0.0089	0.0273	<0.001	<0.005
	07/26/21	0.0324	0.0127	0.0101	0.0105	0.0657	0.00032J	0.0118
	06/27/22	0.411	0.701	0.0428	0.144	1.2988	<0.001	0.0080
	11/07/22	1.23	0.0619	0.3510	1.28	2.9229	<0.001	0.0125
	03/27/23	0.0089	0.0060	0.0043	0.0122	0.0314	<0.001	<0.005
	07/13/23	0.0938	0.0171	0.0427	0.0609	0.2145	<0.001	0.0053
	11/22/23	0.180	0.0556	0.120	0.393	0.7486	<0.001	0.0167
	03/27/24	0.0019	<0.001	0.0022	0.0071	0.0112	<0.001	<0.005
Tier 2 SSTLs		***11.1***	***535***	***152***	***198***	***--***	***38,800***	***--***
MW-2	09/30/08	1.100	2.500	0.790	8.700	13.09	1.000	NA
	11/18/09	0.390	0.640	0.440	4.600	6.070	0.069	NA
	03/18/10	0.021	0.066	0.055	1.350	1.492	0.0082	NA
	07/15/10	0.290	0.730	0.290	4.240	5.550	0.190	NA
	04/08/11	NOT SAMPLED						
	10/03/12	NOT SAMPLED						
	01/11/13	NOT SAMPLED						
	06/05/13	NOT SAMPLED						
	08/21/14	NOT SAMPLED						
	01/14/15	NOT SAMPLED						
	05/19/15	NOT SAMPLED						
	10/06/15	DRY						
	03/17/16	0.0016	0.0077	0.0021	0.026	0.0374	<0.001	<0.005
	07/11/16	0.0034	0.0039	0.0057	0.0485	0.0615	<0.001	<0.005
	11/22/16	DRY						
	03/23/17	DRY						
	07/28/17	DRY						
	02/07/18	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	06/06/18	DRY						
	09/26/18	DRY						
	10/28/19	DRY						
	03/16/20	0.0013	0.0025	0.0011	0.0036	0.0085	<0.001	<0.005
	07/26/21	0.180	0.0877	0.0200	0.0625	0.2877	<0.001	0.0061
	06/27/22	0.435	0.779	0.0585	0.248	1.5205	<0.001	0.0132
	03/27/23	0.0018	0.0041	<0.001	0.0034	0.0093	<0.001	<0.005
	07/13/23	0.0405	0.0256	0.0063	0.0298	0.1022	<0.001	0.0065
	11/22/23	DRY						
	03/27/24	**DRY**						
Tier 2 SSTLs		***11.1***	***535***	***152***	***198***	***--***	***38,800***	***--***

TABLE 2: Summary of Groundwater Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Monitoring Well No.	Date Sampled	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	MTBE	Naphthalene
MW-3	07/16/90	<RL	<RL	<RL	<RL	<RL	<RL	NA
	01/31/91	<RL	<RL	<RL	<RL	<RL	NA	NA
	04/21/93	<RL	<RL	<RL	<RL	<RL	NA	NA
	01/27/97	<RL	<RL	<RL	<RL	<RL	NA	NA
	03/15/00	<RL	<RL	<RL	<RL	<RL	<RL	NA
	06/01/00	<RL	<RL	<RL	<RL	<RL	<RL	NA
	08/10/00	<RL	<RL	<RL	<RL	<RL	<RL	NA
	12/06/00	<RL	<RL	<RL	<RL	<RL	<RL	NA
	05/07/01	<RL	<RL	<RL	<RL	<RL	<RL	NA
	08/30/01	<RL	<RL	<RL	<RL	<RL	<RL	NA
	10/25/01	0.004	0.003	<RL	<RL	0.007	0.010	NA
	01/07/02	<RL	<RL	<RL	<RL	<RL	0.003	NA
	01/07/03	0.011	0.008	<0.001	0.005	0.024	<0.001	NA
	04/07/03	0.039	0.004	0.002	0.010	0.055	0.004	NA
	07/08/03	0.023	0.0030	0.002	0.003	0.031	<0.005	NA
	10/01/03	<0.001	<0.001	<0.001	<0.001	<RL	<0.005	NA
	09/30/08	<0.0010	<0.0010	<0.0010	<0.0020	<RL	<0.0050	NA
	11/18/09	<0.0010	<0.0010	<0.0010	<0.0020	<RL	<0.0050	NA
	03/18/10	<0.0010	<0.0010	<0.0010	<0.0020	<RL	<0.0050	NA
	07/15/10	<0.0010	<0.0010	<0.0010	<0.0020	<RL	<0.0050	NA
	04/08/11	<0.0010	0.0023	<0.0010	0.0010	0.0033	<0.0050	NA
	10/03/12	<0.0010	<0.0010	<0.0010	<0.0020	<RL	<0.0050	NA
	01/11/13	NOT LOCATED						
	06/05/13	NOT LOCATED						
	08/21/14	NOT LOCATED						
	01/14/15	NOT LOCATED						
	05/19/15	NOT LOCATED						
	10/06/15	NOT LOCATED						
	03/17/16	NOT LOCATED						
	07/11/16	NOT LOCATED						
	11/22/16	NOT LOCATED						
	03/23/17	NOT LOCATED						
	07/28/17	NOT LOCATED						
	02/07/18	NOT LOCATED						
	06/06/18	NOT LOCATED						
	09/26/18	NOT LOCATED						
	10/28/19	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	03/16/20	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/26/21	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	06/27/22	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	11/07/22	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	03/27/23	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/13/23	NOT SAMPLED						
	11/22/23	NOT SAMPLED						
	03/27/24	**NOT SAMPLED**						
Tier 2 SSTLs		***11.1***	***535***	***152***	***198***	***--***	***38,800***	***--***

TABLE 2: Summary of Groundwater Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Monitoring Well No.	Date Sampled	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	MTBE	Naphthalene
MW-4	07/16/90	<RL	<RL	<RL	<RL	<RL	0.012	NA
	01/31/91	0.003	<RL	0.004	0.007	0.014	-	NA
	04/21/93	0.011	<RL	<RL	0.026	0.037	-	NA
	10/05/94	0.005	<RL	<RL	0.013	0.018	-	NA
	01/11/95	0.004	<RL	<RL	0.014	0.018	-	NA
	07/03/95	0.004	<RL	<RL	0.023	0.027	-	NA
	11/06/95	0.053	<RL	<RL	0.022	0.075	-	NA
	06/07/96	0.005	<RL	<RL	0.006	0.011	-	NA
	01/27/97	0.003	<RL	<RL	0.007	0.010	-	NA
	03/15/00	**FP = 0.76'**						
	06/01/00	**FP = 0.85'**						
	08/10/00	**FP = 1.5'**						
	12/06/00	**4.90**	13.00	2.00	9.20	29.10	0.290	NA
	05/07/01	**2.40**	8.60	1.70	9.60	22.30	**1.90**	NA
	08/30/01	**2.28**	5.80	0.782	3.99	12.85	0.237	NA
	10/25/01	**6.00**	15.00	1.80	10.00	32.80	**1.50**	NA
	01/07/02	**6.40**	16.00	1.60	8.10	32.10	0.630	NA
	01/07/03	**FP = 0.03'**						
	04/07/03	**3.10**	7.00	1.00	4.80	15.90	0.500	NA
	07/08/03	**2.40**	7.00	0.690	4.00	14.09	0.410	NA
	10/01/03	**5.10**	10.00	0.830	4.50	20.43	**1.40**	NA
	09/30/08	**4.400**	21.000	3.300	16.500	45.200	**6.300**	NA
	11/18/09	**5.100**	25.000	3.500	18.600	52.200	**5.900**	NA
	03/18/10	**6.300**	24.000	4.000	21.000	55.300	**5.800**	NA
	07/15/10	**4.900**	14.000	2.800	14.200	35.900	**3.400**	NA
	04/08/11	**4.300**	18.000	4.300	23.600	50.200	**2.900**	NA
	10/03/12	**FP = 0.15'**						
	01/11/13	**FP = 0.23'**						
	06/05/13	**3.4**	24	4.0	22	53.4	**1.5**	NA
	08/21/14	**4.3**	15	1.9	11	32.2	**4.8**	NA
	01/14/15	**4.4**	19	3.1	15	41.5	**5.6**	0.90
	05/19/15	**3.23**	19.4	2.97	16.6	42.2	**2.18**	0.65
	10/06/15	**2.55**	16.2	3.62	19.4	41.77	0.609	0.923
	03/17/16	**1.89**	10.6	2.48	4.17	19.14	0.761	0.532
	07/11/16	**2.27**	14.5	3.37	18	38.14	1.76	<1
	11/22/16	**1.73**	12.8	3.46	19.5	37.49	0.636	0.902
	03/23/17	ABANDONED						
Source Well SSTLs		***0.219***	***43.9***	***30.7***	***198***	***--***	***0.877***	***--***

TABLE 2: Summary of Groundwater Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Monitoring Well No.	Date Sampled	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	MTBE	Naphthalene
MW-5	07/16/90	2.21	3.35	0.450	2.24	8.250	<RL	NA
	01/31/91	2.60	3.00	0.360	2.40	8.360	-	NA
	04/21/93	1.50	0.570	0.079	0.700	2.849	-	NA
	10/05/94	2.69	2.92	0.454	1.90	7.964	-	NA
	01/11/95	2.00	0.958	<RL	0.731	3.689	-	NA
	07/03/95	2.40	<RL	2.21	2.16	6.770	-	NA
	11/06/95	2.86	0.549	2.97	2.97	9.349	-	NA
	06/07/96	1.12	0.119	0.462	0.569	2.270	-	NA
	01/27/97	1.74	0.287	1.310	1.52	4.857	-	NA
	03/15/00	0.210	0.056	0.017	0.150	0.433	0.011	NA
	06/01/00	0.150	0.061	0.014	0.100	0.325	<RL	NA
	08/10/00	0.140	0.100	0.019	0.120	0.379	0.011	NA
	12/06/00	0.340	0.150	0.010	0.270	0.770	<RL	NA
	05/07/01	0.400	0.300	<RL	0.480	1.180	<RL	NA
	08/30/01	1.07	1.17	0.362	1.97	4.572	0.03	NA
	10/25/01	1.20	1.30	0.240	1.80	4.540	<RL	NA
	01/07/02	0.320	0.140	0.029	0.300	0.789	0.009	NA
	01/07/03	0.130	0.069	0.015	0.200	0.414	0.008	NA
	04/07/03	0.600	0.710	0.130	0.980	2.420	<0.010	NA
	07/08/03	0.180	0.180	0.022	0.200	0.582	0.01	NA
	10/01/03	11.00	12.00	1.20	6.20	30.400	1.30	NA
	12/01/05	1.400	0.310	0.260	2.20	4.170	<0.028	NA
	03/08/06	0.47	0.110	0.140	1.20	1.920	0.045	NA
	10/07/08	0.470	0.880	0.500	3.300	5.150	0.098	NA
	11/18/09	0.220	0.012	0.096	0.306	0.634	0.035	NA
	03/18/10	0.022	<0.001	0.002	0.0154	0.0394	0.0058	NA
	07/15/10	0.300	0.120	0.180	0.970	0.039	0.040	NA
	04/08/11	0.320	0.011	0.076	0.320	0.727	0.067	NA
	10/03/12	0.330	0.014	0.380	0.619	1.343	0.086	NA
	01/11/13	0.12	0.0033	0.080	0.124	0.3273	0.034	NA
	06/05/13	0.38	0.036	0.38	0.52	1.316	0.057	NA
	08/21/14	0.35	0.05	0.29	0.38	1.065	0.033	NA
	01/14/15	0.13	0.013	0.097	0.096	0.336	0.020	0.032
	05/19/15	0.0788	0.0165	0.0752	0.104	0.275	0.0146	0.0223
	10/06/15	0.0424	0.0164	0.0651	0.0787	0.2026	0.0192	0.0196
	03/17/16	0.0035	<0.001	0.0149	<0.002	0.0184	0.0012	<0.005
	07/11/16	0.027	0.0075	0.0685	0.0277	0.1307	0.0083	0.0163
	11/22/16	0.0079	<0.001	0.018	0.0023	0.0282	0.0073	<0.005
	03/23/17	0.007	0.0015	0.0132	0.0072	0.0289	0.0022	<0.005
	07/28/17	0.006	<0.001	0.0078	<0.002	0.0138	0.0028	<0.005
	02/07/18	0.0012	<0.001	0.0029	<0.002	0.0041	<0.001	<0.005
	06/06/18	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	09/26/18	0.0039	<0.001	0.0067	0.0031	0.0137	0.0011	<0.005
	10/28/19	0.0062	<0.001	0.0048	0.0020	0.0130	0.0021	<0.005
	03/16/20	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/26/21	0.00053J	<0.001	<0.001	<0.002	0.00053J	0.00053J	<0.005
	06/27/22	0.0045	0.0017	0.0089	0.0046	0.0197	<0.001	<0.005
	11/07/22	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	03/27/23	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/13/23	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	11/22/23	0.0013	<0.001	0.0010	<0.002	0.0023	<0.001	<0.005
	03/27/24	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
Tier 2 SSTLs		***11.1***	***535***	***152***	***198***	***--***	***38,800***	***--***

TABLE 2: Summary of Groundwater Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Monitoring Well No.	Date Sampled	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	MTBE	Naphthalene
MW-6	07/16/90	<RL	<RL	<RL	<RL	<RL	<RL	NA
	01/31/91	<RL	<RL	<RL	<RL	<RL	<RL	NA
	03/15/00	<RL	<RL	<RL	<RL	<RL	<RL	NA
	06/01/00	<RL	<RL	<RL	<RL	<RL	<RL	NA
	08/10/00	0.008	0.018	0.002	0.017	0.045	<RL	NA
	12/06/00	<RL	<RL	<RL	<RL	<RL	<RL	NA
	05/07/01	<RL	<RL	<RL	<RL	<RL	<RL	NA
	08/30/01	<RL	<RL	<RL	<RL	<RL	<RL	NA
	10/25/01	<RL	<RL	<RL	0.002	0.002	<RL	NA
	01/07/02	<RL	<RL	<RL	<RL	<RL	<RL	NA
	01/07/03	<0.001	<0.001	<0.001	<0.001	<RL	<0.001	NA
	04/07/03	<0.001	<0.001	<0.001	<0.001	<RL	<0.001	NA
	07/08/03	<0.001	<0.001	<0.001	<0.001	<RL	<0.005	NA
	10/01/03	<0.001	<0.001	<0.001	<0.001	<RL	<0.005	NA
	12/01/05	<0.001	<0.001	<0.001	<0.001	<RL	<0.005	NA
	03/08/06	<0.0010	<0.0050	<0.0010	0.0023	0.0023	<0.002	NA
	09/30/08	<0.0010	<0.0010	<0.0010	<0.0020	<RL	<0.0050	NA
	11/18/09	<0.0010	<0.0010	<0.0010	<0.0020	<RL	<0.0050	NA
	03/18/10	<0.0010	<0.0010	<0.0010	<0.0020	<RL	<0.0050	NA
	07/15/10	<0.0010	<0.0010	<0.0010	<0.0020	<RL	<0.0050	NA
	04/08/11	<0.0010	0.0012	<0.0010	<0.0020	<RL	<0.0050	NA
	10/03/12	<0.0010	<0.0010	<0.0010	<0.0020	<RL	<0.0050	NA
	01/11/13	<0.0010	0.0023	<0.0010	0.0014	0.0037	<0.0050	NA
	06/05/13	<0.0010	<0.0050	<0.0010	<0.0030	<RL	<0.0010	NA
	08/21/14	<0.0010	<0.0050	<0.0010	<0.0030	<RL	<0.0010	NA
	01/14/15	<0.0010	<0.0050	0.0012	0.0042	0.0054	<0.0010	<0.0050
	05/19/15	<0.001	<0.001	<0.001	<0.001	<RL	<0.001	<0.001
	10/06/15	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	03/17/16	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/11/16	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	11/22/16	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	03/23/17	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/28/17	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	02/07/18	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	06/06/18	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	09/26/18	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	10/28/19	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	03/16/20	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/26/21	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	06/27/22	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	11/07/22	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	03/27/23	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/13/23	NOT SAMPLED						
	11/22/23	NOT SAMPLED						
	03/27/24	**NOT SAMPLED**						
Tier 2 SSTLs		***11.1***	***535***	***152***	***198***	***-***	***38,800***	***--***

TABLE 2: Summary of Groundwater Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Monitoring Well No.	Date Sampled	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	MTBE	Naphthalene
MW-7	07/16/90	**1.90**	10.1	2.50	12.9	27.40	<RL	NA
	01/31/91	**3.40**	14.0	2.30	14.0	33.70	-	NA
	04/21/93	**0.17**	2.40	1.90	9.50	13.97	-	NA
	10/05/94	<RL	2.17	1.61	5.75	9.53	-	NA
	01/11/95	<RL	1.07	1.56	7.37	10.00	-	NA
	07/03/95	<RL	2.33	2.23	11.50	16.06	-	NA
	11/06/95	<RL	1.37	2.65	7.68	11.70	-	NA
	06/07/96	<RL	1.79	<RL	8.57	10.36	-	NA
	01/27/97	<RL	2.89	0.933	12.8	16.62	-	NA
	03/15/00	**5.70**	2.50	1.50	7.60	17.30	0.440	NA
	06/01/00	**30.0**	20.0	7.70	41.0	98.70	**1.60**	NA
	08/10/00	**4.90**	9.50	2.30	12.0	28.70	0.130	NA
	12/06/00	**3.20**	6.00	1.60	8.30	19.10	0.220	NA
	05/07/01	**6.90**	3.90	2.10	11.0	23.90	0.330	NA
	08/30/01	**6.11**	3.11	1.24	6.52	16.98	0.210	NA
	10/25/01	**7.80**	8.00	1.80	9.40	27.00	0.260	NA
	01/07/02	**9.70**	9.30	2.00	9.80	30.80	0.350	NA
	01/07/03	**4.60**	11.0	2.00	11.0	28.60	0.140	NA
	04/07/03	**7.40**	4.90	1.70	8.80	22.80	0.410	NA
	07/08/03	**1.90**	1.10	0.58	3.20	6.78	<0.250	NA
	10/01/03	**4.90**	2.40	0.680	3.60	11.58	<0.500	NA
	12/01/05	**10.0**	7.80	1.30	7.60	26.70	0.240	NA
	03/08/06	**4.1**	3.80	1.00	5.70	14.60	<0.23	NA
	10/07/08	**7.3**	10.0	1.7	8.9	27.9	0.490	NA
	11/18/09	**4.0**	5.5	1.9	9.9	21.3	0.200	NA
	03/18/10	**2.4**	3.2	1.2	5.8	12.6	0.110	NA
	07/15/10	**4.8**	7.5	1.5	8.0	21.8	0.180	NA
	04/08/11	**7.4**	10.0	1.8	10.1	29.3	0.370	NA
	10/03/12	**7.0**	15.0	1.9	10.2	34.1	0.340	NA
	01/11/13	**6.5**	11	1.5	8.6	27.6	0.28	NA
	06/05/13	**3.7**	7.3	1.7	9.1	21.8	0.15	NA
	08/21/14	**4.4**	9.0	1.2	6.7	21.3	0.21	NA
	01/14/15	**4.3**	8.9	1.2	6.8	21.2	0.27	0.60
	05/19/15	**2.24**	4.36	1.35	6.82	14.77	0.0949	0.587
	10/06/15	**3.13**	7.36	1.49	7.84	19.82	0.23	0.554
	03/17/16	**1.26**	3.27	1.52	7.72	13.77	0.0277	0.516
	07/11/16	**2.37**	4.02	1.22	6.4	14.01	0.162	0.453
	11/22/16	**5.01**	10.2	1.36	7.68	24.25	0.438	0.52
	03/23/17	**2.76**	5.85	1.29	7.06	16.96	0.157	0.546
	07/28/17	3.79	6.97	1.21	6.22	18.19	0.335	0.469
	02/07/18	**3.03**	3.73	0.938	5.09	12.79	0.215	0.369
	06/06/18	**1.61**	3.52	1.27	6.93	13.33	0.0662	0.505
	09/26/18	**2.39**	4.86	1.06	5.76	14.07	0.162	0.473
	10/28/19	**1.96**	4.08	0.972	5.29	12.30	0.135	0.575
	03/16/20	**0.841**	1.60	0.906	4.70	8.047	0.0372	0.405
	07/26/21	**0.777**	1.56	0.969	4.88	8.186	0.0286	0.440
	06/27/22	**0.874**	1.94	1.17	5.56	9.544	<0.01	0.506
	11/07/22	**1.06**	2.08	0.972	5.15	9.262	0.0366	0.392
	03/37/23	**0.99**	1.25	0.775	4.31	7.325	<0.01	0.400
	07/13/23	**0.802**	1.59	0.997	5.04	8.429	<0.01	0.704
	11/22/23	**1.16**	1.62	1.01	6.07	9.860	0.0513	0.577
	03/27/24	**0.800**	1.12	0.973	4.92	7.813	<0.02	0.460
POC Well SSTLs		***0.168***	***33.6***	***23.6***	***198***	**--**	***0.673***	**--**

TABLE 2: Summary of Groundwater Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Monitoring Well No.	Date Sampled	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	MTBE	Naphthalene
MW-8	01/31/91	<RL	<RL	<RL	<RL	<RL	-	NA
	10/05/94	<RL	<RL	<RL	<RL	<RL	-	NA
	01/11/95	<RL	<RL	<RL	<RL	<RL	-	NA
	07/03/95	<RL	<RL	<RL	<RL	<RL	-	NA
	11/06/95	<RL	<RL	<RL	<RL	<RL	-	NA
	06/07/96	<RL	<RL	<RL	<RL	<RL	-	NA
	01/27/97	<RL	<RL	<RL	<RL	<RL	-	NA
	03/15/00	<RL	<RL	<RL	<RL	<RL	<RL	NA
	06/01/00	0.033	0.15	0.016	0.100	0.299	<RL	NA
	08/10/00	<RL	<RL	<RL	<RL	<RL	<RL	NA
	12/06/00	<RL	<RL	<RL	<RL	<RL	<RL	NA
	05/07/01	<RL	<RL	<RL	<RL	<RL	<RL	NA
	08/30/01	<RL	<RL	<RL	<RL	<RL	<RL	NA
	10/25/01	<RL	<RL	<RL	<RL	<RL	<RL	NA
	01/07/02	<RL	<RL	<RL	<RL	<RL	<RL	NA
	01/07/03	<0.001	<0.001	<0.001	<0.001	<RL	<0.001	NA
	04/07/03	<0.001	<0.001	<0.001	<0.001	<RL	<0.001	NA
	07/08/03	<0.001	<0.001	<0.001	<0.001	<RL	<0.005	NA
	10/01/03	<0.001	<0.001	<0.001	<0.001	<RL	<0.005	NA
	12/01/05	<0.001	<0.001	<0.001	<0.002	<RL	<0.005	NA
	03/08/06	<0.0010	<0.0050	<0.0010	<0.0020	<RL	<0.002	NA
	10/07/08	<0.0010	<0.0010	<0.0010	<0.0020	<RL	<0.0050	NA
	11/18/09	<0.0010	<0.0010	<0.0010	<0.0020	<RL	<0.0050	NA
	03/18/10	<0.0010	<0.0010	<0.0010	<0.0020	<RL	<0.0050	NA
	07/15/10	<0.0010	<0.0010	<0.0010	<0.0020	<RL	<0.0050	NA
	04/08/11	<0.0010	0.0020	<0.0010	0.0010	0.0030	<0.0050	NA
	10/03/12	NOT LOCATED						
	01/11/13	<0.0010	<0.0010	<0.0010	<0.0020	<RL	<0.0050	NA
	06/05/13	<0.0010	0.23	0.010	0.061	0.301	<0.0010	NA
	08/21/14	NOT LOCATED						
	01/14/15	NOT LOCATED						
	05/19/15	NOT LOCATED						
	10/06/15	DESTROYED						
Tier 2 SSTLs		***11.1***	***535***	***152***	***198***	***--***	***38,800***	***--***
MW-8R	03/23/17	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/28/17	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	02/07/18	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	06/06/18	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	09/26/18	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	10/28/19	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	03/16/20	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/26/21	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	06/27/22	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	11/07/22	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	03/27/23	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/13/23	NOT SAMPLED						
	11/22/23	NOT SAMPLED						
	03/27/24	**NOT SAMPLED**						
Tier 2 SSTLs		***11.1***	***535***	***152***	***198***	***--***	***38,800***	***--***

TABLE 2: Summary of Groundwater Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Monitoring Well No.	Date Sampled	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	MTBE	Naphthalene
MW-9	01/31/91	<RL	<RL	<RL	<RL	<RL	-	NA
	04/21/93	<RL	<RL	<RL	0.004	0.004	-	NA
	10/05/94	<RL	<RL	<RL	<RL	<RL	-	NA
	01/11/95	<RL	<RL	<RL	<RL	<RL	-	NA
	07/03/95	<RL	<RL	<RL	<RL	<RL	-	NA
	11/06/95	<RL	<RL	<RL	<RL	<RL	-	NA
	06/07/96	<RL	<RL	<RL	<RL	<RL	-	NA
	01/27/97	<RL	<RL	<RL	<RL	<RL	-	NA
	03/15/00	0.003	0.001	<RL	<RL	0.004	<RL	NA
	06/01/00	0.027	0.14	0.015	0.094	0.276	<RL	NA
	08/10/00	<RL	<RL	<RL	<RL	<RL	<RL	NA
	12/06/00	0.083	0.004	0.051	0.066	0.204	0.004	NA
	05/07/01	<RL	<RL	<RL	<RL	<RL	<RL	NA
	08/30/01	0.025	<RL	0.01	0.01	0.04	0.002	NA
	10/25/01	<RL	<RL	<RL	<RL	<RL	<RL	NA
	04/07/03	<0.001	<0.001	<0.001	<0.001	<RL	<0.001	NA
	07/08/03	<0.001	<0.001	<0.001	<0.001	<RL	<0.005	NA
	10/01/03	<0.001	<0.001	<0.001	<0.001	<RL	<0.005	NA
	09/30/08	NOT LOCATED						
	01/11/13	ASSUMED DESTROYED						
	06/05/13	ASSUMED DESTROYED						
	08/21/14	ASSUMED DESTROYED						
	01/14/15	DESTROYED						
POC Well SSTLs		***0.051***	***10.2***	***7.17***	***102***	***-***	***0.205***	***--***
MW-9R	03/23/17	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/28/17	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	02/08/18	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	06/06/18	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	09/26/18	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	10/28/19	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	03/16/20	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/26/21	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	06/27/22	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	11/07/22	<0.001	<0.001	<0.001	0.0021	0.0021	<0.001	<0.005
	03/27/23	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/13/23	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	11/22/23	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	03/27/24	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
POC Well SSTLs		***0.051***	***10.2***	***7.17***	***102***	***-***	***0.205***	***--***

TABLE 2: Summary of Groundwater Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Monitoring Well No.	Date Sampled	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	MTBE	Naphthalene
MW-10D	01/31/91	**4.10**	5.40	1.00	7.40	17.90	-	NA
	04/21/93	**1.80**	1.70	0.56	2.60	6.66	-	NA
	03/15/00	**0.091**	<RL	0.089	0.058	0.238	0.015	NA
	06/01/00	**0.074**	<RL	0.068	0.042	0.000	0.003	NA
	08/10/00	**0.140**	<RL	0.120	0.120	0.380	0.006	NA
	05/07/01	**0.100**	<RL	0.042	0.076	0.218	<RL	NA
	08/30/01	0.024	0.001	0.012	0.011	0.048	0.001	NA
	10/25/01	**0.049**	<RL	0.016	0.023	0.088	0.002	NA
	01/07/02	**0.100**	<RL	0.026	0.053	0.179	0.005	NA
	01/07/03	**0.110**	<0.010	0.052	0.300	0.462	<0.010	NA
	04/07/03	**0.057**	0.002	0.026	0.140	0.225	0.007	NA
	07/08/03	<0.001	<0.001	<0.001	<0.001	<RL	<0.005	NA
	10/01/03	0.001	<0.001	<0.001	<0.001	0.001	<0.005	NA
	12/01/05	0.021	<0.001	0.008	0.023	0.052	<0.005	NA
	03/08/06	0.032	<0.0050	<0.0010	0.02	0.052	0.053	NA
	09/30/08	**0.091**	<0.0010	0.017	0.0068	0.1148	0.046	NA
	11/18/09	0.0014	0.0029	0.0010	0.0048	0.0101	0.0080	NA
	03/18/10	<0.001	0.0033	<0.001	0.0045	0.0078	<0.005	NA
	07/15/10	0.0019	<0.001	<0.001	<0.002	0.0019	<0.0050	NA
	04/08/11	0.0019	0.022	0.0088	0.061	0.0937	0.0056	NA
	10/03/12	NOT SAMPLED						
	01/11/13	NOT SAMPLED						
	06/05/13	<0.0010	<0.0050	<0.0010	<0.0030	<RL	0.0095	NA
	08/21/14	<0.0010	<0.0050	<0.0010	<0.0030	<RL	0.005	NA
	01/14/15	0.0081	0.020	0.0053	0.030	0.0634	0.0034	0.020
	05/19/15	<0.001	<0.001	<0.001	0.002	0.002	0.002	<0.001
	10/06/15	NOT SAMPLED - BLOCKED BY TRUCK						
	03/17/16	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/11/16	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	11/22/16	DRY						
	03/23/17	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/28/17	<0.001	0.0025	<0.001	0.0040	0.0065	<0.001	<0.005
	02/18/18	<0.001	<0.001	<0.001	<0.002	<RL	0.0011	<0.005
	06/06/18	<0.001	<0.001	<0.001	<0.002	<RL	0.0011	<0.005
	09/26/18	<0.001	0.0018	<0.001	0.0025	0.0043	0.0014	<0.005
	10/28/19	<0.001	<0.001	<0.001	<0.002	<RL	0.0023	<0.005
	03/16/20	<0.001	<0.001	<0.001	<0.002	<RL	0.0011	<0.005
	07/26/21	<0.001	<0.001	<0.001	<0.002	<RL	0.0030	<0.005
	06/27/22	<0.001	<0.001	<0.001	<0.002	<RL	0.0047	<0.005
	11/07/22	<0.001	<0.001	<0.001	<0.002	<RL	0.0060	<0.005
	03/27/23	<0.001	<0.001	<0.001	<0.002	<RL	0.0017	<0.005
	07/13/23	<0.001	<0.001	<0.001	<0.002	<RL	0.0030	<0.005
	11/22/23	<0.001	<0.001	<0.001	<0.002	<RL	0.0049	<0.005
	03/27/24	<0.001	<0.001	<0.001	<0.002	<RL	0.0029	<0.005
POC Well SSTLs		***0.034***	***6.7***	***4.71***	***67.3***	***--***	***0.135***	***--***

TABLE 2: Summary of Groundwater Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Monitoring Well No.	Date Sampled	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	MTBE	Naphthalene
MW-11	01/31/91	0.940	<RL	<RL	0.1400	1.080	-	NA
	04/21/93	0.380	0.006	0.008	0.0270	0.421	-	NA
	10/05/94	0.044	<RL	<RL	0.0020	0.046	-	NA
	01/11/95	0.088	<RL	<RL	<RL	0.088	-	NA
	07/03/95	0.121	<RL	<RL	<RL	0.121	-	NA
	11/06/95	0.084	<RL	<RL	0.0120	0.096	-	NA
	06/07/96	0.067	<RL	<RL	0.0060	0.073	-	NA
	01/27/97	0.008	<RL	<RL	<RL	0.008	-	NA
	3/15/00	<RL	<RL	<RL	<RL	<RL	<RL	NA
	06/01/00	0.003	<RL	<RL	0.006	0.009	<RL	NA
	9/30/08	NOT LOCATED						
	3/18/10	ASSUMED DESTROYED						
	8/21/14	ASSUMED DESTROYED						
	1/14/15	DESTROYED						
MW-12	10/25/01	**5.70**	11.0	0.990	5.00	22.690	0.780	NA
	01/07/02	**10.0**	31.0	2.30	11.0	54.30	**1.50**	NA
	01/07/03	**8.40**	34.0	2.40	13.0	57.80	**1.10**	NA
	04/07/03	**9.60**	26.0	2.30	12.0	49.90	**2.20**	NA
	07/08/03	**5.70**	22.0	2.10	12.000	41.80	<2.50	NA
	10/01/03	**5.80**	11.0	0.610	3.40	20.81	**1.40**	NA
	12/01/05	**7.50**	28.0	2.20	13.0	50.70	0.600	NA
	03/08/06	**2.50**	17.0	1.80	11.0	32.30	0.230	NA
	10/07/08	**3.7**	15.0	2.4	11.7	32.8	0.480	NA
	11/18/09	**2.4**	12.0	2.7	12.3	29.4	0.250	NA
	03/18/10	**1.1**	10.0	3.0	14.2	28.3	<0.500	NA
	07/15/10	**2.4**	12.0	3.1	13.1	30.6	0.220	NA
	04/08/11	**1.7**	7.8	2.0	8.7	20.2	0.160	NA
	10/03/12	**1.2**	6.1	2.7	10.9	20.9	0.110	NA
	01/11/13	**1.2**	5.5	2.3	9.5	18.5	<0.10	NA
	06/05/13	**1.2**	4.6	2.5	9.9	18.2	0.098	NA
	08/21/14	**0.97**	4.2	2.2	8.9	16.3	<0.050	NA
	01/14/15	**0.76**	3.2	2.2	8.3	14.5	0.079	0.580
	05/19/15	**1.38**	4.09	2.07	8.7	16.2	0.178	0.843
	10/06/15	**0.873**	3.78	2.29	9.3	16.243	0.1	0.718
	03/17/16	**1.07**	3.89	2.11	7.88	14.95	0.0898	0.747
	07/11/16	**1.01**	3.51	1.95	7.96	14.43	0.109	0.736
	11/22/16	**0.896**	3.41	2.08	8.97	15.356	0.0848	0.854
	03/23/17	**1.36**	4.11	2.08	8.33	15.88	0.124	0.837
	07/28/17	0.895	3.11	2.11	7.85	13.965	0.191	0.77
	02/07/18	**1.560**	3.91	2.05	7.72	15.240	0.189	0.637
	06/06/18	**1.590**	4.14	1.72	7.47	14.920	0.175	0.793
	09/26/18	**0.869**	2.89	1.72	7.18	12.659	0.0942	0.730
	10/28/19	**0.542**	2.14	1.50	6.70	10.882	0.0524	0.749
	03/16/20	**1.20**	3.08	1.79	7.90	13.970	0.147	0.670
	07/26/21	**0.528**	2.16	1.95	8.00	12.638	0.0344	0.735
	06/27/22	**0.317**	1.69	1.53	6.57	10.107	<0.02	0.778
	11/07/22	**0.267**	1.54	1.68	7.86	11.347	<0.02	0.731
	03/27/23	**0.370**	1.38	1.41	5.77	8.930	0.0234	0.634
	07/13/23	0.218	1.1	1.62	6.20	9.138	<0.02	1.090
	11/22/23	0.194	1.00	1.51	6.13	8.834	<0.02	0.744
	03/27/24	**0.412**	1.46	1.77	7.52	11.162	<0.02	0.736
Source Well SSTLs		***0.219***	***43.9***	***30.7***	***198***	***--***	***0.877***	***--***

TABLE 2: Summary of Groundwater Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Monitoring Well No.	Date Sampled	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	MTBE	Naphthalene
MW-13	10/25/01	<RL	<RL	<RL	<RL	<RL	<RL	NA
	01/07/02	0.082	0.002	0.003	0.045	0.132	0.063	NA
	01/07/03	0.005	<0.001	<0.001	0.006	0.011	0.041	NA
	04/07/03	0.031	<0.001	0.002	0.025	0.058	0.056	NA
	07/08/03	0.001	<0.001	<0.001	<0.001	0.001	0.014	NA
	10/01/03	0.054	0.002	0.002	0.027	0.085	0.033	NA
	12/01/05	0.091	<0.001	<0.001	0.024	0.115	0.053	NA
	03/08/06	0.013	<0.0050	0.011	0.023	0.047	<0.0014	NA
	09/30/08	0.440	0.0064	0.0058	0.267	0.719	0.230	NA
	11/18/09	0.710	0.078	0.024	0.260	1.072	0.800	NA
	03/18/10	0.160	0.0026	0.0013	0.0464	0.210	0.230	NA
	07/15/10	0.230	0.0037	0.0024	0.065	0.301	0.480	NA
	04/08/11	0.480	0.0070	0.012	0.197	0.696	1.700	NA
	10/03/12	0.250	0.0066	0.0028	0.0293	0.289	2.100	NA
	01/11/13	0.015	<0.0010	<0.0010	<0.0020	0.015	1.7	NA
	06/05/13	0.0084	<0.0050	<0.0010	<0.0030	0.0084	1.3	NA
	08/21/14	0.065	<0.025	<0.005	<0.015	0.065	1.3	NA
	01/14/15	0.18	0.0092	0.0084	0.033	0.231	2.0	0.059
	05/19/15	0.121	<0.001	<0.001	0.0021	0.1231	2.16	0.0064
	10/06/15	0.0648	<0.001	<0.001	<0.002	0.0648	1.5	0.0057
	03/17/16	0.0075	0.0065	0.0347	<0.01	0.0487	0.692	<0.025
	07/11/16	<0.005	<0.005	<0.005	<0.01	<RL	0.472	<0.025
	11/22/16	0.007	<0.001	<0.001	<0.002	0.007	0.919	<0.005
	03/23/17	0.003	<0.001	<0.001	<0.002	0.003	0.584	<0.005
	07/28/17	0.0052	<0.002	<0.002	0.004	0.0092	0.382	<0.01
	02/08/18	0.0017	<0.001	<0.001	<0.002	0.0017	0.553	<0.005
	06/06/18	<0.002	<0.002	<0.002	<0.004	<RL	0.316	<0.010
	09/26/18	0.0016	0.0012	<0.001	<0.002	0.0028	0.282	<0.005
	10/28/19	<0.005	<0.005	<0.005	<0.010	<RL	0.232	0.0258
	03/16/20	<0.001	<0.001	<0.001	<0.002	<RL	0.103	<0.005
	07/26/21	0.00064J	<0.001	<0.001	<0.002	0.00064J	0.0362	<0.005
	06/27/22	<0.001	<0.001	<0.001	<0.002	<RL	0.0453	<0.005
	11/07/22	<0.001	<0.001	<0.001	<0.002	<RL	0.0698	<0.005
	03/27/23	<0.001	<0.001	<0.001	<0.002	<RL	0.115	<0.005
	07/13/23	<0.001	<0.001	<0.001	<0.002	<RL	0.0403	<0.005
	11/22/23	<0.001	0.0014	<0.001	0.0027	0.0041	0.101	<0.005
	03/27/24	0.0010	<0.001	<0.001	<0.002	0.0010	0.102	<0.005
Tier 2 SSTLs		***11.1***	***535***	***152***	***198***	***--***	***38,880***	***--***
MW-14	08/21/14	0.0011	0.015	0.0058	0.025	0.0469	<0.001	NA
	01/14/15	<0.0010	<0.0050	0.0013	0.0056	0.0069	<0.0010	0.0059
	05/19/15	<0.001	<0.001	<0.001	<0.001	<RL	<0.001	<0.001
	10/06/15	<0.001	0.0051	0.0041	0.0496	0.0588	<0.001	<0.005
	03/17/16	<0.002	0.0688	0.081	0.592	0.7418	0.0026	0.0249
	07/11/16	0.0041	0.102	0.0862	0.466	0.6583	0.0019	0.021
	11/22/16	0.0063	0.165	0.157	0.866	1.1943	0.0032	0.0316
	03/23/17	0.0181	0.318	0.349	1.8	2.4851	0.0065	0.0944
	07/28/17	0.0096	0.239	0.197	0.979	1.4246	0.0048	0.0475
	02/08/18	0.0492	1.24	0.757	3.91	5.9562	0.0185	0.147
	06/06/18	0.0421	0.927	0.528	2.66	4.1571	0.0164	0.118
	09/26/18	0.0245	0.560	0.218	1.17	1.9725	0.0109	0.0549
	10/28/19	0.0505	0.987	0.536	2.46	4.0335	0.0254	0.148
	03/16/20	**0.225**	5.56	2.15	11.0	18.935	0.0816	0.330
	07/26/21	0.219	4.76	1.76	8.4	15.139	0.113	0.272
	06/27/22	0.103	1.98	0.595	3.0	5.718	0.0386	0.170
	11/07/22	0.0415	1.06	0.389	2.18	3.6705	<0.02	0.108
	03/27/23	0.2010	4.73	1.51	5.55	11.9910	0.0947	0.354
	07/13/23	0.0723	1.81	0.747	3.94	6.5693	0.0301	0.275
	11/22/23	0.0609	1.32	0.704	3.90	5.9849	0.0290	0.245
	03/27/24	**0.254**	6.10	2.22	11.70	20.2740	0.1030	0.459
Source Well SSTLs		***0.219***	***43.9***	***30.7***	***198***	***--***	***0.877***	***--***

TABLE 2: Summary of Groundwater Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Monitoring Well No.	Date Sampled	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	MTBE	Naphthalene
MW-15	08/21/14	**0.78**	3.1	0.47	2.2	6.55	**2.1**	NA
	01/14/15	**0.99**	5.2	0.72	3.7	10.61	**1.6**	0.12
	05/19/15	**0.841**	3.68	0.539	2.58	7.64	**1.11**	0.102
	10/06/15	**2.08**	8.84	1.28	6.35	18.55	**6.32**	0.241
	03/17/16	**1.14**	5.34	0.795	2.96	10.235	**3.26**	<0.25
	07/11/16	**1.16**	5.28	0.673	3.35	10.463	**3.13**	<0.25
	11/22/16	**1.09**	6.87	0.903	4.63	13.493	**1.7**	<0.25
	03/23/17	**1.93**	9.91	1.09	5.77	18.70	**4.71**	0.304
	07/28/17	**2.41**	10.7	1.33	6.36	20.80	**7.18**	<0.5
	02/08/18	**2.16**	10.8	1.16	5.78	19.90	**7.7**	<0.5
	06/06/18	**1.67**	7.45	0.894	4.37	14.38	**5.09**	0.157
	09/26/18	**1.53**	6.21	0.739	3.5	11.98	**6.24**	<0.25
	10/28/19	**1.93**	4.5	0.858	4.15	11.44	**9.59**	0.275
	03/16/20	0.131	0.279	0.0669	0.278	0.7549	0.532	<0.25
	07/26/21	**1.15**	1.34	0.567	1.880	4.9370	**4.22**	0.0893
	06/27/22	**1.48**	2.77	0.665	3.140	8.0550	**8.82**	0.285
	11/07/22	**1.72**	0.935	2.07	12.8	17.5250	0.309	0.905
	03/27/23	**2.58**	7.29	1.08	5.9	16.87	**11.8**	<0.5
	07/13/23	**2.01**	5.05	0.861	4.84	12.76	**8.43**	<0.25
	11/22/23	**3.13**	8.19	1.26	7.57	20.15	**11.1**	0.456
	03/27/24	**2.50**	8.82	1.11	6.29	18.72	**13.3**	<0.5
Source Well SSTLs		***0.219***	***43.9***	***30.7***	***198***	**--**	***0.877***	**--**
MW-16	03/23/17	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/28/17	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	02/08/18	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	06/06/18	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	0.0077
	09/26/18	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	10/28/19	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	03/16/20	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/26/21	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	06/27/22	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	11/07/22	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	03/27/23	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/13/23	NOT SAMPLED						
	11/22/23	NOT SAMPLED						
	03/27/24	**NOT SAMPLED**						
Tier 2 SSTLs		***11.1***	***535***	***152***	***198***	**--**	***38,800***	**--**
MW-17	03/23/17	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/28/17	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	02/08/18	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	06/06/18	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	09/26/18	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	10/28/19	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	03/16/20	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/26/21	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	06/27/22	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	11/07/22	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	03/27/23	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/13/23	NOT SAMPLED						
	11/22/23	NOT SAMPLED						
	03/27/24	**NOT SAMPLED**						
Tier 2 SSTLs		***11.1***	***535***	***152***	***198***	**--**	***38,800***	**--**
MW-18	03/23/17	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/28/17	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	02/08/18	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	06/06/18	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	09/26/18	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	10/28/19	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	03/16/20	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/26/21	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	06/27/22	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	11/07/22	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	03/27/23	<0.001	<0.001	<0.001	<0.002	<RL	<0.001	<0.005
	07/13/23	NOT SAMPLED						
	11/22/23	NOT SAMPLED						
	03/27/24	**NOT SAMPLED**						
Tier 2 SSTLs		***11.1***	***535***	***152***	***198***	**--**	***38,800***	**--**

TABLE 2: Summary of Groundwater Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Monitoring Well No.	Date Sampled	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	MTBE	Naphthalene
RW-1	04/08/11	**16**	**56**	3.1	18.3	93.4	**280**	NA
	10/03/12	**12**	**50**	4.0	20.4	86.4	**190**	NA
	01/11/13	**13**	**53**	4.2	24.7	94.9	**170**	NA
	06/05/13	**16**	**55**	3.9	20	94.9	**230**	NA
	08/21/14	**14**	**57**	3.9	21	95.9	**210**	NA
	01/14/15	**11**	38	4.4	21	74.4	**150**	1.1
	05/19/15	**13.2**	**54.1**	4.27	22.5	94.1	**155**	0.705
	10/06/15	**11.5**	42.5	3.72	20.6	78.32	**240**	<1
	03/17/16	**8.87**	34.8	3.16	17.1	63.93	**122**	<2.5
	07/11/16	**8.81**	37.8	3.2	17.7	67.51	**109**	<5
	11/22/16	**6.86**	27.2	3.07	17	54.13	**73.5**	<1
	03/23/17	**9.13**	37.0	3.41	19.1	68.64	**46.2**	<1
	07/28/17	**9.54**	36.6	3.8	19.8	69.74	**51.5**	2.5
	02/07/18	**3.29**	14.2	1.8	10.0	29.29	**23.7**	<1.0
	06/06/18	**3.16**	18.1	2.00	10.6	33.86	**29.3**	0.439
	09/26/18	**3.84**	10.5	2.28	13.1	29.72	**22.8**	0.472
	10/28/19	**3.70**	16.9	3.40	18.1	42.10	**16.4**	0.768
	03/16/20	**5.01**	21.0	3.49	19.1	48.60	**21.1**	<1.0
	07/26/21	**7.47**	37.5	3.86	20.1	68.93	**19.4**	0.374J
	06/28/22	**4.97**	33.0	3.66	20.2	61.83	**10.8**	1.07
	11/08/22	**5.77**	37.5	4.64	22.1	70.01	**4.58**	0.872
	03/29/23	**4.59**	30.3	3.55	20.8	59.24	**3.85**	<1
	07/13/23	**3.89**	25.7	3.88	22.2	55.67	**2.73**	<1
	11/22/23	**5.08**	33.2	3.85	22.3	64.43	**1.18**	<1
	03/27/24	**4.09**	26.9	3.53	20.7	55.22	**1.37**	<1
Source Well SSTLs		***0.219***	***43.9***	***30.7***	***198***	**--**	***0.877***	**--**
RW-2	04/08/11	**6.5**	34.0	2.9	16.7	60.1	**6.6**	NA
	10/03/12	**6.5**	30.0	2.9	17.3	56.7	**8.0**	NA
	01/11/13	**6.2**	29	3.1	19.3	57.6	**7.0**	NA
	06/05/13	**3.0**	24	3.7	22	52.7	**3.8**	NA
	08/21/14	**4.7**	30	4.0	25	63.7	**12**	NA
	01/14/15	**4.7**	21	2.0	12	39.7	**18**	0.62
	05/19/15	**3.74**	21.1	2.56	15.8	43.2	**7.52**	0.581
	10/06/15	**3.42**	22	2.95	17.4	45.77	**11**	0.777
	03/17/16	**1.89**	12.5	3.08	15.7	33.17	**3.86**	0.591
	07/11/16	**2.42**	14.8	2.36	15.4	34.98	**5.4**	0.638
	11/22/16	**4.20**	18.3	2.41	15.1	40.01	**14.4**	0.619
	03/23/17	**4.2**	22.2	2.63	17.1	46.13	**13.6**	1.06
	07/28/17	**5.45**	23.7	3.24	18.2	50.59	**21.2**	1.0
	02/08/18	**4.37**	18.5	2.52	15.5	40.89	**18.1**	0.617
	06/06/18	**3.10**	19.2	2.28	13.3	37.88	**11.9**	0.649
	09/26/18	**3.86**	15.1	2.3	14.0	35.26	**17.1**	0.731
	10/28/19	**3.33**	16.4	2.24	12.5	34.47	**17.0**	<0.50
	03/16/20	**2.36**	10.2	1.72	10.7	24.98	**10.4**	0.590
	07/26/21	**2.73**	15.1	2.31	13.1	33.24	**13.9**	0.445J
	06/28/22	**1.40**	8.44	1.31	8.0	19.17	**9.32**	1.00
	11/07/22	**3.75**	<0.1	<0.1	0.545	4.295	**12.30**	5.53
	03/29/23	**1.99**	11.7	1.76	11.3	26.75	**7.06**	0.533
	07/13/23	**1.74**	10.6	1.66	10.2	24.20	**5.57**	0.006
	11/22/23	**3.13**	19.7	2.61	15.1	40.54	**11.3**	0.764
	03/27/24	**2.06**	14.5	2.02	12.2	30.78	**8.07**	0.794
Source Well SSTLs		***0.219***	***43.9***	***30.7***	***198***	**--**	***0.877***	**--**

TABLE 2: Summary of Groundwater Data

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley, Chambers County, Alabama
UST Incident No. UST91-04-08

Monitoring Well No.	Date Sampled	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	MTBE	Naphthalene
RW-3	3/23/2017	**1.33**	13.7	3.72	21.3	40.05	0.555	0.588
	07/28/17	**1.75**	13.7	4.43	23.8	43.68	**1.06**	1.06
	02/08/18	**1.28**	10.2	2.57	14.7	28.75	0.548	<0.50
	06/06/18	**1.58**	11.1	2.75	16.8	32.23	0.793	0.64
	09/26/18	**1.67**	8.88	2.71	15.6	28.86	0.663	0.71
	10/28/19	**1.40**	4.85	1.88	10.7	18.83	0.463	0.583
	03/16/20	**1.66**	3.65	2.01	10.4	17.72	0.468	0.581
	07/26/21	**1.72**	1.70	2.20	11.3	16.92	0.304	0.491
	06/28/22	**0.613**	0.424	0.730	3.73	5.497	0.178	0.312
	11/08/22	**0.299**	1.76	1.810	9.01	12.879	<0.02	0.768
	03/29/23	**0.594**	0.438	0.981	5.90	7.913	0.145	0.396
	07/13/23	**0.471**	0.351	0.933	5.15	6.905	0.120	0.398
	11/22/23	**0.527**	0.268	0.794	4.70	6.289	0.144	0.393
	03/27/24	**0.405**	0.230	0.650	3.68	4.965	0.125	0.368
Source Well SSTLs		***0.219***	***43.9***	***30.7***	***198***	**--**	***0.877***	**--**

Notes:
SSTL = Site Specific Target Level
All concentrations reported in milligrams per liter (mg/l)
<RL = Less than laboratory reporting limits
NA = Not analyzed
MTBE = Methyl tertiary-butyl ether
Bold = Concentrations above of the applicable SSTLs

TABLE 3: Historical Field Parameter Results

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley , Chambers County, Alabama

Monitoring Well No.	DATE	Temp (^{0}C)	pH	ORP (mv)	D.O. (mg/L)
MW-1	09/30/08	25.28	5.94	-61.4	6.61
	11/18/19	23.55	6.18	-48.7	0.33
	03/18/10	19.46	NA	-80.6	0.95
	07/15/10	23.00	6.10	-99.0	0.20
	03/17/16	23.50	5.59	64.6	1.32
	07/11/16	24.68	6.07	-52.5	0.59
	02/07/18	NM	NM	NM	NM
	06/06/18	NM	NM	NM	NM
	09/26/18	NM	NM	NM	NM
	10/28/19	NM	NM	NM	NM
	03/16/20	15.96		-66.4	0.55
	07/26/21	26.26	5.91	-83.0	0.65
	06/27/22	26.20	5.74	11.2	0.59
	11/07/22	25.72	5.69	26.3	0.36
	03/27/23	20.31	5.15	76.1	0.44
	07/13/23	26.62	5.67	-12.0	0.42
	11/22/23	20.20	5.42	-24.3	0.34
	03/27/24	**19.99**	**4.98**	**31.3**	**0.32**
MW-2	09/30/08	26.48	5.72	-184.4	4.49
	11/18/09	22.92	5.55	-165.4	0.28
	03/18/10	16.72	NA	-182.9	1.12
	07/15/10	24.00	5.26	-125.2	0.39
	03/17/16	22.11	5.53	83.3	1.44
	07/11/16	25.88	5.73	26.3	0.44
	08/20/14	23.03	4.43	266.5	0.30
	02/07/18	16.88	5.77	321.8	0.44
	06/06/18	NM	NM	NM	NM
	09/26/18	NM	NM	NM	NM
	10/28/19	NM	NM	NM	NM
	03/16/20	14.69	4.42	-51.9	0.65
	07/26/21	27.03	5.50	-61.4	0.72
	06/27/22	26.85	5.60	53.7	0.46
	11/07/22	NM	NM	NM	NM
	03/27/23	19.83	5.29	63.1	0.33
	07/13/23	27.27	5.61	12.9	0.43
MW-3	09/30/08	24.40	4.43	226.4	7.67
	11/18/09	23.09	4.40	60.1	1.77
	03/18/10	20.21	NA	37.2	2.04
	07/15/10	22.00	3.70	327.9	1.60
	04/08/11	21.63	3.74	-161.8	2.62
	10/03/12	22.25	5.11	472.1	8.02
	10/28/19	21.77	5.30	190.7	1.90
	03/16/20	19.86	3.24	213.2	1.01
	07/26/21	25.67	5.07	-4.2	2.09
	06/27/22	22.90	5.47	93.8	1.81
	11/07/22	24.20	5.12	26.2	1.19
	03/27/23	23.78	5.60	81.0	0.70

TABLE 3: Historical Field Parameter Results

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley , Chambers County, Alabama

Monitoring Well No.	DATE	Temp (^{0}C)	pH	ORP (mv)	D.O. (mg/L)
MW-4	04/07/03	21.80	8.53	NM	1.57
	07/08/03	23.50	8.92	NM	0.93
	10/01/03	23.50	7.71	NM	0.91
	09/30/08	23.82	4.50	NM	5.57
	11/18/09	23.94	4.54	86.0	0.24
	03/18/10	21.63	NA	169.7	1.17
	07/15/10	22.00	3.91	249.3	0.23
	06/05/13	23.34	4.70	222.5	0.80
	08/20/14	23.03	4.43	266.4	0.30
	01/13/15	23.58	4.54	291.3	0.39
	05/19/15	20.99	4.41	180.6	0.34
	10/06/15	24.61	4.69	223.7	0.29
	03/17/16	27.10	4.66	190.1	1.48
	07/11/16	24.71	4.81	263.1	0.68
	11/22/16	24.11	NM	-59.3	0.53
	Abandoned				
MW-5	07/08/03	24.40	8.66	NM	0.54
	10/01/03	24.00	7.71	NM	1.29
	12/01/05	23.00	4.70	NM	0.30
	03/08/06	21.00	4.87	NM	1.79
	10/07/08	23.25	4.37	NM	0.38
	11/18/09	24.33	5.38	-216.7	0.24
	03/18/10	20.21	NA	-123.6	1.17
	07/15/10	22.00	4.31	-358.6	0.22
	04/08/11	21.46	3.85	-279.8	0.52
	10/03/12	23.75	4.98	-49.2	3.25
	01/11/13	23.43	5.17	56.8	0.35
	06/05/13	22.14	5.49	-8.6	0.90
	08/20/14	22.71	5.24	-47.1	0.34
	01/13/15	23.78	5.10	95.8	1.04
	05/19/15	19.63	5.24	17.0	0.38
	10/06/15	25.13	5.51	-12.4	0.36
	03/17/16	26.10	5.33	122.2	1.07
	07/11/16	24.54	5.63	26.9	0.84
	11/22/16	24.11	NM	-59.3	0.38
	03/23/17	23.02	5.08	122.8	0.90
	07/28/17	25.10	4.50	25.1	0.32
	02/07/18	24.00	4.56	177.3	0.40
	06/06/18	23.33	4.53	-7.3	0.04
	09/26/18	25.29	4.73	46.2	0.05
	10/28/19	22.98	5.18	65.5	1.79
	03/16/20	20.09	4.19	135.6	2.98
	07/26/21	25.96	4.73	13.5	0.66
	06/27/22	25.33	4.80	73.1	0.41
	11/07/22	26.17	4.83	24.7	0.23
	03/27/23	23.28	4.48	139.8	0.75
	07/13/23	25.31	3.97	95.5	0.47
	11/22/23	23.17	4.45	66.6	0.30
	03/27/24	**22.51**	**4.40**	**224.3**	**0.67**

TABLE 3: Historical Field Parameter Results

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley , Chambers County, Alabama

Monitoring Well No.	DATE	Temp (^{0}C)	pH	ORP (mv)	D.O. (mg/L)
MW-6	07/08/03	22.80	8.75	NM	1.33
	10/01/03	22.10	7.93	NM	2.13
	12/01/05	21.00	5.80	NM	6.50
	03/08/06	21.10	5.79	NM	6.10
	09/30/08	23.55	5.83	NM	5.83
	11/18/09	22.25	5.97	-160.3	5.63
	03/18/10	18.90	NA	111.8	6.48
	07/15/10	21.26	5.21	-126.1	0.41
	04/08/11	21.00	5.45	-54.4	0.26
	10/03/12	21.73	5.68	174.4	4.28
	01/11/13	21.83	5.68	111.5	5.67
	06/05/13	21.25	6.37	69.1	5.69
	08/20/14	22.04	5.63	169.0	0.45
	01/13/15	21.08	6.04	260.4	6.02
	05/19/15	19.15	5.36	69.8	4.21
	10/06/15	21.30	5.93	150.2	2.88
	03/17/16	25.00	6.01	171.7	1.85
	07/11/16	22.26	5.77	155.6	2.90
	11/22/16	20.28	NM	-87.8	2.90
	03/23/17	21.80	5.79	137.9	4.60
	07/28/17	22.74	5.13	42.5	1.90
	02/07/18	21.79	6.01	311.3	0.75
	06/06/18	22.21	5.83	-22.1	0.06
	09/26/18	22.39	5.52	71.5	0.06
	10/28/19	19.73	5.98	100.2	1.98
	03/16/20	20.46	5.40	75.4	3.22
	07/26/21	23.39	5.79	-8.2	2.90
	06/27/22	25.70	5.65	70.7	0.50
	11/07/22	22.79	5.58	28.7	2.14
	03/27/23	21.11	5.50	87.4	3.77
MW-7	07/08/03	21.90	8.81	NM	1.01
	10/01/03	23.60	7.62	NM	1.08
	12/01/05	23.00	4.20	NM	0.20
	03/08/06	20.70	4.77	NM	2.58
	10/07/08	22.99	4.44	NM	0.55
	11/18/09	23.87	5.36	63.7	0.28
	03/18/10	20.17	NA	57.4	1.21
	07/15/10	21.66	4.76	-55.1	0.13
	04/08/11	21.10	4.27	195.7	0.39
	10/03/12	23.05	3.87	266.6	4.05
	01/11/13	23.21	4.32	292.6	0.47
	06/05/13	21.88	4.99	161.9	0.95
	08/20/14	21.88	4.67	164.3	0.42
	01/13/15	22.32	4.51	250.9	1.07
	05/19/15	18.69	4.68	130.7	0.29
	10/06/15	24.01	4.64	215.4	0.11
	03/17/16	25.42	5.59	92.3	1.08
	07/11/16	23.27	5.06	162.8	0.86
	11/22/16	21.80	NM	-72.0	0.96
	03/23/17	22.54	4.36	301.2	0.51
	07/28/17	23.64	4.60	77.0	0.07
	02/07/18	23.39	4.70	305.3	0.30
	06/06/18	22.47	5.22	-75.0	0.15
	09/26/18	23.88	4.86	69.9	0.12
	10/28/19	21.40	4.94	187.5	2.30
	03/16/20	19.72	6.01	-38.4	1.39
	07/26/21	24.08	5.73	-6.2	0.49
	06/27/22	23.28	5.06	83.3	0.18
	11/07/22	24.80	4.68	24.2	0.31
	03/27/23	22.22	5.37	39.0	0.49
	07/13/23	23.60	4.76	58.5	0.41
	11/22/23	22.40	4.19	83.1	0.24
	03/27/24	**22.59**	**5.50**	**67.1**	**0.35**

TABLE 3: Historical Field Parameter Results

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley , Chambers County, Alabama

Monitoring Well No.	DATE	Temp (^{0}C)	pH	ORP (mv)	D.O. (mg/L)
MW-8	04/07/03	17.10	8.67	NM	4.75
	07/08/03	22.20	8.82	NM	1.24
	10/01/03	22.00	7.65	NM	2.84
	12/01/05	21.90	5.27	NM	1.81
	03/08/06	19.40	5.85	NM	5.30
	10/07/08	22.69	6.29	NM	0.26
	11/18/09	23.44	6.16	34.5	0.35
	03/18/10	18.54	NA	52.5	1.71
	07/15/10	21.35	5.81	151.7	0.85
	04/08/11	20.40	3.87	282.6	2.52
	01/11/13	22.97	5.91	32.4	0.96
	06/05/13	20.87	6.63	-78.8	1.92
MW-8R	03/23/17	22.94	4.83	211.7	1.71
	07/28/17	24.51	4.35	80.0	1.61
	02/07/18	23.71	5.14	316.2	1.90
	06/06/18	22.98	5.41	-29.7	0.10
	09/26/18	24.81	5.39	89.4	0.14
	10/28/19	23.65	5.95	101.1	1.76
	03/16/20	20.20	5.46	72.1	1.37
	07/26/21	24.88	5.32	22.6	2.96
	06/27/22	24.49	5.19	97.5	2.39
	11/07/22	26.01	5.72	23.5	1.11
	03/27/23	23.17	5.35	87.5	1.73
MW-9R	03/23/17	21.25	6.03	182.6	0.62
	07/28/17	22.36	5.70	-18.7	0.24
	02/08/18	19.72	6.58	296.1	0.88
	06/06/18	20.79	6.59	-0.6	0.39
	09/26/18	22.29	5.98	54.0	0.22
	10/28/19	21.88	6.80	77.5	0.65
	03/16/20	17.81	6.82	109.1	1.70
	07/26/21	23.09	6.33	15.5	0.71
	06/27/22	21.10	5.86	104.3	0.36
	11/07/22	23.48	5.68	28.5	0.27
	03/27/23	29.69	6.38	48.3	0.67
	07/13/23	21.55	5.69	50.1	0.70
	11/22/23	19.76	5.29	53.4	0.32
	03/27/24	**21.02**	**6.22**	**108.1**	**1.66**

TABLE 3: Historical Field Parameter Results

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley , Chambers County, Alabama

Monitoring Well No.	DATE	Temp (^{0}C)	pH	ORP (mv)	D.O. (mg/L)
MW-10D	04/07/03	18.90	8.88	NM	4.45
	07/08/03	22.60	8.74	NM	1.15
	10/01/03	22.50	7.73	NM	1.22
	12/01/05	21.50	5.29	NM	0.53
	03/08/06	17.80	5.50	NM	3.22
	09/30/08	26.09	4.04	NM	11.15
	11/18/09	22.13	4.79	156.8	2.49
	03/18/10	18.85	NA	-58.1	3.74
	07/15/10	20.83	4.23	-115.6	1.50
	04/08/11	19.23	4.08	-110.8	4.18
	01/11/13	19.11	5.61	205.5	8.12
	06/05/13	20.13	4.98	267.5	7.45
	08/20/14	21.07	3.01	242.2	3.20
	01/13/15	20.79	5.38	267.9	5.41
	05/19/15	17.80	4.80	207.5	4.72
	03/17/16	23.19	5.12	506.8	2.60
	07/11/16	22.18	5.39	215.6	2.84
	03/23/17	20.77	5.20	347.7	4.11
	07/28/17	22.64	5.07	45.2	1.42
	02/08/18	19.96	5.40	316.1	0.79
	06/06/18	20.52	5.52	-12.6	0.09
	09/26/18	23.17	5.27	94.7	0.10
	10/28/19	21.69	6.60	104.1	0.95
	03/16/20	17.76	5.89	178.3	2.13
	07/26/21	22.72	4.91	133.2	2.15
	06/27/22	21.00	4.63	98.8	0.48
	11/07/22	23.61	4.77	28.4	1.14
	03/27/23	21.06	5.11	102.5	1.16
	07/13/23	22.20	4.22	78.3	0.68
	11/22/23	21.10	4.68	55.3	1.52
	03/27/24	**20.58**	**4.79**	**202.0**	**0.37**
MW-12	07/08/03	21.40	8.85	NM	0.97
	10/01/03	23.40	7.82	NM	1.22
	12/01/05	22.50	4.47	NM	0.41
	03/08/06	21.50	4.75	NM	1.23
	10/07/08	23.60	4.19	NM	0.39
	11/18/09	24.03	4.98	-220.9	0.36
	03/18/10	21.03	NA	-194.0	0.61
	07/15/10	22.21	4.22	-314.5	0.24
	04/08/11	21.98	3.80	-195.9	0.70
	10/03/12	22.54	5.36	381.7	4.13
	01/11/13	22.98	4.75	228.8	0.66
	06/05/13	22.75	4.68	200.0	1.00
	08/20/14	22.53	4.43	248.5	0.24
	01/13/15	23.18	4.72	317.2	0.21
	05/19/15	19.98	3.90	188.8	0.23
	10/06/15	23.00	4.74	202.6	0.13
	03/17/16	27.01	4.72	275.6	1.13
	07/11/16	23.35	4.55	185.2	0.87
	11/22/16	22.10	NM	-57.2	0.63
	03/23/17	22.97	4.32	254.1	1.10
	07/28/17	23.89	3.97	99.1	0.27
	02/07/18	23.41	4.45	288.7	0.37
	06/06/18	23.24	4.50	-48.4	0.05
	09/26/18	23.65	4.23	86.0	0.05
	10/28/19	21.42	4.94	95.6	1.33
	03/16/20	21.86	4.26	104.3	1.19
	07/26/21	24.70	4.87	16.0	0.54
	06/27/22	23.79	4.71	84.0	0.18
	11/07/22	24.40	4.53	24.7	0.26
	03/27/23	22.78	4.59	122.3	0.45
	07/13/23	24.51	3.90	96.8	0.49
	11/22/23	20.95	4.16	76.9	0.28
	03/27/24	**24.38**	**4.49**	**213.6**	**0.44**

TABLE 3: Historical Field Parameter Results

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley , Chambers County, Alabama

Monitoring Well No.	DATE	Temp (^{0}C)	pH	ORP (mv)	D.O. (mg/L)
MW-13	07/08/03	22.90	8.74	NM	0.58
	10/01/03	22.10	7.62	NM	2.34
	12/01/05	21.00	4.19	NM	0.61
	03/08/06	19.10	4.61	NM	2.92
	09/30/08	22.31	4.77	NM	12.06
	11/18/09	22.32	4.84	367.9	1.06
	03/18/10	19.13	NA	287.3	1.62
	07/15/10	20.23	4.40	491.2	0.29
	04/08/11	19.93	4.39	350.4	0.43
	10/03/12	22.11	4.82	535.0	2.21
	01/11/13	22.02	4.73	430.9	0.45
	06/05/13	20.41	4.74	489.6	0.37
	08/20/14	20.61	2.78	609.7	0.49
	01/13/15	20.58	4.96	492.5	1.53
	05/19/15	17.83	4.70	484.1	0.81
	10/06/15	22.48	5.08	500.1	0.32
	03/17/16	23.83	4.84	494.8	1.29
	7/11/2016	22.42	5.48	163.5	0.59
	11/22/2016	22.33	NM	-43.4	0.28
	03/23/17	21.42	5.44	369.2	0.65
	07/28/17	22.40	5.64	-22.4	0.42
	02/08/18	20.13	5.98	288.8	5.90
	06/06/18	21.63	5.81	1.5	0.28
	09/26/18	22.79	5.86	67.7	0.32
	10/28/19	21.55	6.81	55.8	0.66
	03/16/20	18.61	4.43	171.8	1.53
	07/26/21	23.25	5.20	29.5	0.55
	06/27/22	21.29	5.43	99.8	0.52
	11/07/22	23.47	5.77	28.3	0.32
	03/27/23	21.83	5.23	122.4	0.50
	07/13/23	22.80	4.96	56.8	0.45
	11/22/23	21.30	5.49	46.8	0.33
	03/27/24	**21.17**	**5.11**	**204.8**	**0.48**
MW-14	08/21/14	23.28	4.48	195.2	5.65
	01/13/15	23.37	5.03	246.5	5.16
	05/19/15	21.24	4.25	173.6	2.75
	10/06/15	24.70	5.11	293.1	2.70
	03/17/16	27.19	5.52	155.4	1.32
	07/11/16	24.98	5.14	140.9	4.47
	11/22/16	24.77	NM	-130.9	1.69
	03/23/17	23.98	4.81	111.8	0.90
	07/28/17	25.22	4.24	133.6	1.25
	02/08/18	22.80	5.30	110.9	0.31
	06/06/18	24.13	4.79	10.9	0.03
	09/26/18	24.99	4.45	45.3	0.03
	10/28/19	24.20	5.08	58.2	0.58
	03/16/20	21.80	4.99	50.2	0.41
	07/26/21	25.22	5.40	27.0	2.95
	06/27/22	23.71	5.19	88.0	0.44
	11/07/22	25.56	5.00	27.5	0.29
	03/27/23	24.46	5.19	80.8	0.33
	07/13/23	24.30	4.83	62.3	0.64
	11/22/23	22.08	4.52	58.2	0.28
	03/27/24	**24.30**	**5.06**	**78.6**	**0.30**

TABLE 3: Historical Field Parameter Results

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley , Chambers County, Alabama

Monitoring Well No.	DATE	Temp (^{0}C)	pH	ORP (mv)	D.O. (mg/L)
MW-15	08/21/14	22.11	5.41	79.4	2.84
	01/13/15	22.22	5.91	14.8	0.91
	05/19/15	19.17	5.78	-17.9	0.74
	10/06/15	23.50	6.09	-42.1	0.08
	03/17/16	25.38	5.77	56.0	1.22
	07/11/16	23.53	6.01	-26.6	2.01
	11/22/16	23.84	NM	-138.9	0.31
	03/23/17	22.93	5.79	-9.9	1.33
	07/28/17	24.70	5.61	-31.7	0.24
	02/08/18	20.41	6.01	27.6	0.33
	06/06/18	22.87	6.00	-92.8	0.11
	09/26/18	23.98	6.07	-46.8	0.13
	10/28/19	23.34	6.59	-43.3	0.57
	03/16/20	20.32	4.18	119.6	1.01
	07/26/21	24.12	5.73	-72.7	0.51
	06/27/22	23.22	5.79	-8.1	0.35
	11/07/22	25.11	5.93	21.9	0.25
	03/27/23	23.10	5.93	-68.7	0.28
	07/13/23	23.39	5.86	-10.4	0.36
	11/22/23	21.63	5.88	-22.1	0.26
	03/27/24	**23.30**	**5.78**	**-89.9**	**0.30**
MW-16	03/23/17	22.23	5.17	223.4	3.02
	07/28/17	22.46	5.01	0.1	1.94
	02/08/18	20.19	4.87	262.4	0.75
	06/06/18	21.70	4.72	62.7	0.04
	09/26/18	22.91	4.56	55.7	0.05
	10/28/19	20.92	5.00	141.2	2.30
	03/16/20	20.27	4.33	179.4	2.19
	07/26/21	22.20	5.16	5.0	2.44
	06/27/22	21.88	4.75	86.4	3.90
	11/07/22	22.90	5.19	29.3	2.90
	03/27/23	22.52	4.92	138.9	0.75
MW-17	03/23/17	23.27	5.78	117.9	1.87
	07/28/17	23.52	5.00	47.7	2.51
	02/08/18	21.98	4.78	228.4	0.66
	06/06/18	23.03	4.80	36.4	0.04
	09/26/18	23.60	4.65	73.3	0.05
	10/28/19	21.86	5.01	139.1	1.64
	03/16/20	20.86	6.08	144.6	1.99
	07/26/21	24.16	5.23	9.9	3.11
	06/27/22	22.71	4.70	91.7	2.81
	11/07/22	24.18	4.65	27.6	1.98
	03/27/23	23.54	4.65	150.7	0.64
MW-18	03/23/17	23.63	6.03	-81.8	0.72
	07/28/17	24.11	5.39	-49.3	0.18
	02/08/17	22.30	6.15	-2.7	0.15
	06/06/18	23.71	6.00	-87.1	0.09
	09/26/18	24.42	5.83	-13.5	0.09
	10/28/19	22.55	6.09	102.5	0.61
	03/16/20	21.29	5.35	107.4	1.34
	07/26/21	25.17	5.09	15.2	2.74
	06/27/22	23.32	5.14	72.0	4.41
	11/07/22	23.89	5.06	29.4	3.03
	03/27/23	23.66	4.88	131.1	0.98

TABLE 3: Historical Field Parameter Results

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley , Chambers County, Alabama

Monitoring Well No.	DATE	Temp (^{0}C)	pH	ORP (mv)	D.O. (mg/L)
RW-1	04/08/11	22.87	4.75	128.4	0.52
	10/03/12	23.42	4.37	104.8	4.41
	01/11/13	23.98	5.06	214.9	0.95
	06/05/13	23.01	5.11	167.3	0.46
	08/20/14	22.95	5.09	213.7	0.32
	01/13/15	23.86	5.23	328.1	1.19
	05/19/15	20.44	4.93	240.4	0.34
	10/06/15	24.21	5.23	286.9	0.19
	03/17/16	26.73	5.19	195.0	1.24
	07/11/16	24.24	5.28	231.6	0.58
	11/22/16	24.46	NM	-144.5	0.44
	03/23/17	24.21	5.20	151.1	1.44
	07/28/17	24.92	4.89	13.3	0.30
	02/07/18	23.99	5.76	86.7	0.18
	06/06/18	24.28	5.90	-59.9	0.13
	09/26/18	24.53	5.70	5.2	0.14
	10/28/19	22.96	6.95	15.8	0.67
	03/16/20	21.41	5.95	4.3	0.36
	07/26/21	24.92	5.30	11.3	0.49
	06/28/22	24.39	5.09	85.7	0.54
	11/08/22	24.86	5.53	26.6	0.40
	03/29/23	23.10	5.59	27.2	0.18
	07/13/23	24.96	5.12	49.2	0.45
	11/22/23	22.38	5.42	-0.8	0.30
	03/27/24	**24.14**	**5.53**	**-17.2**	**0.37**
RW-2	04/08/11	22.16	3.93	52.1	0.97
	10/03/12	23.52	4.53	273.0	3.32
	01/11/13	23.32	4.76	238.9	1.06
	06/05/13	22.05	4.62	239.5	0.47
	08/20/14	22.87	4.61	145.9	0.33
	01/13/15	23.02	5.21	205.7	0.71
	05/19/15	19.12	4.86	214.3	0.21
	10/06/15	24.21	5.29	180.9	0.09
	03/17/16	25.70	5.08	164.2	1.20
	07/11/16	23.98	5.18	216.8	0.96
	11/22/16	24.20	NM	-136.5	0.38
	03/23/17	23.69	5.13	129.9	0.92
	07/28/17	23.96	5.11	39.3	0.32
	02/08/18	22.21	5.53	115.3	0.17
	06/06/18	23.76	5.43	-11.1	0.14
	09/26/18	24.26	5.31	61.2	0.17
	10/28/19	22.93	5.91	103.1	2.26
	03/16/20	20.13	5.27	89.8	0.41
	07/26/21	24.81	5.26	21.0	0.57
	06/28/22	24.74	5.12	92.3	0.51
	11/07/22	24.70	5.42	29.7	0.53
	03/29/23	20.77	5.35	40.4	0.30
	07/13/23	24.30	5.20	41.4	0.41
	11/22/23	22.33	5.04	50.3	0.36
	03/27/24	**23.80**	**5.17**	**57.2**	**0.35**

TABLE 3: Historical Field Parameter Results

Circle K Site No. 2706697 (Former Spectrum 40)
588 Fob James Drive
Valley , Chambers County, Alabama

Monitoring Well No.	DATE	Temp (^{0}C)	pH	ORP (mv)	D.O. (mg/L)
RW-3	03/23/17	24.13	8.53	-107.8	NM
	07/27/17	25.06	6.18	-98.2	0.21
	02/08/18	22.67	6.61	-55.4	0.18
	06/06/18	24.47	6.41	-39.5	0.35
	09/26/18	24.42	6.41	-26.8	0.36
	10/28/19	23.09	6.15	21.8	0.62
	03/16/20	21.65	6.52	20.3	2.60
	07/26/21	24.49	5.49	28.4	0.51
	06/28/22	24.13	5.10	101.8	0.38
	11/08/22	24.41	5.73	28.6	0.56
	03/29/23	22.38	5.70	37.4	0.31
	07/13/23	24.47	5.57	32.9	0.58
	11/22/23	21.00	5.35	50.4	0.35
	03/27/24	**24.42**	**5.38**	**81.2**	**0.35**

Notes:

pH = potential hydrogen
^{0}C = degrees Celsius
DO = dissolved oxygen
ORP = oxidation-reduction potential
mg/l = milligrams per liter
mV = millivolts
NM = not measured

APPENDIX A

Site Chronology

APPENDIX A

ENVIRONMENTAL CHRONOLOGICAL HISTORY

Circle K No. 2706697
588 FOB James Drive
Valley, Chambers County, Alabama
Facility ID No. 14543-017-013879
UST Incident No. UST91-04-08

EVENT	DATE
A diesel UST overfilled during refueling. A petroleum release was reported to ADEM. As part of the emergency response by Harmon Engineering Associates, Inc., petroleum impacted soil within the UST pit was removed.	July 1989
Monitoring wells MW-1 and MW-2 were installed in the UST pit to monitor and recover free product.	July 1989
Monitoring wells MW-1 to MW-11 were installed as part of the site investigation assessment	July 1990
A total of seven groundwater sampling events were conducted by Benchmark/Williams Engineering, Inc.	February 1997 through April 2003
Additional assessment was conducted by Gulf Atlantic Drilling. Soil borings were installed around the UST pit and adjacent to the gasoline dispenser islands. During the March 2000 assessment, free product was detected in MW-4 at a thickness of 0.76 feet.	March 2000
MEME event conducted on MW-4	August 24, 2000
MEME event conducted on MW-4	September 8, 2000
A diesel product line failed a line tightness test	December 5, 2000
An ARBCA Tier 1 and 2 Reports submitted to ADEM	January 2001
MEME event conducted on MW-4.	March 8, 2001
PPM Consultants, Inc. conducted a soil assessment to investigate the possible diesel release	March 22, 2001
GMRs submitted to ADEM	June 2001 to November 2001
An ARBCA Tier 1 and 2 Addendum Report #1 submitted to ADEM	November 2001
An ARBCA Tier 1 and 2 Addendum Report #2 submitted to ADEM. SSCALs were calculated	December 2002
ADEM approved CP-28 and CP-29 associated with additional soil delineation and groundwater monitoring	August 6, 2003
Twelve soil borings were advanced near the UST pit and adjacent to the gasoline and diesel dispenser islands.	September 2003
8-hour DPE pilot test conducted on MW-12	April 12, 2004
Aquifer test was performed by PPM using MW-6 as pumping well	May 6, 2004
CAP was submitted to ADEM. PPM recommended RNA	March 2005
ADEM approved CAP	August 30, 2005
1st CA-RNA Monitoring Report (CP-32) submitted to ADEM	December 2005
2nd CA-RNA Monitoring Report (CP-33) submitted to ADEM	March 2006
ADEM requested the CAP to be modified and address the free product conditions at site.	August 4, 2006
ADEM authorized emergency funding for free product removal	August 6, 2006
8-hour MEME event was conducted (CP-36)	September 29, 2006
24-hour MEME event was conducted (CP-36)	October 16, 2006
FPRR (CP-36) submitted to ADEM	November 8, 2006

EVENT	DATE
ADEM approved the implementation of the free product removal plan under CP-40 and CP-41	April 11, 2007
FPRR was submitted to ADEM	August 21, 2007
CP-42 associated with manual free product bailing was submitted to ADEM	March 14, 2008
ADEM approved CP-42	July 29, 2008
CP-43, CP-44 and CP45 were submitted to ADEM	April 17, 2009
ADEM approved CP-43, CP-44 and CP-45 associated with tri-annual sampling and reporting	August 14, 2009
GMR (CP-43) submitted to ADEM	December 2009
GMR (CP-43) submitted to ADEM	April 2010
GMR (CP-43) submitted to ADEM	August 2010
CP-46 submitted to ADEM	September 10, 2010
ADEM approved conducting a 24-hour MEME event, well installation and sampling for CP-46	January 18, 2011
Recovery wells RW-1 and RW-2 installed under CP-46	February 15, 2011
24-hour MEME event was conducted on MW-4, RW-1 and RW-2	May 11, 2011
GMR (CP-46) submitted to ADEM	May 2011
ADEM approved CP-50, CP-51 and CP-52 associated with conducting two 24-hour MEME and groundwater sampling events	July 27, 2012
24-hour MEME event was conducted on MW-4, MW-7, RW-1 and RW-2	September 11, 2012
GMR (CP-50) was submitted to ADEM	October 2012
24-hour MEME event was conducted on MW-4, MW-7, RW-1 and RW-2	December 12, 2012
GMR (CP-51) was submitted to ADEM	February 2013
GMR (CP-52) was submitted to ADEM	June 2013
CP-53 submitted to ADEM associated with the installation of offsite monitoring wells MW-14 and MW-15	June 4, 2013
ADEM approved CP-53	June 21, 2013
24-hour MEME event was conducted on MW-4, MW-7, RW-1 and RW-2	August 26, 2013
CP-55, CP-56 and CP-57 submitted to ADEM	September 19, 2013
MEME report (CP-54) was submitted to ADE	September 27, 2013
ADEM approved CP-55, CP-56 and CP-57 associated with groundwater sampling and reporting	June 6, 2014
Circle K and Waffle House access agreement executed	July 30, 2014
Monitoring wells MW-14 and MW-15 were installed	August 20, 2014
GMR (CP-55) submitted to ADEM	November 21, 2014
GMR (CP-56) submitted to ADEM	February 2015
Response Action Contractor responsibilities transferred from S&ME to ECS.	February 28, 2015
Submittal of cost proposal to cancel CP-57 and conduct a groundwater monitoring event (CP-58).	February 27, 2015
Groundwater Monitoring Report (CP-58) submitted to ADEM	June 25, 2015
Submittal of cost proposals to conduct groundwater monitoring events and six 8-hour MEME events (CP-59, CP-60 and CP-61) to ADEM.	June 29, 2015
Groundwater Monitoring Report (CP-59) submitted to ADEM	December 30, 2015

EVENT	DATE
MEME Notification Letter	April 12, 2016
Groundwater Monitoring Report (CP-60) submitted to ADEM	April 20, 2016
Submittal of a cost proposal to conduct monitoring well installation/abandonment (CP-62) to ADEM	April 25, 2016
Performance of 8 Hour MEME Event	May 6, 2016
Performance of 8 Hour MEME Event	May 18, 2016
Performance of 8 Hour MEME Event	June 1, 2016
Performance of 8 Hour MEME Event	June 14, 2016
Performance of 8 Hour MEME Event	July 1, 2016
Performance of 8 Hour MEME Event	July 14, 2016
Submittal of cost proposals to conduct groundwater monitoring events (CP-63, CP-64 and CP-65) to ADEM	July 29, 2016
Submittal of MEME and Groundwater Monitoring Report (CP-61) submitted to ADEM	August 26, 2016
Offsite access with Waffle House and King Chevrolet approved	September – November 2016
Replacement monitoring wells MW-8R and MW-9R; monitoring wells MW-16, MW-17 & MW-18; and abandonment of MW-4 by overdrilling and installing recovery well RW-3.	November 29 – December 1, 2016
Monitoring Well Installation/Abandonment Report (CP-62) submitted to ADEM	December 27, 2016
Groundwater Monitoring Report (CP-63) submitted to ADEM	December 28, 2016
Groundwater Monitoring Report (CP-64) submitted to ADEM	June 8, 2017
Groundwater Monitoring Report (CP-65) submitted to ADEM	August 17, 2017
Submittal of cost proposals to conduct groundwater monitoring events (CP-66, CP-67 & CP-68) and CAP Modification (AS/SVE) Development (CP-69) submitted to ADEM	August 31, 2017
Groundwater Monitoring Report (CP-66) submitted to ADEM	March 29, 2018
Corrective Action Plan Addendum (CP-69)	June 5, 2018
Groundwater Monitoring Report (CP-67)	August 21, 2018
Groundwater Monitoring Report (CP-68)	December 3, 2018
Revised Corrective Action Plan Addendum (CP-69)	December 3, 2018
Corrective Action Plan Response to Comments	March 28, 2019
Groundwater Monitoring Report (CP-70)	January 9, 2020
Groundwater Monitoring Report (CP-71)	May 14, 2020
Groundwater Monitoring Report (CP-75)	August 10, 2021
Remedial Alternatives Evaluation Report (CP-76)	August 1, 2022
Groundwater Monitoring Report (CP-77)	September 2, 2022
Groundwater Monitoring Report (CP-78)	January 9, 2023
Corrective Action Evaluation Report Response Letter (CP-78)	March 31, 2023
Groundwater Monitoring Report (CP-79)	April 28, 2023
Groundwater Monitoring Report (CP-80)	September 21, 2023
Groundwater Monitoring Report (CP-81)	January 24, 2024
ADEM correspondence – Authorization of CAP Development (CP-83)	March 5, 2024
Groundwater Monitoring Report (CP-82)	May 5, 2024

APPENDIX B

Site Specific Health and Safety Plan

HEALTH AND SAFETY PLAN

Prepared By:
Atlas Technical Consultants, LLC
30181 State Highway 59, Ste. 1A
Loxley, Alabama 36551

Prepared For:
Circle K Stores, Inc.
Circle K No. 2706697
588 Fob James Drive,
Valley, Chambers County, Alabama
ATLAS Project No. Z021000649

ATLAS
HEALTH AND SAFETY PLAN (HASP)
REVIEW AND APPROVAL

CLIENT: Circle K Stores, Inc. PROJECT NUMBER: Z021000649

SITE NAME: Circle K Store No. 2706697 SITE LOCATION: Valley, Alabama

PROJECT DESCRIPTION: Work associated with soil and ground water sampling, well gauging, free product recovery, and remediation activities.

PREPARED BY: Paul M. Naman TITLE: Project Manager DATE: June 21, 2024

Paul M. Naman

Project Manger	Signature	Date

Reviewer's Name	Signature	Date

This Health and Safety Plan (Plan) has been written for the use of ATLAS and its employees. It may also be used as a guidance document by properly trained and experienced ATLAS subcontractors. However, ATLAS does not guarantee the health or safety of any person entering this Site.

Due to the potential hazardous nature of this Site and the activity occurring thereon, it is not possible to discover, evaluate, and provide protection for all possible hazards which may be encountered. Strict adherence to the health and safety guidelines set forth herein will reduce, but not eliminate, the potential for injury at this Site. The health and safety guidelines in this Plan were prepared specifically for this Site and should not be used on any other Site without prior research by trained health and safety specialists.

ATLAS claims no responsibility for use of this Plan by others. The Plan is written for the specific Site conditions, purposes, dates, and personnel specified and must be amended if these conditions change.

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TABLE OF CONTENTS

EMERGENCY INFORMATION

Site Emergencies Call:

Ambulance	**911**
Fire:	**911**
Police:	**911**
Nationwide Call Before You Dig	**811**
CORE Health (24 hour First-Aid)	**(855) 282-6331**
Poison Control Center:	**(800) 222-1222**
National Response Center:	**(800) 424-8802**

Spills:	**Local USEPA Office**	**(800) 241-1754**
	State Health Department	**(800) 252-1818**
	State Environmental Agency	**(334) 271-7700**

Hospital

Fresenius Medical Care at Lanier Memorial Hospital
4800 48th Street
Valley, AL 36854
(334) 756-9180
See map for directions. **Approximate travel time is four minutes.**

EMERGENCY ASSEMBLY LOCATION: Dependent on specific work area, go to designated reporting area.

FIRST-AID MEASURES

In the event that personnel exhibit symptoms of exposure call **CORE Health ((855) 282-6331)** immediately in first-aid assessment process. The following procedures will be used:

Eye Contact: Flush eye immediately with copious amount of water for a minimum of 15 minutes. Repeat until irritation is eliminated and seek medical attention.

Skin Contact: Wash exposed area with soap and water for at least 15 minutes. If dermatitis or severe reddening occurs, seek medical attention.

Inhalation: Move the person into fresh air. If symptoms persist, seek medical attention.
Ingestion: Do not induce vomiting. Seek immediate medical attention.

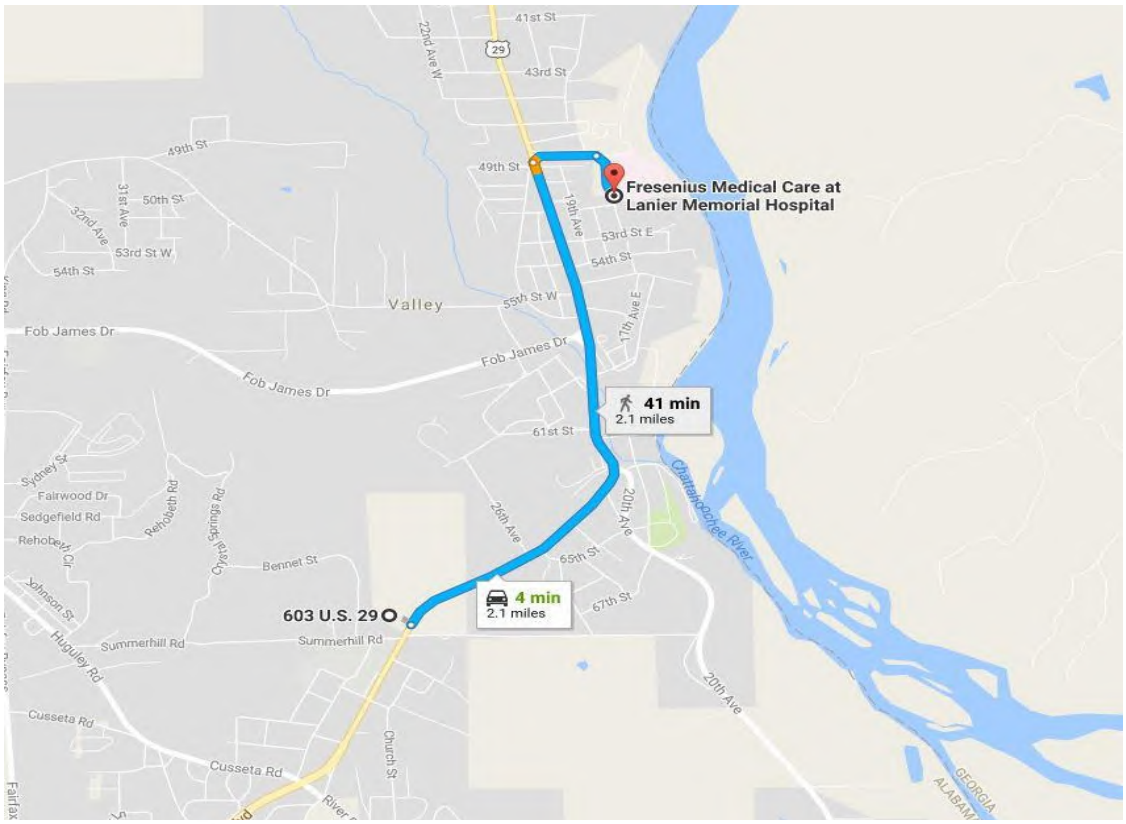
Important Numbers:

Project Manager: ……..	Paul Naman	(251) 490-0308
Site Safety and Health Officer: ……	ATLAS Representative	
Site Supervisor: ……...	Paul Naman	(251) 490-0308
Client Contact: ……	Scott Janashak	(850) 549-2879
State Utility Locate Service: ……...	Alabama 811	(800) 292-8525

NOTE: For additional emergencies/important contacts, refer to your ATLAS Lifelines Card.

EMERGENCY MEDICAL ROUTE TO HOSPITAL

603 Highway 29 to Fresenius Medical Care at Lanier Memorial Hospital



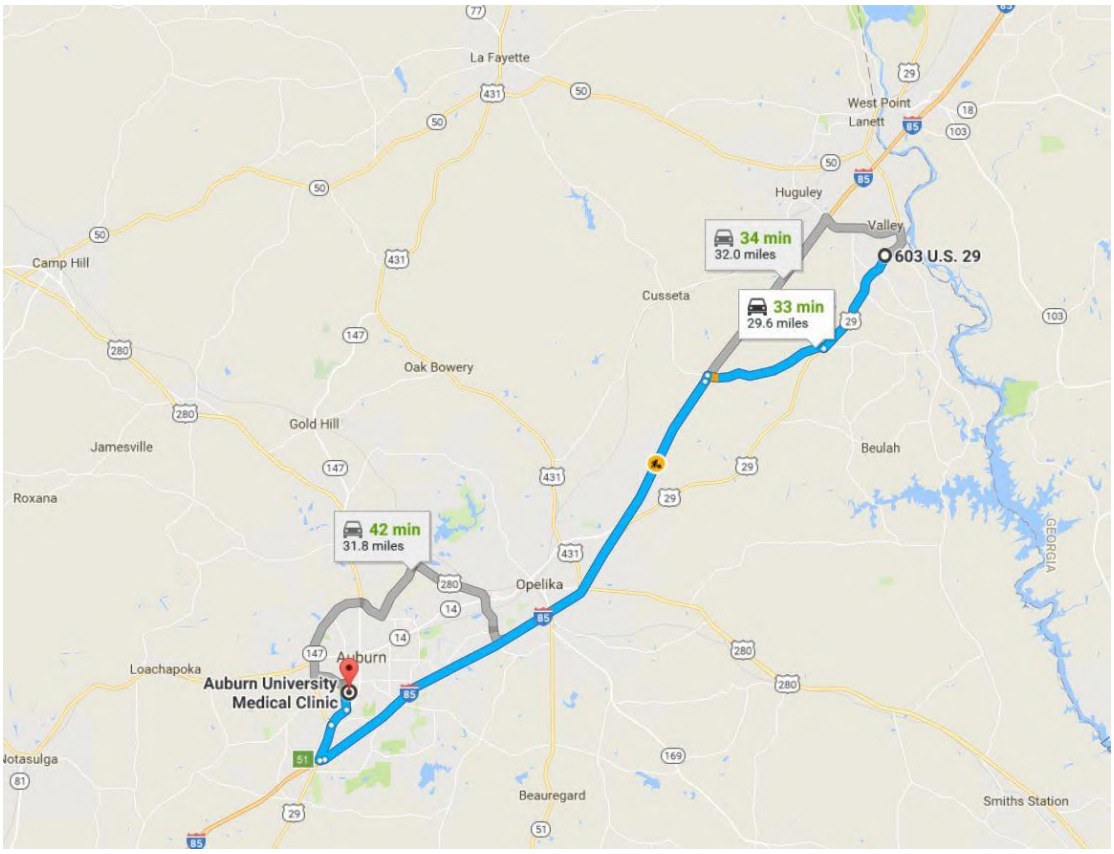
603 US-29
Valley, AL 36854

- Head northeast on US-29 N toward 26th Ave
  1.8 mi
- Turn right onto 48th St
  0.2 mi
- Slight right to stay on 48th St
  0.2 mi

4800 48th St
Valley, AL 36854

NON-EMERGENCY MEDICAL ROUTE TO CLINIC

603 Highway 29 to Auburn University Medical Clinic



603 US-29
Valley, AL 36854

> Get on I-85 S in Lee County
12 min (8.3 mi)

> Follow I-85 S to AL-147 N/AL-15 N/S College St. Take exit 51 from I-85 S
16 min (18.6 mi)

> Continue on S College St. Drive to Lem Morrison Dr in Auburn
7 min (2.7 mi)

Auburn University Medical Clinic
Medical Clinic, 400 Lem Morrison Dr, Auburn, AL 36849

1.0 - INTRODUCTION

1.1 Scope and Applicability of the Site Health and Safety Plan

This Health and Safety Plan (HASP) has been prepared by ATLAS for the activities associated with the sampling, identification, and possible removal of hazardous materials at the Former Spectrum #11 (Circle K Store No. 2706680) in Valley, Chambers County, Alabama (Site).

The health and safety protocols established in this Plan are based on the ATLAS Employee Health and Safety Policy Manual, the Occupational Safety and Health Administration (OSHA) Regulations, past field experiences, specific Site conditions, and chemical hazards known or anticipated to be present from available Site data. The following Site Health and Safety Plan (HASP) is intended solely for use during the proposed activities described in the project documents and technical specifications. Specifications herein are subject to review and revision based on actual conditions encountered in the field during Site characterization activities. Such changes may be instituted by using the HASP List of Approved Amendments and/or Changes (see **Appendix C**).

Before Site operations begin, all employees, including subcontractors for ATLAS covered by this plan, involved in these operations will have read and understood this HASP and all revisions. All Site personnel have the authority to "Stop Work" if unsafe conditions are present or discovered during Site activities. Before work begins, all affected workers will sign the Heath and Safety Plan Acknowledgment Form (see **Appendix C**). By signing this form, all individuals recognize the requirements of the HASP, known or suspected hazards, and will adhere to the protocols required for the project Site.

1.2 Historical Overview

The Former Spectrum #11 (Circle K Store No. 2706680) is currently operated as a retail fuel station at 603 Highway 29, Valley, Alabama. Currently there are three underground storage tanks, two for gasoline and one for kersone. An initial petroleum release was reported at the site in 2002 based on hydrocarbons detected in collected soil samples.

1.3 Visitors

All visitors to the Site must be instructed about the hazards of the activities that ATLAS or its subcontractors are performing. All visitors must sign the ATLAS Visitors Log (see **Appendix C**).

1.4 Subcontractor Activities

All subcontractors used at the Site have been Pre-Approved in the ATLAS Subcontractor Prequalification System.

2.0 - PROJECT ORGANIZATION

All personnel and visitors who may enter work areas on this Site must comply with the requirements of this HASP. All Site personnel have the authority to "Stop Work" if unsafe conditions are present. The specific responsibilities and authority of management, safety and health, and other personnel on this Site are detailed in the following sections.

2.1 Site Safety and Health Officer (SSHO)

The Site Safety and Health Officer (SSHO) has the responsibility and authority to develop and implement this HASP and to verify compliance. The SSHO reports to the Project Manager. The SSHO is on-site during all work operations and has the responsibility to halt Site work if unsafe conditions are detected. The responsibilities of the SSHO at the Site include the following:

- Managing the health and safety functions on the Site;
- Ensuring Site monitoring, worker training, and effective selection and use of PPE;
- Conducting daily Tailgate Safety Meetings for Site personnel and subcontractors and summarize the training on the Tailgate Meeting Form (see **Appendix C**). The following topics should be covered during safety meetings:
  - Hazard Communication (i.e., MSDS location, and container labeling, chemical hazards of non-routine tasks)
  - Determine applicability of Standard Operating Procedures (SOP) in Section 8 and communicate procedures
  - Review Site safety requirements
  - Give refresher training on heat or cold stress (Section 5.2 and 5.3) when appropriate
  - Review Site emergency procedures
  - Discuss location and use of a rig kill switch for drilling/boring operations
- Conducting daily safety inspections of the Site looking for unsafe acts or conditions and providing corrective action as appropriate.

2.2 Site Supervisor

The Site Supervisor is responsible for field operations and reports to the Project Manager. The Site Supervisor is the On-site Coordinator and overseer of operations. It is the Site Supervisor's duty to maintain Site security, supervise the personnel on the Site, coordinate the activities of the subcontractor personnel, and check that the HASP is followed and modified when necessary. The Site Supervisor's specific responsibilities include:

- Executing the work plan and schedule as detailed by the Project Manager
- Coordination with the SSHO on health and safety issues
- Ensuring Site work compliance with the requirements of the HASP
- Before Site activities, contact the hospital emergency room, local fire department, and local police department, as applicable. If outside town, contact county officials and local emergency services.

2.3 Project Manager (PM)

The Project Manager (PM) has the primary responsibility for the fulfillment of the terms of the contract and overseeing operations for the purpose that includes meeting legal and safety requirements. It is the PM's responsibility to keep the project on schedule, within budget, and communicate with the Client regarding the progress toward specified goals.

The PM will inform the Regional Safety Coordinator of all HASP modifications, violations, injuries, exposures, and near-miss situations. The PM responsibilities include:

- Provide personnel time to read and understand the Site Health and Safety Plan (HASP) before fieldwork.
- Conduct project start-up health and safety briefing for: Field personnel, the Site Supervisor, the project team.
- Check that each subcontractor is pre-approved and that each subcontractor's Site workers have appropriate HAZWOPER Training Certificates.
- Check that Site personnel, if required, have received Respiratory Protection Training, Fit testing, and physician's approval to wear a respirator.
- That hazards identified during any Site audits are corrected. If necessary for immediate hazards, shut down field operations if hazards can not be corrected or the hazards present an immediate threat to life and health.

2.4 Regional Safety Coordinator (RSC)

The Regional Safety Coordinator (RSC) is responsible for providing professional health and safety advice and oversight management to the project. The RSC will review and provide support for concerns regarding the health and safety of field personnel assigned to this project, including:

- If requested by the Project Manager, approval of Routine HASP;
- Approval of all Non-Routine HASP;
- Review of incident reports, inspections, and air monitoring results;
- When required, the RSC will conduct a field audit of the Site to evaluate the adequacy of the program and implement the necessary changes through the HASP.

2.5 Project Field Team

The Project Team includes technicians, engineers, scientists, geologists, and possibly subcontractors who perform field activities. Each individual team member will be responsible for understanding and personally complying with the HASP and Site health and safety requirements. Project Team members will report health and safety violations to either the Site Supervisor or the SSHO. Health and safety responsibilities, as discussed in this Plan, which are shared by all Site personnel include:

- Complying with the requirements of the HASP
- Reporting unsafe acts or conditions
- Retain copies at the Site of the following health and safety records:
  - Current HAZWOPER Training Certificate.
  - Respiratory Protection Training Certificate and current fit test record for potential respirator users.
  - Physician's approval for hazardous-waste fieldwork and/or respirator use.
  - First-aid/CPR and bloodborne pathogens training certificate.

3.0 – TASK/OPERATION HEALTH AND SAFETY RISK ANALYSIS SUMMARY

This chapter of the HASP describes the safety and health hazards associated with the Site work and control measures selected to protect workers. The purpose of the Job Safety Analysis (JSA) is to identify the routine safety and health hazards associated with the routine Site tasks and operations. Using this information, appropriate control methods are selected to eliminate the identified risks or effectively control them.

3.1 Job Safety Analysis (JSA)

Each specific JSA appears on a separate copy of the spreadsheets in **Appendix A**. A single JSA may be used for a task/operation performed in multiple locations if the hazards, potential exposures, and controls are the same at each location.

3.2 Health Analysis and Chemical Risk Assessment

Chemicals may be purchased and transported to the Site to support Site characterization and remediation operations. The principal chemical contaminants at the Site are expected to be gasoline (unleaded) and diesel fuel. Appendix B contains information from the National Institute for Occupational Safety and Health (NIOSH) Pocket Guide to Chemical Hazards about each of these chemicals. Additionally, the Hazard Communication Program (Policy No. 21) requires ATLAS to provide employees, contractors, subcontractors, and visitors with information on the health effects of these chemicals and necessary actions to protect against exposure. This information is transmitted through Material Safety Data Sheets (MSDS), the NIOSH Pocket Guide, container labels, training, and a written Hazard Communication program.

Site activities will adhere to the ATLAS Hazard Communication Program as described in the Policy. All Site personnel, including subcontractors, will be briefed on this Program as part of the Site orientation training before starting work. In accordance with this Program, the PM and Site Supervisor will check that each chemical brought to the Site is accompanied by its MSDS. A copy of each MSDS will be made available to each Site employee who may be potentially exposed to the chemical. In addition, the Site Supervisor will check that all subcontractors bring at least one copy of MSDS for each chemical they bring onto the Site. The Site Supervisor will also check that all chemical containers brought to the Site to determine if they are labeled as to its contents and appropriate hazard warnings.

3.3 Risks Associated With Drilling and Subsurface Activities

Drilling operations will conform to the Job Safety Analysis and Subsurface Investigation (ATLAS Policy No. 33). During drilling operations, the subsurface is penetrated to obtain soil and/or groundwater samples. Contaminated soil cuttings and groundwater may be brought to the surface, creating a potential for exposure through skin contact and inhalation of vapors. The open borehole also creates a conduit for vapors to be released to the atmosphere. However, the amount of vapors released to the atmosphere is relatively small and vapors are usually quickly diluted and dispersed in air. Air monitoring is required to determine if protective equipment is necessary, as described in Section 4.0 of this HASP.

In addition to these chemical risks, the risk of drilling into a buried utility, such as a gas, water, electric line, or underground storage tank or other structures, is always present. Complete the Checklist for Subsurface Clearance prior to any subsurface work (see **Appendix C**) and follow the procedures in Table 3-1 for at least the first 5 feet of penetration:

TABLE 3-1
DRILLING/PROBING PROCEDURES
(First 5 feet below surface)

Step 1 - Site Walk	Conduct Site walk. Verify that the Checklist for Subsurface Clearance has been fully completed.
Step 2 - Locate Markouts	Locate all utility markouts and borehole locations. Start intrusive activities at least five (5) feet away and perpendicular to all marked utility lines.
Step 3 - Break Surface Cover	Use a jackhammer or concrete saw to break through the asphalt or concrete surface cover. The drill bit on the rig may also be used on the asphalt cover. Do **NOT** advance bit or cutting tools beyond the asphalt or concrete cover.
Step 4 - Surface Boring	Use air knife with vacuum extractors, hand auger, or hand shovel to remove soil from the borehole to a depth of at least 5 feet below surface. The soil in the borehole should be excavated to a diameter of at least three inches greater than the diameter of the drill bit on the lead auger or drill stem that is to be used. If it is not possible to perform a surface boring which meets the diameter requirements as stated above, surface borings should be installed to the required depth of 5 feet surrounding the proposed well/boring location in such a manner that any lines/utilities passing through the proposed well/boring location will be encountered while installing the investigation borings/well. If pea gravel, fill material, or refusal is encountered, and was not expected to be encountered, abandon the boring and follow instructions from item #9 of section 5.4.1.
Step 5 - Soil Sampling	If soil samples are required to be collected within the first 5 feet below surface, a hand auger should be utilized to collect native, undisturbed soil samples.
Step 6 - Borehole Protection	If no piping or other structures are encountered within the first 5 feet below surface, normal drill/probe activities may proceed with caution. Containerize drill cuttings as appropriate. If excavation of the borehole is conducted the day before actual drilling is conducted, the borehole should be covered with barricades or cones and with a sheet of material sufficient in strength to support a person's weight until it is ready to be drilled. If the borehole is of sufficient size to potentially cause damage to a vehicle if driven over, the borehole should be covered with a material sufficient in strength to support vehicular weight. In lieu of barricades or cones and a material cover, the boring may be temporarily backfilled to surface. If a backfill material is utilized, it is important for the material to be flush with the surrounding pavement.

Risks of injury associated with the drilling operation itself also exist. The risks of working near overhead electrical lines may also present a safety hazard. The SSHO will check for the presence of overhead lines and other obstructions. No drilling operations will be performed within 10 feet of overhead lines with voltages 0-50 kV. For other voltages refer to ATLAS Electrical Safety Policy (No. 12) and Equipment (Drill Rigs, Mobile Equipment) Policy (No. 15).

Table 3-2
Minimum Distance from Electrical Lines

Voltage	Required Distance
0-50 KV	10 Feet
50-200 KV	15 Feet
200-350 KV	20 Feet
350-500 KV	25 Feet
500-750 KV	35 Feet
750-1000 KV	45 Feet

Whenever possible, stay at least two feet from turning or rotating machinery. This includes augers, cathead, engine power takeoff, and drill rods. Learn where the rig kill switch is to shut the rig off in case of an emergency. A discussion should be held with the driller on each drill rig at the startup of the field work to discuss the location and use of the kill switch and for documentation of a Safety Inspection such as the Monthly Heavy Equipment Safety Inspection Checklist found in **Appendix C**.

3.4 Noise Hazards and Controls

Exposure to high levels of noise may occur when working near drill rigs or other heavy equipment. Also, depending upon where the work is being performed, local equipment (e.g., airports, factory machines, etc.) may produce high levels of noise. Employees exposed to noise levels in excess of the action level of 85 decibels (A-weighted, Slow Response) will be included into the ATLAS Policy on Hearing Conservation (Policy No. 34). The SSHO may evaluate employee noise exposures using a Noise Survey Meter or a Noise Dosimeter. The RSC may conduct additional noise monitoring to determine the appropriate response to be taken. Employees will be provided with ear plugs and/or earmuffs when exposed to noise levels in excess of the 8-hour Permissible Exposure Limit (PEL) of 90 decibel (A-weighted, Slow Response). This hearing protection shall have a Noise Reduction Rating (NRR) to protect hearing in accordance with Policy No. 34, including the NRR de-rating factor of [(NRR-7)/2].

3.5 Biological Hazards

Site activities on this Site may expose workers to other hazards such as poisonous plants, insects, animals, and indigenous pathogens. Protective clothing and respiratory protection equipment, and being capable of identifying poisonous plants, animals, and insects, can greatly reduce the chances of exposure. Thoroughly washing any exposed body parts, clothing, and equipment will also protect against infections. If working in wooded/grassy areas, use appropriate insect repellants (containing DEET and/or Permethrin) and apply them per the manufacturers' directions.

4.0 - AIR MONITORING AND PERSONAL PROTECTIVE EQUIPMENT

4.1 Site Air Monitoring Requirements

To prevent exposure to hazardous conditions and aid in the selection of personal protective equipment, monitoring for the presence of airborne contaminants will occur when knowledge of the Site indicates their potential presence. One or more of the following direct-reading instruments may be used to aid in this determination. Photoionization Detectors (PID) and Flame Ionization Detectors (FID) will measure non-specific organic gases and vapors. Combustible Gas Indicators (CGI) will detect explosive atmospheres. Oxygen (O_2) meters will detect fluctuations in oxygen concentrations. These instruments should be calibrated or bump tested daily and whenever the readings may be erratic. All readings should be recorded in the field log books.

Colorimetric detector tubes supplement PID and/or FID readings to measure specific gases and vapors. Other direct-reading instruments are available for use to monitor for the presence of specific airborne Site contaminants.

The breathing zone of the employee(s) anticipated to have the highest potential for exposure for each task will be monitored using an appropriate combination of some or all of these direct-reading instruments. Air monitoring will occur every 15 minutes during non-intrusive activities, or every 5 feet of penetration during intrusive activities. Site tasks and air monitoring requirements are shown in Table 4-1. Additional Site monitoring may occur at the descretion of the SSHO, Site Supervisor, or RSC.

NOTE: All air monitoring equipment must be calibrated as per manufacturer's instructions.

Table 4-1
Site Air Monitoring Requirements

Site Activity	Instrument	Frequency	Location	Caution
Site Excavation or System Construction	PID	Every 30 minutes	In breathing zone of person nearest activity	Communicate with equipment operator before sampling
Drilling and Installing Monitoring Wells	PID	Every 30 minutes	In breathing zone of person nearest activity	Strongest likely concentration when opening cover
Well Sampling—Free Product	PID	Every 30 minutes	In breathing zone of person nearest activity	Strongest likely concentration when opening cover
Well Sampling, System O&M, and Pilot Testing	PID	At least once per site. See air monitoring log for last time sampling was performed. Follow Well Sampling—Free Product Requirements	In breathing zone of person nearest activity	Strongest likely concentration when opening cover

Air monitoring results obtained from the breathing zone during field activities will be recorded in field logbooks and the Air Quality Monitoring Record (see **Appendix C**). All such records will also include the location, date/time, weather conditions, person monitored, background concentration, and identification of specific contaminant whenever possible. Air monitoring information will be utilized to evaluate personnel exposure and assess the appropriateness of PPE for Site conditions. The PPE for the Site are discussed in Section 4.2. Photoionization detector (PID), combustible gas indicator (CGI), and detector tube readings measured in the employees breathing zone will be used to determine the level of protection required. PID readings refer to readings above background, which are sustained for at least 5 minutes and are measured during the performance of field tasks. PID readings are used for general screening.

4.2 Action Levels for Personal Protection Equipment

The first and foremost means of protecting employees from injuries or exposures is to eliminate the exposure. The general hierarchy for controlling potential exposures is: (1) Engineering Controls; (2) Administrative Controls; and (3) the use of PPE. PPE is a means of preventing injury or exposure when exposure elimination and/or other control means are not feasible.

The initial level of protection and the Action Levels at which the PPE will be upgraded are determined based on the identification of specific chemicals expected to be present at a Site and the established OSHA Permissible Exposure Levels (PEL) or ACGIH Threshold Limit Values (TLVs), whichever is lower. In the event more than one chemical is expected or exists at a Site, the most hazardous chemical will dictate the level of personal protection required. Table 4-2 shows the action levels for levels of personal protection equipment.

Table 4-2
Action Levels for Personal Protection Equipment

Monitoring Equipment	Hazard	Action Level Above Background	Action
PID/FID	Organic gas/vapor	< 150 ppm	Level D.
		> 150 ppm	Immediate Withdrawal. Contact the PM and RSC for further instructions to proceed.
Oxygen Concentration Meter	O_2 Concentration	< 19.5 %	Immediate Withdraw. Combustible gas readings are not accurate below this concentration! Notify SSHO.
		19.5 % to 23.5 %	Level D. Check for airborne contaminants. Continue investigation with caution.
		> 23.5 %	Immediate withdrawal. Fire hazard potential. Notify the SSHO and/or the RSC.

Detector tubes to be used are indicated for given ranges based upon the PID readings (Table 4-2). As appropriate, PID readings in conjunction with detector tubes will be utilized during the field activity and location anticipated having the highest level of contamination. This location will be selected by the Site Supervisor. If these measurements indicate exposure levels appropriate for Level D work, the use of detector tubes will be limited to situations where field conditions or

activities have changed. Detector tubes will be available for use at the discretion of the Site Supervisor and the SSHO.

If readings exceed the range for level of protection indicated, personnel should withdraw and not return until an appropriate level of protection has been donned. Upgrading protection shall be communicated to the SSHO, who will in turn convey this information to the RSC. Upon review of PID, CGI, and detector tube measurements, the RSC may further adjust the PPE requirements.

Any upgrading to higher levels of protection may require additional personal sampling using National Institute for Occupational Safety and Health (NIOSH) or Occupational Safety and Health Administration (OSHA) methods for the collection and analysis of airborne contaminants. Air monitoring equipment used on the Site should be calibrated with the following:

Calibration/Response Check

Types	Frequency	Gas Standard
PID	Daily	100 ppm isobutylene in air

Field personnel, in conjunction with the Site Supervisor and SSHO, may choose to allow ventilation of vapors before resuming work (rather than using higher levels of PPE). If ventilation is conducted, additional air monitoring will be performed prior to the resumption of work to determine the level of PPE required.

4.3 Levels of Protection

Levels of protection for Site activities are described on the Site Air Monitoring Summary. The protection levels may include all or some of the following, based on work scope.

Level D:

- Work uniform – Long pants and shirt with sleeves (no tank tops) – refer to Policy No. 25 Personal Protective Equipment (Section 5.5)
- Disposable, inner nitrile gloves
- Chemical-resistant boots with steel toe
- Safety glasses with side shields
- High Visibility Reflective Vest Class 1, Class 2, or Class 3 (select based on Traffic speed)
- Hard hat
- Disposable, chemical-resistant outer boot covers*
- Hearing protection*

LEVEL C:

- Half-face or full-face, air purifying respirator (NIOSH approved)
- Disposable, hooded, chemical-resistant clothing
- Disposable, chemical-resistant outer gloves
- Disposable, inner nitrile gloves
- Chemical-resistant boots with steel toe
- Disposable boot covers
- Hard hat
- Safety Glasses with side shields
- High Visibility Reflective Vest Class 1, Class 2, or Class 3 (select based on Traffic speed)
- Coveralls*

- Hearing protection*

(* Optional Equipment, depending on conditions/exposures)

4.4 Respiratory Protection

Respiratory protection requirements are described in detail in the ATLAS Respiratory Protection Program. Basic rules of respiratory usage are listed below:

- Facial hair that interferes with a satisfactory fit of the mask-to-face seal is not allowed on personnel required to wear respirators.
- Respirator cartridges should be replaced after approximately 8-hours of continuous or intermittent usage, unless otherwise noted. Cartridges should also be replaced if they become damaged, after the expiration date is exceeded, if vapor smell breakthrough occurs, or if filters become clogged causing resistance to breathing.
- Contact lenses may be worn when respiratory protection is required, in conjunction with additional eye protection to protect against particles or splashes, provided there is no interference with the respirator seal.
- Respirators shall be cleaned and disinfected after each day's use or more often, if necessary.
- Prior to donning, respirators will be inspected for worn or deteriorated parts. Emergency respirators or self-contained devices will be inspected at least once a month and after each use.
- After donning, personnel should perform a positive and negative user fit-check to determine if a good seal has been achieved.
- Each employee shall make sure that they have an annual respirator fit test and respiratory protection training.

5.0 - HEALTH SURVEILLANCE PROGRAM

5.1 Employee Medical Examinations

All employees involved in work at the Site will participate in ATLAS's Medical Surveillance Program administered by Health Resources. Additionally, when respirators are required (as determined by the SSHO and project manager), each employee will also have current respirator clearance.

A post project, follow-up exam may be required if an exposure incident is reported or an employee shows specific symptoms associated with the known or suspected hazardous chemicals. The RSC and the Project Manager will determine when post project exams are required.

5.2 Heat Stress Program

This procedure applies to all employees when heat stress conditions exist at project sites.

5.2.1 Training

The SSHO will have received acceptable training in first-aid and Cardiopulmonary Resuscitation (CPR), including training in heat-related illnesses. The SSHO shall also be trained on the requirements of the ATLAS Policy for Industrial Hygiene (Policy No. 23), which contains the requirement for Heat Stress monitoring. All workers should be capable of recognizing and treating the signs and symptoms of heat stress conditions. During potential heat stress conditions, ice should be readily available to rapidly cool victims.

5.2.2 Fluid Replacement

Water will be made available at the Site for employee fluid replacement. When heat stress is determined to be a problem by the SSHO, employees will be provided with balanced, electrolyte solutions to replace fluid and electrolyte loss. Employees will be provided with replacement fluids at a minimum rate of 8 ounces every 15 to 20 minutes per person.

5.2.3 Acclimatization

Acclimatization is a gradual physiological adaptation that improves an individual's ability to tolerate heat stress. Full-heat acclimatization requires up to 3 weeks of continued physical activity under heat-stress conditions similar to those anticipated for the work. Its loss begins when the work activity in the heat stress conditions is discontinued. A noticeable loss usually occurs within 3 – 4 days.

5.2.4 Rest Breaks

When heat stress conditions are applicable, all rest breaks should be taken out of the zone of exclusion into a cooler, shaded, rest area. If these conditions are not available, more frequent rest breaks will be taken.

5.2.5 Heat Stress Monitoring

Heat Stress and heat strain are conditions resulting from environmental factors including temperature, relative humidity, radiant heat transfer, and air movement, as they are affected by clothing. The primary objective of the heat stress management program is to prevent heat stroke which is life threatening and the most serious of the heat-induced disabilities. Extra caution should be taken for workers who are not acclimated to working in the heat.

The following Heat Stress Index (refer to ATLAS Policy No. 23) should be used as a guide to evaluate heat stress situations. If the Heat Stress exceeds 105° F, contact the RSC prior to work for detailed guidance.

Heat Stress Index

Temp. °F	Relative Humidity								
	10%	20%	30%	40%	50%	60%	70%	80%	90%
105	98	104	110	120	132				
102	97	101	108	117	125				
100	95	99	105	110	120	132			
98	93	97	101	106	110	125			
96	91	95	98	104	108	120	128		
94	89	93	95	100	105	111	122		
92	87	90	92	96	100	106	114	122	
90	85	88	90	92	96	100	106	114	122
88	82	86	87	89	93	95	100	106	115
86	80	84	85	87	90	92	96	100	109
84	78	81	83	85	86	89	91	95	99
82	77	79	80	81	84	86	89	91	95
80	75	77	78	79	81	83	85	86	89
78	72	75	77	78	79	80	81	83	85
76	70	72	75	76	77	77	77	78	79
74	68	70	73	74	75	75	75	76	77

NOTES: Add 10° F when protective clothing is being used; Add 10° F when in direct sunlight

HSI Temp	Category	Injury Threat
Above 130° F	Extreme Danger	No work unless emergency exists. Contact ATLAS RSC and Corporate Risk Management Department prior to proceeding. Heat cramps or exhaustion likely, heat stroke possible if exposure is prolonged and there is physical activity.
105° to 130° F	Danger	Contact RSC prior to proceeding. Requires strict adherence to ACGIH Heat Stress Guidelines, including use of on-site WBGT equipment. Heat cramps or exhaustion likely, heat stroke possible if exposure is prolonged and there is physical activity.
90° to 105° F	Extreme Caution	Heat cramps or exhaustion likely, heat stroke possible if exposure is prolonged and there is physical activity.
80° to 90° F	Caution	Heat cramps or exhaustion likely, heat stroke possible if exposure is prolonged and there is physical activity.
Below 80° F	Normal Range	Typical conditions for time of year. Little or no danger under normal circumstances. As always, anticipate problems and work safely.

5.3 Cold Stress Program

This procedure applies to all employees who perform field work in cold environments at risk of cold stress injury and intended to protect workers from the most severe effects of cold stress.

5.3.1 Training

ATLAS Site employees have been trained in cold stress as part of their HAZWOPER 40-hour initial training. Site workers will receive refresher training by the SSHO in cold stress safety and health procedures. The training program will include, as a minimum, instruction in the following areas:

- Proper first-aid treatment
- Proper clothing practices
- Proper eating and drinking habits
- Recognition of impending frostbite
- Recognition of the signs and symptoms of impending hypothermia or excessive cooling of the body when shivering does not occur
- Safe working practices

The SSHO will be trained in first-aid, CPR, and cold stress conditions.

5.3.2 Environmental Monitoring

Frostbite and hypothermia are two types of cold injury that personnel must be protected against during the performance of field duties. The objective is to prevent the deep body temperature from falling below
96.8° F and to prevent cold injury to body extremities. Two factors influence the development of a cold injury the ambient temperature, and wind velocity.

The SSHO will monitor environmental conditions by recording ambient temperature and estimated wind-speed. Information contained in Tables 5-1 and 5-2 will be used to evaluate the possibility of hypothermia among workers on-site.

5.3.3 Protective Clothing and Rest Breaks

Use appropriate cold weather clothing when temperatures are at or below 40°F as exposed skin surfaces must be protected. These protective items can include facemask, hand wear, and foot wear. Workers handling evaporative solvents during cold stress conditions will take special precautions to avoid soaking gloves and clothing because of the added danger of prolonged skin contact and evaporative cooling. Personnel will wear protective clothing appropriate for the level of cold and planned physical activity. The objective is to protect all parts of the body, with emphasis on the hands and feet. Eye protection against glare and ultraviolet light should be worn in snowy and icy conditions.

The work rate should not be so great as to cause heavy sweating that could result in wet clothing. If heavy work must be done, opportunities for rest breaks will be provided where workers have the opportunity to change into dry clothing. Conversely, plan work activities to minimize time spent sitting or standing still. Rest breaks should be taken in a warm, dry area. Windbreaks can also be used to shield the work area from the cooling effects of wind.

5.3.4 Identification and Treatment of Cold Stress

When frostbite, hypothermia, or other cold stress symptoms are suspected, treat the patient to relieve symptoms or transport them to the medical facility identified on page TC-4.

TABLE 5-1
Threshold Limit Values Work/Warm-up Schedule
for Four-Hour Shift*

Air-Temperature--Sunny Sky		No Noticeable Wind		5 mph Wind		10 mph Wind		15 mph Wind		20 mph Wind	
˚C (approx.)	˚F (approx.)	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks
-26˚ to -28˚	-15˚ to -19˚	(Norm. Breaks) 1		(Norm. Breaks) 1		75 min	2	55 min	3	40 min	4
-29˚ to -31˚	-20˚ to -24˚	(Norm. Breaks) 1		75 min	2	55 min	3	40 min	4	30 min	5
-32˚ to -34˚	-25˚ to -29˚	75 min	2	55 min	3	40 min	4	30 min	5	Non-emergency work should cease	
-35˚ to -37˚	-30˚ to -34˚	55 min	3	40 min	4	30 min	5	Non-emergency work should cease		Non-emergency work should cease	
-38˚ to -39˚	-35˚ to -39˚	40 min	4	30 min	5	Non-emergency work should cease		Non-emergency work should cease		Non-emergency work should cease	
-40˚ to -42˚	-40˚ to -44˚	30 min	5	Non-emergency work should cease		Non-emergency work should cease		Non-emergency work should cease		Non-emergency work should cease	
-43˚ & below	-45˚ & below	Non-emergency work should cease		Non-emergency work should cease		Non-emergency work should cease		Non-emergency work should cease		Non-emergency work should cease	

*1. Schedule applies to any 4-hour work period with moderate to heavy work activity, with warm-up periods of ten. (10) Minutes in a warm location and with an extended break (e.g., lunch) at the end of the 4-hour work period in a warm location. For Light-to-Moderate Work (limited physical movement): apply the schedule on step lower. For example, at -35˚C (-30˚F) with no noticeable wind (Step 4), a worker at a job with little physical movement should have a maximum work period of 40 minutes with 4 breaks in a 4-hour period (Step 5).

2. The following is suggested as a guide for estimating wind velocity if accurate information is not available: 5 mph: light flag moves; 10 mph: light flag fully extended: 15 mph: raises a newspaper sheet: 20 mph: blowing and drifting snow.

3. If only the wind chill cooling rate is available, a rough rule of thumb for applying it rather than the temperature and wind velocity factors given above would be 1) special warm-up breaks should be initiated at a wind chill cooling rate of about 1750 watts per square meter (W/m^2); 2) all non-emergency work should have ceased at or before a wind chill of 2250 W/m^2. In general, the warm-up schedule provided above slightly under-compensates for the wind at the warmer temperatures, assuming acclimatization and clothing appropriate for winter work. On the other hand, the chart slightly overcompensates for the actual temperatures in the cooler ranges because windy conditions rarely prevail at extremely low temperatures.

4. TLVs apply only for workers in dry clothing.

* Adapted from Occupational Health & Safety Division, SaskAtlashewan Department of Labor.

TABLE 5-2
Cooling Power of Wind on Exposed Flesh Expressed as Equivalent Temperature (under calm conditions)*

Estimated Wind Speed (mph)	Actual Temperature Reading (degrees F)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	Equivalent chill Temperature (degrees F)											
calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148
(Wind speeds > 40 mph have little additional effect)	LITTLE DANGER If < hr with dry skin. Maximum danger of false sense of security				INCREASING DANGER Danger from freezing of exposed flesh within one minute.			GREAT DANGER Flesh may freeze within 30 seconds.				
	Trench foot and immersion foot may occur at any point on this chart.											

* Developed by U.S. Army Research Institute of Environmental Medicine, Natick, MA

6.0 - SITE SECURITY AND CONTROL

6.1 Work Zones

Restricted Site areas will include, but not necessarily be limited to, the following zones:

- **Exclusion Zone or Hot Zone** - any area where contamination is either known or likely to be present in concentrations that could pose a threat to human health and safety or that potential for harm to personnel exists because of the type of work activities being conducted. Appropriate PPE and warning signs should be utilized in this area.
- **Contamination Reduction Zone** - any area where workers conduct personal and equipment decontamination.
- **Support Zone** - areas where access is controlled, but the chance to encounter hazardous materials or conditions are minimal.

Access to the work zones will be controlled by work zone delineators (e.g. traffic cones, flags, vehicles, DOT approved devices, temporary or permanent fencing, and/or safety barrier tape). Figure 6-1 is an example of a work zone. Additionally ATLAS employees should follow the requirements of the Employee Health and Safety Policy Manual, Policy No. 36, Work Zones in Traffic Areas for additional information.

In the event on-site personnel must upgrade their personal protective equipment, the work zones may require substantial modification in order to provide for the safety of nearby personnel not associated with this work. Any upgrade level will be communicated by the Site Supervisor to the PM. The PM will then inform the RSC of this occurrence.

6.2 Buddy System

The Buddy System will be used at all times by field personnel in the Exclusion Zones. The Buddy System means that personnel work in pairs and stay in close visual contact to be able to observe one another and summon rapid assistance in case of emergency. No one is to perform fieldwork alone without the approval of the Branch Safety Officer and/or the Regional Safety Officer.

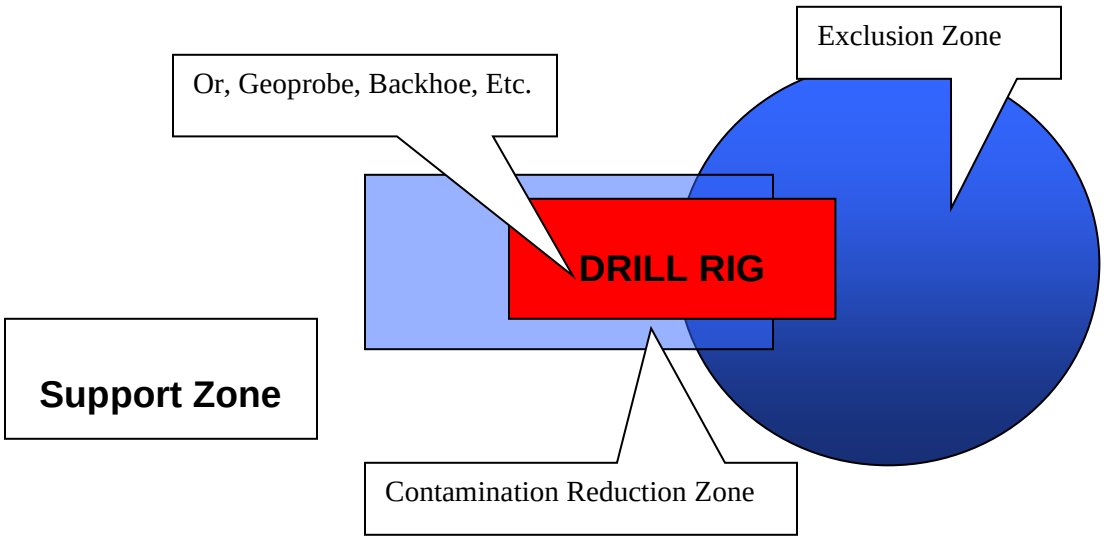
6.3 Site Communication

A loud and clear form of communication should be made available for Site personnel entering the work zones. Site communication may be in the form of hand signals, voice, or other communication devices. All forms of communication should be understood by all workers on the Site prior to starting work.

6.4 Roadway Work Zones

When ATLAS employee and subcontractors are required to perform Site operation in a city street or public right-of-way, a Traffic Control Plan may be required and included with this HASP. Check with the State or local government Department of Transportation for when a traffic control plan is required. Traffic Control Plans will include Transition Areas, Activity Areas, and Termination Areas.

FIGURE 6-1
TYPICAL EXCLUSION ZONE



7.0 - DECONTAMINATION PROCEDURES

7.1 Personnel Decontamination

All personnel must complete appropriate decontamination procedures in a way that is responsive to actual Site conditions before leaving the Site. The decontamination of personnel and equipment will be performed within the exclusion and contamination reduction zones. Wash tubs containing an appropriate decon solution and soft bristle brushes will be used to decontaminate personal protective clothing and boots. Deionized water will be used for the final rinse. The SSHO will visually inspect all PPE and other equipment once decontamination procedures are completed. In general, the four types of decontamination solutions to be considered for PPE include:

- Water for removal of low-molecular weight hydrocarbons, inorganic compounds, salts, some organic acids, and other polar compounds.
- Dilute acids (vinegar) for removal of basic (caustic) compounds, amines, and hydrazines.
- Dilute bases (soaps and detergents) for removal of acidic compounds, phenols, thiols, and some nitro and sulfonic compounds.
- Organic solvents for removal of nonpolar compounds (organic).

LEVEL D/LEVEL C

- Establish a segregated equipment drop
- Remove disposable, outer boot covers, if applicable
- Remove chemical resistant, outer gloves, if applicable
- Remove hard hat and goggles, safety glasses, or face shield
- Remove disposable, inner gloves
- Remove full-face air purifying respirator (Level C only)

Each individual will be responsible for inspecting and decontaminating their own respirator in accordance with the ATLAS Respiratory Protection Program (Policy No. 27).

At a minimum the hands and face of each employee must be thoroughly washed upon leaving the work area. Trash receptacles will be provided for all disposable clothing. Commercial laundries or cleaning establishments that decontaminate clothing or equipment will be informed of the potentially harmful effects of exposure.

Decontamination Solution: _____

STATION #1: _____

Equipment Required: _____

_____

STATION #2: _____

Equipment Required: _____

STATION #3: _____

Equipment Required: _____

STATION #4: _____

Equipment Required: _____

7.2 Equipment Decontamination

The subcontractor will decontaminate field equipment according to the work plan. This may include manual removal of gross contamination with shovels or other tools, followed by a high-pressure, hot water sprayer. Because decontamination at the high-pressure, hot water station poses the possibility of a splash and/or mist inhalation hazard, the task should be performed using Level D personal protective equipment at a minimum.

Field tool including split-barrel soil samplers, brass liners, and sample knives and trowels will be decontaminated. The field tools may be scrubbed visually clean using a detergent solution (Alconox/Liquinox) with water and a stiff, long-bristled scrub brush. Following the solution scrubbing, the tools may be rinsed with distilled water or isopropyl alcohol.

Equipment Decontamination

Gross Removal By:

X	Hand Scrubbing
	Cold High Pressure Wash
	Hot High Pressure Wash
X	Steam Cleaning
	Other (specify) _____
X	Clean Rinse
X	Decon solution (specify) Dilute Liquinox

7.3 Disposition of Decontamination Wastes

All materials and equipment used for decontamination should be disposed of in accordance with local, State, and/or Federal Regulations. Clothing, tools, buckets, brushes, and all other equipment that is contaminated must be properly packaged and stored on the Site until disposal arrangements are finalized. Clothing not completely decontaminated on-site should be secured in plastic bags before being removed from the Site.

Decontamination Waste Water

Collection (specify how): Containerize in drum.

Direct Discharge (specify how and where): NA

Pre-Treatment (specify): NA

Disposal (specify how and where): NA

8.0 - STANDARD OPERATING PROCEDURES

The following Standard Operating Procedures (SOPs) will be applied to each location and activity where work is performed on a hazardous chemical site. As hazards increase or decrease on the Site, the applicability of each SOP must be determined by the SSHO with the approval of any changes by the Project Manager or the RSC.

8.1 Personnel Precautions

1. Eating, drinking, chewing gum or tobacco, smoking, and any practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in the exclusion and contamination reduction zone or in any area known to be contaminated.

2. When decontamination procedures for outer garments are in effect, the entire body should be thoroughly washed as soon as possible after the protective garment is removed.

3. Contact with contaminated or suspected contaminated surfaces should be avoided. When possible, do not walk through puddles, leachate, or discolored surfaces; kneel on the ground; or lean, sit, or place equipment on drums, containers, or the ground.

4. Medicines and alcohol can increase the effects from exposure to toxic chemicals. Personnel should not take prescribed drugs at hazardous waste operations where the potential for absorption, inhalation, or ingestion of toxic substances exists unless specifically approved by a qualified physician. Alcoholic beverage intake should be minimized or avoided.

5. All personnel must be familiar with Standard Operating Procedures and any additional instructions and information contained in this HASP. All visitors and subcontractors will read the HASP before entering the Site.

6. All personnel will be aware of symptoms for heat or cold stress.

7. All personnel will be familiar with the chemicals used on-site and the associated hazards as described in each respective MSDS. The MSDS for the chemicals on-site will be available and located in the company vehicle.

8.2 Operations

1. All personnel going to the Site must be adequately trained and thoroughly briefed on anticipated hazards, equipment, safety practices, emergency procedures, and communications.

2. Personnel on the Site must use the Buddy System when engaged in Level C work as specified in ATLAS Policy No. 35 (Hazwoper). The purpose of the Buddy System is to provide rapid assistance to employees in the event of an emergency.

3. Visual contact must be maintained between pairs of Site and safety personnel. Entry team members should remain close to assist each other during emergencies.

4. Personnel should practice unfamiliar operations before the actual procedure.

5. Entrance and exit locations must be designated, and emergency escape routes delineated. Warning signals for Site evacuation must be established by the SSHO before field activities.

6. Communications using radios, hand signals, or other means, must be maintained between initial entry members at all times. Emergency communications should be prearranged in case of radio failure, the necessity for evacuating the Site, or other reasons.

7. Wind indicators visible to all personnel should be strategically located throughout the Site.

8. Personnel and equipment in the contaminated area should be minimized, consistent with effective Site operations.

9. Work areas for various operational activities will be established.

10. Procedures for leaving a contaminated area will be planned and implemented before going to the Site. Work areas and decontamination procedures will be established based on expected Site conditions.

11. Frequent and regular inspections of Site operations will be conducted by the SSHO to check compliance with this HASP. If changes in operation occur, the HASP must be modified to reflect these changes.

12. All electrical equipment (power tools, extension cords, instruments, radios, etc.) will conform with ATLAS Policy No. 12 (Electrical) The SSHO will ensure that electrical equipment is free from recognized hazards that may cause physical harm to employees.

13. Fire prevention and protection (appropriate signs for flammable liquids, smoking areas, storage areas of combustible or flammable materials, etc.) will be according to ATLAS Policy No. 18, Fire Protection.

14. Site Tailgate Safety Meetings will be held daily to discuss anticipated Site conditions and daily activities. This meeting will be summarized in field logbooks and the Tailgate Safety Meeting Form (see **Appendix C**).

9.0 - CONTINGENCY PLAN

This chapter of the HASP describes potential emergencies at this Site and the procedures for responding to those emergencies.

9.1 Medical Emergencies

1. The name, address, telephone number, travel distance, and travel time to the nearest medical treatment facility are found in the Emergency Information section (see Page TC-4) of this HASP. A map and direction for locating the facility is available in the Emergency Information section (see Page TC-6) of this HASP.

2. Emergency routes will be verified and driven before any Site activities. It may be quicker to transport a person with minor injuries than to wait for Emergency Medical Services (EMS) to respond. Check with the local authorities for response times. Life threatening emergency situations will only be handled by emergency medical services.

3. Before mobilization on-site, the Site Supervisor will contact the local hospital emergency room personnel, local fire department, and local police department to brief them regarding the scope and hazards associated with the scheduled fieldwork. If the Site is outside an established town, contact will be made with county officials and local emergency services.

4. An emergency first-aid kit with contents per ATLAS Policy No. 20 (First-Aid) will be readily available on the Site, and personnel will have first-aid training. The first-aid kit also contains equipment necessary to protect first-aid providers against exposure to bloodborne pathogens. All first-aid providers will have received Bloodborne Pathogens training and can receive Hepatitis B vaccinations according to the ATLAS Policy No. 09 (Bloodborne Pathogens) if exposed to bodily fluids.

5. Any person who becomes ill or injured in the exclusion zone must be decontaminated as well as possible with consideration to which risk will be greater, the spread of contamination or the health of the individual. If the injury or illness is minor, full decontamination (remove contaminated clothing and wash hands and face with soap and water, See Section 7.0) should be completed and first-aid administered before transport. If the patient's condition is serious, at least partial decontamination should be completed (i.e., complete disrobing of the victim and redressing in clean coveralls or wrapping in a blanket). First-aid should be administered while awaiting an ambulance or paramedics.

6. The following steps should be followed if an injury or illness case occurs:

    - Check the Scene.
    - If safe to do so, check the condition of the injured.
    - Call 911 if the victim is unconscious or your training dictates to do so.
    - Care for the injured. Always use “Universal Precautions”.
    - Call **CORE Health (855) 282-6331**, if the injury is non-life threatening. CORE Health will assist you with the location of the nearest clinic, if referral is needed.

7. Provisions must be made to identify the substance to which the worker has been exposed. This information must be given to medical personnel.

9.2 Emergency Equipment

1. A personal eyewash unit that meets ANSI Z358.1-1998, Section 6 will be available in each ATLAS field vehicle at the Site if corrosive chemicals (chemicals with a pH of <3 or >11) will be on-site.

2. An emergency first-aid kit with contents as per ATLAS Policy No. 20 (First-Aid). The Site Supervisor shall be trained and certified in first-aid and CPR.

3. An emergency spill cleanup kit will be available at the Site at all times. Unplanned releases will be reported to the SSHO and/or Site Supervisor as soon as possible.

4. Sufficient water and/or multipurpose dry chemical (Class A, B, and C) fire extinguishers, rated not less than 2A:10B:C, will be maintained on the Site to cope with any situation until emergency services arrive.

9.3 Flammable Conditions

In the event that combustible vapors exceed 10 percent of the LEL or strong odors are detected in the borehole, the following actions should be taken:

- Continue investigation using extreme caution. Personal protective equipment may need to be upgraded.
- Allow vapors to dissipate or use intrinsically-safe mechanical ventilation.
- If atmospheric conditions do not change, call in the listed sequence:
  - —Project Manager
  - —Regional Safety Coordinator
  - —Fire Department
- Provide answering personnel with the call back numbers, locations, directions, and situation assessment.

9.4 Site Evacuation Conditions

The following conditions will necessitate the cessation of field work in the area of concern, withdrawal from the work area, and revisions to this HASP:

- Fires and/or explosions
- Unexploded ordnance is detected
- A major incident or injury occurs
- Flammable atmosphere readings above 10 percent LEL
- Oxygen readings above 23.5 percent oxygen concentration
- Oxygen readings at or below 19.5 percent oxygen concentration
- PID readings over 50 ppm sustained for more than 5 minutes
- Detector tube readings over the maximum Action Level for the contaminant specified

9.5 Emergency Communication System

Emergency contacts and telephone numbers are provided at the beginning of this HASP. Field crews will have some communication device at each active work location. These may include radios, mobile telephones, or walkie-talkies. Such communication devices will have sufficient range to contact the field office and/or emergency services. If an emergency occurs on-site, the Site Supervisor is responsible for checking that appropriate emergency contact has been notified. At the time of the emergency response, the Site Supervisor or designee will brief the emergency personnel on the status of the emergency, including Site conditions.

Field personnel will use hand signals if there are noisy working conditions on the Site. The hand signals that will be used are shown below and will be reviewed by the SSHO during the on-site safety briefing.

Signal	Meaning
Hands on top of head	Need assistance
Grip partner′s wrist or place both hands around partner′s arm	Leave area immediately
Thumbs up	OK; I am all right
Thumbs down	No; Negative
Hand gripping throat	Cannot breathe; Out of air

9.6 Emergency Response Follow-Up

If there is an incident, near-miss, or emergency response, the SSHO will notify the Project Manager and Regional Safety Coordinator. The Project Manager or the Branch Safety Officer will complete a Supervisor's Investigation Report (SIR) (Policy No. 51; Appendix 51-1) and submit to the appropriate Regional distribution list. Prior to resuming work, a Site safety meeting should be held to discuss the circumstances surrounding the incident and what should be done to prevent a re-occurrence.

9.7 Non-Emergency Clinic Information

The address and driving directions to the closest non-emergency care facility is included on page 2-4.

9.8 Spill Containment and Response

In order to help prevent spills, hydraulic lines, gas cans, and other potential sources will be inspected prior to commencement of work each day and logged using appropriate heavy equipment inspection log. Any items identified as potentially damaged or worn will be replaced or repaired prior to use.

In the event of a spill or leak from storage containers or from equipment (such as leaking hydraulic lines) during field operations in the work zone, the following actions are to be taken:

- *Identify if spill is manageable (can it be safely stopped/contained, is there a risk of fire/explosion, is there immediate danger to health/safety of personnel*)
- *Shut off all sources of ignition (drill rig, generators, etc.) and position one crew member near fire protection equipment (i.e. fire extinguisher)*

- *Contact Client site manager immediately with type of incident and approximate size/type of spill*
- *Contain and remove affected material IF SAFE TO DO SO (sorbent material and spark-proof shovels)*
- *Determine what (if any) further action is required*
- *Complete incident report within 8 working hours*

In the event of a LARGE spill which endangers personnel or a facility emergency unrelated to ATLAS project work:

- *Shut off all sources of ignition immediately and evacuate to the designated evacuation zone or safe zone*
- *Contact Client site manager, who will then make appropriate intercompany contacts for emergency response*
- *Follow instructions from Client site manager*
- *Complete incident report within 8 working hours (may require additional follow-up)*

10.0 - EMPLOYEE TRAINING

10.1 Pre-Assignment and Annual Refresher Training

All ATLAS Employees and Subcontractors will participate in routine health and safety education and training programs. These programs are designed to provide employees with a thorough knowledge of hazardous materials, health and safety hazard potential, and Federal Occupational Safety and Health Administration (OSHA) requirements published in 29 Code of Federal Regulations (CFR) Part 1910. According to 29 CFR 1910.120(e), Site employees will have received 40 hours of initial Hazardous Waste Operations & Emergency Response (HAZWOPER) instruction and 24 hours of supervised field experience. Attending an annual 8-hour HAZWOPER refresher training session maintains this initial training. It is the responsibility of the Project Manager and each subcontractor's supervising manager to determine if the subcontractor staff meets these training requirements.

10.2 Site Supervisor's Training

On-site Managers and Supervisors on hazardous waste sites who are directly responsible for or who supervise workers engaged in hazardous wastes operations receive, in addition to the initial 40 HAZWOPER training, 8 additional hours of specialized supervisory training in compliance with the OSHA regulations. This training includes training on the employer's safety and health program and the associated employee training program, personal protective equipment program, spill containment program, and health hazards monitoring procedure and techniques.

10.3 Site Safety Training and Briefing Topics

The SSHO will conduct Site-specific health and safety briefing for field personnel before the start of all field work. Briefing attendees will include the Site Supervisor, the Project Team, and Subcontractor personnel. At the conclusion of the meeting, personnel are to sign the HASP Agreement and Acknowledgement Form in the Appendices. As additional people are assigned to the Site, it is the responsibility of the SHSO to ensure that new personnel are briefed on health and safety protocols and ensure that they have reviewed and signed the HASP Agreement and Acknowledgement Form. Items to be covered include:

- Site-specific health and safety rules
- Client-specific health and safety rules
- Health effects of various chemicals used on the Site
- Emergency response actions pertaining to operations on-Site

Additionally, daily Site Tailgate Safety Meetings will be conducted to review past activities, plan ahead for new or changed operations, to understand any near-miss and "lessons learned, establish safe working procedures for anticipated hazards, and provide pertinent safety and health training and motivation. The SSHO will complete the Tailgate Safety Meeting Form located in the Appendices.

10.4 Visitors

All visitors entering the designated work zones will be subject to all applicable health and safety requirements during field operations at the Site. All visitors to a work Site will be given the opportunity to review the HASP, will be escorted at all times, and will be required to stay a safe distance from Site activities. The Site Supervisor and/or the SSHO will be responsible for briefing all visitors on the Site hazards, Site safety precautions, and the Site emergency response plan.

APPENDIX A
Job Safety Analysis (JSA)

APPENDIX B
Chemical Hazard Information

APPENDIX C
Site Map
List of Approved Amendments/changes
HASP Acknowledgement/Agreement Form
Visitors Log
Tailgate Safety Meeting Form
Air Quality Monitoring Record
Equipment Calibration Log
Checklist for Subsurface Investigation
Monthly Heavy Equipment Safety Inspection Checklist

HEALTH AND SAFETY PLAN (HASP)
List of Approved Amendments/Changes

Date	Name	Signature	Changes/Comments	Section Added

Acknowledgement/Agreement Form

(All ATLAS, Subcontractor & Client Personnel Must Sign)

Client Site Name: _____ Project Site No. _____

ATLAS Project No. _____ Task No. _____

I acknowledge I have reviewed a copy of the Health and Safety Plan for this project, understand it, and agree to comply with all of its provisions. I also understand I could be prohibited by the Site Health and Safety Coordinator or other ATLAS personnel from working on this project for not complying with any aspect of this Health and Safety Plan:

PRINT NAME	SIGNATURE	COMPANY	DATE

HEALTH AND SAFETY PLAN (HASP)
Visitors Log

Client Site Name: _____ Project Site No. _____

ATLAS Project No. _____ Task No. _____

PRINT NAME	SIGNATURE	COMPANY	DATE

HEALTH AND SAFETY PLAN (HASP)
Tailgate Safety Meeting Form

Site Name & Number: _____

ATLAS Project Number: _____

Work Being Performed: _____

Date & Time of Meeting: _____

Name of Presenter: _____

NOTE: On the initial day of the project, the Project Manager or designee should conduct a visual inspection of the project site (using the Site Safety Checklist) prior to the Tailgate Safety Meeting. This inspection should include a review of project site equipment, hazards, and specific job tasks, activities or operations to be performed for that day. These specific items must be covered during the Tailgate Safety Meeting. For subsequent days, any changes to the site or operations must be covered in the Tailgate Safety Meeting. In addition, "Task-Specific" Job Safety Analysis (JSA) for the tasks/activities at the project site must be integrated into the HASP and Tailgate discussions.

Itemize the Specific Topics Discussed (if more space is needed use the back of this page):

❑ Are all employees okay? ❑ Are all employees physically able to perform their job duties? ❑ "Shared Learning" items?
❑ Has PPE been checked? ❑Emergency evacuation area identified? ❑ Asked for Sub interactions or questions?

❑ **Client Requirements** - By checking the box to the left, the Presenter of the Tailgate Meeting acknowledges that all Client-specific requirements have been completed for both ATLAS and Subcontractor employees.

Participants (if needed, list additional participants on back of this page):

Print Name	Signature	Company	Date

A Tailgate Safety Meeting must be conducted and documented at the beginning of each workday when two or more ATLAS employees and/or Subcontractor representatives are present on site. Employees, client representatives and subcontractors who arrive at the site after the Tailgate Safety Meeting has been conducted must be briefed on the topics and acknowledge by signing this form. The JSA must be completed at the beginning of each day when one or more ATLAS employees and/or

subcontractor representatives are present on a site.

HEALTH AND SAFETY PLAN (HASP)
Air Quality Monitoring Record

DATE	TIME	LOCATION	INSTRUMENT	CONCENTRATION (UNITS)	SAMPLED BY

HEALTH AND SAFETY PLAN (HASP)
Equipment Calibration Log

DATE	INSTRUMENT/ MODEL NO.	ZERO ADJUST OK?	CALIBRATION GAS (PPM)	READING (PPM)	LEAK CHECK	PERFORMED BY	COMMENTS

CHECKLIST FOR SUBSURFACE CLEARANCE

MUST be filled out PRIOR to the Start of Field Activities
NO subsurface work in road Right of Ways or Off-Site (property boundary) without Written Authorization

Site Name: _____

Site Address: _____

Project No.: _____

To understand and use this checklist correctly you must refer to and follow the ATLAS Subsurface Investigation Procedures.

	Person Verifying Each Item to Place Initials On Lines Below and Sign Bottom of Page	Comments
PRE-DRILLING PREPARATION		
Review definition of "Critical" and "Non-Critical" areas.		
Request as-built drawings, and/or approval to use private utility locator service and/or air knife to locate/protect subsurface utilities.		
Obtain Site access agreement.		
Pre-plan boring locations.		
Establish surface boring method.		If not using Air Knife-type technology, why?
Obtain permits and clearances.		
Do borehole and utility markouts.		
Establish Site-specific Health and Safety Plan		
Notify Client, owner, operator prior to mobilization.		
ON-SITE PROCEDURES		
Conduct tailgate safety meeting with topics as indicated in procedure.		
Read and follow Drilling/Probing procedures		
--1. Do Site walk and verify that utility location checklist is complete.		
--2. Locate all markouts and planned borehole locations. Start intrusive procedures at least 5 feet away from and perpendicular to utility markouts.		
--3. Break surface cover.		
--4. Do surface boring to required depth using hand auger, post-hole digger, shovel or "air knife".		
--5. If necessary, use alternate procedure for surface boring.		
--6. Collect soil samples by hand augering to required depth.		
--7. Protect the borehole from pedestrian and vehicular traffic.		

*Buried utilities can be found at any depth, but are most often found within the first 5 feet below the ground surface. Proceed slowly and with extra caution when working within 5 feet of the ground surface.
NOTES:

_____

SIGNATURE DATE

MUST be filled out PRIOR to the Start of Field Activities

NO subsurface work in road Right of Ways or Off-Site (property boundary) without Written Authorization

Site Address: _____ **If Present --**

_____

Site Safety Documents (on-site during activities)	**"Yes or No" Fill Out, as applicable**	
Utility Staking Request Form (properly completed for current scope of work)?	**Yes** **No**	Ticket # and Expir. Date: # / /
Site Health and Safety Plan?	**Yes** **No**	Hospital Location Map Available **Yes** **No**

Utility Identification "color" Above Ground (AG) / Buried (B)			**Identify on a Site Map the Location of ALL Lines & Meters (or actual utility) and Indicate Nearest Building Quadrant (NE, SE, SW, or NW)**
Natural Gas (Yellow) / Staked?	AG / B	**Yes** **No**	NW NE SE SW
Electrical (Red) / Staked?	AG / B	**Yes** **No**	NW NE SE SW
Telephone/Fiber Optic (Orange) / Staked?	AG / B	**Yes** **No**	NW NE SE SW
Cable TV (Orange) / Staked?	AG / B	**Yes** **No**	NW NE SE SW
Water (Blue) / Staked?	AG / B	**Yes** **No**	NW NE SE SW
Sewer (Green) / Staked?	AG / B	**Yes** **No**	NW NE SE SW

Significant Site Features		**Site Feature Located in Closest Property Quadrant (NE, SE, SW, or NW). Also Identify on Site Map.**
UST system (UST cavity, dispenser islands, piping runs, vent pipes etc.)?	**Yes** **No**	
Above Ground Storage Tanks – ASTs (dispenser islands, piping runs)?	**Yes** **No**	
Electrical Transformers?	**Yes** **No**	
Area Lighting (Pole mounted lighting, etc.)?	**Yes** **No**	
Signage with electrical power (Business/Company signs, etc.)?	**Yes** **No**	
Underground lawn/landscaping sprinkler system?	**Yes** **No**	
Storm drain cAtlash basins / man-ways and potential connecting conduits/lines?	**Yes** **No**	

Other		**"Other" Concerns Located in Closest Property Quadrant (NE, SE, SW, or NW). Identify on Site Map.**
Pavement distress (Cracked pavement, "buckled" asphalt, etc.)?	**Yes** **No**	

*Buried utilities can be found at any depth, but are most often found within the first 5 feet below the ground surface. Proceed slowly and with extra caution when working within 5 feet of the ground surface.

NOTES:

SIGNATURE _____ DATE

Monthly Mobile/Heavy Equipment Safety Inspection Checklist

This form is to be completed by the qualified operator of the equipment

Date:		Project No.:		Site/Location:	
Equipment Type:		Model No.:		Odometer:	
Operator/Inspector Name:				Machine Hours:	

Warning: Do not operate a malfunctioning machine until corrective measures have been taken and all discrepancies have been cleared by a qualified operator/mechanic. In addition to elements on this checklist, the owner's manual for the specific piece of equipment being operated may contain other daily inspection checks and/or preventative maintenance procedures.

General Safety	☐	Operator Qualification	☐	PPE Supplies	☐	Fire Extinguisher (ready-to-use)
	☐	Owner's Manual (present)	☐	DriverCheck (decal in place)	☐	First-Aid Kit (present & stocked)
	☐	Manufacturer Specs Followed	☐	Access Ladder (secure and ok)	☐	Housekeeping (clean)
	☐	Emergency Kit (signs, flares)	☐	Flashlight	☐	Markers (cones, barricades, etc.)
Vehicle, Engine, and Hydraulic Systems (note any added fluid)	☐	Engine Oil (fluid level, condition)	☐	Fuel Level	☐	Other Fluid
	☐	Transmission (fluid level, fluid condition, unit operation)	☐	Brake Fluid	☐	Steering (power steering fluid level, no play in steering)
	☐	Radiator (coolant level, hose condition)	☐	Fan Belts (tension/condition)	☐	Brakes (vehicle, parking)
	☐	Hydraulic System (fluid level, fluid condition, hose condition, cylinders, leakage)	☐	Chassis (proper lubrication)	☐	Tires (condition, inflation)
	☐	Outriggers (operational, if equipped)	☐		☐	
Tracked Vehicles	☐	Track Tension (proper tension)	☐	Plates and/or Shoes	☐	Grouser Plates
	☐	Rollers	☐	Drive Sprockets		
Lights and alarms (clean and functional)	☐	Headlights (hi, low, run beams)	☐	Parking Lights	☐	Revolving Flashing Lights (if required)
	☐	Reverse Lights (backup)	☐	Equipment Work Lights	☐	Horn
	☐	Brake/Tail Lights	☐	Turn Signals/Hazard Flashers	☐	Reverse Alarms (backup)
Vehicle cab (clean and functional)	☐	Seatbelts (if required)	☐	Windshield Wipers	☐	Body Damage
	☐	Housekeeping	☐	2 Way Communication	☐	Speed/Hour Meter
	☐	Fuel Gauge	☐	Horn (operational)	☐	Windshield (glass ok, clean)
	☐	Controls Operational	☐	Mirrors (rear view, side)		

Maintenance/ Equipment Request	Corrected By:	Date:

Inspectors Signature:		
		Date

APPENDIX D
Excavating & Trenching

All ATLAS employees and subcontractors shall be trained and be familiar with the OSHA Excavation Standard and the ATLAS Employee Health and Safety Policy Manual, Policy No. 16 (Excavation and Trenching) and Policy No. 33 (Subsurface Investigation).

1.0 UNDERGROUND UTILITIES

Prior to any work beginning, the estimated location of utility installations (such as sewer, telephone, fuel, electric, water lines, or any other underground installation) that reasonably may be expected to be encountered during excavation work must be determined prior to opening an excavation. Utility companies or owners shall be contacted and advised of the proposed work and asked to establish the location of the utility underground installations. When utility companies or owners cannot respond to a request to locate underground utilities within 24-48 hours (unless a longer period is required by State or local law), or cannot establish the exact location of these installations, the work may proceed, provided that the work is conducted with caution, and provided detection equipment or other acceptable means to located utilities are used.

When excavation operations approach the estimated location of underground installations (approximately 18 inches from the installation), the exact location of the installations shall be determined by a safe and acceptable means. While the excavation is open, underground installations shall be protected, supported, or removed to safeguard employees.

2.0 ENTERING EXCAVATIONS OR TRENCHES

Daily inspections of excavations, the adjacent areas, and protective systems shall be made by a "*Competent Person"* for evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted by the Competent Person prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard increasing occurrence. All inspections made by the Competent Person should be recorded in the field log book.

No person(s) shall perform work in a trench or excavation that contains accumulated water.

2.1.1 Access/Egress

A stairway, ladder, ramp, or other safe means of egress shall be located in trench excavations that are 4 feet or more in depth so as to require no more than 25 feet of lateral travel distance in any direction.

2.1.2 Exposure to Falling Loads

No employee or subcontractor is permitted underneath loads handled by lifting or digging equipment. All personnel shall be required to stand away from any vehicle being loaded or unloaded to avoid being struck by spilling or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the equipment is provided with a cab shield and/or canopy adequate to protect the operator from falling materials.

2.1.3 Warning Systems

When mobile equipment is operated adjacent to an excavation and the operators/drivers do not have a clear and direct view of the edge of the excavation, a warning system such as barricades, hand or mechanical signals, or stop logs are required.

APPENDIX D
Excavating & Trenching

2.1.4 Protection from Loose Rock or Soil

Adequate protection shall be provided to protect employees from loose rock or soil that could pose a hazard to personnel in the excavation. All temporary spoil piles shall be kept at least 2 feet away from the edge of the excavation. Spoil piles should be placed to channel rainwater or other run-off water away from the excavation.

2.1.5 Hazardous Atmospheres

All excavations deeper than 4 feet deep and which have the potential to have a hazardous atmosphere or oxygen deficient atmospheres (Less than 19.5% oxygen) must be tested to ensure safe working conditions, prior to entry. Air monitoring shall be conducted in accordance with Section 4.0 of the HASP.

2.1.6 Protective Systems

Each employee in an excavation shall be protected from cave-ins by an adequate protective system except when excavations are made entirely in stable rock or the excavation is less than 5 feet in depth and examination by the Competent Person provides no indication of a potential cave-in. Protective systems consist of sloping or benching, use of trench boxes or other shielding mechanisms, or the use of a shoring system in accordance with the regulations.

APPENDIX E
Lockout/Tagout Requirements & Procedures

1.0 DEFINITIONS

1. Lockout – Involves using a device such as a padlock, blank pipe flange, chain key block, etc. to isolate energy from employee exposure.
2. Tagout – Involves applying a tag to the energy isolating device with written information concerning the date and name of person who applied the lock and tag.

2.0 LOCKOUT/TAGOUT POLICY

This procedure establishes the minimum requirements for lockout/tagout of electrical energy sources, mechanical, hydraulic, pneumatic, thermal or chemical process energy. It is to be used to ensure that conductors and circuit parts are disconnected from sources of electrical energy, locked (tagged), and tested before work begins where employees or subcontractor could be exposed to dangerous conditions. Sources of stored energy, such as capacitors or springs, shall be relieved of their energy, and a mechanism shall be engaged to prevent the re-accumulation of energy.

Lockout/tagout procedures shall be used prior to performing tie-in operations, maintenance, repair or adjustment of any device where exposure to hazardous energy sources may occur.

3.0 RESPONSIBILITY

All effected employees and subcontractors shall be instructed in the safety significance of the lockout/tagout procedure. All new or transferred employees and all other persons whose work operations are or might be in the area shall be instructed in the purpose and use of this procedure. The ATLAS Project Manager shall ensure that appropriate personnel receive instructions on their roles and responsibilities. All persons installing a lockout/tagout device shall sign their names and the date on the tag and on the Lockout/Tagout Isolation Record (see **Appendix E.1**).

4.0 PREPARATION FOR LOCKOUT/TAGOUT

1. Review current diagrammatic drawings (or other equally effective means), tags, labels, and signs to identify and locate all disconnecting means to determine that the source of energy is interrupted by a physical break and not deenergized by a circuit interlock. Make a list of disconnecting means to be locked/tagged.
2. Review other work activities to identify where and how other personnel might be exposed to sources of energy. Establish energy control methods for control of other hazardous energy sources in the area.
3. Provide an adequately rated voltage detector to test each electrical phase conductor or circuit part to verify that they are deenergized. Test the voltage detector to make sure that it is working properly.

5.0 LOCKOUT PROCEDURE

1. Complete the Lockout/Tagout Isolation Record (see **Appendix E.1**).
2. All affected employees in the area shall be notified that a lockout is being performed.
3. The equipment being locked out shall be shut down using normal shutdown procedures. (i.e. operator's control station, stop button, etc.).
4. Any residual energy shall be identified and dissipated at this time.

5. All equipment energy sources shall be neutralized. (i.e. electrical disconnects shall be opened, valves closed, blanks inserted in piping, springs returned to neutral position, other energy sources as required)

6. The qualified employee performing the lockout shall place his/her personal lock and tag on EACH energy isolation point isolated in Step 4. If more than two (2) isolation points are required to lockout the device, a group lockbox may be used. A tag indicating all persons who applied a lock, date, time, equipment type, and number and duration of lockout shall also be applied at this time. A subcontractor representative and an ATLAS employee shall also apply a lock at this time.
7. Test the lockout by clearing the area and attempting to operate the machine or attempting to operate disconnecting means to determine that the operation is prohibited. A voltage-detecting instrument should be used for electrical components. Inspect the instrument prior to use for physical damage and operation.

6.0 REMOVAL OF LOCKOUT/TAGOUT

1. Upon completion of the lockout an authorized employee must check the area for completeness of work. If the employee who initiated the lockout is available, he/she should conduct this inspection.
2. Remove all tools and nonessential items from the area.
3. Replace all guards.
4. Ensure all employees are clear of the equipment/process.
5. Notify all affected employees in the area that the lockout device(s) are being removed.
6. Remove lockout device(s).
7. Restart the machine to insure proper operation.

7.0 GROUP LOCKOUT

1. When multiple isolation points, three (3) or more, must be controlled during a lockout, or when multiple persons (craft) are involved, a group lockout shall be used.
2. Follow the steps for a normal lockout as documented in steps 1-6 above.
3. Each key for the locks used shall be placed in a group lockout box. The group lockbox shall be kept in view of the work being performed when practical.
4. A Job Control Lock shall be installed on the group lockbox by a ATLAS Employee. This lock shall remain in place until the lockout has been completed.
5. Each employee shall remove their own lock when their portion of the work is completed or at the end of each shift.
6. Upon completion of the work, the ATLAS employee shall inspect the work area for completeness.
7. When all of the conditions of the lockout termination procedures have been satisfied, the Job Control Lock shall be removed from the group lockbox.

8.0 EMERGENCY REMOVAL LOCKOUT/TAGOUT DEVICE

1. If an employee leaves the facility without removing his/her lock and tag, an effort shall be made to notify the employee that the supervisor in charge will authorize the removal of their lock. It must be deemed necessary that removal of the lock is required by at least two supervisory personnel, but only after confirming beyond any doubt it is safe to do so.
2. Verify the employee has left the Site.
3. Check with co-workers.
4. Check the employee's time card.

5. Attempt to reach him/her at home.

APPENDIX E
Lockout/Tagout Requirements & Procedures

6. Verify the employee is not in the equipment.
7. Visually confirm the completeness of work.
8. Contact the Regional Safety Coordinator and the Project Manager.
9. An authorized employee, under the direct supervision of an ATLAS Supervisor shall remove the lock.
10. Upon return to the Site by the employee involved, he/she shall be informed of the removal.
11. A review of the incident may be conducted by the ATLAS RSC Coordinator to determine any disciplinary actions necessary.

APPENDIX E-1
Lockout/Tagout Isolation Record

System:		Isolation Record	Status	Tagging Authority
Equipment Tag:		Equipment Description:	☐ Construction	
			☐ Startup	
			☐ Operations	

LOTO No.	DNO Tag No.	Equipment Tag No.	Equipment Description	Pos.	LOTO Placed By:	Date	LOTO Removed BY:	Date

Tagging Authority Approval:		
	Signature	Date

Holder List:

PTW No.	Signed Onto LOTO Name	Date / Time	Signed Off LOTO Name	Date / Time

ATC ASSOCIATES, INC.

JSA JOB SAFETY ANALYSIS

For RM Department Use
JSA NO: EM-001(a)
Primary Job Category: All

DESCRIPTION OF JOB: **Driving**		REVISION DATE: **04-12-11**	JSA CREATED ON: **11/30/07**
PREPARED BY: Christine Anderson	REVIEWED BY: Dan Mickelsen	APPROVED BY: Dan Mickelsen	PAGE: 1 of 2

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

☐ REFLECTIVE VEST ☐ HARD HAT ☐ SAFETY TOED BOOTS ☐ SAFETY GLASSES ☐ FACE SHIELD	☒ LONG PANTS ☐ COTTON, LEATHER, OR CRAFTSMAN GLOVES ☐ CHEMICAL RESISTANT GLOVE: ☐ HEARING PROTECTION	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED AIR RESPIRATOR ☐ CHEMICAL RESISTANT CLOTHING: ☐ GOGGLES	☐ OTHER: ☐ OTHER: ☐ OTHER: ☐ OTHER: ☐ OTHER:

REQUIRED TOOLS/EQUIPMENT/SUPPLIES

☐ DRINKING WATER ☐ BUG REPELLENT ☐ TRAFFIC CONTROL DEVICES ☐ LADDER	☐ RATCHET WITH EXTENSION ☐ WELL MAGNET ☐ AIR MONITORING **SELECT FROM LIST** ☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER: ☐ OTHER: ☐ OTHER: ☐ OTHER:	☐ OTHER: ☐ OTHER: ☐ OTHER: ☐ OTHER:

STOP WORK

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1 JOB STEPS	2 POTENTIAL HAZARDOUS CONDITIONS or UNSAFE PRACTICES	3 SAFE PROCEDURES and PREVENTATIVE MEASURES
Enter/Exit Vehicle	Hand injuries – cuts and pinches	• Make sure keys are in your pocket before shutting door. • Only lock the vehicle once the door is closed. • Do not try to stop the door. • Do not place your hand between the door and the frame of the vehicle.
	Crime/Assault	• Beware of surroundings. • Use buddy system if working in high crime areas or at night. • Ask for someone to walk to your vehicle with you if a hazard is present.
Driving to and from site	Vehicles	• Use defensive driving techniques.
	Pedestrians	• Yield to all pedestrians. • Use defensive driving techniques.
	Distractions	• Do not use cell phones or other portable electronic devices while driving. • Do not eat or engage in other distracting activities while driving.
	Load shifting/moving	• All tools, equipment and supplies must be properly secured in the bed of the truck/vehicle. • Check strapping prior to driving.
	Road Conditions	• Obey posted signage and speed limits. • Use caution while traveling in construction zones. • Follow ATC's Winter Driving Tips.

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

ATC ASSOCIATES INC.

JSA JOB SAFETY ANALYSIS

For RM Department Use
JSA NO: EM-001(a)
Primary Job Category: All

DESCRIPTION OF JOB: **Driving**		REVISION DATE: **04-12-11**	JSA CREATED ON: **11/30/07**
PREPARED BY: Christine Anderson	REVIEWED BY: Dan Mickelsen	APPROVED BY: Dan Mickelsen	PAGE: 2 of 2

☐ REFLECTIVE VEST ☐ HARD HAT ☐ SAFETY TOED BOOTS ☐ SAFETY GLASSES ☐ FACE SHIELD	☐ LONG PANTS ☐ COTTON, LEATHER, OR CRAFTSMAN GLOVES ☐ CHEMICAL RESISTANT GLOVE: ☐ HEARING PROTECTION	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED AIR RESPIRATOR ☐ CHEMICAL RESISTANT CLOTHING: ☐ GOGGLES	☐ OTHER: ☐ OTHER: ☐ OTHER: ☐ OTHER: ☐ OTHER:

REQUIRED TOOLS/EQUIPMENT/SUPPLIES

☐ DRINKING WATER ☐ BUG REPELLENT ☐ TRAFFIC CONTROL DEVICES ☐ LADDER	☐ RATCHET WITH EXTENSION ☐ WELL MAGNET ☐ AIR MONITORING **SELECT FROM LIST** ☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER: ☐ OTHER: ☐ OTHER: ☐ OTHER:	☐ OTHER: ☐ OTHER: ☐ OTHER: ☐ OTHER:

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ATC ASSOCIATES, INC.

JSA JOB SAFETY ANALYSIS

For RM Department Use
JSA NO: EM-001(b)
Primary Job Category: Environmental Management

DESCRIPTION OF JOB: **Site Setup**		REVISION DATE: **04/19/11**	JSA CREATED ON: **10/10/07**
PREPARED BY: Christine Anderson	REVIEWED BY: Dan Mickelsen	APPROVED BY: Dan Mickelsen	PAGE: 1 of 4

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT			
☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR	☐ OTHER:
☒ HARD HAT	☒ COTTON, LEATHER, OR CRAFTSMAN GLOVES	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☐ CHEMICAL RESISTANT GLOVE:	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ HEARING PROTECTION	☐ GOGGLES	☐ OTHER:
☐ FACE SHIELD			☐ OTHER:
REQUIRED TOOLS/EQUIPMENT/SUPPLIES			
☐ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☐ AIR MONITORING **SELECT FROM LIST**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

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1 JOB STEPS	2 POTENTIAL HAZARDOUS CONDITIONS or UNSAFE PRACTICES	3 SAFE PROCEDURES and PREVENTATIVE MEASURES
Drive around site	• Traffic	• Use defensive driving techniques
	• Pedestrians	• Yield to all pedestrians. • Use defensive driving techniques
Load/Unload equipment and supplies	• Vehicles	• When backing the drill rig, vehicles with trailers, or other large vehicles a spotter must be used. • Use barrier controls with a height of at least 36 inches. • Wear traffic reflective vest. • Caution tape or snow fence should be used to surround the work site.
	• Pedestrians	• Use barrier controls with a height of at least 36 inches. • Place signs indicating authorized personnel only at entrance to site. • When backing the drill rig, vehicles with trailers, or other large vehicles a spotter must be used. • Caution tape or snow fence should be used to surround the work site.
	• Weather	• Prevent heat and cold illnesses by: drinking water frequently and moderately; rest frequently; wear light colored clothing; eat light meals. • Adjust work schedule to avoid temperature extremes. • Sunscreen • Layer clothing to adjust to changing environmental temperatures • Avoid drinks with caffeine (coffee, tea, or soda) or alcohol. • Use the buddy system (work in pairs).
	• Slips, trips and falls	• Maintain housekeeping. • Set up work zone with enough room for staging of equipment and supplies such

ATC ASSOCIATES INC.

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Site Setup		**04/19/11**	**10/10/07**
PREPARED BY: Christine Anderson	REVIEWED BY: Dan Mickelsen	APPROVED BY: Dan Mickelsen	PAGE: 2 of 4

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☒ SAFETY GLASSES	☐ HEARING PROTECTION	☐ GOGGLES	☐ OTHER:
☐ FACE SHIELD			☐ OTHER:
REQUIRED TOOLS/EQUIPMENT/SUPPLIES			
☐ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☐ AIR MONITORING **SELECT FROM LIST**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

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1 JOB STEPS	2 POTENTIAL HAZARDOUS CONDITIONS or UNSAFE PRACTICES	3 SAFE PROCEDURES and PREVENTATIVE MEASURES
		that there are aisle ways for walking and working. • If on pavement or concrete sweep up loose sand, dirt or rock • Wear slip resistant steel toed boots. • Keep foot wear clean of mud and other debris. • Setup areas away from snow and ice. • If ice is present wear yak-traks on boots.
	• Insects and animals	• Look around area before setting up for the presence of bee nests and cob webs. • Do not disturb – leave them alone. • If stray dogs are present go indoors or the cab of the truck and wait for it to leave. Call animal control. • If you encounter bees or poisonous spiders leave the area and call the Project Manager. • Keep hands and feet out of areas you can not see.
	• Back Injuries	• Use proper lifting procedures – avoid lifting with the back and twisting. • Do not lift over 50 pounds without assistance.
	• Hand Injuries	• Wear work gloves – leather or craftsman while setting up. • Watch hand placement – always know where your hands are at. • Do not place your hand in direct path of a tool or between two objects.
	• Heavy Equipment	• Spotters must be used at all times when heavy equipment is being operated. • All onsite personnel must wear safety reflective vest. • Operator must follow spotters hand signals and remove hands from controls when not working.

ATC ASSOCIATES INC.

JSA JOB SAFETY ANALYSIS

For RM Department Use
JSA NO: EM-001(b)
Primary Job Category: Environmental Management

DESCRIPTION OF JOB: **Site Setup**		REVISION DATE: **04/19/11**	JSA CREATED ON: **10/10/07**
PREPARED BY: Christine Anderson	REVIEWED BY: Dan Mickelsen	APPROVED BY: Dan Mickelsen	PAGE: 3 of 4

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

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☒ HARD HAT	☒ COTTON, LEATHER, OR CRAFTSMAN GLOVES	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
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REQUIRED TOOLS/EQUIPMENT/SUPPLIES

☐ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
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☒ TRAFFIC CONTROL DEVICES	☐ AIR MONITORING **SELECT FROM LIST**	☐ OTHER:	☐ OTHER:
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1 JOB STEPS	2 POTENTIAL HAZARDOUS CONDITIONS or UNSAFE PRACTICES	3 SAFE PROCEDURES and PREVENTATIVE MEASURES
		• Site personnel should only approach the spotter • Backup alarm is required on heavy equipment.
Underground Utility Locate	• Vehicles	• Wear traffic reflective vest. • A spotter should walk with the utility locator looking for hazards whenever the locator is looking down.
	• Weather	• Prevent heat and cold illnesses by: drinking water frequently and moderately; rest frequently; wear light colored clothing; eat light meals. • Adjust work schedule to avoid temperature extremes. • Sunscreen • Layer clothing to adjust to changing environmental temperatures • Avoid drinks with caffeine (coffee, tea, or soda) or alcohol. • Use the buddy system (work in pairs).
	• Slips, trips and falls	• Wear slip resistant steel toed boots with ankle support. • Keep foot wear clean of mud and other debris. • If ice is present wear yak-traks on boots.
	• Insects and animals	• Look around area before setting up for the presence of bee nests and cob webs. • Do not disturb – leave them alone. • If stray dogs are present go indoors or the cab of the truck and wait for it to leave. Call animal control. • If you encounter bees or poisonous spiders leave the area and call the Project Manager. • Keep hands and feet out of areas you can not see.

ATC ASSOCIATES, INC.

JSA JOB SAFETY ANALYSIS

For RM Department Use
JSA NO: EM-001(b)
Primary Job Category: Environmental Management

DESCRIPTION OF JOB: **Site Setup**		REVISION DATE: **04/19/11**	JSA CREATED ON: **10/10/07**
PREPARED BY: Christine Anderson	REVIEWED BY: Dan Mickelsen	APPROVED BY: Dan Mickelsen	PAGE: 4 of 4

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

☐ REFLECTIVE VEST	☐ LONG PANTS	☐ AIR PURIFYING RESPIRATOR	☐ OTHER:
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☐ SAFETY TOED BOOTS	☐ CHEMICAL RESISTANT GLOVE:	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
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REQUIRED TOOLS/EQUIPMENT/SUPPLIES

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ATC ASSOCIATES INC.

JSA JOB SAFETY ANALYSIS

For RM Department Use
Primary Category:
EM - Environmental Management
Secondary Category:
JSA NO. **EM-001b**

DESCRIPTION OF JOB:	OPERATOR JOB CLASSIFICATION:	DATE:	REVISION:
Site setup and tear down	**ATC Field Staff**	**10/10/07**	**10/10/07**

PREPARED BY: Dan Mickelsen	REVIEWED BY: Dan Mickelsen	APPROVED BY: Dan Mickelsen	PAGE: 1of

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

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☒ TRAFFIC CONTROL DEVICES	☐ AIR MONITORING **SELECT FROM LIST**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

1 JOB STEPS	2 POTENTIAL HAZARDOUS CONDITIONS or UNSAFE PRACTICES	3 SAFE PROCEDURES and PREVENTATIVE MEASURES
Drive around site	• Traffic	• Use defensive driving techniques
	• Pedestrians	• Yield to all pedestrians. • Use defensive driving techniques
Load/Unload equipment and supplies	• Vehicles	• When backing the drill rig, vehicles with trailers, or other large vehicles a spotter must be used. • Use barrier controls with a height of at least 36 inches. • Wear traffic reflective vest. • Caution tape or snow fence should be used to surround the work site.
	• Pedestrians	• Use barrier controls with a height of at least 36 inches. • Place signs indicating authorized personnel only at entrance to site. • When backing the drill rig, vehicles with trailers, or other large vehicles a spotter must be used. • Caution tape or snow fence should be used to surround the work site.
	• Weather	• Prevent heat and cold illnesses by: drinking water frequently and moderately; rest frequently; wear light colored clothing; eat light meals. • Adjust work schedule to avoid temperature extremes. • Sunscreen • Layer clothing to adjust to changing environmental temperatures • Avoid drinks with caffeine (coffee, tea, or soda) or alcohol. • Use the buddy system (work in pairs).

ATC ASSOCIATES, INC.

JSA JOB SAFETY ANALYSIS

For RM Department Use
Primary Category:
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DESCRIPTION OF JOB:	OPERATOR JOB CLASSIFICATION:	DATE:	REVISION:
Site setup and tear down	**ATC Field Staff**	**10/10/07**	**10/10/07**

PREPARED BY: Dan Mickelsen	REVIEWED BY: Dan Mickelsen	APPROVED BY: Dan Mickelsen	PAGE: 1of

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REQUIRED TOOLS/EQUIPMENT/SUPPLIES

☒ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☐ AIR MONITORING **SELECT FROM LIST**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

1 JOB STEPS	2 POTENTIAL HAZARDOUS CONDITIONS or UNSAFE PRACTICES	3 SAFE PROCEDURES and PREVENTATIVE MEASURES
	• Slips, trips and falls	• Maintain housekeeping. • Set up work zone with enough room for staging of equipment and supplies such that there are aisle ways for walking and working. • If on pavement or concrete sweep up loose sand, dirt or rock • Wear slip resistant steel toed boots. • Keep foot wear clean of mud and other debris. • Setup areas away from snow and ice. • If ice is present wear yak-traks on boots.
	• Insects and animals	• Look around area before setting up for the presence of bee nests and cob webs. • Do not disturb – leave them alone. • If stray dogs are present go indoors or the cab of the truck and wait for it to leave. Call animal control. • If you encounter bees or poisonous spiders leave the area and call the Project Manager. • Keep hands and feet out of areas you can not see.
	• Back Injuries	• Use proper lifting procedures – avoid lifting with the back and twisting. • Do not lift over 50 pounds without assistance.
	• Hand Injuries	• Wear work gloves – leather or craftsman while setting up. • Watch hand placement – always know where your hands are at. • Do not place your hand in direct path of a tool or between two objects.
	• Heavy Equipment	• Spotters must be used at all times when heavy equipment is being operated. • All onsite personnel must wear safety reflective

ATC ASSOCIATES INC.

JSA JOB SAFETY ANALYSIS

For RM Department Use
Primary Category:
EM - Environmental Management
Secondary Category:
JSA NO. **EM-001b**

DESCRIPTION OF JOB:	OPERATOR JOB CLASSIFICATION:	DATE:	REVISION:
Site setup and tear down	**ATC Field Staff**	**10/10/07**	**10/10/07**

PREPARED BY: Dan Mickelsen	REVIEWED BY: Dan Mickelsen	APPROVED BY: Dan Mickelsen	PAGE: 1of

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR	☐ OTHER:
☒ HARD HAT	☒ COTTON, LEATHER, OR CRAFTSMAN GLOVES	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☐ CHEMICAL RESISTANT GLOVE:	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ HEARING PROTECTION	☐ GOGGLES	☐ OTHER:
☐ FACE SHIELD			☐ OTHER:

REQUIRED TOOLS/EQUIPMENT/SUPPLIES

☒ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☐ AIR MONITORING **SELECT FROM LIST**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

1 JOB STEPS	2 POTENTIAL HAZARDOUS CONDITIONS or UNSAFE PRACTICES	3 SAFE PROCEDURES and PREVENTATIVE MEASURES
		vest. • Operator must follow spotters hand signals and remove hands from controls when not working. • Site personnel should only approach the spotter • Backup alarm is required on heavy equipment.
Underground Utility Locate	• Vehicles	• Wear traffic reflective vest. • A spotter should walk with the utility locator looking for hazards whenever the locator is looking down.
	• Weather	• Prevent heat and cold illnesses by: drinking water frequently and moderately; rest frequently; wear light colored clothing; eat light meals. • Adjust work schedule to avoid temperature extremes. • Sunscreen • Layer clothing to adjust to changing environmental temperatures • Avoid drinks with caffeine (coffee, tea, or soda) or alcohol. • Use the buddy system (work in pairs).
	• Slips, trips and falls	• Wear slip resistant steel toed boots with ankle support. • Keep foot wear clean of mud and other debris. • If ice is present wear yak-traks on boots.
	• Insects and animals	• Look around area before setting up for the presence of bee nests and cob webs. • Do not disturb – leave them alone. • If stray dogs are present go indoors or the cab of the truck and wait for it to leave. Call animal control. • If you encounter bees or poisonous spiders leave

ATC ASSOCIATES INC.

JSA JOB SAFETY ANALYSIS

For RM Department Use
Primary Category:
EM - Environmental Management
Secondary Category:
JSA NO. **EM-001b**

DESCRIPTION OF JOB:	OPERATOR JOB CLASSIFICATION:	DATE:	REVISION:
Site setup and tear down	**ATC Field Staff**	**10/10/07**	**10/10/07**

PREPARED BY: Dan Mickelsen	REVIEWED BY: Dan Mickelsen	APPROVED BY: Dan Mickelsen	PAGE: 1of

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR	☐ OTHER:
☒ HARD HAT	☒ COTTON, LEATHER, OR CRAFTSMAN GLOVES	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☐ CHEMICAL RESISTANT GLOVE:	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ HEARING PROTECTION	☐ GOGGLES	☐ OTHER:
☐ FACE SHIELD			☐ OTHER:

REQUIRED TOOLS/EQUIPMENT/SUPPLIES

☒ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☐ AIR MONITORING **SELECT FROM LIST**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

1 JOB STEPS	2 POTENTIAL HAZARDOUS CONDITIONS or UNSAFE PRACTICES	3 SAFE PROCEDURES and PREVENTATIVE MEASURES
		the area and call the Project Manager. • Keep hands and feet out of areas you can not see.

ATC ASSOCIATES INC.

JSA JOB SAFETY ANALYSIS

For RM Department Use
Primary Category:
EM - Environmental Management
Secondary Category:
JSA NO. **EM-001c**

DESCRIPTION OF JOB:	OPERATOR JOB CLASSIFICATION:	DATE:	REVISION:
Opening and closing a well vault	**ATC Field Staff**	**10/10/07**	**10/10/07**

PREPARED BY: Dan Mickelsen	REVIEWED BY: Dan Mickelsen	APPROVED BY: Dan Mickelsen	PAGE: 1of 3

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR	☐ OTHER:
☒ HARD HAT	☒ COTTON, LEATHER, OR CRAFTSMAN GLOVES	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☒ CHEMICAL RESISTANT GLOVE: **Nitrile**	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ HEARING PROTECTION	☐ GOGGLES	☐ OTHER:
☐ FACE SHIELD			☐ OTHER:

REQUIRED TOOLS/EQUIPMENT/SUPPLIES

☒ DRINKING WATER	☒ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☒ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☒ AIR MONITORING **PID**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

1 JOB STEPS	2 POTENTIAL HAZARDOUS CONDITIONS or UNSAFE PRACTICES	3 SAFE PROCEDURES and PREVENTATIVE MEASURES
Obtain supplies and tools from truck	• Hand injuries – cuts and scrapes	• Wear work gloves – leather or craftsman while handling equipment. • Watch hand placement – always know where your hands are at. • Do not place your hand in direct path of a tool or between two objects.
	• Slip, trip and falls	• Do not jump from the back of pickup trucks. • Always step down, facing the truck and maintaining three (3) points of contact.
Walk to and from well	• Slip, trip and falls	• Maintain housekeeping. • Set up work zone with enough room for staging of equipment and supplies such that there is aisle ways for walking and working. • If on pavement or concrete sweep up loose sand, dirt or rock • Wear slip resistant steel toed boots. • Keep foot wear clean of mud and other debris. • Be deliberate with footing while walking in fields. • Limit the amount of tools and supplies that you carry so that you can see your path.
	• Weather	• Prevent heat and cold illnesses by: drinking water frequently and moderately; rest frequently; wear light colored clothing; eat light meals. • Adjust work schedule to avoid temperature extremes. • Sunscreen • Layer clothing to adjust to changing environmental temperatures • Avoid drinks with caffeine (coffee, tea, or soda) or alcohol. • Use the buddy system (work in pairs).

ATC ASSOCIATES INC.

JSA JOB SAFETY ANALYSIS

For RM Department Use
Primary Category:
EM - Environmental Management
Secondary Category:
JSA NO. **EM-001c**

DESCRIPTION OF JOB:	OPERATOR JOB CLASSIFICATION:	DATE:	REVISION:
Opening and closing a well vault	**ATC Field Staff**	**10/10/07**	**10/10/07**

PREPARED BY: Dan Mickelsen	REVIEWED BY: Dan Mickelsen	APPROVED BY: Dan Mickelsen	PAGE: 1of 3

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR	☐ OTHER:
☒ HARD HAT	☒ COTTON, LEATHER, OR CRAFTSMAN GLOVES	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☒ CHEMICAL RESISTANT GLOVE: **Nitrile**	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ HEARING PROTECTION	☐ GOGGLES	☐ OTHER:
☐ FACE SHIELD			☐ OTHER:

REQUIRED TOOLS/EQUIPMENT/SUPPLIES

☒ DRINKING WATER	☒ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☒ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☒ AIR MONITORING **PID**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

1 JOB STEPS	2 POTENTIAL HAZARDOUS CONDITIONS or UNSAFE PRACTICES	3 SAFE PROCEDURES and PREVENTATIVE MEASURES
Remove locks and bolts	• Hand injuries – cuts and scrapes	• Wear work gloves – leather or craftsman. • Use a ratchet extension while unbolting the well. • Watch hand placement – always know where your hands are at. • Do not place your hand in direct path of a tool or between two objects.
Remove/replace well vault lid	• Hand injuries – cuts, scrapes, pinches.	• Wear work gloves – leather or craftsman while opening wells. • Watch hand placement – always know where your hands are at. • Do not place your hand in direct path of a tool or between two objects. • Lift the well cover with the magnet. When removing the magnet lift with your legs, don't jerk upward.
	• Insect – bees, wasps, hornets or black widow spiders	• If insects are encountered notify the Project Manager so that an exterminator can be called. • Open wells slowing looking under the lid. • Shut down site do not proceed
	• Sharp metal at well opening	• Wear work gloves – leather or craftsman • Watch hand placement – always know where your hands are at.
	• Back injuries	• Use proper lifting procedures – avoid lifting with the back and twisting.
Remove/replace well lid	• Pressure	• Remove cap slowing. • Listen for hissing sound • Do not place face near welling opening
	• Chemical contact – inhalation	• Stand upwind while removing cap. • Do not place face near welling opening • Monitor the area with a PID while performing site operations when the well is known to contain free

ATC ASSOCIATES INC.

JSA JOB SAFETY ANALYSIS

For RM Department Use
Primary Category:
EM - Environmental Management
Secondary Category:
JSA NO. **EM-001c**

DESCRIPTION OF JOB:	OPERATOR JOB CLASSIFICATION:	DATE:	REVISION:
Opening and closing a well vault	**ATC Field Staff**	**10/10/07**	**10/10/07**

PREPARED BY: Dan Mickelsen	REVIEWED BY: Dan Mickelsen	APPROVED BY: Dan Mickelsen	PAGE: 1of 3

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR	☐ OTHER:
☒ HARD HAT	☒ COTTON, LEATHER, OR CRAFTSMAN GLOVES	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☒ CHEMICAL RESISTANT GLOVE: **Nitrile**	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ HEARING PROTECTION	☐ GOGGLES	☐ OTHER:
☐ FACE SHIELD			☐ OTHER:

REQUIRED TOOLS/EQUIPMENT/SUPPLIES

☒ DRINKING WATER	☒ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☒ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☒ AIR MONITORING **PID**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

1 JOB STEPS	2 POTENTIAL HAZARDOUS CONDITIONS or UNSAFE PRACTICES	3 SAFE PROCEDURES and PREVENTATIVE MEASURES
		product. • Respirator use required if 10 ppm is maintained for 5 minutes.
	• Chemical contact – hand	• Wear nitrile gloves

ATC ASSOCIATES INC.

JSA JOB SAFETY ANALYSIS

For RM Department Use
Primary Category:
EM - Environmental Management
Secondary Category:
JSA NO. **EM-001d**

DESCRIPTION OF JOB:	OPERATOR JOB CLASSIFICATION:	DATE:	REVISION:
Guaging of a well	**ATC Field Staff**	**3/30/06**	**12/5/07**
PREPARED BY: **Dan Mickelsen**	REVIEWED BY: **Dan Mickelsen**	APPROVED BY: **Dan Mickelsen**	PAGE: 1of 2

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR	☐ OTHER:
☒ HARD HAT	☒ COTTON, LEATHER, OR CRAFTSMAN GLOVES	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☒ CHEMICAL RESISTANT GLOVE: **Nitrile**	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ HEARING PROTECTION	☐ GOGGLES	☐ OTHER:
☒ FACE SHIELD			☐ OTHER:

REQUIRED TOOLS/EQUIPMENT/SUPPLIES

☐ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☒ AIR MONITORING **PID**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

1 JOB STEPS	2 POTENTIAL HAZARDOUS CONDITIONS or UNSAFE PRACTICES	3 SAFE PROCEDURES and PREVENTATIVE MEASURES
Obtain supplies and tools from truck	• Hand injuries – cuts and scrapes	• Wear work gloves – leather or craftsman while handling equipment. • Watch hand placement – always know where your hands are at. • Do not place your hand in direct path of a tool or between two objects.
	• Slip, trip and falls	• Do not jump from the back of pickup trucks. Always step down. • Maintain three points of contact while climbing and descending. Always face the object you are climbing.
Walk to and from well	• Slip, trip and falls	• Maintain housekeeping. • Set up work zone with enough room for staging of equipment and supplies such that there are aisle ways for walking and working. • If on pavement or concrete sweep up loose sand, dirt or rock • Wear slip resistant steel toed boots. • Keep foot wear clean of mud and other debris. • Be deliberate with footing while walking in fields. In fields look down while walking. Limit carrying objects that could block or obstruct your view of the pathway.
	• Weather	• Prevent heat and cold illnesses by: drinking water frequently and moderately; rest frequently; wear light colored clothing; eat light meals. • Adjust work schedule to avoid temperature extremes. • Sunscreen • Layer clothing to adjust to changing environmental temperatures • Avoid drinks with caffeine (coffee, tea, or soda) or alcohol. • Use the buddy system (work in pairs).
Lower and raise water level meter into well	• Chemical contact – inhalation	• Stand upwind. • Do not place face near welling opening. Bring the measurement tape to you to read.

ATC ASSOCIATES INC.

JSA JOB SAFETY ANALYSIS

For RM Department Use
Primary Category:
EM - Environmental Management
Secondary Category:
JSA NO. **EM-001d**

DESCRIPTION OF JOB:	OPERATOR JOB CLASSIFICATION:	DATE:	REVISION:
Guaging of a well	**ATC Field Staff**	**3/30/06**	**12/5/07**

PREPARED BY:	REVIEWED BY:	APPROVED BY:	PAGE:
Dan Mickelsen	**Dan Mickelsen**	**Dan Mickelsen**	1of 2

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR	☐ OTHER:
☒ HARD HAT	☒ COTTON, LEATHER, OR CRAFTSMAN GLOVES	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☒ CHEMICAL RESISTANT GLOVE: **Nitrile**	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ HEARING PROTECTION	☐ GOGGLES	☐ OTHER:
☒ FACE SHIELD			☐ OTHER:

REQUIRED TOOLS/EQUIPMENT/SUPPLIES

☐ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☒ AIR MONITORING **PID**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

1 JOB STEPS	2 POTENTIAL HAZARDOUS CONDITIONS or UNSAFE PRACTICES	3 SAFE PROCEDURES and PREVENTATIVE MEASURES
		Breathing zone should be at least 2 feet away from the well opening. • Monitor the area with a PID while performing site operations if well is known to contain free product • Respirator use required if 10 ppm is maintained for 5 minutes. • Bring tape measure to face to read.
	• Chemical contact – hand	• Wear nitrile gloves
Decon equipment	• Chemical contact – hand	• Wear nitrile gloves
	• Splash Hazards	• Wear safety glasses • Face shield while pouring or cleaning decon buckets.

ATC JSA JOB SAFETY ANALYSIS

For RM Department Use
JSA NO: EM-001(e)
Primary Job Category: Environmental Management

DESCRIPTION OF JOB: **Water Sampling Of A Well**

REVISION DATE:	JSA CREATED ON:
02/24/16	**12/6/07**

PREPARED BY: Christine Anderson	REVIEWED BY: Dan Mickelsen	APPROVED BY: Dan Mickelsen	PAGE: 1 of 4

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR	☐ OTHER:
☒ HARD HAT	☐ COTTON, LEATHER, OR CRAFTSMAN GLOVES	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☒ CHEMICAL RESISTANT GLOVE: **Nitrile**	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ HEARING PROTECTION	☐ GOGGLES	☐ OTHER:
☐ FACE SHIELD			☐ OTHER:

REQUIRED TOOLS/EQUIPMENT/SUPPLIES

☒ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☒ AIR MONITORING **PID**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

STOP WORK

ATC and Subcontractor employees must stop work and contact off-site senior personnel when a change in condition, process, or job phase develops on the project site that is not addressed by this JSA or within the project specific HASP. The JSA should be modified with new steps, hazards, and safe procedures agreed upon by all ATC and Subcontractor employees at the project site and approved by off-site senior personnel. Documentation of the modification and review by all affected personnel must take place.

1 JOB STEPS	2 POTENTIAL HAZARDOUS CONDITIONS or UNSAFE PRACTICES	3 SAFE PROCEDURES and PREVENTATIVE MEASURES
Obtain supplies and tools from truck	Hand injuries – cuts and scrapes	• Wear work gloves – leather or craftsman while handling equipment. • Watch hand placement – always know where your hands are at. • Do not place your hand in direct path of a tool or between two objects.
	Slip, trip and falls	• Do not jump from the back of pickup trucks. Always step down. • Maintain three points of contact while climbing and descending. Always face the object you are climbing.
Walk to and from well	Slip, trip and falls	• Maintain housekeeping. • Set up work zone with enough room for staging of equipment and supplies such that there are aisle ways for walking and working. • If on pavement or concrete sweep up loose sand, dirt or rock • Wear slip resistant steel toed boots. • Keep foot wear clean of mud and other debris. • Be deliberate with footing while walking in fields. In fields look down while walking. Limit carrying objects that could block or obstruct your view of the pathway.
	Weather	• Prevent heat and cold illnesses by: drinking water frequently and moderately; rest frequently; wear light colored clothing; eat light meals. • Adjust work schedule to avoid temperature extremes. • Sunscreen • Layer clothing to adjust to changing environmental temperatures • Avoid drinks with caffeine (coffee, tea, or soda) or alcohol. • Use the buddy system (work in pairs).
Prepare sampling equipment	Hand cuts	• Do not use a fixed open blade knife to cut the plastic wrap.

ATC JSA JOB SAFETY ANALYSIS

For RM Department Use
JSA NO: EM-001(e)
Primary Job Category: Environmental Management

DESCRIPTION OF JOB: **Water Sampling Of A Well**		REVISION DATE: **02/24/16**	JSA CREATED ON: **12/6/07**
PREPARED BY: Christine Anderson	REVIEWED BY: Dan Mickelsen	APPROVED BY: Dan Mickelsen	PAGE: 2 of 4

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR	☐ OTHER:
☒ HARD HAT	☐ COTTON, LEATHER, OR CRAFTSMAN GLOVES	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☒ CHEMICAL RESISTANT GLOVE: **Nitrile**	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ HEARING PROTECTION	☐ GOGGLES	☐ OTHER:
☐ FACE SHIELD			☐ OTHER:

REQUIRED TOOLS/EQUIPMENT/SUPPLIES

☒ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☒ AIR MONITORING **PID**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

STOP WORK

ATC and Subcontractor employees must stop work and contact off-site senior personnel when a change in condition, process, or job phase develops on the project site that is not addressed by this JSA or within the project specific HASP. The JSA should be modified with new steps, hazards, and safe procedures agreed upon by all ATC and Subcontractor employees at the project site and approved by off-site senior personnel. Documentation of the modification and review by all affected personnel must take place.

1 JOB STEPS	2 POTENTIAL HAZARDOUS CONDITIONS or UNSAFE PRACTICES	3 SAFE PROCEDURES and PREVENTATIVE MEASURES
Lower and raise sampling device into well	Chemical contact – inhalation	• Stand upwind. • Do not place face near welling opening. Bring the measurement tape to you to read. Breathing zone should be at least 2 feet away from the well opening. • Monitor the area with a PID while performing site operations if well is known to contain free product • Respirator use required if 10 ppm is maintained for 5 minutes. • Bring tape measure to face to read.
	Shoulder/arm strain or sprain	• For wells deeper then 125 feet use a pump to extract sample from well. • If the well needs to be purged of 5 gallons or more than then a pump should be used.
	Chemical contact – hand	• Wear nitrile gloves
Place sample into sample container	Chemical contact with acid.	• Wear nitrile gloves when handling empty or full sampling containers. Some containers break during shipment and can leak acid onto other sampling containers.
	Breaking the sampling container, broken glass	• Over tightening will cause the glass to break. Once resistance is felt stop. • When tightening, keep hands and fingers away from the neck of the sampling container. • Hold the filled VOA vertically with the fingertips of your thumb, index, and middle fingers; gently twist the cap onto the VOA by pinching it between your index, middle finger, and thumb of your other hand. The hand holding the VOA does not move, while the hand with the cap

ATC JSA JOB SAFETY ANALYSIS

For RM Department Use
JSA NO: EM-001(e)
Primary Job Category: Environmental Management

DESCRIPTION OF JOB: **Water Sampling Of A Well**		REVISION DATE: **02/24/16**	JSA CREATED ON: **12/6/07**
PREPARED BY: Christine Anderson	REVIEWED BY: Dan Mickelsen	APPROVED BY: Dan Mickelsen	PAGE: 3 of 4

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT			
☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR	☐ OTHER:
☒ HARD HAT	☐ COTTON, LEATHER, OR CRAFTSMAN GLOVES	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☒ CHEMICAL RESISTANT GLOVE: **Nitrile**	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ HEARING PROTECTION	☐ GOGGLES	☐ OTHER:
☐ FACE SHIELD			☐ OTHER:

REQUIRED TOOLS/EQUIPMENT/SUPPLIES			
☒ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☒ AIR MONITORING **PID**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

STOP WORK

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1 JOB STEPS	2 POTENTIAL HAZARDOUS CONDITIONS or UNSAFE PRACTICES	3 SAFE PROCEDURES and PREVENTATIVE MEASURES
		rotates slightly to the right. • Breakage typically occurs when tightening cap. Therefore it is important to not apply any compression force to the vial (i.e. pushing the cap down onto the vial and/or pushing the vial up into the cap), as this will force broken glass towards the cap hand if vial failure occurs. • See ATC Steps to Fill a VOA With a Groundwater Sample.
Decon equipment	Chemical contact – hand	• Wear nitrile gloves
	Splash Hazards	• Wear safety glasses • Face shield while pouring or cleaning decon buckets.

ATC JSA JOB SAFETY ANALYSIS

For RM Department Use
JSA NO: EM-001(e)
Primary Job Category: Environmental Management

DESCRIPTION OF JOB: **Water Sampling Of A Well**		REVISION DATE: **02/24/16**	JSA CREATED ON: **12/6/07**
PREPARED BY: Christine Anderson	REVIEWED BY: Dan Mickelsen	APPROVED BY: Dan Mickelsen	PAGE: 4 of 4

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

☐ REFLECTIVE VEST	☐ LONG PANTS	☐ AIR PURIFYING RESPIRATOR	☐ OTHER:
☐ HARD HAT	☐ COTTON, LEATHER, OR CRAFTSMAN GLOVES	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☐ SAFETY TOED BOOTS	☐ CHEMICAL RESISTANT GLOVE:	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☐ SAFETY GLASSES	☐ HEARING PROTECTION	☐ GOGGLES	☐ OTHER:
☐ FACE SHIELD			☐ OTHER:

REQUIRED TOOLS/EQUIPMENT/SUPPLIES

☐ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☐ TRAFFIC CONTROL DEVICES	☐ AIR MONITORING **SELECT FROM LIST**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

STOP WORK

ATC and Subcontractor employees must stop work and contact off-site senior personnel when a change in condition, process, or job phase develops on the project site that is not addressed by this JSA or within the project specific HASP. The JSA should be modified with new steps, hazards, and safe procedures agreed upon by all ATC and Subcontractor employees at the project site and approved by off-site senior personnel. Documentation of the modification and review by all affected personnel must take place.

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ATC ASSOCIATES INC.

JSA JOB SAFETY ANALYSIS

For RM Department Use
JSA NO: EM-008a
Primary Job Category: Environmental Management

DESCRIPTION OF JOB: **Vacuum Truck Operations**		REVISION DATE: **04/19/2011**	JSA CREATED ON: **01/30/09**
PREPARED BY: Christine Anderson	REVIEWED BY: Dan Mickelsen	APPROVED BY: Dan Mickelsen	PAGE: 1 of 4

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

☒ REFLECTIVE VEST	☒ LONG PANTS	☒ AIR PURIFYING RESPIRATOR	☐ OTHER:
☒ HARD HAT	☒ COTTON, LEATHER, OR CRAFTSMAN GLOVES	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☒ CHEMICAL RESISTANT GLOVE: **Nitrile**	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ HEARING PROTECTION	☐ GOGGLES	☐ OTHER:
☒ FACE SHIELD			☐ OTHER:

REQUIRED TOOLS/EQUIPMENT/SUPPLIES

☐ DRINKING WATER	☒ RATCHET WITH EXTENSION	☒ OTHER: LEL Meter	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☒ AIR MONITORING **PID**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

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1 JOB STEPS	2 POTENTIAL HAZARDOUS CONDITIONS or UNSAFE PRACTICES	3 SAFE PROCEDURES and PREVENTATIVE MEASURES
Driving to and from the project site	See JSA for Driving	• See JSA for Driving
	Spill of hazardous material	• Follow established truck route • Check load before leaving the site • All drivers must carry an emergency phone number in case of spill.
Move truck into position	Vehicles	• When backing equipment into place a spotter must be used. • Spotter must have on traffic safety vest. • Equipment driver should yield to other vehicles.
	Pedestrians	• When backing equipment into place a spotter must be used. • Back-up alarm on equipment. • All personnel should wear traffic reflective vest.
Setup	See JSA for Site Setup	• See JSA for Site Setup
Open connection port and connect hoses	Confined space	• Turbine sump is considered a permitted confined space and entry past the plane of the sump by any part of the body including the hand is prohibited. • If the sump contains an internal lid use a long handled (non-sparking) tool to lift the lid and move out of position so that the product lines are visible. • Any tools or equipment that drop into the sump must remain there. Do not attempt to retrieve, contact Project Manager.
	Hand injuries	• Wear work gloves – leather, cotton, or craftsman while opening wells. • Watch hand placement – always know where your hands are at. • Do not place your hand in direct path of a tool or between two objects. • Do not place hand under the lid, between the lid and ground. • Lift the cover with the magnet, pry bar with hook end or with the

ATC ASSOCIATES INC.

JSA JOB SAFETY ANALYSIS

For RM Department Use
JSA NO: EM-008a
Primary Job Category: Environmental Management

DESCRIPTION OF JOB: **Vacuum Truck Operations**		REVISION DATE: **04/19/2011**	JSA CREATED ON: **01/30/09**
PREPARED BY: Christine Anderson	REVIEWED BY: Dan Mickelsen	APPROVED BY: Dan Mickelsen	PAGE: 2 of 4

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

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☒ HARD HAT	☒ COTTON, LEATHER, OR CRAFTSMAN GLOVES	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☒ CHEMICAL RESISTANT GLOVE: **Nitrile**	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ HEARING PROTECTION	☐ GOGGLES	☐ OTHER:
☒ FACE SHIELD			☐ OTHER:

REQUIRED TOOLS/EQUIPMENT/SUPPLIES

☐ DRINKING WATER	☒ RATCHET WITH EXTENSION	☒ OTHER: LEL Meter	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☒ AIR MONITORING **PID**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

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1 JOB STEPS	2 POTENTIAL HAZARDOUS CONDITIONS or UNSAFE PRACTICES	3 SAFE PROCEDURES and PREVENTATIVE MEASURES
		manufacturer installed handles. • When removing the lid, lift with your legs, don't jerk upward. • Use two people to remove the lid if the pry bar with hook is not used. • If bolted in place do not remove lid.
	Inhalation hazard	• Stand upwind while removing the lid. • Do not place face near opening of vault when removing or replacing lid.
	Fire/explosion	• Remove all sources of ignition. Turn off nearby vehicles. • Monitor the atmosphere, within 2 feet from the opening downwind at ground level, with a PID for levels of organic vapor.
Loading/Unloading of hazardous material	Vehicles	• Use barrier controls with a height of at least 42 inches. • Wear traffic reflective vest. • Do not hide around blind corners. • Make your presence known • Place the ATC truck between you and the main traffic pattern
	Pedestrians	• Use barrier controls with a height of at least 42 inches. • Caution tape or snow fence should be used to surround the entire site.
	Explosions	• Use only conductive hoses when operating • Make sure the equipment is properly grounded before operating • Vent all vapors through a stack 12 feet above the tank or through a hose at least 50 feet in length which exhausts downwind of the operations away from ignition sources. • Remove all ignition sources

ATC ASSOCIATES INC.

JSA JOB SAFETY ANALYSIS

For RM Department Use
JSA NO: EM-008a
Primary Job Category: Environmental Management

DESCRIPTION OF JOB: Vacuum Truck Operations		REVISION DATE: 04/19/2011	JSA CREATED ON: 01/30/09
PREPARED BY: Christine Anderson	REVIEWED BY: Dan Mickelsen	APPROVED BY: Dan Mickelsen	PAGE: 3 of 4

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

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☒ SAFETY GLASSES	☐ HEARING PROTECTION	☐ GOGGLES	☐ OTHER:
☒ FACE SHIELD			☐ OTHER:

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☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☒ AIR MONITORING **PID**	☐ OTHER:	☐ OTHER:
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1 JOB STEPS	2 POTENTIAL HAZARDOUS CONDITIONS or UNSAFE PRACTICES	3 SAFE PROCEDURES and PREVENTATIVE MEASURES
—		• Monitor the environment for hazardous and explosive environments. • Stop work if 10% of LEL is reached.
	Slips, trips and falls	• Maintain housekeeping. • Set up work zone with enough room for staging of equipment and supplies such that there are aisle ways for walking and working. • If on pavement or concrete sweep up loose sand, dirt or rock • Wear slip resistant steel toed boots. • Keep foot wear clean of mud and other debris • If ice and snow are present place yak-traks on boots
	Chemical contact	• Wear nitrile gloves when handling hoses • Wear safety glasses
	Hose failures	• Before turning on vacuum check all hose connections • Secure all hoses with anti-whip chains
	Hazardous environment	• Monitor the environment for hazardous and explosive environments with a PID, FID or 5 gas monitor. • Stop work if 25 PPM is reached in the breathing zone and sustained for 5 minutes.

ATC ASSOCIATES INC.

JSA JOB SAFETY ANALYSIS

For RM Department Use
JSA NO: EM-008a
Primary Job Category: Environmental Management

DESCRIPTION OF JOB: **Vacuum Truck Operations**		REVISION DATE: **04/19/2011**	JSA CREATED ON: **01/30/09**
PREPARED BY: Christine Anderson	REVIEWED BY: Dan Mickelsen	APPROVED BY: Dan Mickelsen	PAGE: 4 of 4

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☐ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☐ TRAFFIC CONTROL DEVICES	☐ AIR MONITORING **SELECT FROM LIST**	☐ OTHER:	☐ OTHER:
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Job Safety Analysis (JSA)

Date of Analysis: 3/13/06 JSA Conducted By: Dale Gann Job Title: Senior Project Engineer
Department: _____ Job Description: EFR Event
Job Location: _____

(1) Job Segments & Steps	(2) Potential Hazards	(3) Safe Procedures & Preventive Measures
Travel to and from Site	• Pedestrians	• Yield to all pedestrians. • Use defensive driving techniques.
	• Road Conditions	• Check the State of Colorado Department of Transportation for road closures and weather conditions.
	• Vehicles	• Use defensive driving techniques.
Site set up and teardown	• Vehicles	• Use barrier controls with a height of at least 36 inches. • Wear traffic reflective vest
	• Pedestrians	• Use barrier controls with a height of at least 36 inches. • Caution tape and snow fence should be used to surround the entire work area.
	• Weather	• Prevent heat and cold illnesses by: drinking water frequently and moderately; rest frequently; wear light colored clothing; eat light meals. • Adjust work schedule to avoid temperature extremes. • Sunscreen • Layer clothing to adjust to changing environmental temperatures • Avoid drinks with caffeine (coffee, tea, or soda) or alcohol. • Use the buddy system (work in pairs).
	• Back injuries	• Use proper lifting procedures – avoid lifting with the back and twisting. • Do not lift over 50 pounds without assistance.
	• Hand injuries	• Wear work gloves – leather or craftsman while setting up. • Watch hand placement – always know where your hands are at. • Do not place your hand in direct path of a tool or between two objects.
	• Slips, trips and falls	• Maintain housekeeping. • Set up work zone with enough room for staging of equipment and supplies such that there are aisle ways for walking and working. • If on pavement or concrete sweep up loose sand, dirt or

Job Safety Analysis (JSA)

Date of Analysis: 3/13/06 JSA Conducted By: Dale Gann Job Title: Senior Project Engineer
Department: _____ Job Description: EFR Event
Job Location: _____

		rock • Wear slip resistant steel toed boots. • Keep foot wear clean of mud and other debris. • Setup areas away from snow and ice. • If ice is present wear yak-traks on boots.
	• Insects and animals	• Look around area before setting up for the presence of bee nests and cob webs. • Do not disturb – leave them alone. • If stray dogs are present go indoors or the cab of the truck and wait for it to leave. Call animal control. • If you encounter bees or poisonous spiders leave the area and call the Project Manager. • Keep hands and feet out of areas you can not see.
Open and Close Wells	• Back Injuries	• Use proper lifting procedures – avoid lifting with the back and twisting.
	• Chemical	• Perform air monitoring using a PID. See Air Monitoring section of the HASP
	• Hand injuries – pinch and cuts	• Wear work gloves – leather or craftsman while opening wells. • Use a ratchet extension while unbolting the well. • Watch hand placement – always know where your hands are at. • Do not place your hand in direct path of a tool or between two objects. • Lift the well cover out by inserting a screw driver into a bolt hole or use a magnet.

Job Safety Analysis (JSA)

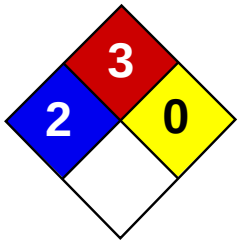
Date of Analysis: 3/13/06 JSA Conducted By: Dale Gann Job Title: Senior Project Engineer
Department: _____ Job Description: EFR Event
Job Location: _____

	• Slip, trips and falls	• Maintain housekeeping. • Set up work zone with enough room for staging of equipment and supplies such that there are aisle ways for walking and working. • If on pavement or concrete sweep up loose sand, dirt or rock • Wear slip resistant steel toed boots. • Pickup tools when done using them. • Pickup loose bolts and secure them. • Keep foot wear clean of mud and other debris. • Setup areas away from snow and ice. • If ice is present wear yak-traks on boots.
	• Weather	• Prevent heat and cold illnesses by: drinking water frequently and moderately; rest frequently; wear light colored clothing; eat light meals. • Adjust work schedule to avoid temperature extremes. • Sunscreen • Layer clothing to adjust to changing environmental temperatures • Avoid drinks with caffeine (coffee, tea, or soda) or alcohol. • Use the buddy system (work in pairs).
	• Pedestrians	• Use barrier controls with a height of at least 36 inches. • Caution tape and snow fence should be used to surround the entire work area.
	• Vehicles	• Use barrier controls with a height of at least 36 inches. • Wear traffic reflective vest. • Use the buddy system – The 2nd person should still stand and watch for traffic while the other person is opening the well.
Perform EFR	• Vehicles	• Use barrier controls with a height of at least 36 inches. • Wear traffic reflective vest.

Job Safety Analysis (JSA)

Date of Analysis: 3/13/06 JSA Conducted By: Dale Gann Job Title: Senior Project Engineer
Department: _____ Job Description: EFR Event
Job Location: _____

	• Pedestrians	• Use barrier controls with a height of at least 36 inches. • Caution tape and snow fence should be used to surround the work area.
	• Back Injuries	• Use proper lifting procedures – avoid lifting with the back and twisting. • Do not lift over 50 pounds without assistance.
	• Noise	• Measure the noise level. If it is above 85 decibels then hearing protection is required.
	• Electrical Shock Hazard	• Be aware of your surroundings. • Before starting equipment look for any frayed or loose electrical wires.
	• Chemical	• Wear nitrile gloves whenever contacting hoses and storage tanks. • Perform air monitoring using a PID in area of exhaust. • Wear safety glasses
	• Hazardous environment	• Monitor the environment for hazardous and explosive environments with a PID, FID or 4 gas monitor. • Stop work if 10 PPM is reached in the breathing zone and sustained for 5 minutes.
	• Hose failures	• Before turning on vacuum check all hose connections • Secure all hoses with anti-whip chains
	• Explosions	• Use only conductive hoses when operating • Make sure the equipment is properly grounded before operating • Vent all vapors through a stack 12 feet above the tank or through a hose at least 50 feet in length which exhausts downwind of the operations away from ignition sources. • Remove all ignition sources • Monitor the environment for hazardous and explosive environments. • Stop work if 10% of LEL is reached.



Material Safety Data Sheet
Benzene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Benzene

Catalog Codes: SLB1564, SLB3055, SLB2881

CAS#: 71-43-2

RTECS: CY1400000

TSCA: TSCA 8(b) inventory: Benzene

CI#: Not available.

Synonym: Benzol; Benzine

Chemical Name: Benzene

Chemical Formula: C6-H6

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Benzene	71-43-2	100

Toxicological Data on Ingredients: Benzene: ORAL (LD50): Acute: 930 mg/kg [Rat]. 4700 mg/kg [Mouse]. DERMAL (LD50): Acute: >9400 mg/kg [Rabbit]. VAPOR (LC50): Acute: 10000 ppm 7 hours [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of eye contact (irritant), of inhalation. Hazardous in case of skin contact (irritant, permeator), of ingestion. Inflammation of the eye is characterized by redness, watering, and itching.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH, 1 (Proven for human.) by IARC. MUTAGENIC EFFECTS: Classified POSSIBLE for human. Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female [POSSIBLE]. The substance is toxic to blood, bone marrow, central nervous system (CNS). The substance may be toxic to liver, Urinary System. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention immediately.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 497.78°C (928°F)

Flash Points: CLOSED CUP: -11.1°C (12°F). (Setaflash)

Flammable Limits: LOWER: 1.2% UPPER: 7.8%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Highly flammable in presence of open flames and sparks, of heat. Slightly flammable to flammable in presence of oxidizing materials. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Explosive in presence of oxidizing materials, of acids.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards:
Extremely flammable liquid and vapor. Vapor may cause flash fire. Reacts on contact with iodine heptafluoride gas. Dioxygenyl tetrafluoroborate is as very powferful oxidant. The addition of a small particle to small samples of benzene, at ambient temperature, causes ignition. Contact with sodium peroxide with benzene causes ignition. Benzene ignites in contact with powdered chromic anhydride. Virgorous or incandescent reaction with hydrogen + Raney nickel (above 210 C) and bromine trifluoride.

Special Remarks on Explosion Hazards:
Benzene vapors + chlorine and light causes explosion. Reacts explosively with bromine pentafluoride, chlorine, chlorine trifluoride, diborane, nitric acid, nitryl perchlorate, liquid oxygen, ozone, silver perchlorate. Benzene + pentafluoride and methoxide (from arsenic pentafluoride and potassium methoxide) in trichlorotrifluoroethane causes explosion. Interaction

of nitryl perchlorate with benzene gave a slight explosion and flash. The solution of permanganic acid (or its explosive anhydride, dimaganese heptoxide) produced by interaction of permanganates and sulfuric acid will explode on contact with benzene. Peroxodisulfuric acid is a very powferful oxidant. Uncontrolled contact with benzene may cause explosion. Mixtures of peroxomonsulfuric acid with benzene explodes.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.5 STEL: 2.5 (ppm) from ACGIH (TLV) [United States] TWA: 1.6 STEL: 8 (mg/m3) from ACGIH (TLV) [United States] TWA: 0.1 STEL: 1 from NIOSH TWA: 1 STEL: 5 (ppm) from OSHA (PEL) [United States] TWA: 10 (ppm) from OSHA (PEL) [United States] TWA: 3 (ppm) [United Kingdom (UK)] TWA: 1.6 (mg/m3) [United Kingdom (UK)] TWA: 1 (ppm) [Canada] TWA: 3.2 (mg/m3) [Canada] TWA: 0.5 (ppm) [Canada]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor:
Aromatic. Gasoline-like, rather pleasant. (Strong.)

Taste: Not available.

Molecular Weight: 78.11 g/mole

Color: Clear Colorless. Colorless to light yellow.

pH (1% soln/water): Not available.

Boiling Point: 80.1 (176.2°F)

Melting Point: 5.5°C (41.9°F)

Critical Temperature: 288.9°C (552°F)

Specific Gravity: 0.8787 @ 15 C (Water = 1)

Vapor Pressure: 10 kPa (@ 20°C)

Vapor Density: 2.8 (Air = 1)

Volatility: Not available.

Odor Threshold: 4.68 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 2.1

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether, acetone.

Solubility:
Miscible in alcohol, chloroform, carbon disulfide oils, carbon tetrachloride, glacial acetic acid, diethyl ether, acetone. Very slightly soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources, incompatibles.

Incompatibility with various substances: Highly reactive with oxidizing agents, acids.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Benzene vapors + chlorine and light causes explosion. Reacts explosively with bromine pentafluoride, chlorine, chlorine trifluoride, diborane, nitric acid, nitryl perchlorate, liquid oxygen, ozone, silver perchlorate. Benzene + pentafluoride and methoxide (from arsenic pentafluoride and potassium methoxide) in trichlorotrifluoroethane causes explosion. Interaction of nitryl perchlorate with benzene gave a slight explosion and flash. The solution of permanganic acid (or its explosive anhydride, dimaganese heptoxide) produced by interaction of permanganates and sulfuric acid will explode on contact with benzene. Peroxodisulfuric acid is a very powferful oxidant. Uncontrolled contact with benzene may cause explosion. Mixtures of peroxomonsulfuric acid with benzene explodes.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 930 mg/kg [Rat]. Acute dermal toxicity (LD50): >9400 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 10000 7 hours [Rat].

Chronic Effects on Humans:

CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH, 1 (Proven for human.) by IARC. MUTAGENIC EFFECTS: Classified POSSIBLE for human. Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female [POSSIBLE]. Causes damage to the following organs: blood, bone marrow, central nervous system (CNS). May cause damage to the following organs: liver, Urinary System.

Other Toxic Effects on Humans:
Very hazardous in case of inhalation. Hazardous in case of skin contact (irritant, permeator), of ingestion.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive effects (female fertility, Embryotoxic and/or foetotoxic in animal) and birth defects. May affect genetic material (mutagenic). May cause cancer (tumorigenic, leukemia)) Human: passes the placental barrier, detected in maternal milk.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes skin irritation. It can be absorbed through intact skin and affect the liver, blood, metabolism,and urinary system. Eyes: Causes eye irritation. Inhalation: Causes respiratory tract and mucous membrane irritation. Can be absorbed through the lungs. May affect behavior/Central and Peripheral nervous systems (somnolence, muscle weakness, general anesthetic, and other symptoms similar to ingestion), gastrointestinal tract (nausea), blood metabolism, urinary system. Ingestion: May be harmful if swallowed. May cause gastrointestinal tract irritation including vomiting. May affect behavior/Central and Peripheral nervous systems (convulsions, seizures, tremor, irritability, initial CNS stimulation followed by depression, loss of coordination, dizziness, headache, weakness, pallor, flushing), respiration (breathlessness and chest constriction), cardiovascular system, (shallow/rapid pulse), and blood.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Benzene UNNA: 1114 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Benzene California prop. 65 (no significant risk level): Benzene: 0.007 mg/day (value) California prop. 65: This product contains the following ingredients

for which the State of California has found to cause cancer which would require a warning under the statute: Benzene Connecticut carcinogen reporting list.: Benzene Connecticut hazardous material survey.: Benzene Illinois toxic substances disclosure to employee act: Benzene Illinois chemical safety act: Benzene New York release reporting list: Benzene Rhode Island RTK hazardous substances: Benzene Pennsylvania RTK: Benzene Minnesota: Benzene Michigan critical material: Benzene Massachusetts RTK: Benzene Massachusetts spill list: Benzene New Jersey: Benzene New Jersey spill list: Benzene Louisiana spill reporting: Benzene California Director's list of Hazardous Substances: Benzene TSCA 8(b) inventory: Benzene SARA 313 toxic chemical notification and release reporting: Benzene CERCLA: Hazardous substances.: Benzene: 10 lbs. (4.536 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R11- Highly flammable. R22- Harmful if swallowed. R38- Irritating to skin. R41- Risk of serious damage to eyes. R45- May cause cancer. R62- Possible risk of impaired fertility. S2- Keep out of the reach of children. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S39- Wear eye/face protection. S46- If swallowed, seek medical advice immediately and show this container or label. S53- Avoid exposure - obtain special instructions before use.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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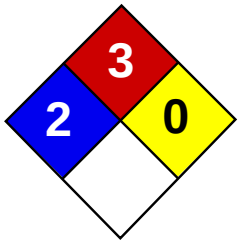

Material Safety Data Sheet
Methyl tert-butyl ether MSDS

Section 1: Chemical Product and Company Identification

Product Name: Methyl tert-butyl ether

Catalog Codes: SLM2152

CAS#: 1634-04-4

RTECS: KN5250000

TSCA: TSCA 8(b) inventory: Methyl tert-butyl ether

CI#: Not available.

Synonym:

Chemical Name: Methyl tert-Butyl Ether

Chemical Formula: C5-H12-O

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Methyl {tert-}butyl ether	1634-04-4	100

Toxicological Data on Ingredients: Methyl tert-butyl ether: ORAL (LD50): Acute: 4000 mg/kg [Rat]. 5960 mg/kg [Mouse]. VAPOR (LC50): Acute: 23576 ppm 4 hour(s) [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Extremely hazardous in case of eye contact (irritant), of ingestion. Very hazardous in case of skin contact (irritant), of inhalation. Hazardous in case of skin contact (permeator). Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:
Extremely hazardous in case of eye contact (irritant), of ingestion. Very hazardous in case of skin contact (irritant), of inhalation. Hazardous in case of skin contact (permeator). CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to lungs, the nervous system, mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged inhalation of vapors may lead to chronic respiratory irritation.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

Skin Contact:
After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cold water may be used. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 224°C (435.2°F)

Flash Points: CLOSED CUP: -28°C (-18.4°F).

Flammable Limits: LOWER: 2.5% UPPER: 15.1%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances: Flammable in presence of open flames and sparks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapour/spray. In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes

Storage:
Flammable materials should be stored in a separate safety storage cabinet or room. Keep away from heat. Keep away from sources of ignition. Keep container tightly closed. Keep in a cool, well-ventilated place. Ground all equipment containing material. A refrigerated room would be preferable for materials with a flash point lower than 37.8°C (100°F).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not available.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Characteristic. (Strong.)

Taste: Not available.

Molecular Weight: 88.15 g/mole

Color: Clear Colorless.

pH (1% soln/water): Not available.

Boiling Point: 55.2°C (131.4°F)

Melting Point: -109°C (-164.2°F)

Critical Temperature: Not available.

Specific Gravity: 0.7405 (Water = 1)

Vapor Pressure: 245 mm of Hg (@ 20°C)

Vapor Density: 3.1 (Air = 1)

Volatility: 100% (v/v).

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, methanol, diethyl ether.

Solubility:

Soluble in methanol, diethyl ether. Partially soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Not available.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 4000 mg/kg [Rat]. Acute toxicity of the vapor (LC50): 23576 ppm 4 hour(s) [Rat].

Chronic Effects on Humans: The substance is toxic to lungs, the nervous system, mucous membranes.

Other Toxic Effects on Humans:
Extremely hazardous in case of ingestion. Very hazardous in case of skin contact (irritant), of inhalation. Hazardous in case of skin contact (permeator).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: Class 3: Flammable liquid.

Identification: : Methyl tert-butyl ether : UN2398 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Pennsylvania RTK: Methyl tert-butyl ether Massachusetts RTK: Methyl tert-butyl ether TSCA 8(b) inventory: Methyl tert-butyl ether SARA 313 toxic chemical notification and release reporting: Methyl tert-butyl ether CERCLA: Hazardous substances.: Methyl tert-butyl ether

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R11- Highly flammable. R38- Irritating to skin. R41- Risk of serious damage to eyes.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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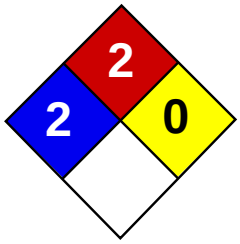

Health	2
Fire	2
Reactivity	0
Personal Protection	E

Material Safety Data Sheet
Naphthalene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Naphthalene

Catalog Codes: SLN1789, SLN2401

CAS#: 91-20-3

RTECS: QJ0525000

TSCA: TSCA 8(b) inventory: Naphthalene

CI#: Not available.

Synonym:

Chemical Name: Not available.

Chemical Formula: C10H8

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Naphthalene	91-20-3	100

Toxicological Data on Ingredients: Naphthalene: ORAL (LD50): Acute: 490 mg/kg [Rat]. 533 mg/kg [Mouse]. 1200 mg/kg [Guinea pig]. DERMAL (LD50): Acute: 20001 mg/kg [Rabbit]. VAPOR (LC50): Acute: 170 ppm 4 hour(s) [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of ingestion. Hazardous in case of eye contact (irritant), of inhalation. Slightly hazardous in case of skin contact (irritant, permeator). Severe over-exposure can result in death.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Classified Development toxin [POSSIBLE]. The substance is toxic to blood, kidneys, the nervous system, the reproductive system, liver, mucous membranes, gastrointestinal tract, upper respiratory tract, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

Skin Contact:
After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact: Not available.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:
Do not induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 567°C (1052.6°F)

Flash Points: CLOSED CUP: 88°C (190.4°F). OPEN CUP: 79°C (174.2°F).

Flammable Limits: LOWER: 0.9% UPPER: 5.9%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances: Not available.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
Flammable solid. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container.

Large Spill:
Flammable solid. Stop leak if without risk. Do not touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe dust. Avoid contact with eyes Wear suitable protective clothing In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

Storage:
Flammable materials should be stored in a separate safety storage cabinet or room. Keep away from heat. Keep away from sources of ignition. Keep container tightly closed. Keep in a cool, well-ventilated place. Ground all equipment containing material. Keep container dry. Keep in a cool place.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection:
Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
Israel: TWA: 10 (ppm) TWA: 10 STEL: 15 (ppm) from ACGIH (TLV) [1995] TWA: 52 STEL: 79 (mg/m3) from ACGIH [1995] Australia: STEL: 15 (ppm) Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Crystalline solid.)

Odor: Aromatic.

Taste: Not available.

Molecular Weight: 128.19 g/mole

Color: White.

pH (1% soln/water): Not available.

Boiling Point: 218°C (424.4°F)

Melting Point: 80.2°C (176.4°F)

Critical Temperature: Not available.

Specific Gravity: 1.162 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: 4.4 (Air = 1)

Volatility: Not available.

Odor Threshold: 0.038 ppm

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties:
Partially dispersed in hot water, methanol, n-octanol. Very slightly dispersed in cold water. See solubility in methanol, n-octanol.

Solubility:
Partially soluble in methanol, n-octanol. Very slightly soluble in cold water, hot water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Highly reactive with oxidizing agents.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: May attack some forms of rubber and plastic

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 490 mg/kg [Rat]. Acute dermal toxicity (LD50): 20001 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 170 ppm 4 hour(s) [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH. DEVELOPMENTAL TOXICITY: Classified Development toxin [POSSIBLE]. The substance is toxic to blood, kidneys, the nervous system, the reproductive system, liver, mucous membranes, gastrointestinal tract, upper respiratory tract, central nervous system (CNS).

Other Toxic Effects on Humans:
Very hazardous in case of ingestion. Hazardous in case of inhalation. Slightly hazardous in case of skin contact (irritant, permeator).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Ecotoxicity in water (LC50): 305.2 ppm 96 hour(s) [Trout].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: CLASS 4.1: Flammable solid.

Identification: : Naphthalene, refined : UN1334 PG: III

Special Provisions for Transport: Marine Pollutant

Section 15: Other Regulatory Information

Federal and State Regulations:
Rhode Island RTK hazardous substances: Naphthalene Pennsylvania RTK: Naphthalene Florida: Naphthalene Minnesota: Naphthalene Massachusetts RTK: Naphthalene TSCA 8(b) inventory: Naphthalene TSCA 8(a) PAIR: Naphthalene TSCA 8(d) H and S data reporting: Naphthalene: 06/01/87 SARA 313 toxic chemical notification and release reporting: Naphthalene: 1% CERCLA: Hazardous substances.: Naphthalene: 100 lbs. (45.36 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-4: Flammable solid. CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC):
R36- Irritating to eyes. R40- Possible risks of irreversible effects. R48/22- Harmful: danger of serious damage to health by prolonged exposure if swallowed. R48/23- Toxic: danger of serious damage to health by prolonged exposure through inhalation. R63- Possible risk of harm to the unborn child.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 2

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 2

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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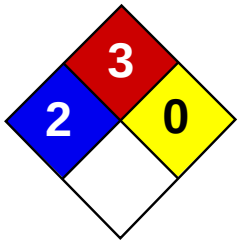

Health	2
Fire	3
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
Toluene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Toluene

Catalog Codes: SLT2857, SLT3277

CAS#: 108-88-3

RTECS: XS5250000

TSCA: TSCA 8(b) inventory: Toluene

CI#: Not available.

Synonym: Toluol, Tolu-Sol; Methylbenzene; Methacide; Phenylmethane; Methylbenzol

Chemical Name: Toluene

Chemical Formula: C6-H5-CH3 or C7-H8

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Toluene	108-88-3	100

Toxicological Data on Ingredients: Toluene: ORAL (LD50): Acute: 636 mg/kg [Rat]. DERMAL (LD50): Acute: 14100 mg/kg [Rabbit]. VAPOR (LC50): Acute: 49000 mg/m 4 hours [Rat]. 440 ppm 24 hours [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, the nervous system, liver, brain, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 480°C (896°F)

Flash Points: CLOSED CUP: 4.4444°C (40°F). (Setaflash) OPEN CUP: 16°C (60.8°F).

Flammable Limits: LOWER: 1.1% UPPER: 7.1%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
Flammable liquid, insoluble in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray or fog.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards:
Toluene forms explosive reaction with 1,3-dichloro-5,5-dimethyl-2,4-imidazolididione; dinitrogen tetraoxide; concentrated nitric acid, sulfuric acid + nitric acid; N2O4; AgClO4; BrF3; Uranium hexafluoride; sulfur dichloride. Also forms an explosive mixture with tetranitromethane.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Toxic flammable liquid, insoluble or very slightly soluble in water. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 200 STEL: 500 CEIL: 300 (ppm) from OSHA (PEL) [United States] TWA: 50 (ppm) from ACGIH (TLV) [United States] SKIN TWA: 100 STEL: 150 from NIOSH [United States] TWA: 375 STEL: 560 (mg/m3) from NIOSH [United States] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Sweet, pungent, Benzene-like.

Taste: Not available.

Molecular Weight: 92.14 g/mole

Color: Colorless.

pH (1% soln/water): Not applicable.

Boiling Point: 110.6°C (231.1°F)

Melting Point: -95°C (-139°F)

Critical Temperature: 318.6°C (605.5°F)

Specific Gravity: 0.8636 (Water = 1)

Vapor Pressure: 3.8 kPa (@ 25°C)

Vapor Density: 3.1 (Air = 1)

Volatility: Not available.

Odor Threshold: 1.6 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 2.7

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether, acetone.

Solubility:
Soluble in diethyl ether, acetone. Practically insoluble in cold water. Soluble in ethanol, benzene, chloroform, glacial acetic acid, carbon disulfide. Solubility in water: 0.561 g/l @ 25 deg. C.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources (flames, sparks, static), incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Incompatible with strong oxidizers, silver perchlorate, sodium difluoride, Tetranitromethane, Uranium Hexafluoride. Frozen Bromine Trifluoride reacts violently with Toluene at -80 deg. C. Reacts chemically with nitrogen oxides, or halogens to form nitrotoluene, nitrobenzene, and nitrophenol and halogenated products, respectively.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 636 mg/kg [Rat]. Acute dermal toxicity (LD50): 14100 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 440 24 hours [Mouse].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: blood, kidneys, the nervous system, liver, brain, central nervous system (CNS).

Other Toxic Effects on Humans:
Hazardous in case of skin contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Special Remarks on Toxicity to Animals:
Lowest Published Lethal Dose: LDL [Human] - Route: Oral; Dose: 50 mg/kg LCL [Rabbit] - Route: Inhalation; Dose: 55000 ppm/40min

Special Remarks on Chronic Effects on Humans:
Detected in maternal milk in human. Passes through the placental barrier in human. Embryotoxic and/or foetotoxic in animal. May cause adverse reproductive effects and birth defects (teratogenic). May affect genetic material (mutagenic)

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: Skin: Causes mild to moderate skin irritation. It can be absorbed to some extent through the skin. Eyes: Cauess mild to moderate eye irritation with a burning sensation. Splash contact with eyes also causes conjunctivitis, blepharospasm, corneal edema, corneal abraisons. This usually resolves in 2 days. Inhalation: Inhalation of vapor may cause respiratory tract irritation causing coughing and wheezing, and nasal discharge. Inhalation of high concentrations may affect behavior and cause central nervous system effects characterized by nausea, headache, dizziness, tremors, restlessness, lightheadedness, exhilaration, memory loss, insomnia, impaired reaction time, drowsiness, ataxia, hallucinations, somnolence, muscle contraction or spasticity, unconsciousness and coma. Inhalation of high concentration of vapor may also affect the cardiovascular system (rapid heart beat, heart palpitations, increased or decreased blood pressure, dysrhythmia,), respiration (acute pulmonary edema, respiratory depression, apnea, asphyxia), cause vision disturbances and dilated pupils, and cause loss of appetite. Ingestion: Aspiration hazard. Aspiration of Toluene into the lungs may cause chemical pneumonitis. May cause irritation of the digestive tract with nausea, vomiting, pain. May have effects similar to that of acute inhalation. Chronic Potential Health Effects: Inhalation and Ingestion: Prolonged or repeated exposure via inhalation may cause central nervous system and cardiovascular symptoms similar to that of acute inhalation and ingestion as well liver damage/failure, kidney damage/failure (with hematuria, proteinuria, oliguria, renal tubular acidosis), brain damage, weight loss, blood (pigmented or nucleated red blood cells, changes in white blood cell count), bone marrow changes, electrolyte imbalances (Hypokalemia, Hypophostatemia), severe, muscle weakness and Rhabdomyolysis. Skin: Repeated or prolonged skin contact may cause defatting dermatitis.

Section 12: Ecological Information

Ecotoxicity:
Ecotoxicity in water (LC50): 313 mg/l 48 hours [Daphnia (daphnia)]. 17 mg/l 24 hours [Fish (Blue Gill)]. 13 mg/l 96 hours [Fish (Blue Gill)]. 56 mg/l 24 hours [Fish (Fathead minnow)]. 34 mg/l 96 hours [Fish (Fathead minnow)]. 56.8 ppm any hours [Fish (Goldfish)].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Toluene UNNA: 1294 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Toluene California prop. 65 (no significant risk level): Toluene: 7 mg/day (value) California prop. 65 (acceptable daily intake level): Toluene: 7 mg/day (value) California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Toluene Connecticut hazardous material survey.: Toluene Illinois

toxic substances disclosure to employee act: Toluene Illinois chemical safety act: Toluene New York release reporting list: Toluene Rhode Island RTK hazardous substances: Toluene Pennsylvania RTK: Toluene Florida: Toluene Minnesota: Toluene Michigan critical material: Toluene Massachusetts RTK: Toluene Massachusetts spill list: Toluene New Jersey: Toluene New Jersey spill list: Toluene Louisiana spill reporting: Toluene California Director's List of Hazardous Substances.: Toluene TSCA 8(b) inventory: Toluene TSCA 8(d) H and S data reporting: Toluene: Effective date: 10/04/82; Sunset Date: 10/0/92 SARA 313 toxic chemical notification and release reporting: Toluene CERCLA: Hazardous substances.: Toluene: 1000 lbs. (453.6 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R11- Highly flammable. R20- Harmful by inhalation. S16- Keep away from sources of ignition - No smoking. S25- Avoid contact with eyes. S29- Do not empty into drains. S33- Take precautionary measures against static discharges.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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Last Updated: 05/21/2013 12:00 PM

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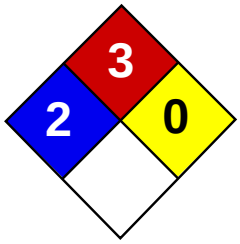

Material Safety Data Sheet
Xylenes MSDS

Section 1: Chemical Product and Company Identification

Product Name: Xylenes

Catalog Codes: SLX1075, SLX1129, SLX1042, SLX1096

CAS#: 1330-20-7

RTECS: ZE2100000

TSCA: TSCA 8(b) inventory: Xylenes

CI#: Not available.

Synonym: Xylenes; Dimethylbenzene; xylol; methyltoluene

Chemical Name: Xylenes (o-, m-, p- isomers)

Chemical Formula: C6H4(CH3)2

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Xylenes	1330-20-7	100

Toxicological Data on Ingredients: Xylenes: ORAL (LD50): Acute: 4300 mg/kg [Rat]. 2119 mg/kg [Mouse]. DERMAL (LD50): Acute: >1700 mg/kg [Rabbit].

Section 3: Hazards Identification

Potential Acute Health Effects: Hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, liver, mucous membranes, bone marrow, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 464°C (867.2°F)

Flash Points: CLOSED CUP: 24°C (75.2°F). (Tagliabue.) OPEN CUP: 37.8°C (100°F).

Flammable Limits: LOWER: 1% UPPER: 7%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Highly flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Slightly explosive in presence of open flames and sparks, of heat.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Special Remarks on Fire Hazards: Vapors may travel to source of ignition and flash back.

Special Remarks on Explosion Hazards:
Vapors may form explosive mixtures with air. Containers may explode when heated. May polymerize explosively when heated. An attempt to chlorinate xylene with 1,3-Dichloro-5,5-dimethyl-2,4-imidazolidindione (dichlorohydrantoin) caused a violent explosion

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined

areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 100 (ppm) [Canada] TWA: 435 (mg/m3) [Canada] TWA: 434 STEL: 651 (mg/m3) from ACGIH (TLV) [United States] TWA: 100 STEL: 150 (ppm) from ACGIH (TLV) [United States] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Sweetish.

Taste: Not available.

Molecular Weight: 106.17 g/mole

Color: Colorless. Clear

pH (1% soln/water): Not available.

Boiling Point: 138.5°C (281.3°F)

Melting Point: -47.4°C (-53.3°F)

Critical Temperature: Not available.

Specific Gravity: 0.864 (Water = 1)

Vapor Pressure: 0.9 kPa (@ 20°C)

Vapor Density: 3.7 (Air = 1)

Volatility: Not available.

Odor Threshold: 1 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 3.1

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility:
Insoluble in cold water, hot water. Miscible with absolute alcohol, ether, and many other organic liquids.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources, incompatibles

Incompatibility with various substances: Reactive with oxidizing agents, acids.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Store away from acetic acid, nitric acid, chlorine, bromine, and fluorine.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 2119 mg/kg [Mouse]. Acute dermal toxicity (LD50): >1700 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 5000 4 hours [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: blood, kidneys, liver, mucous membranes, bone marrow, central nervous system (CNS).

Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals:
Lowest Lethal Dose: LDL [Human] - Route: Oral; Dose: 50 mg/kg LCL [Man] - Route: Oral; Dose: 10000 ppm/6H

Special Remarks on Chronic Effects on Humans:
Detected in maternal milk in human. Passes through the placental barrier in animal. Embryotoxic and/or foetotoxic in animal. May cause adverse reproductive effects (male and femael fertility (spontaneous abortion and fetotoxicity)) and birth defects based animal data.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes skin irritation. Can be absorbed through skin. Eyes: Causes eye irritation. Inhalation: Vapor causes respiratory tract and mucous membrane irritation. May affect central nervous system and behavior (General anesthetic/CNS depressant with effects including headache, weakness, memory loss, irritability, dizziness, giddiness, loss of coordination and judgement, respiratory depression/arrest or difficulty breathing, loss of appetite, nausea, vomiting, shivering, and possible coma and death). May also affects blood, sense organs, liver, and peripheral nerves. Ingestion: May cause gastrointestinal irritation including abdominal pain, vomiting, and nausea. May also affect liver and urinary system/ kidneys. May cause effects similar to those of acute inhalation. Chronic Potential Health Effects: Chronic inhalation may affect the urinary system (kidneys) blood (anemia), bone marrow (hyperplasia of bone marrow) brain/behavior/Central Nervous system. Chronic inhalation may alsocause mucosal bleeding. Chronic ingestion may affect the liver and metabolism (loss of appetite) and may affect urinary system (kidney damage)

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Xylenes UNNA: 1307 PG: III

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut hazardous material survey.: Xylenes Illinois chemical safety act: Xylenes New York acutely hazardous substances: Xylenes Rhode Island RTK hazardous substances: Xylenes Pennsylvania RTK: Xylenes Minnesota: Xylenes Michigan critical material: Xylenes Massachusetts RTK: Xylenes Massachusetts spill list: Xylenes New Jersey: Xylenes New Jersey spill list: Xylenes Louisiana spill reporting: Xylenes California Director's List of Hazardous Substances: Xylenes TSCA 8(b) inventory: Xylenes SARA 302/304/311/312 hazardous chemicals: Xylenes SARA 313 toxic chemical notification and release reporting: Xylenes CERCLA: Hazardous substances.: Xylenes: 100 lbs. (45.36 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R10- Flammable. R21- Harmful in contact with skin. R36/38- Irritating to eyes and skin. S2- Keep out of the reach of children. S36/37- Wear suitable protective clothing and gloves. S46- If swallowed, seek medical advice immediately and show this container or label.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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