



SHELL FOOD MART

CAP DEVELOPMENT REPORT

ATTF CP-14

August 19, 2026



728 Montgomery Hwy
Vestavia, Jefferson Co., AL

FAC ID 25736-073-008747
UST 24-01-02

PREPARED FOR

MM Alabama Leasing
1255 Lakes Pkwy, STE 180
Lawrenceville, GA 30043

PREPARED BY

Three Notch Group
6767 Old Madison Pike, Suite 400
Huntsville, AL 35806

CERTIFICATION PAGE

"I hereby certify that, in my professional judgment, the components of this document and associated work satisfy the applicable requirements set forth in Chapter 335-6 of the ADEM Administrative Code, and are consistent with generally accepted professional consulting principles and practices. 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."

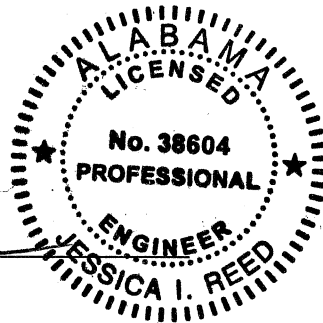
This document has been prepared based on historical site assessment data and has been prepared to address soil and groundwater contamination at the Shell Food Mart site (Facility Identification Number 25736-073-008747) in Vestavia, Jefferson County, Alabama. The recommended action should not be construed to apply to any other site.

Signature

Jessica Reed

Registered Professional Engineer in the State of Alabama

Registration No. 38604



Date

8/19/26

INTRODUCTION

The Shell Food Mart facility is a commercial property that operates as a gasoline station and convenience store. The site reportedly has two active 10,000-gallon unleaded gasoline Underground Storage Tanks (USTs), and one 10,000-gallon gasoline UST in temporary closure. A tank tightness test was conducted on the midgrade gasoline tank in October 2023, which indicated tank failure. The tank was emptied, and a Notice of Temporary Closure dated November 27, 2023 was submitted to the Alabama Department of Environmental Management (ADEM). The results of the tank tightness test and release report were submitted to ADEM.

As a result of the release report, ADEM sent the responsible party, MM Alabama Leasing, a Notification of Requirement to conduct Investigative and Corrective Actions. In a second letter dated February 1, 2024, ADEM issued a Notice of Tank Trust Fund (ATTF) Eligibility. In a third letter dated February 22, 2024, ADEM issued the Pre-Approved Cost Proposal (CP-01) for conducting Preliminary Investigation activities. MM Alabama Leasing contracted Three Notch Group, Inc. (Three Notch) as the ATTF contractor.

To date, a Preliminary Investigation, Secondary Investigation, groundwater monitoring events, an Alabama Risk Based Corrective Action (ARBCA) Tier I/Tier II Evaluation, Mobile Enhanced Multi-Phase Extraction (MEME) events, and a Corrective Action Plan (CAP) Evaluation have been conducted at the site. Currently, there are a total of eleven Type II monitoring wells and one Type III vertical delineation well at the site.

The ground cover of the site includes asphalt and grass areas. The tank pit and fuel dispenser areas are paved with concrete. Surface storm water at the facility flows south into a drainage ditch located on the southwestern side of the site. Electric service is located above ground along the eastern and southern edges of the site. Underground water lines and the water main are located along the eastern edge of the site of Montgomery Highway. The underground and above ground lines that are located around the site are shown in Appendix B. Underground lines are located approximately 3-12 feet below land surface (ft-bls). The depth to groundwater of the unconfined aquifer at the site fluctuates approximately 9.05-14.79 ft-bls, indicating that underground utilities could be directly affected by the contamination in this area.

A water well inventory has been completed for the area surrounding the site. Three Notch contacted Birmingham Water Works and inquired about any public water wells within one mile of the site. There are no public water supply wells within one mile of the site. Three Notch also conducted a visual

survey of the surrounding area and did not identify any private wells within 1,000 feet of the site.

SUMMARY OF PREVIOUS SITE INVESTIGATIONS

A tank tightness test was conducted on the midgrade gasoline tank in October 2023, which indicated tank failure. The tank was emptied, and a Notice of Temporary Closure dated November 27, 2023 was submitted to the Alabama Department of Environmental Management (ADEM). The results of the tank tightness test and release report were submitted to ADEM.

As a result of the release report, ADEM sent the responsible party, MM Alabama Leasing, a Notification of Requirement to conduct Investigative and Corrective Actions. In a second letter dated February 1, 2024, ADEM issued a Notice of ATTF Eligibility. In a third letter dated February 22, 2024, ADEM issued the Pre-Approved Cost Proposal (CP-01) for conducting Preliminary Investigation activities.

The Preliminary Investigation was completed, and the report was submitted to ADEM in April 2024. Upon review of the Preliminary Investigation report, the ADEM requested that a Secondary Investigation be conducted and approved the Secondary work plan and corresponding cost proposal in correspondence dated July 8, 2024. Three Notch mobilized to the Shell Food Mart facility to conduct the Secondary Investigation on November 4, 2024.

Twelve soil borings (MW-1, MW-2, MW-4 through MW-11, RW-3, and VW-1), which were converted into ten monitoring wells, one recovery well, and one vertical extent monitoring well, were installed at the site on March 6, 2024, November 4-5, 2024, and April 8, 2026. The total depth of the borings ranged from approximately twelve ft-bls to approximately thirty ft-bls. The soil beneath the site generally consists of red and brown, fine grained, very stiff to moderately stiff, highly plastic, silty to sandy clays. The site is located in the Cahaba Ridges district of the Valley and Ridge physiographic province. Groundwater was encountered at depths ranging from approximately 8 to 15.5 ft-bls during drilling activities. The Shell Food Mart #0521 facility is located within the Pottsville Aquifer system. Bedrock was encountered in five of the borings (MW-1, MW-2, MW-4, RW-3, and VW-1) at depths ranging from ten to sixteen ft-bls.

SUMMARY OF PREVIOUSLY CONDUCTED CORRECTIVE ACTION

To date, seven groundwater monitoring events have been conducted at the site between March 2024 and July 2026. Additionally, thirteen MEME events have been conducted between June 2025 and July 2026.

REMEDIAL OBJECTIVES AND EXPOSURE ASSESSMENT

General Remedial Objectives

The general objectives of this corrective action plan and the remedial efforts for the facility are as follows:

- Ensure that the health and safety of all project personnel is maintained during remediation activities.
- Prevent hydrocarbon contaminant migration to sensitive receptors.
- Remove free product from the site subsurface if present.
- Reduce adsorbed phase petroleum hydrocarbons from soils within the vadose and saturated zone, to below approved Site-Specific Target Levels (SSTLs).
- Reduce dissolved petroleum hydrocarbons from groundwater to below approved SSTLs.
- Accomplish these objectives within the proposed period of operation.

Exposure Assessment

An exposure assessment was conducted by Three Notch during the ARBCA evaluation. The current land use site conceptual exposure model indicates that complete exposure pathways exist on-site for indoor and outdoor vapor inhalation from soil and groundwater for commercial workers. Complete exposure pathways also exist for indoor and outdoor vapor inhalation from impacted groundwater for offsite commercial workers. Under future conditions complete pathways for exposure exist for indoor and outdoor vapor inhalation for soil and groundwater for on-site commercial and construction workers and dermal contact with soil for construction workers. Complete exposure pathways exist for exposure to indoor and outdoor vapors for groundwater under current conditions for off-site commercial workers, with complete exposure pathways under future conditions for commercial and construction workers. Future land use of the site and the surrounding area is expected to remain the same.

Site-Specific Target Levels

To assess the risk to human health and the environment of the dissolved hydrocarbon plume associated with the Shell Food Mart site, an ARBCA Tier I/Tier II Evaluation was performed in January 2026. Based on the ARBCA Tier II Evaluation, SSTLs for site remediation were calculated for the various media (soil and groundwater) at the site. The SSTLs developed during this process, which have been approved by ADEM, would not be expected to pose a significant risk to any recognized actual or potential receptors. The SSTLs for soil and groundwater are summarized in the following table:

Chemicals of Concern	Soil (mg/Kg)				Groundwater (mg/L)	
	Dermal Contact	On-Site Indoor Inhalation	Off-Site Indoor Inhalation	Groundwater Resource Protection	On-Site Indoor Inhalation	Off-Site Indoor Inhalation
Benzene	546	0.0894	NA	2.26	10	10
Toluene	533	13.7	NA	62.2	526	526
Ethylbenzene	230	47.3	NA	24.3	169	169
Xylenes	273	18	NA	89.3	175	175
MTBE	378	245	NA	0.01	16,800	16,800
Naphthalene	189	13.6	NA	1.44	26.2	26.2

A more detailed presentation of these values is provided in the January 2026 ARBCA Evaluation Report.

RECENT MONITORING ACTIVITIES, RESULTS, AND COMPARISONS TO SSTLS

As part of CAP development, current representative concentrations for the COC are needed in the evaluation and design of a plan to effectively treat and reduce contaminants. The site has had multiple approved groundwater monitoring events conducted. The most recent groundwater monitoring event was completed on July 16, 2026.

Groundwater Monitoring Activities

Personnel from Three Notch mobilized to the Shell Food Mart site on July 16, 2026 to collect groundwater samples for BTEX/MTBE/Naphthalene analyses. Upon arriving at the site, the technician removed the well caps from the twelve monitoring wells. The water levels in the wells were allowed to stabilize. Water levels were then measured with an electronic water level indicator and recorded in the site field book. After all measurements were completed, the wells were sufficiently purged by the removal of approximately 34 gallons of purge water which was treated using a portable carbon unit and released on-site. Monitoring wells MW-1, MW-4, and MW-8 were observed to be dry.

Groundwater samples were collected and analyzed from nine monitoring wells using new, disposable bailers and transferred to 40 milliliter (mL) glass volatile organic analysis (VOA) vials preserved with hydrochloric acid (HCl) for BTEX/MTBE/Naphthalene analysis. The samples were placed on ice and transported under chain of custody protocol to Waypoint Analytical where they were analyzed by EPA Method 8260B for the presence of BTEX/MTBE/Naphthalene constituents.

Laboratory Analytical Results

The BTEX/MTBE/Naphthalene analyses for this event indicate that COC concentrations were present at the site at levels above the Groundwater Resource Protection (GRP) Site Specific Target Levels (SSTLs) in two (MW-2 and MW-5) of the nine sampled monitoring wells. All COC concentrations were below the established SSTLs for Indoor Air Inhalation. The concentrations above the approved SSTLs are as follows:

	<u>COC</u>	<u>GRP SSTLs</u>	<u>Indoor Inhalation SSTLs</u>	<u>Concentration</u>
MW-2	Benzene	0.693 mg/L	10 mg/L	4.47 mg/L
MW-5	Benzene	0.466 mg/L	10 mg/L	1.39 mg/L

REMEDATION RATIONALE AND APPROACH

Based upon current constituent concentrations and the risk assessment results, there are exceedances in the GRP SSTLs. The proposed corrective action, which was outlined in the CAP Evaluation Report dated May 29, 2026 and approved by ADEM in a letter dated June 25, 2026, involves use of quarterly remediation by natural attenuation (RNA) in addition to monthly Mobile Enhanced Multi-Phase Extraction (MEME) events. This corrective action would provide the most economical use of resources and allow natural attenuation to continue to reduce contaminant concentrations.

Natural attenuation is a passive remediation process by which dilution, volatilization, biodegradation, adsorption, and chemical reactivity are allowed to reduce contaminant concentrations to acceptable levels. As a general rule, decreasing trends indicate these natural attenuation processes are occurring and will likely continue to reduce the contaminant concentrations to below acceptable levels, when used in conjunction with MEME events. If COC concentrations increase based on future monitoring results, the CAP approach should be re-evaluated.

REMEDATION RECOMMENDATION PLAN

The proposed corrective action at the Shell Food Mart site involves the application of monthly MEME events in conjunction with quarterly natural attenuation monitoring. Three Notch recommends the installation of four recovery wells. The proposed locations are shown in Appendix B. The MEME events will be conducted by Three Notch or equivalent. Three Notch recommends using the newly

installed recovery wells for the extraction. MEME events would be anticipated to reduce the residual COC concentrations within the source area to levels below the approved SSTLs.

Three Notch recommends over-drilling of three existing 2-inch monitoring wells (MW-1, MW-2, and MW-3) and converting to two 4-inch recovery wells (RW-1, RW-2, and RW-5). Three Notch also recommends the installation of one additional recovery well (RW-4). The wells will be drilled to a depth of approximately 20 ft-bls using a track-mounted hollow-stem auger drilling rig or a track-mounted sonic drilling rig using hollow core barrels. Each well will be constructed with 5 feet of 4-inch diameter schedule 40 PVC casing and 15 feet of 0.020" slotted PVC screen with an attached silt trap. The annular space of each borehole will be filled with coarse graded 6/10 filter sand from the bottom of the borehole to a level of approximately two feet above the top of the screened interval. A two-foot granular bentonite seal will be placed above the sand pack and hydrated for at least two hours. The well will then be grouted to a level just below the ground surface. Each recovery well will be completed at the surface with an 8-inch diameter metal man way with a bolt-down steel cover installed in a flush-mounted concrete pad. A Typical Recovery Well Construction Detail is included in Appendix B.

Soil samples will be collected during installation of one of the proposed recovery wells (RW-4). As the soil boring is advanced, soil core samples will be collected using either a 5-foot continuous core-barrel sampler advanced along with the hollow-stem augers or by 10-foot continuous core-barrel sampler advanced along with the outer core barrel. Samples will be selected based on the Photo Ionization Detector (PID) field screening method. During soil boring advancement, representative portions of the soil from each sample interval will be retained for further analysis. One portion will be placed in a cooler on ice, for possible submission to the laboratory for analysis. The other portion will be allowed to volatilize for approximately one hour prior to head space analysis for organic vapors using a PID. The headspace of the samples will be analyzed with the PID, the values recorded, and the two samples with the highest levels of VOCs from the boring will be submitted for laboratory analysis. No soil samples will be collected for the MW-1, MW-2, and MW-5 redrilled recovery wells (RW-1, RW-2, and RW-5).

Samples submitted for analysis will be placed into laboratory-supplied containers (4-ounce, unpreserved jars with Teflon-lined lids), placed on ice maintaining chain of custody protocol. Samples will be analyzed for BTEX/MTBE/Naphthalene using EPA Method 8260B.

Soil cuttings and construction debris will be placed in a roll-off container and disposed of at a permitted landfill. Three Notch obtained a Solid Waste Certification during the Additional Well Installation. Investigation Derived Waste (IDW) will be disposed of under Waste Profile #166866 and certification # SW-043028-A003.

Three Notch will survey the location of each well referenced to site structures and measure the elevation of the wells referenced to a USGS Topographic map of the location. The newly installed wells will be properly developed using new disposable plastic bailers. Approximately five well volumes (if present) will be removed from the well. Purge water generated from well development activities will be treated using a granular activated carbon filtration system prior to being discharged on-site. A sample of the treated water will be collected and analyzed for BTEX/MTBE/Naphthalene analysis by EPA Method 8260B to ensure breakthrough has not occurred. If evidence of free product is observed, purge water will be containerized and disposed of at an approved disposal facility.

MEME Events

Three Notch recommends that monthly 8-hour duration MEME events be conducted at the site in order to reduce dissolved hydrocarbon concentrations in the source area. Each 8-hour MEME event will be conducted using Three Notch, or equivalent. The primary objective will be vapor recovery and petroleum contact water (PCW) removal, utilizing total fluids extraction from the wells.

Natural Attenuation

Groundwater sampling will be conducted on a quarterly basis. The thirteen existing and proposed monitoring and recovery wells will be sampled and gauged during each quarterly event.

The groundwater samples will be collected from the wells using new clean plastic bailers and transferred to 40 mL glass VOA vials preserved with HCl for BTEX, MTBE, and naphthalene analysis using EPA Method 8260B. During each groundwater sampling event, all monitoring wells sampled will also be monitored for natural attenuation parameters (DO, pH, and ORP).

Once the COC concentrations are reduced to below the SSTLs, corrective action activities will be discontinued, and re-bounce monitoring will be initiated. Should the COC concentrations remain above the SSTLs after a two-year period, Three Notch will re-evaluate the corrective plan. Three Notch will recommend the site for No Further Action (NFA) status once remediation goals are met.

PROPOSED REPORTING REQUIREMENTS

Three Notch will submit reports in accordance with ADEM requirements. These reports will include the following:

Reporting of CAP Implementation

This report will detail installation of the recovery wells. A copy of the Solid Waste Profile will be included in this report.

Reporting of Natural Attenuation with MEME Events Effectiveness

Three Notch proposes to submit quarterly RNA/MEME reports, which will summarize field activities and the progress of site groundwater constituent concentrations towards achieving approved corrective action levels. The following data will be included in each report: field activities performed, groundwater elevations, groundwater analytical results as compared to target levels, potentiometric surface maps, COC contour maps, and MEME data results. The reports will also include remediation effectiveness and recommendations concerning additional measures deemed necessary.

Request for Closure Evaluation of Corrective Action

This report will include data that demonstrates that remediation goals have been achieved and will request a status of NFA for the site. Methods for abandonment of monitoring and recovery wells will be described.

Well Abandonment

This report will describe in detail the closure of the site and removal of all monitoring and recovery wells.

SCHEDULE OF IMPLEMENTATION

It is anticipated that the proposed corrective action plan will begin with the first MEME event and groundwater monitoring event following the approval of the CAP and completion of the CAP Implementation. The following schedule indicates the timetable for major project events to be completed as part of this corrective action plan:

Time Following CAP Approval (months)	Project Event	Project Event Length
1	Recovery Well Installation	1 Week
0 – 24	Quarterly groundwater monitoring and monthly 8-hour MEME events, evaluation of performance, and recommendations for further corrective action if required	2 Years
25	Well abandonment; completion and submittal of final report if allowable by ADEM	2 Months

PROPOSED SAMPLING AND MONITORING ACTIVITIES

Three Notch will submit cost proposals for well installation, in addition to cost proposals for RNA/MEME events under separate cover.

Following the approval of the CAP and installation of the recovery wells, monthly 8-hour duration MEME events will be conducted at the site in order to reduce dissolved hydrocarbon concentrations in the source area. During the events, groundwater and soil vapor will be extracted from the proposed recovery wells. The MEME events will be conducted using a mobile liquid ring Multi-Phase Extraction (MPE) system operated by Three Notch, or equivalent. The MEME system has been approved by ADEM for use at numerous locations in Alabama for free product recovery, emergency response, and pilot testing activities. The unit operates with continuously monitored off-gas treatment (thermal destruction).

Prior to the MEME event, static water levels in selected wells will be recorded. Applied vacuum at the extraction wells and casing vacuums in the observation wells will be recorded periodically during the event (except when the unit is not attended). Water level and vacuum measurements, to determine the radius of influence, will be obtained periodically from observation wells. Measurements of flow and hydrocarbon concentrations will also be obtained periodically. Field measurements will be obtained using a calibrated FID instrument. Hydrocarbon removal rates will be calculated and plotted.

Groundwater samples will be collected from all monitoring and recovery wells. The groundwater samples will be collected from the monitoring and recovery wells using new clean plastic bailers. Samples will be transferred to 40 mL glass VOA vials preserved with HCl for BTEX, MTBE, and naphthalene analysis in accordance with EPA Method 8260B. During each groundwater sampling

event, all sampled wells will also be sampled for natural attenuation parameters (DO, pH, and ORP). The natural attenuation parameters will provide information concerning the recovery of the shallow aquifer down gradient of the release area.

The results of the proposed activities will be submitted to ADEM on a quarterly basis in the form of a RNA/MEME Report. The report will include conclusions regarding the effectiveness of the recovery activities performed and recommendations for future site activities.

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THREE
NOTCH
GROUP

TABLES



APPENDIX A

Monitoring Point Data Summary Table

SITE NAME:	Shell Food Mart #0521, Vestavia			UST Number:	24-01-02	WELL ID:	MW-1		
INSTALLATION DATE:	03/06/2024	WELL DEPTH (FT BTOC):	12.0	SCREEN LENGTH (FT):	10.0	CASING ELEV (FT ABOVE MSL):	927.36	WELL TYPE: DIAMETER (IN):	II 2
Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)									

POTENTIOMETRIC ELEVATION SUMMARY

[illegible]

INTRINSIC GROUNDWATER DATA SUMMARY

[illegible]

Monitoring Point Data Summary Table

SITE NAME:	Shell Food Mart #0521, Vestavia			UST Number:	24-01-02	WELL ID:	MW-1		
INSTALLATION DATE:	03/06/2024	WELL DEPTH (FT BTOC):	12.0	SCREEN LENGTH (FT):	10.0	CASING ELEV (FT ABOVE MSL):	927.36	WELL TYPE: DIAMETER (IN):	II 2
Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)									

GROUNDWATER ANALYTICAL SUMMARY (mg/L)							
SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTEX	NAPHTHALENE
03/12/2024	<0.200	15.6	63.6	7.00	26.7	112.90	<1.00
11/06/2024	NOT SAMPLED - FREE PRODUCT						
07/10/2025	<1.00	9.78	41.4	7.02	26.8	85.00	<5.00
09/23/2025	NOT SAMPLED - DRY						
01/22/2026	NOT SAMPLED - DRY						
04/06/2026	NOT SAMPLED - DRY						
04/07/2026	NOT SAMPLED						
07/16/2026	NOT SAMPLED - DRY						
GRP SSTLs:	3.76	0.941	188	132	175	-	3.76
Inhalation SSTLs:	16,800	10	526	169	175	-	26.2

Monitoring Point Data Summary Table

SITE NAME:	Shell Food Mart #0521, Vestavia			UST Number:	24-01-02	WELL ID:	MW-2		
INSTALLATION DATE:	03/06/2024	WELL DEPTH (FT BTOC):	14.0	SCREEN LENGTH (FT):	10.0	CASING ELEV (FT ABOVE MSL):	926.94	WELL TYPE: DIAMETER (IN):	II 2
Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)									

[illegible][illegible]

Monitoring Point Data Summary Table

SITE NAME:	Shell Food Mart #0521, Vestavia			UST Number:	24-01-02	WELL ID:	MW-2		
INSTALLATION DATE:	03/06/2024	WELL DEPTH (FT BTOC):	14.0	SCREEN LENGTH (FT):	10.0	CASING ELEV (FT ABOVE MSL):	926.94	WELL TYPE: DIAMETER (IN):	II 2
Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)									

GROUNDWATER ANALYTICAL SUMMARY (mg/L)							
SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTEX	NAPHTHALENE
03/12/2024	<0.200	14.6	45.4	8.37	29.1	97.47	<1.00
11/06/2024	<0.500	18.9	38.9	4.17	13.6	75.57	<2.50
07/10/2025	<2.00	13.7	34.1	2.56	7.06	57.42	<10.0
09/23/2025	NOT SAMPLED - DRY						
01/22/2026	NOT SAMPLED - DRY						
04/06/2026	NOT SAMPLED - DRY						
04/07/2026	NOT SAMPLED						
07/16/2026	<0.500	4.47	36.2	4.97	18.7	64.34	<2.50
GRP SSTLs:	2.77	0.693	139	97.1	175	-	2.77
Inhalation SSTLs:	16,800	10	526	169	175	-	26.2

Monitoring Point Data Summary Table

SITE NAME:	Shell Food Mart #0521, Vestavia			UST Number:	24-01-02	WELL ID:	MW-4		
INSTALLATION DATE:	03/06/2024	WELL DEPTH (FT BTOC):	15.0	SCREEN LENGTH (FT):	10.0	CASING ELEV (FT ABOVE MSL):	929.68	WELL TYPE: DIAMETER (IN):	II 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

GROUNDWATER ANALYTICAL SUMMARY (mg/L)							
SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTEX	NAPHTHALENE
03/12/2024	NOT SAMPLED - FREE PRODUCT						
11/06/2024	<0.001	<0.001	<0.002	<0.001	<0.001	BDL	<0.005
07/10/2025	NOT SAMPLED - DRY						
09/23/2025	NOT SAMPLED - DRY						
01/22/2026	NOT SAMPLED - DRY						
04/06/2026	<0.001	<0.001	<0.002	<0.001	0.001	0.001	<0.005
04/07/2026	NOT SAMPLED						
07/16/2026	NOT SAMPLED - DRY						
GRP SSTLs:	2.77	0.693	139	97.1	175	-	2.77
Inhalation SSTLs:	16,800	10	526	169	175	-	26.2

Monitoring Point Data Summary Table

SITE NAME:	Shell Food Mart #0521, Vestavia			UST Number:	24-01-02	WELL ID:	MW-5		
INSTALLATION DATE:	11/04/2024	WELL DEPTH (FT BTOC):	14.0	SCREEN LENGTH (FT):	10.0	CASING ELEV (FT ABOVE MSL):	930.29	WELL TYPE: DIAMETER (IN):	II 2
Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)									

[illegible][illegible]

Monitoring Point Data Summary Table

SITE NAME:	Shell Food Mart #0521, Vestavia			UST Number:	24-01-02	WELL ID:	MW-5		
INSTALLATION DATE:	11/04/2024	WELL DEPTH (FT BTOC):	14.0	SCREEN LENGTH (FT):	10.0	CASING ELEV (FT ABOVE MSL):	930.29	WELL TYPE: DIAMETER (IN):	II 2
Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)									

GROUNDWATER ANALYTICAL SUMMARY (mg/L)							
SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTEX	NAPHTHALENE
11/06/2024	0.001	0.035	<0.002	0.017	0.046	0.098	<0.005
07/10/2025	<0.020	1.39	0.050	1.23	1.18	3.850	0.194
09/23/2025	<0.005	0.415	<0.010	0.01	0.196	0.621	0.048
01/22/2026	0.002	0.220	0.002	0.007	0.004	0.233	0.018
04/06/2026	<0.001	<0.001	<0.002	<0.001	<0.001	BDL	<0.005
04/07/2026	NOT SAMPLED						
07/16/2026	<0.020	1.39	<0.040	0.054	0.108	1.552	0.108
GRP SSTLs:	1.86	0.466	93.2	65.2	175	-	1.86
Inhalation SSTLs:	16,800	10	526	169	175	-	26.2

Monitoring Point Data Summary Table

SITE NAME:	Shell Food Mart #0521, Vestavia			UST Number:	24-01-02	WELL ID:	MW-6		
INSTALLATION DATE:	11/04/2024	WELL DEPTH (FT BTOC):	15.0	SCREEN LENGTH (FT):	10.0	CASING ELEV (FT ABOVE MSL):	930.24	WELL TYPE: DIAMETER (IN):	II 2
Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)									

[illegible]

Monitoring Point Data Summary Table

SITE NAME:	Shell Food Mart #0521, Vestavia			UST Number:	24-01-02	WELL ID:	MW-7		
INSTALLATION DATE:	11/04/2024	WELL DEPTH (FT BTOC):	15.0	SCREEN LENGTH (FT):	10.0	CASING ELEV (FT ABOVE MSL):	929.31	WELL TYPE: DIAMETER (IN):	II 2
Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)									

POTENTIOMETRIC ELEVATION SUMMARY

[illegible]

INTRINSIC GROUNDWATER DATA SUMMARY

[illegible]

Monitoring Point Data Summary Table

SITE NAME:	Shell Food Mart #0521, Vestavia			UST Number:	24-01-02	WELL ID:	MW-7		
INSTALLATION DATE:	11/04/2024	WELL DEPTH (FT BTOC):	15.0	SCREEN LENGTH (FT):	10.0	CASING ELEV (FT ABOVE MSL):	929.31	WELL TYPE: DIAMETER (IN):	II 2
Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)									

[illegible]

Monitoring Point Data Summary Table									
SITE NAME:	Shell Food Mart #0521, Vestavia			UST Number:	24-01-02	WELL ID:	MW-8		
INSTALLATION DATE:	11/04/2024	WELL DEPTH (FT BTOC):	15.0	SCREEN LENGTH (FT):	10.0	CASING ELEV (FT ABOVE MSL):	929.17	WELL TYPE: DIAMETER (IN):	II 2
Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)									

GROUNDWATER ANALYTICAL SUMMARY (mg/L)							
SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTX	NAPHTHALENE
11/06/2024	<0.001	<0.001	<0.002	<0.001	<0.001	BDL	<0.005
07/10/2025	<0.001	<0.001	<0.002	<0.001	<0.001	BDL	<0.005
09/23/2025	<0.001	<0.001	<0.002	<0.001	<0.001	BDL	<0.005
01/22/2026	<0.001	<0.001	<0.002	<0.001	<0.001	BDL	<0.005
04/06/2026	<0.001	<0.001	<0.002	<0.001	<0.001	BDL	<0.005
04/07/2026	NOT SAMPLED						
07/16/2026	NOT SAMPLED - DRY						
GRP SSTLs:	0.985	0.246	49.2	34.5	175	-	0.985
Inhalation SSTLs:	16,800	10	526	169	175	-	26.2

Monitoring Point Data Summary Table

SITE NAME:	Shell Food Mart #0521, Vestavia			UST Number:	24-01-02	WELL ID:	MW-9		
INSTALLATION DATE:	11/05/2024	WELL DEPTH (FT BTOC):	15.0	SCREEN LENGTH (FT):	10.0	CASING ELEV (FT ABOVE MSL):	928.93	WELL TYPE: DIAMETER (IN):	II 2
Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)									

[illegible]

Monitoring Point Data Summary Table

SITE NAME:	Shell Food Mart #0521, Vestavia			UST Number:	24-01-02	WELL ID:	MW-10		
INSTALLATION DATE:	11/05/2024	WELL DEPTH (FT BTOC):	15.0	SCREEN LENGTH (FT):	10.0	CASING ELEV (FT ABOVE MSL):	928.96	WELL TYPE: DIAMETER (IN):	II 2
Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)									

POTENTIOMETRIC ELEVATION SUMMARY

[illegible]

INTRINSIC GROUNDWATER DATA SUMMARY

[illegible]

Monitoring Point Data Summary Table

SITE NAME:	Shell Food Mart #0521, Vestavia			UST Number:	24-01-02	WELL ID:	MW-10		
INSTALLATION DATE:	11/05/2024	WELL DEPTH (FT BTOC):	15.0	SCREEN LENGTH (FT):	10.0	CASING ELEV (FT ABOVE MSL):	928.96	WELL TYPE: DIAMETER (IN):	II 2
Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)									

[illegible]

Monitoring Point Data Summary Table

SITE NAME:	Shell Food Mart #0521, Vestavia			UST Number:	24-01-02	WELL ID:	MW-10		
INSTALLATION DATE:	11/05/2024	WELL DEPTH (FT BTOC):	15.0	SCREEN LENGTH (FT):	10.0	CASING ELEV (FT ABOVE MSL):	928.96	WELL TYPE: DIAMETER (IN):	II 2
Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)									

GROUNDWATER ANALYTICAL SUMMARY (mg/L)											
SAMPLE DATE	ANTHRACENE	BENZO(a) ANTHRACENE	BENZO(a) PYRENE	BENZO(b) FLUORANTHENE	BENZO(g,h,i) PERYLENE	BENZO(k) FLUORANTHENE	CHRYSENE	FLUORANTHENE	FLUORENE	PHENANTHRENE	PYRENE
11/06/2024	NOT SAMPLED										
07/10/2025	NOT SAMPLED										
09/23/2025	NOT SAMPLED - DRY										
01/22/2026	NOT SAMPLED										
04/06/2026	NOT SAMPLED										
04/07/2026	NOT SAMPLED										
07/16/2026	NOT SAMPLED										
ISLs:	0.0434	0.0012	0.0002	0.0012	0.0007	0.0008	0.0016	0.2060	1.4600	1.0000	0.1350

Monitoring Point Data Summary Table									
SITE NAME:	Shell Food Mart #0521, Vestavia			UST Number:	24-01-02	WELL ID:	MW-11		
INSTALLATION DATE:	11/05/2024	WELL DEPTH (FT BTOC):	14.5	SCREEN LENGTH (FT):	10.0	CASING ELEV (FT ABOVE MSL):	928.86	WELL TYPE: DIAMETER (IN):	II 2
Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)									

GROUNDWATER ANALYTICAL SUMMARY (mg/L)							
SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTX	NAPHTHALENE
11/06/2024	<0.010	0.029	<0.020	0.176	0.606	0.811	<0.050
07/10/2025	<0.005	<0.005	<0.010	0.015	<0.005	0.015	<0.025
09/23/2025	<0.005	0.005	<0.010	0.057	0.097	0.159	<0.025
01/22/2026	<0.001	<0.001	<0.002	<0.001	<0.001	BDL	<0.005
04/06/2026	<0.001	<0.001	<0.002	<0.001	<0.001	BDL	<0.005
04/07/2026	NOT SAMPLED						
07/16/2026	<0.001	<0.001	<0.002	<0.001	<0.001	BDL	<0.005
GRP SSTLs:	0.511	0.128	25.5	17.9	175	-	0.511
Inhalation SSTLs:	16,800	10	526	169	175	-	26.2

Monitoring Point Data Summary Table									
SITE NAME:	Shell Food Mart #0521, Vestavia			UST Number:	24-01-02	WELL ID:	VW-1		
INSTALLATION DATE:	11/05/2024	WELL DEPTH (FT BTOC):	29.0	SCREEN LENGTH (FT):	2.0	CASING ELEV (FT ABOVE MSL):	929.71	WELL TYPE: DIAMETER (IN):	III 2
Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)									

GROUNDWATER ANALYTICAL SUMMARY (mg/L)							
SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTX	NAPHTHALENE
11/06/2024	<0.001	<0.001	<0.002	<0.001	<0.001	BDL	<0.005
07/10/2025	<0.001	<0.001	<0.002	<0.001	<0.001	BDL	<0.005
09/23/2025	<0.001	<0.001	<0.002	<0.001	<0.001	BDL	<0.005
01/22/2026	<0.001	<0.001	<0.002	<0.001	<0.001	BDL	<0.005
04/06/2026	<0.001	<0.001	<0.002	<0.001	<0.001	BDL	<0.005
04/07/2026	NOT SAMPLED						
07/16/2026	<0.001	<0.001	<0.002	<0.001	<0.001	BDL	<0.005
GRP SSTLs:	2.77	0.693	139	97.1	175	-	2.77
Inhalation SSTLs:	16,800	10	526	169	175	-	26.2

Monitoring Point Data Summary Table

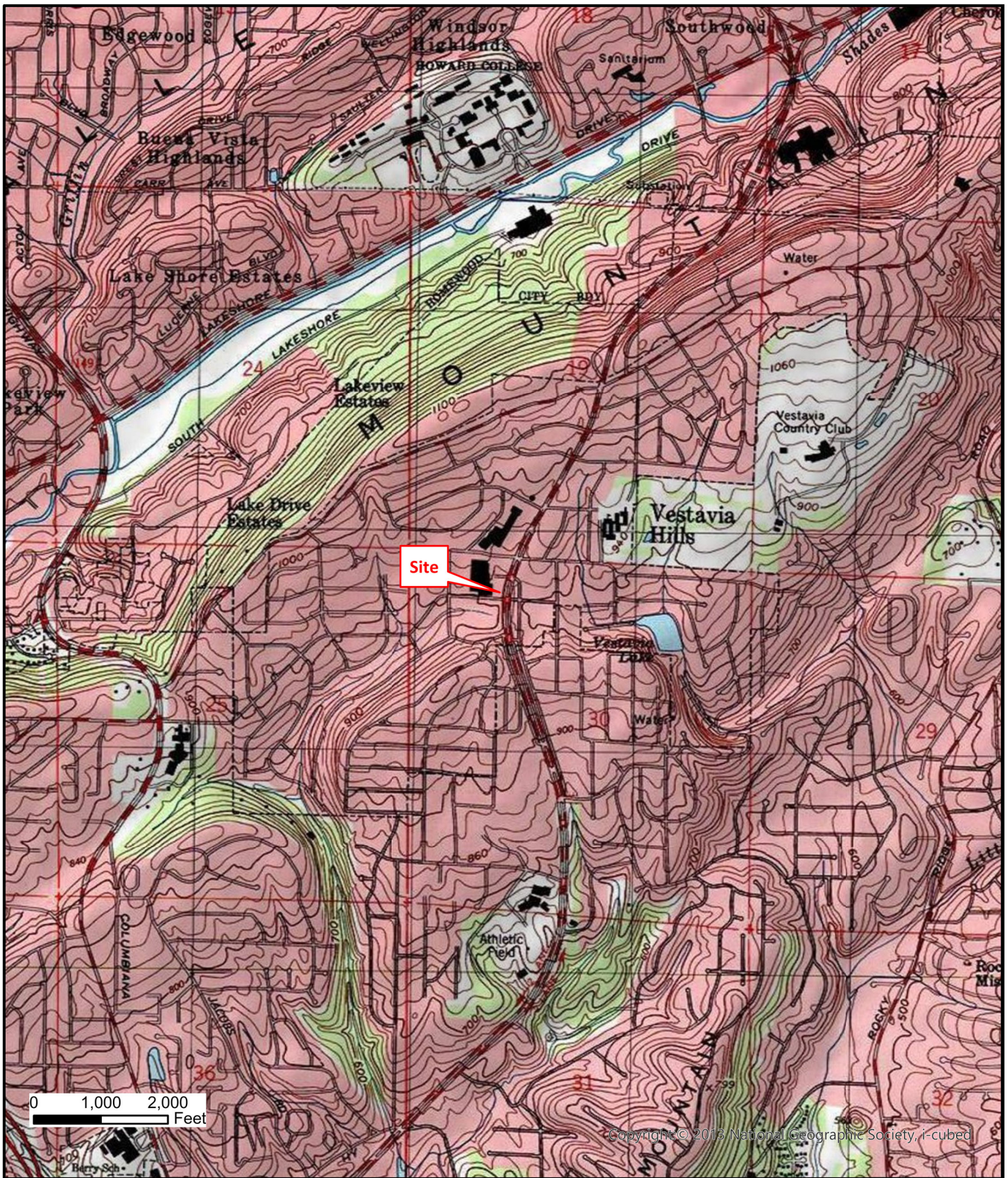
SITE NAME:	Shell Food Mart #0521, Vestavia			UST Number:	24-01-02	WELL ID:	RW-3		
INSTALLATION DATE:	04/08/2026	WELL DEPTH (FT BTOC):	20.0	SCREEN LENGTH (FT):	10.0	CASING ELEV (FT ABOVE MSL):	927.53	WELL TYPE: DIAMETER (IN):	II 4
Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)									

GROUNDWATER ANALYTICAL SUMMARY (mg/L)							
SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTEX	NAPHTHALENE
03/12/2024	<0.010	0.573	0.105	0.059	0.181	0.918	<0.050
11/06/2024	<0.050	5.33	<0.100	0.169	<0.050	5.499	<0.250
04/06/2026	NOT SAMPLED						
04/07/2026	NOT SAMPLED						
04/08/2026	MW-3 ABANDONED AND REINSTALLED AS RW-3						
07/16/2026	0.008	0.042	<0.002	0.003	0.008	0.053	<0.005
GRP SSTLs:	3.88	0.969	194	136	175	-	3.88
Inhalation SSTLs:	16,800	10	526	169	175	-	26.2

Monitoring Point Data Summary Table									
SITE NAME:	Shell Food Mart #0521, Vestavia			UST Number:	24-01-02	WELL ID:	Carbon Effluent		
INSTALLATION DATE:	-	WELL DEPTH (FT BTOC):	-	SCREEN LENGTH (FT):	-	CASING ELEV (FT ABOVE MSL):	-	WELL TYPE: DIAMETER (IN):	- -
Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)									

[illegible]

FIGURES



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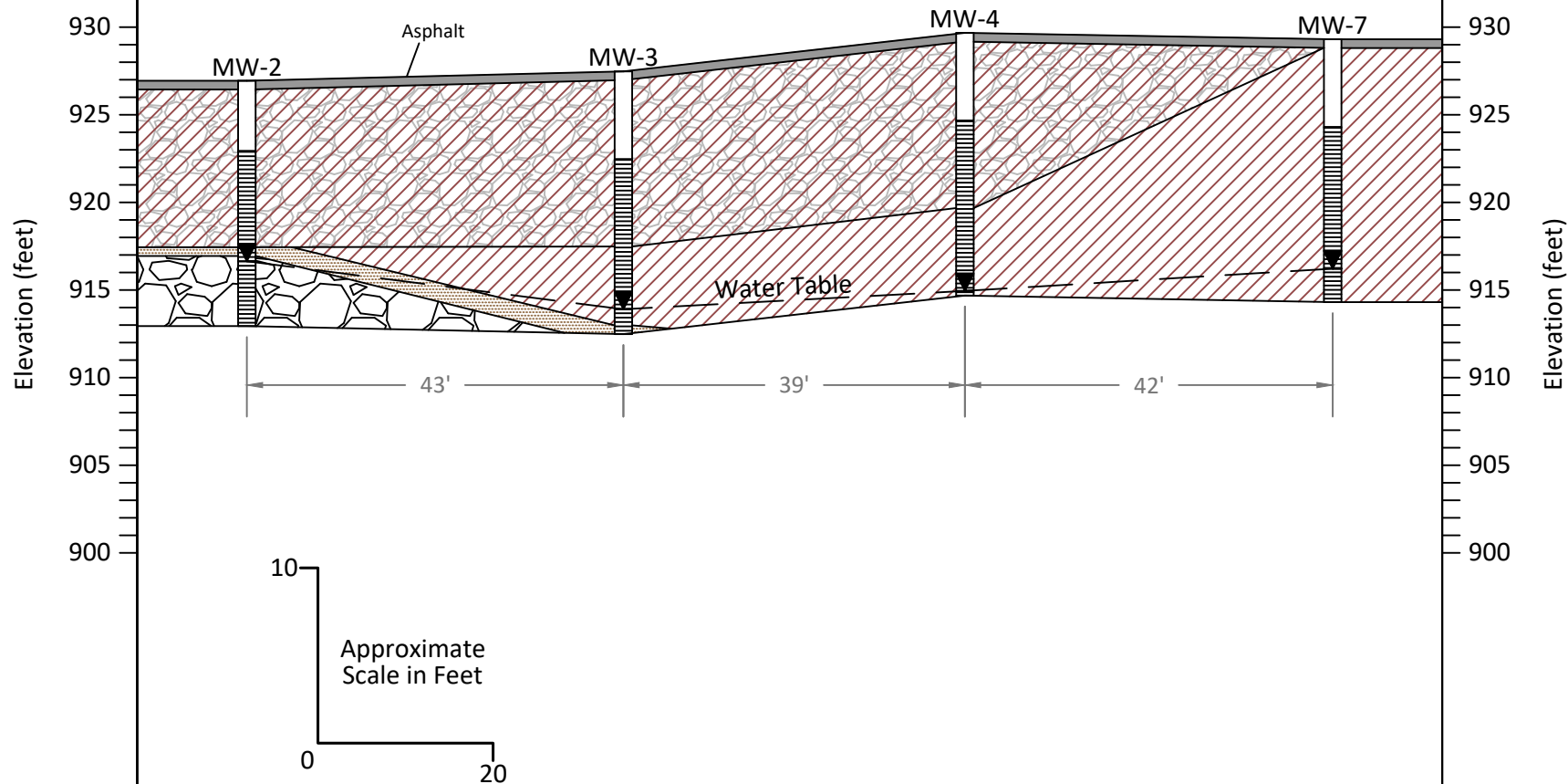
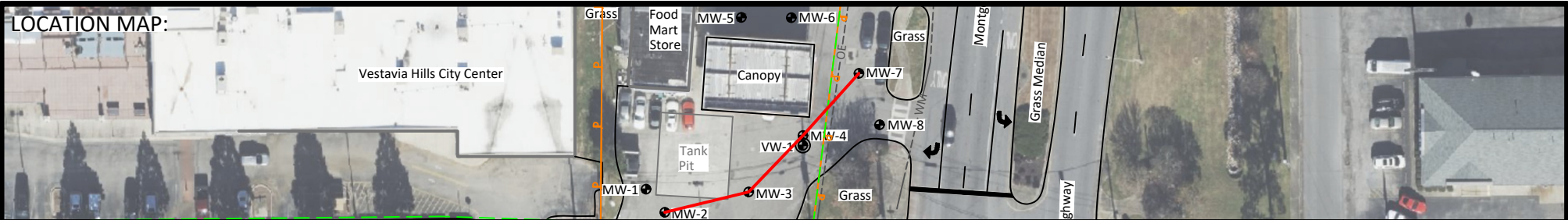


Site Location USGS Topographic Map

MM - Shell Food Mart #0521 Vestavia
728 Montgomery Highway
Vestavia Hills, Jefferson County, Alabama



LOCATION MAP:



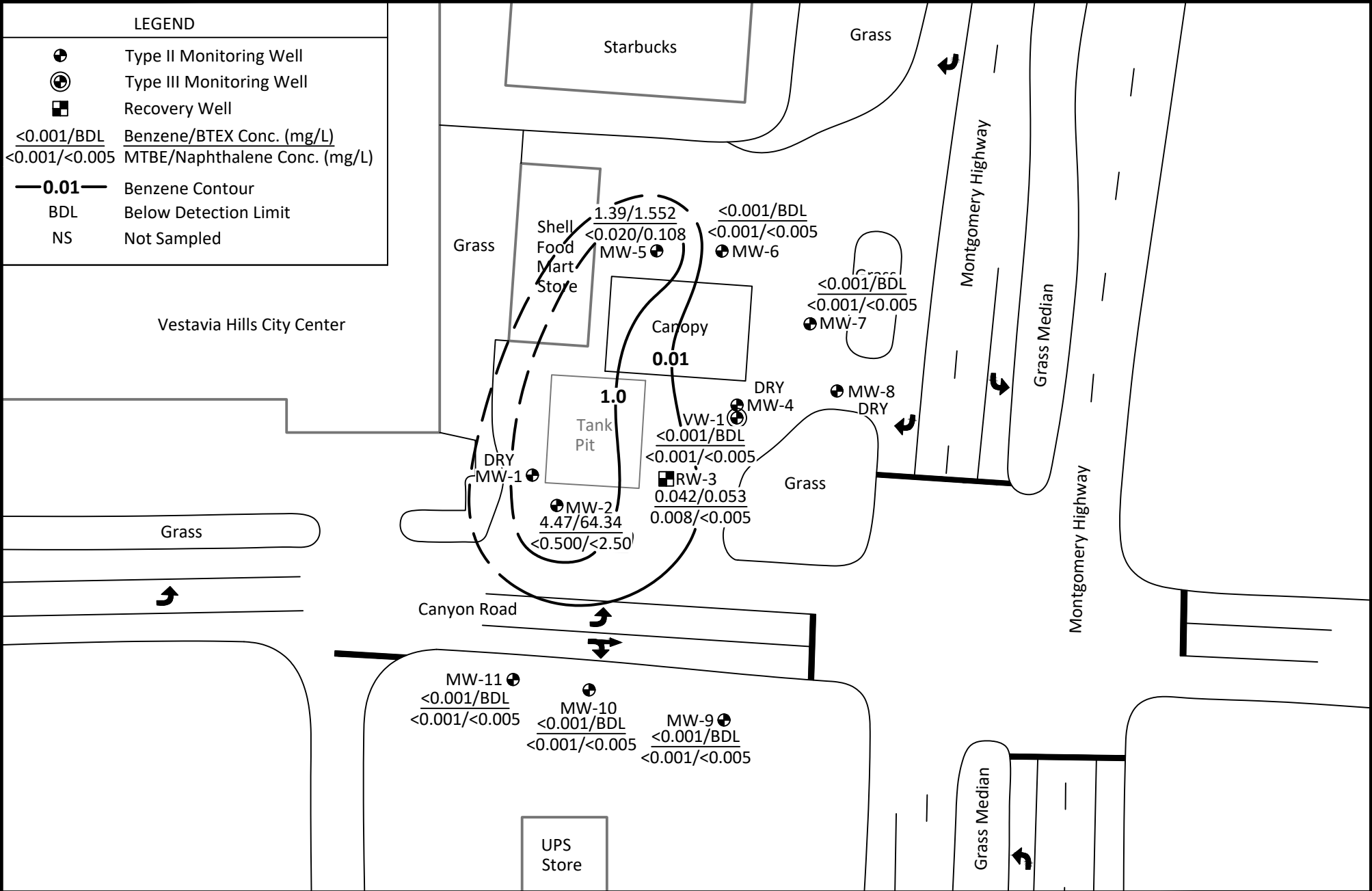
Legend



Lithologic Cross-Section

MM - Shell Food Mart #0521 Vestavia
728 Montgomery Highway
Vestavia Hills, Jefferson County, Alabama

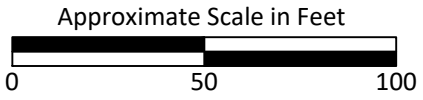
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	Clay		Screened Interval
	Sand		Groundwater Level

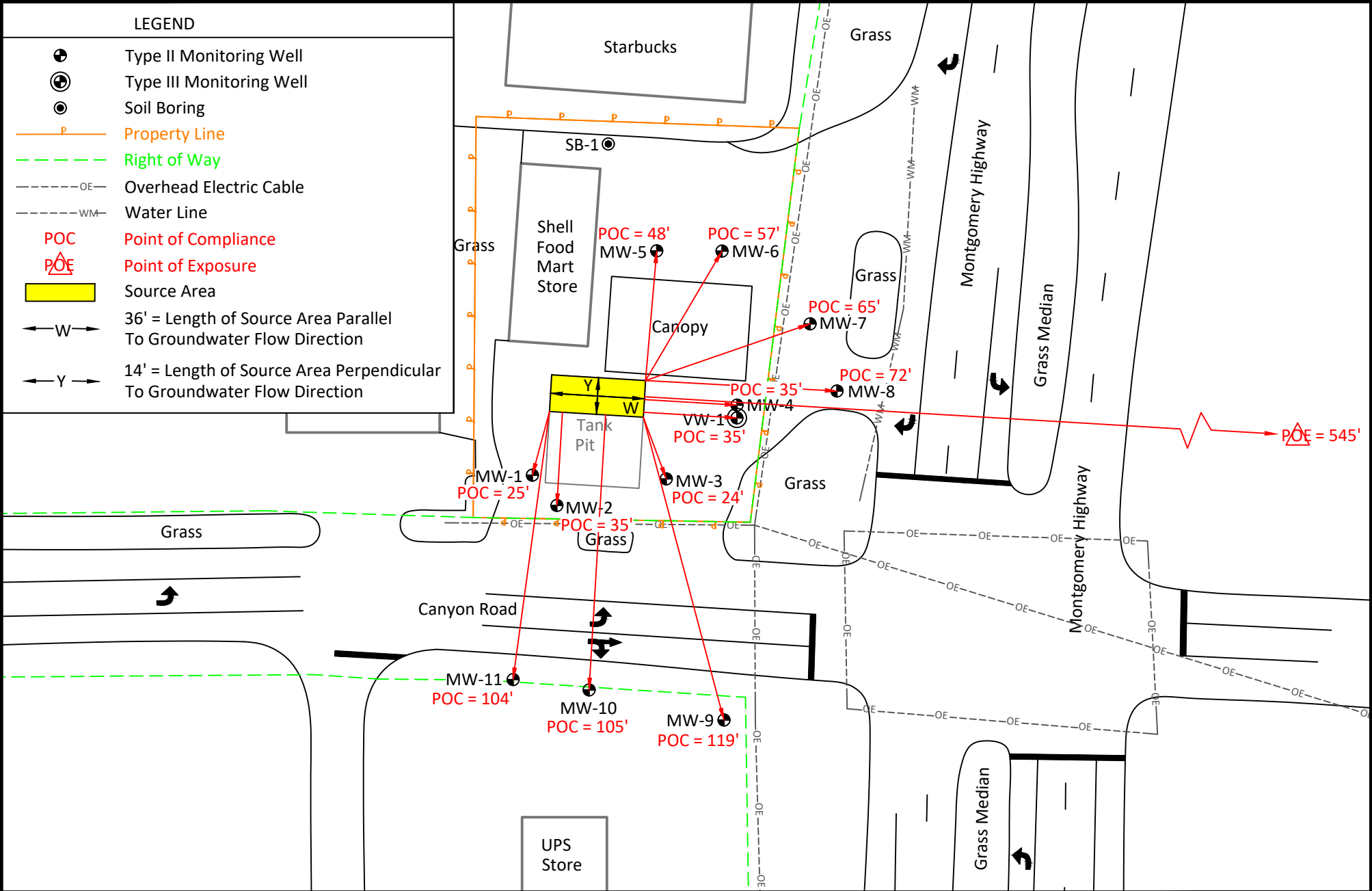


**THREE
NOTCH
GROUP**

Groundwater Analytical and Benzene Contour Map
July 16, 2026

Shell Food Mart #0521
728 Montgomery Highway
Vestavia Hills, Jefferson County, Alabama





**THREE
NOTCH
GROUP**

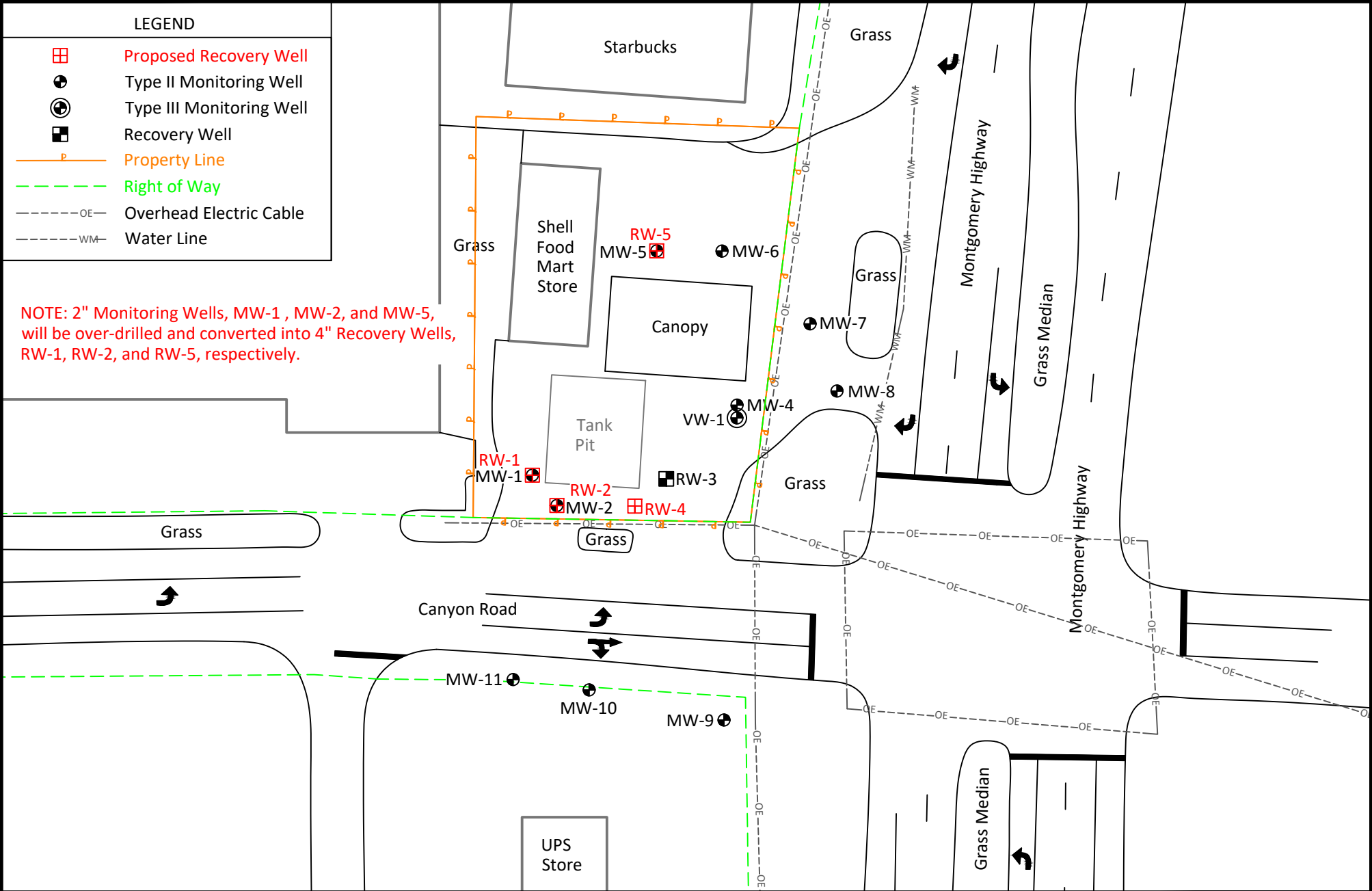
Site Conceptual Model

MM - Shell Food Mart #0521 Vestavia
728 Montgomery Highway
Vestavia Hills, Jefferson County, Alabama



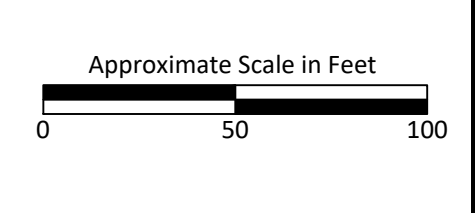
Approximate Scale in Feet



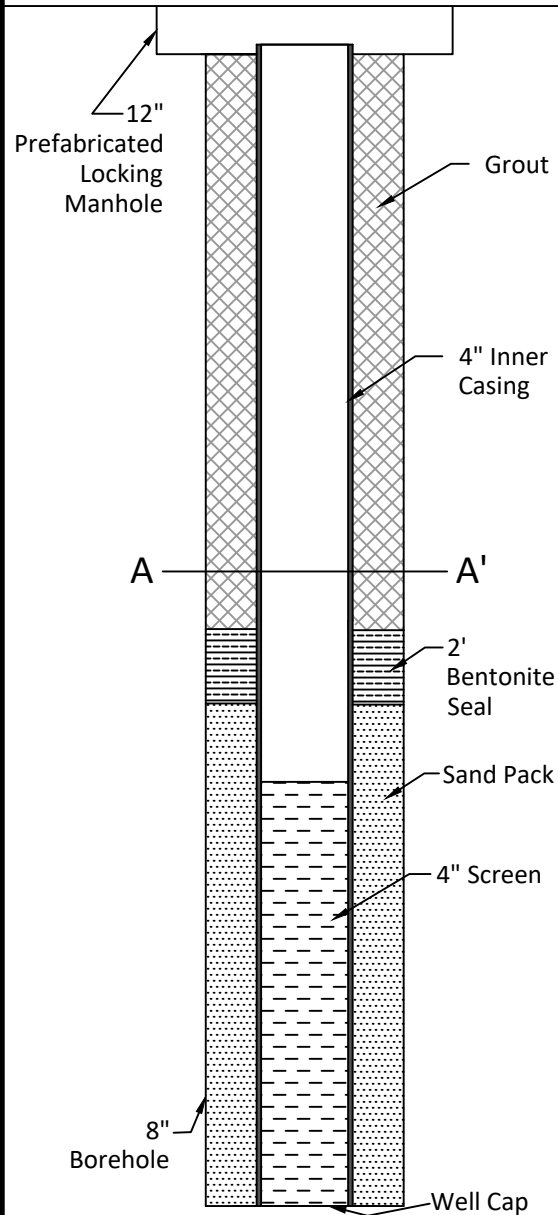


Proposed Recovery Well Locations Map

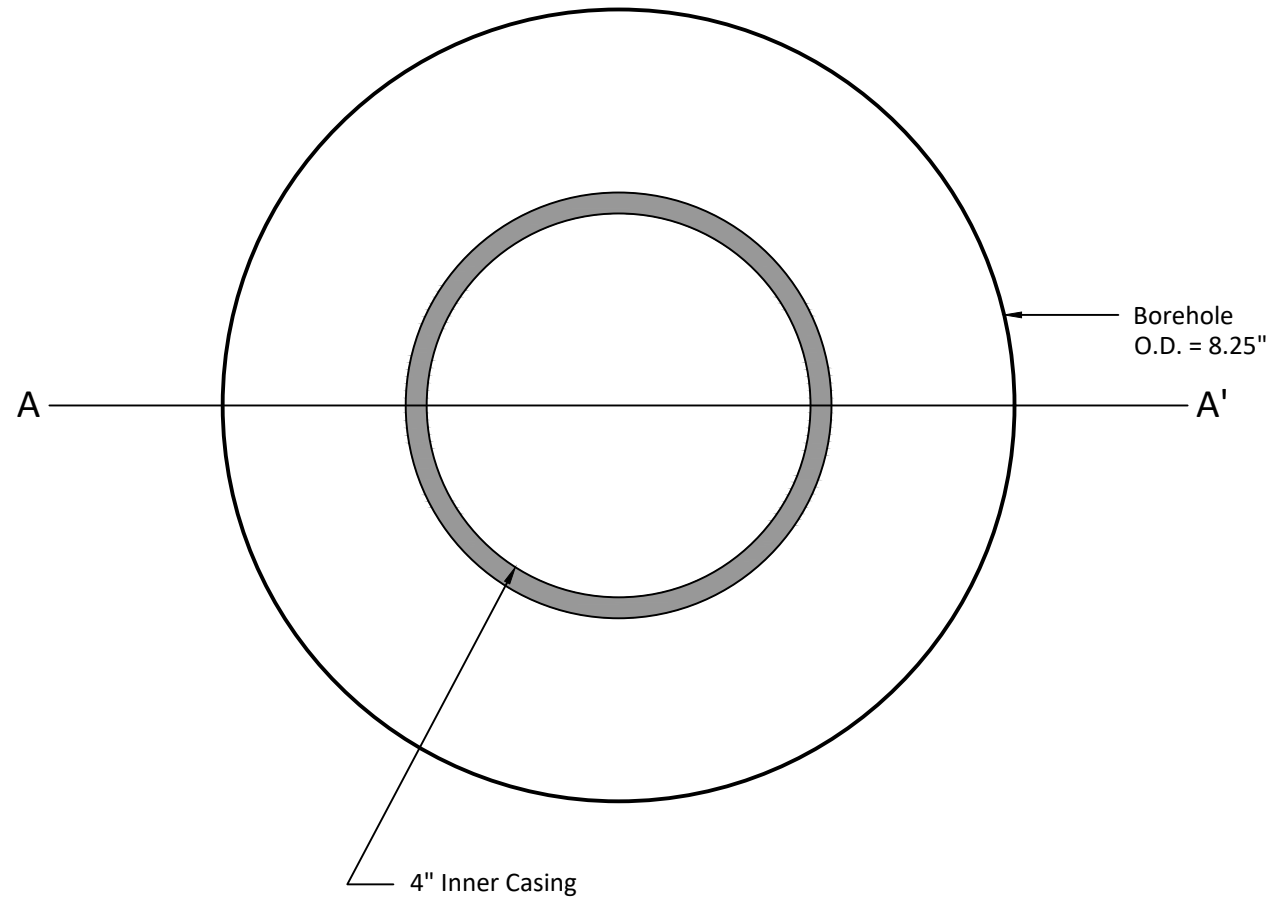
Shell Food Mart #0521
728 Montgomery Highway
Vestavia Hills, Jefferson County, Alabama



Typical Recovery Well Diagram
Scale: 1" = 8"



Cross-Section
Scale: 1" = 2"



Recovery Well Construction And Cross-Section Detail

Shell Food Mart #0521
728 Montgomery Highway
Vestavia Hills, Jefferson County, Alabama

Approximate Scale in Inches



APPROVED ARBCA SSTLs

ARBCA SUMMARY REPORT

FORM NO. 27

UST Incident No(s):	24-01-02	Facility ID:	25736-073-008747
Date Form Completed:	28-Jan-26	Form Completed By:	Michael Kotar

TIER 2 GROUNDWATER RESOURCE PROTECTION TARGET CONCENTRATIONS

Distance from source to the point of exposure (POE):		545									
COMPARISON FOR SOURCE SOIL			COMPARISON FOR SOURCE GROUNDWATER			COMPARISON FOR COMPLIANCE WELLS					
CHEMICALS OF CONCERN	Soil Source Rep. Conc. 1	Allowable Soil Conc. 2	E/ NE	GW Source Rep. Conc. 3	Allowable GW Conc. at a POC 4	E/ NE	CW Rep. Conc. 5	Allowable GW Conc. at a POC 6	E/ NE	CW Rep. Conc. 5	Allowable GW Conc. at a POC 6
	[mg/kg]	[mg/kg]		[mg/L]	[mg/L]		[mg/L]	[mg/L]		[mg/L]	[mg/L]
COMPLIANCE WELL NO.	MW-1			MW-1			MW-3			MW-2	
DISTANCE FROM SOURCE	25			25			24			35	
RECENT TREND										35	

ORGANICS

Benzene	2.26	1.02	E	31.7	0.941	E	5.33	0.969	E	18.9	0.693	E	0.0005	0.693	NE
Toluene	62.2	345	NE	65.6	188	NE	0.105	194	NE	45.4	139	NE	0.001	139	NE
Ethylbenzene	24.3	230	NE	7.02	132	NE	0.169	136	NE	8.37	97.1	NE	0.0005	97.1	NE
Xylenes (Total)	89.3	273	NE	26.8	175	NE	0.181	175	NE	29.1	175	NE	0.0005	175	NE
MTBE	0.01	1.55	NE	547	3.76	E	0.025	3.88	NE	2	2.77	NE	0.005	2.77	NE
Anthracene															
Benzo(a)anthracene															
Benzo(a)pyrene															
Benzo(b)fluoranthene															
Benzo(g,h,i)perylene															
Benzo(k)fluoranthene															
Chrysene															
Fluoranthene															
Fluorene															
Naphthalene	1.44	41.5	NE	31.7	3.76	E	0.25	3.88	NE	10	2.77	E	0.0025	2.77	NE
Phenanthrene															
Pyrene															

METALS

Arsenic															
Barium															
Cadmium															
Chromium VI															
Lead															
Zinc															

NOTE: Use the ARBCA Computational Software to calculate the allowable (i) soil source conc., (ii) GW source conc., and (iii) compliance well conc.

1: The soil source representative concentrations have to be calculated and entered here.

3: The groundwater source representative concentrations have to be calculated and entered here.

5: Representative concentrations in the compliance well.

E: Representative concentration exceeds allowable concentration.

Recommended Attachment: A map showing the location(s) of the soil source(s), location of POE, and location(s) of POC.

2: Allowable soil concentrations at the source protective of groundwater at the POE.

4: Allowable groundwater concentrations at the source protective of groundwater at the POE.

6: Allowable groundwater concentrations at a point of compliance (POC) protective of a POE.

NE: Representative concentration does not exceed allowable concentration.

TIER 2 GROUNDWATER RESOURCE PROTECTION TARGET CONCENTRATIONS

Distance from source to the point of exposure (POE): 545

COMPARISON FOR COMPLIANCE WELLS									
CHEMICALS OF CONCERN	CW Rep. Conc. 5	Allowable GW Conc. at a POC 6	E/ NE	CW Rep. Conc. 5	Allowable GW Conc. at a POC 6	E/ NE	CW Rep. Conc. 5	Allowable GW Conc. at a POC 6	E/ NE
	[mg/L]	[mg/L]		[mg/L]	[mg/L]		[mg/L]	[mg/L]	
COMPLIANCE WELL NO.									
35									
COMPLIANCE FROM SOURCE									
RECENT TREND									

COMPARISON FOR COMPLIANCE WELLS									
CHEMICALS OF CONCERN	CW Rep. Conc. 5	Allowable GW Conc. at a POC 6	E/ NE	CW Rep. Conc. 5	Allowable GW Conc. at a POC 6	E/ NE	CW Rep. Conc. 5	Allowable GW Conc. at a POC 6	E/ NE
	[mg/L]	[mg/L]		[mg/L]	[mg/L]		[mg/L]	[mg/L]	
COMPLIANCE WELL NO.									
35									
COMPLIANCE FROM SOURCE									
RECENT TREND									
ORGANICS									
Benzene	0.0005	0.693	NE	1.39	0.466	E	0.0005	0.361	NE
Toluene	0.001	139	NE	0.05	93.2	NE	0.001	72.2	NE
Ethylbenzene	0.0005	97.1	NE	1.23	65.2	NE	0.0005	58.5	NE
Xylenes (Total)	0.0005	175	NE	1.18	175	NE	0.0005	40.9	NE
MTBE	0.0005	2.77	NE	0.02	1.86	NE	0.0005	175	NE
Anthracene							0.0005	1.17	NE
Benzo(a)anthracene								0.985	NE
Benzo(a)pyrene									
Benzo(b)fluoranthene									
Benzo(g,h,i)perylene									
Benzo(k)fluoranthene									
Chrysene									
Fluoranthene									
Fluorene									
Naphthalene	0.0025	2.77	NE	0.194	1.86	NE	0.0025	1.17	NE
Phenanthrene									
Pyrene									
METALS									
Arsenic									
Barium									
Cadmium									
Chromium VI									
Lead									
Zinc									

NOTE: Use the ARBCA Computational Software to calculate the allowable (i) soil source conc., (ii) GW source conc., and (iii) compliance well conc.
 5: Representative concentrations in the compliance well.
 E: Representative concentration exceeds allowable concentration.
 NE: Representative concentration does not exceed allowable concentration.
 Recommended Attachment: A map showing the location(s) of the soil source(s), location of POE, and location(s) of POC.

UST Incident No(s): 24-01-02

Facility ID: 25736-073-008747

Date Form Completed: 22-Jan-26

Form Completed By: Michael Kotar

TIER 2 GROUNDWATER RESOURCE PROTECTION TARGET CONCENTRATIONS

Distance from source to the point of exposure (POE):															
COMPARISON FOR SOURCE SOIL				COMPARISON FOR SOURCE GROUNDWATER				COMPARISON FOR COMPLIANCE WELLS							
CHEMICALS OF CONCERN	Soil Source Rep. 1	Allowable Soil 2	E/NE	GW Source Rep. 3	Allowable GW 4	E/NE	CW Rep. Conc. 5	Allowable GW Conc. at a POC 6	E/NE	CW Rep. Conc. 5	Allowable GW Conc. at a POC 6	E/NE			
	[mg/kg]	[mg/kg]		[mg/L]	[mg/L]		[mg/L]	[mg/L]		[mg/L]	[mg/L]				
COMPLIANCE WELL NO.															
DISTANCE FROM SOURCE															
RECENT TREND															
ORGANICS															
Benzene							0.029	0.128	NE	0.036	0.125	NE	0.0005	0.0992	NE
Toluene							0.01	25.5	NE	0.01	25.1	NE	0.002	19.8	NE
Ethylbenzene							0.176	17.9	NE	0.205	17.6	NE	0.0005	13.9	NE
Xylenes (Total)							0.606	175	NE	0.722	175	NE	0.0005	175	NE
MTBE							0.005	0.511	NE	0.005	0.502	NE	0.0025	0.397	NE
Anthracene															
Benzo(a)anthracene															
Benzo(a)pyrene															
Benzo(b)fluoranthene															
Benzo(g,h,i)perylene															
Benzo(k)fluoranthene															
Chrysene															
Fluoranthene															
Fluorene															
Naphthalene							0.05	0.511	NE	0.05	0.502	NE	0.0005	0.397	NE
Phenanthrene															
Pyrene															
METALS															
Arsenic															
Barium															
Cadmium															
Chromium VI															
Lead															
Zinc															

NOTE: Use the ARBCA Computational Software to calculate the allowable (i) soil source conc., (ii) GW source conc., and (iii) compliance well conc.

1: The soil source representative concentrations have to be calculated and entered here.

2: Allowable soil concentrations at the source protective of groundwater at the POE.

3: The groundwater source representative concentrations have to be calculated and entered here.

4: Allowable groundwater concentrations at the source protective of groundwater at the POE.

5: Representative concentrations in the compliance well.

6: Allowable groundwater concentrations at a point of compliance (POC) protective of a POE.

NE: Representative concentration does not exceed allowable concentration.

Recommended Attachment A map showing the location(s) of the soil source(s), location of POE, and location(s) of POC.

ARBCA SUMMARY REPORT										FORM NO. 29a	
UST Incident No(s): 24-01-02		Facility ID: 25736-073-008747									
Date Form Completed: 28-Jan-26		Form Completed By: Michael Kotar									
TIER 2 ON-SITE TARGET LEVELS FOR INHALATION AND INGESTION											
NOTE: The SSTLs listed for each route of exposure are the minimum SSTLs for all the receptors for that particular route of exposure. The Tier 2 on-site target levels are the minimum SSTLs of all routes of exposures within each medium.											
CHEMICALS OF CONCERN	SURFICIAL SOIL			SUBSURFACE SOIL			GROUNDWATER				
	Outdoor Inhalation, Ingestion, & Dermal Contact [mg/kg]	On-Site Tier 2 [mg/kg]		Indoor Inhalation [mg/kg]	Outdoor Inhalation [mg/kg]	On-Site Tier 2 [mg/kg]	Indoor Inhalation [mg/L]	Outdoor Inhalation [mg/L]	Ingestion of Water [mg/L]	On-Site Tier 2 [mg/L]	
ORGANICS											
Benzene	546	546		0.0894	4.9	0.0894	10	1750	NA	10	
Toluene	533	533		13.7	533	13.7	526	526	NA	526	
Ethylbenzene	230	230		47.3	230	47.3	169	169	NA	169	
Xylenes (Total)	273	273		18	273	18	175	175	NA	175	
MtBE	378	378		245	10900	245	16800	48000	NA	16800	
Anthracene	NA	NA		NA	NA	NA	NA	NA	NA	NA	
Benzo(e)anthracene	NA	NA		NA	NA	NA	NA	NA	NA	NA	
Benzo(e)pyrene	NA	NA		NA	NA	NA	NA	NA	NA	NA	
Benzo(b)fluoranthene	NA	NA		NA	NA	NA	NA	NA	NA	NA	
Benzo(a,h,i)perylene	NA	NA		NA	NA	NA	NA	NA	NA	NA	
Benzo(k)fluoranthene	NA	NA		NA	NA	NA	NA	NA	NA	NA	
Chrysene	NA	NA		NA	NA	NA	NA	NA	NA	NA	
Fluoranthene	NA	NA		NA	NA	NA	NA	NA	NA	NA	
Fluorene	NA	NA		NA	NA	NA	NA	NA	NA	NA	
Naphthalene	189	189		13.6	189	13.6	26.2	31	NA	26.2	
Phenanthrene	NA	NA		NA	NA	NA	NA	NA	NA	NA	
Pyrene	NA	NA		NA	NA	NA	NA	NA	NA	NA	
METALS											
Arsenic	NA	NA		NA	NA	NA	NA	NA	NA	NA	
Barium	NA	NA		NA	NA	NA	NA	NA	NA	NA	
Cadmium	NA	NA		NA	NA	NA	NA	NA	NA	NA	
Chromium VI	NA	NA		NA	NA	NA	NA	NA	NA	NA	
Lead	NA	NA		NA	NA	NA	NA	NA	NA	NA	
Zinc	NA	NA		NA	NA	NA	NA	NA	NA	NA	

NOTE:
NA: Not Available

ARBCA SUMMARY REPORT										FORM NO. 29b	
UST Incident No(s): 24-01-02		Facility ID: 25736-073-008747									
Date Form Completed: 28-Jan-26		Form Completed By: Michael Kotar									
TIER 2 OFF-SITE TARGET LEVELS FOR INHALATION AND INGESTION											
NOTE: The SSTLs listed for each route of exposure are the minimum SSTLs for all the receptors for that particular route of exposure. The Tier 2 off-site target levels are the minimum SSTLs of all routes of exposures within each medium.											
CHEMICALS OF CONCERN	SURFICIAL SOIL		SUBSURFACE SOIL			GROUNDWATER					
	Outdoor Inhalation, Dermal Contact, Ingestion, [mg/kg]	Off-Site Tier 2 Target Levels [mg/kg]	Indoor Inhalation [mg/kg]	Outdoor Inhalation [mg/kg]	Off-Site Tier 2 Target Levels [mg/kg]	Indoor Inhalation [mg/L]	Outdoor Inhalation [mg/L]	Ingestion of Water [mg/L]	Off-Site Tier 2 Target Levels [mg/L]		
ORGANICS											
Benzene	NA	NA	NA	NA	NA	10	1750	NA	10		
Toluene	NA	NA	NA	NA	NA	526	526	NA	526		
Ethylbenzene	NA	NA	NA	NA	NA	169	169	NA	169		
Xylenes (Total)	NA	NA	NA	NA	NA	175	175	NA	175		
MtBE	NA	NA	NA	NA	NA	16800	48000	NA	16800		
Anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Naphthalene	NA	NA	NA	NA	NA	26.2	31	NA	26.2		
Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA		
METALS											
Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Barium	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Chromium VI	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA		

NOTE:
NA: Not Available

SITE HEALTH AND SAFETY PLAN

Site Health and Safety Plan

**Shell Food Mart
Facility ID# 25736-073-008747
UST No. 24-01-02**

***Prepared For:*
MM Alabama Leasing
1255 Lakes Pkwy, STE 180
Lawrenceville, GA 30043**

***Prepared By:*
Three Notch Group, Inc.
6767 Old Madison Pike, Suite 400
Huntsville, Alabama 35806**

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1.0 Introduction

This Health and Safety Plan (HASP) has been prepared specifically for corrective action activities to be conducted by Three Notch Group, Inc. (Three Notch) for the Shell Food Mart site located in Vestavia, Jefferson County, Alabama. These activities include all fieldwork necessary to conduct soil and groundwater remediation of petroleum hydrocarbons at the site.

2.0 Purpose

This HASP describes the preventative measures, person protection, and safety procedures to be followed by Three Notch personnel and subcontractors during all field activities. The HASP has been prepared in accordance with and meets the requirements of the Occupation Safety and Health Administration (OSHA) General Safety Standards for industry under 29 CFR 1910 and construction under 29 CFR 1926, the joint NIOSH/OSHA/USCG/EPA, *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, dated October 1985, and NFPA Safety Guidelines. Should any unexpected conditions arise, the HASP will be amended to accommodate site specific conditions.

3.0 Key Personnel and Responsibilities

All Three Notch personnel have received an initial 40-hour HAZWOPER certification, which is updated annually through an 8-hour refresher course. This training course meets the requirements of the OSHA 29 CFR 1910.120 standards. Three Notch personnel assigned to the project include:

NAME	TITLE	RESPONSIBILITIES
Kristy Brown	Corporate HSO	Overall management of entire project from beginning to completion. Responsible for preparation and implementation of the HASP and reporting of all hazard incidents to appropriate enforcement agencies. Coordinates and oversees all field activities.
Jessica Reed	Project Manager / Site HSO	Performs all field activities and is responsible for recognizing site hazards and reporting hazard incidents to Corporate HSO.

4.0 Scope of Work

Work to be performed may include installation activities.

4.1 Installation Activities

Installation activities generally involve preparing the site for installation activities and also the construction of the MEME manifold onsite. More specifically this may include:

- Preparing the site for work to be performed
- Saw-cutting concrete surface, excavating, and installing well vaults
- Installing polyvinyl chloride (PVC) extraction piping
- Installing piping connections from extraction piping to wellhead

5.0 Chemical Hazards

When conducting the corrective action activities, the primary chemicals of concern are gasoline or diesel.

5.1 Gasoline and Diesel

Gasoline and diesel are substances to be potentially encountered in the soil and groundwater at the site. Gasoline components include benzene, toluene, ethylbenzene, and xylenes (BTEX). Diesel components may include anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene.

5.2 Hazard Identification

During the corrective action activities, many hazards or potential hazards may be encountered when dealing with gasoline or diesel. This section serves as a guideline in recognizing hazards associated with these chemicals that exist or may potentially arise during field activities. Recognition is the first step in eliminating exposure to these hazards.

Occasionally methyl tertiary-butyl ether (MTBE) is encountered. MTBE has been used since 1979 as an oxygenate to gasoline in order to decrease carbon monoxide production in cars, particularly older model cars; however, MTBE has been determined to be a potential carcinogen. MTBE has low taste and odor thresholds, which can make a water supply non-potable even at low concentrations.

Exposure to MTBE will only be seen through exposure to gasoline containing MTBE and the effects of gasoline containing MTBE are relatively similar to gasoline not containing MTBE. The following are hazards associated with exposure to gasoline:

- Contact may irritate or burn the skin and eyes and absorption through the skin may be poisonous

- Vapors may be poisonous if inhaled and are irritating to the respiratory tract
- Vapors are an explosion hazard and may travel to a source of ignition and produce flashback
- A gasoline fire may produce irritating and poisonous gases
- Gasoline and diesel are flammable/combustible materials that may be ignited by heat, sparks, or flames, and a gasoline container may explode when exposed to heat or fire

The primary hazard associated with exposure to gasoline is the inhalation of vapors. The Safety Data Sheet (SDS) is attached to this Health & Safety Plan.

5.3 Hazard Prevention

Preventing exposure to chemical hazards generally requires the use of personal protective equipment (PPE). Level D equipment will provide the protection necessary to prevent exposure to these hazards. Level D equipment is discussed further in Section 10.1, Personal Protective Equipment.

5.4 Symptoms and First Aid Procedures

Many of the constituents found in gasoline and diesel act as central nervous system (CNS) depressants. The following table includes first aid measures for CNS depressants, which affect a person through inhalation (breathing), dermal (skin), or ingestion (mouth) exposure. In addition, the eye can be very sensitive to exposure to chemicals and is therefore included in the following table:

ROUTES OF EXPOSURE	SYMPTOMS	TREATMENT
Inhalation	Dizziness, nausea, lack of coordination, headache, irregular and rapid breathing, weakness, loss of consciousness, coma	Bring victim to fresh air. Rinse eyes or throat with plenty of water, if irritated. If symptoms are severe (victim vomits, is very dizzy or groggy, etc.), evacuate to hospital. Be prepared to administer CPR if certified. Monitor victim for at least 48 hours.
Dermal	Irritation, rash, or burning	Flush affected area with water for at least 15 minutes. Apply clean dressing and get medical attention.
Ingestion	Dizziness, nausea with stomach, cramps, loss of consciousness, coma	Evacuate victim to hospital. Do not induce vomiting.
Eye	Redness, irritation, pain, impaired vision	Flush with an abundant amount of water for at least 15 minutes. If severe, seek medical attention immediately.

6.0 Equipment/Operational Hazards

The following sections will address the hazards, preventative measures, and first aid procedures associated with the drill rig, backhoes, and other heavy equipment. The drill rig used during these field activities generally requires the use of augers for probing. These augers are designed to rotate in a circular motion while being forced downward through the soil. Field personnel are required to assemble and disassemble these parts. Contact with these rotating parts is one recognized hazard. In addition, the machinery also contains parts that become increasingly heated during operation.

6.1 Hazard Identification

There are several hazards associated with use of any type of drill rig and heavy machinery while performing corrective action activities. Generally during these field operations, the general public may become fascinated with the operation and approach the work area. All unauthorized personnel are required to remain 100 feet away from the work area. The site HSO officer will be responsible for keeping all unauthorized personnel away from the work area. The hazards associated with the use of a drill rig or other heavy machinery is as follows:

- Gasoline vapors from nearby dispensers can potentially enter the diesel-operated engine thereby causing fire/explosion hazards
- Rotating augers may catch onto gloves or clothing thereby pulling hands arms into the rotating machinery
- Drilling equipment may rupture hydraulic hoses thereby releasing hydraulic fluids
- Engine and exhaust system of an engine are extremely hot during and following operation
- Potential contact with overhead and underground utilities
- Open excavations/boreholes can be the source of trips and falls
- Digging machinery such as backhoes may puncture subsurface utilities
- Operators of heavy machinery may be unable to locate pedestrians near the operating equipment; therefore, all field personnel are to remain with eye contact of the operator at all times during operation

6.2 Hazard Prevention

Hazards associated with heavy machinery can easily be avoided with additional planning. The key to avoiding these hazards includes being familiar with the equipment and the process. In addition, being familiar with and implementing the precautionary measures listed below may reduce or eliminate the risks of a hazardous situation.

- Wear hard hat when working near or around the machinery
- Wear safety glasses when performing maintenance to machinery or power tools
- Shut down the machine engine when repairing or adjusting equipment
- Prevent accidental starting of engine during maintenance procedures by removing or tagging ignition key
- Block wheels or lower leveling jacks and set hand brakes to prevent equipment from moving during drilling procedures
- When possible, release all pressure on hydraulic systems, drilling fluid systems, and air pressure systems of

heavy machinery prior to performing maintenance

- Know the location of the emergency shut-off switch for all equipment
- Avoid contact with engine or exhaust system of engine following its operation
- Avoid using gasoline or other volatile/flammable liquids as a cleaning agent on or around heavy machinery
- Replace all caps, filler plugs, protective guards or panels, and high-pressure hose clamps, chains or cables moved during maintenance prior to excavation
- Avoid wearing rings or jewelry during drilling or installation procedures
- Be aware of all overhead and underground utilities
- Avoid alcohol or other CNS depressants or stimulants prior to excavation
- Avoid contact with equipment parts during freezing weather. Freezing of moist skin to metal can occur almost instantaneously
- Shut all field operations during an electrical storm
- Do not operate heavy equipment within 20 feet of overhead power lines

6.3 Symptoms and First Aid Procedure

Hazards associated with heavy equipment were identified in Section 6.1. Unlike hazards associated with temperature or chemicals, symptoms will not be apparent with these types of hazards. In addition, these hazards will occur rapidly as opposed to over a period of time. Due to the size and composition of hydraulic vehicles, exposure to these hazards will range from extremely serious to life-threatening; therefore Three Notch requires that exposed field personnel seek medical attention at the nearest medical facility and the Project Manager be notified immediately. A site location map to the nearest hospital is attached to this Health & Safety Plan.

7.0 Temperature Hazards

Another hazard associated with corrective action activities involves working in extreme weather conditions. Temperatures in the Southeast USA during the spring, summer, and occasionally the fall seasons can vary from mild to extremely hot. During this season, extra precautions are necessary to prevent hazards associated with elevated temperatures, which result in various forms of heat stress. In addition, the Southeast is known for its rather mild winter condition; however, on occasion, the Southeast may experience freezing conditions; therefore, precautions are also necessary to prevent hazards associated with these extreme temperatures.

7.1 Heat

As stated in OSHA's regulatory guidelines for heat exposure operations involving high air temperatures, radiant heat sources, high humidity, direct physical contact with hot objects, or strenuous physical activities have a high potential for inducing heat stress. Additional factors to consider in the determination of heat stress on an individual include age, weight, degree of physical fitness, degree of acclimatization, metabolism, use of alcohol or drugs, and a variety of medical conditions such as hypertension (high blood pressure). The following sections will identify the hazards associated with heat stress, the measures needed in order to prevent exposure to these hazards, and first aid procedures in the event exposure to these hazards should occur.

7.1.1 Hazard Identification

Heat stress is a major hazard, especially for workers wearing protective clothing. Depending on the ambient conditions and the work being performed, heat stress can occur very rapidly- within as little as 15 minutes. The key to preventing excessive heat stress is educating personnel on the hazards associated with working in heat and the benefits of implementing proper controls and work practices. The hazards associated with heat stress range from heat fatigue (mild discomfort) to heat stroke (extreme danger, which may result in death, and are discussed in the following sections.

7.1.1.1 Heat Fatigue

Heat fatigue occurs due to a lack of acclimatization (adjusting one's tolerance to work in elevated temperatures). Acclimatization is a gradual process. This process should include all field personnel being permitted to work in elevated temperatures in specified increments. On a daily basis, the maximum allowable work period should gradually be increased until the worker is able to perform his/her duties more proficiently under these conditions. The use of an acclimatization program is recommended in the regulatory guidelines established by OSHA.

7.1.1.2 Heat Rash

Heat rash (prickly heat) is the most common heat stress factor and may result from continuous exposure to heat or humid air where the skin remains wet due to lack of evaporation. Under these conditions, sweat ducts become plugged, and a skin rash appears, generally in areas where clothing is restrictive. This uncomfortable rash can be prevented by resting in a cool place during breaks and by implementing good daily personal hygiene.

7.1.1.3 Heat Collapse

Heat collapse is commonly referred to as "fainting." Fainting generally occurs when the brain does not receive enough oxygen. As a result of this condition, the exposed individual may lose consciousness. Heat collapse is rapid and unpredictable; therefore, acclimatization is an important factor in preventing this condition.

7.1.1.4 Heat Cramps

Heat cramps are muscular spasms, which usually occur in the abdomen or limbs due to loss of electrolytes following profuse sweating. Cramps are caused by either too much or too little salt intake. During the sweating process, salt exits the body; therefore, without the proper replenishment, the body experiences an electrolyte imbalance thereby inducing heat cramps. Thirst cannot be relied upon as a guide to the need for water. When working in hot environments, water must be replenished every 15 to 20 minutes.

7.1.1.5 Heat Exhaustion

Heat exhaustion is a result of overexertion in hot or warm weather. It is highly possible for an onsite worker to experience heat exhaustion due to the use of worker-protective coveralls, boots, gloves, and respirator protection,

even when ambient temperatures are mild. Fainting may also occur with heat exhaustion. This can become an extreme hazard if operating heavy machinery.

Caution: Individuals with heart problems or on a “low sodium” diet who work in these environments should consult a physician and Corporate HSO prior to working in these conditions.

7.1.1.6 Heat Stroke

Heat stroke is the most severe form of heat stress. The body’s temperature control system is maintained through sweat production. Perspiration is a cooling process for the body and keeps the body core temperature within a stable range. During heat stroke, sweat production is inhibited and the body temperature begins to rapidly rise. Brain damage and death may occur if body core temperature is extremely elevated and is not reduced.

7.1.2 Hazard Prevention

Hazards associated with temperature extremes can also be prevented with additional planning and preparation. The hazards associated with temperature can range from heat fatigue to heat stroke as described previously in Section 7.1.1 Measures to ensure the prevention of temperature hazards are as follows:

- Adhere to acclimatization process by exposing field personnel to progressively longer periods of time in hot environments.
- Schedule work for early morning or evening during warm weather
- Work in shifts; limit exposure time of personnel and allow frequent breaks
- Have cool liquids at an Exclusion Zone border for exposed personnel to continuously replace body fluids. As stated in the previous section, OSHA recommends that fluids, preferably water and/or a water-electrolyte solution be replenished every 15 to 20 minutes.
- Avoid caffeine and alcoholic beverages both during work hours and 24 hours prior to performing field activities

The site HSO or designee should continually monitor personnel for signs of heat stress. If any signs of heat disorders are apparent, all field personnel must immediately rest and replenish fluids until body core temperature is lowered and remains stable.

7.1.3 Symptoms and First Aid Procedures

As discussed previously in Section 7.1.1, hazards associated with heat stress range from heat fatigue to heat stroke. Taking precautionary measures to ensure that personnel are not exposed to extreme temperatures for long periods of time can prevent these hazards. First aid measures for heat fatigue, heat rash, and heat collapse include taking frequent breaks so that the body core temperature can cool down. The following table includes first aid measures for signs of overexposure to heat.

TEMPERATURE HAZARDS	SYMPTOMS	TREATMENT
Heat Fatigue	Impaired performance of skilled sensorimotor, mental or vigilance jobs	No known treatment. Victim should be placed under cooler conditions until body core temperature lowers.
Heat Rash	Rash due to plugged sweat ducts, generally where clothing is restrictive	Keep dry towels or paper towels at the site to dry skin when excessive sweating occurs. Rash usually disappears when affected individual returns to cooler environment.
Heat Collapse	Loss of consciousness	Attempt to awaken individual. Relocate victim to a cooler area until body core temperature lowers and replenish fluids. Victim should rest for a few days.
Heat Cramps	Uncontrollable muscle spasms	Apply warm, moist heat and pressure to reduce pain. Give electrolyte drinks by mouth. Victim should intake additional potassium (Bananas are good potassium source).
Heat Exhaustion	Pale, clammy skin, profuse perspiration, weakness, headache, and nausea	Get victim into shade or cooler place. Immediately remove any protective clothing. Victim should drink plenty of fluids. Victim should lie down with feet raised. Fan and cool victim with wet compresses. If vomiting occurs, transport to hospital. Victim should rest for a few days.
Heat Stroke	Pale, dry skin due to lack of perspiration, weakness, unconsciousness	Immediately take precautions to cool body core temperature by removing clothing and sponging body with cool water or placing in tub of cool water until temperature is lowered sufficiently (102°F). Stop cooling and observe victim for 10 minutes. Once temperature remains lowered, dry person off. Use fans or air conditioning, if available. Do not give the victim stimulants. Transfer to medical facility. Under no condition is the victim to be left unattended unless authorized by a physician.

8.0 Explosion/Electrocution Hazards

As stated previously in Section 4.1, extensive efforts are made in order to determine the location of subsurface utilities prior to corrective action activities. Efforts are made to obtain the location of underground utilities through the Line Locator Services, and utility companies are notified in advance to perform a site inspection and utility marking; however, the potential for a subsurface utility to go unnoticed exists. Therefore, the hazards associated

with exposure to these utilities are identified and preventative measures and first aid procedures are discussed further in the following sections.

8.1 *Explosion*

Primarily when dealing with subsurface utilities, two potentially life-threatening hazards exist. The first hazard identified in association with subsurface utilities during excavation activities are discussed further in the following section.

8.1.1 *Hazard Identification*

The main hazard associated with puncturing a subsurface utility gas line is explosion. By releasing gas (usually natural gas, which is generally methane gas or propane gas) into the atmosphere, explosive conditions are favorable; therefore, ignition sources must be immediately eliminated in the event a gas release occurs. Due to the flammability of gasoline, ignition sources will be minimized; however, the engines are needed during field activities. Therefore, the only alternative to reducing the explosion hazard is to stop the release as soon as possible. However, when dealing with gases under pressure, the volatilization process may occur at such a rapid speed that an explosive situation is inevitable.

8.1.2 *Hazard Prevention*

Preventative measures are ensured prior to field activities. These measures generally encompass locating subsurface utilities. In addition, Three Notch will request local utility companies to perform site inspections and mark all subsurface utilities. In addition to this notification, if a particular subsurface utility is not identified and Three Notch suspects the utility to exist, Three Notch will take additional precautionary measures to ensure the suspected utility does not exist. These measures generally include locating utility meter boxes, etc. In addition, a field technician or subcontractor will generally probe the ground with a small rod in order to possibly identify the existence of subsurface utilities. This is conducted usually when machinery reaches 2-3 feet below land surface (ft-bls).

8.2 *Electrocution*

8.2.1 *Hazard Identification*

The main hazard associated with puncturing a subsurface electrical line or coming into contact with an overhead power line is electrocution. When dealing with electricity, all things are classified as either conductors or insulators. Conductors allow electricity to pass through them while insulators prevent electricity to pass through. Examples of conductors are metals, wood, and water, and examples of insulators are rubber and PVC. Humans are also classified as conductors; therefore, contact with electrical sources can be fatal.

Because the heavy machinery is metal, which has been classified as one of the best sources of electrical conduction, contact with exposed electrical lines will allow current to flow. The National Electrical Code (NEC) has determined that 20 milliamps (mA) of current can be fatal. For comparison, a common household circuit breaker may conduct

15, 20, or 30 amps of electrical current.

8.2.2 Hazard Prevention

As stated previously in Section 8.1.2, preventative measures to locate subsurface and overhead electrical lines prior to corrective action activities are required by Three Notch. Three Notch will notify local utility companies to provide a site inspection and mark any existing subsurface electrical lines. In addition, Three Notch will contact the local power provider to insulate overhead lines if necessary. When dealing with the electrical components of the dewatering system, the following precautionary measures may prevent exposure to electrocution:

- Avoid contact with exposed connections/wiring and other related components
- If unfamiliar with the system, do not attempt contact with any component
- Call the Project Manager if unsure of any connections associated with the operations of the system.

8.2.3 Symptoms and First Aid Procedures

As discussed previously in Section 8.2.1, the hazard associated with puncturing subsurface electrical utilities and contacting electrical components of dewatering system is electrocution. The primary route of exposure is contact. The transmission of electricity is allowed because the metal equipment serves as a conductor for electrical current. Symptoms and treatment for exposure to electrical current is presented in the following table:

Caution: NEVER attempt to dislodge or remove someone that is contacting a high voltage line. Use an insulating material (PVC) to release the victim from the electrocution source.

9.0 Miscellaneous Hazards

The last hazard identified when performing corrective action activities has been classified as miscellaneous hazards due to the variety of these hazards. These hazards generally are nothing more than nuisances and with additional planning should be entirely avoidable; however, there are instances in which exposure to these hazards will occur. Therefore, these hazards are identified and preventative measures and first aid procedures are discussed in further detail in the following sections.

9.1 Hazard Identification

Occasionally, exposure to common nuisances may potentially result in a life-threatening situation. For example, a wasp or bee sting for some individuals only causes irritation or localized soreness; however, to others with little tolerance for wasp or bee venom, an allergic reaction can result which could potentially lead to death if not treated immediately. Therefore, allergic reactions to these insects have been identified as a potential hazard. In addition to the insects, contact with black widow spiders (red hourglass), brown recluse spiders (violin shape on back), and snakes are also potential hazard.

9.2 Hazard Prevention

Prevention, with regards to miscellaneous hazards, is more difficult to plan ahead. Generally, prior to conducting corrective action activities, the primary location for the activities has been established; therefore, barricades such as cones and company vehicles can be placed around the work area to prevent exposure to incoming and ongoing vehicles. However, the limitation to using cones is that they are often small and unnoticeable to drivers once inside the vehicles; therefore, the best prevention with regards to this miscellaneous hazard is to constantly be aware of your surroundings. This preventative measure can also be applied to exposure to insects, snakes, and spiders. Be aware of your surrounding when working around dark, secluded areas such as cracks and crevices, where snakes, spiders, and mice like to hide.

9.3 Symptoms and First Aid Procedures

If an employee or subcontractor shows any signs of an allergic reaction (anaphylactic shock, hives, or difficulty breathing) to a sting or bite, immediately seek medical attention at the nearest hospital. In the event that an operating vehicle strikes a person, seek medical attention immediately. In the meantime, a first aid kit and eye wash bottle will be provided by Three Notch and should be kept in all company vehicles. If field personnel are aware of their allergic reactions to insect bites, Three Notch requires that medication be kept on hand during field activities and at least one other field technician be made aware of the medication in the event of an allergic reaction should occur.

10.0 Additional Precautions

Additional precautions have been implemented in order to ensure overall safety for all field personnel. The safety protocols listed in this segment are to be considered the minimum requirements to be met by all field personnel engaging in corrective action activities.

10.1 Personal Protective Equipment

PPE is the most effective measure to prevent exposure to chemical hazards. There are four levels of PPE protection ranging from Level A to Level D equipment. Level A protection serves as the most conservative protective equipment, and Level D protection serves as the least conservative protective equipment. These levels are described further in the following table:

LEVELS OF PPE PROTECTION	PPE REQUIREMENTS
Level A	Worn when the highest level of respiratory, skin, and eye protection is necessary.
Level B	Worn when the highest level of respiratory protection is needed, but a lesser level of skin protection is necessary.

LEVELS OF PPE PROTECTION	PPE REQUIREMENTS
Level C	Worn when the criteria for using air-purifying respirators are met, and a lesser level of skin protection is necessary.
Level D	Refers to work conducted without respiratory protection. This level should be used only when the atmosphere contains no know or suspected airborne chemical or radiological contaminants and oxygen concentrations are between 19.5 % and 23.0%

Level D protective clothing, as indicated below, shall be considered the minimum requirements for installation and excavation operations:

- Hard hat
- Coveralls*
- Non permeable gloves
- Steel-toe, non-permeable boots
- Hearing protection*
- Safety goggles (chemical)*

*These items are mandatory on an “as needed” basis. Generally, normal site conditions do not warrant the use of this equipment; however, under certain conditions where large amounts of free product are encountered, the use of coveralls and safety goggles may be warranted. Safety goggles and hearing protection are mandatory when near the drill rig to reduce stress on the ear and also prevent objects from the soil or drill rig from lodging in the eye.

Equipment may be upgraded to Level C depending on the site conditions and/or monitoring results. Level C protection, in addition to Level D protection, includes the following:

- Rubber/chemical resistant outer gloves
- Face-shield if splash hazards exist
- Outer disposable booties
- Half-mask respirator

10.2 Signs, Signals, and Barricades

As stated previously in Section 9.1, corrective action activities are generally conducted at retail gasoline facilities and convenience stores, and are therefore, high traffic areas. All Three Notch field personnel must be aware of his/her surroundings at all times. In addition, the items listed below will be provided to secure the area in order to protect all field personnel as well as the general public.

- Utilize barricades to protect workers, pedestrians and vehicles from work activities
- Post area for “NO SMOKING”
- Utilize cones to protect workers from incoming and ongoing vehicles

10.3 Fire Protection and Prevention

As stated previously in Section 5.1, gasoline is a highly flammable substance. Three Notch requires that the work area be posted with “NO SMOKING” signs in an attempt to prevent fires from occurring; however, as a secondary precaution Three Notch plans to implement the following:

- Maintain a 20 lb. ABC Dry Chemical fire extinguisher on site at all times
- Eliminate ALL ignition sources in the vicinity of any releases
- The contractor will clean up all small spills using absorbent materials or by pumping

10.4 Storage and Decontamination

During the corrective action activities, impacted soils will be encountered. Groundwater will be treated and pumped to an NPDES outfall. Contaminated soil will be temporarily stored until transported for disposal. Decontamination procedures will be implemented should chemical exposure occur. The procedures are detailed below:

- Avoid contact with liquid gasoline or diesel
- Place contaminated soil on visqueen and cover once removed from the excavation
- Change any product contaminated soil immediately
- Wash any contaminated skin surfaces immediately with soap and water

Caution: All personnel are required to wash hands at the completion of work, before and after restroom use and before eating in order to prevent dermal contact with or ingestion of contaminants encountered during field activities.

11.0 Emergency Contingency Plan

If an incident occurs that requires declaring an emergency, all personnel will assemble at a designated emergency meeting location for further instruction. Arrangement for decontamination, evacuation and/or transport will be made at that time. The client and appropriate Three Notch personnel will be notified of the incident as soon as possible.

11.1 Notification/Reporting Procedures

In the event of an emergency, Three Notch Project Manager will be notified as soon as possible regarding the nature of the incident and emergency service contact will be notified as needed (see Section 11.7, Contingency Contacts). It is the responsibility of the Site HSO to report all incidents to the Three Notch Corporate HSO so that the required reporting procedures may be implemented.

11.2 Hazardous Substance Release

In the event that potentially hazardous substances migrate from the work zone and potentially endanger

unprotected personnel or the community all on site activities will cease until the release is brought under control. Three Notch will immediately notify the proper authorities so that they may be able to ensure that public health and safety is maintained throughout this process event to the extent of evacuation if necessary.

11.3 Personnel Injury

In the event of an injury, all personnel will assemble at the designated emergency meeting location. The Site HSO, prior to the beginning of field activities should designate this location. If the injured person is immobile one or more persons should remain nearby to provide any necessary first aid techniques. If medical help is necessary, the Site HSO will summon the appropriate assistance for transportation to the nearest medical facility. Due to the potential for these situations, Three Notch recommends that at least one qualified person be CPR/First Aid certified.

11.4 Evacuation Plan

Gasoline and diesel are flammable substances; therefore, a fire/explosion potential exists during the excavation activities. In the event of an onsite evacuation, the following plan will be implemented:

- A signal consisting of one continuous blast of a vehicle or air horn will be used
- All personnel will immediately evacuate the area and report to the designated emergency meeting location for further instruction

11.5 Spill Prevention and Response

In the event of a leak or spill, the area will be blocked using barricades, and the spill contained until absorbed and removed by authorized personnel. Unauthorized persons will be denied access to the area until all spills have been removed and field operations completed. Three Notch will follow prescribed procedures for reporting and responding to large releases by notifying the National Response Center (see Section 11.7). All materials will be disposed of according to regulatory guidelines.

11.6 Emergency Communication

In the event of an emergency situation, the following standard hand signals will be used onsite as a means of communication:

- Hand gripping throat (cannot breathe)
- Grip partner's wrist or both hands around waist (leave area immediately)
- Hands on top of head (need assistance)
- Thumbs up (OK, I am all right, I understand)
- Thumbs down (No, negative)

11.7 Contingency Contacts

In the event of an emergency, Three Notch has provided several emergency contacts. These contacts, along with

phone numbers, are listed in the following table. The Site HSO will be responsible for the notification of these contacts in the event of an emergency.

AGENCY	CONTACT	TELEPHONE NO.
Fire Department		911
Police Department		911
Ambulance		911
Hospital		1-256-265-1000
Corporate HSO	Kristy Brown	1-334-222-9431
Project Manager	Jessica Reed	1-256-539-7470
EPA RCRA-Superfund Hotline		1-800-424-9346
Chemtrec (24 hours)		1-800-424-9300
Bureau of Explosives (24 hours)		1-202-293-4048
Centers for Disease Control (Biological Agents)		1-404-633-5353
National Response Center		1-800-424-8802

11.8 Medical Facility

Name of Hospital: Baptist Health Brookwood Hospital

Address: 2010 Brookwood Medical Center Drive, Birmingham, AL 35209

Phone: 205-877-1000

Route to Hospital: see attached map with driving directions

Travel Time from Site: 5 minutes

Distance to Hospital: 1.7 miles

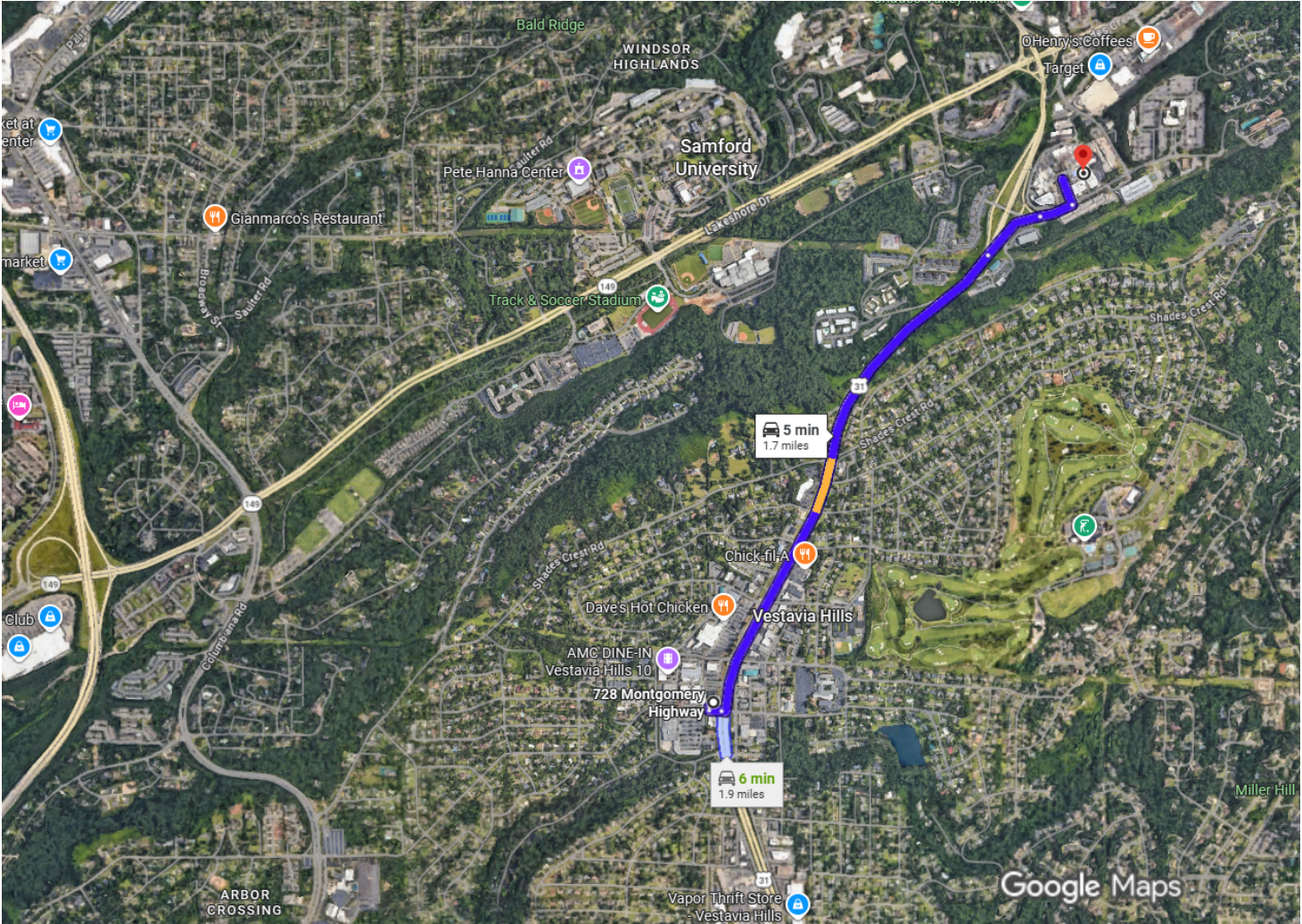
Name/Number of 24-hour Ambulance Service: 911

In cases of construction accidents, rapid notification to OSHA is required.



728 Montgomery Hwy, Vestavia Hills, AL 35216 to Baptist Health Brookwood Hospital, 2010 Brookwood Medical Center Dr, Birmingham, AL 35209

Drive 1.7 miles, 5 min



Imagery ©2026 Google, Imagery ©2026 Airbus, Maxar Technologies, Map data ©2026 Google 1000 ft

728 Montgomery Hwy
Vestavia Hills, AL 35216

- ↑ 1. Exit the parking lot toward Canyon Rd
46 ft
- ↶ 2. Turn left onto Canyon Rd
157 ft
- ↶ 3. Turn left onto US-31 N
1.3 mi
- ↷ 4. Take the Brookwood Medical Center Drive exit
0.2 mi
- ↗ 5. Merge onto Brookwood Medical Center Dr
449 ft
- ↶ 6. Turn left

i Destination will be on the right

358 ft

Baptist Health Brookwood Hospital

2010 Brookwood Medical Center Dr, Birmingham, AL
35209

SAFETY DATA SHEET



Section 1. Identification

Product name BP Unleaded Gasolines
SDS # 12631
Code 12631

Relevant identified uses of the substance or mixture and uses advised against

Product use USE AS MOTOR FUEL ONLY.

Supplier BP Products North America Inc.
30 South Wacker Drive
Chicago, IL 60606
USA

EMERGENCY HEALTH INFORMATION: 1 (800) 447-8735
Outside the US: +1 703-527-3887 (CHEMTREC)

EMERGENCY SPILL INFORMATION: 1 (800) 424-9300 CHEMTREC (USA)

Section 2. Hazards identification

OSHA/HCS status This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture FLAMMABLE LIQUIDS - Category 1
SKIN IRRITATION - Category 2
EYE IRRITATION - Category 2A
GERM CELL MUTAGENICITY - Category 1
CARCINOGENICITY - Category 1A
TOXIC TO REPRODUCTION - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
ASPIRATION HAZARD - Category 1

GHS label elements

Hazard pictograms



Signal word

Danger

Hazard statements

Extremely flammable liquid and vapor.
May be fatal if swallowed and enters airways.
Causes skin irritation.
Causes serious eye irritation.
May cause drowsiness or dizziness.
May cause genetic defects.
May cause cancer.
Suspected of damaging fertility or the unborn child.

Precautionary statements

Section 2. Hazards identification

Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves, protective clothing and eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating or lighting equipment. Use non-sparking tools. Take action to prevent static discharges. Use only outdoors or in a well-ventilated area. Avoid breathing vapor. Wash hands thoroughly after handling.

Response

IF exposed or concerned: Get medical attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell. IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage

Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.

Disposal

Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements

Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and receiving equipment. These alone may be insufficient to remove static electricity.

Hazards not otherwise classified

Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor may cause flash fire or explosion.

Section 3. Composition/information on ingredients

Substance/mixture

Mixture

Ingredient name	CAS number	%
Gasoline	Mixture	85 - 100
Ethanol	64-17-5	0 - 15
Contains:		
Benzene	71-43-2	0 - 3.8
Cyclohexane	110-82-7	0 - 1
Ethylbenzene	100-41-4	0 - 2
Toluene	108-88-3	4 - 11
1,2,4-Trimethylbenzene	95-63-6	0 - 3
xylene	1330-20-7	4 - 11
Naphthalene	91-20-3	0 - 0.5

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Check for and remove any contact lenses. Get medical attention.

Skin contact

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Drench contaminated clothing with water before removing. This is necessary to avoid the risk of sparks from static electricity that could ignite contaminated clothing. Contaminated clothing is a fire hazard. Contaminated leather, particularly footwear, must be discarded. Clean shoes thoroughly before reuse. Get medical attention.

Inhalation

If inhaled, remove to fresh air. Get medical attention. If exposure to vapor, mists or fumes causes drowsiness, headache, blurred vision or irritation of the eyes, nose or throat, remove immediately to fresh air. Keep patient warm and at rest. If any symptoms persist obtain medical advice.

Section 4. First aid measures

Ingestion	Do not induce vomiting. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Aspiration hazard if swallowed. Can enter lungs and cause damage. Get medical attention immediately.
Protection of first-aiders	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

Most important symptoms/effects, acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	Treatment should in general be symptomatic and directed to relieving any effects. Product can be aspirated on swallowing or following regurgitation of stomach contents, and can cause severe and potentially fatal chemical pneumonitis, which will require urgent treatment. Because of the risk of aspiration, induction of vomiting and gastric lavage should be avoided. Gastric lavage should be undertaken only after endotracheal intubation. Monitor for cardiac dysrhythmias.
Specific treatments	No specific treatment.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media	In case of fire, use foam, dry chemical or carbon dioxide extinguisher or spray.
Unsuitable extinguishing media	Do not use water jet. The use of a water jet may cause the fire to spread by splashing the burning product.

Specific hazards arising from the chemical

Extremely flammable liquid and vapor. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard. Vapors can form explosive mixtures with air. Vapors are heavier than air and can spread along the ground or float on water surfaces to remote ignition sources. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. This product is a poor conductor of electricity and can become electrostatically charged. If sufficient charge is accumulated, ignition of flammable mixtures can occur. To reduce potential for static discharge, use proper bonding and grounding procedures. This liquid may accumulate static electricity when filling properly grounded containers. Static accumulation may be significantly increased by the presence of small quantities of water or other contaminants. Liquid will float and may reignite on surface of water.

Hazardous combustion products

Combustion products may include the following:
carbon oxides (CO, CO₂) (carbon monoxide, carbon dioxide)

Special protective actions for fire-fighters

No action shall be taken involving any personal risk or without suitable training. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters

Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Immediately contact emergency personnel. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. No flames, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Put on appropriate personal protective equipment. Floors may be slippery; use care to avoid falling. Eliminate all ignition sources. Entry into a confined space or poorly ventilated area contaminated with vapor, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. Wear self-contained positive pressure breathing apparatus (SCBA).

For emergency responders

Entry into a confined space or poorly ventilated area contaminated with vapor, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. Wear self-contained breathing apparatus. Wear a suitable chemical protective suit. Chemical resistant boots. See also the information in "For non-emergency personnel".

Environmental precautions

Liquid leaks generate large volumes of flammable vapor, heavier than air, which may travel to remote sources of ignition (eg. along drainage systems). Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. In case of small spillages in closed waters (i.e. ports), contain product with floating barriers or other equipment. Collect spilled product by absorbing with specific floating absorbents. If possible, large spillages in open waters should be contained with floating barriers or other mechanical means. If this is not possible, control the spreading of the spillage, and collect the product by skimming or other suitable mechanical means. The use of dispersants should be advised by an expert, and, if required, approved by local authorities. Collect recovered product and other contaminated materials in suitable tanks or containers for recycle, recovery or safe disposal.

Methods and materials for containment and cleaning up

Small spill

Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. The method and equipment used must be in conformance with appropriate regulations and industry practice on explosive atmospheres.

Large spill

Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Dike spill area and do not allow product to reach sewage system and surface or ground water. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Use spark-proof tools and explosion-proof equipment. Contaminated absorbent material may pose the same hazard as the spilled product. The method and equipment used must be in conformance with appropriate regulations and industry practice on explosive atmospheres. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

Protective measures

Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not swallow. Aspiration hazard if swallowed. Can enter lungs and cause damage. Never siphon by mouth. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container. Avoid contact of spilled material and runoff with soil and surface waterways. Handling operations that can promote accumulation of

Section 7. Handling and storage

static charges include but are not limited to: mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations. Restrict flow velocity according to API 2003 (2008), NFPA 77 (2007), and Laurence Britton, "Avoiding Static Ignition Hazards in Chemical Operations". To reduce potential for static discharge, ensure that all equipment is properly grounded and bonded and meets appropriate electrical classification requirements.

Advice on general occupational hygiene

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Wash thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Store and use only in equipment/containers designed for use with this product. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

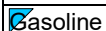
Light hydrocarbon vapors can build up in the headspace of tanks. These can cause flammability/explosion hazards even at temperatures below the normal flash point (note: flash point must not be regarded as a reliable indicator of the potential flammability of vapor in tank headspaces). Tank headspaces should always be regarded as potentially flammable and care should be taken to avoid static electrical discharge and all ignition sources during filling, ullaging and sampling from storage tanks. Do not enter storage tanks. If entry to vessels is necessary, follow permit to work procedures. Entry into a confined space or poorly ventilated area contaminated with vapor, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. When the product is pumped (e.g. during filling, discharge or ullaging) and when sampling, there is a risk of static discharge. Ensure equipment used is properly earthed or bonded to the tank structure. Electrical equipment should not be used unless it is intrinsically safe (i.e. will not produce sparks). Explosive air/vapor mixtures may form at ambient temperature. If product comes into contact with hot surfaces, or leaks occur from pressurized fuel pipes, the vapor or mists generated will create a flammability or explosion hazard. Product contaminated rags, paper or material used to absorb spillages, represent a fire hazard, and should not be allowed to accumulate. Dispose of safely immediately after use.

Do not enter storage tanks without breathing apparatus unless the tank has been well ventilated and the tank atmosphere has been shown to contain hydrocarbon vapor concentrations of less than 1% of the lower flammability limit and an oxygen concentration of at least 20% volume.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
 Gasoline	ACGIH TLV (United States). TWA: 300 ppm 8 hours. Issued/Revised: 5/1996 TWA: 890 mg/m ³ 8 hours. Issued/Revised: 5/1996 STEL: 500 ppm 15 minutes. Issued/Revised: 5/1996 STEL: 1480 mg/m ³ 15 minutes. Issued/Revised: 5/1996
Ethanol	ACGIH TLV (United States). STEL: 1000 ppm 15 minutes. Issued/Revised: 11/2008

Section 8. Exposure controls/personal protection

Toluene	OSHA PEL (United States). TWA: 1900 mg/m³ 8 hours. Issued/Revised: 6/1993 TWA: 1000 ppm 8 hours. Issued/Revised: 6/1993 OSHA PEL Z2 (United States). AMP: 500 ppm 10 minutes. Issued/Revised: 6/1993 CEIL: 300 ppm Issued/Revised: 6/1993 TWA: 200 ppm 8 hours. Issued/Revised: 6/1993 ACGIH TLV (United States). Ototoxicant. TWA: 20 ppm 8 hours. Issued/Revised: 11/2006
xylene	ACGIH TLV (United States). STEL: 651 mg/m³ 15 minutes. Issued/Revised: 5/1996 STEL: 150 ppm 15 minutes. Issued/Revised: 5/1996 TWA: 434 mg/m³ 8 hours. Issued/Revised: 5/1996 TWA: 100 ppm 8 hours. Issued/Revised: 5/1996 OSHA PEL (United States). TWA: 435 mg/m³ 8 hours. Issued/Revised: 6/1993 TWA: 100 ppm 8 hours. Issued/Revised: 6/1993
Benzene	ACGIH TLV (United States). Absorbed through skin. STEL: 8 mg/m³ 15 minutes. Issued/Revised: 5/1997 STEL: 2.5 ppm 15 minutes. Issued/Revised: 5/1997 TWA: 1.6 mg/m³ 8 hours. Issued/Revised: 5/1997 TWA: 0.5 ppm 8 hours. Issued/Revised: 5/1997 OSHA PEL (United States). STEL: 5 ppm 15 minutes. Issued/Revised: 6/1993 TWA: 1 ppm 8 hours. Issued/Revised: 6/1993 OSHA PEL Z2 (United States). AMP: 50 ppm 10 minutes. Issued/Revised: 6/1993 CEIL: 25 ppm Issued/Revised: 6/1993 TWA: 10 ppm 8 hours. Issued/Revised: 6/1993
1,2,4-Trimethylbenzene	ACGIH TLV (United States). TWA: 123 mg/m³ 8 hours. Issued/Revised: 9/1994 TWA: 25 ppm 8 hours. Issued/Revised: 9/1994
Ethylbenzene	ACGIH TLV (United States). TWA: 20 ppm 8 hours. Issued/Revised: 12/2010 OSHA PEL (United States). TWA: 435 mg/m³ 8 hours. Issued/Revised: 6/1993

Section 8. Exposure controls/personal protection

cyclohexane	TWA: 100 ppm 8 hours. Issued/Revised: 6/1993 ACGIH TLV (United States). TWA: 100 ppm 8 hours. Issued/Revised: 1/2002 OSHA PEL (United States). TWA: 1050 mg/m³ 8 hours. Issued/Revised: 6/1993 TWA: 300 ppm 8 hours. Issued/Revised: 6/1993
naphthalene	ACGIH TLV (United States). Absorbed through skin. TWA: 52 mg/m³ 8 hours. Issued/Revised: 5/1996 TWA: 10 ppm 8 hours. Issued/Revised: 5/1996 OSHA PEL (United States). TWA: 50 mg/m³ 8 hours. Issued/Revised: 6/1993 TWA: 10 ppm 8 hours. Issued/Revised: 6/1993

While specific OELs for certain components may be shown in this section, other components may be present in any mist, vapor or dust produced. Therefore, the specific OELs may not be applicable to the product as a whole and are provided for guidance only.

Appropriate engineering controls

All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained. Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organisation for standards.

Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits.

The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

Chemical splash goggles.

Skin protection

Hand protection

Wear chemical resistant gloves.

Do not re-use gloves. Protective gloves must give suitable protection against mechanical risks (i.e. abrasion, blade cut and puncture). Protective gloves will deteriorate over time due to physical and chemical damage. Inspect and replace gloves on a regular basis. The frequency of replacement will depend upon the circumstances of use.

Recommended: Gloves made from fluoroelastomer resistant to hydrocarbons and a wide range of chemicals.

Section 8. Exposure controls/personal protection

Body protection

Use of protective clothing is good industrial practice. Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Cotton or polyester/cotton overalls will only provide protection against light superficial contamination that will not soak through to the skin. Overalls should be laundered on a regular basis. When the risk of skin exposure is high (e.g. when cleaning up spillages or if there is a risk of splashing) then chemical resistant aprons and/or impervious chemical suits and boots will be required.

Wear suitable protective clothing.

Footwear highly resistant to chemicals.

When there is a risk of ignition wear inherently fire resistant protective clothes and gloves.

When there is a risk of ignition from static electricity, wear anti-static protective clothing. For greatest effectiveness against static electricity, overalls, boots and gloves should all be anti-static.

When the risk of skin exposure is high (from experience this could apply to the following tasks: cleaning work, maintenance and service, filling and transfer, taking samples and cleaning up spillages) then a chemical protective suit and boots will be required. Work clothing / overalls should be laundered on a regular basis. Laundering of contaminated work clothing should only be done by professional cleaners who have been told about the hazards of the contamination. Always keep contaminated work clothing away from uncontaminated work clothing and uncontaminated personal clothes.

Other skin protection

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection

Use only with adequate ventilation. Do not breathe vapor or mist. If ventilation is inadequate, use a NIOSH-certified respirator with an organic vapor cartridge and P95 particulate filter.

If operating conditions cause high vapor concentrations or the TLV is exceeded, use NIOSH-certified, supplied-air respirator.

Use with adequate ventilation.

If there is a requirement for the use of a respiratory protective device, but the use of breathing apparatus (independent of ambient atmosphere) is not required, then a suitable filtering device must be worn.

The filter class must be suitable for the maximum contaminant concentration (gas/vapor/aerosol/particulates) that may arise when handling the product.

Section 9. Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

Physical state

Clear, Liquid.

Color

Colorless to light yellow.

Odor

Gasoline

Odor threshold

0.025 ppm (Based on Gasoline)

pH

Not applicable. Based on Solubility in water (Very slightly soluble in water)

Melting point/freezing point

Not available.

Boiling point, initial boiling point, and boiling range

26.67 to 221.1°C (80 to 430°F)

Flash point

Closed cup: -42.778°C (-45°F)

Evaporation rate

Not available.

Flammability

Not applicable. Based on - Physical state

Lower and upper explosion limit/flammability limit

Lower: 1.3%
Upper: 7.6% (Estimated.)

Vapor pressure

48.3 to 103.4 kPa (361.97 to 775.66 mm Hg) [37.8°C (100°F)]

Section 9. Physical and chemical properties

Ingredient name	Vapor Pressure at 20°C			Vapor pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
Ethanol	42.95	5.7				
Toluene	23.17	3.1				
Benzene	75.01	10				
Ethylbenzene	9.3	1.2				
cyclohexane	93.01	12.4				

Relative vapor density

3 to 4 [Air = 1]

Density

750 kg/m³ (0.75 g/cm³)

Solubility(ies)

Media	Result
Water	Very slightly soluble

Miscible with water

No.

Partition coefficient: n-octanol/water

>3

Auto-ignition temperature

257°C (494.6°F)

Decomposition temperature

Not available.

Viscosity

Kinematic: <20.5 mm²/s (<20.5 cSt) at 40°C

Particle characteristics

Median particle size

Not applicable.

Section 10. Stability and reactivity

Reactivity

No specific test data available for this product. Refer to Conditions to avoid and Incompatible materials for additional information.

Chemical stability

The product is stable.

Possibility of hazardous reactions

Under normal conditions of storage and use, hazardous reactions will not occur.
Under normal conditions of storage and use, hazardous polymerization will not occur.

Conditions to avoid

Keep away from heat, sparks and flame. Avoid all possible sources of ignition (spark or flame).

Incompatible materials

Reactive or incompatible with the following materials: oxidizing materials.
Chlorine and Fluorine

Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Test	Species	Result	Exposure	Remarks
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Section 11. Toxicological information

Gasoline	LC50 Inhalation Vapor	Rat	>5610 g/m ³ analytical	4 hours	Based on Gasoline
	LC50 Inhalation Vapor	Rat	>7630 mg/m ³ Nominal	4 hours	Based on Gasoline
	LD50 Dermal	Rabbit	>2000 mg/kg	-	Based on Gasoline
	LD50 Oral	Rat	>5000 mg/kg	-	Based on Gasoline
Ethanol	LC50 Inhalation Vapor	Rat	124.7 mg/l	4 hours	Based on Ethanol
	LC50 Inhalation Vapor	Rat	116.9 mg/l	4 hours	Based on Ethanol
	LC50 Inhalation Vapor	Rat	133.8 mg/l	4 hours	Based on Ethanol
	LD50 Oral	Rat	10470 mg/kg	-	Based on Ethanol

Conclusion/Summary

Not classified. Based on available data, the classification criteria are not met.

Irritation/Corrosion

Product/ingredient name	Species	Result	Score	Exposure	Observation	Conc.	Remarks
Gasoline	Rabbit	Eyes - Non-irritating to the eyes.	-	-	-	-	Based on Gasoline
	Rabbit	Skin - Irritant	-	-	-	-	Based on Gasoline
Ethanol	Rabbit	Eyes - Cornea opacity	-	-	-	-	Based on Ethanol
	Rabbit	Eyes - Iris lesion	-	-	-	-	Based on Ethanol
	Rabbit	Eyes - Irritant	-	-	-	-	Based on Ethanol
	Rabbit	Skin - Non-irritant to skin.	-	-	-	-	Based on Ethanol

Skin

Causes skin irritation.

Eyes

Causes serious eye irritation.

Sensitizer

Product/ingredient name	Route of exposure	Species	Result	Remarks
Gasoline	skin	Guinea pig	Not sensitizing	Based on Gasoline

Skin

Not classified. Based on available data, the classification criteria are not met.

Mutagenicity

Product/ingredient name	Test	Experiment	Result	Remarks
Gasoline	Equivalent to OECD 476	Experiment: In vitro Subject: Mammal - species unspecified	Negative	Based on Gasoline
	Equivalent to OECD 471	Experiment: In vitro Subject: Non-mammalian species	Negative	Based on Gasoline

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Ethanol	EPA OPPTS 870.5395	Experiment: In vivo	Negative	Based on Gasoline vapor condensate
		Subject: Unspecified Cell: Germ		
	Equivalent to OECD 475	Experiment: In vivo	Negative	Based on Gasoline
		Subject: Unspecified Cell: Germ		
	Equivalent to OECD 476	Experiment: In vitro	Negative	Based on Ethanol
		Subject: Mammal - species unspecified		
	Equivalent to OECD 473	Experiment: In vitro	Negative	Based on Ethanol
		Subject: Non- mammalian species		
	Equivalent to OECD 478	Experiment: In vivo	Negative	Based on Ethanol
		Subject: Unspecified Cell: Germ		

Conclusion/Summary

May cause genetic defects.

Carcinogenicity

Product/ingredient name	Test authority / Test number	Species	Route	Exposure	Result	Remarks
Gasoline	Equivalent to OECD 451	Mouse	Dermal	102 weeks	Negative - Dermal - Unspecified	Based on Gasoline
	Equivalent to OECD 451	Rat	Inhalation	113 weeks	Negative - Inhalation - Unspecified	Based on Gasoline
Ethanol	Equivalent to OECD -	Rat	Oral	104 weeks	Negative - Oral - Unspecified	Based on Ethanol
	EPA OPPTS 870.4200	Mouse	Oral	105 weeks	Positive - Oral - Unspecified	Based on Ethanol

Conclusion/Summary

May cause cancer.

Classification

Product/ingredient name	OSHA	IARC	NTP
Gasoline	-	2B	-
Toluene	-	3	-
xylene	-	3	-
Benzene	+	1	Known to be a human carcinogen.
Ethylbenzene	-	2B	-
naphthalene	-	2B	Reasonably anticipated to be a human carcinogen.

Descriptors:

OSHA:
+ - Potential occupational
carcinogen

IARC:
1 - Carcinogenic to human.
2A - Probable human carcinogen.
2B - Possible carcinogen to
human.
3 - Not classifiable as a human
carcinogen.
4 - Probably not a human
carcinogen.

NTP:
Proven - Known to be human
carcinogens.
Possible - Reasonably anticipated
to be human carcinogens.

Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Development toxin	Species	Result	Exposure
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Product name BP Unleaded Gasolines

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Gasoline	-	-	Negative	Rat	Inhalation	14 days
	-	Negative	-	Rat	Inhalation	2 generation
Ethanol	-	-	Negative	Rat	Inhalation	18 days
	-	Positive	-	Rat	Oral	2 generation

Conclusion/Summary

Development: Suspected of damaging the unborn child.
 Fertility: Not classified. Based on available data, the classification criteria are not met.
 Effects on or via lactation: Not classified. Based on available data, the classification criteria are not met.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Gasoline	Category 3	-	Narcotic effects
Toluene	Category 3	-	Narcotic effects
xylene	Category 3	-	Respiratory tract irritation
1,2,4-Trimethylbenzene	Category 3	-	Respiratory tract irritation
Ethylbenzene	Category 3	-	Respiratory tract irritation
cyclohexane	Category 3	-	Narcotic effects

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Toluene	Category 2	-	hearing organs
Benzene	Category 1	-	blood system

Aspiration hazard

Name	Result
Gasoline	ASPIRATION HAZARD - Category 1
Toluene	ASPIRATION HAZARD - Category 1
xylene	ASPIRATION HAZARD - Category 1
Benzene	ASPIRATION HAZARD - Category 1
Ethylbenzene	ASPIRATION HAZARD - Category 1
cyclohexane	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure

Routes of entry anticipated: Dermal, Inhalation.

Potential acute health effects

Eye contact

Causes serious eye irritation.

Skin contact

Causes skin irritation.

Inhalation

Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.

Ingestion

Irritating to mouth, throat and stomach. Aspiration hazard if swallowed -- harmful or fatal if liquid is aspirated into lungs.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact

Adverse symptoms may include the following:
 pain or irritation
 watering
 redness

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Skin contact	Adverse symptoms may include the following: irritation redness reduced fetal weight increase in fetal deaths skeletal malformations
Inhalation	Adverse symptoms may include the following: nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness
Ingestion	Adverse symptoms may include the following: nausea or vomiting reduced fetal weight increase in fetal deaths skeletal malformations

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects Not available.

Potential delayed effects Not available.

Long term exposure

Potential immediate effects Not available.

Potential delayed effects Not available.

Potential chronic health effects

General Solvent "sniffing" (abuse) or intentional overexposure to vapors can produce serious central nervous system effects, including unconsciousness, and possibly death.

Carcinogenicity May cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity May cause genetic defects.

Teratogenicity Suspected of damaging the unborn child.

Developmental effects No known significant effects or critical hazards.

Fertility effects No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	>2000 mg/kg
Dermal	>2000 mg/kg
Inhalation (vapors)	>20 mg/l
Inhalation (dusts and mists)	>5 mg/l

Other information Aspiration of this product into the lungs can cause chemical pneumonia and can be fatal. Aspiration into the lungs can occur while vomiting after ingestion of this product. Do not siphon by mouth.

Additional information Gasoline - Excess exposure to vapors may produce headaches, dizziness, nausea, drowsiness, irritation of eyes, nose and throat and central nervous system depression. Aspiration of this material into the lungs can cause chemical pneumonia and can be fatal. Aspiration into the lungs can occur while vomiting after ingestion of this product. Inhalation of unleaded gasoline vapors did not produce birth defects in laboratory animals. Ingestion of this material can cause gastrointestinal irritation and diarrhea.

In a long-term inhalation study of whole unleaded gasoline vapors, exposure-related kidney damage and kidney tumors were observed in male rats. Similar kidney effects

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were not seen in female rats or in mice. At the highest exposure level (2056 ppm), female mice had an increased incidence of liver tumors. Results from subsequent scientific studies have shown that a broad variety of chemicals cause these kidney effects only in the male rat. Further studies have discovered the means by which the physiology of the male rat uniquely predispose it to these effects. Consequently, the Risk Assessment Forum of the Environmental Protection Agency has recognized that these responses are not predictive of a human health hazard. The liver tumors that were increased in the high-dose female mice are likewise of questionable significance because of their high spontaneous occurrence even without chemical exposure and because the rate of their occurrence is accelerated by a broad spectrum of chemicals not commonly considered to be carcinogens (e.g., phenobarbital). Thus, the significance of the mouse liver tumor response in terms of human health is questionable.

Gasoline is a complex mixture of hydrocarbons and contains benzene (typically no more than 2 volume%), toluene, and xylene. Chronic exposure to high levels of benzene has been shown to cause cancer (leukemia) in humans and other adverse blood effects (anemia). Benzene is considered a human carcinogen by IARC, NTP and OSHA. Over exposure to xylene and toluene can cause irritation to the upper respiratory tract, headache and narcosis. Some liver damage and lung inflammation were seen in chronic studies on xylene in guinea pigs but not in rats.

Solvent "sniffing" (abuse) or intentional overexposure to vapors can produce serious central nervous system effects, including unconsciousness, and possibly death.

Gasoline: Additional toxicity information on components.

Overexposure to n-hexane may cause progressive and potentially irreversible damage to the peripheral nervous system, particularly in the arms and legs.

Studies in occupationally exposed individuals indicate that toluene exposure has been associated with impaired color vision and decreased performance in some neurobehavioral tests.

Prolonged high level exposure to toluene or xylene has caused some degree of hearing loss in experimental animals.

Inhalation of very high concentrations of gasoline vapors and some of its components can result in cardiac sensitization and irregular heartbeats, leading to potentially fatal changes in heart rhythms. Injection of adrenaline-like agents may enhance this effect.

Benzene: Acute toxicity of benzene results primarily from depression of the central nervous system (CNS). Inhalation of concentrations over 50 ppm can produce headache, lassitude, weariness, dizziness, drowsiness, or excitation. Exposure to very high levels can result in unconsciousness and death.

Benzene: Long-term overexposure to benzene has been associated with certain types of leukemia in humans. In addition, the International Agency for Research on Cancer (IARC), the National Toxicology Program, and OSHA consider benzene to be a human carcinogen. Chronic exposures to high levels of benzene have been reported to cause adverse blood effects including anemia. Benzene exposure can occur by inhalation and absorption through the skin.

Inhalation and forced feeding studies of benzene in laboratory animals have produced a carcinogenic response in a variety of organs, including possibly leukemia, other adverse effects on the blood, chromosomal changes and some effects on the immune system.

Exposure to benzene at levels up to 300 ppm did not produce birth defects in animal studies; however, exposure to higher dosage levels resulted in a reduction of body weight of the rat pups (fetotoxicity). Changes in the testes have been observed in mice exposed to benzene at 300 ppm, but reproductive performance was not altered in rats exposed to benzene at the same level. Aspiration of this material into the lungs can cause chemical pneumonia and can be fatal. Aspiration into the lungs can occur while vomiting after ingestion of this material.

Toluene: Aspiration of this material into the lungs can cause chemical pneumonia and can be fatal. Aspiration into the lungs can occur while vomiting after ingestion of this material. Deliberate inhalation of high concentrations of toluene has been linked to damage of the brain, liver and kidney. Inhalation of very high concentrations of toluene, such as in cases of solvent abuse, has resulted in sudden death which may be a result

Section 11. Toxicological information

of cardiac arrhythmia or central nervous system depression. Mental and/or growth retardation has been reported in children of women who deliberately inhale toluene during pregnancy (usually at thousands of ppm). Fetal developmental toxicity was observed when pregnant rats were exposed to toluene at levels of 1500 ppm. Maternal toxicity was also observed at this concentration. Prolonged, high level exposure to toluene in laboratory animals has resulted in hearing loss. Exposure studies in rats have resulted in adverse effects on the kidney, liver and central nervous system. Studies in occupationally exposed individuals indicate that toluene exposure has been associated with impaired color vision and decreased performance in some neurobehavioral tests. There are occupational studies which report an association between inhalation exposure to toluene and adverse effects on reproduction including spontaneous abortion. The methodology of these studies and the reliability of the results have been questioned. In a two-generation study in rats, inhalation of toluene at levels up to 2000 ppm did not produce adverse effects on fertility or reproductive performance.

Xylenes: Xylene has been reported to cause central nervous system effects at concentrations above the recommended exposure limit. Xylene vapor becomes irritating at relatively high levels. In one study, eye irritation was reported at exposures of 460 ppm and in one person at 230 ppm after 15 minutes. In another study, no one reported eyes, nose and throat irritation at mixed xylene exposures up to 230 ppm for 30 minutes. Dermal LD50 is expected to be greater than 10g/kg in rabbits, based on test results from similar materials.

Mixed xylenes caused slight hearing loss in rats exposed to 800 ppm in the air for 14 hours/day for six weeks. There is no information available for lower concentrations; however, similar chemicals that have caused these hearing effects at similar concentrations have not caused effects at lower concentrations.

Pregnant animals exposed to xylene or its isomers have been reported to cause development toxicity in rodents when exposed by inhalation. The developmental effects observed consisted of delayed development and minor skeletal variations, but no malformations. Because of the high exposure levels used in these studies, we do not believe that these results imply an increased risk of reproductive toxicity to workers exposed to xylene levels at or below the exposure limits.

Xylene and its isomers are not genotoxic.

Technical grade xylene has been tested in a National Toxicology Program carcinogenicity study in rats and mice dosed orally for two years. There was no evidence of carcinogenicity.

Ethylbenzene: The National Toxicology Program (NTP) conducted a 13-week inhalation study with male and female rats and mice at exposure concentrations ranging from 100 to 1000 ppm ethylbenzene. No rats or mice died during the study. Kidney, liver, and lung weights were increased in the exposed rats, while weight increases were observed only in the livers of exposed mice. Treatment-related histopathologic changes were not observed in any tissues of rats and mice.

NTP also exposed male and female rats and mice by inhalation to 0, 75, 250, or 750 ppm ethylbenzene for 2 years. There was a statistically significant increase in the number of kidney tumors in male and female rats at 750 ppm. There were also increased incidences of lung tumors in male mice and liver tumors in female mice that were statistically significant at 750 ppm. Except for the male rat kidney tumors, the incidence of the tumors were within the range observed for non-exposed animals from other studies conducted by NTP. The significance of these findings to humans is unknown. Ethylbenzene is not genotoxic. The International Agency for Research on Cancer (IARC) has evaluated ethylbenzene and found it to be possibly carcinogenic to humans (Group 2B).

Ethylbenzene is not genotoxic.

This product contains trimethylbenzenes. These compounds cause irritation to the eyes, nose and respiratory tract. Repeated dermal exposure can defat and irritate the skin. Inhalation may cause dizziness and drowsiness. Studies in laboratory animals with mixtures of C9 aromatic hydrocarbons produced adverse effects on development such as increased fetal mortality, reduced fetal weight, and delayed ossification at high exposure concentrations. Effects were reduced if exposure was terminated prior to delivery. There was no evidence of reproductive toxicity.

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Naphthalene has been reported to cause developmental toxicity in mice after oral exposure to relatively high dose levels, but developmental toxicity was not observed in NTP (National Toxicology Program) sponsored studies in rats and rabbits. Ingestion or inhalation of naphthalene can result in hemolysis and other blood abnormalities, and individuals (and infants) deficient in glucose-6-phosphate dehydrogenase may be especially susceptible to these effects. Inhalation of naphthalene may cause headache and nausea. Airborne exposure can result in eye irritation. Naphthalene exposure has been associated with cataracts in animals and humans.

Ethanol - Human data: In humans excessive consumption of alcoholic beverages during pregnancy is associated with the induction of Fetal Alcohol Syndrome in the offspring. Reduced birth weight and physical and mental defects occur. There is no evidence that such effects might be caused by exposures other than direct ingestion of alcoholic drinks. In humans high lifetime consumption of alcoholic beverages can be associated with certain cancers and effects on the liver. There is no evidence that these can be caused by exposure other than direct ingestion of alcoholic drinks (IARC 1988).

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Toxicity

No testing has been performed by the manufacturer.

Product/ingredient name	Species	Test/Result	Exposure	Effects	Remarks
Gasoline	Micro-organism	Acute EC50 15.41 mg/l Nominal Fresh water	40 hours	growth inhibition	-
	Algae	Acute EL50 3.1 mg/l Nominal Fresh water	72 hours	(growth rate)	Based on Gasoline
	Algae	Acute EL50 3.7 mg/l Nominal Fresh water	96 hours	(growth rate)	Based on Gasoline
	Daphnia	Acute EL50 4.5 mg/l Nominal Fresh water	48 hours	Mobility	Based on straight-run light gasoline
	Fish	Acute LL50 10 mg/l Nominal Fresh water	96 hours	Mortality	Based on Naphtha (petroleum), isomerisation
	Fish	Acute LL50 8.2 mg/l Nominal Fresh water	96 hours	Mortality	Based on Naphtha (petroleum), light alkylate
	Algae	Acute NOELR 0.5 mg/l Nominal Fresh water	72 hours	(growth rate)	Based on Gasoline
	Daphnia	Acute NOELR 0.5 mg/l Nominal Fresh water	48 hours	Mobility	Based on Straight run gas oil
	Daphnia	Chronic EL50 10 mg/l Nominal Fresh water	21 days	Reproduction	Based on Naphtha (petroleum), light alkylate
	Daphnia	Chronic EL50 >40 mg/l Nominal Fresh water	21 days	Mobility	Based on Naphtha (petroleum), light

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alkylate

Ethanol	Fish	Chronic EL50 10 mg/l Nominal Fresh water	21 days	Reproduction	Based on: Naphtha (petroleum), light alkylate; read across between species
	Fish	Chronic LL50 5.2 mg/l Nominal Fresh water	14 days	Mortality	Based on Naphtha (petroleum), light catalytic reformed
	Daphnia	Chronic NOELR 2.6 mg/l Nominal Fresh water	21 days	Reproduction	Based on Naphtha (petroleum), light alkylate
	Daphnia	Chronic NOELR 16 mg/l Nominal Fresh water	21 days	Mobility	Based on Naphtha (petroleum), light alkylate
	Fish	Chronic NOELR 2.6 mg/l Nominal Fresh water	14 days	Mortality	Based on Naphtha (petroleum), light catalytic reformed
	Fish	Chronic NOELR 2.6 mg/l Nominal Fresh water	21 days	Reproduction	Based on: Naphtha (petroleum), light alkylate; read across between species
	soil, plants	Chronic PNEC >0.4 mg/kg	-	-	-
	Algae	EC50 675 mg/l	4 days	-	Based on Ethanol
	Aquatic plants	EC50 4432 mg/l	7 days	-	Based on Ethanol
	Daphnia	Acute LC50 5012 mg/l	48 hours	-	Based on Ethanol
Ethanol	Fish	Acute LC50 153 g/l	96 hours	-	Based on Ethanol
	Fish	Acute LC50 14.2 g/l	96 hours	-	Based on Ethanol
	Daphnia	Chronic LC50 2 mg/l	10 days	-	Based on Ethanol
	Daphnia	Chronic LC50 9.6 mg/l	9 days	-	Based on Ethanol

Conclusion/Summary Toxic to aquatic life with long lasting effects.

Persistence and degradability

Expected to be biodegradable.

Product/ingredient name	Test	Result	Remarks
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Ethanol	EPA	95 % - Readily - 15 days	Based on Ethanol
	EPA	84 % - Readily - 20 days	Based on Ethanol
	EPA	74 % - Readily - 5 days	Based on Ethanol
	EPA	74 % - Readily - 10 days	Based on Ethanol

Conclusion/Summary Not available.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Ethylbenzene	-	-	Inherent

Bioaccumulative potential

This product is not expected to bioaccumulate through food chains in the environment.

Mobility in soil

Soil/water partition coefficient (K_{oc}) Not available.

Mobility Spillages may penetrate the soil causing ground water contamination.

Other adverse effects No known significant effects or critical hazards.

Other ecological information Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

Section 13. Disposal considerations

Disposal methods The generation of waste should be avoided or minimized wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

United States - RCRA Toxic hazardous waste "U" List

Ingredient	CAS #	Status	Reference number
Toluene	108-88-3	Listed	U220
Xylene	1330-20-7	Listed	U239
Benzene (I,T)	71-43-2	Listed	U019
Cyclohexane (I)	110-82-7	Listed	U056

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	-	-	-	-
UN proper shipping name	See: Special precautions for user RQ (Benzene, xylene)	See: Special precautions for user	See: Special precautions for user. Marine pollutant	See: Special precautions for user

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Transport hazard class(es)	3 	3  	3  	3 
Packing group	II	II	II	II
Environmental hazards	No.	Yes.	Yes.	Yes. The environmentally hazardous substance mark is not required.
Additional information	Reportable quantity 263.16 lbs / 119.47 kg [42.082 gal / 159.3 L]. Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.	Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3), 2.7 (Marine pollutant mark). The marine pollutant mark is not required when transported by road or rail.	The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg. Emergency schedules F-E, S-E	The environmentally hazardous substance mark may appear if required by other transportation regulations.

Special precautions for user

Proper classification to be determined at the time of shipment

Select UN number and Proper Shipping Name based on the ethanol content of the product:

Ethanol 0 - 10%: UN1203 GASOLINE

Ethanol >10 - 15%: UN3475 ETHANOL AND GASOLINE MIXTURE

Transport in bulk according to IMO instruments

Proper shipping name

MARPOL Annex 1 rules apply for bulk shipments by sea.

Category: gasoline and spirits

Section 15. Regulatory information

U.S. Federal regulations

United States inventory (TSCA 8b)

All components are active or exempted.

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 311/312

Classification

FLAMMABLE LIQUIDS - Category 1
SKIN IRRITATION - Category 2
EYE IRRITATION - Category 2A
GERM CELL MUTAGENICITY - Category 1
CARCINOGENICITY - Category 1A
TOXIC TO REPRODUCTION - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
ASPIRATION HAZARD - Category 1
HNOC - Static-accumulating flammable liquid

SARA 313

Section 15. Regulatory information

	Product name	CAS number	Concentration
Form R - Reporting requirements	Toluene	108-88-3	4 - 11
	xylene	1330-20-7	4 - 11
	Benzene	71-43-2	0 - 3.8
	1,2,4-Trimethylbenzene	95-63-6	0 - 3
	Ethylbenzene	100-41-4	0 - 2
	cyclohexane	110-82-7	0 - 1
	Naphthalene	91-20-3	0 - 0.5
Supplier notification	Toluene	108-88-3	4 - 11
	xylene	1330-20-7	4 - 11
	Benzene	71-43-2	0 - 3.8
	1,2,4-Trimethylbenzene	95-63-6	0 - 3
	Ethylbenzene	100-41-4	0 - 2
	cyclohexane	110-82-7	0 - 1
	Naphthalene	91-20-3	0 - 0.5

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts

The following components are listed: ETHYL ALCOHOL; TOLUENE; XYLENE; BENZENE; PSEUDOCUMENE; ETHYL BENZENE; CYCLOHEXANE

New Jersey

The following components are listed: ETHYL ALCOHOL; TOLUENE; XYLENES; BENZENE; PSEUDOCUMENE; ETHYL BENZENE; CYCLOHEXANE; NAPHTHALENE

Pennsylvania

The following components are listed: GASOLINE; ETHANOL; BENZENE, METHYL-; BENZENE, DIMETHYL-; BENZENE; PSEUDOCUMENE; BENZENE, ETHYL-; CYCLOHEXANE

California Prop. 65

Other Prop 65 chemicals will result under certain conditions from the use of this material. For example, burning fuels produces combustion products including carbon monoxide, a Prop 65 reproductive toxin.

⚠ WARNING: This product can expose you to chemicals including Benzene, Benzene and Benzene, which are known to the State of California to cause cancer and birth defects or other reproductive harm. This product can expose you to chemicals including Gasoline, Ethylbenzene, Naphthalene, Ethylbenzene, cumene, Ethylbenzene, Ethylbenzene, cumene, Naphthalene, Naphthalene, Naphthalene, acetaldehyde, Furan, Propylene oxide and Styrene, which are known to the State of California to cause cancer, and Toluene, Toluene, Toluene and Toluene, which are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Other regulations

Australia inventory (AIIIC)

At least one component is not listed.

Canada inventory

Not determined.

China inventory (IECSC)

At least one component is not listed.

Japan inventory (CSCL)

At least one component is not listed.

Korea inventory (KECI)

At least one component is not listed.

Philippines inventory (PICCS)

At least one component is not listed.

Taiwan Chemical Substances Inventory (TCSI)

At least one component is not listed.

REACH Status

For the REACH status of this product please consult your company contact, as identified in Section 1.

Section 16. Other information

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



History

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Section 16. Other information

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Date of previous issue 02/23/2022.

Prepared by Product Stewardship

Key to abbreviations

ACGIH = American Conference of Industrial Hygienists
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
CAS Number = Chemical Abstracts Service Registry Number
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
OEL = Occupational Exposure Limit
SDS = Safety Data Sheet
STEL = Short term exposure limit
TWA = Time weighted average
UN = United Nations
UN Number = United Nations Number, a four digit number assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods.
Varies = may contain one or more of the following 64741-88-4, 64741-89-5, 64741-95-3, 64741-96-4, 64742-01-4, 64742-44-5, 64742-45-6, 64742-52-5, 64742-53-6, 64742-54-7, 64742-55-8, 64742-56-9, 64742-57-0, 64742-58-1, 64742-62-7, 64742-63-8, 64742-65-0, 64742-70-7, 72623-85-9, 72623-86-0, 72623-87-1

▣ Indicates information that has changed from previously issued version.

Notice to reader

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The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from BP Group.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken. You can contact the BP Group to ensure that this document is the most current available. Alteration of this document is strictly prohibited.

QUALITY ASSURANCE/QUALITY CONTROL MONITORING AND SAMPLING PLAN

QA/QC MONITORING/SAMPLING PLAN

FIELD ACTIVITIES

Air Sampling

Air samples are collected utilizing an air sampling pump system or Summa canister. The pump is primed, prior to collection of each sample, to displace any trapped air or gases with the targeted air make-up. The air is drawn in and exits through polyethylene tubing. The sample is collected directly into and stored in a Tedlar air/gas sampling bag or Summa canister. The sample bag or canister is provided to Three Notch by the analytical laboratory. The air sampling pump system is also used to extract air/gases from a vacuum and drive them into a field-screening instrument. The air sample collection and screening protocols are described below.

Air Screening

Air screening is conducted to provide a field indication of the levels of hydrocarbon gases in vapor phase. The air/gases are screened with an organic vapor analyzer, equipped with a methane filter (as applicable). The field instrument is field calibrated to a gas standard of known concentration. Field air/gas samples are screened at ambient conditions and the data recorded. The field screening test form contains the following information:

- Project name (client and location);
- Data table number;
- Personnel collecting samples;
- Field screening instrument used and I.D. number;
- Calibration information;
- Description of field screening method;
- Sample identification information; and
- Screening data, including time collected/screened, ambient temperature/results.

Air Sampling Protocols

Air samples designated for laboratory analysis are collected in Tedlar bags or a Summa canister. The sample bags or canister are provided to Three Notch directly by the analytical laboratory. If Tedlar bags are used, two Tedlar bags are filled for each sample, in the event the bags are damaged during shipment. Upon collection, each sample bag is immediately placed in a cooler or other secure shipping container, following laboratory instructions and appropriate chain of custody documentation. The samples are sent direct to the laboratory via overnight carrier, or are picked up from the Three Notch office by a representative of the laboratory.

Groundwater Monitoring/Sampling Activity Protocols

Groundwater monitoring/sampling includes the following associated activities:

- 1) Measurement for the presence of free product;
- 2) Measurement of static water level;
- 3) Calculation of standing water volume (in well);

- 4) Sample collection; and
- 5) Equipment decontamination.

Groundwater sampling parameters are recorded in the field on a monitor well sampling record form. The details for each of the above referenced monitoring/sampling activities are described in the following sections.

Free Product Detection and Measurement

The presence of free product is measured prior to free product recovery, and purging/sampling the selected monitor well. Free product is detected/measured using a hydrocarbon/water interface probe. The probe is lowered slowly into the well until an instrument tone is heard (a constant tone indicates that free product is present, and an intermittent tone indicates that water is present). The point at which a constant tone is first heard is considered the top of free product. The measurement from the top of the PVC well casing to the top of free product is recorded. The measurement is checked at least twice. The probe is then slowly lowered further into the well until an intermittent tone is heard (indicating that the probe has passed through the free product layer into the underlying groundwater interval). Once the intermittent tone is encountered, the probe is slowly raised until the constant tone is again indicated. This point is considered the interface between the floating free product layer and the groundwater table. The measurement from the top of the PVC casing to the interface is recorded. This measurement is also checked at least twice.

The free product thickness is determined by calculating the difference between the measurement to the top of free product and the measurement to the free product/water interface (the interface probe measures free product and water levels to an accuracy of 0.01 feet). If free product is identified by the interface probe, a clear bailer is lowered into the well to collect a sample for visual confirmation of the free product. Remarks regarding visual characteristics of the free product are recorded (black, clear, colored, etc.).

Calculation of Standing Water Volume

The standing water volume in a monitor well is calculated using the equation:

$v = 3.14 \times r^2 \times l$ (where v = well volume, r = well radius, and l = length of the column of water in the well).

The column of water in the well can be calculated using the equation:

$l = w - d$ (where w = distance from the top of casing to the bottom of the well and d = distance from the top of casing to the top of the water).

Well Evacuation

Well evacuation is initiated after the static water level is measured and the standing water volume has been calculated. Well evacuation is conducted by either using a new disposable

(single-use) bailer, a well-dedicated PVC bailer, or a surface mounted pneumatic operated diaphragm pump (a diaphragm pump is only used in deep wells (greater than 25 feet) or in wells that yield such large volumes that hand-bailing is not practical).

Well evacuation with a bailer is performed by attaching a new nylon line to the bailer, and then lowering the bailer in to the well until the bailer is submerged. The bailer is then retrieved from the well in such a manner that the bailer and nylon line do not contact the ground or surrounding vegetation (to prevent contaminating the bailer or line). The water removed from the well is poured into a graduated bucket so that the amount of water removed can be determined. This procedure is repeated until three well volumes of water are removed, or until the well is purged dry. For wells that recharge very slowly, the purge water is limited to one well volume. The volume of groundwater purged from each well will be recorded.

Well evacuation with a diaphragm pump is conducted by lowering disposable tubing (hose) into the well, to sufficient depth. For deeper wells, a PVC pipe, equipped with a foot valve (to stage-lift the water out of the well) will be employed. The piping will be well-dedicated to prevent cross-contamination. Pumping will be performed until at least three well volumes are recovered (purge volume will be recorded).

Petroleum contaminated water (PCW) purged from wells in conjunction with groundwater monitoring/sampling activities will be containerized on-site in labeled 55-gallon drums. PCW will be removed periodically from the site to an appropriate disposal/treatment/recycling facility approved by the ADEM. Records will be maintained as to the volume of PCW accumulated at the site, and identification labels will be affixed to PCW containers. Prior to disposal, samples will be collected and analyzed as required by the ADEM and the disposal/treatment/recycling facility. No waste will be removed from the site without ADEM knowledge/approval.

Groundwater Sample Collection

Groundwater samples are collected from monitor wells not containing free product, unless otherwise directed by the ADEM. Groundwater sampling is performed using a new disposable bailer for each sampled well. The disposable bailers are purchased in individually wrapped packages, and are not opened until ready to use. Once opened, the bailers are attached to a length of new nylon string. The bailer and string are not allowed to touch the ground or vegetation, and are disposed of after each well. Sampling is accomplished by slowly lowering the bailer into the well to a depth where the bailer is almost completely submerged. The bailer is then slowly retrieved from the well to minimize agitation of the sample. Once collected, the water sample is immediately transferred (poured slowly to minimize agitation and formation of air bubbles) into the designated sample containers.

Groundwater samples collected for BTEX/MTBE and naphthalene analysis (volatile organics) are transferred very slowly down the inside of the sample vial to avoid aeration. The sample vials, consisting of 40 ml glass with a Teflon septum cap, are shipped to Three Notch directly from the analytical laboratory. The groundwater sample is added to the vial until a convex meniscus is

formed across the top of the vial. The Teflon septum cap is placed on the vial and the vial is upended to check for trapped air bubbles. If bubbles are present, the sample container is opened, and topped off again until an air-free sample is obtained. If the vial cannot be closed “air-free” after three tries, it is discarded. Two samples are collected for each BTEX/MTBE (volatile) analysis. The preservation employed for BTEX/MTBE (volatile) analysis will include either of the following (depending on holding time constraints):

- Cool collected sample to 4°C and maintain (7 day holding time), or
- Add 4 drops concentrated HCl to sample vial (typically the acid is pre-added by the laboratory to the sample vial) and then cool sample to 4°C and maintain (14 day holding time).

Immediately following collection of each groundwater sample, the sample is labeled, placed in bubble pack (to prevent the glass vial from breaking during shipping), and stored in a well-iced ice chest. Each sample label includes the site location, sample identification number, name of collector, date/time of collection, and parameter(s) requested.

Following collection of all samples, the iced chest will be sealed and transported to the laboratory following appropriate chain of custody protocols (refer to description of Chain of Custody protocols provided below).

Decontamination of Groundwater Sampling Equipment

All equipment used for groundwater sampling is either well-dedicated or is used only once and disposed of. As a result, cleaning/decontamination of sampling equipment is minimal.

QA/QC PROCEDURES DISCUSSION

Chain of Custody

Sample custody begins with the subcontracted laboratory when sample kits are prepared and shipped for Three Notch use at a specified project location. Responsibility for sample container materials and preparation lies with the subcontracted laboratory. Sample containers and kits are normally shipped to Three Notch by common carrier or are dropped off by a laboratory representative. Upon receipt of the kits, Three Notch personnel complete an inventory of the contents to confirm that the containers, etc. are adequate for the number of wells and specified analytes. Sample bottles may be pre-labeled and contain the proper preservative. The individual sample vials and/or other sample containers are not opened until used in the field. Three Notch will secure the sample kits inside the office until the specific sampling project is to be performed.

The samples remain in the custody of the Three Notch representative until delivered to the subcontract laboratory or dispatched via common carrier for shipment to the laboratory. In cases where samples leave the direct control of Three Notch personnel, such as shipment to a laboratory by a common carrier (FedEx, UPS, etc.), a seal will be provided on the shipping container or individual sample bottles to ensure that the samples have not been opened or otherwise disturbed during transportation.

To establish and maintain the documentation necessary to trace sample possession from the time of collection, a chain of custody record will be completed and will accompany every sample. The record contains the following types of information:

- Sample number
- Signature of collector
- Date and time of collection
- Sample type (soil, groundwater, air, etc.)
- Identification of well
- Number of containers
- Parameters requested for analysis
- Required detection limit
- Signature of person(s) involved in the chain of possession.

Field QA/QC Program

Various types of field blanks are collected to verify that the sample collection and handling process has not affected the quality or integrity of the samples.

- 1) Trip Blanks – A trip blank is a field blank that is transported from the laboratory to the sampling site, handled in the same manner as other samples, and then returned to the laboratory for analysis in determining QA/QC of sample handling procedures. The trip blank is prepared in the laboratory with distilled/organic free water and is utilized at a frequency of 1 trip blank for each cooler (or other shipping container) used to transport samples from the laboratory to the field and back to the laboratory.
- 2) Duplicate Sample – Duplicate samples are collected simultaneously from the same source, under identical conditions, into separate sample containers. These samples provide a check on the sampling techniques as well as laboratory equipment. Duplicate samples are only collected on groundwater samples at a frequency of one sample per sampling event.

The results of the analysis of the blanks will not be used to correct the groundwater data. If contaminants are found in the blanks, an attempt to identify the source of contamination will be initiated and corrective action, including re-sampling if necessary, will be evaluated.

After completing a sampling program, the field data package (field logs, calibration records, chain of custody forms, etc.) will be reviewed for completeness and accuracy. Some of the items considered in the Field Data Package Validation Procedure include but are not limited to the following:

- A completeness review of field data contained on water and soil sampling logs;
- A verification that sampler blanks were properly prepared, identified, and analyzed;

- A check on field analyses for equipment calibration and condition; and
- A review of chain of custody forms for proper completion, signatures of field personnel and the laboratory sample custodian, and dates.

Laboratory QA/QC Program

The selection of a contract laboratory can be directed either by the client or by Three Notch. In either case, the selection is typically based upon several facts, including cost; laboratory certification; quality data and reporting; and turn around time. The most critical factor in the selection of an analytical laboratory by Three Notch is the quality of data and reporting provided by the laboratory. Typically, the results of analytical laboratory testing dictate the activities conducted at a site. The activities conducted when selecting a laboratory include discussions with current and past customers, discussions with regulators, and review of laboratory QA/QC practices.

The normal turn around for samples will be two weeks for most samples. Prior to contracting a laboratory to conduct analysis, an estimate of the turn around time is obtained. If the expected turn around is in excess of three weeks then a backup laboratory is contacted to determine their availability. A decision of which laboratory to use in a particular instance is made on a case-by-case basis.

Once an analytical report is received by Three Notch, validation of the analytical data package will be performed. The Analytical Data Package Validation procedure will include but is not limited to the following:

- A comparison of the Data Package to the reporting level requirements designed for the project, to ensure completeness;
- A comparison of sampling dates, sample extraction dates, and analysis dates to determine if samples were extracted and/or analyzed within the proper holding times' as failure in this area may render the data unusable;
- A review of analytical methods and required detection limits to verify that they agree with set standards; as failure in this area may render the data unusable;
- A review of sample blanks to evaluate possible sources of contamination. The preparation techniques and frequencies, and the analytical results (if appropriate) will be considered; and
- A review of blanks (trip blanks, reagent blanks, method blanks, and extraction blanks) to assure that they are contamination free at the lowest possible detection limit. All blank contaminants must be explained or the data applicable to those blanks will be labeled suspect and may only be sufficient for qualitative purposes.
- A review of detection limits, to ensure sample results are accurate to below the levels specified as ADEM Initial Screening Levels.
- A review of data "qualifiers" reported by the laboratory for significance to the results.

ADEM FORMS

UST RELEASE FACT SHEET

GENERAL INFORMATION:

SITE NAME: Shell Food Mart
ADDRESS: 728 Montgomery Highway
Vestavia, Jefferson County, Alabama

FACILITY I.D. NO.: 25736-073-008747
INCIDENT NO.: UST24-01-02

RESULTS OF EXPOSURE ASSESSMENT:

How many private drinking water wells are located within 1,000 ft. of site?

0

How many public water supply wells are located within 1 mile of the site?

0

Have any drinking water supply wells been impacted by contamination from this release?

No

Is there an imminent threat of contamination to any drinking water wells?

☐ Yes ☒ No

Have vapors or contaminated groundwater posed a threat to the public?

☐ Yes ☒ No

Are any underground utilities impacted or imminently threatened by the release?

☒ Yes ☐ No

Have surface waters been impacted by the release?

☐ Yes ☒ No

Is there an imminent threat of contamination to surface waters?

☐ Yes ☒ No

What is the type of surrounding population?

Commercial

CONTAMINATION DESCRIPTION:

Type of contamination at site: ☒ Gasoline, ☐ Diesel, ☐ Waste Oil
☐ Kerosene, ☐ Other _____

Free product present in wells? ☒ Yes ☐ No Maximum thickness measured: 1.03 ft in MW-1 (11/06/24)

Maximum TPH concentrations measured in soil: N/A

Maximum BTEX or PAH concentrations measured in groundwater: BTEX - 112.90 mg/L in MW-1 (3/12/24)

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: Shell Food Mart
 SITE ADDRESS: 728 Montgomery Hwy
Vestavia, Jefferson County, AL
 FACILITY I.D. NO.: 25736-073-008747
 UST INCIDENT NO.: UST24-01-02

OWNER NAME: MM Alabama Leasing
 OWNER ADDRESS: 1255 Lakes Pkwy, STE 180
Lawrenceville, GA 30043

NAME & ADDRESS OF PERSON
 COMPLETING THIS FORM: Britney Reed
Three Notch Group, Inc.
6767 Old Madison Pike, Suite 400
Huntsville, AL 35806

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.	☐	☒
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.	☐	☒

CLASSIFICATION	DESCRIPTION	YES	NO
CLASS D	SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS		
D.1	There is a potential for explosive levels, or concentrations of vapors that could cause acute effects, to accumulate in a residence or other building.	☐	☒
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.	☐	☒
CLASS H	SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS		
H.1	Impacted surface water, storm water 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
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TASKS PERFORMANCE SUMMARY

TASK PERFORMANCE SUMMARY

CAP Development (CP-14)
 Shell Food Mart
 728 Montgomery Hwy
 Vestavia, Jefferson County, AL

Task Completed by Personnel/Title:	Project Management	Work Plan Preparation/ Review	Cost Proposal Preparation/ Review	Field Work	Data Interpretation/ Tabulations	Drafting	Report Preparation/ Review	Payment Request Preparation/ Review
Michelle Grantham, PM								X
Jessica Reed, PE/PM			X				X	
Britney Reed, PM	X		X		X		X	X
James Arnold, Drafter						X		
Lee Ann Wagner, Admin	X							
Leigh Caylor, Admin	X							X
Ashley Roberts, Admin	X							X
Sonia McAulliffe, Admin	X							

Notes:

DO=Drilling Oversight
 BL=Boring Log Description/Soil Classification
 WG=Well Gauging
 GSC=Groundwater Sample Collection
 MEME=MEME Oversight
 PM=Project Management
 O&M=Routine Operation & Maintenance
 HRS=High Resolution Study
 VM=Vapor Monitoring
 FC=Fan Check