



JET-PEP #434

CORRECTIVE ACTION PLAN

ATTF CP-12



Jet-Pep #434
1608 Bessemer Super Highway
Birmingham, Jefferson Co., AL
Fac ID 12740-073-001470
UST 16-02-01

PREPARED FOR

Jet-Pep, Inc.
P.O. Box 143
Holly Pond, Alabama 35083

DATE

February 17,
2019

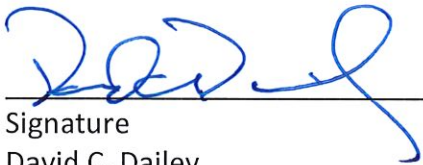
PREPARED BY

CDG Engineers & Associates, Inc.
3 Riverchase Ridge
Birmingham, AL 35244

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 Jet-Pep #434 site (Facility Identification Number 12740-073-001470) in Birmingham, Jefferson County, Alabama. The recommended action should not be construed to apply to any other site.



Signature

David C. Dailey

Registered Engineer in the State of Alabama

Registration No. 23095

2/14/19

Date

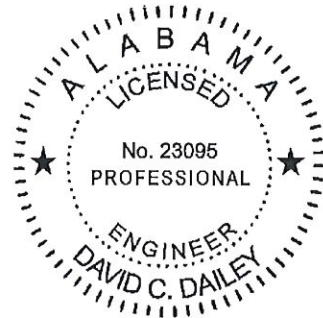


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UST RELEASE FACT SHEET

GENERAL INFORMATION:

SITE NAME: _____ Jet-Pep #434

ADDRESS: _____ 1608 Bessemer Road, Birmingham, Jefferson Co., Alabama _____

FACILITY I.D. NO.: 12740-073-001470

UST INCIDENT NO.: UST16-02-01

RESULTS OF EXPOSURE ASSESSMENT:

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

CONTAMINATION DESCRIPTION:

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

Free product present in wells? Yes No Maximum thickness measured: 3.57 ft 12/22/99

Maximum BTEX concentrations measured in soil: 1,402 mg/kg Closure Assessment

Maximum BTEX concentrations measured in groundwater: 464.8 mg/L in IW-16 (5/8/15)

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: Jet-Pep #434
 SITE ADDRESS: 1608 Bessemer Road
Birmingham, Jefferson County, Alabama
 FACILITY I.D. NO.: 12740-073-001470
 UST INCIDENT NO.: UST16-02-01

OWNER NAME: Jet-Pep, Inc.
 OWNER ADDRESS: P.O. Box 143
Holly Pond, AL 35083

NAME & ADDRESS OF PERSON COMPLETING THIS FORM: Alecia Hamilton
CDG Engineers & Associates, Inc.
3 Riverchase Ridge
Hoover, AL 35244

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

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

ADDITIONAL COMMENTS:

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

Enter the determined classification ranking:	C.2
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ADEM GROUNDWATER BRANCH
SITE CLASSIFICATION CHECKLIST
(5/8/95)

1.0 INTRODUCTION

CDG Engineers & Associates, Inc. (CDG) was retained by Jet-Pep, Inc. (Jet-Pep) to complete environmental investigative and corrective action activities for the Jet-Pep #434 facility located at 1608 Bessemer Road in Bessemer, Jefferson County, Alabama. Based upon the results of a groundwater monitoring event conducted at the site, the Alabama Department of Environmental Management (ADEM) issued a Notice of Requirement (NOR) to conduct investigative and corrective actions in a letter dated March 7, 2016. The site is eligible for Alabama Tank Trust Fund (ATTF) reimbursement.

The work plan and cost proposal for Corrective Action Plan (CAP) development were prepared and submitted by CDG on September 12, 2018. The work plan and cost proposal for CAP and development were approved by ADEM on September 28, 2018.

The following scope of work was approved for CAP Development (CP-12):

- Provide all pertinent history of the investigations and interim corrective action that has occurred at the site.
- Identify the proposed corrective action goals with supportive documentation.
- Perform a receptor survey.
- Compare the various types of potential corrective action, and make a recommendation of the type of corrective action that should be implemented at the site.
- Develop site-specific CAP with an engineered system design for the remediation of free product, groundwater and soil, incorporating the results of the free product removal, pilot testing, and other applicable activities.

This report summarizes the results of these activities.

2.0 SUMMARY OF PREVIOUS SITE INVESTIGATIONS

Previous corrective action and remediation activities have been completed at the site under incident number UST 88-10-03. In January 1987, Crown Central, LLC., discovered that approximately 500 gallons of gasoline had been released. Crown retained O'Brien & Gere (OBG) to install the preliminary six monitoring wells, OBG-1 through OBG-6. The groundwater results from the preliminary activities indicated that groundwater had been impacted by the release.

During the years of 1993 through 1995, Crown contracted with Karst Environmental to perform groundwater monitoring events. During the July 1995 sampling event free product was not observed and minimal contamination was reported.

On May 12, 1997, P.E. LaMoreaux & Associates, Inc. (PELA) performed an underground storage tank (UST) closure assessment. During the assessment, the underground piping was removed, leaving the tanks in place. Southeastern General Contractors, Inc. was retained to upgrade the existing UST system. The closure report was submitted to ADEM on May 27, 1997.

Additional work completed by PELA includes a Secondary Investigation, quarterly groundwater monitoring, free product removal, corrective action plan (CAP), and an Alabama Risk Based Corrective Action (ARBCA) evaluation. Previous free product removal activities include hydro skimming, bailing, and mobile enhanced multi-phase extraction events.

Due to the persistent presence of free product in injection wells near the current tank hold, ADEM requested the tank owner (Jet-Pep) perform a tracer test to determine the presence of a continual source. However, Jet-Pep met with ADEM to discuss the tracer test and his reluctance to perform the test due to disruption of business. Both parties

agreed that a high-resolution site characterization would be appropriate for the site and Jet-Pep retained CDG to conduct the on going environmental assessments under incident release number UST16-02-01.

The High-Resolution Site Characterization was conducted at the site to define the vertical and horizontal extent of the petroleum contaminated soils and groundwater. To conduct the soil profile study CDG contracted with a third party vendor, Columbia Technologies, LLC of Baltimore, Maryland. Two different technologies were applied during the soil profiling activities.

The Laser Induced Fluorescence/Ultraviolet Optical Screening Tool (LIF/UVOST) probe uses a laser pulse to excite hydrocarbons present within the soil which in turn emit an ultra-violet response which is measured by the probe. LIF/UVOST is useful in identifying the presence of polycyclic aromatic hydrocarbons (PAHs). As such the presence of diesel fuel within the soil profile would provide a strong LIF/UVOST response. As gasoline typically contains a minor fraction of PAH range hydrocarbons, the LIF/UVOST tool is also useful for identifying the presence of gasoline-range phase-separated hydrocarbons within the soil profile.

Membrane Interface Probe (MIP) technology uses a heat source to volatilize petroleum hydrocarbons present within the soil profile. The volatilized hydrocarbons are then transported via a carrier gas to a sensor array comprised of a photoionization detector (PID), a flame ionization detector (FID), and a halogen specific detector (XSD). MIP is most useful in the presence of dissolved-phase hydrocarbons, as the presence of phase-separated hydrocarbons would quickly overload and possibly foul the sensor array.

Electrical Conductivity (EC) and Hydraulic Profiling Tool (HPT) technology was used in conjunction with the MIP to provide an indication of relative variations in soil physical properties throughout the depth of the boreholes. The EC measures the electrical

conductivity of the encountered soils and is useful as a measure of clay content. The HPT forces water into the soils along the borehole wall and measures the pressure required to achieve flow. This provides a relative measure of the hydraulic conductivity of the encountered soils

Additionally, high resolution soil sampling activities were conducted at the site. A total of fifteen soil samples were collected using EnCore samplers, and were analyzed for BTEX, MTBE, and naphthalene constituents in accordance with EPA Method 8260B. The results of the soil sampling activities were used to validate the interpretations of the MIP-PID and FID response and to evaluate LNAPL saturation and absorbed constituent concentrations.

Personnel from CDG mobilized the site to oversee the soil profiling activities conducted by Columbia Technologies at the Jet-Pep #434 site. Upon arriving at the site, the placement of the soil borings locations was established. Fifteen borings (L01 through L15) were then advanced using the LIF/UVOST. Six borings (M01 through M06) were advanced using MIP and Hydraulic Profiling Tool (HPT) technology. The field activities were completed during one mobilization from January 17-19, 2017. The raw LIF/UVOST and MIP/HPT data were available for review in real time as each borehole was advanced. Three additional direct-push borings (SS01 through SS03) were installed on January 19, 2017 in order to conduct high resolution soil sampling activities. A total of twenty-four borings were completed over the three-day period of the study.

To date, six groundwater monitoring and MEME events have been completed. The most recent groundwater samples were collected from the site on December 20, 2018. During the monitoring event, each of the twenty-five existing monitoring wells were gauged and eleven were sampled. Samples were analyzed for BTEX/MTBE and naphthalene in accordance with EPA Method 8260B. Free product was detected in one of the monitoring wells, IW-16 (0.17 ft.). The benzene concentration detected in

monitoring wells OBG-6R and MW-9 exceeded the previously approved ARBCA Tier II SSTLs. Additionally, the MTBE concentration in monitoring well OBG-6R exceeded the SSTL.

3.0 SUMMARY OF PREVIOUSLY CONDUCTED CORRECTION ACTION

The following corrective action activities have previously been completed by PELA. Free product recovery activities began in 1998, including hydro skimming, hand bailing, and pumping. PELA completed a CAP in February of 2000 which continued free product recovery via hydro skimming. In September of 2001 ADEM approved a modification to the CAP to begin Mobile Enhanced Multi-phase Extraction (MEME) events. Due to the consistent presence of elevated hydrocarbon contamination in monitoring wells OBG-2R, OBG-6R and MW-9, additional monitoring wells were installed. MW-12 and MW-14 were installed in March 2008. Due to the presence of free product on site, an additional modification to the CAP for bio-remediation and chemical injection was approved by ADEM on March 19, 2010. Field activities for the implementation to the modification of the CAP were completed in three phases (UIC permit approval, test well drilling, and pilot injection test, and injection well drilling with chemical injection). Test well IW-18 was used to inject 16 gallons of M-1000BX solution mixed with 2% potassium chloride followed by 1 gallon of Tre-phasic12 nutrient diluted in 55 gallons of water and mixed with potassium chloride. The injection rate averaged 0.15 gallons per minute (gpm). After completing the injection of IW-18, the remaining injection wells were used to inject 13.5 gallons of M-1000BX followed by 1-gallon of Tre-phasic12 nutrient diluted in 55 gallons of water. This injection rate varied between 0.15 to 0.54 gpm. The report detailing the CAP implementation was submitted to ADEM in October 2011. In August 2014, the second chemical injection was completed.

In December 2015, ethanol was detected in the groundwater samples for the first time indicating a new release. Eight MEME events have been completed under the current release number (UST16-02-01).

The most recent MEME event was conducted at the site on December 5, 2018 by Brown. Prior to system setup, groundwater levels were measured in the several wells. Free product was detected in monitoring well MW-9 (0.08 ft) and IW-16 (0.06 ft) during the gauging event. During the 8-hour MEME Event, MW-9, MW-14, IW-16, and IW-18 were used for groundwater and vapor recovery. During this period, the operational parameters of the system were recorded at 30-minute intervals while manned.

During the 8-hour MEME event, the average soil vapor flow rate was calculated at 131.0 SCFM. Throughout the event, vapor concentration levels were recorded from both the influent and effluent sample ports. Approximately 5.41 pounds of hydrocarbon were removed (0.88 equivalent gallons of gasoline). Additionally, 0.25 pounds of methane were recovered and thermally destroyed during the event. Approximately 1,650 gallons of petroleum contact water was recovered and transported to Allied Energy Company located in Birmingham, Alabama for disposal. To date, approximately 143.33 pounds of hydrocarbon (23.23 equivalent gallons of gasoline), and 8,850 gallons of petroleum contact water has been recovered from the site under incident number UST16-02-01.

4.0 REMEDIAL OBJECTIVES AND SITE CHARACTERIZATION

4.1 GENERAL REMEDIAL OBJECTIVES

The general objectives of the corrective action activities 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 migration to sensitive receptors.
- Remove free product from the site subsurface if present.
- Reduce dissolved petroleum hydrocarbons from groundwater to below ADEM approved Site Specific Target Levels (SSTLs).
- Accomplish these objectives in a timely and cost-effective manner.

4.2 VADOSE ZONE SOIL CHARACTERIZATION

Vadose zone soil characterization is based on data that was collected by PELA during the previous release incident (UST88-10-03). Soil borings previously conducted during the Preliminary and Secondary Investigations were reviewed to determine the subsurface soil conditions and the feasibility of the various remediation options for the site. The chemicals of concern (COCs) for the release at the site include BTEX, MTBE, and naphthalene constituents. The analytical results from the soil samples collected during the site characterization activities are summarized in the Monitoring Point Data Summary Tables. The Soil Constituent Concentration Map shows the locations of the soil boring locations and the distribution of soil COC concentrations across the site. The vadose zone soils are predominantly comprised of silty clays with an average porosity of 40.7%. The average volumetric moisture content within the vadose zone was measured to be 29.5%. A cross-section of the site soils along the transect depicted in the Lithologic Cross Section in the Figures section of this report.

4.3 AQUIFER CHARACTERIZATION

Aquifer characterization is based on data that was collected by PELA during the previous release incident (UST88-10-03). The analytical results of the groundwater samples collected during the site characterization activities are summarized in Monitoring Point Data Summary Tables. Water level and product thickness measurements collected from the monitoring wells at the site are summarized in Monitoring Point Data Summary. The average historical depth to groundwater beneath the site is approximately 8.68 feet below top of casing (ft-btoc). Based on groundwater level measurements collected during the December 2018 sampling event, a potentiometric surface map (Figures section) was constructed for the site. As shown on the potentiometric surface map, the general groundwater flow direction beneath the site is predominantly to the east. The lateral hydraulic gradient (*i*) was approximately 0.088 feet per foot according to measurements taken from monitoring wells OBG-2R and MW-14.

Slug testing conducted by previous consultants under incident release number UST88-10-03 indicated that the average hydraulic conductivity (*K*) of the site soils was approximately 2.00×10^{-4} cm/sec. Based on these values, the anticipated Darcy velocity (*K_i*) of groundwater flow beneath the site would be approximately 555 cm/yr. Free product has been detected in monitoring wells MW-9, MW-14, and injection wells IW-16, IW-18, and IW-27. Using the analytical data from the December 2018 groundwater sampling event, an isoconcentration map for benzene (Figures section) was constructed to represent the approximate extent of the dissolved hydrocarbon plume.

4.4 EXPOSURE ASSESSMENT

An exposure assessment was conducted by CDG during the Alabama Risk Based Corrective Action (ARBCA) evaluation. The current land use site conceptual exposure model indicates that complete exposure pathways exist onsite for indoor and outdoor vapor inhalation from soil and groundwater for commercial and construction workers and for dermal contact with affected soil by commercial and construction workers. Complete exposure pathways also exist for dermal contact and indoor and outdoor vapor inhalation from impacted soil and groundwater for offsite residents, commercial workers, and construction workers. Future land use of the site and the surrounding area is expected to remain the same. There are no public water supply wells located within one mile of the site. No domestic water supply wells have been identified within 1,000 feet of the site.

4.5 SITE-SPECIFIC TARGET LEVELS

To assess the risk to human health and the environment of the dissolved hydrocarbon plume associated with the Jet-Pep #434 site, an ARBCA Tier I/ Tier II evaluation was performed for the site. Details of this evaluation are contained in a report submitted to ADEM in April 2018. Based on the ARBCA Tier II evaluation, SSTLs were calculated for the various media (soil and groundwater) at the site. The SSTLs developed during this process were accepted by ADEM as petroleum hydrocarbon levels that would not pose a significant risk to any recognized actual or potential receptors. The ADEM approved SSTLs for soil and groundwater are summarized in the following table.

Site Specific Target Levels for the Jet-Pep #434 Facility						
Chemicals of Concern	Soil			Groundwater		
	Dermal Contact (mg/Kg)	On-site Indoor Inhalation (mg/Kg)	Off-Site Indoor Inhalation (mg/Kg)	Groundwater Resource Protection (mg/Kg)	On-site Indoor Inhalation (mg/L)	Off-Site Indoor Inhalation (mg/L)
Benzene	39.3	3.58	0.546	0.691	19	2.9
Toluene	303	303	1.54	230	526	170
Ethylbenzene	129	129	126	129	169	169
Xylenes	156	156	66.5	156	175	143
MTBE	377	9,110	1,190	1.52	48,000	7,410
Naphthalene	112	112	45.1	28.8	31	14.2

A more detailed presentation of these values is provided in Appendix A and in the April 2018 ARBCA Evaluation Report. The individual Groundwater Resource Protection (GRP) SSTLs generated for each of site monitoring wells are presented in the Monitoring Point Data Summary Tables.

4.6 MEME EVENT DATA COLLECTION

Multiple MEME events have been conducted at the site. The MEME events were conducted for durations of approximately eight hours. The number of extraction wells used during the MEME events has varied among the events. The most recent MEME event was conducted at the site on December 5, 2018 by Brown. Prior to the MEME event on December 5, 2018, the water levels in several existing monitoring wells were gauged. Free product was detected in monitoring well MW-9 (0.08 feet) and injection well IW-16 (0.06 feet) prior to the event. Monitoring wells MW-9 and MW-14, and injection wells IW-16 and IW-18 were used for extraction throughout the event. The results for the 8-hours of recovery are from approximately 7:00 AM to approximately 3:00 PM on December 5, 2018. During the eight-hour event, the average flow rate from

the extraction well was calculated at 131.0 scfm. Approximately 5.41 pounds of hydrocarbon (0.88 equivalent gallons of gasoline) were recovered during the eight hours of recovery. Additionally, 1,650 gallons of PCW were removed from the site during the eight-hour event. The recovered liquids were collected in a holding tank on the system and later disposed of at Allied Energy Company in Birmingham, Alabama. The transportation of the PCW was performed by Brown. At the conclusion of the eight-hour event, the water levels in all existing monitoring wells were re-gauged and the change in elevation was recorded. Free product was not detected in any of the monitoring wells following the MEME event.

4.7 SITE CHARACTERIZATION CONCLUSIONS

Soil Characterization Summary

The results of the geotechnical analyses indicate the following physical properties for the soils at the Jet-Pep #434 site:

- The vadose zone soils are predominantly comprised of permeable clays.
- Soil has a porosity of 40.7%.
- Volumetric moisture content within the vadose zone was measured at 29.5%.
- Available porosity for vapor transport within the vadose zone is 11.2%.

Aquifer Characterization Summary

The results of the aquifer characterization at the site indicate the following physical properties for the unconfined groundwater zone beneath the site:

- The average depth to groundwater is approximately 8.68 ft-btoc.
- The average hydraulic conductivity within the saturated zone is 2.00×10^{-4} cm/sec.
- The general groundwater flow beneath the site is to the east.
- The average hydraulic gradient across the site is 0.088 ft/ft.

- The calculated Darcy velocity for groundwater flow is 555 cm/yr.
- Free product has historically been detected in monitoring wells MW-9, MW-14, and injection wells IW-16, IW-18, and IW-27.

Exposure/Risk Assessment Summary

Based upon current constituent concentrations and the risk assessment results, SSTLs were calculated for the site using the ARBCA process. There are complete exposure pathways for vapor inhalation from both soil and groundwater on and off-site. The dissolved hydrocarbon concentrations have historically been below the SSTL for indoor inhalation by onsite and offsite commercial and construction workers. The dissolved benzene concentrations in monitoring wells OBG-6R and MW-14, injection wells IW-16, IW-17, IW-18, IW-19, IW-20, IW-22, and IW-23 have historically been above the GRP SSTLs. The presence of dissolved hydrocarbon concentrations above the SSTLs will require remediation.

MEME Event Summary

Based upon the results of the MEME events conducted at the Jet-Pep #434 site, the vadose zone soils allow for adequate airflow, allowing this to pose an effective remediation of the site using high vacuum extraction technologies. The average flow rate from the extraction wells during the December 5, 2018 MEME event was reported as 131.0 standard cubic feet per minute (scfm). Based on the soil characterization there would be approximately 11.2% available pore space for vapor transport within the vadose zone. During prolonged vapor extraction events it would be typical for intrinsic permeability to increase as the moisture content drops in the shallow soils. The average vapor phase hydrocarbon recovery rate during the December 5, 2018 MEME event was approximately 0.676 pounds per hour. The average groundwater recovery rate of 3.4 gallons per minute (gpm) during the event would indicate a relatively high intrinsic permeability within the saturated zone.

5.0 REMEDIATION RATIONALE AND APPROACH

Subsurface soil and groundwater are impacted onsite. Free product and elevated dissolved hydrocarbon concentrations are present in the groundwater in the area beneath the fuel dispensers, the convenience store building, and the UST hold. To address COCs, which exceed the SSTLs in groundwater and soil and to prevent offsite migration, the source area must be remediated. Full-scale technologies addressing both soil and groundwater were reviewed for applicability to the Jet-Pep #434 site. The discussion is divided into media (soil and groundwater) and in situ/ex situ technologies.

5.1 SOIL: EX-SITU METHODS

The excavation of the impacted soils at the site would involve a prohibitively large quantity of soil due to the areal extent of the contaminant plume. It would also impose a severe disruption on the commercial activities being conducted on the site. Furthermore, the extents of the excavation would likely extend into the Alabama Department of Transportation (ALDOT) right-of-way. Due to these issues, excavation was not considered as a viable remedial alternative for the site soils.

5.2 SOIL: IN-SITU METHODS

Bioremediation

Remediation of soil contamination using in-situ bioremediation involves injecting oxygen or oxygen releasing compounds directly into the source zone. The oxygen is then used to accelerate the rate of naturally occurring aerobic contaminant biodegradation in saturated soils. Volatile organic compounds in high concentrations are toxic to bacteria (EPA, 1992). Because of the high concentrations of dissolved phase hydrocarbons present in the source area, bio-remediation is not considered a viable remediation alternative at this time because the toxic conditions would limit the effectiveness of the microbial activity to fringe areas of the source area and the surrounding area of groundwater contamination.

SVE

Based upon the results of the MEME events conducted at the Jet-Pep #434 site, SVE alone does not appear to be a cost effective remedial technology for the dissolved hydrocarbon plume. Data collected to date indicates the vadose zone soils have an effective porosity of 11.2% and free product is present. Based on the available data, technologies that solely include vapor recovery are not recommended for the soil source-area contamination at this site.

5.3 GROUNDWATER EX-SITU TREATMENT

Pump and Treat

Generally for pump and treat systems to be effective, a significant capture zone must be developed. An adequate capture zone would be able to contain a dissolved phase contaminant plume, halting migration. While pump and treat methods are effective in reducing groundwater constituent concentrations and limiting offsite migrations, they do not adequately address vapor phase and absorbed phase hydrocarbon contamination at the source. Because of the presence of free product and elevated dissolved hydrocarbon concentrations in the groundwater beneath the site, some form of groundwater treatment is required.

Dual Phase Extraction

Dual phase extraction or MPE involves applying vacuum to remove liquid and vapor phase contaminants from low to moderately permeable, heterogeneous soils. In many cases, MPE provides a more efficient remedial approach as opposed to conventional pump and treat technology. The application of a vacuum to a well increases the hydraulic driving force that enables groundwater to flow into a well, while conventional pumping relies mainly on a difference in elevation head. In addition, conventional pump and treat methodology is not successful in addressing vapor phase and absorbed phase hydrocarbon contamination. The need for vapor phase and absorbed phase

hydrocarbon contaminant removal in the soil source area and for dissolved-phase hydrocarbon contaminant removal in the groundwater plume could be efficiently performed with the use of a dual phase extraction system.

Air Sparging

Air sparging technology involves the injection of air into saturated zones in effect creating a subsurface air stripper, which removes contaminants through volatilization. Air sparging technologies are designed to operate at high airflow rates to effect volatilization. Air sparging systems are operated in tandem with SVE systems in order to capture contaminants stripped from the saturated zone. Contaminant migration can be induced if a net positive subsurface pressure is created (EPA, 1995). Channeling of airflow can occur in heterogeneous formations, potentially off-gassing in undesirable locations such as on site buildings and utility conveyances. These potential negative effects can be minimized by proper design. Air sparging systems are not usually installed at sites containing high concentrations of contaminants due to the potential for contaminant spreading and the creation of hazardous and or explosive conditions.

5.4 GROUNDWATER IN-SITU TREATMENT

In-situ treatment of groundwater includes the following biological enhancement technologies: oxygen enhancement (peroxide injection, oxygen sparging), the addition of nitrates, methanotrophic degradation and natural attenuation (EPA, 1995). Chemical oxidation is another form of in-situ groundwater treatment technology.

Bioremediation

Biologic degradation of petroleum organics does not occur in proximity to gasoline free product or areas of high concentrations of volatile organic compounds (EPA, 1992). The high VOC concentrations are toxic to naturally occurring bacteria. Removal of the high concentrations of COCs in soils and groundwater is needed prior to biological enhancement technologies, which could be potentially applicable at the site.

Because of the high concentrations of dissolved phase hydrocarbons present in the source area, bio-remediation is not considered a viable remediation alternative at this time because the toxic conditions would limit the effectiveness of the microbial activity to fringe areas of the source area and the surrounding area of groundwater contamination.

Chemical Oxidation

Chemical oxidation uses reagents to transform, degrade, or immobilize organic wastes. In-Situ Chemical Oxidation (ISCO) relies on the destructive capacity of oxidants to chemically destroy the bonds of the hydrocarbons. Complete chemical oxidation of gasoline would produce carbon dioxide and water. Chemical oxidants work by producing free radicals, such as the hydroxyl radical, which oxidize the petroleum hydrocarbons. Several commonly used chemical oxidants have been used for in-situ applications on petroleum hydrocarbons and MTBE, including hydrogen peroxide, Fenton's Reagent (hydrogen peroxide with an iron catalyst, frequently performed at a low pH), sodium persulfate, and ozone.

ISCO is most often utilized at sites with elevated COC concentrations in the source area. Chemical oxidation of high concentration areas is often part of a multi-step remediation approach that paves the way for more biologically mediated, less costly approaches, such as accelerated bioremediation or monitored natural attenuation.

Based on the presence of a building, USTs, dispensers, and multiple underground utilities within the source area, CDG feels that the risks associated with the application of ISCO outweigh the benefits at the Jet-Pep #434 site. Due to the amount of free product on and off site, injection of oxidants would potentially move contaminants from free form to a dissolved state, ineffectively remediating the source area.

Natural Attenuation

Natural attenuation is the process by which dilution, volatilization, biodegradation, adsorption, and chemical reactivity are allowed to reduce contaminant concentrations to acceptable levels. Natural attenuation is applicable in low risk cases where active remediation is technically impracticable or deemed unnecessary due to contaminant concentrations at or below levels where natural processes can prevent plume migration. Extensive site-specific data collection is required to effectively model natural attenuation. The risks posed by the contaminants at the Jet-Pep #434 site warrant an active remediation approach to accelerate the reduction of dissolved hydrocarbon concentrations in the source area. Natural attenuation could be considered as the sole method for future remediation once dissolved hydrocarbon concentrations have dropped to levels where natural processes can effectively attenuate the residual hydrocarbon constituents.

6.0 PROPOSED REMEDIATION METHOD

In an effort to decrease chemicals of concern (COC) concentrations in soil and groundwater to levels acceptable by ADEM, the installation of a dedicated MPE system is recommended for the site. The MPE system has four main remedial objectives: removal of free product; removal of vapor phase COC; removal of absorbed phase COC; and removal of dissolved phase COC.

MPE was selected because it typically provides a more efficient remedial approach as opposed to conventional pump and treat technology. The application of vacuum to a well increases the hydraulic driving force that enables groundwater to flow into a well, while conventional pumping relies mainly on a difference in elevation head. In addition, conventional pump and treat methodology is not as successful in addressing vapor phase and absorbed phase contamination.

After receiving approval from ADEM, a new MPE system will be manufactured by, and purchased from MK Environmental of Willowbrook, Illinois. The MPE system will utilize one twenty-five (hp) oil-sealed Liquid Ring Vacuum Pump (LRVP) to produce high vacuums and airflows in an effort to remove petroleum constituents from the impacted subsurface. The LRVP will be connected to a total of four recovery wells. All system components, excluding air treatment operations, will be enclosed in an aluminum cargo trailer. Above ground system components will be enclosed within a wooden privacy fence complete with locking gates in an effort to prevent unauthorized personnel from entering the immediate area. The fence will be placarded with a sign reading "Groundwater Remediation" and listing CDG's emergency contact information.

Extracted fluids will travel from the extraction wells to a primary Air/Water Separator (AWS), utilized to separate vapors and groundwater. Vapors will subsequently pass through the LRVP to two 1,000 gallon granular activated carbon vessels. Groundwater will flow from the AWS to an air stripper for treatment. The air stripper is capable of

decreasing hydrocarbon concentrations to below permit requirements at flows up to fifteen gallons per minute (gpm). The treated groundwater will be discharged into a storm sewer located along Bessemer Road. Exhaust from the air stripper will be routed to two 1,000 pound vapor phase carbon vessels, connected in series, for treatment prior to discharge to the atmosphere.

The locations of the extraction wells, extraction lines, effluent discharge and system location are presented in the Figures section. Equipment specifications and cut sheets are provided in Appendix C.

The system is outfitted with an intrinsically safe alarm sensor such that should an alarm condition occur, the system will automatically shut down until the alarm can be relieved and the system reset. These sensors are included in an effort to maintain effective operation of the system and reduce the potential for untreated discharges. The alarms will be integrated with a telemetry system to notify CDG of a system fault, so that it can be restarted as soon as possible. The telemetry system will allow CDG to remotely shut down the system. A run time (hour) meter will be installed on the system and the system will be equipped with applicable gauges and meters to allow for measurements as required for monthly and/or quarterly reporting.

7.0 GROUNDWATER REMEDIATION

The selection of an appropriate groundwater extraction system is dependant on the phases of petroleum constituents present in the groundwater and the hydrogeologic setting. For the site, petroleum constituents are primarily present in liquid and dissolved phase. Available data indicates that the ability to extract vapors and groundwater from the subsurface is achievable. Based on these conditions and findings, MPE appears to be the most feasible vapor and groundwater extraction technology for the site.

7.1 Groundwater Extraction

Based on a review of the historical groundwater elevation data, one distinct water bearing unit exists beneath the site. This unit generally appears to be confined within the low permeability clay beneath the site. The average depth to groundwater in the Type II monitoring wells at the Jet-Pep #434 site is approximately 8.68 ft-btoc.

Based on previous monitoring well gauging and sampling events conducted at the site, the direction of the shallow groundwater flow is predominantly to the east. The average lateral hydraulic gradient is approximately 0.088 feet per foot based on measurements taken from monitoring wells OBG-2R and MW-14 on December 20, 2018. A potentiometric surface map from the December 20, 2018 sampling event is presented in the Figures section.

The groundwater monitoring well network at the site consists of eleven Type II monitoring wells (OBG-2R, OBG-3R, OBG-4, OBG-5R, OBG-6R, MW-8, MW-9, MW-10, MW-11, MW-12, and MW-14) and fourteen Type II injection wells (IW-15 through IW-28). Groundwater samples were collected on December 20, 2018 from all site monitoring wells. Free product was detected in one of the monitoring wells (IW-16, 0.17 ft.) during the December 20, 2018 sampling event.

Two of the wells sampled during the December 20, 2018 sampling event contained concentrations of benzene above ARBCA Tier II GRP SSTLs. Samples collected from monitoring wells OBG-6R and MW-9 exceeded their respective SSTLs for benzene. The MTBE concentration in monitoring well OBG-6R was also above the GRP SSTLs. The Monitoring Point Data Summary references all exceedances in detail.

The MPE system is selected to provide high vacuums and high airflows necessary to extract fluids from the subsurface. The LRVP will be connected to four extraction wells on site. Based on the design ROI of approximately 15 feet, these wells will be sufficient to extract liquid, vapor, dissolved, and absorbed phase hydrocarbons in the source area. The recovery well layout with estimated ROI is illustrated in the Figures section.

An average hydraulic conductivity value of 6,307.2 cm/yr (2.00×10^{-4} cm/sec) has been estimated for the site. This value represents the calculated average from slug test data collected during the Secondary Investigation activities. The hydraulic gradient of approximately 0.088 feet/foot was calculated using the December 2018 gauging data. The Darcy velocity is therefore approximately 555 cm/yr.

In order to recover groundwater from the approximate 10-foot water column, CDG recommends that a network of four recovery wells be installed in the source area. The new proposed 4-inch diameter recovery wells will be installed to a target depth of approximately 20 ft-bls, and will include approximately 15 feet of 0.020-inch slotted screen. The recovery well locations, piping network, and recovery well detail are illustrated in in the Figures section. A recovery well detail is also illustrated in the Figures section.

A one-inch diameter flexible Spirallite® drop tube, extending to approximately one foot below the static groundwater level, will be installed in each extraction well. The groundwater, along with vapors, will travel up the drop tube, out of the well head and

into a 2-inch diameter PVC conduit connecting to a manifold, which is connected directly to the AWS1 inside the MPVE system building. Each recovery wellhead is equipped with a brass ball valve located inside the recovery well vault in order to control the vacuum and flow at each well.

Recovered fluids will flow directly to the AWS1, utilized to separate vapors from groundwater. Groundwater will be transferred to the AWS1 to the OWS by means of a 1.5 hp centrifugal pump. A total flow meter was placed in line to record the volume of groundwater recovered.

7.2 Groundwater Treatment System

The selection of an appropriate groundwater treatment system was based on the expected flow rate of the extraction system, the influent contaminant concentrations of the groundwater, and discharge limits. Based on the available data, it appears that air stripping is the most feasible and cost-effective method for treatment of recovered groundwater.

The City of Birmingham would not authorize the discharge into the storm sewer system. Therefore, the treated effluent will be discharged into the City of Birmingham sanitary sewer system.

8.0 RATIONALE FOR SELECTION OF REMEDIAL METHOD

The selection of an appropriate remedial method is dictated by a number of factors, including but not limited to: site setting, type and extent of contamination present, potential receptors, availability of resources, discharge requirements, clean up time, and cost effectiveness.

Based on the exposure assessment conducted at the site and the historical analytical data, contamination at the subject site does not appear to pose an immediate threat to

the surrounding population. It does not appear that natural attenuation is occurring at an acceptable rate. Free product is present at the site and dissolved hydrocarbon concentrations exceed the SSTLs in multiple wells. Based on these observations ADEM has required that active remedial efforts be initiated on site. Furthermore, offsite migration of the hydrocarbon plume has already occurred.

The presence of soil and groundwater contamination requires a remedial technology that will adequately address these phases of contamination. Based on the specific site data collected to date, it appears that MPE is the most technically feasible remedial alternative for this site.

Based on CDG's opinion, the remedial approach described herein is designed to perform in a cost effective and reliable manner throughout the life of the project. Based on the clean-up time calculations, presented in Appendix C, the estimated clean-up time for the system is approximately 0.4 years. However, based on CDG's professional experience with similar remediation systems, CDG believes that two to four years is a reasonable clean-up time estimate. The total estimated clean-up cost for this incident, including system installation, and twelve (12) quarters of O&M, is approximately \$500,000.

9.0 SITE PREPARATION ACTIVITIES

Site preparation activities will be conducted prior to system arrival at the property. These activities will consist of the installation of underground piping associated with the recovery well network. The piping will be installed using surface trenches. Traffic rated well vaults will be installed above each recovery well.

9.1 RECOVERY WELL INSTALLATION

Four recovery wells will be connected to the proposed MPE system at the site. The locations of the recovery wells are shown in Figures section.

Each of the recovery wells will be located onsite. Four new recovery wells are proposed at the site. The proposed new recovery wells will be installed to a depth of approximately 20 ft-bls, with screened intervals from approximately 5 to 20 ft-bls. All proposed recovery wells will be constructed with 4-inch diameter well materials, including 15 feet of 0.020-inch slotted screen. The location, depth, diameter, and screened interval for these wells were selected to insure that sufficient drawdown can be induced in the water table.

9.2 LOCAL PERMITTING

CDG personnel contacted representatives of the City of Bessemer to discuss permits and zoning applicable to the installation of the proposed remediation system. According to the city officials, a building permit will be necessary in order to receive electrical service and to construct the fence around the proposed MPE system compound.

10.0 INSTALLATION AND OPTIMIZATION ACTIVITIES

The MPE system, and all ancillary equipment, will be delivered to the site within thirty days of approval from ADEM, pending availability. A professional engineer experienced in MPE system operation and an environmental technician will be on site to observe installation and optimization activities.

10.1 EQUIPMENT REVIEW

An equipment manual and troubleshooting guide will be provided to CDG by the equipment supplier prior to system arrival. Appropriate CDG personnel will familiarize themselves with the manual before starting and operating equipment.

10.2 OFFLOADING AND PLACEMENT

The skid-mounted system and the ancillary equipment will be transported on a trailer and offloaded with a crane. The system was placed in the approximate location illustrated in the Figures section. Above ground system components will be enclosed within a wooden privacy fence complete with locking gates in an effort to prevent unauthorized personnel from entering the immediate area.

10.3 UTILITY CONNECTIONS

The electrical, telephone, and wastewater discharge connections will be completed by CDG's subcontractor in accordance with local requirements.

10.4 INITIAL START-UP AND OPTIMIZATION ACTIVITIES

Once all connections are made, each electric motor will be visually tested prior to initiating long-term operation. This consists of momentarily operating each motor individually and verifying that the shafts are rotating in the proper direction. The MPE system will be temporarily operated for a period of four to eight hours. During this time, system components will be checked and monitored to ensure the system is operating as

expected. Alarm conditions will be manually simulated to verify that automatic shutdown operations will occur if needed.

10.5 PERMANENT START-UP

The system will be permanently started once it is observed that the treatment system is capable of producing effluent discharge within the required limits. Once permanent operations are initiated, CDG personnel will remain on site for a minimum of one day to monitor system performance. Modifications will be made as necessary in an effort to enhance system operations. Operation parameters monitored during system testing activities will be evaluated further during this time.

11.0 OPERATION AND MAINTENANCE ACTIVITIES

Upon the completion of the initial optimization, CDG will implement an Operation and Maintenance (O&M) program to adequately monitor system performance.

11.1 OPERATION AND MAINTENANCE

Full scale operations will include O&M of the system and continuing optimization of system performance. Scheduled visits will be made to maintain the system components and ensure the system is operating at the greatest efficiency possible. Minor system components will be regularly inspected and replaced as required. All pumps and compressors within the unit will be serviced on a routine basis. If a shutdown of the system occurs, CDG will attempt to provide personnel to repair the system within 72 hours of receiving notification of shutdown.

Typical O&M activities will include the following:

- Visual inspection of the treatment system components (including pipe connections and bolted flange plates for potential leaks due to vibration)
- Cleaning, inspection, and testing of float switches and conductivity probes
- Monitoring of vacuum levels at designated points in the system
- Monitoring pressure levels on the exhaust side of the LVRP
- Removal of silt and sludge build up from the knockout pot, filtration system, and other system components
- Removal of air stripper foulants
- Monitor destruction efficiency of the granular activated carbon
- Treated groundwater effluent sample collection
- Monitor groundwater levels

In order to ensure the system is working properly, during the first quarter of operation, technicians will visit the site bi-weekly to inspect the carbon vessels and measure

concentrations with a photo-ionization detector (PID). During two visits per month, routine O&M activities as described above will also be conducted. System data, including total operational system hours, temperatures, flow, and water discharge will be recorded for inclusion in quarterly reports to the ADEM.

All activities will be performed in accordance with the Quality Assurance/Quality Control Plan and Site Health and Safety Plan included in Appendices E and F, respectively.

11.2 QUARTERLY SAMPLING

As part of O&M activities, a groundwater monitoring event will be conducted once per quarter to evaluate the effectiveness of the remediation system. CDG recommend that each of the wells be sampled during the quarterly groundwater monitoring activities.

Prior to sample collection, the depth to groundwater will be measured using an oil/water interface probe. Each monitoring and recovery well will be purged using clean plastic disposable bailers. Approximately three well volumes will be removed from each well. The purge water will be treated by the MPE system.

Samples will be collected using clean plastic disposable bailers and shipped in laboratory supplied 40-mL vials preserved with hydrochloric acid (HCl). The samples will be placed on ice and transported, under chain of custody protocol, to the CDG laboratory in Andalusia, Alabama for analysis of BTEX/MTBE/Naphthalene in accordance with EPA method 8260B.

Groundwater effluent samples will be collected monthly. Effluent samples will be collected from a sample port after leaving the oil-water separator, prior to exiting the system. Effluent samples will be collected in laboratory-supplied 40-mL vials preserved with HCl. Oil and Grease samples will be collected in one-liter glass jars preserved with hydrochloric acid (HCl). These samples will be packed on ice and shipped, under chain of

custody protocol, to the CDG laboratory in Andalusia, AL for analysis for total BTEX/MTBE/Naphthalene, pH, and Oil and Grease in accordance with EPA Methods 8260B, 150.1, and 1664.

Influent and effluent exhaust will be monitored bi-weekly using a photo-ionization detector (PID) to ensure the destruction efficiency of the vapor phase carbon. All sampling shall be completed in accordance with the procedures set forth in the Quality Assurance/Quality Control Plan (Appendix E).

Quarterly Corrective Action System Effectiveness Monitoring Reports (CASEMR) will be completed in accordance with ADEM requirements. The reports will include a summary of all current and historic sample analysis data with corresponding figures and tables, summary of gallons of treated groundwater to date, and a discussion of system effectiveness/runtime. The reports will include recommendations for adjustments to the system, if any, and an estimate of the time required for completion of remediation activities.

12.0 PROPOSED REPORTING REQUIREMENTS

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

Start Up Notification

This report will provide start up notification within 15 days of corrective action start up.

Report of Corrective Action Implementation

This report will be submitted following MPE system installation and start-up activities have been completed. This report will include as-built drawings of the system, analytical results of the first sampling event and copies of all permits issued to date.

Reporting of Corrective Action Effectiveness

CDG proposes to submit quarterly CASEMR reports, which will summarize field activities and the progress of the system towards SSTLs. The following data will be included in each report: groundwater elevations, gallons of water treated, and groundwater analytical results. The reports will also include system effectiveness and recommendations concerning additional modifications deemed necessary.

Request for Closure Evaluation of Corrective Action

The remediation goals for this project include the removal of free product and the reduction of dissolved hydrocarbon concentrations to below the SSTLs. This report will include data that shows that remediation goals have been achieved and request No Further Action (NFA) status. Methods for removal of equipment and abandonment of monitoring and recovery wells will be described.

Site Closure Report

This report will describe in detail the closure of the site and removal of all remediation equipment.

13.0 REFERENCES

CDG Engineers & Associates, Inc., February 2017; **Report of High-Resolution Site Characterization**, Jet-Pep #434, Bessemer, Alabama.

CDG Engineers & Associates, Inc., April 2018; **Report of Alabama Risk-Based Corrective Action Tier I/Tier II Evaluation**, Jet-Pep #434, Bessemer, Alabama.

CDG Engineers & Associates, Inc., April 2018; **Report of Corrective Action Plan Evaluation**, Jet-Pep #434, Bessemer, Alabama.



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Tables

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	OBG-2R		
INSTALLATION DATE:	10/25/06	WELL DEPTH (FT BTOC):	14.1	SCREEN INTERVAL (FT):	3.0 - 14.10	CASING ELEV (FT ABOVE MSL):	399.87	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				
MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
07/28/99	12.38	387.49	-	-
03/16/11	4.92	394.95	-	-
12/07/11	9.15	390.72	-	-
03/07/12	4.73	395.14	-	-
06/12/12	7.45	392.42	-	-
09/10/12	4.97	394.90	-	-
01/03/13	3.83	396.04	-	-
04/02/13	3.38	396.49	-	-
07/17/13	5.99	393.88	-	-
10/28/13	8.48	391.39	-	-
05/05/14	2.87	397.00	-	-
11/11/14	10.15	389.72	-	-
02/06/15	8.42	391.45	-	-
05/07/15	3.82	396.05	-	-
08/28/15	7.32	392.55	-	-
12/03/15	3.68	396.19	-	-
03/25/16	4.22	395.65	-	-
03/09/17	3.20	396.67	-	-
06/23/17	1.82	398.05	-	5.0
09/14/17	4.82	395.05	-	4.5
12/12/17	5.92	393.95	-	3.9
03/23/18	3.72	396.15	-	5.0
06/21/18	5.11	394.76	-	4.3
09/18/18	7.65	392.22	-	3.1
12/20/18	3.78	396.09	-	5.0

INTRINSIC GROUNDWATER DATA SUMMARY			
SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
07/28/99	1.55	6.10	15.0
03/16/11	-	-	-
12/07/11	-	-	-
03/07/12	-	-	-
06/12/12	-	-	-
09/10/12	1.25	6.44	44.2
01/03/13	2.74	6.86	20.1
04/02/13	2.39	5.91	38.7
07/17/13	3.58	6.65	17.5
10/28/13	2.04	6.26	46.0
05/05/14	3.10	6.16	48.2
11/11/14	3.74	6.54	26.0
02/06/15	3.99	6.69	21.7
05/07/15	-	6.26	12.1
08/28/15	4.24	6.36	-6.3
12/03/15	2.89	6.54	-22.7
03/25/16	5.68	6.33	35.4
03/09/17	3.78	6.59	57.6
06/23/17	3.94	6.71	81.4
09/14/17	3.80	6.65	69.7
12/12/17	3.68	6.72	81.3
03/23/18	3.21	7.12	96.3
06/21/18	3.20	7.05	96.7
09/18/18	3.32	7.11	103.2
12/20/18	1.25	5.90	48.0

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	OBG-2R		
INSTALLATION DATE:	10/25/06	WELL DEPTH (FT BTOC):	14.1	SCREEN INTERVAL (FT):	3.0 - 14.10	CASING ELEV (FT ABOVE MSL):	399.87	WELL TYPE:	II
								DIAMETER (IN):	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
07/28/99	4.170	7.530	1.330	0.982	8.250	18.092	-
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
09/10/12	0.076	0.340	0.860	1.300	8.200	10.700	-
01/03/13	0.061	0.240	0.730	0.540	6.900	8.410	-
04/02/13	0.029	0.091	0.200	0.044	2.100	2.435	-
07/17/13	0.063	0.280	0.887	0.899	6.660	8.726	-
10/28/13	0.0653	0.241	0.635	0.773	9.910	11.559	-
05/05/14	0.074	0.181	0.459	0.530	4.740	5.910	-
11/11/14	0.0923	0.291	0.938	0.961	6.730	8.920	-
02/06/15	0.0183	0.343	1.170	1.340	10.300	13.153	-
05/09/15	0.0689	0.356	1.000	0.787	6.120	8.263	0.586
08/28/15	0.0753	0.268	1.170	1.850	13.200	16.488	0.740
10/31/15	CA VIA RNA WITH MEME						
12/03/15	0.0372	0.199	1.360	0.878	9.840	12.277	1.040
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	0.0344	0.0877	0.395	0.274	2.900	3.6567	0.301
03/09/17	0.0101	0.0301	0.0388	0.0119	0.7257	0.8065	0.078
06/23/17	0.004	0.0090	0.002	0.003	0.017	0.031	<0.005
09/14/17	0.0125	0.0648	<0.001	0.0149	0.0018	0.0815	0.0192
12/12/14	0.019	0.014	<0.001	0.005	<0.003	0.019	0.010
03/23/18	0.011	<0.001	0.006	0.007	0.057	0.070	<0.005
06/21/18	0.002	0.0067	0.0072	0.0065	0.0375	0.0579	0.0032
09/18/18	0.0029	0.0088	0.002	0.0047	0.0309	0.0464	0.0044
12/20/18	0.0117	0.0058	0.0055	0.0184	0.1161	0.1458	0.0178
GRP SSTLs:	1.64	0.411	82.2	57.5	175	-	1.64
Inhalation SSTLs:	48000	17.8	526	169	175	-	31

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	OBG-3R		
INSTALLATION DATE:	10/25/06	WELL DEPTH (FT BTOC):	12.5	SCREEN INTERVAL (FT):	2.5 - 12.5	CASING ELEV (FT ABOVE MSL):	396.71	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				
MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
07/28/99	9.66	387.05	-	-
03/16/11	5.65	391.06	-	-
12/07/11	6.96	389.75	-	-
03/07/12	5.17	391.54	-	-
06/12/12	6.45	390.26	-	-
09/10/12	6.90	389.81	-	-
01/03/13	5.30	391.41	-	-
04/02/13	3.82	392.89	-	-
07/17/13	5.71	391.00	-	-
10/28/13	6.82	389.89	-	-
05/05/14	3.57	393.14	-	-
11/11/14	7.18	389.53	-	-
02/06/15	8.03	388.68	-	-
05/07/15	1.20	395.51	-	-
08/28/15	6.58	390.13	-	-
12/03/15	8.20	388.51	-	-
03/25/16	4.58	392.13	-	-
03/09/17	7.52	389.19	-	-
06/23/17	1.12	395.59	-	5.0
09/14/17	2.75	393.96	-	4.7
12/12/17	4.60	392.11	-	3.8
03/23/18	4.18	392.53	-	4.0
06/21/18	5.36	391.35	-	3.4
09/18/18	6.34	390.37	-	3.0
12/20/18	3.83	392.88	-	4.2

INTRINSIC GROUNDWATER DATA SUMMARY			
SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
07/28/99	2.16	5.53	49.2
03/16/11	-	-	-
12/07/11	-	-	-
03/07/12	-	-	-
06/12/12	-	-	-
09/10/12	1.62	5.16	128.0
01/03/13	3.35	5.86	75.7
04/02/13	3.42	5.13	81.3
07/17/13	3.86	5.43	83.6
10/28/13	6.11	5.07	43.3
05/05/14	6.40	5.09	106.4
11/11/14	3.36	5.18	101.0
02/06/15	6.71	5.41	92.0
05/07/15	-	5.16	22.4
08/28/15	4.92	5.23	55.5
12/03/15	-	-	-
03/25/16	5.27	5.04	107.1
03/09/17	4.08	5.87	112.2
06/23/17	4.12	5.65	137.6
09/14/17	4.24	5.79	121.3
12/12/17	4.18	6.04	119.7
03/23/18	3.96	6.38	92.4
06/21/18	3.63	6.32	125.4
09/18/18	3.70	6.59	131.3
12/20/18	6.20	6.20	225.0

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	OBG-3R		
INSTALLATION DATE:	10/25/06	WELL DEPTH (FT BTOC):	12.5	SCREEN INTERVAL (FT):	2.5 - 12.5	CASING ELEV (FT ABOVE MSL):	396.71	WELL TYPE:	II
								DIAMETER (IN):	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
07/28/99	<0.0001	<0.00001	<0.00001	<0.00001	<0.00002	BDL	-
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
09/10/12	NOT SAMPLED						
01/03/13	NOT SAMPLED						
04/02/13	NOT SAMPLED						
07/17/13	NOT SAMPLED						
10/28/13	NOT SAMPLED						
05/05/14	NOT SAMPLED						
11/11/14	NOT SAMPLED						
02/06/15	NOT SAMPLED						
05/09/15	NOT SAMPLED						
08/28/15	NOT SAMPLED						
10/31/15	CA VIA RNA WITH MEME						
12/03/15	NOT SAMPLED						
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	<0.00016	<0.00023	<0.00098	<0.00034	0.0007	0.0007	<0.00386
03/09/17	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
06/23/17	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
09/14/17	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
12/12/14	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
03/23/18	<0.001	<0.001	<0.005	<0.001	<0.001	BDL	<0.005
06/21/18	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
09/18/18	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
12/20/18	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
GRP SSTLs:	0.381	0.0952	19	13.3	175	-	0.381
Inhalation SSTLs:	48000	17.8	526	169	175	-	31

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	OBG-4		
INSTALLATION DATE:	02/25/87	WELL DEPTH (FT BTOC):	11.5	SCREEN INTERVAL (FT):	1.5 - 11.5	CASING ELEV (FT ABOVE MSL):	395.87	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				
MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
07/28/99	8.84	387.03	-	-
03/25/16	4.36	391.51	-	-
03/09/17	5.91	389.96	-	-
06/23/17	1.60	394.27	-	4.0
09/14/17	4.44	391.43	-	3.4
12/12/17	6.02	389.85	-	2.6
03/23/18	4.22	391.65	-	3.5
06/21/18	5.11	390.76	-	3.1
09/18/18	6.16	389.71	-	2.6
12/20/18	4.40	391.47	-	3.4

INTRINSIC GROUNDWATER DATA SUMMARY			
SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
07/28/99	1.24	5.04	81.4
03/25/16	3.45	6.06	49.1
03/09/17	4.02	6.17	77.5
06/23/17	4.30	6.09	94.3
09/14/17	3.94	6.01	82.4
12/12/17	3.92	6.11	103.4
03/23/18	3.83	6.43	116.7
06/21/18	3.87	6.45	114.8
09/18/18	3.82	6.61	129.5
12/20/18	5.42	6.00	213.0

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	OBG-4		
INSTALLATION DATE:	02/25/87	WELL DEPTH (FT BTOC):	11.5	SCREEN INTERVAL (FT):	1.5 - 11.5	CASING ELEV (FT ABOVE MSL):	395.87	WELL TYPE:	II
								DIAMETER (IN):	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
07/28/99	0.0214	<0.00001	<0.00001	<0.00001	<0.00002	BDL	-
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
09/10/12	NOT SAMPLED						
01/03/13	NOT SAMPLED						
04/02/13	NOT SAMPLED						
07/17/13	NOT SAMPLED						
10/28/13	NOT SAMPLED						
05/05/14	NOT SAMPLED						
11/11/14	NOT SAMPLED						
02/06/15	NOT SAMPLED						
05/09/15	NOT SAMPLED						
08/28/15	NOT SAMPLED						
10/31/15	CA VIA RNA WITH MEME						
12/03/15	NOT SAMPLED						
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	0.0009	0.0008	<0.00098	<0.00034	<0.0004	0.0008	<0.00386
03/09/17	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
06/23/17	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
09/14/17	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
12/12/17	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
03/23/18	<0.001	<0.001	<0.005	<0.001	<0.001	BDL	<0.005
06/21/18	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
09/18/18	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
12/20/18	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
GRP SSTLs:	0.0434	0.122	24.4	17.1	175	-	0.434
Inhalation SSTLs:	48000	17.8	526	169	175	-	31

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	OBG-5R		
INSTALLATION DATE:	10/25/06	WELL DEPTH (FT BTOC):	12.9	SCREEN INTERVAL (FT):	2.9 - 12.9	CASING ELEV (FT ABOVE MSL):	397.17	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				
MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
07/28/99	10.23	386.94	-	-
03/16/11	10.23	386.94	-	-
12/07/11	10.23	386.94	-	-
03/07/12	5.96	391.21	-	-
06/12/12	7.60	389.57	-	-
09/10/12	6.40	390.77	-	-
01/03/13	5.00	392.17	-	-
04/02/13	4.42	392.75	-	-
07/17/13	6.91	390.26	-	-
10/28/13	8.31	388.86	-	-
05/05/14	4.51	392.66	-	-
11/11/14	8.62	388.55	-	-
02/06/15	6.43	390.74	-	-
05/07/15	5.25	391.92	-	-
08/28/15	6.81	390.36	-	-
12/03/15	7.28	389.89	-	-
03/25/16	5.58	391.59	-	-
03/09/17	8.36	388.81	-	-
06/23/17	2.05	395.12	-	5.0
09/14/17	6.25	390.92	-	3.2
12/12/17	7.50	389.67	-	2.6
03/23/18	5.75	391.42	-	3.4
06/21/18	6.65	390.52	-	3.0
09/18/18	5.62	391.55	-	3.5
12/20/18	6.01	391.16	-	3.3

INTRINSIC GROUNDWATER DATA SUMMARY			
SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
07/28/99	1.24	5.04	81.4
03/16/11	3.45	6.06	49.1
12/07/11	4.02	6.17	77.5
03/07/12	3.45	6.06	49.1
06/12/12	3.75	4.94	84.7
09/10/12	3.02	7.16	3.2
01/03/13	3.40	6.81	-9.0
04/02/13	3.65	6.64	17.8
07/17/13	3.36	6.67	26.9
10/28/13	5.98	6.81	12.9
05/05/14	3.70	6.80	11.7
11/11/14	5.75	6.99	5.4
02/06/15	-	6.82	-19.0
05/07/15	-	6.82	-19.0
08/28/15	4.52	6.42	-9.5
12/03/15	-	-	-
03/25/16	4.70	6.80	7.1
03/09/17	4.44	6.93	37.6
06/23/17	4.76	6.79	57.2
09/14/17	4.52	6.83	61.4
12/12/17	4.36	6.90	89.6
03/23/18	4.15	6.82	88.1
06/21/18	4.12	6.84	93.1
09/18/18	4.20	6.94	107.6
12/20/18	5.93	5.80	194.0

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	OBG-5R		
INSTALLATION DATE:	10/25/06	WELL DEPTH (FT BTOC):	12.9	SCREEN INTERVAL (FT):	2.9 - 12.9	CASING ELEV (FT ABOVE MSL):	397.17	WELL TYPE:	II
								DIAMETER (IN):	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
07/28/99	0.0050	<0.00001	<0.00001	<0.00001	<0.00002	BDL	-
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
09/10/12	NOT SAMPLED						
01/03/13	NOT SAMPLED						
04/02/13	NOT SAMPLED						
07/17/13	NOT SAMPLED						
10/28/13	NOT SAMPLED						
05/05/14	NOT SAMPLED						
11/11/14	NOT SAMPLED						
02/06/15	NOT SAMPLED						
05/09/15	NOT SAMPLED						
08/28/15	NOT SAMPLED						
10/31/15	CA VIA RNA WITH MEME						
12/03/15	NOT SAMPLED						
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	0.0002	<0.00023	<0.00098	<0.00034	<0.0004	BDL	<0.00386
03/09/17	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
06/23/17	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
09/14/17	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
12/12/17	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
03/23/18	<0.001	<0.001	<0.005	<0.001	<0.001	BDL	<0.005
06/21/18	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
09/18/18	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
12/20/18	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
GRP SSTLs:	0.822	0.206	41.1	28.8	175	-	0.822
Inhalation SSTLs:	48000	17.8	526	169	175	-	31

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	OBG-6R		
INSTALLATION DATE:	10/25/06	WELL DEPTH (FT BTOC):	14.7	SCREEN INTERVAL (FT):	3.0 - 14.70	CASING ELEV (FT ABOVE MSL):	398.77	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				
MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
07/28/99	10.52	388.25	-	-
03/16/11	2.67	396.10	-	-
12/07/11	7.38	391.39	-	-
03/07/12	2.81	395.96	-	-
06/12/12	3.87	394.90	-	-
09/10/12	5.74	393.03	-	-
01/03/13	5.03	393.74	-	-
04/02/13	2.44	396.33	0.01	-
07/17/13	3.52	395.25	-	-
10/28/13	5.08	393.69	-	-
05/05/14	2.21	396.56	-	-
11/11/14	8.61	390.16	-	-
02/06/15	8.12	390.65	-	-
05/07/15	2.51	396.26	-	-
08/28/15	3.80	394.97	-	-
12/03/15	7.17	391.60	-	-
03/25/16	2.45	396.32	-	-
03/09/17	3.90	394.87	-	-
06/23/17	0.42	398.35	-	6.0
09/14/17	1.88	396.89	-	6.2
12/12/17	2.47	396.30	-	5.9
03/23/18	3.01	395.76	-	5.6
06/21/18	2.69	396.08	-	5.8
09/18/18	9.37	389.40	-	2.6
12/20/18	2.45	396.32	-	5.9

INTRINSIC GROUNDWATER DATA SUMMARY			
SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
07/28/99	2.20	6.72	-19.9
03/16/11	-	-	-
12/07/11	-	-	-
03/07/12	-	-	-
06/12/12	-	-	-
09/10/12	1.36	6.60	35.0
01/03/13	2.81	6.85	20.3
04/02/13	2.35	6.24	21.7
07/17/13	2.97	6.38	31.9
10/28/13	2.20	6.40	42.0
05/05/14	1.98	6.13	50.2
11/11/14	3.41	6.00	53.0
02/06/15	3.61	6.49	32.7
05/07/15	-	6.04	24.7
08/28/15	4.87	6.09	8.6
12/03/15	3.40	6.17	-3.2
03/25/16	5.60	6.25	37.3
03/09/17	4.24	6.67	59.7
06/23/17	4.80	6.33	71.5
09/14/17	3.88	6.19	63.5
12/12/17	3.48	6.27	90.8
03/23/18	3.33	6.55	105.4
06/21/18	3.29	6.32	79.6
09/18/18	2.88	6.62	97.4
12/20/18	2.43	6.10	135.0

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	OBG-6R		
INSTALLATION DATE:	10/25/06	WELL DEPTH (FT BTOC):	14.7	SCREEN INTERVAL (FT):	3.0 - 14.70	CASING ELEV (FT ABOVE MSL):	398.77	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
07/28/99	2.590	7.620	2.000	0.418	2.550	12.588	-
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
09/10/12	7.200	9.200	1.300	14.000	8.900	33.400	-
01/03/13	5.000	6.500	9.400	0.900	6.400	23.200	-
04/02/13	3.600	6.100	11.000	1.200	8.000	26.300	-
07/17/13	4.470	9.140	15.500	2.020	11.000	37.660	-
10/28/13	4.150	8.690	15.700	1.720	8.700	34.810	-
05/05/14	2.960	7.590	14.200	1.870	8.390	32.050	-
11/11/14	4.210	9.920	18.600	1.970	11.700	42.190	-
02/06/15	1.270	10.800	19.700	2.920	15.500	48.920	-
05/09/15	5.570	10.400	16.800	1.330	7.550	36.080	0.302
08/28/15	4.460	9.870	15.700	1.340	9.830	36.740	0.440
12/03/15	3.780	8.660	1.690	19.100	8.930	38.380	0.410
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	2.590	4.440	7.990	0.901	5.310	18.641	0.280
03/09/17	2.2041	4.2924	6.9996	0.5271	4.9329	16.752	0.1989
06/23/17	0.884	2.080	3.600	0.834	4.470	10.984	0.149
09/14/17	0.9901	2.5095	3.6582	0.3978	4.888	11.4535	0.1249
12/12/17	1.640	5.350	12.100	2.520	12.300	32.270	0.970
03/23/18	2.580	6.710	11.900	1.920	10.800	31.330	0.431
06/21/18	2.4711	6.269	11.2746	1.2627	7.0564	25.8627	0.2197
09/18/18	2.978	8.8507	14.3925	1.8918	9.6299	34.7649	0.3697
12/20/18	1.7782	3.8668	7.6759	0.9087	5.2741	17.7255	0.1679
GRP SSTLS:	1.64	0.411	82.2	57.5	175	-	1.64
Inhalation SSTLS:	48000	17.8	526	169	175	-	31

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434	UST NUMBER:	16-02-01	WELL ID:	MW-7
INSTALLATION DATE:	-	WELL DEPTH (FT BTOC):	-	SCREEN INTERVAL (FT):	-
			-	CASING ELEV (FT ABOVE MSL):	-
				WELL TYPE:	II
				DIAMETER (IN):	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
07/28/99	<0.0001	<0.00001	<0.00001	<0.00001	<0.00002	BDL	-
10/10/16	WELL DESTROYED						
GRP SSTLs:	-	-	-	-	-		-
Inhalation SSTLs:	-	-	-	-	-		-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	MW-8		
INSTALLATION DATE:	09/16/97	WELL DEPTH (FT BTOC):	30	SCREEN INTERVAL (FT):	5.0 - 30.0	CASING ELEV (FT ABOVE MSL):	408.00	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

MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
07/28/99	21.95	386.05	-	-
03/09/17	15.98	392.02	-	-
06/23/17	10.25	397.75	-	8.0
09/14/17	14.41	393.59	-	7.5
12/12/17	16.03	391.97	-	6.7
03/23/18	14.17	393.83	-	7.6
06/21/18	14.82	393.18	-	7.3
09/18/18	16.12	391.88	-	6.7
12/20/18	14.27	393.73	-	7.6

INTRINSIC GROUNDWATER DATA SUMMARY

SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
07/28/99	3.25	6.52	-8.4
03/09/17	3.88	6.91	31.8
06/23/17	4.06	6.79	60.4
09/14/17	3.96	6.94	77.6
12/12/17	4.08	7.11	105.2
03/23/18	3.97	7.25	119.2
06/21/18	3.69	7.18	119.5
09/18/18	3.54	7.27	130.8
12/20/18	6.63	6.20	105.0

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	MW-8		
INSTALLATION DATE:	09/16/97	WELL DEPTH (FT BTOC):	30	SCREEN INTERVAL (FT):	5.0 - 30.0	CASING ELEV (FT ABOVE MSL):	408.00	WELL TYPE:	II
							DIAMETER (IN):	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
07/28/99	0.0013	0.0025	0.0008	0.0016	0.0015	0.0063	-
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
01/26/06	<0.0001	<0.00001	<0.00001	<0.00002	<0.00001	BDL	-
04/18/06	<0.00374	<0.00014	<0.00017	<0.00016	<0.00026	BDL	-
10/31/15	CA VIA RNA WITH MEME						
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
10/10/16	WELL ASSUMED DESTROYED						
03/09/17	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
06/23/17	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
09/14/17	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
12/12/17	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
03/23/18	<0.001	<0.001	<0.005	<0.001	0.0040	0.0040	<0.005
06/21/18	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
09/18/18	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
12/20/18	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
GRP SSTLs:	1.51	0.378	75.6	53	175	-	1.51
Inhalation SSTLs:	48000	17.8	526	169	175	-	31

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	MW-9		
INSTALLATION DATE:	09/16/97	WELL DEPTH (FT BTOC):	26.5	SCREEN INTERVAL (FT):	6.5 - 26.5	CASING ELEV (FT ABOVE MSL):	405.60	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				
MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
07/28/99	20.07	385.53	-	-
03/16/11	13.05	392.55	0.01	-
12/07/11	13.57	392.03	-	-
03/07/12	14.80	390.80	-	-
06/12/12	16.25	389.35	-	-
09/10/12	15.15	390.45	-	-
01/03/13	13.10	392.50	-	-
04/02/13	13.75	391.85	-	-
07/17/13	15.99	389.61	-	-
10/28/13	17.33	388.27	-	-
05/05/14	13.39	392.21	0.07	-
11/11/14	18.15	387.45	0.04	-
02/06/15	-		0.01	-
05/07/15	14.69	390.91	0.01	-
08/28/15	16.61	388.99	-	-
12/03/15	15.18	390.42	-	-
03/25/16	14.68	390.92	-	-
03/09/17	17.70	389.69	2.40	-
06/23/17	9.74	395.89	0.04	-
09/14/17	14.80	390.84	0.06	-
12/12/17	16.71	389.16	0.36	-
03/23/18	14.69	390.91	-	5.7
06/21/18	15.58	390.02	-	5.2
09/18/18	16.45	389.22	0.10	-
12/20/18	14.75	390.85	-	5.6

INTRINSIC GROUNDWATER DATA SUMMARY			
SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
07/28/99	1.35	6.54	-15.4
03/16/11	FREE PRODUCT (0.01 FT)		
12/07/11	-	-	-
03/07/12	-	-	-
06/12/12	-	-	-
09/10/12	1.00	7.14	4.2
01/03/13	2.29	7.30	-4.9
04/02/13	3.04	6.36	15.2
07/17/13	1.76	6.90	3.6
10/28/13	2.00	7.07	5.2
05/05/14	2.11	6.63	23.0
11/11/14	3.82	7.12	-5.7
02/06/15	2.41	7.20	-6.7
05/07/15	-	6.95	-25.7
08/28/15	3.64	6.80	-29.1
12/03/15	2.15	6.49	-20.2
03/25/16	2.05	7.13	-11.9
03/09/17	FREE PRODUCT (2.40 FT)		
06/23/17	FREE PRODUCT (0.04 FT)		
09/14/17	FREE PRODUCT (0.06 FT)		
12/12/17	FREE PRODUCT (0.36 FT)		
03/23/18	3.69	7.36	86.9
06/21/18	3.83	7.20	102.4
09/18/18	FREE PRODUCT (0.10 FT)		
12/20/18	1.10	5.80	114.0

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	MW-9		
INSTALLATION DATE:	09/16/97	WELL DEPTH (FT BTOC):	26.5	SCREEN INTERVAL (FT):	6.5 - 26.5	CASING ELEV (FT ABOVE MSL):	405.60	WELL TYPE:	II
								DIAMETER (IN):	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
07/28/99	<0.1	6.33	21.80	2.33	26.60	57.06	-
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
09/10/12	0.018	0.440	0.300	1.300	2.000	4.040	-
01/03/13	0.016	0.290	1.000	0.190	1.300	2.780	-
04/02/13	0.012	0.290	0.530	0.088	1.100	2.008	-
07/17/13	0.009	0.326	0.262	0.104	0.521	1.213	-
10/28/13	0.0198	0.402	0.673	0.255	1.510	2.840	-
05/05/14	0.016	0.288	0.301	0.430	2.070	3.089	-
11/11/14	0.0197	0.293	0.488	0.520	3.010	4.311	-
02/06/15	0.0136	0.174	0.250	0.171	1.050	1.645	-
05/09/15	0.0142	0.223	0.131	0.161	1.130	1.645	0.101
08/28/15	0.0156	0.270	0.236	0.164	1.210	1.880	0.108
10/31/15	CA VIA RNA WITH MEME						
12/03/15	0.0034	0.0667	0.116	0.0773	0.703	0.963	0.080
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	0.008	0.121	0.0803	0.0513	0.276	0.5286	0.150
03/09/17	NOT SAMPLED - FREE PRODUCT (2.40 FT)						
06/23/17	NOT SAMPLED - FREE PRODUCT (0.04 FT)						
09/14/17	NOT SAMPLED - FREE PRODUCT (0.06 FT)						
12/12/17	NOT SAMPLED - FREE PRODUCT (0.36 FT)						
03/23/18	0.024	0.850	4.710	1.670	12.300	19.530	2.200
06/21/18	0.0262	0.5724	2.4633	0.360	2.7110	6.1067	0.2015
09/18/18	NOT SAMPLED - FREE PRODUCT (0.10 FT)						
12/20/18	<0.025	3.6643	18.8231	2.2688	13.2221	37.9783	0.9262
GRP SSTLs:	1.64	0.411	82.2	57.5	175	-	1.64
Inhalation SSTLs:	48000	17.8	526	169	175	-	31

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	MW-10		
INSTALLATION DATE:	09/11/97	WELL DEPTH (FT BTOC):	35	SCREEN INTERVAL (FT):	10.0 - 35.0	CASING ELEV (FT ABOVE MSL):	405.37	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				
MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
07/28/99	18.63	386.74	-	-
03/16/11	12.87	392.50	-	-
12/07/11	12.92	392.45	-	-
03/07/12	14.75	390.62	-	-
06/12/12	16.14	389.23	-	-
09/10/12	15.45	389.92	-	-
01/03/13	12.88	392.49	-	-
04/02/13	13.69	391.68	-	-
07/17/13	15.93	389.44	-	-
10/28/13	17.24	388.13	-	-
05/05/14	13.30	392.07	-	-
11/11/14	18.03	387.34	-	-
02/06/15	15.74	389.63	-	-
05/07/15	14.63	390.74	-	-
08/28/15	16.52	388.85	-	-
12/03/15	15.03	390.34	-	-
03/25/16	14.60	390.77	-	-
03/09/17	15.88	389.49	-	-
06/23/17	10.11	395.26	-	8.0
09/14/17	14.35	391.02	-	9.9
12/12/17	16.22	389.15	-	9.0
03/23/18	14.61	390.76	-	-
09/18/18	16.55	388.82	-	8.9
12/20/18	14.57	390.80	-	9.8

INTRINSIC GROUNDWATER DATA SUMMARY			
SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
07/28/99	-	-	-
03/16/11	-	-	-
12/07/11	-	-	-
03/07/12	-	-	-
06/12/12	-	-	-
09/10/12	1.47	6.57	36.8
01/03/13	2.51	6.56	36.8
04/02/13	6.69	6.26	20.7
07/17/13	3.21	7.04	-3.8
10/28/13	4.75	7.12	2.7
05/05/14	5.70	6.52	28.5
11/11/14	3.27	7.43	-22.7
02/06/15	5.53	7.47	-20.3
05/07/15	-	7.30	-45.0
08/28/15	5.97	7.17	-50.0
12/03/15	6.27	6.82	-37.4
03/25/16	5.16	6.96	-2.1
03/09/17	4.24	7.08	24.5
06/23/17	4.88	7.19	55.1
09/14/17	4.42	7.11	43.4
12/12/17	4.22	7.20	71.9
03/23/18	-	-	-
09/18/18	3.60	7.19	109.9
12/20/18	5.90	5.00	205.0

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	MW-10		
INSTALLATION DATE:	09/11/97	WELL DEPTH (FT BTOC):	35	SCREEN INTERVAL (FT):	10.0 - 35.0	CASING ELEV (FT ABOVE MSL):	405.37	WELL TYPE:	II
							DIAMETER (IN):	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
07/28/99	NOT SAMPLED						
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
09/10/12	<0.005	<0.001	<0.001	<0.001	<0.001	BDL	-
01/03/13	<0.005	<0.001	<0.001	<0.001	<0.001	BDL	-
04/02/13	<0.005	<0.001	<0.001	<0.001	<0.001	BDL	-
07/17/13	<0.001	<0.001	<0.005	<0.001	<0.001	BDL	-
10/28/13	<0.001	<0.001	<0.005	<0.001	0.0024	0.0024	-
05/05/14	<0.001	<0.001	<0.005	<0.001	0.0024	0.0024	-
11/11/14	<0.001	<0.001	<0.005	<0.001	<0.001	BDL	-
02/06/15	<0.001	<0.001	<0.005	<0.001	<0.001	BDL	-
05/09/15	<0.001	<0.001	<0.005	<0.001	<0.001	BDL	<0.005
08/28/15	<0.001	<0.001	<0.005	<0.001	<0.001	BDL	<0.005
10/31/15	CA VIA RNA WITH MEME						
12/03/15	<0.001	<0.001	<0.001	<0.005	<0.001	BDL	<0.005
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	<0.00016	<0.00023	<0.00098	<0.00034	<0.0004	BDL	<0.00386
03/09/17	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
06/23/17	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
09/14/17	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
12/12/17	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
03/23/18	NOT SAMPLED						
06/21/18	NOT SAMPLED						
09/18/18	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
12/20/18	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
GRP SSTLs:	0.552	0.138	27.6	19.3	175	-	0.552
Inhalation SSTLs:	7400	2.72	157	169	132	-	14.2

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	MW-11		
INSTALLATION DATE:	05/01/98	WELL DEPTH (FT BTOC):	22.9	SCREEN INTERVAL (FT):	7.9 - 22.9	CASING ELEV (FT ABOVE MSL):	407.11	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				
MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
07/28/99	20.22	386.89	-	-
03/16/11	13.95	393.16	-	-
12/07/11	14.65	392.46	-	-
03/07/12	15.61	391.50	-	-
06/12/12	17.23	389.88	-	-
09/10/12	16.43	390.68	-	-
01/03/13	14.07	393.04	-	-
04/02/13	14.40	392.71	-	-
07/17/13	16.82	390.29	-	-
10/28/13	18.26	388.85	-	-
05/05/14	14.02	393.09	-	-
11/11/14	19.13	387.98	-	-
02/06/15	16.62	390.49	-	-
05/07/15	15.38	391.73	-	-
08/28/15	17.55	389.56	-	-
12/03/15	16.34	390.77	-	-
03/25/16	15.46	391.65	-	-
03/09/17	17.00	390.11	-	-
06/23/17	11.31	395.80	-	5.0
09/14/17	15.58	391.53	-	3.5
12/12/17	17.30	389.81	-	2.7
03/23/18	11.32	395.79	-	5.6
06/21/18	16.18	390.93	-	3.2
09/18/18	17.46	389.65	-	2.6
12/20/18	15.34	391.77	-	3.6

INTRINSIC GROUNDWATER DATA SUMMARY			
SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
07/28/99	3.45	6.78	-23.9
03/16/11	-	-	-
12/07/11	-	-	-
03/07/12	-	-	-
06/12/12	-	-	-
09/10/12	1.39	7.31	-6.0
01/03/13	2.13	7.38	-9.3
04/02/13	4.83	6.84	-11.0
07/17/13	2.78	6.99	-1.1
10/28/13	4.72	7.30	-7.4
05/05/14	5.40	7.04	1.0
11/11/14	2.44	7.43	-23.0
02/06/15	6.20	7.61	-27.9
05/07/15	-	7.50	-55.5
08/28/15	4.84	7.26	-55.0
12/03/15	5.25	7.30	-60.9
03/25/16	5.01	7.30	-22.4
03/09/17	2.16	7.44	19.2
06/23/17	4.36	7.19	38.9
09/14/17	3.44	7.27	49.6
12/12/17	3.92	7.19	87.6
03/23/18	3.75	7.06	95.7
06/21/18	3.55	7.08	84.1
09/18/18	3.48	7.04	98.1
12/20/18	5.59	5.80	183.0

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	MW-11		
INSTALLATION DATE:	05/01/98	WELL DEPTH (FT BTOC):	22.9	SCREEN INTERVAL (FT):	7.9 - 22.9	CASING ELEV (FT ABOVE MSL):	407.11	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
07/28/99	<0.0001	<0.00001	<0.00001	<0.00001	<0.00002	BDL	-
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
09/10/12	<0.005	<0.001	<0.001	<0.001	<0.001	BDL	-
01/03/13	<0.005	<0.001	<0.001	<0.001	<0.001	BDL	-
04/02/13	<0.005	<0.001	<0.001	<0.001	<0.001	BDL	-
07/17/13	<0.001	<0.001	<0.005	<0.001	<0.001	BDL	-
10/28/13	<0.001	<0.001	<0.005	<0.001	<0.001	BDL	-
05/05/14	<0.001	<0.001	<0.005	<0.001	<0.001	BDL	-
11/11/14	<0.001	<0.001	<0.005	<0.001	<0.001	BDL	-
02/06/15	<0.001	<0.001	<0.005	<0.001	<0.001	BDL	-
05/09/15	<0.001	<0.001	<0.005	<0.001	<0.001	BDL	<0.005
08/28/15	<0.001	<0.001	<0.005	<0.001	<0.001	BDL	<0.005
10/31/15	CA VIA RNA WITH MEME						
12/03/15	<0.001	<0.001	<0.001	<0.005	<0.001	BDL	<0.005
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	<0.00016	<0.00023	<0.00098	<0.00034	<0.0004	BDL	<0.00386
03/09/17	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
06/23/17	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
09/14/17	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
12/12/17	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
03/23/18	<0.001	<0.001	<0.005	<0.001	<0.001	BDL	<0.005
06/21/18	<0.001	<0.001	0.0016	<0.001	0.0025	0.0041	0.0018
09/18/18	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
12/20/18	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
GRP SSTLs:	0.922	0.23	46.1	32.3	175	-	0.922
Inhalation SSTLs:	7400	2.72	157	169	132	-	14.2

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	MW-12		
INSTALLATION DATE:	04/30/08	WELL DEPTH (FT BTOC):	20.55	SCREEN INTERVAL (FT):	5.55 - 20.55	CASING ELEV (FT ABOVE MSL):	399.70	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				
MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
03/16/11	6.59	393.11	-	-
12/07/11	7.44	392.26	-	-
03/07/12	8.29	391.41	-	-
06/12/12	9.84	389.86	-	-
09/10/12	8.99	390.71	-	-
01/03/13	6.71	392.99	-	-
04/02/13	7.11	392.59	-	-
07/17/13	9.43	390.27	-	-
10/28/13	10.86	388.84	-	-
05/05/14	6.72	392.98	-	-
11/11/14	9.73	389.97	-	-
02/06/15	9.21	390.49	-	-
05/07/15	7.99	391.71	-	-
08/28/15	10.06	389.64	-	-
12/03/15	8.96	390.74	-	-
03/25/16	8.09	391.61	-	-
03/09/17	9.85	389.85	-	-
06/23/17	4.30	395.40	-	6.0
09/14/17	8.07	391.63	-	6.0
12/12/17	9.82	389.88	-	5.2
03/23/18	8.19	391.51	-	5.9
06/21/18	9.16	390.54	-	5.5
09/18/18	9.97	389.73	-	5.1
12/20/18	8.20	391.50	-	5.9

INTRINSIC GROUNDWATER DATA SUMMARY			
SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
03/16/11	-	-	-
12/07/11	-	-	-
03/07/12	-	-	-
06/12/12	2.09	5.89	19.3
09/10/12	1.50	6.24	55.6
01/03/13	2.46	6.62	33.4
04/02/13	2.06	5.60	56.0
07/17/13	1.87	6.28	37.0
10/28/13	2.36	6.01	61.8
05/05/14	2.28	5.99	57.0
11/11/14	3.62	6.17	46.2
02/06/15	2.65	6.45	34.9
05/07/15		6.20	15.0
08/28/15	4.51	6.03	11.4
12/03/15	4.06	6.29	-9.7
03/25/16	2.08	6.34	32.7
03/09/17	3.81	6.58	53.6
06/23/17	4.10	6.41	69.3
09/14/17	3.92	6.27	49.6
12/12/17	3.98	6.62	94.3
03/23/18	3.82	6.87	98.5
06/21/18	3.36	6.73	110.5
09/18/18	3.52	6.93	124.2
12/20/18	1.37	6.30	87.0

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	MW-12		
INSTALLATION DATE:	04/30/08	WELL DEPTH (FT BTOC):	20.55	SCREEN INTERVAL (FT):	5.55 - 20.55	CASING ELEV (FT ABOVE MSL):	399.70	WELL TYPE:	II
								DIAMETER (IN):	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
05/30/08	<0.001	0.0068	<0.005	0.0026	0.0327	0.0421	-
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
09/10/12	<0.005	0.0081	0.120	0.0064	0.140	0.2745	-
01/03/13	<0.005	0.0064	0.0062	0.088	0.110	0.2106	-
04/02/13	<0.005	0.0051	0.0036	0.074	0.110	0.1927	-
07/17/13	0.0017	0.008	0.0072	0.136	0.171	0.3222	-
10/28/13	<0.001	0.0124	0.016	0.180	0.269	0.4774	-
05/05/14	<0.001	0.0043	<0.005	0.0795	0.0643	0.1481	-
11/11/14	0.0014	0.0164	<0.005	0.103	0.0784	0.1978	-
02/06/15	0.001	0.0048	<0.005	0.0394	0.0294	0.0736	-
05/09/15	0.0012	0.0035	<0.005	0.0398	0.0219	0.0652	0.022
08/28/15	0.0013	0.0098	<0.005	0.105	0.0973	0.2121	0.069
10/31/15	CA VIA RNA WITH MEME						
12/03/15	<0.001	0.0090	0.0458	<0.005	0.1450	0.1998	0.0170
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	<0.00016	0.0141	0.0015	0.0378	0.0192	0.0726	0.014
03/09/17	<0.001	0.0782	0.0028	0.0373	0.0522	0.1705	0.0109
06/23/17	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
09/14/17	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
12/12/17	<0.001	0.0010	<0.001	0.0020	<0.003	0.0030	<0.005
03/23/18	<0.001	<0.001	<0.005	<0.001	<0.001	BDL	<0.005
06/21/18	<0.001	<0.001	<0.001	0.0015	0.0016	0.0031	0.0015
09/18/18	<0.001	0.0082	<0.001	0.0150	0.0086	0.0318	0.0064
12/20/18	<0.001	<0.001	<0.001	0.0018	0.0011	0.0029	<0.001
GRP SSTLs:	1.64	0.411	82.2	57.5	175	-	1.64
Inhalation SSTLs:	48000	17.8	526	169	175	-	31

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	MW-14		
INSTALLATION DATE:	04/29/08	WELL DEPTH (FT BTOC):	18.1	SCREEN INTERVAL (FT):	6.1 - 18.1	CASING ELEV (FT ABOVE MSL):	398.45	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				
MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
03/16/11	5.80	392.65	0.03	-
12/07/11	6.75	391.70	0.01	-
03/07/12	7.64	390.81	-	-
06/12/12	8.84	389.61	0.01	-
09/10/12	8.13	390.32	0.01	-
01/03/13	5.99	392.46	0.01	-
04/02/13	6.53	391.92	0.01	-
07/17/13	9.01	389.44	-	-
10/28/13	10.48	387.97	0.23	-
05/05/14	5.97	392.48	-	-
11/11/14	10.76	387.69	0.61	-
02/06/15	8.06	390.39	-	-
05/07/15	7.28	391.17	-	-
08/28/15	9.14	389.31	-	-
12/03/15	8.17	390.28	-	-
03/25/16	7.25	391.20	-	-
03/09/17	8.65	389.80	-	-
06/23/17	3.62	394.83	-	6.0
09/14/17	7.38	391.07	-	5.1
12/12/17	8.86	389.63	0.06	-
03/23/18	7.87	390.58	-	4.9
06/21/18	7.95	390.50	-	4.9
09/18/18	9.10	389.35	-	4.3
12/20/18	7.21	391.24	-	5.2

INTRINSIC GROUNDWATER DATA SUMMARY			
SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
03/16/11	FREE PRODUCT (0.03 FT)		
12/07/11	FREE PRODUCT (0.01 FT)		
03/07/12	-	-	-
06/12/12	FREE PRODUCT (0.01 FT)		
09/10/12	1.33	6.79	24.8
01/03/13	2.40	6.90	17.5
04/02/13	2.60	6.32	17.3
07/17/13	1.49	6.56	22.2
10/28/13	1.90	6.61	29.8
05/05/14	1.07	6.92	34.0
11/11/14	3.44	6.70	17.4
02/06/15	3.00	6.90	9.3
05/07/15	-	6.57	-5.1
08/28/15	4.57	6.54	-16.2
12/03/15	2.28	6.56	-23.5
03/25/16	1.91	6.71	11.8
03/09/17	2.74	6.84	31.7
06/23/17	2.66	6.67	44.8
09/14/17	2.28	6.73	33.9
12/12/17	-	-	-
03/23/18	3.78	7.32	86.9
06/21/18	3.72	7.14	122.6
09/18/18	3.88	7.20	144.8
12/20/18	1.31	5.60	37.0

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	MW-14		
INSTALLATION DATE:	04/29/08	WELL DEPTH (FT BTOC):	18.1	SCREEN INTERVAL (FT):	6.1 - 18.1	CASING ELEV (FT ABOVE MSL):	398.45	WELL TYPE:	II
							398.45	DIAMETER (IN):	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
05/30/08	1.10	18.80	30.90	7.21	33.90	90.81	-
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
09/10/12	1.50	12.00	3.40	21.00	23.00	59.40	-
01/03/13	<2.5	10.00	29.00	2.50	19.00	60.50	-
04/02/13	1.20	9.20	22.00	2.60	19.00	52.80	-
07/17/13	1.27	9.72	25.30	3.01	17.50	55.53	-
10/28/13	2.08	11.00	25.80	3.34	21.10	61.24	-
05/05/14	1.04	9.71	34.60	7.24	42.80	94.35	-
11/11/14	1.73	11.40	84.20	4.15	25.90	125.65	-
02/06/15	0.781	13.00	44.90	5.68	29.50	93.08	-
05/09/15	1.71	11.40	28.00	3.50	18.80	61.70	0.9560
08/28/15	2.20	14.50	34.40	3.42	22.30	74.62	0.8780
10/31/15	CA VIA RNA WITH MEME						
12/03/15	1.16	8.94	3.87	30.40	22.30	65.51	<1
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	1.24	7.24	22.30	2.51	16.40	48.45	0.71
03/09/17	0.2269	4.2047	23.6032	3.3090	24.8027	55.9196	1.0009
06/23/17	<0.001	0.015	0.316	0.094	1.710	2.135	0.046
09/14/17	0.1152	1.4174	10.6411	2.5734	24.2964	38.9283	1.1881
12/12/17	NOT SAMPLED - FREE PRODUCT (0.06 FT)						
03/23/18	1.36	7.47	24.80	2.98	19.20	54.45	1.01
06/21/18	0.4976	3.9192	14.1794	1.9230	16.4088	36.4304	0.9336
09/18/18	0.2219	2.3556	8.2581	1.3454	13.1335	25.0926	1.1582
12/20/18	0.0892	0.3766	2.0339	0.4339	6.5083	9.3527	0.9348
GRP SSTLs:	1.64	0.411	82.2	57.5	175	-	1.64
Inhalation SSTLs:	48000	17.8	526	169	175	-	31

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-15		
INSTALLATION DATE:	09/21/11	WELL DEPTH (FT BTOC):	9.85	SCREEN INTERVAL (FT):	4.85 - 9.85	CASING ELEV (FT ABOVE MSL):	398.44	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

MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
10/28/13	-	-	0.01	-
03/27/16	4.01	394.43	-	-
03/09/17	2.10	396.34	-	-
06/23/17	0.46	397.98	-	-
09/14/17	4.16	394.28	-	-
12/12/17	5.59	392.85	-	-
03/23/18	4.76	393.68	-	-
06/21/18	8.36	390.08	-	-
09/18/18	9.49	388.95	-	-
12/20/18	1.65	396.79	-	-

INTRINSIC GROUNDWATER DATA SUMMARY

SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
10/28/13	1.18	6.92	13.0
03/27/16	2.30	7.20	-15.1
03/09/17	2.46	7.27	11.9
06/23/17	-	-	-
09/14/17	-	-	-
12/12/17	-	-	-
03/23/18	-	-	-
06/21/18	-	-	-
09/18/18	-	-	-
12/20/18	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-15		
INSTALLATION DATE:	09/21/11	WELL DEPTH (FT BTOC):	9.85	SCREEN INTERVAL (FT):	4.85 - 9.85	CASING ELEV (FT ABOVE MSL):	398.44	WELL TYPE:	II
								DIAMETER (IN):	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
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
10/28/13	0.2280	5.0200	7.9800	2.3900	18.9000	34.2900	-
05/08/15	0.1010	4.8000	13.3000	7.5800	36.2000	61.8800	2.4000
10/31/15	CA VIA RNA WITH MEME						
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	0.0960	5.2300	11.0000	3.3300	19.7000	39.2600	1.0100
03/09/17	NOT SAMPLED						
06/23/17	NOT SAMPLED						
09/14/17	NOT SAMPLED						
12/12/17	NOT SAMPLED						
03/23/18	NOT SAMPLED						
06/21/18	NOT SAMPLED						
09/18/18	NOT SAMPLED						
12/20/18	NOT SAMPLED						
GRP SSTLs:	-	-	-	-	-	-	-
Inhalation SSTLs:	-	-	-	-	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-16		
INSTALLATION DATE:	09/21/11	WELL DEPTH (FT BTOC):	15.35	SCREEN INTERVAL (FT):	5.4 - 15.4	CASING ELEV (FT ABOVE MSL):	398.80	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				
MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
10/28/13	-	-	2.50	-
05/08/15	-		0.96	-
03/25/16	8.43	390.37	-	-
03/09/17	8.80	390.04	0.05	-
06/23/17	4.25	394.81	0.35	-
09/14/17	7.80	391.31	0.42	-
12/12/17	9.22	389.63	0.07	-
03/23/18	7.36	391.52	0.11	-
06/21/18	8.42	390.63	0.33	-
09/18/18	9.19	389.64	0.04	-
12/20/18	7.50	391.43	0.17	-

INTRINSIC GROUNDWATER DATA SUMMARY			
SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
10/28/13	1.78	7.00	8.7
05/08/15	-	6.99	-25.6
03/25/16	2.15	7.12	-11.2
03/09/17	FREE PRODUCT (0.05 FT)		
06/23/17	FREE PRODUCT (0.35 FT)		
09/14/17	FREE PRODUCT (0.42 FT)		
12/12/17	FREE PRODUCT (0.07 FT)		
03/23/18	FREE PRODUCT (0.11 FT)		
06/21/18	FREE PRODUCT (0.33 FT)		
09/18/18	FREE PRODUCT (0.04 FT)		
12/20/18	FREE PRODUCT (0.17 FT)		

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-16		
INSTALLATION DATE:	09/21/11	WELL DEPTH (FT BTOC):	15.35	SCREEN INTERVAL (FT):	5.4 - 15.4	CASING ELEV (FT ABOVE MSL):	398.80	WELL TYPE:	II
								DIAMETER (IN):	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
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
10/28/13	5.5400	14.8000	53.4000	11.2000	51.6000	131.0000	-
05/08/15	4.6200	20.8000	128.0000	56.0000	260.0000	464.8000	9.6600
10/31/15	CA VIA RNA WITH MEME						
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	11.2000	16.1000	38.3000	11.8000	42.4000	108.6000	2.9800
03/09/17	NOT SAMPLED - FREE PRODUCT (0.05 FT)						
06/23/17	NOT SAMPLED - FREE PRODUCT (0.35 FT)						
09/14/17	NOT SAMPLED - FREE PRODUCT (0.42 FT)						
12/12/17	NOT SAMPLED - FREE PRODUCT (0.07 FT)						
03/23/18	NOT SAMPLED - FREE PRODUCT (0.11 FT)						
06/21/18	NOT SAMPLED - FREE PRODUCT (0.33 FT)						
09/18/18	NOT SAMPLED - FREE PRODUCT (0.04 FT)						
12/20/18	NOT SAMPLED - FREE PRODUCT (0.17 FT)						
GRP SSTLs:	-	-	-	-	-	-	-
Inhalation SSTLs:	-	-	-	-	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-17		
INSTALLATION DATE:	09/21/11	WELL DEPTH (FT BTOC):	15.85	SCREEN INTERVAL (FT):	3.9 - 15.9	CASING ELEV (FT ABOVE MSL):	398.66	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				
MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
10/28/13	-	-	-	-
05/08/15	7.20	391.46	-	-
03/27/16	7.20	391.46	-	-
03/09/17	8.70	389.96	-	-
06/23/17	4.15	394.51	-	-
09/14/17	7.27	391.39	-	-
12/12/17	8.62	390.04	-	-
03/23/18	7.14	391.52	-	-
06/21/18	7.56	391.10	-	-
09/18/18	9.23	389.43	-	-
12/20/18	7.18	391.48	-	-

INTRINSIC GROUNDWATER DATA SUMMARY			
SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
10/28/13	2.29	6.95	11.5
05/08/15		6.72	10.7
03/27/16	1.63	7.06	-8.0
03/09/17	2.44	6.89	22.1
06/23/17	-	-	-
09/14/17	-	-	-
12/12/17	-	-	-
03/23/18	-	-	-
06/21/18	-	-	-
09/18/18	-	-	-
12/20/18	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-17		
INSTALLATION DATE:	09/21/11	WELL DEPTH (FT BTOC):	15.85	SCREEN INTERVAL (FT):	3.9 - 15.9	CASING ELEV (FT ABOVE MSL):	398.66	WELL TYPE:	II
								DIAMETER (IN):	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
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
10/28/13	6.0400	7.8700	15.2000	4.1700	20.4000	47.6400	-
05/08/15	2.4800	4.0400	4.9800	1.7700	12.6000	23.3900	0.5110
10/31/15	CA VIA RNA WITH MEME						
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	1.5800	2.2400	0.4670	1.8500	8.5500	13.1070	0.6310
03/09/17	NOT SAMPLED						
06/23/17	NOT SAMPLED						
09/14/17	NOT SAMPLED						
12/12/17	NOT SAMPLED						
03/23/18	NOT SAMPLED						
06/21/18	NOT SAMPLED						
09/18/18	NOT SAMPLED						
12/20/18	NOT SAMPLED						
GRP SSTLs:	-	-	-	-	-	-	-
Inhalation SSTLs:	-	-	-	-	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-18		
INSTALLATION DATE:	12/21/10	WELL DEPTH (FT BTOC):	17.35	SCREEN INTERVAL (FT):	5.35 - 17.35	CASING ELEV (FT ABOVE MSL):	398.72	WELL TYPE:	II
								DIAMETER (IN):	2

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

POTENTIOMETRIC ELEVATION SUMMARY				
MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
10/28/13	-	-	1.20	-
05/08/15	-	-	-	-
03/27/16	7.57	391.15	-	-
03/09/17	9.11	389.61	0.11	-
06/23/17	4.30	394.42	0.02	-
09/14/17	7.93	390.79	-	-
12/12/17	9.47	389.25	-	-
03/23/18	7.25	391.47	-	-
06/21/18	8.09	390.63	-	-
09/18/18	9.12	389.60	-	-
12/20/18	7.59	391.13	-	-

INTRINSIC GROUNDWATER DATA SUMMARY			
SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
10/28/13	1.29	7.01	8.6
05/08/15	-	7.06	-29.5
03/27/16	1.70	7.15	-12.8
03/09/17	FREE PRODUCT (0.11 FT)		
06/23/17	FREE PRODUCT (0.02 FT)		
09/14/17	-	-	-
12/12/17	-	-	-
03/23/18	-	-	-
06/21/18	-	-	-
09/18/18	-	-	-
12/20/18	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-18		
INSTALLATION DATE:	12/21/10	WELL DEPTH (FT BTOC):	17.35	SCREEN INTERVAL (FT):	5.35 - 17.35	CASING ELEV (FT ABOVE MSL):	398.72	WELL TYPE:	II
								DIAMETER (IN):	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
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
10/28/13	7.5900	12.7000	17.5000	5.7600	24.1000	60.0600	-
05/08/15	8.0700	9.4700	9.6300	2.7300	13.3000	35.1300	0.5130
10/31/15	CA VIA RNA WITH MEME						
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	7.8100	22.7000	28.0000	6.6400	33.4000	90.7400	1.6800
03/09/17	NOT SAMPLED - FREE PRODUCT (0.11 FT)						
06/23/17	NOT SAMPLED - FREE PRODUCT (0.02 FT)						
09/14/17	NOT SAMPLED						
12/12/17	NOT SAMPLED						
03/23/18	NOT SAMPLED						
06/21/18	NOT SAMPLED						
09/18/18	NOT SAMPLED						
12/20/18	NOT SAMPLED						
GRP SSTLs:	-	-	-	-	-	-	-
Inhalation SSTLs:	-	-	-	-	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-19		
INSTALLATION DATE:	09/21/11	WELL DEPTH (FT BTOC):	17.85	SCREEN INTERVAL (FT):	5.85 - 17.85	CASING ELEV (FT ABOVE MSL):	399.26	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				
MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
10/28/13	-	-	-	-
05/08/15	-	-	-	-
03/27/16	7.30	391.96	-	-
03/09/17	9.13	390.13	-	-
06/23/17	6.74	392.52	-	-
09/14/17	7.96	391.30	-	-
12/12/17	9.52	389.74	-	-
03/23/18	7.37	391.89	-	-
06/21/18	8.39	390.87	-	-
09/18/18	8.36	390.90	-	-
12/20/18	7.32	391.94	-	-

INTRINSIC GROUNDWATER DATA SUMMARY			
SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
10/28/13	1.51	6.63	28.7
05/08/15	-	6.57	0.8
03/27/16	2.03	7.26	19.4
03/09/17	1.88	6.94	33.6
06/23/17	-	-	-
09/14/17	-	-	-
12/12/17	-	-	-
03/23/18	-	-	-
06/21/18	-	-	-
09/18/18	-	-	-
12/20/18	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-19		
INSTALLATION DATE:	09/21/11	WELL DEPTH (FT BTOC):	17.85	SCREEN INTERVAL (FT):	5.85 - 17.85	CASING ELEV (FT ABOVE MSL):	399.26	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
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
10/28/13	0.4960	0.4440	0.0332	0.0155	0.0934	0.5861	-
05/08/15	0.3260	0.6600	0.8640	0.1310	1.2700	2.9250	0.1340
10/31/15	CA VIA RNA WITH MEME						
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	0.1300	1.3400	1.3500	0.4570	1.7500	4.8970	0.1200
03/09/17	NOT SAMPLED						
06/23/17	NOT SAMPLED						
09/14/17	NOT SAMPLED						
12/12/17	NOT SAMPLED						
03/23/18	NOT SAMPLED						
06/21/18	NOT SAMPLED						
09/18/18	NOT SAMPLED						
12/20/18	NOT SAMPLED						
GRP SSTLs:	-	-	-	-	-	-	-
Inhalation SSTLs:	-	-	-	-	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-20		
INSTALLATION DATE:	09/21/11	WELL DEPTH (FT BTOC):	11.85	SCREEN INTERVAL (FT):	4.85 - 11.85	CASING ELEV (FT ABOVE MSL):	399.54	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				
MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
10/28/13	-	-	-	-
05/08/15	-	-	-	-
03/27/16	5.85	393.69	-	-
03/09/17	5.54	394.00	-	-
06/23/17	2.39	397.15	-	-
09/14/17	4.73	394.81	-	-
12/12/17	6.35	393.19	-	-
03/23/18	4.88	394.66	-	-
06/21/18	7.89	391.65	-	-
09/18/18	7.42	392.12	-	-
12/20/18	7.83	391.71	-	-

INTRINSIC GROUNDWATER DATA SUMMARY			
SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
10/28/13	1.77	6.49	36.3
05/08/15	-	6.67	-7.7
03/27/16	2.67	6.55	20.9
03/09/17	2.32	6.81	44.2
06/23/17	-	-	-
09/14/17	-	-	-
12/12/17	-	-	-
03/23/18	-	-	-
06/21/18	-	-	-
09/18/18	-	-	-
12/20/18	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-20		
INSTALLATION DATE:	09/21/11	WELL DEPTH (FT BTOC):	11.85	SCREEN INTERVAL (FT):	4.85 - 11.85	CASING ELEV (FT ABOVE MSL):	399.54	WELL TYPE:	II
								DIAMETER (IN):	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
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
10/28/13	0.2450	0.6330	<0.05	0.0811	0.2600	0.9741	-
05/08/15	0.0135	0.2680	0.0153	0.0132	0.0169	0.3134	0.0140
10/31/15	CA VIA RNA WITH MEME						
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	0.1190	0.3390	0.0071	0.0066	0.0368	0.3895	0.0250
03/09/17	NOT SAMPLED						
06/23/17	NOT SAMPLED						
09/14/17	NOT SAMPLED						
12/12/17	NOT SAMPLED						
03/23/18	NOT SAMPLED						
06/21/18	NOT SAMPLED						
09/18/18	NOT SAMPLED						
12/20/18	NOT SAMPLED						
GRP SSTLs:	-	-	-	-	-	-	-
Inhalation SSTLs:	-	-	-	-	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-21		
INSTALLATION DATE:	09/20/11	WELL DEPTH (FT BTOC):	18.85	SCREEN INTERVAL (FT):	3.85 - 18.85	CASING ELEV (FT ABOVE MSL):	400.18	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				
MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
10/28/13	-	-	-	-
05/08/15	-	-	-	-
03/27/16	4.21	395.97	-	-
03/09/17	7.33	392.85	-	-
06/23/17	3.30	396.88	-	-
09/14/17	6.16	394.02	-	-
12/12/17	7.74	392.44	-	-
03/23/18	6.07	394.11	-	-
06/21/18	9.14	391.04	-	-
09/18/18	8.63	391.55	-	-
12/20/18	3.88	396.30	-	-

INTRINSIC GROUNDWATER DATA SUMMARY			
SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
10/28/13	1.69	6.25	49.2
05/08/15	-	6.61	-4.9
03/27/16	3.05	6.46	25.8
03/09/17	2.78	6.72	37.4
06/23/17	-	-	-
09/14/17	-	-	-
12/12/17	-	-	-
03/23/18	-	-	-
06/21/18	-	-	-
09/18/18	-	-	-
12/20/18	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-21		
INSTALLATION DATE:	09/20/11	WELL DEPTH (FT BTOC):	18.85	SCREEN INTERVAL (FT):	3.85 - 18.85	CASING ELEV (FT ABOVE MSL):	400.18	WELL TYPE:	II
								DIAMETER (IN):	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
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
10/28/13	0.0374	0.0064	<0.005	0.1000	0.1710	0.2774	-
05/08/15	0.0230	0.0160	0.0085	0.0678	0.1050	0.1973	0.0900
10/31/15	CA VIA RNA WITH MEME						
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	0.0300	0.0333	<0.00098	0.0234	0.0232	0.0799	0.0390
03/09/17	NOT SAMPLED						
06/23/17	NOT SAMPLED						
09/14/17	NOT SAMPLED						
12/12/17	NOT SAMPLED						
03/23/18	NOT SAMPLED						
06/21/18	NOT SAMPLED						
09/18/18	NOT SAMPLED						
12/20/18	NOT SAMPLED						
GRP SSTLs:	-	-	-	-	-	-	-
Inhalation SSTLs:	-	-	-	-	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-22		
INSTALLATION DATE:	09/21/11	WELL DEPTH (FT BTOC):	18.85	SCREEN INTERVAL (FT):	3.85 - 18.85	CASING ELEV (FT ABOVE MSL):	398.56	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				
MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
10/28/13	-	-	-	-
05/08/15	-	-	-	-
03/27/16	6.98	391.58	-	-
03/09/17	8.42	390.14	-	-
06/23/17	3.98	394.58	-	-
09/14/17	7.27	391.29	-	-
12/12/17	8.52	390.04	-	-
03/23/18	6.99	391.57	-	-
06/21/18	8.33	390.23	-	-
09/18/18	9.13	389.43	-	-
12/20/18	6.96	391.60	-	-

INTRINSIC GROUNDWATER DATA SUMMARY			
SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
10/28/13	2.53	6.60	30.4
05/08/15	-	6.40	7.5
03/27/16	2.00	6.78	8.0
03/09/17	2.44	6.61	29.3
06/23/17	-	-	-
09/14/17	-	-	-
12/12/17	-	-	-
03/23/18	-	-	-
06/21/18	-	-	-
09/18/18	-	-	-
12/20/18	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-22		
INSTALLATION DATE:	09/21/11	WELL DEPTH (FT BTOC):	18.85	SCREEN INTERVAL (FT):	3.85 - 18.85	CASING ELEV (FT ABOVE MSL):	398.56	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
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
10/28/13	4.7600	8.2500	<0.1	2.3000	4.4900	15.0400	-
05/08/15	0.3520	0.4810	0.0193	<0.001	0.3650	0.8653	0.0430
10/31/15	CA VIA RNA WITH MEME						
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	0.8630	1.5700	0.3410	0.2690	0.4250	2.6050	0.0570
03/09/17	NOT SAMPLED						
06/23/17	NOT SAMPLED						
09/14/17	NOT SAMPLED						
12/12/17	NOT SAMPLED						
03/23/18	NOT SAMPLED						
06/21/18	NOT SAMPLED						
09/18/18	NOT SAMPLED						
12/20/18	NOT SAMPLED						
GRP SSTLs:	-	-	-	-	-	-	-
Inhalation SSTLs:	-	-	-	-	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-23		
INSTALLATION DATE:	09/21/11	WELL DEPTH (FT BTOC):	18.85	SCREEN INTERVAL (FT):	3.85 - 18.85	CASING ELEV (FT ABOVE MSL):	398.59	WELL TYPE:	II
								DIAMETER (IN):	2

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

POTENTIOMETRIC ELEVATION SUMMARY				
MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
10/28/13	-	-	-	-
05/08/15	-	-	-	-
03/27/16	7.16	391.43	-	-
03/09/17	8.65	389.94	-	-
06/23/17	4.19	394.40	-	-
09/14/17	7.52	391.07	-	-
12/12/17	8.87	389.72	-	-
03/23/18	7.18	391.41	-	-
06/21/18	8.72	389.87	-	-
09/18/18	9.10	389.49	-	-
12/20/18	7.02	391.57	-	-

INTRINSIC GROUNDWATER DATA SUMMARY			
SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
10/28/13	2.00	6.51	35.3
05/08/15	-	6.29	13.0
03/27/16	2.47	6.65	16.5
03/09/17	2.58	6.74	38.4
06/23/17	-	-	-
09/14/17	-	-	-
12/12/17	-	-	-
03/23/18	-	-	-
06/21/18	-	-	-
09/18/18	-	-	-
12/20/18	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-23		
INSTALLATION DATE:	09/21/11	WELL DEPTH (FT BTOC):	18.85	SCREEN INTERVAL (FT):	3.85 - 18.85	CASING ELEV (FT ABOVE MSL):	398.59	WELL TYPE:	II
								DIAMETER (IN):	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
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
10/28/13	2.9300	8.5800	<0.1	2.1600	1.5000	12.2400	-
05/08/15	0.3950	1.3600	0.0913	0.4310	0.4760	2.3583	0.1020
10/31/15	CA VIA RNA WITH MEME						
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	0.9170	1.2400	0.1220	0.1600	0.6860	2.2080	0.2140
03/09/17	NOT SAMPLED						
06/23/17	NOT SAMPLED						
09/14/17	NOT SAMPLED						
12/12/17	NOT SAMPLED						
03/23/18	NOT SAMPLED						
06/21/18	NOT SAMPLED						
09/18/18	NOT SAMPLED						
12/20/18	NOT SAMPLED						
GRP SSTLs:	-	-	-	-	-	-	-
Inhalation SSTLs:	-	-	-	-	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-24		
INSTALLATION DATE:	09/22/11	WELL DEPTH (FT BTOC):	15.85	SCREEN INTERVAL (FT):	3.85 - 15.85	CASING ELEV (FT ABOVE MSL):	398.64	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				
MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
10/28/13	-	-	-	-
05/08/15	-	-	-	-
03/27/16	7.25	391.39	-	-
03/09/17	8.88	389.76	-	-
06/23/17	4.41	394.23	-	-
09/14/17	7.74	390.90	-	-
12/12/17	9.04	389.60	-	-
03/23/18	7.24	391.40	-	-
06/21/18	8.18	390.46	-	-
09/18/18	9.06	389.58	-	-
12/20/18	7.44	391.20	-	-

INTRINSIC GROUNDWATER DATA SUMMARY			
SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
10/28/13	1.99	7.17	-0.4
05/08/15	-	6.79	-14.4
03/27/16	1.40	7.19	14.7
03/09/17	2.16	7.04	51.5
06/23/17	-	-	-
09/14/17	-	-	-
12/12/17	-	-	-
03/23/18	-	-	-
06/21/18	-	-	-
09/18/18	-	-	-
12/20/18	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-24		
INSTALLATION DATE:	09/22/11	WELL DEPTH (FT BTOC):	15.85	SCREEN INTERVAL (FT):	3.85 - 15.85	CASING ELEV (FT ABOVE MSL):	398.64	WELL TYPE:	II
								DIAMETER (IN):	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
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
10/28/13	0.7360	5.0800	<0.05	0.7790	0.1240	5.9830	-
05/08/15	0.1600	0.6230	0.0141	0.0050	0.0308	0.6729	0.0260
10/31/15	CA VIA RNA WITH MEME						
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	0.0928	0.1400	0.0020	0.0085	0.0168	0.1673	0.0160
03/09/17	NOT SAMPLED						
06/23/17	NOT SAMPLED						
09/14/17	NOT SAMPLED						
12/12/17	NOT SAMPLED						
03/23/18	NOT SAMPLED						
06/21/18	NOT SAMPLED						
09/18/18	NOT SAMPLED						
12/20/18	NOT SAMPLED						
GRP SSTLs:	-	-	-	-	-	-	-
Inhalation SSTLs:	-	-	-	-	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-25		
INSTALLATION DATE:	09/22/11	WELL DEPTH (FT BTOC):	20.85	SCREEN INTERVAL (FT):	5.85 - 20.85	CASING ELEV (FT ABOVE MSL):	403.86	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				
MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
10/28/13	-	-	-	-
05/08/15	-	-	-	-
03/27/16	12.05	391.81	-	-
03/09/17	13.27	390.59	-	-
06/23/17	7.90	395.96	-	-
09/14/17	12.13	391.73	-	-
12/12/17	13.58	390.28	-	-
03/23/18	12.24	391.62	-	-
06/21/18	13.07	390.79	-	-
09/18/18	13.85	390.01	-	-
12/20/18	12.16	391.70	-	-

INTRINSIC GROUNDWATER DATA SUMMARY			
SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
10/28/13	1.68	6.43	39.6
05/08/15	-	6.52	0.4
03/27/16	2.35	6.50	24.0
03/09/17	2.40	6.81	62.6
06/23/17	-	-	-
09/14/17	-	-	-
12/12/17	-	-	-
03/23/18	-	-	-
06/21/18	-	-	-
09/18/18	-	-	-
12/20/18	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-25		
INSTALLATION DATE:	09/22/11	WELL DEPTH (FT BTOC):	20.85	SCREEN INTERVAL (FT):	5.85 - 20.85	CASING ELEV (FT ABOVE MSL):	403.86	WELL TYPE:	II
								DIAMETER (IN):	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
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
10/28/13	<0.001	0.0015	<0.005	<0.001	<0.001	0.0015	-
05/08/15	<0.001	<0.001	<0.005	<0.001	<0.001	BDL	<0.005
10/31/15	CA VIA RNA WITH MEME						
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	0.0002	<0.00023	<0.00098	0.0021	0.0019	0.0040	<0.00386
03/09/17	NOT SAMPLED						
06/23/17	NOT SAMPLED						
09/14/17	NOT SAMPLED						
12/12/17	NOT SAMPLED						
03/23/18	NOT SAMPLED						
06/21/18	NOT SAMPLED						
09/18/18	NOT SAMPLED						
12/20/18	NOT SAMPLED						
GRP SSTLs:	-	-	-	-	-	-	-
Inhalation SSTLs:	-	-	-	-	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-26		
INSTALLATION DATE:	09/22/11	WELL DEPTH (FT BTOC):	20.85	SCREEN INTERVAL (FT):	3.85 - 18.85	CASING ELEV (FT ABOVE MSL):	403.82	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

MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
10/28/13	-	-	-	-
05/08/15	-	-	-	-
03/27/16	9.43	394.39	-	-
03/09/17	11.33	392.49	-	-
06/23/17	5.96	397.86	-	-
09/14/17	10.21	393.61	-	-
12/12/17	11.75	392.07	-	-
03/23/18	8.14	395.68	-	-
06/21/18	9.18	394.64	-	-
09/18/18	9.85	393.97	-	-
12/20/18	8.00	395.82	-	-

INTRINSIC GROUNDWATER DATA SUMMARY

SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
10/28/13	1.54	6.21	51.8
05/08/15		5.88	35.0
03/27/16	3.69	6.48	25.0
03/09/17	2.76	6.63	74.3
06/23/17	-	-	-
09/14/17	-	-	-
12/12/17	-	-	-
03/23/18	-	-	-
06/21/18	-	-	-
09/18/18	-	-	-
12/20/18	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-26		
INSTALLATION DATE:	09/22/11	WELL DEPTH (FT BTOC):	20.85	SCREEN INTERVAL (FT):	3.85 - 18.85	CASING ELEV (FT ABOVE MSL):	403.82	WELL TYPE:	II
								DIAMETER (IN):	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
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
10/28/13	0.0012	<0.001	<0.005	<0.001	<0.001	BDL	-
05/08/15	0.0014	<0.001	<0.005	<0.001	<0.001	BDL	<0.005
10/31/15	CA VIA RNA WITH MEME						
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	0.0097	0.0007	<0.00098	0.0010	0.0062	0.0079	<0.00386
03/09/17	NOT SAMPLED						
06/23/17	NOT SAMPLED						
09/14/17	NOT SAMPLED						
12/12/17	NOT SAMPLED						
03/23/18	NOT SAMPLED						
06/21/18	NOT SAMPLED						
09/18/18	NOT SAMPLED						
12/20/18	NOT SAMPLED						
GRP SSTLs:	-	-	-	-	-	-	-
Inhalation SSTLs:	-	-	-	-	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-27		
INSTALLATION DATE:	09/22/11	WELL DEPTH (FT BTOC):	9.85	SCREEN INTERVAL (FT):	4.85 - 9.85	CASING ELEV (FT ABOVE MSL):	403.90	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				
MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
05/08/15	-	-	-	-
03/27/16	12.31	391.59	0.36	-
03/09/17	12.82	391.08	-	-
06/23/17	7.45	396.45	-	-
09/14/17	11.72	392.18	-	-
12/12/17	12.97	390.93	-	-
03/23/18	11.59	392.31	0.26	-
06/21/18	8.80	395.10	-	-
09/18/18	12.84	391.06	-	-
12/20/18	12.80	391.10	-	-

INTRINSIC GROUNDWATER DATA SUMMARY			
SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
05/08/15		7.20	-37.4
03/27/16	FREE PRODUCT (0.36 FT)		
03/09/17	3.02	6.96	17.4
06/23/17	-	-	-
09/14/17	-	-	-
12/12/17	-	-	-
03/23/18	FREE PRODUCT (0.26 FT)		
06/21/18	-	-	-
09/18/18	-	-	-
12/20/18	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-27		
INSTALLATION DATE:	09/22/11	WELL DEPTH (FT BTOC):	9.85	SCREEN INTERVAL (FT):	4.85 - 9.85	CASING ELEV (FT ABOVE MSL):	403.90	WELL TYPE:	II
								DIAMETER (IN):	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
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
10/28/13	NOT SAMPLED						
05/08/15	1.9400	10.3000	29.5000	3.7000	21.5000	65.0000	0.8000
10/31/15	CA VIA RNA WITH MEME						
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	NOT SAMPLED - FREE PRODUCT (0.36 FT)						
03/09/17	NOT SAMPLED						
06/23/17	NOT SAMPLED						
09/14/17	NOT SAMPLED						
12/12/17	NOT SAMPLED						
03/23/18	NOT SAMPLED - FREE PRODUCT (0.26 FT)						
06/21/18	NOT SAMPLED						
09/18/18	NOT SAMPLED						
12/20/18	NOT SAMPLED						
GRP SSTLs:	-	-	-	-	-	-	-
Inhalation SSTLs:	-	-	-	-	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-28		
INSTALLATION DATE:	09/22/11	WELL DEPTH (FT BTOC):	12.85	SCREEN INTERVAL (FT):	5.85 - 12.85	CASING ELEV (FT ABOVE MSL):	403.99	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

MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS REMOVED
05/08/15	-	-	0.60	-
03/27/16	12.46	391.53	-	-
03/09/17	12.47	391.52	-	-
06/23/17	7.07	396.92	-	-
09/14/17	12.39	391.60	-	-
12/12/17	13.72	390.27	-	-
03/23/18	11.29	392.70	-	-
06/21/18	12.01	391.98	-	-
09/18/18	13.41	390.58	-	-
12/20/18	12.78	391.21	-	-

INTRINSIC GROUNDWATER DATA SUMMARY

SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
05/08/15	-	7.25	-39.8
03/27/16	3.02	7.17	14.0
03/09/17	2.88	7.31	29.8
06/23/17	-	-	-
09/14/17	-	-	-
12/12/17	-	-	-
03/23/18	-	-	-
06/21/18	-	-	-
09/18/18	-	-	-
12/20/18	-	-	-

Monitoring Point Data Summary Table

SITE NAME:	Jet-Pep #434			UST NUMBER:	16-02-01	WELL ID:	IW-28		
INSTALLATION DATE:	09/22/11	WELL DEPTH (FT BTOC):	12.85	SCREEN INTERVAL (FT):	5.85 - 12.85	CASING ELEV (FT ABOVE MSL):	403.99	WELL TYPE:	II
								DIAMETER (IN):	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
03/10/04	CA FREE PRODUCT RECOVERY VIA HYDROSKIMMER						
09/21/06	CA VIA MEME EVENTS						
10/21/11	CA VIA CHEMICAL INJECTION						
10/28/13	1.7100	8.6300	13.8000	3.1300	13.2000	38.7600	-
05/08/15	2.2700	15.2000	33.9000	3.0900	16.4000	68.5900	0.7830
10/31/15	CA VIA RNA WITH MEME						
01/18/16	NEW INCIDENT UST16-02-01 WAS ISSUED						
03/27/16	2.0000	13.7000	32.4000	4.0300	21.6000	71.7300	0.8120
03/09/17	NOT SAMPLED						
06/23/17	NOT SAMPLED						
09/14/17	NOT SAMPLED						
12/12/17	NOT SAMPLED						
03/23/18	NOT SAMPLED						
06/21/18	NOT SAMPLED						
09/18/18	NOT SAMPLED						
12/20/18	NOT SAMPLED						
GRP SSTLs:	-	-	-	-	-	-	-
Inhalation SSTLs:	-	-	-	-	-	-	-



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Figures

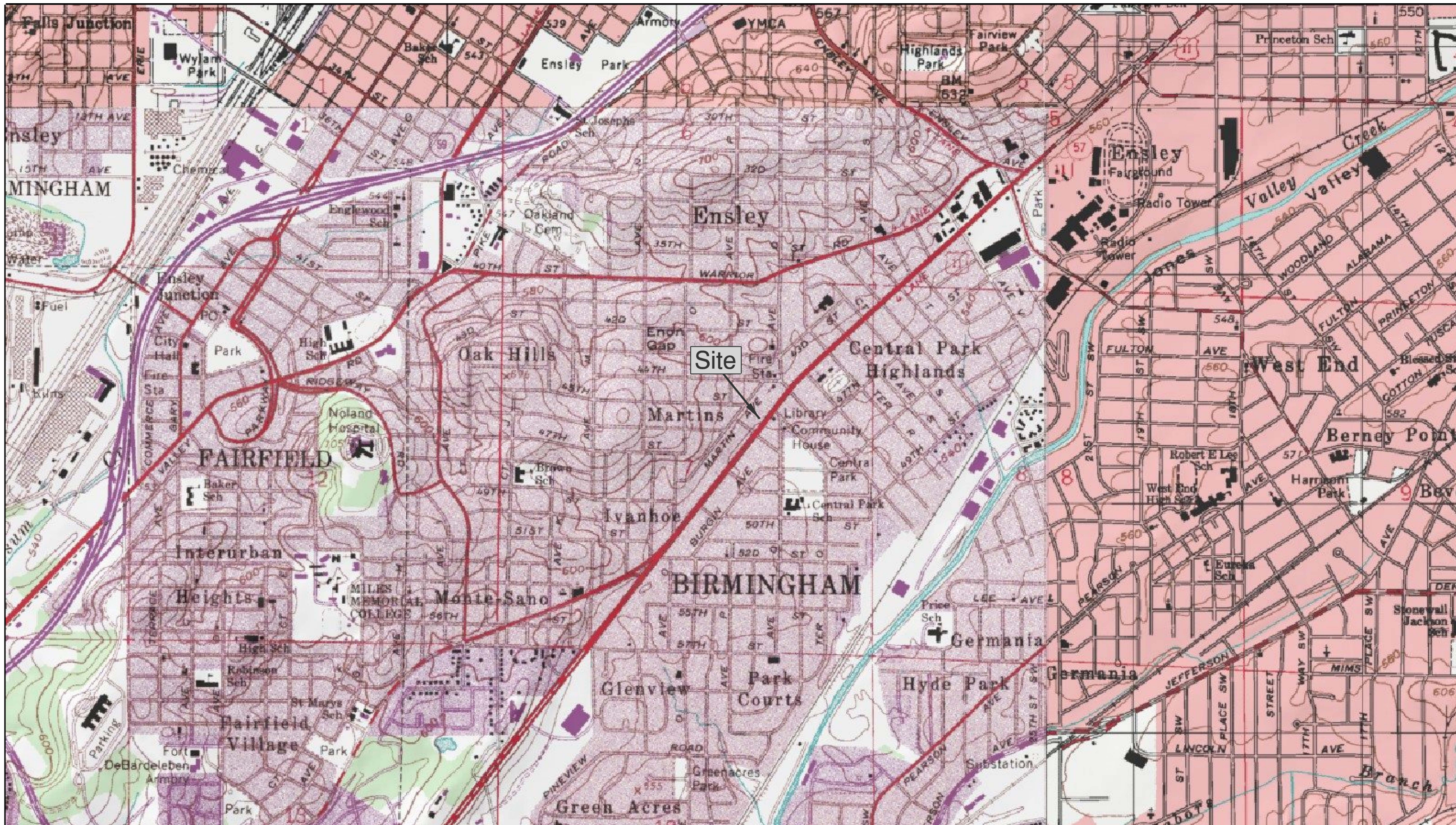
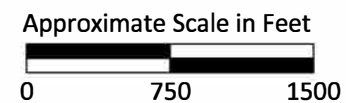


Figure 1
Topographic Map

Jet-Pep #434
1608 Bessemer Road
Birmingham, Jefferson County, Alabama



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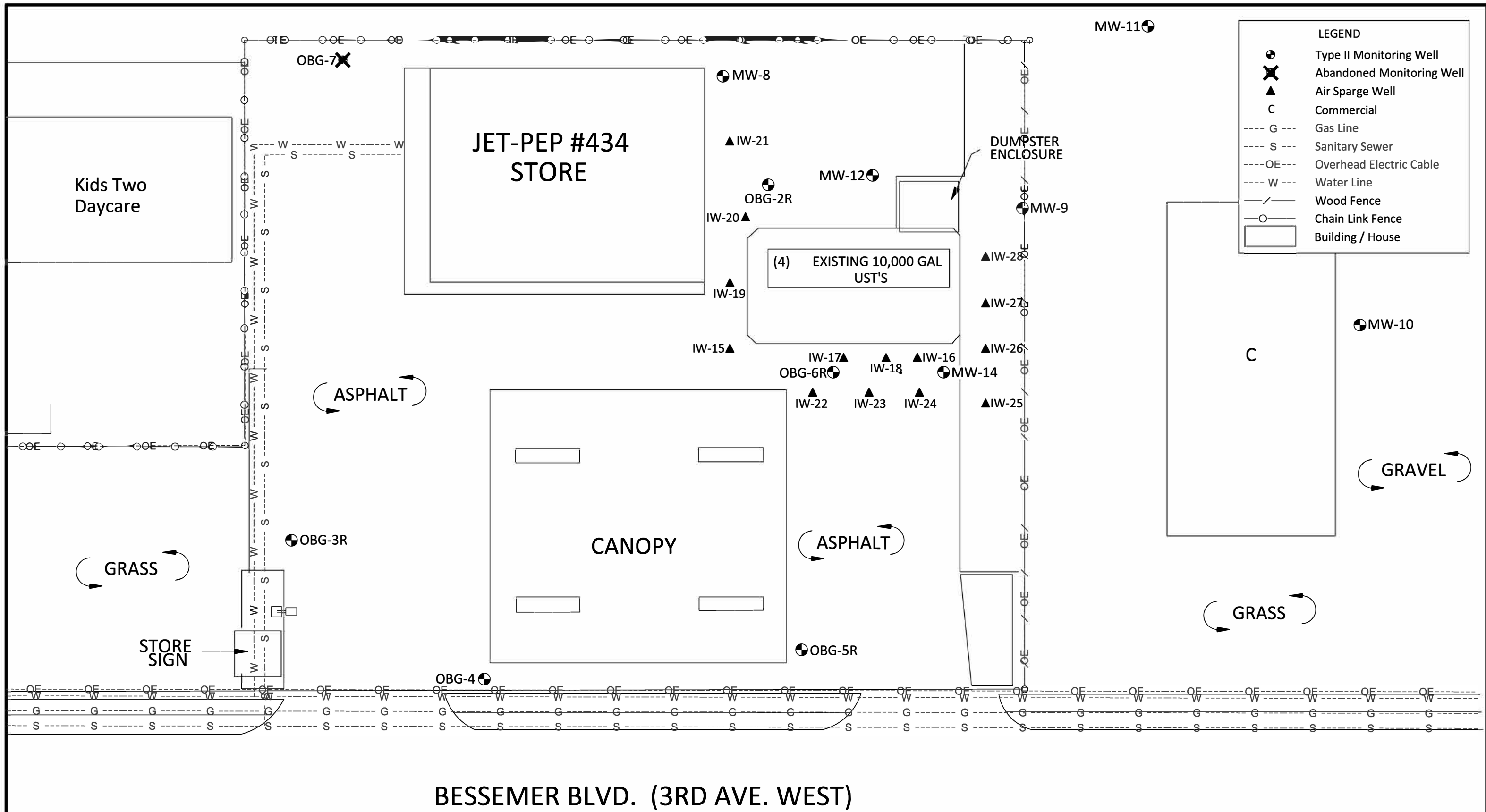
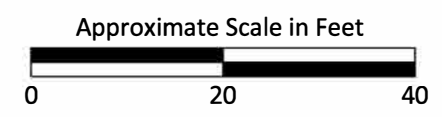
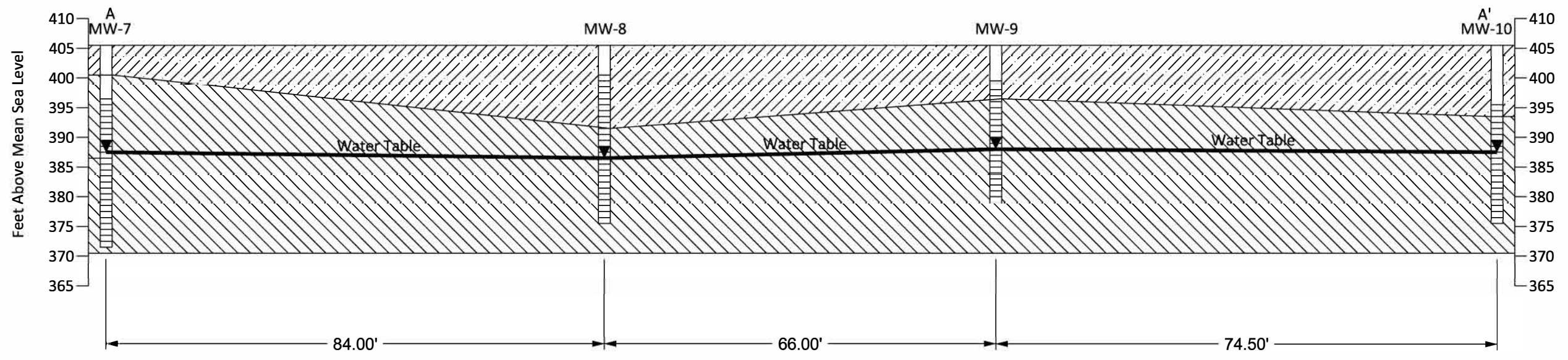






Figure 2
Site Map with Utility Locations

Jet-Pep #434
1608 Bessemer Road
Birmingham, Jefferson County, Alabama

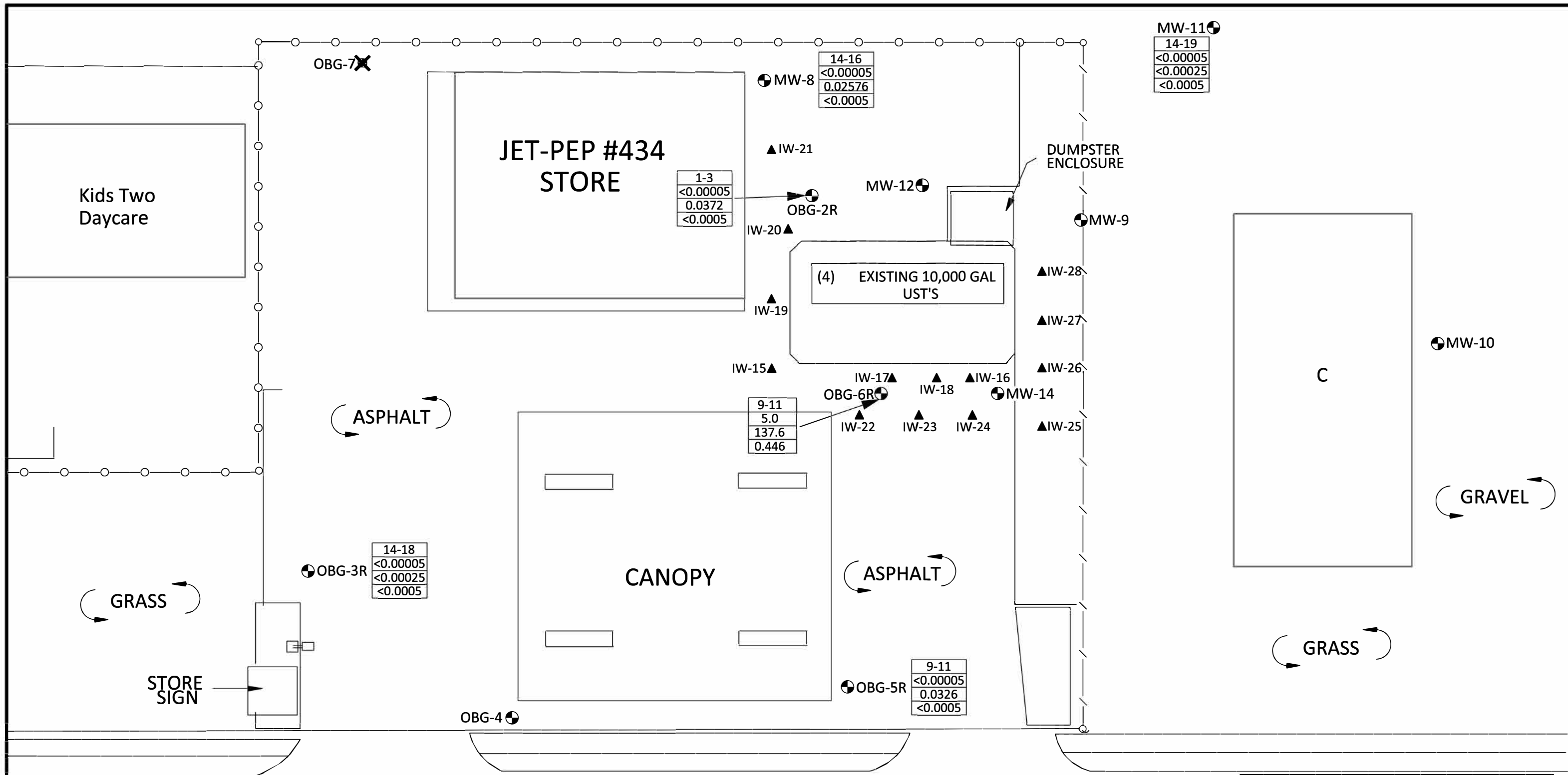




LEGEND

 Clay	 Screened Interval
 Sandy Clay	 Groundwater Level





BESSEMER BLVD. (3RD AVE. WEST)

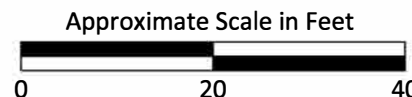
LEGEND									
	Type II Monitoring Well								
	Air Sparge Well (Injection Well)								
	Abandoned Monitoring Well								
<table border="1"><tr><td>0-3</td></tr><tr><td><0.00005</td></tr><tr><td><0.00025</td></tr><tr><td><0.0005</td></tr></table>	0-3	<0.00005	<0.00025	<0.0005	<table border="1"><tr><td>Depth (feet)</td></tr><tr><td>Benzene Concentration (mg/Kg)</td></tr><tr><td>BTEX Concentration (mg/Kg)</td></tr><tr><td>MTBE Concentration (mg/Kg)</td></tr></table>	Depth (feet)	Benzene Concentration (mg/Kg)	BTEX Concentration (mg/Kg)	MTBE Concentration (mg/Kg)
0-3									
<0.00005									
<0.00025									
<0.0005									
Depth (feet)									
Benzene Concentration (mg/Kg)									
BTEX Concentration (mg/Kg)									
MTBE Concentration (mg/Kg)									
C	Commercial								
	Wood Fence								
	Chain Link Fence								
	Building / House								

Figure 4 - Soil Constituent Concentration Map
September 07, 2004

Jet-Pep #434
1608 Bessemer Road
Birmingham, Jefferson County, Alabama



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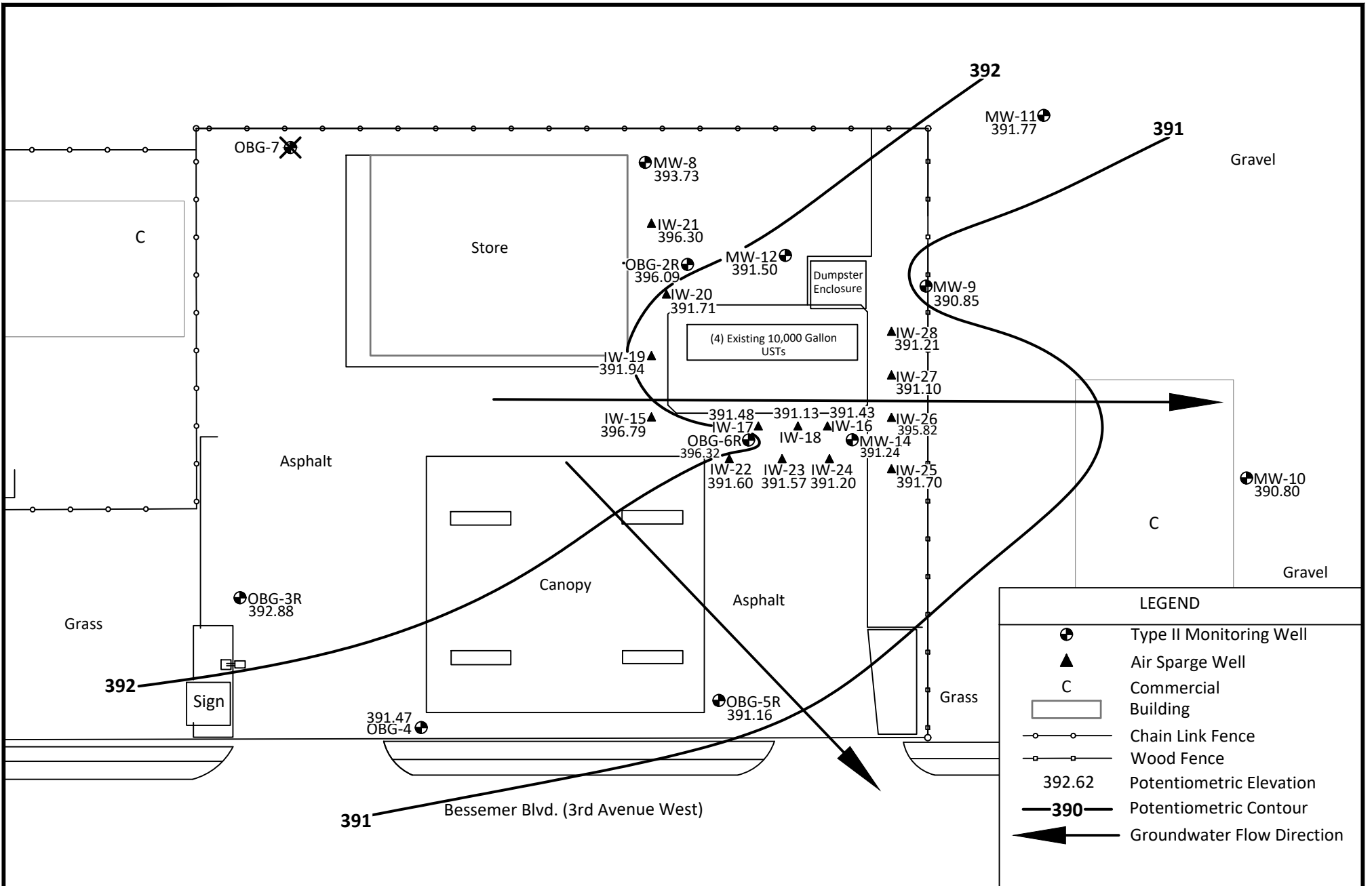
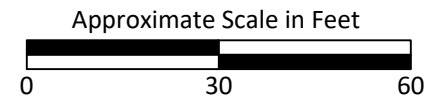


Figure 5 - Potentiometric Surface Map
December 20, 2018

Jet-Pep #434
1608 Bessemer Road
Birmingham, Jefferson County, Alabama



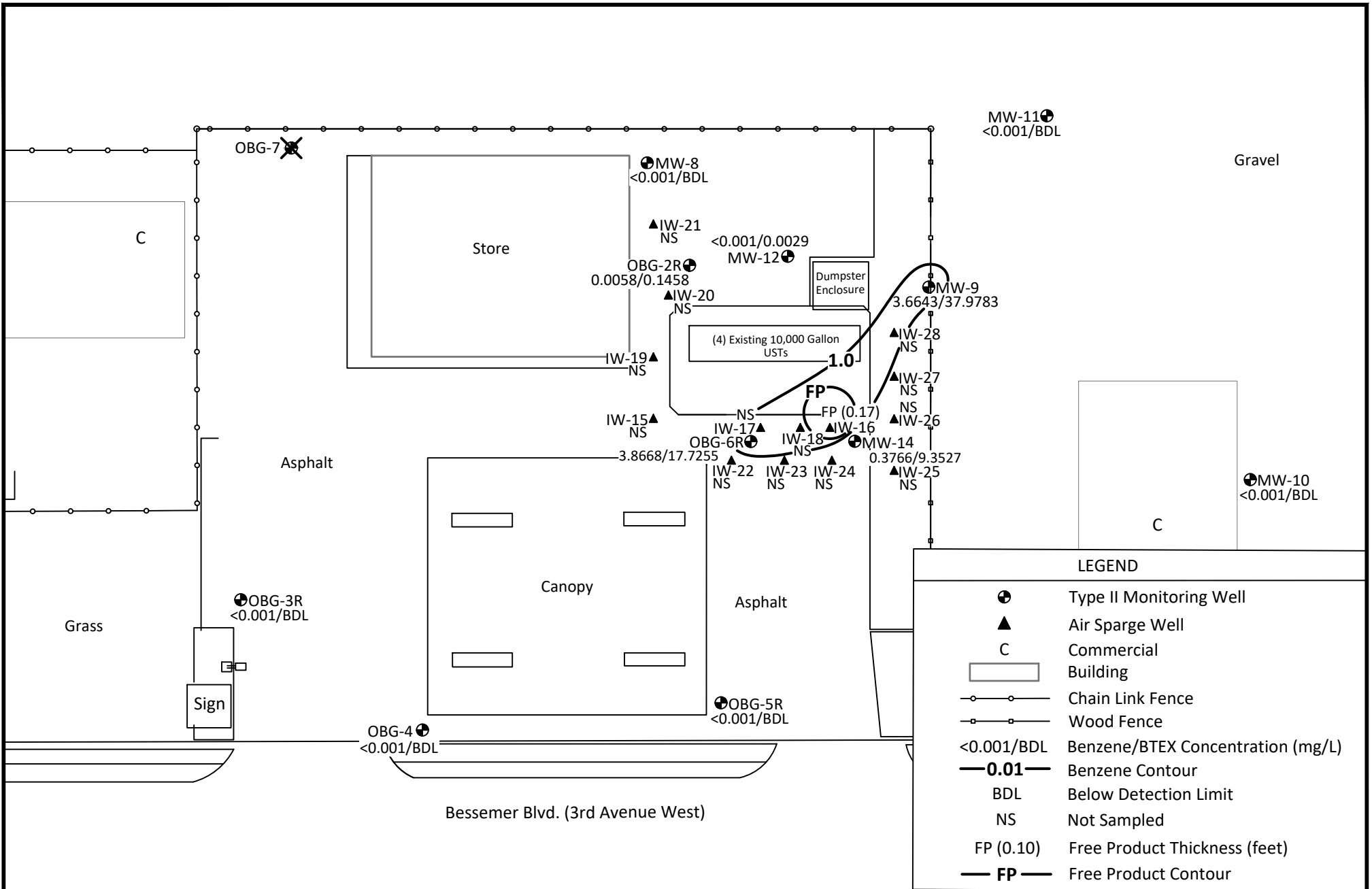
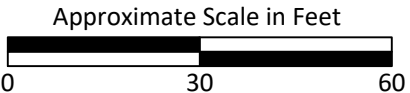


Figure 6 - Groundwater Analytical and Benzene Contour Map
December 20, 2018

Jet-Pep #434
1608 Bessemer Road
Birmingham, Jefferson County, Alabama



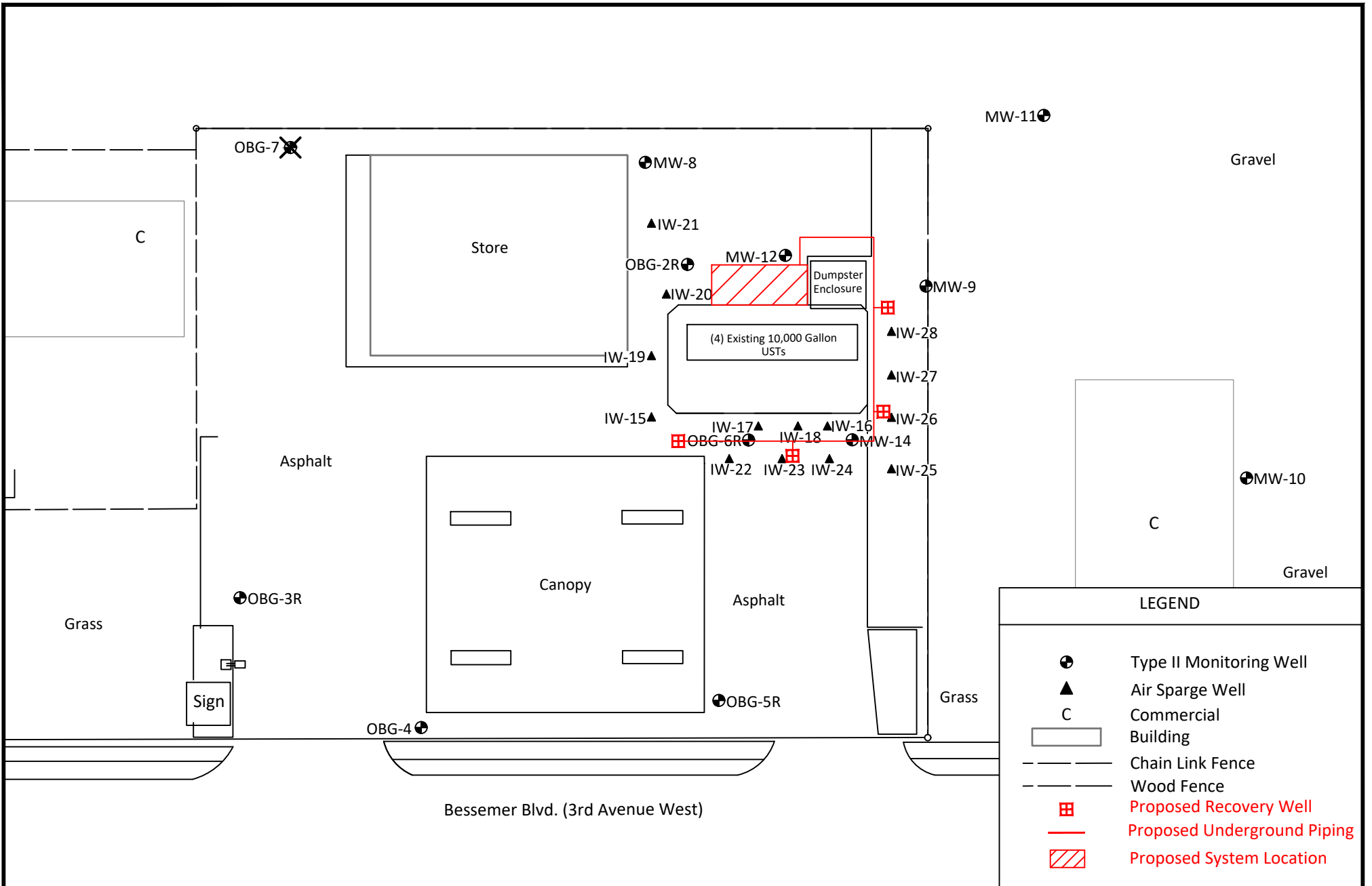
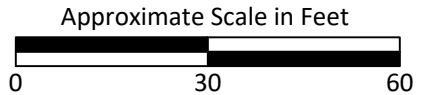


Figure 7
Proposed Underground Piping and Recovery Well Network

Jet-Pep #434
1608 Bessemer Road
Birmingham, Jefferson County, Alabama



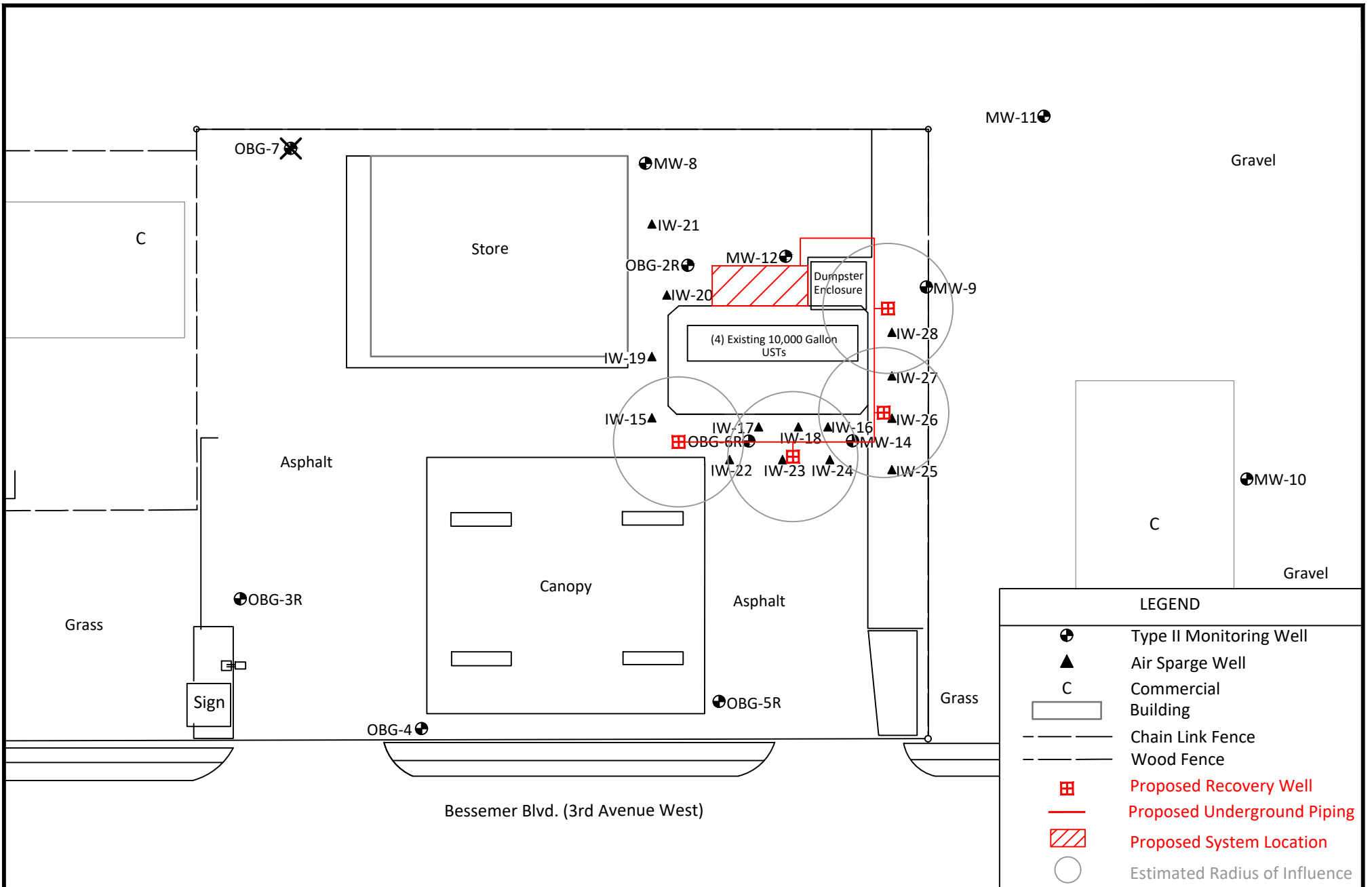
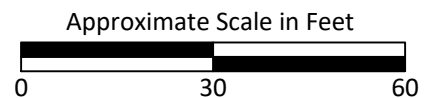


Figure 8
Recovery Well Layout with Estimated Radius of Influence

Jet-Pep #434
1608 Bessemer Road
Birmingham, Jefferson County, Alabama



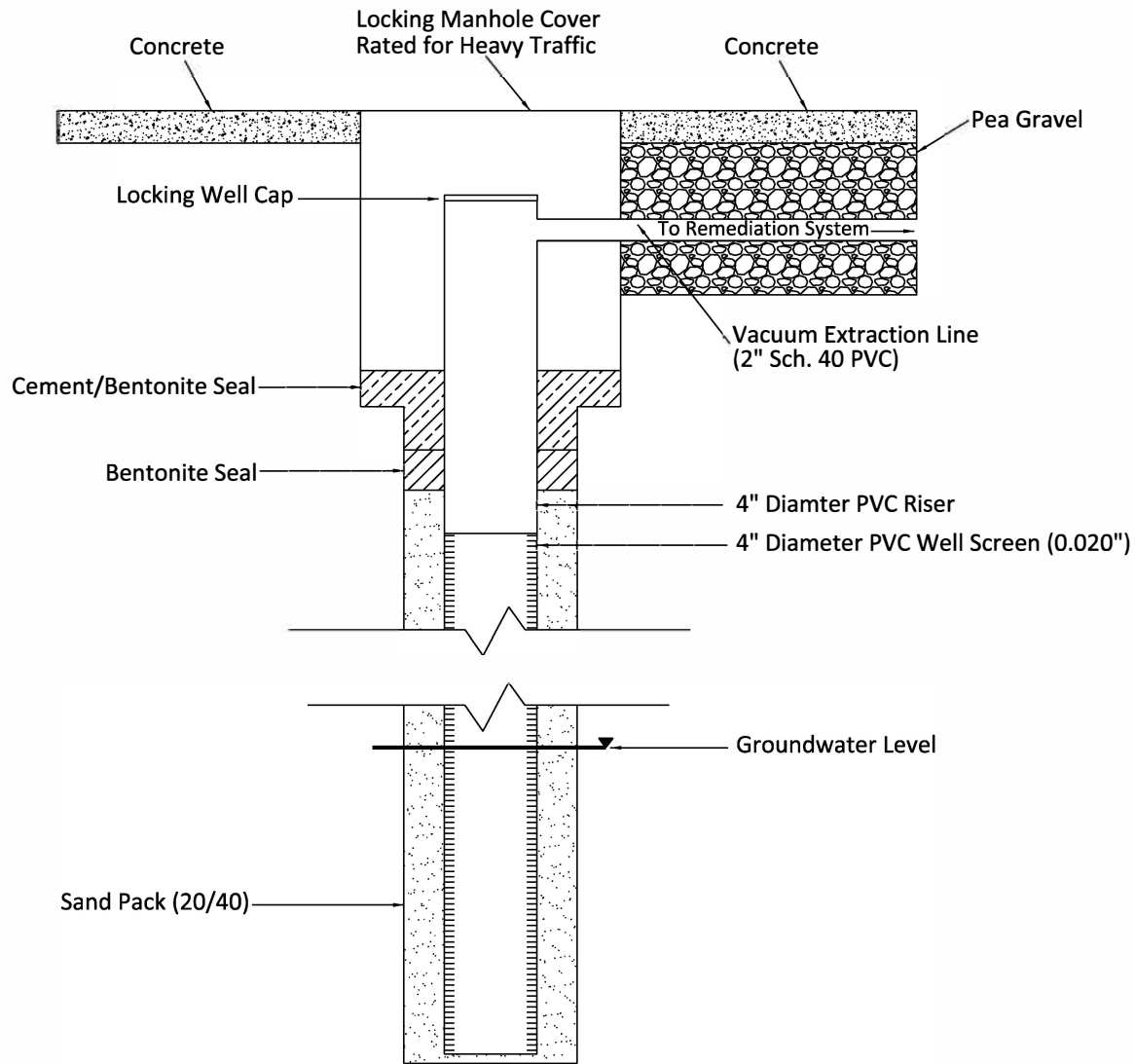


Figure 9
Recovery Well Detail

Jet-Pep #434
1608 Bessemer Road
Birmingham, Jefferson County, Alabama



NOT TO SCALE



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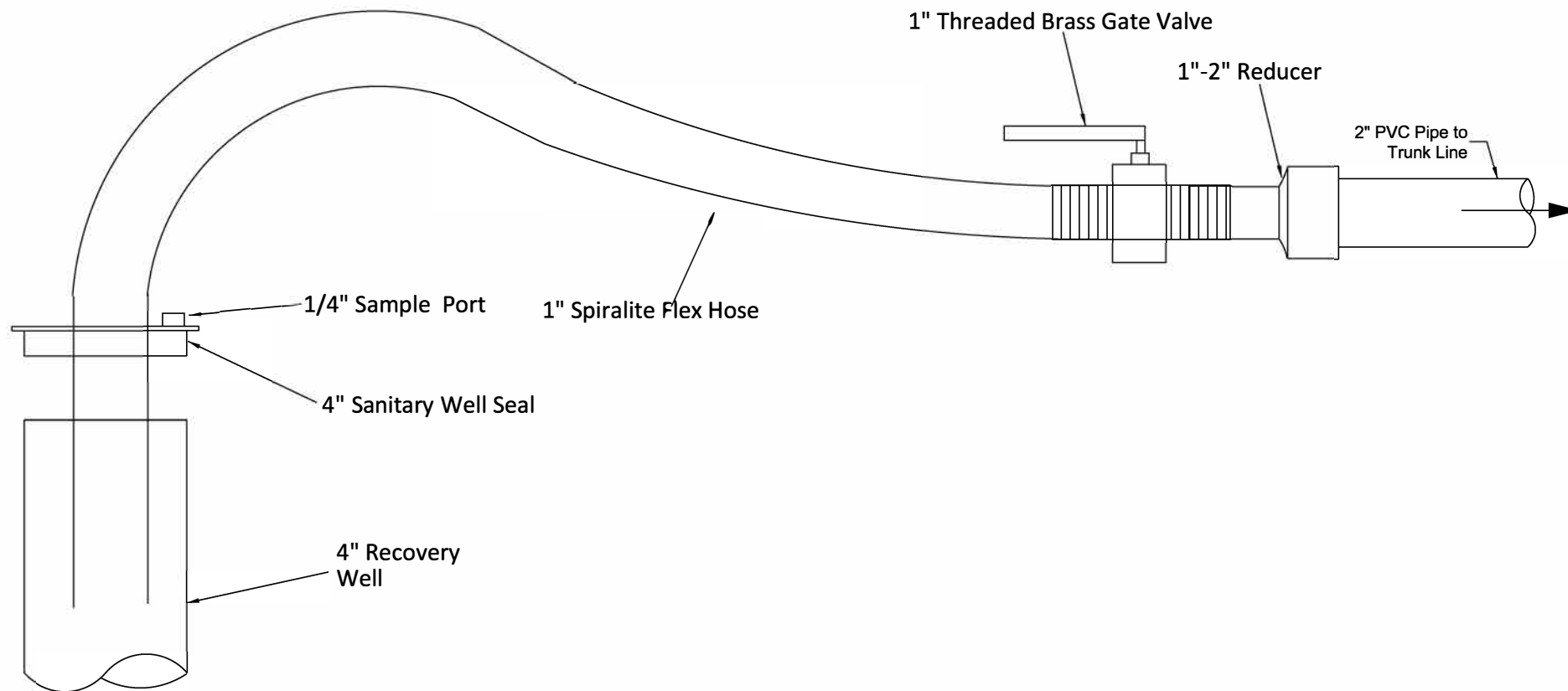


Figure 10
 Typical Well Head Connection for Recovery Well

Jet-Pep #434
 1608 Bessemer Road
 Birmingham, Jefferson County, Alabama



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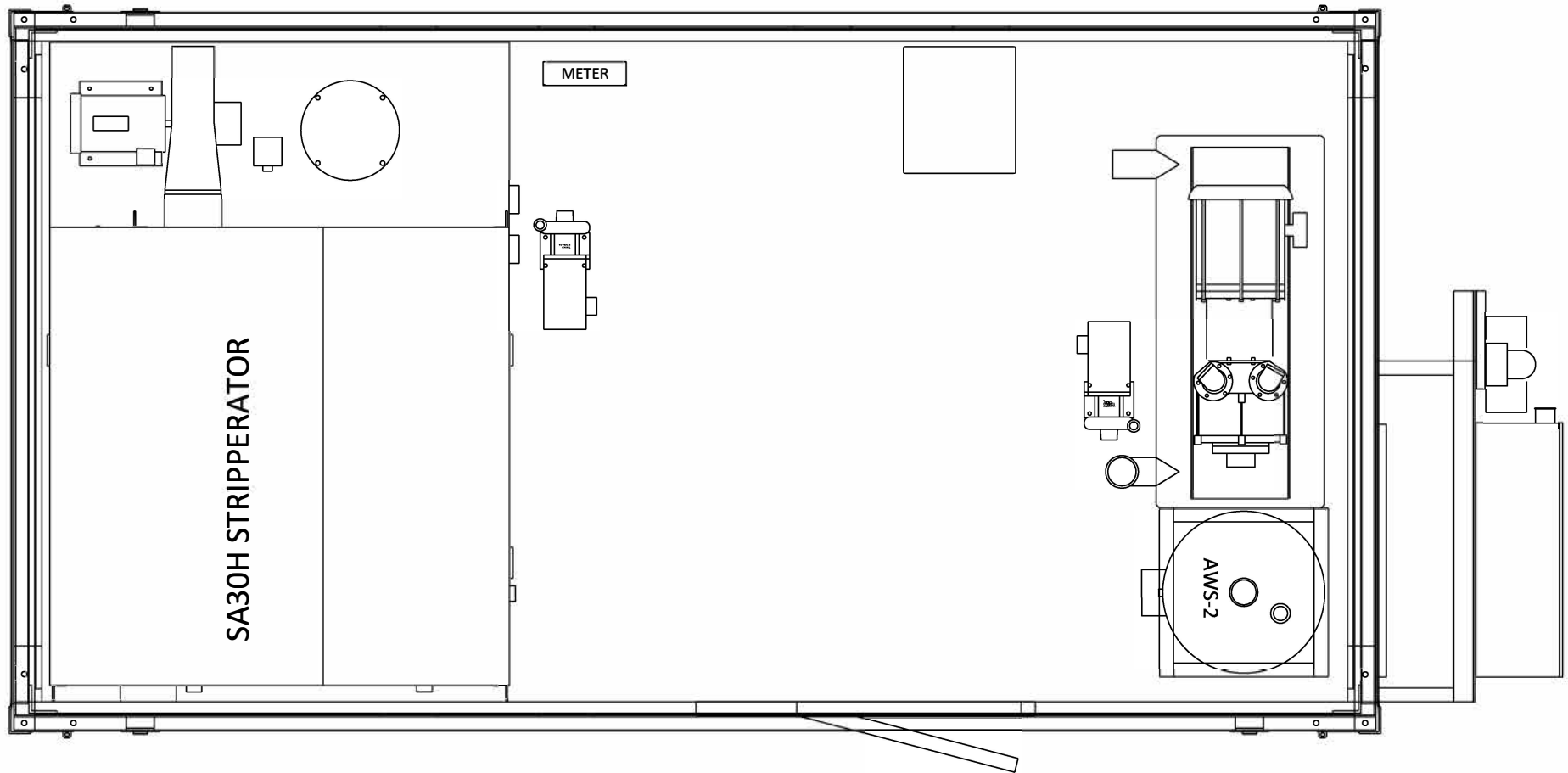


Figure 11
 Typical MPE System Diagram

Jet-Pep #434
 1608 Bessemer Road
 Birmingham, Jefferson County, Alabama



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ARBCA Tier 2 SSTLs

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc.at POE [mg/L]	Dry Leaching Factor to Groundwater (LFsw) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [-]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [-]	for POE [-]		at a POC Protective of a POE [mg/L]	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	1.00E+00	8.22E+01	6.91E-01	4.11E-01	4.11E-01
Toluene	1.00E+00	3.57E-01	1	1.00E+00	8.22E+01	2.30E+02	8.22E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	1.00E+00	8.22E-01	1.29E+02	5.75E+01	5.75E+01
Xylenes (mixed)	1.00E+01	2.30E-01	1	1.00E+00	8.22E-01	1.56E+02	1.75E+02	1.75E+02 #
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	1.00E+00	8.22E-01	1.52E+00	1.64E+00	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	1.00E+00	8.22E-01	2.96E+00	4.34E-02	4.34E-02 #
Benzo(a)anthracene	1.17E-03	1.98E-04	1	1.00E+00	8.22E-01	9.76E+00	9.40E-03	9.40E-03 #
Benzo(a)pyrene	2.00E-04	7.31E-05	1	1.00E+00	8.22E-01	4.55E+00	1.62E-03	1.62E-03 #
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	1.00E+00	8.22E-01	5.35E+00	1.50E-03	1.50E-03 #
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	1.00E+00	8.22E-01	3.21E+00	7.00E-04	7.00E-04 #
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	1.00E+00	8.22E+01	2.85E+00	8.00E-04	8.00E-04 #
Chrysene	1.60E-03	1.78E-04	1	1.00E+00	8.22E+01	1.85E+00	1.60E-03	1.60E-03 #
Fluoranthene	2.06E-01	1.44E-03	1	1.00E+00	8.22E+01	2.94E+01	2.06E-01	2.06E-01 #
Fluorene	1.46E-00	9.13E-03	1	1.00E+00	8.22E+01	4.46E+01	1.98E+00	1.98E+00 #
Naphthalene	2.00E-02	5.70E-02	1	1.00E+00	8.22E+01	2.88E+01	1.64E+00	1.64E+00
Phenanthrene	1.00E-00	5.01E-03	1	1.00E+00	8.22E+01	4.10E+01	1.00E+00	1.00E+00 #
Pyrene	1.35E-01	1.04E-03	1	1.00E+00	8.22E+01	2.66E+01	1.35E-01	1.35E-01 #
METALS								
Arsenic	-	3.20E-03	1	1.00E+00	8.22E-01	--	NA	NA
Barium	-	5.00E-03	1	1.00E+00	8.22E-01	--	NA	NA
Cadmium	-	2.74E-03	1	1.00E+00	8.22E-01	--	NA	NA
Chromium VI	-	1.07E-02	1	1.00E+00	8.22E-01	--	NA	NA
Lead	-	1.68E-03	1	1.00E+00	8.22E+01	-	NA	NA
Zinc	-	3.31E-03	1	1.00E+00	8.22E+01	-	NA	NA

*: Calculated concentrations exceeded saturated soil concentration and hence saturated soil concentrations are listed soil concentrations protective of groundwater.

#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC. Soil concentrations are presented on a dry weight basis.

NA: Not available

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc. at POE [mg/L]	Dry Leaching Factor to Groundwater (LF _{sw}) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [-]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [-]	for POE [-]		at a POC Protective of a POE 086-32 [mg/L]	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	4.32E+00	8.22E+01	6.91E-01	9.52E-02	4.11E-01
Toluene	1.00E+00	3.57E-01	1	4.32E+00	8.22E+01	2.30E+02	1.90E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	4.32E+00	8.22E+01	1.29E+02	1.33E+01	5.75E+01
Xylenes (mixed)	1.00E+01	2.30E-01	1	4.32E+00	8.22E+01	1.56E+02	1.75E+02	1.75E+02
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	4.32E+00	8.22E+01	1.52E+00	3.81E-01	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	4.32E+00	8.22E+01	2.96E+00	4.34E-02	4.34E-02
Benzo(a)anthracene	1.17E-03	1.98E-04	1	4.32E+00	8.22E+01	9.76E+00	9.40E-03	9.40E-03
Benzo(a)pyrene	2.00E-04	7.31E-05	1	4.32E+00	8.22E+01	4.55E+00	1.62E-03	1.62E-03
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	4.32E+00	8.22E+01	5.35E+00	1.50E-03	1.50E-03
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	4.32E+00	8.22E+01	3.21E+00	7.00E-04	7.00E-04
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	4.32E+00	8.22E+01	2.85E+00	8.00E-04	8.00E-04
Chrysene	1.60E-03	1.78E-04	1	4.32E+00	8.22E+01	1.85E+00	1.60E-03	1.60E-03
Fluoranthene	2.06E-01	1.44E-03	1	4.32E+00	8.22E+01	2.94E+01	2.06E-01	2.06E-01
Fluorene	1.46E+00	9.13E-03	1	4.32E+00	8.22E+01	4.46E+01	1.98E+00	1.98E+00
Naphthalene	2.00E-02	5.70E-02	1	4.32E+00	8.22E+01	2.88E+01	3.81E-01	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	4.32E+00	8.22E+01	4.10E+01	1.00E+00	1.00E+00
Pyrene	1.35E-01	1.04E-03	1	4.32E+00	8.22E+01	2.66E+01	1.35E-01	1.35E-01
METALS								
Arsenic	--	3.20E-03	1	4.32E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	4.32E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	4.32E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	4.32E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	4.32E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	4.32E+00	8.22E+01	--	NA	NA

*: Calculated concentrations exceeded saturated soil concentration and hence saturated soil concentrations are listed soil concentrations protective of groundwater.

#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC. Soil concentrations are presented on a dry weight basis.

NA: Not available

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc.at POE [mg/L]	Dry Leaching Factor to Groundwater (LFsw) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [-]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [-]	for POE [-]		at a POC Protective of a POE [mg/L] <i>0.86-4</i>	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	3.36E+00	8.22E+01	6.91E-01	1.22E-01	4.11E-01
Toluene	1.00E+00	3.57E-01	1	3.36E+00	8.22E+01	2.30E+02	2.44E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	3.36E+00	8.22E+01	1.29E+02	1.71E+01	5.75E+01
Xylenes (mixed)	1.00E+01	2.30E-01	1	3.36E+00	8.22E+01	1.56E+02	1.75E+02	1.75E+02 #
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	3.36E+00	8.22E+01	1.52E+00	4.89E-01	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	3.36E+00	8.22E+01	2.96E+00	4.34E-02	4.34E-02 #
Benzo(a)anthracene	1.17E-03	1.98E-04	1	3.36E+00	8.22E+01	9.76E+00	9.40E-03	9.40E-03 #
Benzo(a)pyrene	2.00E-04	7.31E-05	1	3.36E+00	8.22E+01	4.55E+00	1.62E-03	1.62E-03 #
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	3.36E+00	8.22E+01	5.35E+00	1.50E-03	1.50E-03 #
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	3.36E+00	8.22E+01	3.21E+00	7.00E-04	7.00E-04 #
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	3.36E+00	8.22E+01	2.85E+00	8.00E-04	8.00E-04 #
Chrysene	1.60E-03	1.78E-04	1	3.36E+00	8.22E+01	1.85E+00	1.60E-03	1.60E-03 #
Fluoranthene	2.06E-01	1.44E-03	1	3.36E+00	8.22E+01	2.94E+01	2.06E-01	2.06E-01 #
Fluorene	1.46E+00	9.13E-03	1	3.36E+00	8.22E+01	4.46E+01	1.98E+00	1.98E+00 #
Naphthalene	2.00E-02	5.70E-02	1	3.36E+00	8.22E+01	2.88E+01	4.89E-01	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	3.36E+00	8.22E+01	4.10E+01	1.00E+00	1.00E+00 #
Pyrene	1.35E-01	1.04E-03	1	3.36E+00	8.22E+01	2.66E+01	1.35E-01	1.35E-01 #
METALS								
Arsenic	--	3.20E-03	1	3.36E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	3.36E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	3.36E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	3.36E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	3.36E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	3.36E+00	8.22E+01	--	NA	NA

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#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC. Soil concentrations are presented on a dry weight basis.

NA: Not available

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc. at POE [mg/L]	Dry Leaching Factor to Groundwater (LFsw) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [-]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [-]	for POE [-]		at a POC Protective of a POE [mg/L] <i>OBG-SR</i>	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	2.00E+00	8.22E+01	6.91E-01	2.06E-01	4.11E-01
Toluene	1.00E+00	3.57E-01	1	2.00E+00	8.22E+01	2.30E+02	4.11E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	2.00E+00	8.22E+01	1.29E+02 *	2.88E+01	5.75E+01
Xylenes (mixed)	1.00E+01	2.30E-01	1	2.00E+00	8.22E+01	1.56E+02 *	1.75E+02 #	1.75E+02 #
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	2.00E+00	8.22E+01	1.52E+00	8.22E-01	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	2.00E+00	8.22E+01	2.96E+00 *	4.34E-02 #	4.34E-02 #
Benzo(a)anthracene	1.17E-03	1.98E-04	1	2.00E+00	8.22E+01	9.76E+00 *	9.40E-03 #	9.40E-03 #
Benzo(a)pyrene	2.00E-04	7.31E-05	1	2.00E+00	8.22E+01	4.55E+00 *	1.62E-03 #	1.62E-03 #
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	2.00E+00	8.22E+01	5.35E+00 *	1.50E-03 #	1.50E-03 #
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	2.00E+00	8.22E+01	3.21E+00 *	7.00E-04 #	7.00E-04 #
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	2.00E+00	8.22E+01	2.85E+00 *	8.00E-04 #	8.00E-04 #
Chrysene	1.60E-03	1.78E-04	1	2.00E+00	8.22E+01	1.85E+00 *	1.60E-03 #	1.60E-03 #
Fluoranthene	2.06E-01	1.44E-03	1	2.00E+00	8.22E+01	2.94E+01 *	2.06E-01 #	2.06E-01 #
Fluorene	1.46E+00	9.13E-03	1	2.00E+00	8.22E+01	4.46E+01 *	1.98E+00 #	1.98E+00 #
Naphthalene	2.00E-02	5.70E-02	1	2.00E+00	8.22E+01	2.88E+01	8.22E-01	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	2.00E+00	8.22E+01	4.10E+01 *	1.00E+00 #	1.00E+00 #
Pyrene	1.35E-01	1.04E-03	1	2.00E+00	8.22E+01	2.66E+01 *	1.35E-01 #	1.35E-01 #
METALS								
Arsenic	--	3.20E-03	1	2.00E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	2.00E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	2.00E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	2.00E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	2.00E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	2.00E+00	8.22E+01	--	NA	NA

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#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC. Soil concentrations are presented on a dry weight basis.

NA: Not available

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc.at POE [mg/L]	Dry Leaching Factor to Groundwater (LFsw) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [-]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [-]	for POE [-]		at a POC Protective of a POE [mg/L] <i>0.65-62</i>	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	1.00E+00	8.22E+01	6.91E-01	4.11E-01	4.11E-01
Toluene	1.00E+00	3.57E-01	1	1.00E+00	8.22E+01	2.30E+02	8.22E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	1.00E+00	8.22E+01	1.29E+02	5.75E+01	5.75E+01
Xylenes (mixed)	1.00E+01	2.30E-01	1	1.00E+00	8.22E+01	1.56E+02	1.75E+02	1.75E+02
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	1.00E+00	8.22E+01	1.52E+00	1.64E+00	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	1.00E+00	8.22E+01	2.96E+00	4.34E-02	4.34E-02
Benzo(a)anthracene	1.17E-03	1.98E-04	1	1.00E+00	8.22E+01	9.76E+00	9.40E-03	9.40E-03
Benzo(a)pyrene	2.00E-04	7.31E-05	1	1.00E+00	8.22E+01	4.55E+00	1.62E-03	1.62E-03
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	1.00E+00	8.22E+01	5.35E+00	1.50E-03	1.50E-03
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	1.00E+00	8.22E+01	3.21E+00	7.00E-04	7.00E-04
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	1.00E+00	8.22E+01	2.85E+00	8.00E-04	8.00E-04
Chrysene	1.60E-03	1.78E-04	1	1.00E+00	8.22E+01	1.85E+00	1.60E-03	1.60E-03
Fluoranthene	2.06E-01	1.44E-03	1	1.00E+00	8.22E+01	2.94E+01	2.06E-01	2.06E-01
Fluorene	1.46E+00	9.13E-03	1	1.00E+00	8.22E+01	4.46E+01	1.98E+00	1.98E+00
Naphthalene	2.00E-02	5.70E-02	1	1.00E+00	8.22E+01	2.88E+01	1.64E+00	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	1.00E+00	8.22E+01	4.10E+01	1.00E+00	1.00E+00
Pyrene	1.35E-01	1.04E-03	1	1.00E+00	8.22E+01	2.66E+01	1.35E-01	1.35E-01
METALS								
Arsenic	--	3.20E-03	1	1.00E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	1.00E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	1.00E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	1.00E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	1.00E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	1.00E+00	8.22E+01	--	NA	NA

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#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC. Soil concentrations are presented on a dry weight basis.

NA: Not available

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc. at POE [mg/L]	Dry Leaching Factor to Groundwater (LF _{sw}) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [-]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [-]	for POE [-]		at a POC Protective of a POE MW-9 [mg/L]	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	1.09E+00	8.22E+01	6.91E-01	3.78E-01	4.11E-01
Toluene	1.00E+00	3.57E-01	1	1.09E+00	8.22E+01	2.30E-02	7.56E+01	8.22E-01
Ethylbenzene	7.00E-01	2.69E-01	1	1.09E+00	8.22E+01	1.29E-02	5.30E+01	5.75E-01
Xylenes (mixed)	1.00E+01	2.30E-01	1	1.09E+00	8.22E+01	1.56E-02	1.75E+02	1.75E-02
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	1.09E+00	8.22E+01	1.52E-00	1.51E+00	1.64E-00
Anthracene	4.34E-02	3.01E-03	1	1.09E+00	8.22E+01	2.96E-00	4.34E-02	4.34E-02
Benzo(a)anthracene	1.17E-03	1.98E-04	1	1.09E+00	8.22E+01	9.76E+00	9.40E-03	9.40E-03
Benzo(a)pyrene	2.00E-04	7.31E-05	1	1.09E+00	8.22E+01	4.55E+00	1.62E-03	1.62E-03
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	1.09E+00	8.22E+01	5.35E+00	1.50E-03	1.50E-03
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	1.09E+00	8.22E+01	3.21E+00	7.00E-04	7.00E-04
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	1.09E+00	8.22E+01	2.85E+00	8.00E-04	8.00E-04
Chrysene	1.60E-03	1.78E-04	1	1.09E+00	8.22E+01	1.85E+00	1.60E-03	1.60E-03
Fluoranthene	2.06E-01	1.44E-03	1	1.09E+00	8.22E+01	2.94E+01	2.06E-01	2.06E-01
Fluorene	1.46E+00	9.13E-03	1	1.09E+00	8.22E+01	4.46E+01	1.98E+00	1.98E+00
Naphthalene	2.00E-02	5.70E-02	1	1.09E+00	8.22E+01	2.88E+01	1.51E+00	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	1.09E+00	8.22E+01	4.10E+01	1.00E+00	1.00E+00
Pyrene	1.35E-01	1.04E-03	1	1.09E+00	8.22E+01	2.66E+01	1.35E-01	1.35E-01
METALS								
Arsenic	--	3.20E-03	1	1.09E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	1.09E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	1.09E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	1.09E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	1.09E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	1.09E+00	8.22E+01	--	NA	NA

*: Calculated concentrations exceeded saturated soil concentration and hence saturated soil concentrations are listed soil concentrations protective of groundwater.

#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC. Soil concentrations are presented on a dry weight basis.

NA: Not available

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc. at POE [mg/L]	Dry Leaching Factor to Groundwater (LF _{sw}) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [-]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [-]	for POE [-]		at a POC Protective of a POE MW-9 [mg/L]	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	1.00E+00	8.22E+01	6.91E-01	4.11E-01	4.11E-01
Toluene	1.00E+00	3.57E-01	1	1.00E+00	8.22E+01	2.30E+02	8.22E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	1.00E+00	8.22E+01	1.29E+02 *	5.75E+01	5.75E+01
Xylenes (mixed)	1.00E+01	2.30E-01	1	1.00E+00	8.22E+01	1.56E+02 *	1.75E+02 #	1.75E+02 #
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	1.00E+00	8.22E+01	1.52E+00	1.64E+00	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	1.00E+00	8.22E+01	2.96E+00 *	4.34E-02 #	4.34E-02 #
Benzo(a)anthracene	1.17E-03	1.98E-04	1	1.00E+00	8.22E+01	9.76E+00 *	9.40E-03 #	9.40E-03 #
Benzo(a)pyrene	2.00E-04	7.31E-05	1	1.00E+00	8.22E+01	4.55E+00 *	1.62E-03 #	1.62E-03 #
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	1.00E+00	8.22E+01	5.35E+00 *	1.50E-03 #	1.50E-03 #
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	1.00E+00	8.22E+01	3.21E+00 *	7.00E-04 #	7.00E-04 #
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	1.00E+00	8.22E+01	2.85E+00 *	8.00E-04 #	8.00E-04 #
Chrysene	1.60E-03	1.78E-04	1	1.00E+00	8.22E+01	1.85E+00 *	1.60E-03 #	1.60E-03 #
Fluoranthene	2.06E-01	1.44E-03	1	1.00E+00	8.22E+01	2.94E+01 *	2.06E-01 #	2.06E-01 #
Fluorene	1.46E+00	9.13E-03	1	1.00E+00	8.22E+01	4.46E+01 *	1.98E+00 #	1.98E+00 #
Naphthalene	2.00E-02	5.70E-02	1	1.00E+00	8.22E+01	2.88E+01	1.64E+00	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	1.00E+00	8.22E+01	4.10E+01 *	1.00E+00 #	1.00E+00 #
Pyrene	1.35E-01	1.04E-03	1	1.00E+00	8.22E+01	2.66E+01 *	1.35E-01 #	1.35E-01 #
METALS								
Arsenic	--	3.20E-03	1	1.00E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	1.00E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	1.00E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	1.00E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	1.00E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	1.00E+00	8.22E+01	--	NA	NA

*: Calculated concentrations exceeded saturated soil concentration and hence saturated soil concentrations are listed soil concentrations protective of groundwater.

#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC.

Soil concentrations are presented on a dry weight basis.

NA: Not available

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc. at POE [mg/L]	Dry Leaching Factor to Groundwater (L.Fsw) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [-]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [-]	for POE [-]		at a POC Protective of a POE [mg/L]	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	2.98E+00	8.22E+01	6.91E-01	1.38E-01	4.11E-01
Toluene	1.00E+00	3.57E-01	1	2.98E+00	8.22E+01	2.30E+02	2.76E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	2.98E+00	8.22E+01	1.29E+02	1.93E+01	5.75E+01
Xylenes (mixed)	1.00E+01	2.30E-01	1	2.98E+00	8.22E+01	1.56E+02	1.75E+02	1.75E+02
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	2.98E+00	8.22E+01	1.52E+00	5.52E-01	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	2.98E+00	8.22E+01	2.96E+00	4.34E-02	4.34E-02
Benzo(a)anthracene	1.17E-03	1.98E-04	1	2.98E+00	8.22E+01	9.76E+00	9.40E-03	9.40E-03
Benzo(a)pyrene	2.00E-04	7.31E-05	1	2.98E+00	8.22E+01	4.55E+00	1.62E-03	1.62E-03
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	2.98E+00	8.22E+01	5.35E+00	1.50E-03	1.50E-03
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	2.98E+00	8.22E+01	3.21E+00	7.00E-04	7.00E-04
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	2.98E+00	8.22E+01	2.85E+00	8.00E-04	8.00E-04
Chrysene	1.60E-03	1.78E-04	1	2.98E+00	8.22E+01	1.85E+00	1.60E-03	1.60E-03
Fluoranthene	2.06E-01	1.44E-03	1	2.98E+00	8.22E+01	2.94E+01	2.06E-01	2.06E-01
Fluorene	1.46E+00	9.13E-03	1	2.98E+00	8.22E+01	4.46E+01	1.98E+00	1.98E+00
Naphthalene	2.00E-02	5.70E-02	1	2.98E+00	8.22E+01	2.88E+01	5.52E-01	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	2.98E+00	8.22E+01	4.10E+01	1.00E+00	1.00E+00
Pyrene	1.35E-01	1.04E-03	1	2.98E+00	8.22E+01	2.66E+01	1.35E-01	1.35E-01
METALS								
Arsenic	--	3.20E-03	1	2.98E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	2.98E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	2.98E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	2.98E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	2.98E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	2.98E+00	8.22E+01	--	NA	NA

*: Calculated concentrations exceeded saturated soil concentration and hence saturated soil concentrations are listed soil concentrations protective of groundwater.

#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC. Soil concentrations are presented on a dry weight basis.

NA: Not available

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc.at POE [mg/L]	Dry Leaching Factor to Groundwater (LFsw) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [-]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [-]	for POE [-]		at a POC Protective of a POE MW-11 [mg/L]	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	1.78E+00	8.22E+01	6.91E-01	2.30E-01	4.11E-01
Toluene	1.00E+00	3.57E-01	1	1.78E+00	8.22E+01	2.30E+02	4.61E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	1.78E+00	8.22E+01	1.29E+02 *	3.23E+01	5.75E+01
Xylenes (mixed)	1.00E-01	2.30E-01	1	1.78E+00	8.22E+01	1.56E+02 *	1.75E+02 #	1.75E+02 #
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	1.78E+00	8.22E+01	1.52E+00	9.22E-01	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	1.78E+00	8.22E+01	2.96E+00 *	4.34E-02 #	4.34E-02 #
Benzo(a)anthracene	1.17E-03	1.98E-04	1	1.78E+00	8.22E+01	9.76E+00 *	9.40E-03 #	9.40E-03 #
Benzo(a)pyrene	2.00E-04	7.31E-05	1	1.78E+00	8.22E+01	4.55E+00 *	1.62E-03 #	1.62E-03 #
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	1.78E+00	8.22E+01	5.35E+00 *	1.50E-03 #	1.50E-03 #
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	1.78E+00	8.22E+01	3.21E+00 *	7.00E-04 #	7.00E-04 #
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	1.78E+00	8.22E+01	2.85E+00 *	8.00E-04 #	8.00E-04 #
Chrysene	1.60E-03	1.78E-04	1	1.78E+00	8.22E+01	1.85E+00 *	1.60E-03 #	1.60E-03 #
Fluoranthene	2.06E-01	1.44E-03	1	1.78E+00	8.22E+01	2.94E+01 *	2.06E-01 #	2.06E-01 #
Fluorene	1.46E-00	9.13E-03	1	1.78E+00	8.22E+01	4.46E+01 *	1.98E+00 #	1.98E+00 #
Naphthalene	2.00E-02	5.70E-02	1	1.78E+00	8.22E+01	2.88E+01	9.22E-01	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	1.78E+00	8.22E+01	4.10E+01 *	1.00E+00 #	1.00E+00 #
Pyrene	1.35E-01	1.04E-03	1	1.78E+00	8.22E+01	2.66E+01 *	1.35E-01 #	1.35E-01 #
METALS								
Arsenic	--	3.20E-03	1	1.78E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	1.78E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	1.78E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	1.78E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	1.78E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	1.78E+00	8.22E+01	--	NA	NA

*: Calculated concentrations exceeded saturated soil concentration and hence saturated soil concentrations are listed soil concentrations protective of groundwater.

#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC. Soil concentrations are presented on a dry weight basis.

NA: Not available

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc.at POE [mg/L]	Dry Leaching Factor to Groundwater (LFsw) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [-]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [-]	for POE [-]		at a POC Protective of a POE [mg/L]	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	1.00E+00	8.22E+01	6.91E-01	4.11E-01	4.11E-01
Toluene	1.00E-00	3.57E-01	1	1.00E+00	8.22E+01	2.30E+02	8.22E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	1.00E+00	8.22E+01	1.29E+02	5.75E+01	5.75E+01
Xylenes (mixed)	1.00E-01	2.30E-01	1	1.00E+00	8.22E+01	1.56E+02	1.75E+02	1.75E+02
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	1.00E+00	8.22E-01	1.52E+00	1.64E+00	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	1.00E+00	8.22E+01	2.96E+00	4.34E-02	4.34E-02
Benzo(a)anthracene	1.17E-03	1.98E-04	1	1.00E+00	8.22E+01	9.76E+00	9.40E-03	9.40E-03
Benzo(a)pyrene	2.00E-04	7.31E-05	1	1.00E+00	8.22E+01	4.55E+00	1.62E-03	1.62E-03
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	1.00E+00	8.22E-01	5.35E+00	1.50E-03	1.50E-03
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	1.00E+00	8.22E-01	3.21E+00	7.00E-04	7.00E-04
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	1.00E+00	8.22E-01	2.85E+00	8.00E-04	8.00E-04
Chrysene	1.60E-03	1.78E-04	1	1.00E+00	8.22E-01	1.85E+00	1.60E-03	1.60E-03
Fluoranthene	2.06E-01	1.44E-03	1	1.00E+00	8.22E-01	2.94E+01	2.06E-01	2.06E-01
Fluorene	1.46E+00	9.13E-03	1	1.00E+00	8.22E+01	4.46E+01	1.98E+00	1.98E+00
Naphthalene	2.00E-02	5.70E-02	1	1.00E+00	8.22E+01	2.88E+01	1.64E+00	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	1.00E+00	8.22E+01	4.10E+01	1.00E+00	1.00E+00
Pyrene	1.35E-01	1.04E-03	1	1.00E+00	8.22E+01	2.66E+01	1.35E-01	1.35E-01
METALS								
Arsenic	--	3.20E-03	1	1.00E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	1.00E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	1.00E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	1.00E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	1.00E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	1.00E+00	8.22E+01	--	NA	NA

*: Calculated concentrations exceeded saturated soil concentration and hence saturated soil concentrations are listed soil concentrations protective of groundwater.

#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC. Soil concentrations are presented on a dry weight basis.

NA: Not available

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc.at POE [mg/L]	Dry Leaching Factor to Groundwater (LFsw) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [-]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [-]	for POE [-]		at a POC Protective of a POE [mg/L]	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	1.00E+00	8.22E+01	6.91E-01	4.11E-01	4.11E-01
Toluene	1.00E+00	3.57E-01	1	1.00E+00	8.22E+01	2.30E+02	8.22E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	1.00E+00	8.22E+01	1.29E+02 *	5.75E+01	5.75E+01
Xylenes (mixed)	1.00E+01	2.30E-01	1	1.00E+00	8.22E+01	1.56E+02 *	1.75E+02 #	1.75E+02 #
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	1.00E+00	8.22E+01	1.52E+00	1.64E+00	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	1.00E+00	8.22E+01	2.96E+00 *	4.34E-02 #	4.34E-02 #
Benzo(a)anthracene	1.17E-03	1.98E-04	1	1.00E+00	8.22E+01	9.76E+00 *	9.40E-03 #	9.40E-03 #
Benzo(a)pyrene	2.00E-04	7.31E-05	1	1.00E+00	8.22E+01	4.55E+00 *	1.62E-03 #	1.62E-03 #
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	1.00E+00	8.22E+01	5.35E+00 *	1.50E-03 #	1.50E-03 #
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	1.00E+00	8.22E+01	3.21E+00 *	7.00E-04 #	7.00E-04 #
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	1.00E+00	8.22E+01	2.85E+00 *	8.00E-04 #	8.00E-04 #
Chrysene	1.60E-03	1.78E-04	1	1.00E+00	8.22E+01	1.85E+00 *	1.60E-03 #	1.60E-03 #
Fluoranthene	2.06E-01	1.44E-03	1	1.00E+00	8.22E+01	2.94E+01 *	2.06E-01 #	2.06E-01 #
Fluorene	1.46E+00	9.13E-03	1	1.00E+00	8.22E+01	4.46E+01 *	1.98E+00 #	1.98E+00 #
Naphthalene	2.00E-02	5.70E-02	1	1.00E+00	8.22E+01	2.88E+01	1.64E+00	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	1.00E+00	8.22E+01	4.10E+01 *	1.00E+00 #	1.00E+00 #
Pyrene	1.35E-01	1.04E-03	1	1.00E+00	8.22E+01	2.66E+01 *	1.35E-01 #	1.35E-01 #
METALS								
Arsenic	--	3.20E-03	1	1.00E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	1.00E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	1.00E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	1.00E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	1.00E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	1.00E+00	8.22E+01	--	NA	NA

*: Calculated concentrations exceeded saturated soil concentration and hence saturated soil concentrations are listed soil concentrations protective of groundwater.

#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC.

Soil concentrations are presented on a dry weight basis.

NA: Not available

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc. at POE [mg/L]	Dry Leaching Factor to Groundwater (LFsw) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [--]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [--]	for POE [--]		at a POC Protective of a POE POE [mg/L]	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	1.00E+00	8.22E+01	6.91E-01	4.11E-01	4.11E-01
Toluene	1.00E+00	3.57E-01	1	1.00E+00	8.22E+01	2.30E+02	8.22E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	1.00E+00	8.22E+01	1.29E+02 *	5.75E+01	5.75E+01
Xylenes (mixed)	1.00E+01	2.30E-01	1	1.00E+00	8.22E+01	1.56E+02 *	1.75E+02 #	1.75E+02 #
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	1.00E+00	8.22E+01	1.52E+00	1.64E+00	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	1.00E+00	8.22E+01	2.96E+00 *	4.34E-02 #	4.34E-02 #
Benzo(a)anthracene	1.17E-03	1.98E-04	1	1.00E+00	8.22E+01	9.76E+00 *	9.40E-03 #	9.40E-03 #
Benzo(a)pyrene	2.00E-04	7.31E-05	1	1.00E+00	8.22E+01	4.55E+00 *	1.62E-03 #	1.62E-03 #
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	1.00E+00	8.22E+01	5.35E+00 *	1.50E-03 #	1.50E-03 #
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	1.00E+00	8.22E+01	3.21E+00 *	7.00E-04 #	7.00E-04 #
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	1.00E+00	8.22E+01	2.85E+00 *	8.00E-04 #	8.00E-04 #
Chrysene	1.60E-03	1.78E-04	1	1.00E+00	8.22E+01	1.85E+00 *	1.60E-03 #	1.60E-03 #
Fluoranthene	2.06E-01	1.44E-03	1	1.00E+00	8.22E+01	2.94E+01 *	2.06E-01 #	2.06E-01 #
Fluorene	1.46E+00	9.13E-03	1	1.00E+00	8.22E+01	4.46E+01 *	1.98E+00 #	1.98E+00 #
Naphthalene	2.00E-02	5.70E-02	1	1.00E+00	8.22E+01	2.88E+01	1.64E+00	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	1.00E+00	8.22E+01	4.10E+01 *	1.00E+00 #	1.00E+00 #
Pyrene	1.35E-01	1.04E-03	1	1.00E+00	8.22E+01	2.66E+01 *	1.35E-01 #	1.35E-01 #
METALS								
Arsenic	--	3.20E-03	1	1.00E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	1.00E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	1.00E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	1.00E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	1.00E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	1.00E+00	8.22E+01	--	NA	NA

*: Calculated concentrations exceeded saturated soil concentration and hence saturated soil concentrations are listed soil concentrations protective of groundwater.

#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC.
Soil concentrations are presented on a dry weight basis.

NA: Not available

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc.at POE [mg/L]	Dry Leaching Factor to Groundwater (LFsw) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [-]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [-]	for POE [-]		at a POC Protective of a POE [mg/L]	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	1.00E+00	8.22E+01	6.91E-01	4.11E-01	4.11E-01
Toluene	1.00E+00	3.57E-01	1	1.00E+00	8.22E+01	2.30E+02	8.22E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	1.00E+00	8.22E+01	1.29E+02 *	5.75E+01	5.75E+01
Xylenes (mixed)	1.00E+01	2.30E-01	1	1.00E+00	8.22E+01	1.56E+02 *	1.75E+02 #	1.75E+02 #
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	1.00E+00	8.22E+01	1.52E+00	1.64E+00	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	1.00E+00	8.22E+01	2.96E+00 *	4.34E-02 #	4.34E-02 #
Benzo(a)anthracene	1.17E-03	1.98E-04	1	1.00E+00	8.22E+01	9.76E+00 *	9.40E-03 #	9.40E-03 #
Benzo(a)pyrene	2.00E-04	7.31E-05	1	1.00E+00	8.22E+01	4.55E+00 *	1.62E-03 #	1.62E-03 #
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	1.00E+00	8.22E+01	5.35E+00 *	1.50E-03 #	1.50E-03 #
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	1.00E+00	8.22E+01	3.21E+00 *	7.00E-04 #	7.00E-04 #
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	1.00E+00	8.22E+01	2.85E+00 *	8.00E-04 #	8.00E-04 #
Chrysene	1.60E-03	1.78E-04	1	1.00E+00	8.22E+01	1.85E+00 *	1.60E-03 #	1.60E-03 #
Fluoranthene	2.06E-01	1.44E-03	1	1.00E+00	8.22E+01	2.94E+01 *	2.06E-01 #	2.06E-01 #
Fluorene	1.46E+00	9.13E-03	1	1.00E+00	8.22E+01	4.46E+01 *	1.98E+00 #	1.98E+00 #
Naphthalene	2.00E-02	5.70E-02	1	1.00E+00	8.22E+01	2.88E+01	1.64E+00	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	1.00E+00	8.22E+01	4.10E+01 *	1.00E+00 #	1.00E+00 #
Pyrene	1.35E-01	1.04E-03	1	1.00E+00	8.22E+01	2.66E+01 *	1.35E-01 #	1.35E-01 #
METALS								
Arsenic	--	3.20E-03	1	1.00E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	1.00E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	1.00E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	1.00E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	1.00E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	1.00E+00	8.22E+01	--	NA	NA

*: Calculated concentrations exceeded saturated soil concentration and hence saturated soil concentrations are listed soil concentrations protective of groundwater.

#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC.
Soil concentrations are presented on a dry weight basis.

NA: Not available

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc.at POE [mg/L]	Dry Leaching Factor to Groundwater (LFsw) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [--]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [--]	for POE [--]		at a POC Protective of a POE [mg/L]	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	1.00E+00	8.22E+01	6.91E-01	4.11E-01	4.11E-01
Toluene	1.00E+00	3.57E-01	1	1.00E+00	8.22E+01	2.30E+02	8.22E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	1.00E+00	8.22E+01	1.29E+02 *	5.75E+01	5.75E+01
Xylenes (mixed)	1.00E+01	2.30E-01	1	1.00E+00	8.22E+01	1.56E+02 *	1.75E+02 #	1.75E+02 #
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	1.00E+00	8.22E+01	1.52E+00	1.64E+00	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	1.00E+00	8.22E+01	2.96E+00 *	4.34E-02 #	4.34E-02 #
Benzo(a)anthracene	1.17E-03	1.98E-04	1	1.00E+00	8.22E+01	9.76E+00 *	9.40E-03 #	9.40E-03 #
Benzo(a)pyrene	2.00E-04	7.31E-05	1	1.00E+00	8.22E+01	4.55E+00 *	1.62E-03 #	1.62E-03 #
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	1.00E+00	8.22E+01	5.35E+00 *	1.50E-03 #	1.50E-03 #
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	1.00E+00	8.22E+01	3.21E+00 *	7.00E-04 #	7.00E-04 #
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	1.00E+00	8.22E+01	2.85E+00 *	8.00E-04 #	8.00E-04 #
Chrysene	1.60E-03	1.78E-04	1	1.00E+00	8.22E+01	1.85E+00 *	1.60E-03 #	1.60E-03 #
Fluoranthene	2.06E-01	1.44E-03	1	1.00E+00	8.22E+01	2.94E+01 *	2.06E-01 #	2.06E-01 #
Fluorene	1.46E+00	9.13E-03	1	1.00E+00	8.22E+01	4.46E+01 *	1.98E+00 #	1.98E+00 #
Naphthalene	2.00E-02	5.70E-02	1	1.00E+00	8.22E+01	2.88E+01	1.64E+00	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	1.00E+00	8.22E+01	4.10E+01 *	1.00E+00 #	1.00E+00 #
Pyrene	1.35E-01	1.04E-03	1	1.00E+00	8.22E+01	2.66E+01 *	1.35E-01 #	1.35E-01 #
METALS								
Arsenic	--	3.20E-03	1	1.00E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	1.00E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	1.00E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	1.00E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	1.00E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	1.00E+00	8.22E+01	--	NA	NA

*: Calculated concentrations exceeded saturated soil concentration and hence saturated soil concentrations are listed soil concentrations protective of groundwater.

#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC. Soil concentrations are presented on a dry weight basis.

NA: Not available

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc. at POE [mg/L]	Dry Leaching Factor to Groundwater (LF _{sw}) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [--]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [--]	for POE [--]		at a POC Protective of a POE [mg/L] <i>1w-19</i>	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	1.00E+00	8.22E+01	6.91E-01	4.11E-01	4.11E-01
Toluene	1.00E+00	3.57E-01	1	1.00E+00	8.22E+01	2.30E+02	8.22E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	1.00E+00	8.22E+01	1.29E+02 *	5.75E+01	5.75E+01
Xylenes (mixed)	1.00E+01	2.30E-01	1	1.00E+00	8.22E+01	1.56E+02 *	1.75E+02 #	1.75E+02 #
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	1.00E+00	8.22E+01	1.52E+00	1.64E+00	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	1.00E+00	8.22E+01	2.96E+00 *	4.34E-02 #	4.34E-02 #
Benzo(a)anthracene	1.17E-03	1.98E-04	1	1.00E+00	8.22E+01	9.76E+00 *	9.40E-03 #	9.40E-03 #
Benzo(a)pyrene	2.00E-04	7.31E-05	1	1.00E+00	8.22E+01	4.55E+00 *	1.62E-03 #	1.62E-03 #
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	1.00E+00	8.22E+01	5.35E+00 *	1.50E-03 #	1.50E-03 #
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	1.00E+00	8.22E+01	3.21E+00 *	7.00E-04 #	7.00E-04 #
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	1.00E+00	8.22E+01	2.85E+00 *	8.00E-04 #	8.00E-04 #
Chrysene	1.60E-03	1.78E-04	1	1.00E+00	8.22E+01	1.85E+00 *	1.60E-03 #	1.60E-03 #
Fluoranthene	2.06E-01	1.44E-03	1	1.00E+00	8.22E+01	2.94E+01 *	2.06E-01 #	2.06E-01 #
Fluorene	1.46E+00	9.13E-03	1	1.00E+00	8.22E+01	4.46E+01 *	1.98E+00 #	1.98E+00 #
Naphthalene	2.00E-02	5.70E-02	1	1.00E+00	8.22E+01	2.88E+01	1.64E+00	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	1.00E+00	8.22E+01	4.10E+01 *	1.00E+00 #	1.00E+00 #
Pyrene	1.35E-01	1.04E-03	1	1.00E+00	8.22E+01	2.66E+01 *	1.35E-01 #	1.35E-01 #
METALS								
Arsenic	--	3.20E-03	1	1.00E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	1.00E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	1.00E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	1.00E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	1.00E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	1.00E+00	8.22E+01	--	NA	NA

*: Calculated concentrations exceeded saturated soil concentration and hence saturated soil concentrations are listed soil concentrations protective of groundwater.

#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC.

Soil concentrations are presented on a dry weight basis.

NA: Not available

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc. at POE [mg/L]	Dry Leaching Factor to Groundwater (LF _{sw}) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [-]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [-]	for POE [-]		at a POC Protective of a POE [mg/L]	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	1.00E+00	8.22E+01	6.91E-01	4.11E-01	4.11E-01
Toluene	1.00E+00	3.57E-01	1	1.00E+00	8.22E+01	2.30E+02	8.22E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	1.00E+00	8.22E+01	1.29E+02 *	5.75E+01	5.75E+01
Xylenes (mixed)	1.00E+01	2.30E-01	1	1.00E+00	8.22E+01	1.56E+02 *	1.75E+02 #	1.75E+02 #
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	1.00E+00	8.22E+01	1.52E+00	1.64E+00	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	1.00E+00	8.22E+01	2.96E+00 *	4.34E-02 #	4.34E-02 #
Benzo(a)anthracene	1.17E-03	1.98E-04	1	1.00E+00	8.22E+01	9.76E+00 *	9.40E-03 #	9.40E-03 #
Benzo(a)pyrene	2.00E-04	7.31E-05	1	1.00E+00	8.22E+01	4.55E+00 *	1.62E-03 #	1.62E-03 #
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	1.00E+00	8.22E+01	5.35E+00 *	1.50E-03 #	1.50E-03 #
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	1.00E+00	8.22E+01	3.21E+00 *	7.00E-04 #	7.00E-04 #
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	1.00E+00	8.22E+01	2.85E+00 *	8.00E-04 #	8.00E-04 #
Chrysene	1.60E-03	1.78E-04	1	1.00E+00	8.22E+01	1.85E+00 *	1.60E-03 #	1.60E-03 #
Fluoranthene	2.06E-01	1.44E-03	1	1.00E+00	8.22E+01	2.94E+01 *	2.06E-01 #	2.06E-01 #
Fluorene	1.46E+00	9.13E-03	1	1.00E+00	8.22E+01	4.46E+01 *	1.98E+00 #	1.98E+00 #
Naphthalene	2.00E-02	5.70E-02	1	1.00E+00	8.22E+01	2.88E+01	1.64E+00	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	1.00E+00	8.22E+01	4.10E+01 *	1.00E+00 #	1.00E+00 #
Pyrene	1.35E-01	1.04E-03	1	1.00E+00	8.22E+01	2.66E+01 *	1.35E-01 #	1.35E-01 #
METALS								
Arsenic	--	3.20E-03	1	1.00E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	1.00E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	1.00E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	1.00E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	1.00E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	1.00E+00	8.22E+01	--	NA	NA

*: Calculated concentrations exceeded saturated soil concentration and hence saturated soil concentrations are listed soil concentrations protective of groundwater.

#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC.

Soil concentrations are presented on a dry weight basis.

NA: Not available

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc.at POE [mg/L]	Dry Leaching Factor to Groundwater (LFsw) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [-]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [-]	for POE [-]		at a POC Protective of a POE [mg/L]	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	1.00E+00	8.22E+01	6.91E-01	4.11E-01	4.11E-01
Toluene	1.00E+00	3.57E-01	1	1.00E+00	8.22E+01	2.30E+02	8.22E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	1.00E+00	8.22E+01	1.29E+02 *	5.75E+01	5.75E+01
Xylenes (mixed)	1.00E+01	2.30E-01	1	1.00E+00	8.22E+01	1.56E+02 *	1.75E+02 #	1.75E+02 #
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	1.00E+00	8.22E+01	1.52E+00	1.64E+00	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	1.00E+00	8.22E+01	2.96E+00 *	4.34E-02 #	4.34E-02 #
Benzo(a)anthracene	1.17E-03	1.98E-04	1	1.00E+00	8.22E+01	9.76E+00 *	9.40E-03 #	9.40E-03 #
Benzo(a)pyrene	2.00E-04	7.31E-05	1	1.00E+00	8.22E+01	4.55E+00 *	1.62E-03 #	1.62E-03 #
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	1.00E+00	8.22E+01	5.35E+00 *	1.50E-03 #	1.50E-03 #
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	1.00E+00	8.22E+01	3.21E+00 *	7.00E-04 #	7.00E-04 #
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	1.00E+00	8.22E+01	2.85E+00 *	8.00E-04 #	8.00E-04 #
Chrysene	1.60E-03	1.78E-04	1	1.00E+00	8.22E+01	1.85E+00 *	1.60E-03 #	1.60E-03 #
Fluoranthene	2.06E-01	1.44E-03	1	1.00E+00	8.22E+01	2.94E+01 *	2.06E-01 #	2.06E-01 #
Fluorene	1.46E+00	9.13E-03	1	1.00E+00	8.22E+01	4.46E+01 *	1.98E+00 #	1.98E+00 #
Naphthalene	2.00E-02	5.70E-02	1	1.00E+00	8.22E+01	2.88E+01	1.64E+00	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	1.00E+00	8.22E+01	4.10E+01 *	1.00E+00 #	1.00E+00 #
Pyrene	1.35E-01	1.04E-03	1	1.00E+00	8.22E+01	2.66E+01 *	1.35E-01 #	1.35E-01 #
METALS								
Arsenic	--	3.20E-03	1	1.00E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	1.00E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	1.00E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	1.00E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	1.00E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	1.00E+00	8.22E+01	--	NA	NA

*: Calculated concentrations exceeded saturated soil concentration and hence saturated soil concentrations are listed soil concentrations protective of groundwater.

#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC.

Soil concentrations are presented on a dry weight basis.

NA: Not available

1W-22

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc. at POE [mg/L]	Dry Leaching Factor to Groundwater (LFsw) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [--]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [--]	for POE [--]		at a POC Protective of a POE [mg/L]	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	1.00E+00	8.22E+01	6.91E-01	4.11E-01	4.11E-01
Toluene	1.00E+00	3.57E-01	1	1.00E+00	8.22E+01	2.30E+02	8.22E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	1.00E+00	8.22E+01	1.29E+02 *	5.75E+01	5.75E+01
Xylenes (mixed)	1.00E+01	2.30E-01	1	1.00E+00	8.22E+01	1.56E+02 *	1.75E+02 #	1.75E+02 #
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	1.00E+00	8.22E+01	1.52E+00	1.64E+00	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	1.00E+00	8.22E+01	2.96E+00 *	4.34E-02 #	4.34E-02 #
Benzo(a)anthracene	1.17E-03	1.98E-04	1	1.00E+00	8.22E+01	9.76E+00 *	9.40E-03 #	9.40E-03 #
Benzo(a)pyrene	2.00E-04	7.31E-05	1	1.00E+00	8.22E+01	4.55E+00 *	1.62E-03 #	1.62E-03 #
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	1.00E+00	8.22E+01	5.35E+00 *	1.50E-03 #	1.50E-03 #
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	1.00E+00	8.22E+01	3.21E+00 *	7.00E-04 #	7.00E-04 #
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	1.00E+00	8.22E+01	2.85E+00 *	8.00E-04 #	8.00E-04 #
Chrysene	1.60E-03	1.78E-04	1	1.00E+00	8.22E+01	1.85E+00 *	1.60E-03 #	1.60E-03 #
Fluoranthene	2.06E-01	1.44E-03	1	1.00E+00	8.22E+01	2.94E+01 *	2.06E-01 #	2.06E-01 #
Fluorene	1.46E+00	9.13E-03	1	1.00E+00	8.22E+01	4.46E+01 *	1.98E+00 #	1.98E+00 #
Naphthalene	2.00E-02	5.70E-02	1	1.00E+00	8.22E+01	2.88E+01	1.64E+00	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	1.00E+00	8.22E+01	4.10E+01 *	1.00E+00 #	1.00E+00 #
Pyrene	1.35E-01	1.04E-03	1	1.00E+00	8.22E+01	2.66E+01 *	1.35E-01 #	1.35E-01 #
METALS								
Arsenic	--	3.20E-03	1	1.00E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	1.00E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	1.00E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	1.00E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	1.00E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	1.00E+00	8.22E+01	--	NA	NA

*: Calculated concentrations exceeded saturated soil concentration and hence saturated soil concentrations are listed soil concentrations protective of groundwater.
 #: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC.
 Soil concentrations are presented on a dry weight basis.
 NA: Not available

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc. at POE [mg/L]	Dry Leaching Factor to Groundwater (LFsw) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [--]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [--]	for POE [--]		at a POC Protective of a POE [mg/L]	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	1.00E+00	8.22E+01	6.91E-01	4.11E-01	4.11E-01
Toluene	1.00E+00	3.57E-01	1	1.00E+00	8.22E+01	2.30E+02	8.22E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	1.00E+00	8.22E+01	1.29E+02 *	5.75E+01	5.75E+01
Xylenes (mixed)	1.00E+01	2.30E-01	1	1.00E+00	8.22E+01	1.56E+02 *	1.75E+02 #	1.75E+02 #
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	1.00E+00	8.22E+01	1.52E+00	1.64E+00	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	1.00E+00	8.22E+01	2.96E+00 *	4.34E-02 #	4.34E-02 #
Benzo(a)anthracene	1.17E-03	1.98E-04	1	1.00E+00	8.22E+01	9.76E+00 *	9.40E-03 #	9.40E-03 #
Benzo(a)pyrene	2.00E-04	7.31E-05	1	1.00E+00	8.22E+01	4.55E+00 *	1.62E-03 #	1.62E-03 #
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	1.00E+00	8.22E+01	5.35E+00 *	1.50E-03 #	1.50E-03 #
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	1.00E+00	8.22E+01	3.21E+00 *	7.00E-04 #	7.00E-04 #
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	1.00E+00	8.22E+01	2.85E+00 *	8.00E-04 #	8.00E-04 #
Chrysene	1.60E-03	1.78E-04	1	1.00E+00	8.22E+01	1.85E+00 *	1.60E-03 #	1.60E-03 #
Fluoranthene	2.06E-01	1.44E-03	1	1.00E+00	8.22E+01	2.94E+01 *	2.06E-01 #	2.06E-01 #
Fluorene	1.46E+00	9.13E-03	1	1.00E+00	8.22E+01	4.46E+01 *	1.98E+00 #	1.98E+00 #
Naphthalene	2.00E-02	5.70E-02	1	1.00E+00	8.22E+01	2.88E+01	1.64E+00	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	1.00E+00	8.22E+01	4.10E+01 *	1.00E+00 #	1.00E+00 #
Pyrene	1.35E-01	1.04E-03	1	1.00E+00	8.22E+01	2.66E+01 *	1.35E-01 #	1.35E-01 #
METALS								
Arsenic	--	3.20E-03	1	1.00E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	1.00E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	1.00E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	1.00E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	1.00E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	1.00E+00	8.22E+01	--	NA	NA

*: Calculated concentrations exceeded saturated soil concentration and hence saturated soil concentrations are listed soil concentrations protective of groundwater.

#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC.

Soil concentrations are presented on a dry weight basis.

NA: Not available

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc. at POE [mg/L]	Dry Leaching Factor to Groundwater (LFsw) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [--]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [--]	for POE [--]		at a POC Protective of a POE [mg/L]	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	1.00E+00	8.22E+01	6.91E-01	4.11E-01	4.11E-01
Toluene	1.00E+00	3.57E-01	1	1.00E+00	8.22E+01	2.30E+02	8.22E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	1.00E+00	8.22E+01	1.29E+02 *	5.75E+01	5.75E+01
Xylenes (mixed)	1.00E+01	2.30E-01	1	1.00E+00	8.22E+01	1.56E+02 *	1.75E+02 #	1.75E+02 #
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	1.00E+00	8.22E+01	1.52E+00	1.64E+00	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	1.00E+00	8.22E+01	2.96E+00 *	4.34E-02 #	4.34E-02 #
Benzo(a)anthracene	1.17E-03	1.98E-04	1	1.00E+00	8.22E+01	9.76E+00 *	9.40E-03 #	9.40E-03 #
Benzo(a)pyrene	2.00E-04	7.31E-05	1	1.00E+00	8.22E+01	4.55E+00 *	1.62E-03 #	1.62E-03 #
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	1.00E+00	8.22E+01	5.35E+00 *	1.50E-03 #	1.50E-03 #
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	1.00E+00	8.22E+01	3.21E+00 *	7.00E-04 #	7.00E-04 #
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	1.00E+00	8.22E+01	2.85E+00 *	8.00E-04 #	8.00E-04 #
Chrysene	1.60E-03	1.78E-04	1	1.00E+00	8.22E+01	1.85E+00 *	1.60E-03 #	1.60E-03 #
Fluoranthene	2.06E-01	1.44E-03	1	1.00E+00	8.22E+01	2.94E+01 *	2.06E-01 #	2.06E-01 #
Fluorene	1.46E+00	9.13E-03	1	1.00E+00	8.22E+01	4.46E+01 *	1.98E+00 #	1.98E+00 #
Naphthalene	2.00E-02	5.70E-02	1	1.00E+00	8.22E+01	2.88E+01	1.64E+00	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	1.00E+00	8.22E+01	4.10E+01 *	1.00E+00 #	1.00E+00 #
Pyrene	1.35E-01	1.04E-03	1	1.00E+00	8.22E+01	2.66E+01 *	1.35E-01 #	1.35E-01 #
METALS								
Arsenic	--	3.20E-03	1	1.00E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	1.00E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	1.00E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	1.00E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	1.00E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	1.00E+00	8.22E+01	--	NA	NA

*: Calculated concentrations exceeded saturated soil concentration and hence saturated soil concentrations are listed soil concentrations protective of groundwater.

#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC.

Soil concentrations are presented on a dry weight basis.

NA: Not available

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc.at POE [mg/L]	Dry Leaching Factor to Groundwater (LFsw) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [-]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [-]	for POE [-]		at a POC Protective of a POE [mg/L]	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	1.00E+00	8.22E+01	6.91E-01	4.11E-01	4.11E-01
Toluene	1.00E+00	3.57E-01	1	1.00E+00	8.22E+01	2.30E+02	8.22E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	1.00E+00	8.22E+01	1.29E+02 *	5.75E+01	5.75E+01
Xylenes (mixed)	1.00E+01	2.30E-01	1	1.00E+00	8.22E+01	1.56E+02 *	1.75E+02 #	1.75E+02 #
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	1.00E+00	8.22E+01	1.52E+00	1.64E+00	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	1.00E+00	8.22E+01	2.96E+00 *	4.34E-02 #	4.34E-02 #
Benzo(a)anthracene	1.17E-03	1.98E-04	1	1.00E+00	8.22E+01	9.76E+00 *	9.40E-03 #	9.40E-03 #
Benzo(a)pyrene	2.00E-04	7.31E-05	1	1.00E+00	8.22E+01	4.55E+00 *	1.62E-03 #	1.62E-03 #
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	1.00E+00	8.22E+01	5.35E+00 *	1.50E-03 #	1.50E-03 #
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	1.00E+00	8.22E+01	3.21E+00 *	7.00E-04 #	7.00E-04 #
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	1.00E+00	8.22E+01	2.85E+00 *	8.00E-04 #	8.00E-04 #
Chrysene	1.60E-03	1.78E-04	1	1.00E+00	8.22E+01	1.85E+00 *	1.60E-03 #	1.60E-03 #
Fluoranthene	2.06E-01	1.44E-03	1	1.00E+00	8.22E+01	2.94E+01 *	2.06E-01 #	2.06E-01 #
Fluorene	1.46E+00	9.13E-03	1	1.00E+00	8.22E+01	4.46E+01 *	1.98E+00 #	1.98E+00 #
Naphthalene	2.00E-02	5.70E-02	1	1.00E+00	8.22E+01	2.88E+01	1.64E+00	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	1.00E+00	8.22E+01	4.10E+01 *	1.00E+00 #	1.00E+00 #
Pyrene	1.35E-01	1.04E-03	1	1.00E+00	8.22E+01	2.66E+01 *	1.35E-01 #	1.35E-01 #
METALS								
Arsenic	--	3.20E-03	1	1.00E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	1.00E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	1.00E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	1.00E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	1.00E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	1.00E+00	8.22E+01	--	NA	NA

*: Calculated concentrations exceeded saturated soil concentration and hence saturated soil concentrations are listed soil concentrations protective of groundwater.

#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC.

Soil concentrations are presented on a dry weight basis.

NA: Not available

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc. at POE [mg/L]	Dry Leaching Factor to Groundwater (LFsw) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [-]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [-]	for POE [-]		at a POC Protective of a POE 1W-26 [mg/L]	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	1.00E+00	8.22E+01	6.91E-01	4.11E-01	4.11E-01
Toluene	1.00E+00	3.57E-01	1	1.00E+00	8.22E+01	2.30E+02	8.22E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	1.00E+00	8.22E+01	1.29E+02 *	5.75E+01	5.75E+01
Xylenes (mixed)	1.00E+01	2.30E-01	1	1.00E+00	8.22E+01	1.56E+02 *	1.75E+02 #	1.75E+02 #
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	1.00E+00	8.22E+01	1.52E+00	1.64E+00	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	1.00E+00	8.22E+01	2.96E+00 *	4.34E-02 #	4.34E-02 #
Benzo(a)anthracene	1.17E-03	1.98E-04	1	1.00E+00	8.22E+01	9.76E+00 *	9.40E-03 #	9.40E-03 #
Benzo(a)pyrene	2.00E-04	7.31E-05	1	1.00E+00	8.22E+01	4.55E+00 *	1.62E-03 #	1.62E-03 #
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	1.00E+00	8.22E+01	5.35E+00 *	1.50E-03 #	1.50E-03 #
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	1.00E+00	8.22E+01	3.21E+00 *	7.00E-04 #	7.00E-04 #
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	1.00E+00	8.22E+01	2.85E+00 *	8.00E-04 #	8.00E-04 #
Chrysene	1.60E-03	1.78E-04	1	1.00E+00	8.22E+01	1.85E+00 *	1.60E-03 #	1.60E-03 #
Fluoranthene	2.06E-01	1.44E-03	1	1.00E+00	8.22E+01	2.94E+01 *	2.06E-01 #	2.06E-01 #
Fluorene	1.46E+00	9.13E-03	1	1.00E+00	8.22E+01	4.46E+01 *	1.98E+00 #	1.98E+00 #
Naphthalene	2.00E-02	5.70E-02	1	1.00E+00	8.22E+01	2.88E+01	1.64E+00	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	1.00E+00	8.22E+01	4.10E+01 *	1.00E+00 #	1.00E+00 #
Pyrene	1.35E-01	1.04E-03	1	1.00E+00	8.22E+01	2.66E+01 *	1.35E-01 #	1.35E-01 #
METALS								
Arsenic	--	3.20E-03	1	1.00E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	1.00E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	1.00E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	1.00E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	1.00E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	1.00E+00	8.22E+01	--	NA	NA

*: Calculated concentrations exceeded saturated soil concentration and hence saturated soil concentrations are listed soil concentrations protective of groundwater.

#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC.

Soil concentrations are presented on a dry weight basis.

NA: Not available

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc.at POE [mg/L]	Dry Leaching Factor to Groundwater (LFsw) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [-]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [-]	for POE [-]		at a POC Protective of a POE [mg/L]	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	1.00E+00	8.22E+01	6.91E-01	4.11E-01	4.11E-01
Toluene	1.00E+00	3.57E-01	1	1.00E+00	8.22E+01	2.30E+02	8.22E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	1.00E+00	8.22E+01	1.29E+02 *	5.75E+01	5.75E+01
Xylenes (mixed)	1.00E+01	2.30E-01	1	1.00E+00	8.22E+01	1.56E+02 *	1.75E+02 #	1.75E+02 #
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	1.00E+00	8.22E+01	1.52E+00	1.64E+00	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	1.00E+00	8.22E+01	2.96E+00 *	4.34E-02 #	4.34E-02 #
Benzo(a)anthracene	1.17E-03	1.98E-04	1	1.00E+00	8.22E+01	9.76E+00 *	9.40E-03 #	9.40E-03 #
Benzo(a)pyrene	2.00E-04	7.31E-05	1	1.00E+00	8.22E+01	4.55E+00 *	1.62E-03 #	1.62E-03 #
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	1.00E+00	8.22E+01	5.35E+00 *	1.50E-03 #	1.50E-03 #
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	1.00E+00	8.22E+01	3.21E+00 *	7.00E-04 #	7.00E-04 #
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	1.00E+00	8.22E+01	2.85E+00 *	8.00E-04 #	8.00E-04 #
Chrysene	1.60E-03	1.78E-04	1	1.00E+00	8.22E+01	1.85E+00 *	1.60E-03 #	1.60E-03 #
Fluoranthene	2.06E-01	1.44E-03	1	1.00E+00	8.22E+01	2.94E+01 *	2.06E-01 #	2.06E-01 #
Fluorene	1.46E+00	9.13E-03	1	1.00E+00	8.22E+01	4.46E+01 *	1.98E+00 #	1.98E+00 #
Naphthalene	2.00E-02	5.70E-02	1	1.00E+00	8.22E+01	2.88E+01	1.64E+00	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	1.00E+00	8.22E+01	4.10E+01 *	1.00E+00 #	1.00E+00 #
Pyrene	1.35E-01	1.04E-03	1	1.00E+00	8.22E+01	2.66E+01 *	1.35E-01 #	1.35E-01 #
METALS								
Arsenic	--	3.20E-03	1	1.00E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	1.00E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	1.00E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	1.00E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	1.00E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	1.00E+00	8.22E+01	--	NA	NA

*: Calculated concentrations exceeded saturated soil concentration and hence saturated soil concentrations are listed soil concentrations protective of groundwater.

#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC.

Soil concentrations are presented on a dry weight basis.

NA: Not available

GROUNDWATER RESOURCE PROTECTION - WITHOUT BIODEGRADATION

CHEMICALS OF CONCERN	Target Groundwater Conc. at POE [mg/L]	Dry Leaching Factor to Groundwater (LFsw) [mg/L]/[mg/kg]	User Specified Unsaturated Zone DAF [-]	Saturated Zone DAF		Allowable Soil Conc. Protective of GW at the POE [mg/kg]	Allowable GW Conc.	
				for POC [-]	for POE [-]		at a POC Protective of a POE [mg/L]	at the Source Protective of a POE [mg/L]
ORGANICS								
Benzene	5.00E-03	5.94E-01	1	1.00E+00	8.22E+01	6.91E-01	4.11E-01	4.11E-01
Toluene	1.00E+00	3.57E-01	1	1.00E+00	8.22E+01	2.30E+02	8.22E+01	8.22E+01
Ethylbenzene	7.00E-01	2.69E-01	1	1.00E+00	8.22E+01	1.29E+02	5.75E+01	5.75E+01
Xylenes (mixed)	1.00E+01	2.30E-01	1	1.00E+00	8.22E+01	1.56E+02	1.75E+02	1.75E+02
Methyl-tert-butyl-ether (MTBE)*	2.00E-02	1.08E+00	1	1.00E+00	8.22E+01	1.52E+00	1.64E+00	1.64E+00
Anthracene	4.34E-02	3.01E-03	1	1.00E+00	8.22E+01	2.96E+00	4.34E-02	4.34E-02
Benzo(a)anthracene	1.17E-03	1.98E-04	1	1.00E+00	8.22E+01	9.76E+00	9.40E-03	9.40E-03
Benzo(a)pyrene	2.00E-04	7.31E-05	1	1.00E+00	8.22E+01	4.55E+00	1.62E-03	1.62E-03
Benzo(b)fluoranthene	1.17E-03	5.76E-05	1	1.00E+00	8.22E+01	5.35E+00	1.50E-03	1.50E-03
Benzo(g,h,i)perylene	7.00E-04	4.49E-05	1	1.00E+00	8.22E+01	3.21E+00	7.00E-04	7.00E-04
Benzo(k)fluoranthene	8.00E-04	5.76E-05	1	1.00E+00	8.22E+01	2.85E+00	8.00E-04	8.00E-04
Chrysene	1.60E-03	1.78E-04	1	1.00E+00	8.22E+01	1.85E+00	1.60E-03	1.60E-03
Fluoranthene	2.06E-01	1.44E-03	1	1.00E+00	8.22E+01	2.94E+01	2.06E-01	2.06E-01
Fluorene	1.46E+00	9.13E-03	1	1.00E+00	8.22E+01	4.46E+01	1.98E+00	1.98E+00
Naphthalene	2.00E-02	5.70E-02	1	1.00E+00	8.22E+01	2.88E+01	1.64E+00	1.64E+00
Phenanthrene	1.00E+00	5.01E-03	1	1.00E+00	8.22E+01	4.10E+01	1.00E+00	1.00E+00
Pyrene	1.35E-01	1.04E-03	1	1.00E+00	8.22E+01	2.66E+01	1.35E-01	1.35E-01
METALS								
Arsenic	--	3.20E-03	1	1.00E+00	8.22E+01	--	NA	NA
Barium	--	5.00E-03	1	1.00E+00	8.22E+01	--	NA	NA
Cadmium	--	2.74E-03	1	1.00E+00	8.22E+01	--	NA	NA
Chromium VI	--	1.07E-02	1	1.00E+00	8.22E+01	--	NA	NA
Lead	--	1.68E-03	1	1.00E+00	8.22E+01	--	NA	NA
Zinc	--	3.31E-03	1	1.00E+00	8.22E+01	--	NA	NA

*: Calculated concentrations exceeded saturated soil concentration and hence saturated soil concentrations are listed soil concentrations protective of groundwater.

#: Calculated concentrations exceeded pure component water solubility and hence water solubilities are listed as allowable groundwater concentrations at the POE and/or POC.

Soil concentrations are presented on a dry weight basis.

NA: Not available



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Calculations

Radius of Influence Calculations

Jet-Pep #434

1608 Bessemer Road

Birmingham, Jefferson County, Alabama

$$P_r^2 - P_w^2 = (P_{RI}^2 - P_w^2) \times \ln(r/R_w) / \ln(R_i/R_w)$$

$$R_i = \exp[(P_{RI}^2 - P_w^2) \times \ln(r/R_w) / (P_r^2 - P_w^2) + \ln(R_w)]$$

Well ID	radial distance (in ft) from extraction well	measured vacuum ("H ₂ O)			
		12/5/2018 15:35:00 PM			
MW-14	0	89.59			
IW-23	17	0.25			
IW-22	28	0.11			
IW-17	22	0.08			
radius (in) of extraction well:		1			

date & time	P _w Pressure (atm) at recovery well	P _{RI} pressure (atm) at radius of influence	R _w well radius (in.) of extraction well
5/22/18 12:15	0.779768928	0.997797689	1
Well	r radial distance from extraction well, ft	P _r pressure (atm) at radial distance	R _i radius of influence
IW-23	17	0.999385447	16.28
IW-22	28	0.999729597	26.44
IW-17	22	0.999803343	20.78

Note: Data generated during MEME activities conducted in December 2018.

Source: Kuo, Jeff, Ph.D. *Practical Design Calculations for Groundwater and Soil Remediation*,

Estimated Time Required for Ground Water Clean Up Using SSTLs

Will estimate time required for clean up of ground water contaminants in general accordance with methods presented in "Analysis of Ground-Water Remedial Alternatives at a Superfund Site", by Zheng and others, 1991 and "Discussion of Papers", by Mcaleb, Zhenb and others, 1992

Approach: estimate the number of pore volumes (ground water) required to remove existing benzene concentration to alternate corrective action level. If free product is present on-site, will assume COC concentrations to be equivalent to effective solubility values

Constituent	Maximum Value (mg/l)
Benzene	31.7
Toluene	64.5
Ethylbenzene	2.72
Xylenes	10.1
MTBE	547

Soil physical property data collected from Shelby Tube Samples in 2004.

dry bulk density	P_b	1.92	g / cm ³
organic carbon	f_{OC}	0.0029	g_c / g_s
porosity	N	0.407	-
water content	wc	0.295	cm ³ / cm ³
Air content	ac	0.112	cm ³ / cm ³

Physiochemical properties of constituents

Constituent	MW (g/mole)	Log k_{ow} (-)	K_{oc} (-)
Benzene	78.1	2.13	85
Toluene	92.1	2.73	338
Ethylbenzene	106.2	3.15	890
Xylenes	106.2	3.00	630
MTBE	88.2	1.10	8

where: MW= molecular weight, grams/mole
 K_{ow} = organic water partition coefficient, dimensionless
 K_{oc} = 0.63 * K_{ow}

Target values: based on SSTLs calculated in ARBCA Evaluation (March 2018)

Constituent	Target Levels (mg/l)
Benzene	0.411
Toluene	82.2
Ethylbenzene	57.5
Xylenes	175
MTBE	1.64

Estimate Time Required for Ground Water Clean Up Using SSTLs

$$PV = \frac{-1}{\ln [1 + (n/\rho_b K_{oc} f_{oc})]} \ln(C_s / C_i)$$

Where: PV= pore volume
 C_s= target level
 C_i= initial value

Constituent	Pore Volume
Benzene	7.00
Toluene	NA
Ethylbenzene	NA
Xylenes	NA
MTBE	NA

Estimated areal extent of the onsite contamination is 2,500 ft² and the contamination zone is estimated to be approximately 7.5 feet, based on seasonal variations observed in ground-water levels.

Estimate clean up time using the formula:

$$t_c = PV \times t_{pv}$$

where: t_c= clean up time
 t_{pv}= time required for movement of one pore volume of clean water through the attainment area

Volume of one pore volume: 18,750 ft³ x 7.48 gal/ ft³ x n= 57,082 gal
 Pumping rate: 2.0 gpm (assuming 90% run time 946,080 gal/year)

$$t_c = 7.00 * (57,082 \text{ gal} / 946,080 \text{ gal/year}) = 0.422 \text{ years}$$



Engineering. Environmental. Answers.

Equipment Specifications

MK ENVIRONMENTAL INC.

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

igiltz@mkenv.com

QUOTATION

Date 1/17/2019
 Quote No. 219004
 Reference JP #434
 Page No. 1 of 4
 Freight Included
 Terms PWP Net 180
 Ship Via FLATBED
 F.O.B. Factory

SOLD TO:	SHIP TO:
David Dailey CDG Engineers & Associates, Inc. 3 Riverchase Ridge Hoover, AL. 35244 PH: (205) 403-2600	JP # 434 Midfield, Alabama

Quotation valid for 60 days

QUANTITY		UNIT PRICE	AMOUNT
	200 amp 3/60/230 volt 4 wire plus ground electrical service Brought to NEMA 3R control Panel Interior electrical will comply with NEC requirements for Class 1, Division 2, Group D Hazardous locations Motors will be TEFC construction		
1	25.0 HP single stage oil sealed liquid ring blower 375 ACFM @ 20"Hg. Capacity 3/60/230-460 volt, TEFC motor Direct drive motor Oil Scavenge line Backpressure gauge Multistage filtration system allows operation over the full range of vacuums, Temperature gauge Y strainer with clean out plug High temperature switch low and high oil level switches inlet filter inlet check valve Includes extra 5 gallon bucket of replacement seal oil LRP heat exchanger recirculation sound box with hardware	36,558.00	\$36,558.00
1	190 gallon Air/water separator with conductivity probe level switches 10" diameter clean out ports with vacuum rated quick release lid Clear PVC sight glass piping to liquid ring pump, to check for water carryover Liquid filled vacuum gauge Vacuum assist hose 2" drain valves Vacuum relief valve Dilution valve with filter/silencer Inlet screen		
1	1.5 hp transfer pump, 3450 rpm, TEFC motor Cast Iron housing with composite impeller, anti air lock design manual "Pump ON" button inside building for sampling		
1	5-Point dual phase inlet manifold inside system building including 4" main x (5) 2" branches, each branch includes; 2" throttling valve, vacuum gauge, 6" section of clear pvc site tube with quick Fernco disconnect 50' of bulk 2" clear tiger flex hose for stub up connection by others		
1	MKE Model SA15B STRIPPERATOR 15 GPM oil/water Separator and Air stripper treatment system Coalescing separator with skimming weir and water sump tank Low profile air stripping system with nylon aeration tubes and dual pattern diffusers 2.0 HP aluminum blower, AMCA B rated spark resistant Air pressure gauge Intrinsically safe high-high sump level and low blower pressure alarm switches Stainless steel construction Air stripper blower silencer	16,377.00	\$16,377.00
1	1.5 hp transfer pump, 3450 rpm, TEFC motor Cast Iron housing with composite impeller, anti air lock design manual "Pump ON" button inside building for sampling		
1	Groundwater flow totalizer with pulse output for remote totalization Flow calibration button		

MK ENVIRONMENTAL INC.

David Dailey
 CDG Engineers & Associates, Inc.

Date 1/17/2019
 Quote No. 219004
 Reference JP #434
 Page No. 2 of 4

QUANTITY		UNIT PRICE	AMOUNT
1	<p>Master Control Panel System, Including: NEMA 3R control panel with blank front cover Swing out sub panel for gauges, control operators, and switches IEC Magnetic motor starters, safety switches, H-O-A controls Control transformer (8) intrinsically safe relays, (8) alarm indicator LED's, (16) output channels Hard wired relay logic (1) exterior GFCI utility outlet System run time totalizing hour meter Blower low pressure alarm Anti-falsing alarm circuit to prevent nuisance tripping Auto-release restart timer for remote restarts via telemetry Three phase voltage and phase monitor Emergency E-stop LED red indicator light located on swing out sub panel</p> <p><u>Liquid ring automatic shut down upon:</u> AWS1 high liquid level Oil reservoir tank low and high level alarms Liquid ring High temperature alarm Air stripper blower low pressure Air stripper sump High liquid level alarm Phase fault condition Interior Emergency Stop Mushroom button with twist to release detent</p>	17,207.00	\$17,207.00
1	<p>Fused Main Disconnect system for liquid ring and oxidizer Includes: (1) 200 amp disconnect box for LRP (1) Weatherhead with extension pole and bracket support (1) 200 amp Electric meter socket base installed</p>		
1	<p>FleetZOOM FZ300 Cellular Wireless Monitoring Unit. 14 Digital Inputs, 4 Digital Outputs, 2 Analog Input plus internal temperature and DC power monitoring. Includes: Cellular antenna, wiring diagrams, setup forms. Web based monitoring capabilities with graphing and data export. Email & SMS alarming capabilities.</p> <p>One full year of service starting at time of installation. Real Time Alarm Monitoring & Notification, Real Time Status Monitoring. Maximum of 500 alarm or status change events per month, plus sampling of all signals, transmitted every 60 minutes. Annual renewal service invoiced at end of each year, due Jan of following year. Renewal: \$420/yr per unit, BY OTHERS. (subject to change)</p>		
1	<p>Vacuum transducer integrated into telemetry system for real time monitoring, 4-20mA</p>		
1	<p>System building 8.5'W x 12'L x 9.5'H aluminum/steel enclosure, fully insulated with Removable sliding wall panels for ease of maintenance Exterior grade plywood floor, structural steel frame Includes 100 watt XP interior light, and removable center grate for ease of maintenance The breaker panel and control panel will be mounted on a vertical steel bracket attached to platform end. The bracket, panels and all conduits will allow for the removal of the enclosure panels by one person.</p> <p>10" structural steel base with 4" steel cross members Steel corner posts and roof frame Continuous sheet aluminum roof for superior protection</p>	26,221.00	\$26,221.00

MK ENVIRONMENTAL INC.

David Dailey
 CDG Engineers & Associates, Inc.

Date 1/17/2019
 Quote No. 219004
 Reference JP #434
 Page No. 3 of 4

QUANTITY		UNIT PRICE	AMOUNT
1	12,000 BTU XP heater with XP thermostat. All components fully piped, wired and factory tested		
1	Equipment Electrical Installation Includes XP wiring, XP seal off connectors, liquid tight flexible conduit UL listed equipment.		
1	Equipment Mechanical Installation Includes mounting, piping and connectors Brass fittings, sample ports, pressure gauges and sight glasses		
1	Third Party MET Certification The entire remediation building to be third party certified at MK Environmental factory. National Recognized Testing Lab (NRTL)		
1	Startup & Training Services 1-day remediation system startup & training services. Based on 2 weeks prior notice.	2,500.00	\$2,500.00
1	Freight Services Remediation system building freight to jobsite. Off loading and placement by others.	2,500.00	\$2,500.00

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

Jerry Giltz,
 MK ENVIRONMENTAL, INC.

EQUIP. SUB TOTAL	\$101,363.00
EQUIP. SALES TAX	
START UP/TRAINING	
FREIGHT	
NET TOTAL	\$101,363.00

SOLD TO:
David Dailey

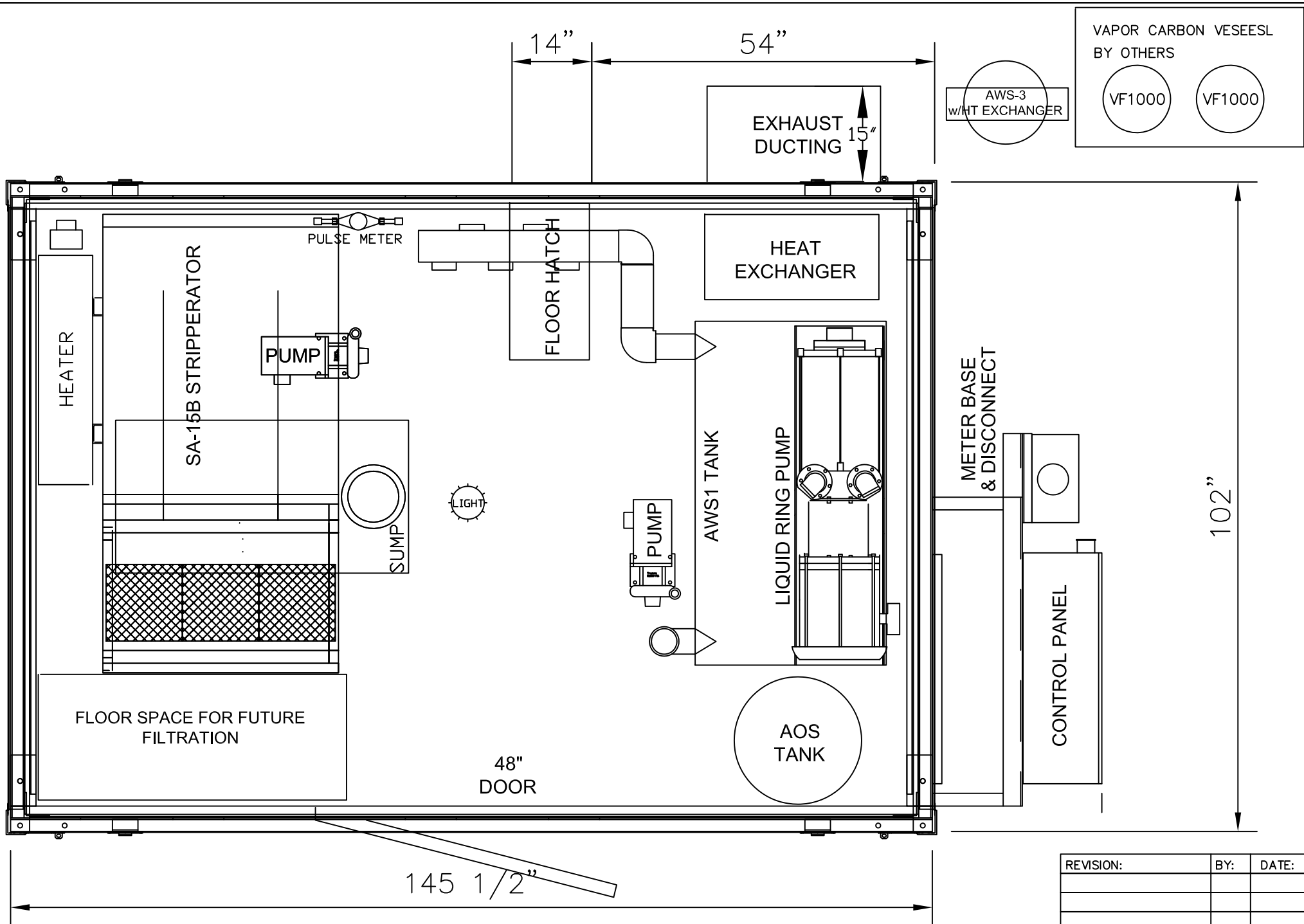
Date 1/17/2019
Quote No. 219004
Reference JP #434
Page No. 4 of 4

			AMOUNT
	<u>MK Offgas Treatment Page: (Add to the Net Total)</u>		
1	<p>Air to air heat exchanger (dual phase exhaust stream) for the offgas treatment prior to the carbon drums. To reduce the outlet temperature of the dual phase offgas stream to help knockout the condensate in the air stream. Includes an elevated stand to mount the heat exchanger and fit over the AWS-3 knockout drum. Includes starter controls for the heat exchanger motor in the master control panel. Wiring from the heat exchanger starter to the heat exchanger motor at time of startup Located outside the system building. AWS3 knock out tank prior to oxidizer to minimize condensed liquids from entering burner or vapor phase carbon bed.</p>	6,765.00	\$6,765.00
	<p>Note:</p> <p>1. Installed outside of the remediation system building. Placement and piping by others.</p> <p>2. Vapor phase carbon vessels for treating the DVPE off gas provided by CDG.</p>		

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

Jerry Giltz,
MK ENVIRONMENTAL, INC.

EQUIP. SUB TOTAL	\$6,765.00
EQUIP. SALES TAX	
START UP/TRAINING	Included
FREIGHT	Included
NET TOTAL	\$6,765.00



REVISION:	BY:	DATE:



DATE:
1-17-19

DRAWN BY:
JAG

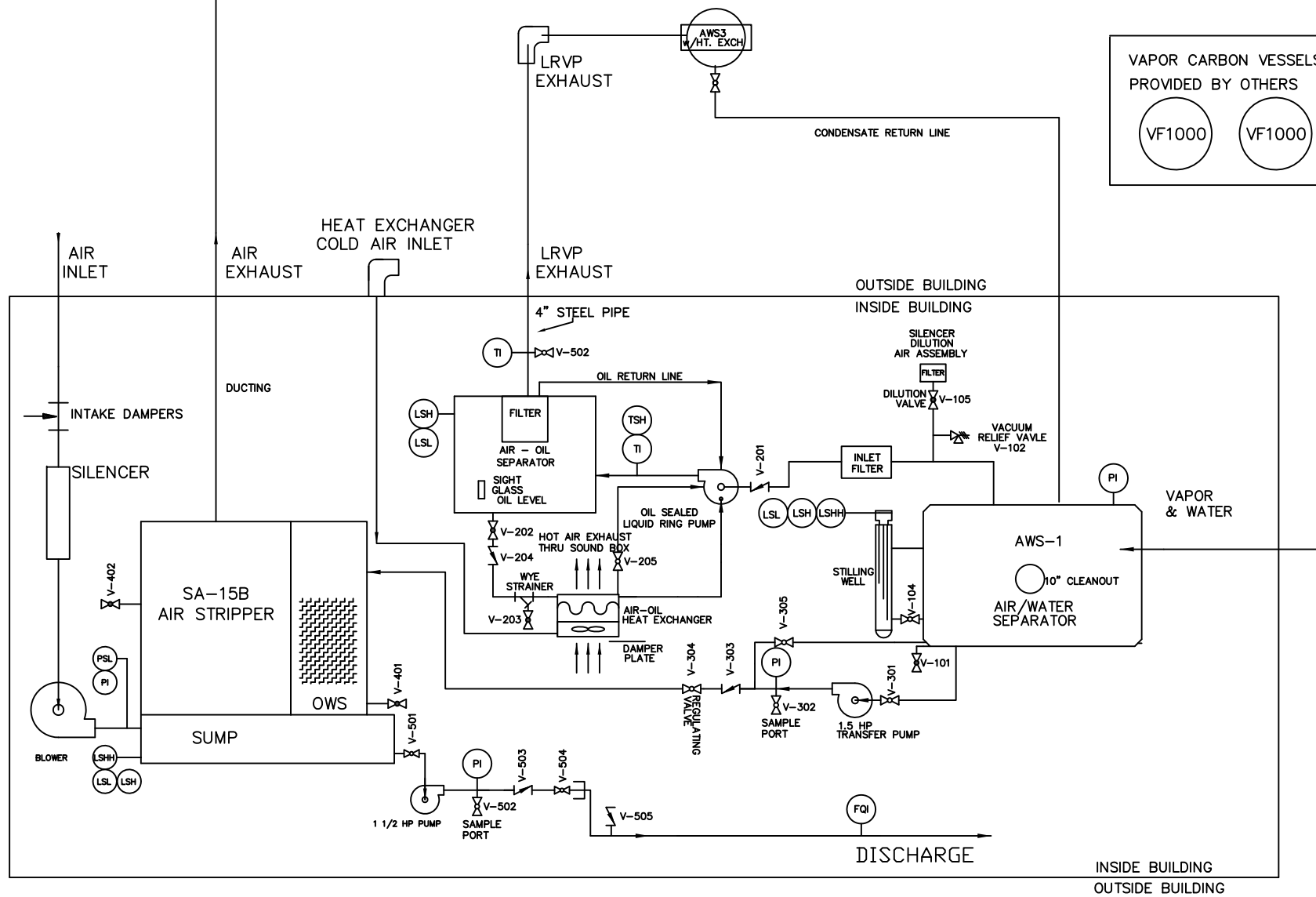
JOB NUMBER
219004

FACILITY ID/TAG#

DRAWING NUMBER

CDG ENG.
JP NO. 434; MIDFIELD, AL

REVISION:	BY:	DATE:



VAPOR CARBON VESSELS
PROVIDED BY OTHERS

VF1000 VF1000

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

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

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



DATE: 1-17-19
DRAWN BY: JAG
JOB NUMBER: 219004
FACILITY ID/TAG#

DRAWING NUMBER
CDG ENG., AL
JP NO. 434; MIDFIELD AL



Environmental Inc.

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

MK ON-SITE REMEDIATION EQUIPMENT



SYSTEM DESCRIPTION

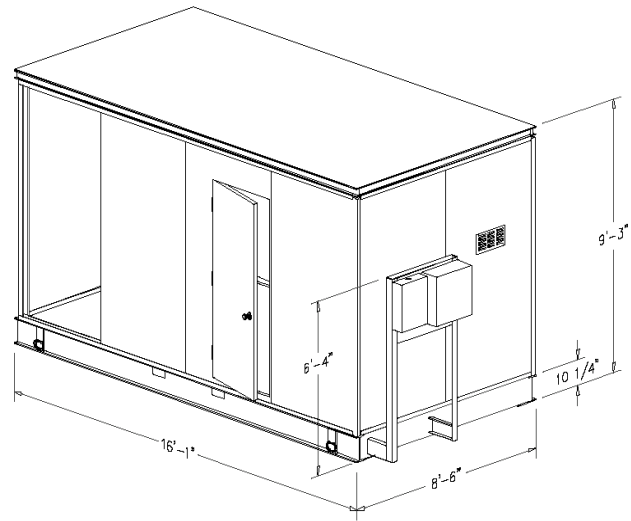
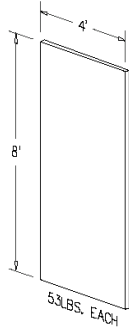
MK Environmental is your single source manufacturer for all your remediation needs. Designed to save time, space and money - Engineering for maximum UPTIME. All the room needed for maintenance, without taking up a lot of room.

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

MK ENVIRONMENTAL ON-SITE PLATFORM

INSULATED, REMOVABLE WALL PANELS

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



MK Building Specifications:

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

Optional Building Features:

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

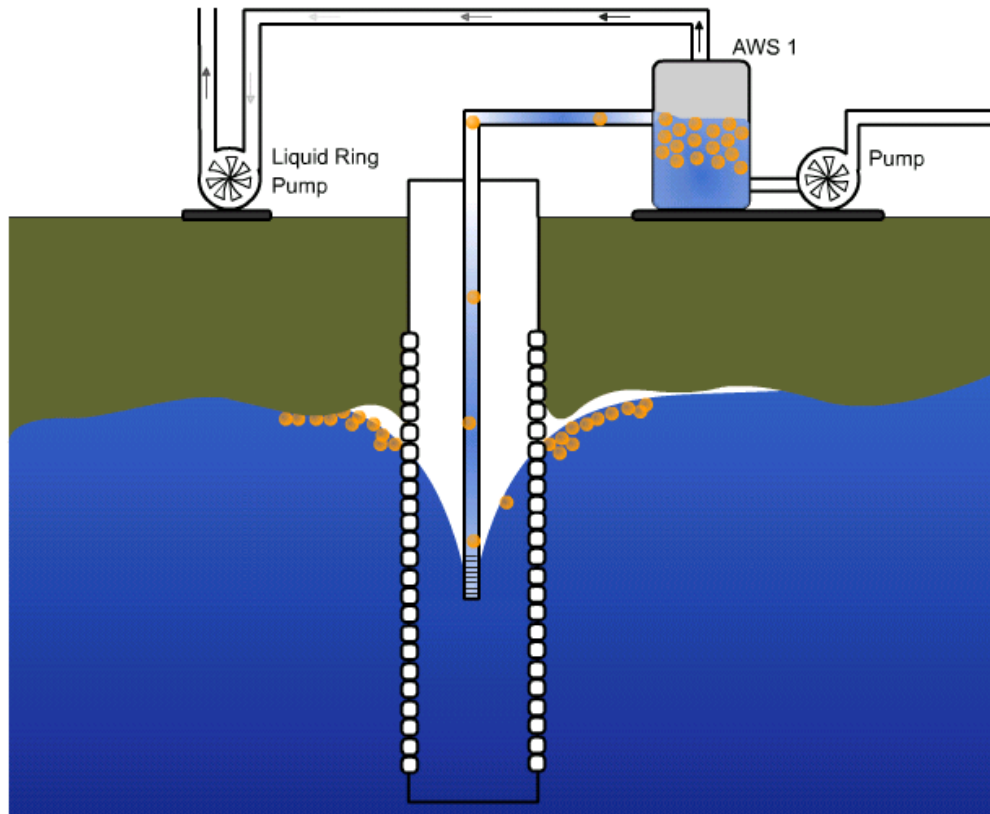


MK Environmental Inc.
7150 S. Madison Street
Willowbrook, IL. 60527
630-920-1104 Phone
630-920-8013 Fax

Environmental Inc.

OIL SEAL DUAL EXTRACTION SYSTEM

Liquid Ring Extraction System



HOW IT WORKS

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

Oil Seal Dual Extraction System Continue

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

MK Environmental Inc.

7150 S. Madison Street, Willowbrook, IL. 60527

630-920-1104

630-920-8013 fax

mkenv.com

DIAGRAMMA DI FUNZIONAMENTO
Performance curves

POMPA PER VUOTO AD ANELLO DI LIQUIDO
Liquid ring vacuum pump

TIPO
Type **TRSC 100-550**



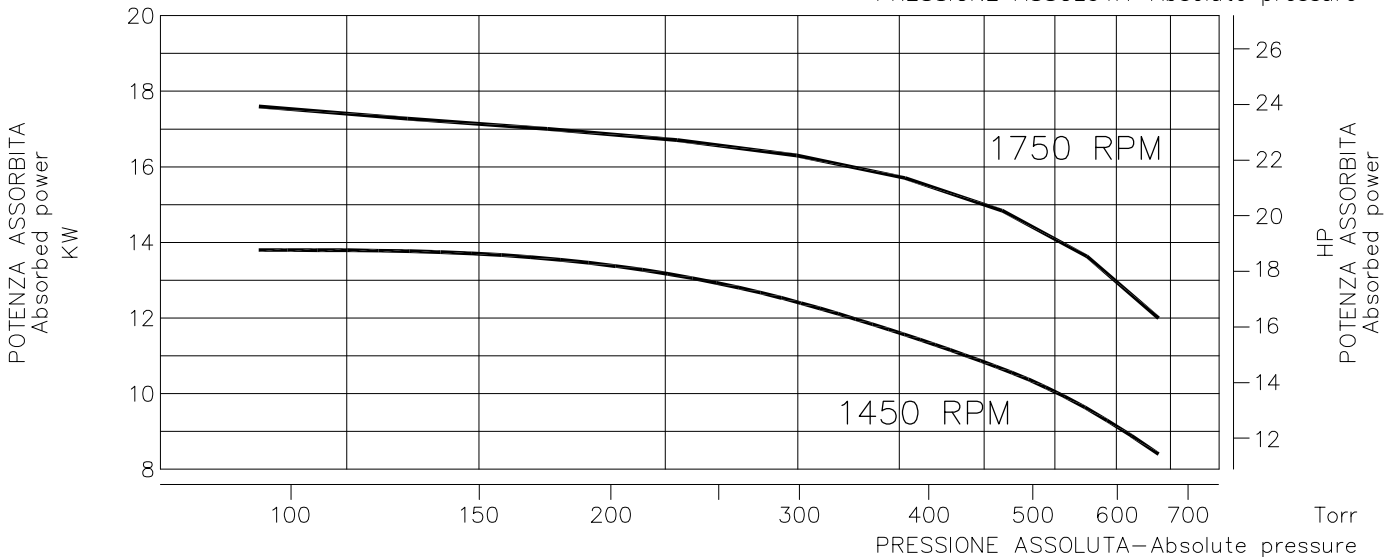
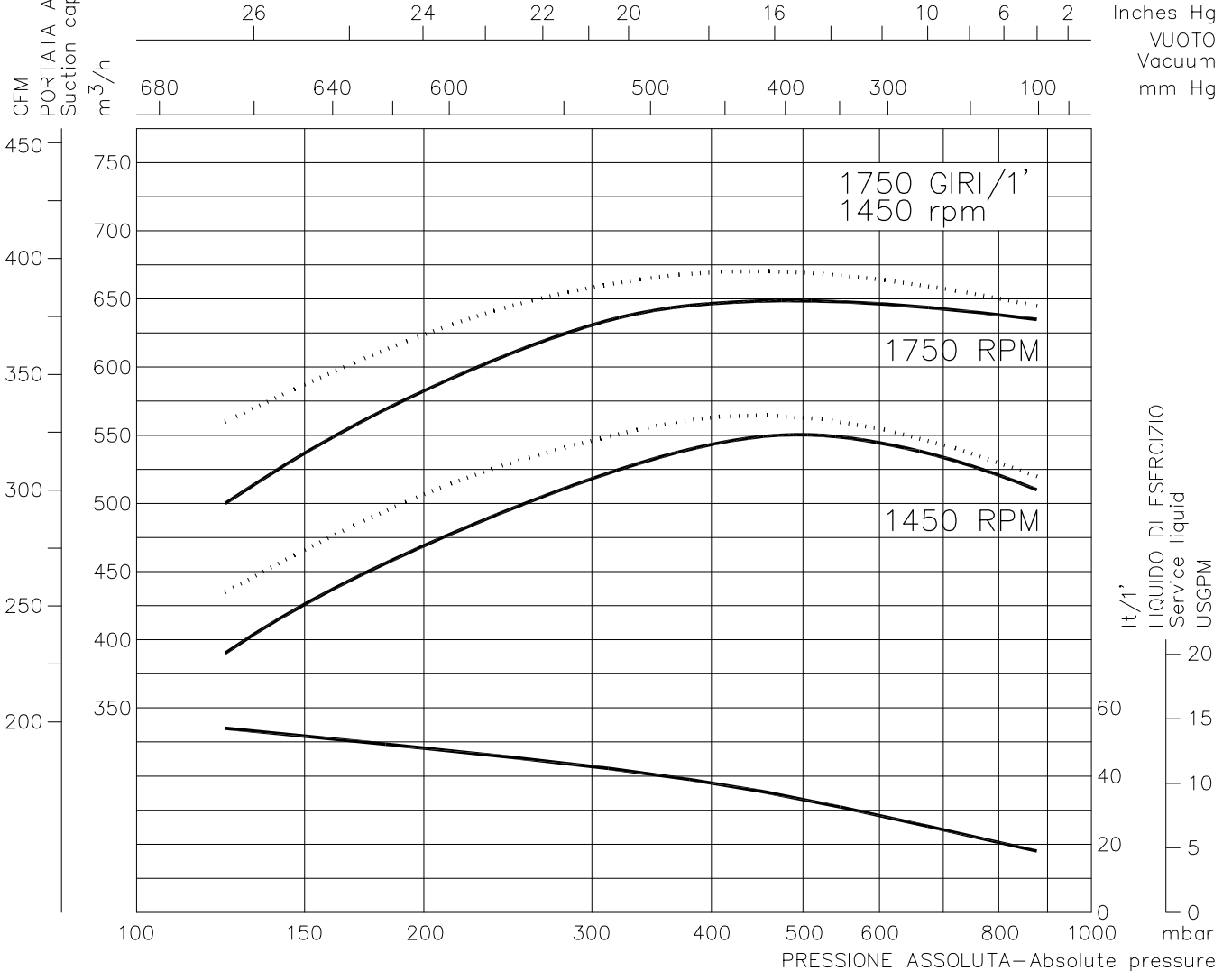
**TRAVAINI
PUMPS USA**
Liquid Ring & Rotary Vane Vacuum Pumps and Systems

200 Newsome Drive
Yorktown, VA 23693
1-800-535-4243
www.Travaini.com

I DATI RIPORTATI SONO RIFERITI A :

Data refers to :

ARIA SECCA A 20 °C	—————	Dry air at 20 °C (68 °F)
ARIA SATURA A 20 °C	Saturated air at 20 °C (68 °F)
LIQUIDO DI ESERCIZIO	ACQUA / Water	Service liquid
TEMPERATURA LIQUIDO DI ESERCIZIO	15 °C (59 °F)	Service liquid temperature
PRESSIONE DI SCARICO	1013 mbar	Discharge pressure
TOLLERANZE	10%	Tolerance





Environmental Inc.

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

STRIPPERATOR SA15B



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

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

CT Series

High Pressure Centrifugal Pumps
 ½ - 2½ HP
 Heads to 140 Feet
 Capacities to 95 GPM



MYERS CT SERIES LINE OF HIGH PRESSURE CENTRIFUGAL PUMPS PROVIDES QUALITY AT A COMPETITIVE PRICE. The complete line of ½ to 2½ HP units provide strong pressures up to 140 feet and flows up to 95 gpm.

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

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

SPECIFICATIONS

HP	Catalog No.		Pipe Tapping Sizes		Motor Voltage	Phase	Approx. Wt. Lbs.
	Composite Impeller	Brass Impeller	Suction (NPT)	Discharge (NPT)			
½	CT05	CT05B	1¼"	1"	115/230	1	30
	CT053	CT05B3	1¼"	1"	208/230/460	3	30
¾	CT07	CT07B	1¼"	1"	115/230	1	32
	CT073	CT07B3	1¼"	1"	208/230/460	3	32
1	CT10	CT10B	1¼"	1"	115/230	1	35
	CT103	CT10B3	1¼"	1"	208/230/460	3	35
1½	CT15	CT15B	1¼"	1"	115/230	1	40
	CT153	CT15B3	1¼"	1"	208/230/460	3	40
2	CT20	CT20B	1¼"	1¼"	115/230	1	57
	CT203	CT20B3	1¼"	1¼"	208/230/460	3	57
2½	CT25	CT25B	2"	1½"	115/230	1	62
	CT253	CT25B3	2"	1½"	208/230/460	3	62

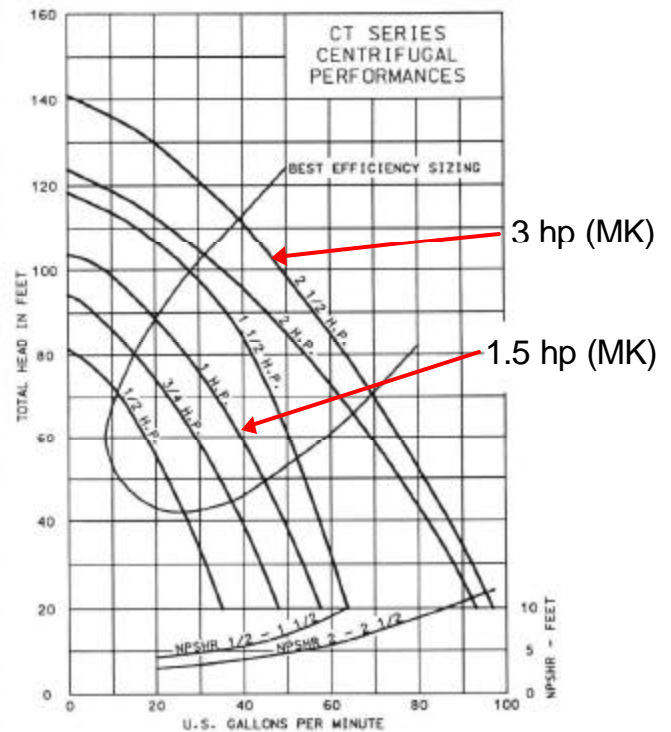
ADVANTAGES BY DESIGN

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

Applications

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

PUMP PERFORMANCE



WHERE INNOVATION MEETS TRADITION

Myers

ISO 9001 Certified Company

CT Series

High Pressure Centrifugal Pumps

1/2 - 2 1/2 HP

Heads to 140 Feet

Capacities to 95 GPM

1. MOTOR MK standard is TEFC construction

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

2. SEAL PLATE

- Heavy duty cast iron for dependable service and long life

3. IMPELLER

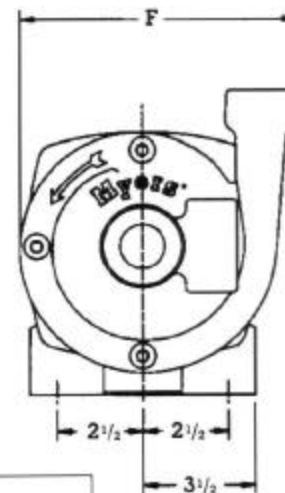
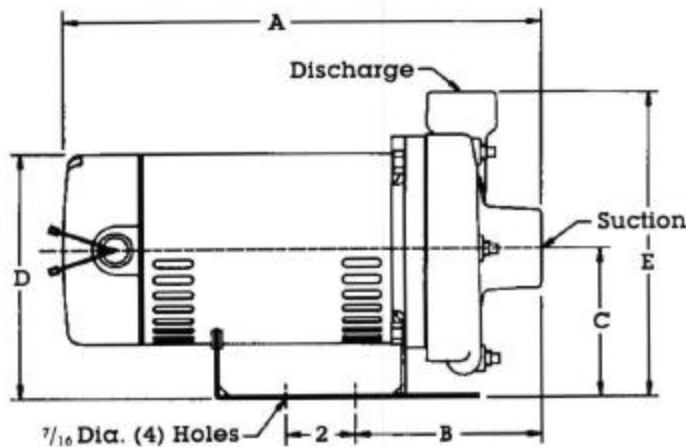
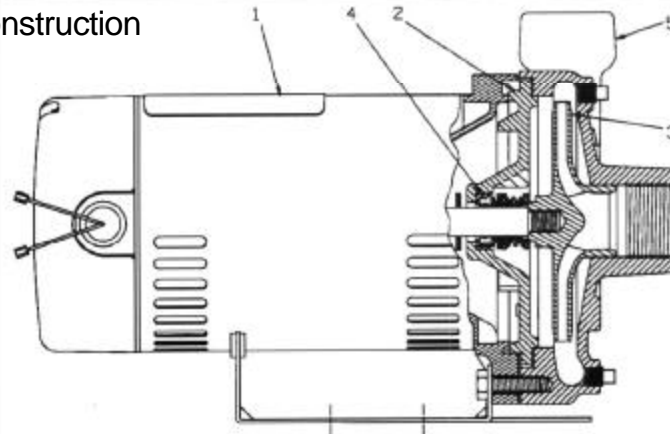
- Reinforced composite for applications to 140° F.
- Threaded SST insert on composite impellers
- Brass for applications to 212° F.
- Enclosed design for high efficiencies
- Balanced for smooth operation

4. MECHANICAL SEAL

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

5. CASING

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



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



FZ300

Cellular Monitoring System

Overview:

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

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

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

Features:

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

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

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

Technical Specifications:

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

Radio Agency Approvals:

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

Each Complete Monitoring System Includes:



Digital Cellular Monitoring Unit:

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



Low Profile or High Gain Cellular Antenna:

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



Mapping & Reporting:

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



Alarming & Notifications:

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



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Operation and Maintenance Form



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OPERATION & MAINTENANCE RECORD

CLIENT: Jet-Pep, Inc.
LOCATION: Jet-Pep #434
1608 Bessemer Road
Birmingham, Alabama

Page: 1 of 1
File Number: _____
Event Date: _____
Field Personnel: _____

SYSTEM DATA	
TOTAL SYSTEM HOURS	
EXHAUST TEMPERATURE	
AMBIENT TEMPERATURE	
EFFLUENT CARBON (ppm)	
INFLUENT CARBON (ppm)	
COMPRESSOR PRESSURE (psi)	
CASING VACUUM "Hg RW-1	
CASING VACUUM "Hg RW-2	
CASING VACUUM "Hg RW-3	
CASING VACUUM "Hg RW-4	
CASING VACUUM "Hg	
CASING VACUUM "Hg	
CASING VACUUM "Hg	
CASING VACUUM "Hg	
TOTAL EFFLUENT DISCHARGE (gal)	
STRIPPER PRESSURE ("H2O)	
AMBIENT FLOW ("H2O) (2" PVC)	

FIELD NOTES: _____



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Quality Assurance / Quality Control 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 CDG 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 CDG 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 CDG 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 analysis (volatile organics) are poured 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 CDG 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 CDG 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 CDG by common carrier or are dropped off by a laboratory representative. Upon receipt of the kits, CDG 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. CDG 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 CDG 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 CDG 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 CDG. 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 CDG 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 CDG, 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.



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Site Health and Safety Plan

Site Health and Safety Plan

**Jet-Pep #434
Birmingham, Jefferson County, Alabama
ADEM Facility ID# 12740-073-001470
ADEM Incident No. UST16-02-01**

Prepared For:

**Jet-Pep, Inc.
P.O. Box 143
Holly Pond, Alabama 35083**

Prepared By:

**CDG Engineers & Associates, Inc.
3 Riverchase Ridge
Hoover, Alabama 35244**

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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 CDG Engineers & Associates, Inc. (CDG) for the Jet-Pep #434 facility in Birmingham, 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 CDG 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 CDG 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. CDG personnel assigned to the project include:

NAME	TITLE	RESPONSIBILITIES
David C. Dailey	Professional Engineer/ 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.
Alecia Hamilton	Environmental Scientist/ Site HSO/Project Manager	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 will include installation and sampling activities.

4.1 Installation Activities

Installation activities generally involve preparing the site for installation activities and also the construction of the MPVE unit onsite. More specifically this will include:

- Preparing the site for work to be performed
- Saw-cutting concrete surface, excavating, and installing well vaults
- Installing polyvinyl chloride (PVC) extraction piping and subsurface utility lines
- Installing piping connections from extraction piping to wellhead
- Overseeing placing and leveling of remediation system
- Completing all piping connections from extraction and utility lines to remediation unit
- Completing all electrical connections
- Installing concrete block security fence
- Inspecting rotation on all electric motors
- Inspecting PVC piping, extraction lines, treatment system, and associated connections for leaks at start up

4.2 Operation and Maintenance Activities

Subsequent to the construction and installation of the MPVE unit, the unit must periodically undergo inspections or maintenance. CDG field personnel will inspect the unit on a weekly basis, taking certain instrument readings necessary to determine the progress of the remediation being performed at that particular site. Maintenance of the unit is performed on an as needed basis. The following applies to operation and maintenance activities associated with the MPVE unit:

- Inspecting proper working condition of telemetry system
- Lubricating motors
- Inspecting piping for leaks
- Inspecting belts on Liquid Ring Vacuum Pump (LRVP) system
- Periodic cleaning of equipment and components
- Periodic inspections of electrical connections

- Measuring induced vacuum in on site monitoring wells
- Removing silt and sludge buildup from knockout pot air stripper, filtration system and other system components
- Measuring air flow from MPVE unit
- Measuring liquid levels in wells
- Sampling effluent for discharge parameters
- Measuring volume of liquids removed and discharged

5.0 Chemical Hazards

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

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 Material Safety Data Sheets (MSDS's) are presented in Attachment A.

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 hazardous 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 hazardous 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 CDG 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 presented in Attachment B.

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, CDG 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 CDG suspects the utility to exist, CDG 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 the ground surface (ft-bgs).

8.2 Electrocutation

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 electrocutation. 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 CDG. CDG will notify local utility companies to provide a site inspection and mark any existing subsurface electrical lines. In addition, CDG 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 electrocutation:

- 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 electrocutation. 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 CDG and should be kept in all company

vehicles. If field personnel are aware of their allergic reactions to insect bites, CDG 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.
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 known 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 CDG 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. CDG requires that the work area be posted with “NO SMOKING” signs in an attempt to prevent fires from occurring; however, as a secondary precaution CDG 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 CDG personnel will be notified of the incident as soon as possible.

11.1 Notification/Reporting Procedures

In the event of an emergency, CDG 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 CDG 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. CDG 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 filed 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, CDG 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. CDG 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, CDG 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		205-481-7000
Corporate HSO	David Dailey	205-403-2600
Project Manager	Alecia Hamilton	205-403-2600
EPA RCRA-Superfund Hotline		800-424-9346
Chemtrec (24 hours)		800-424-9300
Bureau of Explosives (24 hours)		202-293-4048
Centers for Disease Control (Biological Agents)		404-633-5353
National Response Center		800-424-8802

Medical Facility

Name of Hospital: Medical West

Address: 995 9th Avenue SW, Bessemer, AL 35022

Phone: 205-481-7000

Route to Hospital: see attached map with driving directions

Travel Time from Site: 18 minutes

Distance to Hospital: 10.1 miles

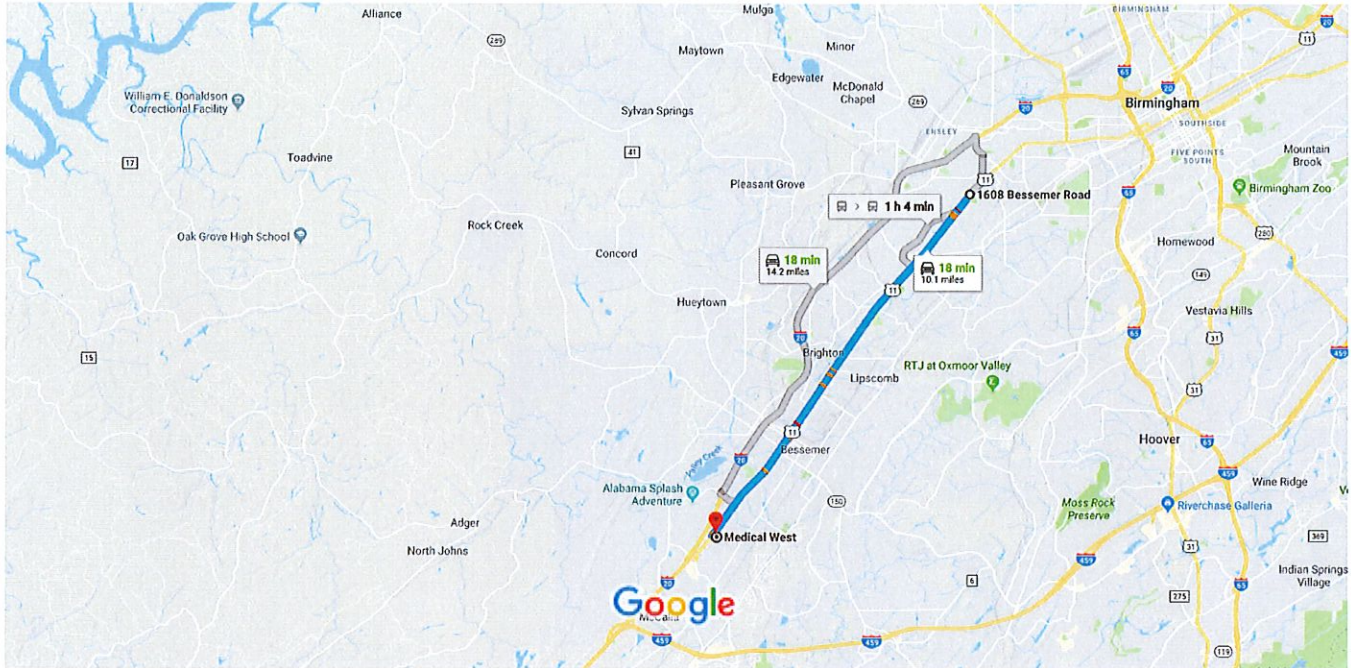
Name/Number of 24-hour Ambulance Service: 911

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



1608 Bessemer Road, Birmingham, AL to
bessemer hospital

Drive 10.1 miles, 18 min



Map data ©2019 Google 2 mi

1608 Bessemer Rd

Birmingham, AL 35208

- ↑ 1. Head southwest on US-11 S/Bessemer Rd toward Ave P
 - 📍 Continue to follow US-11 S
 - 📍 Pass by Advance Auto Parts (on the right in 7.3 mi)

10.0 mi
- ↩ 2. Turn left onto Medical Center Dr

335 ft
- ↩ 3. Turn left

135 ft

Medical West

995 9th Ave SW, Bessemer, AL 35022

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.