Stantec

July 18, 2019

Attention: **Jeff Aul**
Alabama Department of Environmental Management
1400 Coliseum Boulevard
Montgomery, AL 36110-2059

Reference: **Revised Modified Corrective Action Plan (CP-57) and Trust Fund Cost Proposals CP-61 through CP-66 Corrective Action Implementation**
Former Circle (Medical Center) BP
1098 Ross Clark Circle, Dothan, Houston County, AL
ADEM Facility ID No.: 20503-069-002586; Incident No.: UST98-09-01

On behalf of Dth Es Tu Malade? #1, LLC, Stantec Consulting Services Inc. (Stantec) is pleased to present the following Revised Modified Corrective Action Plan (CP-57) and cost proposals CP-61 through CP-66 for corrective action implementation for Former Circle (Medical Center) BP located in Dothan, Alabama.

If you have any questions, please contact me at (615) 829-5452 or Cassidy.Sutherland@stantec.com.

Regards,

Stantec Consulting Services Inc.

Cassidy Sutherland, P.G.
Professional Geologist

Cc. Foy Tatum, Dth Es Tu Malade? #1, LLC

Revised Modified Corrective Action Plan (CP-57)
Former Circle (Medical Center) BP
1098 Ross Clark Circle,
Dothan, Alabama 36303
ADEM #20503-069-002586
UST98-09-01

Stantec

Submitted to:
Mr. Jeff Aul
Alabama Department of Environmental Management
1400 Coliseum Boulevard
Montgomery, AL 36110-2059

Prepared for:
Dth Es Tu Malade? #1, LLC
5455 Troy Highway
Montgomery, AL 36116
Phone: (334) 288-2330 Ext. 102

Prepared by:
Stantec Consulting Services Inc.
601 Grassmere Park Road
Suite 22
Nashville, TN 37211
Phone: (615) 829-5452

July 18, 2019

CERTIFICATION PAGE

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

Signature

Matthew Carlson
Name of Alabama Registered Professional Engineer

Registration Number #27739

07/18/19
Date

Signature

7/23/19
Cassidy Sutherland
Name of Alabama Registered Professional Geologist

Registration Number #1429

07/18/19
Date

REVISED MODIFIED CORRECTIVE ACTION PLAN (CP-57)
FORMER CIRCLE (MEDICAL CENTER) BP
1098 ROSS CLARK CIRCLE, DOTHAN, ALABAMA 36303
ADEM #20503-069-002586
UST98-09-01

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UST98-09-01

1.0 INTRODUCTION

On behalf of Dth Es Tu Malade? #1, LLC, Stantec Consulting Services Inc. (Stantec) presents this Revised Modified Corrective Action Plan (CAP) for Former Circle (Medical Center) BP, located at 1098 Ross Clark Circle in Dothan, Alabama (the Site; **Figure 1**). This revised modified CAP was prepared in response to letters from the Alabama Department of Environmental Management (ADEM), dated May 9 and 24, 2019 (**Appendix A**).

The purpose of this CAP is to present the Site background information; evaluate the extent of petroleum hydrocarbons; present the current exposure assessment; establish remedial objectives; detail the additional remedial action activities proposed for the Site; present rationale for selection of the remediation methods; and provide conclusions and recommendations for implementation of a Site remediation approach.

The ADEM forms, "UST Release Fact Sheet" and "UST Site Classification System Checklist" are included in **Appendix B**.

2.0 SITE BACKGROUND

2.1 SITE DESCRIPTION AND LAND USE

The Site is currently an active CVS Pharmacy located on the northern corner at the intersection of East Main Street and Ross Clark Circle in Dothan, Alabama. Current Site structures include the CVS Pharmacy building in the northern portion of the Site, an inactive air sparge (AS) and soil vapor extraction (SVE) system compound in the northwest portion of the Site, and parking areas in the eastern and southern portions of the Site. Four gasoline underground storage tanks (USTs), a station building, and two product dispenser islands were formerly located in the southern portion of the Site and one diesel UST was formerly located in the eastern portion of the Site. The five USTs were removed in June 1998 and the current CVS Pharmacy was constructed in November 1998. A Site Plan is shown on **Figure 2**.

Land use near the Site consists primarily of commercial properties. The Site is bounded on the northwest by a Waffle House restaurant, on the northeast by a Hardee's restaurant, on the east by Ross Clark Circle, on the south by the intersection of Ross Clark Circle and East Main Street, and on the west by East Main Street. Southeast Alabama Medical Center (Noland Hospital) is located across East Main Street and TitleMax Title Loans, Taco Bell, Avadian Credit Union, and Walgreens are located across Ross Clark Circle.

2.2 REGIONAL AND LOCAL GEOLOGY AND HYDROGEOLOGY

The shallow soil beneath the Site consists of unconsolidated Tertiary Age Residuum. The Residuum was produced from weathering of the Jackson Group and consists of sand, silt, and clay with weathered limestone fragments and chert. Based on regional geologic mapping, these sediments are estimated to be approximately 85 feet thick beneath the Site (Bondurant Environmental Consultants, Inc. [Bondurant], 2002).

Beneath the Tertiary Age Residuum is the Lisbon Formation, which consists of glauconitic fossilferous sands and calcareous clays. The Lisbon Formation is underlain by the Tallahatta and Hatchetigbee Formations. The principal confined aquifers underlying the Site are the Lisbon and Nanafalia-Clayton Aquifers. The Lisbon Aquifer includes sand beds in the Lisbon, Tallahatta, and Hatchetigbee Formations. The Nanafalia-Clayton Aquifer is separated from the overlying Lisbon Aquifer by the Tuscahoma Sand Formation. The Site is in an area of recharge for the Lisbon Aquifer, and is therefore susceptible to surface contamination (Bondurant, 2002).

The uppermost 10 feet of soil beneath the Site reportedly consists of silty clayey sand that grades into a sandy unit with depth. Geologic cross-sections are included in Bondurant's CAP, dated July 2002 (Bondurant, 2002). Soil boring and well construction logs are included in **Appendix C**. Two gradational geologic units are shown on the cross-sections, which differ only by the amount

of clay. The upper unit generally consists of sandy clay and silt. This unit extends to a depth of approximately 10 feet below ground surface (bgs) in most of the borings and generally grades into a sandier unit with depth. Beneath the upper clay unit is a homogenous unit consisting predominantly of orange and white clayey sand, which extends to a depth of at least 55 feet bgs based on soil descriptions from the borehole for deep monitoring well MW-8 (BO-8).

Bondurant reported the vertical hydraulic conductivity in the unsaturated and saturated zones to be $5.2x10^{-7}$ centimeters per second (cm/s) and $3.5x10^{-6}$ cm/s, respectively. Sieve analyses indicated approximately 60% sand and 40% silt and clay in the uppermost saturated soil and approximately 78% sand and 22% silt and clay in the lower saturated zone. Aquifer test data indicated an approximate transmissivity of the uppermost groundwater system (uppermost saturated soil) of 429 gallons per day per foot (gpd/ft) with a storativity of 0.008, which is typical for a confined aquifer. The estimated hydraulic conductivity of the uppermost saturated zone based on the aquifer test data is $3.4x10^{-4}$ cm/s (Bondurant, 2002).

Groundwater monitoring was performed at the Site from December 1998 through May 2017. A total of 12 monitoring wells (MW-1 through MW-12), five extraction wells (VZ-13 through VZ-17), and three AS wells (AS-1, AS-2, and AS-3) are currently present at the Site. Well construction details are presented in the Correction Action System Effectiveness Monitoring Report in **Appendix D**. Groundwater elevation data are presented in **Table 1**. The historical range of depth-to-groundwater measurements from monitoring and extraction wells is 12.18 to 35.09 feet below top of casing (btoc). During the January 2019 groundwater monitoring event, depth-to-groundwater measurements in monitoring and extraction wells ranged from 14.87 to 21.03 feet btoc and the groundwater flow direction was toward the south-southeast, which is generally consistent with historical directions of groundwater flow. The average lateral hydraulic gradient was approximately 0.051 feet per foot (ft/ft). Groundwater elevation contours from January 2019 are shown on **Figure 3** (Stantec, 2019).

2.3 PREVIOUS INVESTIGATIONS AND REMEDIATION

Several soil and groundwater investigations have been conducted at the Site since 1998. A Site Plan showing monitoring well locations is included on **Figure 2**. Groundwater analytical data are summarized in **Table 2** and select January 2019 groundwater analytical data are shown on **Figure 4**. Monitored natural attenuation (MNA) parameter data are summarized in **Table 3** and shown on **Figure 5**. Location of soil samples and historical soil analytical data are shown on **Figure 6**. Soil boring and well construction logs are included in **Appendix C**.

On June 29, 1998, four gasoline USTs (two 10,000-gallon and two 3,000-gallon) and one 3,000-gallon diesel UST were removed from the Site. Seven of the 17 soil samples collected from the UST tank pit areas contained total petroleum hydrocarbons (TPH) concentrations above 100 parts per million (ppm). Approximately 450 tons of excavated soil was removed and sent off-Site for landfill disposal (Bondurant, 2002).

In February 1998, four shallow Type II monitoring wells (MW-1 through MW-4) were installed at the Site. In February 2000, three shallow Type II monitoring wells (MW-5, MW-6, and MW-7) and a deep Type III monitoring well (MW-8) were installed at the Site. In April 2001, four shallow Type II monitoring wells (MW-9 through MW-12) were installed at the Site. A total of 22 soil samples were collected during the three investigations, with a maximum benzene concentration of 0.295 milligrams per kilogram (mg/kg) in the sample collected from MW-9 at 28 to 30 feet bgs, and a maximum methyl tertiary-butyl ether (MTBE) concentration of 1.02 mg/kg in the sample collected from MW-3 at 14 to 16 feet bgs (Bondurant, 2002).

On August 2 and 3, 2000, a 24-hour high vacuum extraction (HVE) event was conducted at the Site. During the event, approximately 250 gallons (1,537 pounds) of gasoline were extracted. A second 24-hour HVE event was conducted on July 16, 2001 and approximately 1,650 gallons of petroleum-contacted water (PCW) and 356 gallons (2,196 pounds) of hydrocarbons were extracted (Bondurant, 2002). Between March 19, 2009 and December 21, 2016, a total of 20 8-hour HVE events were conducted at the Site. Including the first two 24-hour HVE events in 2000 and 2001, a total of approximately 21,783 gallons of PCW and approximately 1,223 gallons (7,542 pounds) of hydrocarbons were removed through these HVE events (Stantec, 2017a). A summary of HVE recovery data is provided in **Table 4**.

In July 2002, a CAP recommending a SVE system be installed at the Site was submitted and approved by ADEM. Several SVE extraction wells were installed the following year (Bondurant, 2003). On March 16, 2005, an Alabama Risk-Based Corrective Action (ARBCA) Tier I and Tier II Evaluation was submitted by SECOR International Incorporated (SECOR; 2005a). On November 8, 2005, the SVE system, which consists of an 8 horsepower (hp) blower, a 40-gallon capacity air/water separator, five 4-inch SVE extraction wells (VZ-13 through VZ-17), and an air pollution control device (APCD) of activated carbon, was installed and a Remediation System Installation Report was submitted by SECOR on November 14, 2005 (SECOR, 2005b). The SVE system was started up on March 7, 2006.

On November 11, 2010, an AS Optimization Plan recommending the installation of an AS system and three AS wells was submitted by Stantec. The optimization plan was approved by ADEM on March 24, 2011. The AS system, which consists of a 10 hp compressor and three 2-inch AS wells (AS-1, AS-2, and AS-3), was started up on August 17, 2011 (Stantec, 2010). On February 22, 2012, continuous operation of the AS system was ceased due to the concern for potential spread of PSH. From February 2012 through September 2014, the AS system was only operated during short-term HVE events. The AS system returned to continuous operation on September 7, 2014.

Routine AS/SVE system operations and maintenance (O&M) activities included checking the total system vacuum, obtaining ambient and exhaust air temperatures, field screening, measuring air flow coefficients, and adjusting system flow rates based on the readings. Historical AS/SVE system operations data are included in **Appendix D**.

The ADEM Air Division approved of bypassing the SVE system APCD of activated carbon in a

letter dated August 9, 2016 because no phase-separated hydrocarbons (PSH; i.e., free product) had been observed at the Site since 2015 and emissions from the SVE system were below the required loading limit for APCD of 0.1 pounds per hour.

On March 7, 2017, the Stantec field technician observed that the vanes to the AS system were broken and the system could not be operated. Per ADEM correspondence dated March 8, 2017, the AS system has not been repaired or restarted. The SVE system was also shut down on March 14, 2017 per ADEM guidance.

From October 3 through 6, 2017, a Dual-Phase Extraction (DPE) pilot test was conducted to evaluate the feasibility of multi-phase extraction (MPE) at the Site. Pilot testing was conducted individually at wells VZ-14 and VZ-15, with wells MW-3, MW-7, MW-8, MW-10, MW-11, and VZ-13 used as observation wells. Pilot testing was only intended to be conducted with well VZ-14 as the extraction well, but due to short-circuiting issues because of multiple well casing fractures at well VZ-14, the test was moved to well VZ-15.

Results from the DPE pilot test indicate drawdown was observed in observation wells up to 51 feet from extraction well VZ-14. A maximum of 1.11 feet of drawdown was observed 8.7 feet from extraction well VZ-14 in observation well MW-7. No drawdown was measured in observation wells associated with extraction from well VZ-15. No sustained vacuum radius of influence (ROI) was observed for extraction wells VZ-14 or VZ-15. This could be due to short-circuiting issues, the distance of the observation wells from the extraction well (for testing at well VZ-15 especially), and tight soil formations in the area of the wells.

During the 48 hours that the DPE system was operated on well VZ-14, approximately 8.48 pounds of hydrocarbons (equivalent to 1.76 gallons of gasoline) were removed at an average total loading rate of 0.24 pounds/hour. During the 22 hours that the DPE system was operated on well VZ-15, approximately 1.62 pounds of hydrocarbons (equivalent to 0.26 gallons of gasoline) were removed at an average total loading rate of 0.07 pounds/hour. Based on the low vacuum ROI, drawdown, and mass removal rates observed during the DPE pilot testing (especially at VZ-15, since VZ-14 had short-circuiting issues), the DPE technology did not appear to be effective at the Site (Stantec, 2017b).

From March 19 through 22, 2018, high-resolution soil profiling was conducted at the Site. Six ultra-violet optical screening tool (UVOST) borings, three membrane interface/hydraulic profiling tool (MiHPT) borings, and two confirmation borings with soil and groundwater sample collection were completed within the vicinity of the former gasoline UST area near monitoring well MW-3 and vapor extraction well VZ-17. Results from the investigation indicated there were impacts in the source area at the Site, but PSH is no longer present. Confirmation soil analytical results were several orders of magnitude less than the United States Environmental Protection Agency (EPA) Regional Screening Level (RSL) soil saturation concentration (C_{sat}) values, indicating the soil concentrations are not indicative of PSH and that PSH within the soil pores is unlikely.

Additionally, no PSH or sheen was visually observed in the soil or groundwater during the investigation (Stantec, 2018).

From November 2018 to January 2019, a sulfate injection feasibility study was conducted, which included two groundwater monitoring and sampling events, one on November 19 and 20, 2018 and one on January 20 and 21, 2019. Additional sampling for benzene, toluene, ethylbenzene, and xylenes (BTEX) and MTBE was conducted during both groundwater monitoring and sampling events. Additionally, groundwater samples were analyzed for MNA parameters, including sulfate, nitrate, and ferrous iron. Field measurements of pH, dissolved oxygen (DO), and oxidation-reduction potential (ORP) were also collected in the field and groundwater samples were screened for sulfate reducing bacteria (SRB) populations using BART™ biodetectors.

Results of the sulfate injection feasibility study indicated that natural sulfate levels appear to be nearly depleted and the subsurface geochemical and SRB population conditions are suitable for petroleum hydrocarbon degradation by SRB. Sulfate injection technology was recommended to reduce dissolved-phase petroleum hydrocarbon concentration through enhanced anaerobic biological treatment (Stantec, 2019).

3.0 EXTENT OF PETROLEUM HYDROCARBONS

3.1 EXTENT OF PSH

As shown on **Table 1**, several wells at the Site have a history of PSH; however, the corrective action conducted since 2000 has removed all PSH. PSH was last detected on-Site in extraction well VZ-15 on September 23, 2015 (thickness of 0.04 feet). No other wells contained PSH in 2013, 2014, and 2015, and no wells contained PSH in 2016 or 2017, or 2019. Results from the March 2018 high-resolution soil profiling confirm there are impacts in the source area at the Site, but PSH is no longer present. Confirmation soil analytical results were several orders of magnitude less than the EPA RSL C_{sat} values, indicating the soil concentrations are not indicative of PSH and that PSH within the soil pores is unlikely. Additionally, no PSH or sheen was visually observed in the soil or groundwater during the investigation (Stantec, 2018; 2019).

3.2 EXTENT OF PETROLEUM HYDROCARBONS IN SOIL

Historical soil sample analytical results are shown on the soil constituent concentration map on **Figure 6**. Soil analytical results are compared to the most conservative of the Alabama risk-based screening levels (RBSLs) for indoor and outdoor air inhalation of subsurface soil by commercial and construction workers and the groundwater resource protection (GRP) target concentrations where the distance from the source to the point of exposure is 555 feet (ADEM, 2001; SECOR, 2005a). These RBSLs are listed on **Figure 6**. The Initial Screening Levels (ISLs) are not appropriate for this Site given that the ingestion, dermal contact, and inhalation of outdoor particulates from surficial and subsurface soil exposure pathways are considered incomplete for all current or future human receptors (Section 4.5).

As shown on **Figure 6**, only the MTBE concentration in borehole BO-3/MW-3 at a depth of 14 to 16 feet bgs exceeded the RBSLs. These impacts are confined to the Site and defined by boreholes BO-1/MW-1, BO-2/MW-2, BO-4/MW-4 through BO-7/MW-7, BO-9/MW-9 through BO-12/MW-12, and LIF-05. Shallow soil is not impacted by petroleum hydrocarbons.

3.3 EXTENT OF PETROLEUM HYDROCARBONS IN GROUNDWATER

Groundwater sample analytical results for petroleum hydrocarbons are presented in **Table 2** and shown on the groundwater constituent concentration map on **Figure 4**. Groundwater results are compared to GRP Site-Specific Target Levels (SSTLs) developed using an ARBCA evaluation without decay (SECOR, 2005a). A summary of the GRP SSTLs is included in **Table 2**.

As shown on **Table 2** and **Figure 4**, when wells were last sampled in January 2019, benzene concentrations exceeding GRP source area SSTLs were observed in wells MW-3, MW-8, VZ-15, and VZ-17 and MTBE concentrations exceeding the GRP source area SSTL was observed in well

MW-3. No other detected constituents exceeded source SSTLs and no point of compliance (POC) SSTLs were exceeded. The dissolved-phase benzene and MTBE plumes are confined to the Site property and adequately delineated by data at monitoring wells MW-1, MW-2, MW-4, MW-5, MW-6, MW-7, MW-9, MW-10, MW-11, and MW-12. Down-gradient off-Site well MW-12 was installed approximately over 18 years ago and remains non-detect, which indicates that contaminants are not migrating off-Site.

3.3.1.1 Plume Stability

Spatially, the dissolved-phase benzene and MTBE plumes have decreased in overall size (i.e., wells that previously had concentrations above groundwater GRP SSTLs now have concentrations below GRP SSTLs). Source wells MW-1, MW-7, MW-9, and MW-10 and POC well MW-11 for benzene and source wells MW-8 and VZ-13 for MTBE were previously within the respective constituent plumes, but concentrations have since decreased, and these wells are now outside the respective plume boundaries.

The dissolved-phase petroleum hydrocarbon plumes are also stable or decreasing in concentration. To demonstrate this, a groundwater analytical data trends analysis was conducted on Site wells that have exceeded GRP SSTLs during at least one of the last four sampling events (source wells MW-3, MW-8, and VZ-13 through VZ-17 for benzene and source well MW-3 for MTBE) or Site wells that previously exhibited PSH or exceeded GRP SSTLs, but no longer do (source wells MW-1, MW-7, MW-9, and MW-10 and POC well MW-11 for benzene and source wells MW-8 and VZ-13 for MTBE). As part of the trends analysis, Mann-Kendall Statistical Tests and first-order trend graphs were prepared. The Mann-Kendall Statistical Tests were prepared using Form 4400-215 from the State of Wisconsin Department of Natural Resources Remediation and Redevelopment Program. Following completion of the Mann-Kendall Statistical Tests, first-order trend graphs were prepared where additional trend information was required. The completed forms and graphs are included in **Appendix E**, with results summarized on **Table 5**.

The Mann-Kendall Statistical Tests indicated that benzene concentrations in wells MW-1, MW-3, MW-7, MW-8, MW-9, and VZ-15 and MTBE concentrations in wells MW-3 and MW-8 are decreasing; benzene concentrations in well MW-10 are stable; benzene concentrations in wells MW-11, VZ-13, VZ-14, and VZ-16 and MTBE concentrations in well VZ-13 are non-stable; and benzene concentrations in well VZ-17 are increasing. Even though the Mann-Kendall Statistical Tests indicated non-stable or increasing concentration trends for benzene at wells MW-11, VZ-13, VZ-14, VZ-16, and VZ-17 and MTBE at well VZ-13, the Mann-Kendall Statistical Tests only utilize concentrations from the last 10 sampling events rather than all available data. First-order trend graphs can utilize all available sample data and can also be used to determine concentration trends. Therefore, first-order trend graphs utilizing all available sampling data were prepared for benzene at wells MW-11, VZ-13, VZ-14, VZ-16, and VZ-17 and MTBE at well VZ-13. These graphs indicated decreasing concentration trends for benzene at wells MW-11, VZ-13, VZ-14, and VZ-16 and MTBE at well VZ-13 and stable concentration trends for benzene at well VZ-17.

4.0 EXPOSURE ASSESSMENT

An exposure assessment helps to identify complete and potentially complete exposure pathways relevant to human health risks at the Site based on analyses of the following components:

- Current and future land uses;
- Groundwater well, surface water body, and utility evaluations;
- Potentially exposed populations; and
- Complete and potentially complete exposure pathways.

4.1 CURRENT AND FUTURE LAND USES

The Site is currently an active CVS Pharmacy located on the northern corner at the intersection of East Main Street and Ross Clark Circle in Dothan, Alabama. Land use near the Site consists of commercial properties. No residential areas are located within 500 feet of the Site. None of the surrounding businesses appear to have basements. Based on the predominant commercial land use and the Site's location at a major intersection, the Site will likely continue to be used for commercial purposes in the future.

4.2 WATER SURVEY

4.2.1 Groundwater Wells

No active private drinking water wells have been identified within 1,000 feet of the Site. One public water supply well (City of Dothan Well #13) was identified within 1 mile of the Site; however, this well was located approximately 3,200 feet northwest (cross-gradient) of the Site. The City of Dothan Well #13 is listed as having a total depth of 720 feet bgs and is screened within the Tallahatta and Nanafalia Formations. The pumping water level in the well was reported to be approximately 300 feet bgs in 1987 (SECOR, 2005a).

4.2.2 Surface Water Bodies

The United States Geological Survey (USGS) 7.5-minute topographic map for the Dothan East Quadrangle and aerial photos from Google Earth® were reviewed to identify any surface water within a 500-feet radius of the Site. No surface water bodies were identified within a 500-feet radius of the Site.

4.3 UTILITY EVALUATION

A storm sewer curb inlet is located at the southeast corner of the Site property and drains to a grass swale located east of the Site. Municipal water and sanitary sewer services are provided to the Site by the City of Dothan through underground lines. These utilities are present in the Right-of-Way to East Main Street on the south side of the Site (SECOR, 2005a). The dissolved-phase petroleum hydrocarbon plume, with depth-to-groundwater historically ranging from approximately 12 to 35 feet bgs, likely passes beneath these utilities and does not intersect them.

4.4 POTENTIALLY EXPOSED POPULATIONS

Based on the current and likely future use of the Site and adjacent and down-gradient properties as commercial, the current or future potentially exposed populations on Site and off Site include commercial workers and construction workers.

4.5 EXPOSURE PATHWAY ANALYSIS

An exposure pathway is considered complete or potentially complete if it meets four basic requirements: 1) presence of chemical sources; 2) release and transport within an environmental medium; 3) an exposure route; and 4) a receptor. A graphical representation of the exposure pathway analysis for the Site is shown on **Figure 7**.

Incomplete exposure pathways are justified as follows:

- The ingestion, dermal contact, and inhalation of outdoor particulates from surficial and subsurface soil exposure pathways are considered incomplete for all current or future on-Site and off-Site commercial and construction workers because soils with detectable hydrocarbon concentrations were present at depths greater than 10 feet bgs. Furthermore, soil impacts are confined to the Site and most of the Site is paved.

- The ingestion of groundwater exposure pathways are considered incomplete for all current or future on-Site and off-Site commercial and construction workers because the Site and surrounding properties are supplied water from municipal sources and no water supply wells are present within 1,000 feet of the Site.

Potentially complete exposure pathways are summarized as follows:

- The soil gas and groundwater emission pathways (inhalation of indoor and outdoor air) are considered potentially complete for current and future on-Site and off-Site commercial and construction workers because migration of vapor emissions from impacted soil and groundwater through cracks in the building foundations, pavement, and ground cover are possible.

4.6 RISK EVALUATION

Although the soil gas and groundwater emission pathways are considered potentially complete for current and future on-Site and off-Site commercial and construction workers, all soil and groundwater concentrations are below Alabama indoor and outdoor inhalation RBSLs (ADEM, 2001), indicating no unacceptable health risks to receptors.

With no unacceptable health risks to receptors, the site conceptual exposure scenario, and thus SSTLs (presented throughout this document), are based on future GRP considerations, with an imaginary point of exposure of 555 feet from the Site, per ADEM ARBCA guidance (ADEM, 2001).

5.0 REMEDIAL OBJECTIVES

5.1 REMEDIATION GOALS

The remediation goal is defined as the point at which implementation of an active remedial alternative will be stopped. Remediation goals are identified as removal of free product from the Site and reduction of dissolved-phase petroleum hydrocarbon concentrations to less than GRP SSTLs.

Based on the evidence presented in Section 3.1, the free product removal goal is considered met. In addition, dissolved-phase concentrations for POC wells have already been reduced to below POC GRP SSTLs; therefore, the only remaining remediation goal is reduction of dissolved-phase petroleum hydrocarbon concentrations to less than GRP SSTLs in the source area.

5.2 TARGET ZONE OF REMEDIATION

The target zone of remediation includes the area surrounding wells MW-3, MW-8, VZ-13, VZ-15, VZ-16, and VZ-17, as constituent concentrations remain above the benzene source GRP SSTL for all listed wells and above the MTBE source GRP SSTL in well MW-3. The vertical extent of the target zone of remediation generally extends to approximately 36 feet bgs.

6.0 REMEDIAL ACTION IMPLEMENTATION

Sulfate injection for enhanced anaerobic biological treatment has been selected as the remedial technology most likely to effectively address the remaining Site remediation goal of reducing dissolved-phase concentrations to below SSTLs in the source area.

6.1 SULFATE INJECTION TECHNOLOGY DESCRIPTION

The EPA defines MNA as the "reliance on natural attenuation processes to achieve site-specific remedial objectives within a timeframe that is reasonable compared to that offered by other more active methods." These in-situ processes include biodegradation, dispersion, dilution, sorption, volatilization, and chemical or biological destruction of contaminants. For petroleum-impacted sites, biodegradation is the predominant process for plume stabilization. Most sites have millions of bacteria in the soil and groundwater that are readily capable of degrading petroleum hydrocarbons if geochemical conditions are suitable. Geochemical conditions are considered suitable when there is a surplus of electron acceptors available for use as an energy and oxygen source for biodegradation processes. Many petroleum-impacted sites are electron-acceptor limited, however, so bioremediation kinetics are dependent upon the rate at which new electron acceptors are delivered to the subsurface through infiltration and dispersion. Testing has shown that artificial introduction of soluble electron acceptors into the subsurface can greatly increase natural biodegradation rates to enhance MNA processes.

Biodegradation of petroleum hydrocarbons such as BTEX occurs naturally when suitable microbial populations and geochemical conditions are present in the subsurface. The major driving force for biological processes involves the transfer of energy in the form of electrons. During biodegradation, petroleum hydrocarbons serve as the electron donor. The mechanisms for aerobic degradation processes in which oxygen serves as an electron acceptor are well documented. Typical field applications utilize SVE/bioventing, air sparging, hydrogen peroxide, and/or oxygen release compounds for oxygen delivery to the subsurface. A broad range of microorganisms are capable of aerobically degrading petroleum-related constituents; however, the availability of oxygen is limited at most sites with petroleum hydrocarbons due to the low solubility of oxygen in water and the rapid consumption of oxygen by other competing scavengers. Opportunely, there exists indigenous petroleum-degrading microorganisms that can anaerobically degrade petroleum hydrocarbons using alternative electron acceptors such as ferric iron, nitrate, sulfate, and to a lesser extent manganese. During these processes, more specific bacteria types are involved; therefore, the presence of the appropriate type of bacteria is essential to successful petroleum hydrocarbon degradation.

SRB will utilize sulfate as an electron acceptor to degrade petroleum hydrocarbons in groundwater. The process has been documented to readily degrade each of the BTEX

compounds. In the process, the hydrocarbon is degraded to carbon dioxide and water and the sulfate is reduced to sulfide. The degradation of benzene is shown below:

$4C_6H_6 + 15SO_4^{-2} \rightarrow 24CO_2 + 15S^{-2} + 12H_2O$

Optimum conditions for petroleum hydrocarbon degradation by SRB include anaerobic conditions (DO < 2 milligrams per liter [mg/L]), ORP of groundwater between 0 and -200 millivolts (mV), and neutral pH. Approximately 4.6 mass units of sulfate are stoichiometrically required to degrade one mass unit of hydrocarbon. Biodegradation of hydrocarbons by SRB is relatively common as these bacteria are extremely resilient and can be found in almost every environment, though in some cases supplementation of SRB is necessary.

6.2 SULFATE INJECTION SCOPE OF WORK

The work tasks to be completed include the following:

- Project preparation and permitting;
- Site health and safety plan;
- Baseline groundwater sampling;
- Sulfate solution injection; and
- Post-injection monitoring.

Each phase of the proposed sulfate injection program is discussed in greater detail below.

6.2.1 Project Preparation and Planning

During this phase of operation, the following work will be completed:

- Procurement of equipment and materials;
- Scheduling and coordination activities; and
- Acquisition of required permits.

The sulfate injection activities will involve the injection of a sulfate solution into the subsurface to enhance in-situ biodegradation. Injection of treatment solutions into the groundwater for remedial purposes is permitted by rule under 40 Code of Federal Regulation (CFR) §144 since it involves a beneficial use, Class V, underground injection control (UIC) well for aquifer remediation (classified as a category 5X26 well in EPA 570/9-87-006). Inventory reporting requirements are applicable as described in 40 CFR §144.83. Alabama is a UIC Primacy State for

Class V wells and the ADEM Groundwater Branch has regulatory authority over injection wells used for remediation purposes.

Any person or operator who wishes to construct an injection well must submit an ADEM UIC Class V well permit application to the ADEM Groundwater Branch. This requirement extends to modifying an existing injection well and converting another well type to an injection well (even in cases where mechanical condition does not change). The permit application requirements are included in **Appendix F**. The permit application must contain information detailing location, elevation, and layout; lease identification and well number; a list of tools and equipment to be used; expected depth and geologic characteristics; drilling, mud, casing, and cementing plans; logging, coring, and testing plans; waste disposal plans; environmental considerations; and emergency procedures. Local regulatory agencies may also require notification or additional permitting requirements prior to injection of solutions into the ground. All permitting requirements will be determined and accounted for prior to initiating injection activities.

6.2.2 Site Health and Safety Plan

As required by the Occupational Health and Safety Administration Standard "Hazardous Waste Operations and Emergency Response" guidelines (29 CFR 1910.120), Stantec has created a Site-specific Health and Safety Plan (HASP) for the field work proposed herein. The HASP outlines potential hazards to Stantec field personnel during the field activities. Job safety analyses (JSAs) for tasks to be performed by Stantec personnel (e.g., driving, sulfate injection activities, sample collection, etc.) are included. The HASP also includes required personal protective equipment (PPE) to be worn by Stantec field personnel for each task. Stantec has also produced a Journey Management Plan (JMP) to prevent losses associated with motor vehicle incidents. A copy of Stantec's HASP and JMP are included in **Appendix G** and will be available on-Site during field activities.

6.2.3 Baseline Groundwater Sampling

Baseline groundwater sampling was conducted at proposed injection wells (VZ-13, VZ-14, VZ-15, VZ-16, and VZ-17) and observation wells (MW-2, MW-3, MW-4, MW-5, MW-6, MW-8, MW-10, MW-11, MW-12) in November 2018 and January 2019. The proposed injection wells are wells that have exceeded benzene and MTBE GRP SSTLs during at least one of the last four sampling events and are considered within the dissolved-phase benzene plume. With this criteria, wells MW-3 and MW-8 would also be considered for injection, but because the wells are constructed as monitoring wells and not remediation wells, they will not be used for injection. Instead, monitoring wells MW-3 and MW-8 have been included as observation wells. Wells MW-2, MW-4, MW-5, MW-6, MW-10, MW-11, and MW-12 are considered background wells and have never been a part of the dissolved-phase benzene plume or haven't been part of the plume for over 6 years.

Existing remediation wells are proposed as injection wells due to the property owners request to not conduct drilling activities because they would further disrupt the CVS Pharmacy's use of the property. A Site Plan showing the proposed injection and observation wells is shown on **Figure 8**. Boring logs and well construction details for the proposed injection and observation wells are provided in **Appendix C**.

As part of the baseline sampling, the proposed injection and observation wells were purged to ensure representative groundwater samples were collected. The following analyses were performed for each well location:

- Field measurement of pH, ORP, DO, and depth-to-groundwater;
- BTEX, MTBE, and naphthalene by EPA Method 8260;
- Sulfate and nitrate by EPA Method 9056A;
- Ferrous iron by SM 3500 FeB-2011; and
- SRB populations using BART™ biodetectors.

The BART™ biodetectors were used to determine the amounts of SRB in the subsurface at the Site and are manufactured by Droycon Bioconcepts, Inc. The manufacturer's technical specification sheet for the biodetectors is provided in **Appendix H**.

BTEX and MTBE data from the baseline sampling events are included in **Table 2** and the pH, ORP, DO, sulfate, nitrate, ferrous iron, and SRB data are included in **Table 3**. In addition, all but the SRB data are shown on **Figure 5**. Although DO levels in wells within the petroleum hydrocarbon plume varied and were above 2 mg/L in some wells, negative ORP values between 0 and -200 mV were generally present in wells within the petroleum hydrocarbon plume and are indicative of reducing anaerobic conditions and are optimal for petroleum hydrocarbon reduction by SRB. Evidence of nitrate, sulfate, and ferric iron reduction is an additional indication of anaerobic conditions. The SRB screening results show that SRB population levels are low to moderate across the Site, with the highest levels observed within the petroleum hydrocarbon plume.

The natural supply of sulfate appears to be depleted in wells within the petroleum hydrocarbon plume. However, this indicates petroleum hydrocarbon degradation by SRB has historically occurred and is likely to continue to occur with the delivery of additional sulfate to the subsurface through sulfate injection. In addition, approximately neutral pH values (ranging from 5.73 to 6.08 standard units [su]) are present in wells within the petroleum hydrocarbon plume. Based on this evaluation, the subsurface geochemical and SRB population conditions appear suitable for petroleum hydrocarbon degradation by SRB (Stantec, 2019).

6.2.4 Sulfate Injection Activities

The sulfate solution will be prepared and injected in a batch process during one sulfate injection event. The water will preferably be obtained from a nearby fire hydrant, located on the eastern

side of the Site. If approval cannot be obtained to use the hydrant, water truck delivery will be used. A garden hose spigot will not be used because typical garden hose spigot flow rates range from approximately 3 to 6 gallons per minute, which would take at least 27 hours to fill the tank the approximate 10 times needed for the injections. The water will be pumped into a 1,000-gallon polytank equipped with a submersible pump and sufficient Epsom salt (magnesium sulfate heptahydrate) added to provide a 990 mg/L sulfate solution. The submersible pump will be used to mix the sulfate solution in the polytank and for injection from the tank to the injection wells. The pump will include a valved distribution manifold line with an in-line flowmeter to regulate injection flow. The injection plumbing will be configured to utilize 4-inch hose with Camlock fittings to connect the injection hose to the proposed injection wells (VZ-13, VZ-15, VZ-16, and VZ-17). Well VZ-14 is also a proposed injection well, but due to the short-circuiting issues observed at the well during the DPE pilot test, the sulfate solution will be gravity fed rather than injected. The sulfate injection layout is shown on **Figure 8**. It is proposed for Stantec to conduct the sulfate injection event; however, per ADEM protocol, Stantec was required to obtain a second quote for another contractor to conduct the sulfate injection event with Stantec oversight. Environmental Products & Services of Vermont, Inc. (EPS) provided that second quote and the Stantec and EPS quotes are presented in **Appendix I**.

The sulfate injection design is based on a 20-foot well screen interval for wells VZ-13, VZ-14, VZ-15, VZ-16, and VZ-17, a 10-foot ROI from the injection well, a 25% effective soil porosity, and a target pore volume exchange of 50%. The 25% effective porosity was based on a site-specific total porosity of approximately 30%. The 5% difference considers isolated pores and pore volume occupied by water. The estimated volume of sulfate solution to be injected into the subsurface is calculated to be approximately 1,900 gallons per injection well for wells VZ-13, VZ-14, VZ-15, VZ-16, and VZ-17. This equates to a total injection solution volume of approximately 9,500 gallons. As stated above, the target sulfate concentration of the injection solution will be 990 mg/L. Since Epsom salt is 39% sulfate by weight, approximately 20 pounds of Epsom salt will be required to prepare a 1,000-gallon batch of sulfate solution for injection operations.

Separate batches of sulfate solution will be made up for each injection well and the solution will be injected (or gravity fed, in the case of well VZ-14) one well at a time. Injection activities will be conducted at the wells in the following order: VZ-17, VZ-15, VZ-16, VZ-13, and VZ-14. The injection flow rate able to be achieved at each injection well will be unknown until the actual sulfate injection event; however, the flow rate will be monitored in the field using the in-line totalizer from the tank to the injection well. The property owner has requested the injection event be 2 weeks or less in order to limit disruption to the active CVS Pharmacy on-Site; therefore, based on the flow rates able to be achieved during injections at wells VZ-17, VZ-15 and VZ-16, injection into the remainder of the injection wells may not occur or may be postponed until a later date (additional injection events) to keep the event to 2 weeks or less.

The pressure will be monitored at regular intervals using a pressure gauge at the injection well head. The pressure will be kept at approximately 10 pounds per square inch (psi) or less; any higher and the well seals could be blown out and/or daylighting could occur. The volume

injected, pressure, and injection flow rate will be recorded at least every hour, or more often, as needed.

At the conclusion of the sulfate injection event, the equipment will be demobilized from the Site. All wells will be secured, and the property will be restored to its pre-sulfate injection event appearance.

The basis of design presented herein (i.e., the amount of injection fluid) is based on the geology and hydrogeology reported in Bondurant's CAP (Bondurant, 2002) and the *ARBCA Tier I and Tier II Report*, dated March 16, 2005 (SECOR, 2005a). This includes an uppermost saturated zone consisting of a homogenous unit of clayey sand (78% sand and 22% silt and clay), with a hydraulic conductivity of $3.4x10^{-4}$ cm/s and total porosity of 30.23%. Should the saturated zone not be as homogenous as previously described, with conditions indicative of lower permeability soils (such as silt and clay) observed in the saturated zone, the lower permeability soils could cause mounding of the injection fluid. This would mean the formation takes in less fluid than anticipated in one event. If these conditions are observed, the fluid may need to be injected in multiple events. As described above, multiple events may also be needed based on the injection flow rates able to be achieved at the Site and the timeframe allowed by the property owner (2 weeks). Injecting in multiple events would extend the cleanup timeline.

6.2.5 Post-Injection Groundwater Sampling

A quarterly groundwater monitoring and sampling program will be implemented for one year following the sulfate injection event. Groundwater samples will be collected from proposed injection wells VZ-13, VZ-14, VZ-15, VZ-16, and VZ-17 and observation wells MW-2, MW-3, MW-4, MW-5, MW-6, MW-8, MW-10, MW-11, and MW-12. Prior to sampling, the wells will be purged to ensure representative groundwater samples are collected. Purge water generated during groundwater monitoring will be transported by a licensed waste-hauler to an approved waste facility for disposal. The following analyses will be performed for each well location as part of the post-injection sampling:

- Field measurement of pH, ORP, DO, and depth-to-groundwater;
- BTEX, MTBE, and naphthalene by EPA Method 8260;
- Sulfate and nitrate by EPA Method 9056A;
- Ferrous iron by SM 3500 FeB-2011; and
- SRB populations using BART™ biodetectors.

In addition, during the last post-injection groundwater monitoring event, samples from wells MW-1, MW-7, and MW-9 will be analyzed for BTEX and MTBE by EPA Method 8260B and field measurement of depth-to-groundwater will be collected.

7.0 RATIONALE FOR SELECTION OF REMEDIATION METHODS

Stantec has chosen the sulfate injection technology as the preferred remedial alternative to reduce dissolved-phase petroleum hydrocarbon (specifically benzene and MTBE) concentrations in the source area to below GRP SSTLs through enhanced anaerobic biological treatment. As described in the paragraphs below, the subsurface beneath the Site is believed to be conducive to treatment via fluid injection and given the contaminant concentration levels, sulfate injection would be more efficient and cost-effective than oxygen injection. In addition, multiple remedial actions have previously been conducted at the Site (SVE, AS, HVE, and MPE), or evaluated (excavation), and these technologies have been determined to no longer be feasible for the Site.

Based on the geology/hydrogeology reported in Bondurant's CAP and the *ARBCA Tier I and Tier II Report*, dated March 16, 2005 (Bondurant, 2002; SECOR, 2005a), the uppermost saturated zone beneath the Site consists of a homogenous unit of clayey sand (78% sand and 22% silt and clay), with a hydraulic conductivity of $3.4x10^{-4}$ cm/s and total porosity of 30.23%. Low permeability soils can limit infiltration rates and ROI of fluid injections; however, the reported Site geology/hydrogeology data represents a relatively high permeability, which is conducive to fluid injections. Contact limitations due to lower permeability soils present in the saturated zone are still possible, however.

As described in Section 6.1, testing has shown that artificial introduction of soluble electron acceptors into the subsurface can greatly increase natural biodegradation rates to enhance MNA processes. Biodegradation can occur via the aerobic process or the anaerobic process. Based on results of the previous sulfate injection feasibility evaluation (Stantec, 2019), the subsurface geochemical conditions appear suitable for anaerobic biodegradation (petroleum hydrocarbon degradation by SRB), rather than aerobic biodegradation. To take advance of the anaerobic environment, Stantec has chosen sulfate injection over any type of oxygen injection or application. Taking advantage of the anaerobic environment is more efficient and cost-effective than attempting to overcome the oxygen limitation and changing an anaerobic environment to aerobic through oxygen application.

Other remedial alternatives were considered to reduce dissolved-phase concentrations in the source area, including AS/SVE, HVE, and MPE, which have all been historically conducted at the Site, and excavation. The AS/SVE system and historical periodic HVE events were successful in removing free product from the source area and decreasing dissolved-phase concentrations outside the source area, thus reducing the size of the dissolved-phase plume; however, approximately 15 years following the startup of these systems, they have failed to reduce dissolved-phase concentrations in the source area to below SSTLs. Therefore, these technologies are no longer feasible for the Site and were eliminated from consideration as remedial alternatives. In addition, MPE (in the form of DPE) pilot testing was conducted at the Site in

October 2017 and based on the low vacuum ROI, drawdown, and mass removal rates observed, the technology did not appear to be effective at the Site (Stantec, 2017b); therefore, MPE was also eliminated from consideration as a remedial alternative for the Site. Excavation was eliminated from consideration because the property owner will not allow further disruption to the CVS Pharmacy's use of the property, which excludes excavation.

8.0 DATA EVALUATION AND REPORT PREPARATION

A report summarizing sulfate injection operations will be prepared and submitted to ADEM. The report will include copies of all permits issued, a description of field activities including injection rates and volumes, a Site location map, and Site Plan.

Additional reports will be submitted following each post-injection groundwater sampling event. These reports will include descriptions of field activities, a Site location map, Site plan, summary of analytical results, certified laboratory analysis reports, and chain-of-custody documentation.

Following completion of four quarterly post-injection groundwater sampling events, all data collected will be reviewed and evaluated against remedial objectives to assess the effectiveness of the sulfate treatment. The final quarterly groundwater sampling report will include an evaluation of sulfate injection results, conclusions, and recommendations for future remedial activities, which may include additional sulfate injection events, as needed.

9.0 SCHEDULE OF ACTIVITIES

The sulfate injection scope of work will be scheduled upon approval of this revised modified CAP by ADEM. The following presents the schedule for the proposed scope of work:

- The sulfate injection event will be scheduled within 45 days of the approval of this revised modified CAP by ADEM and after receiving approval/permitting from the ADEM Water Division. The sulfate injection event will take approximately 2 weeks to perform.
- A report documenting the results of the sulfate injection event will be prepared and submitted to ADEM within 60 days of the completion of the sulfate injection activities.
- The first quarterly post-injection groundwater sampling event will be scheduled for approximately 90 days following the sulfate injection event, and the three subsequent quarterly events will be scheduled every 90 days (approximately) thereafter.
- Reports documenting the results of the post-injection groundwater sampling will be prepared and submitted to ADEM within 60 days of each post-injection groundwater sampling event.

10.0 CONCLUSIONS AND RECOMMENDATIONS

10.1 CONCLUSIONS

10.1.1 Extent of Petroleum Hydrocarbons

- PSH is no longer present at the Site.
- Shallow soil is not impacted by petroleum hydrocarbons. The limited subsurface soil impacts are confined to the Site and delineated.
- The dissolved-phase petroleum hydrocarbon plumes are defined and confined to the Site. No POC SSTLs are exceeded and impacts are not migrating off-Site. The plumes are decreasing in overall size and concentration.

10.1.2 Exposure Assessment

The soil gas and groundwater emission pathways (inhalation of indoor and outdoor air) are considered potentially complete for current and future on-Site and off-Site commercial and construction workers. However, all soil and groundwater concentrations are below Alabama indoor and outdoor inhalation RBSLs, indicating no unacceptable health risks to receptors.

10.1.3 Remedial Objectives

The remaining remediation goal is identified as reduction of dissolved-phase concentrations at the source to less than GRP SSTLs. To reduce dissolved-phase concentrations at the source to less than GRP SSTLs, the target zone of remediation includes the area surrounding source wells MW-3, MW-8, VZ-13, VZ-15, VZ-16, and VZ-17. The vertical extent of the target zone of remediation generally extends to approximately 36 feet bgs.

10.2 RECOMMENDATIONS

The subsurface of the Site is believed to be conducive to treatment via fluid injection and given the contaminant concentration levels, sulfate injection would be more efficient and cost-effective than oxygen injection. In addition, multiple remedial actions have previously been conducted or evaluated, including SVE, AS, MPE, and excavation, and these technologies have been determined to be no longer feasible for the Site. Therefore, enhanced anaerobic biological treatment via sulfate injection to target the identified treatment zone is selected as the preferred remedial alternative for the Site.

11.0 REFERENCES

ADEM, 2001. *ARBCA: Alabama Risk-Based Corrective Action for Underground Storage Tanks, Guidance Manual, Revision 1.0*. November.

Bondurant, 2002. *Corrective Action Plan*. July.

Bondurant, 2003. *Installation of Vapor Extraction Wells*. March 28.

SECOR, 2005a. *ARBCA Tier I and Tier II Report*. March 16.

SECOR, 2005b. *Remediation System Installation*. November 14.

Stantec, 2010. *Air Sparge Optimization Plan and ATTF Proposal (CP-36) for Plan Implementation*. November 11.

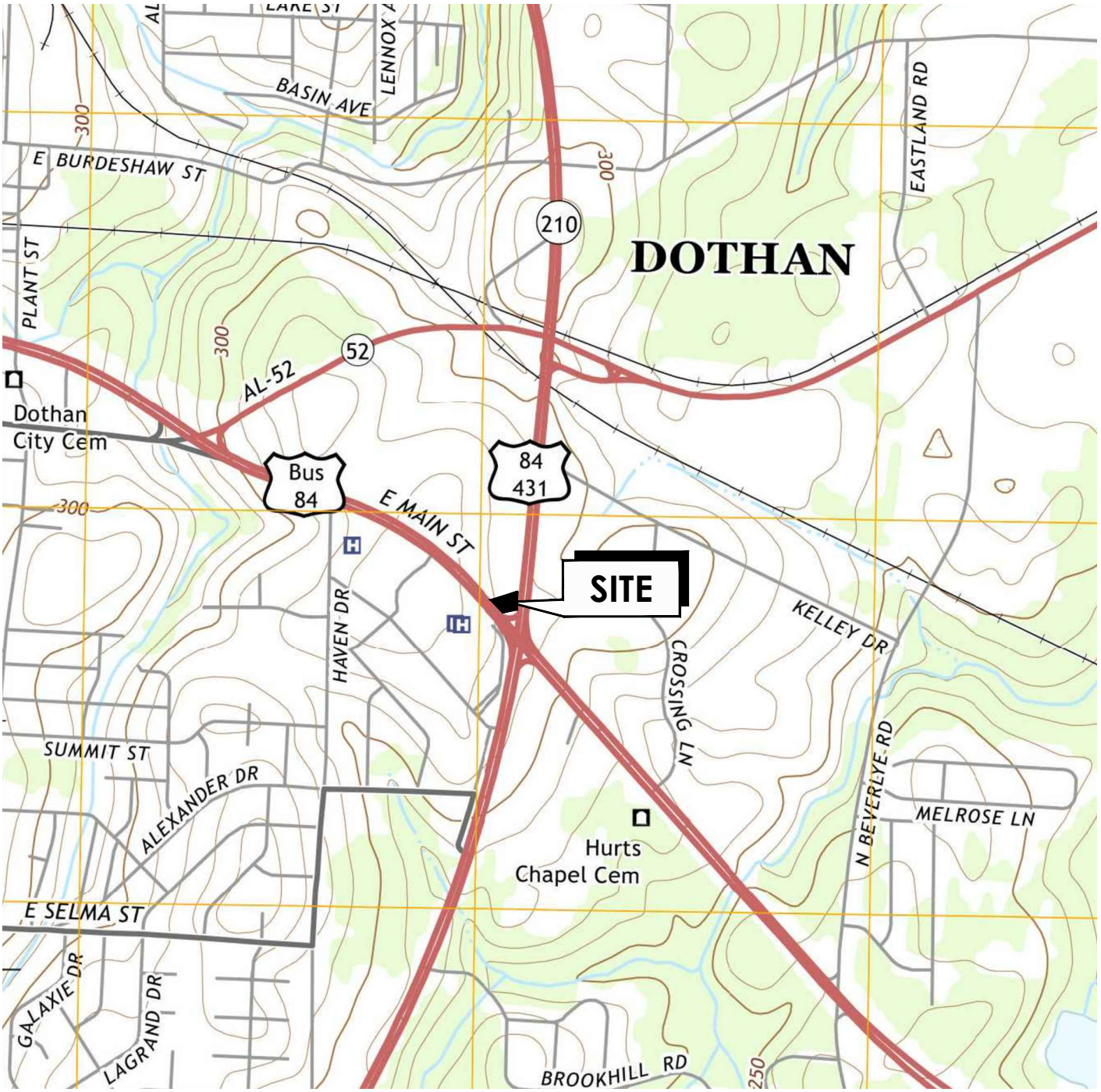
Stantec, 2017a. *Corrective Action Report (CP-56)*. August 31.

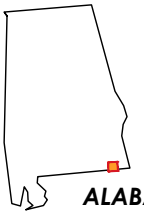
Stantec, 2017b. *Multi-Phase Extraction Pilot Test Report (CP-58)*. December 1.

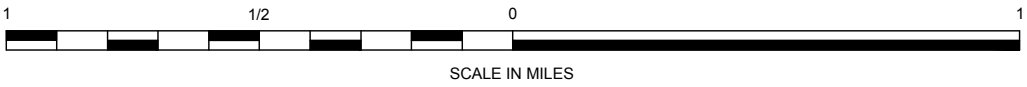
Stantec, 2018. *High-Resolution Soil Profile Report (CP-59)*. May 18.

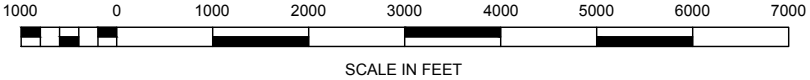
Stantec, 2019. *Sulfate Injection Feasibility Report (CP-60)*. March 8.

FIGURES









REFERENCE: USGS 7.5 MINUTE QUADRANGLE
DOTHAN EAST, ALABAMA 2014

Stantec
601 Grassmere Park Road, Suite 22
Nashville, TN 37211
PHONE: (615)885-1144 FAX: (615)885-1102

FOR:
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(MEDICAL CENTER) BP
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SITE LOCATION MAP

FIGURE: **1**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
212201283	JRO	RMN/EEO	CS	06/14/17

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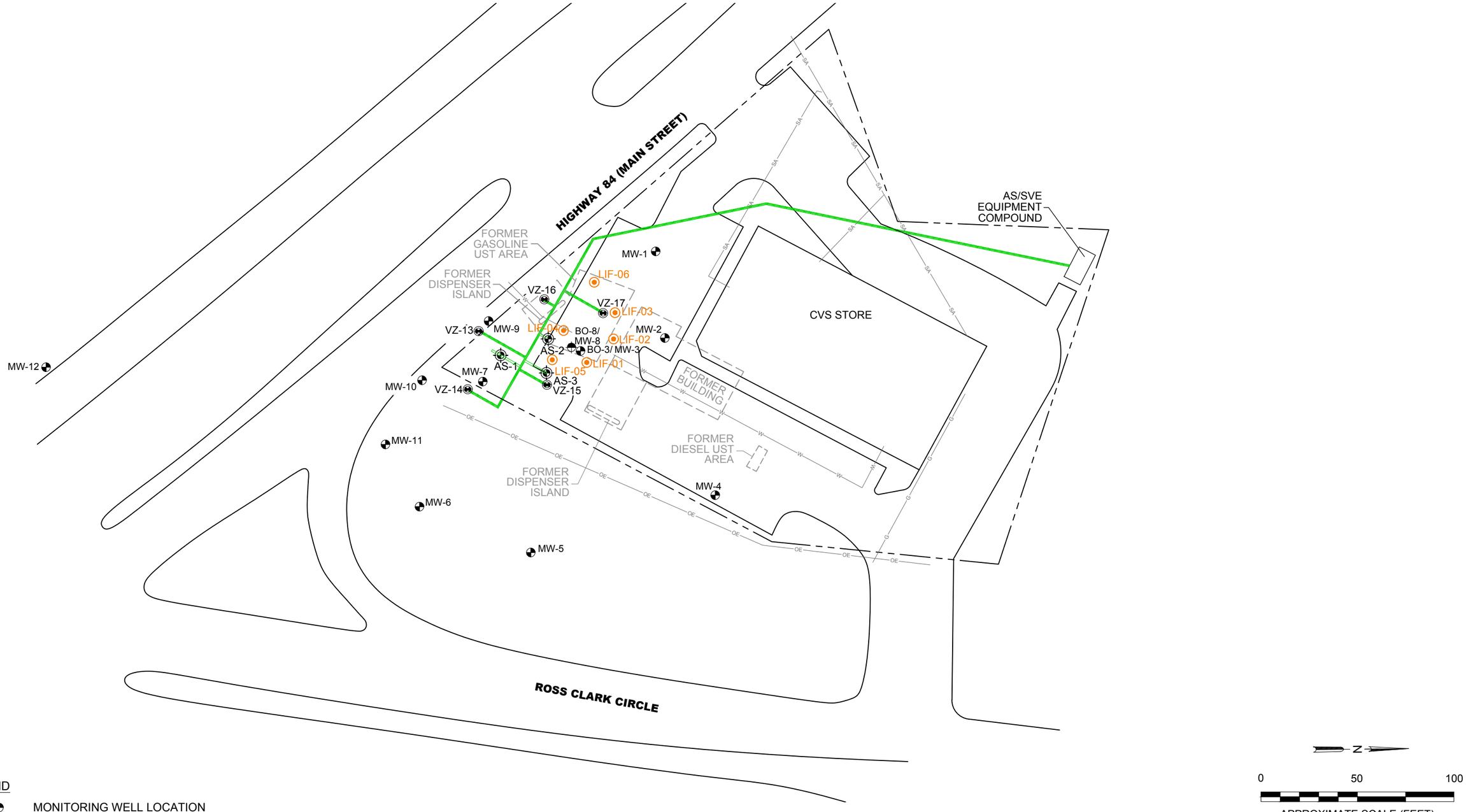

LEGEND

- MONITORING WELL LOCATION
- DEEP MONITORING WELL LOCATION
- VAPOR EXTRACTION WELL LOCATION
- AIR SPARGE WELL LOCATION
- APPROXIMATE PROPERTY LINE
- G — GAS LINE
- OE — OVERHEAD ELECTRIC LINE
- W — WATER LINE
- SA — SANITARY SEWER
- SYSTEM TRENCH
- AS — AIR SPARGE
- SVE — SOIL VAPOR EXTRACTION
- ULTRA-VIOLET OPTICAL SCREENING TOOL (UVOST) BORING LOCATION

N

0 50 100

APPROXIMATE SCALE (FEET)

Stantec
601 Grassmere Park Road, Suite 22
Nashville, TN 37211
PHONE: (615)885-1144 FAX: (615)885-1102

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SITE PLAN

FIGURE: **2**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
212201283	JRO	RMN/EEO	CS	08/22/18

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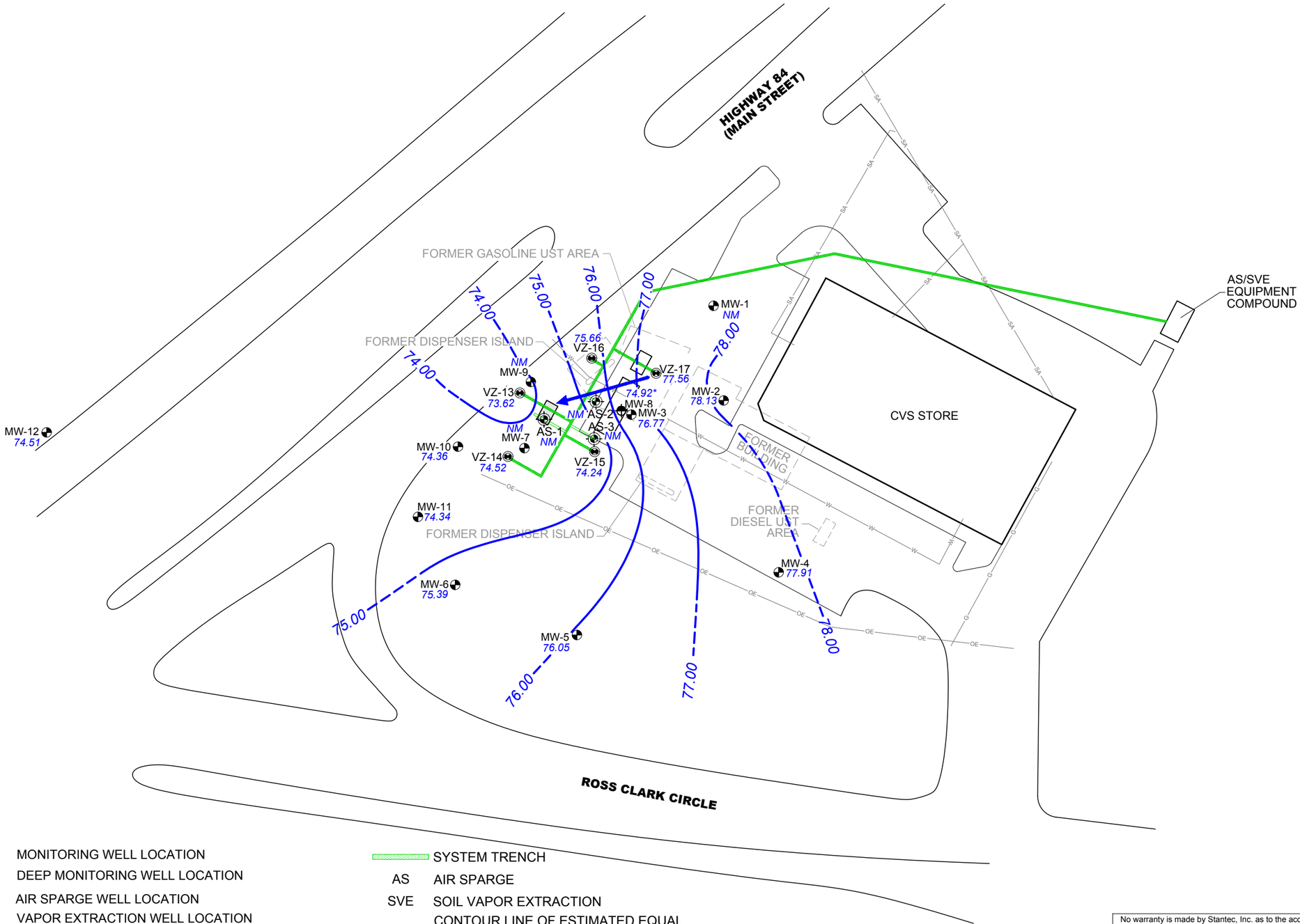

LEGEND

- MONITORING WELL LOCATION
- DEEP MONITORING WELL LOCATION
- AIR SPARGE WELL LOCATION
- VAPOR EXTRACTION WELL LOCATION
- APPROXIMATE PROPERTY LINE
- GAS LINE
- OVERHEAD ELECTRIC LINE
- WATER LINE
- SANITARY SEWER
- SYSTEM TRENCH
- AS — AIR SPARGE
- SVE — SOIL VAPOR EXTRACTION
- CONTOUR LINE OF ESTIMATED EQUAL POTENTIOMETRIC ELEVATION IN FEET (DASHED WHERE INFERRED)
- *78.13* — GROUNDWATER ELEVATION IN FEET RELATIVE TO A COMMON DATUM
- ESTIMATED GROUNDWATER FLOW DIRECTION
- * — NOT USED FOR CONTOURING
- *NM* — NOT MEASURED

N

0 50 100

APPROXIMATE SCALE (FEET)

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601 Grassmere Park Road, Suite 22
Nashville, TN 37211
PHONE: (615)885-1144 FAX: (615)885-1102

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POTENTIOMETRIC SURFACE MAP - UPPERMOST GROUNDWATER SYSTEM JANUARY 20, 2019

FIGURE: **3**

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212201283	JRO	RMN/EEO	CS	02/13/19

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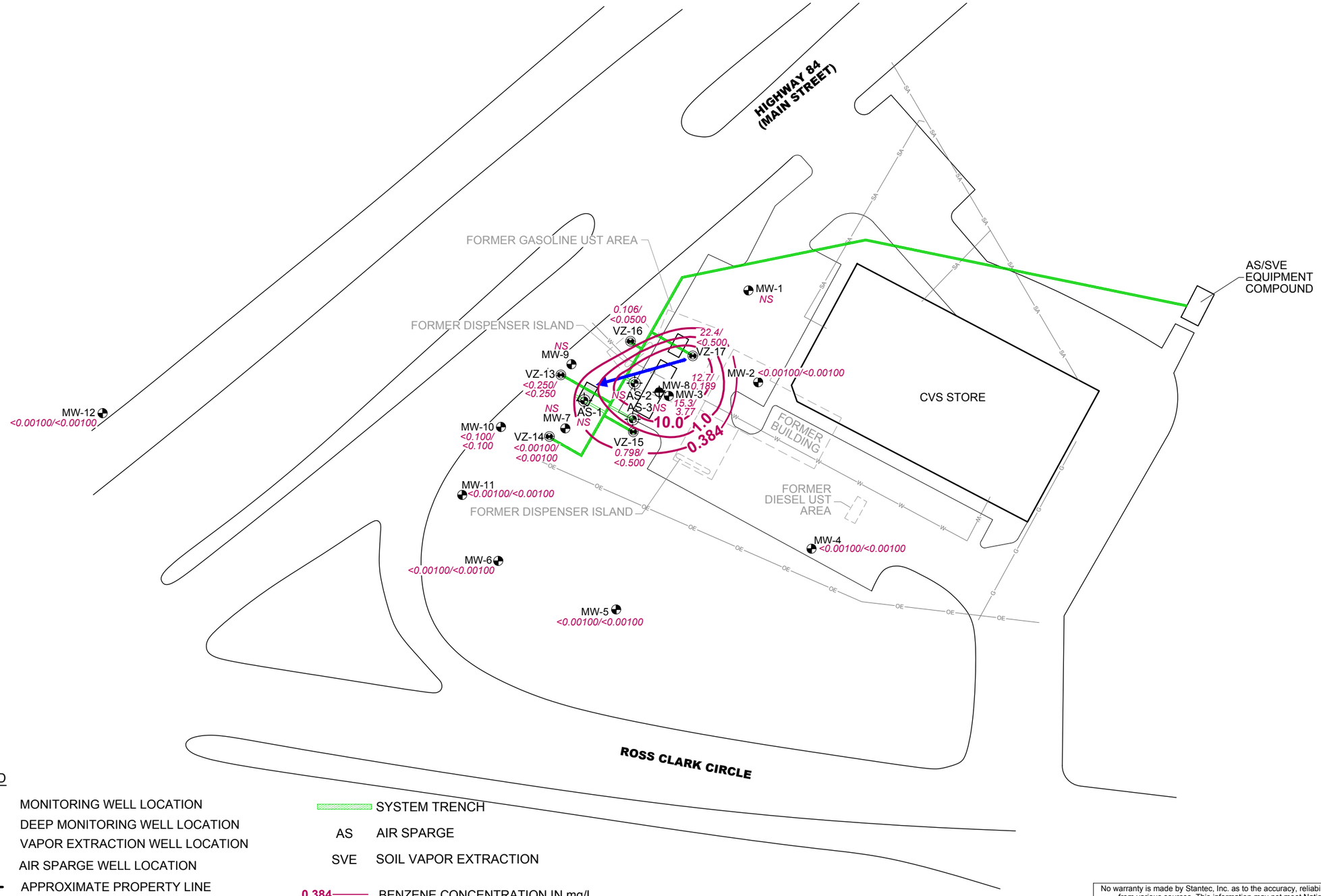

LEGEND

- MONITORING WELL LOCATION
- DEEP MONITORING WELL LOCATION
- VAPOR EXTRACTION WELL LOCATION
- AIR SPARGE WELL LOCATION
- APPROXIMATE PROPERTY LINE
- G — GAS LINE
- OE — OVERHEAD ELECTRIC LINE
- W — WATER LINE
- SA — SANITARY SEWER
- SYSTEM TRENCH
- AS — AIR SPARGE
- SVE — SOIL VAPOR EXTRACTION
- 0.384 — BENZENE CONCENTRATION IN mg/L
- *15.3/3.77* — BENZENE/MTBE CONCENTRATION (mg/L)
- ESTIMATED GROUNDWATER FLOW DIRECTION
- *NS* — NOT SAMPLED
- MTBE — METHYL TERTIARY-BUTYL ETHER
- mg/L — MILLIGRAMS PER LITER

N

0 50 100

APPROXIMATE SCALE (FEET)

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601 Grassmere Park Road, Suite 22
Nashville, TN 37211
PHONE: (615)885-1144 FAX: (615)885-1102

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DOTHAN, ALABAMA

CONSTITUENT CONCENTRATIONS IN GROUNDWATER - JANUARY 21, 2019

FIGURE: **4**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
212201283	JRO	RMN/EEO	CS	02/13/19

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VZ-16	11/20/18	01/21/19
FE	7.18	14.0
NO3	<0.100	<0.100
SO4	<5.00	<5.00
pH	6.33	6.28
DO	0.96	1.73
ORP	-57.1	-44.0

VZ-17	11/20/18	01/21/19
FE	14.4	15.2
NO3	<0.100	<0.100
SO4	5.49	10.3
pH	5.73	5.93
DO	1.17	2.42
ORP	-43.4	-13.0

VZ-13	11/20/18	01/21/19
FE	6.82	5.50
NO3	<0.100	<0.100
SO4	<5.00	<5.00
pH	5.28	5.36
DO	2.76	1.74
ORP	79.6	95.0

MW-12	11/20/18	01/21/19
FE	<0.0500	<0.0500
NO3	1.26	1.63
SO4	<5.00	<5.00
pH	4.89	4.53
DO	5.34	4.05
ORP	206.0	267.0

MW-10	11/20/18	01/21/19
FE	4.55	4.18
NO3	<0.100	<0.100
SO4	<5.00	<5.00
pH	4.99	4.99
DO	2.77	1.68
ORP	184.2	142.0

MW-2	11/20/18	01/21/19
FE	<0.0500	<0.0500
NO3	5.07	4.53
SO4	5.01	5.04
pH	4.88	4.62
DO	1.60	3.33
ORP	203.6	273.0

MW-3	11/20/18	01/21/19
FE	6.85	7.62
NO3	<0.100	<0.100
SO4	<5.00	6.86
pH	5.71	6.08
DO	2.81	1.95
ORP	32.3	-6.0

MW-4	11/20/18	01/21/19
FE	<0.0500	<0.0500
NO3	0.982	2.45
SO4	<5.00	<5.00
pH	4.82	4.89
DO	2.11	1.35
ORP	213.5	234.0

VZ-14	11/20/18	01/21/19
FE	0.368	0.272
NO3	0.120	0.106
SO4	11.1	13.8
pH	7.00	6.79
DO	5.30	3.29
ORP	40.5	-6.0

MW-11	11/20/18	01/21/19
FE	0.0650	<0.0500
NO3	<0.100	<0.100
SO4	<5.00	<5.00
pH	5.15	4.45
DO	4.33	2.84
ORP	173.8	215.0

VZ-15	11/20/18	01/21/19
FE	0.921	4.47
NO3	<0.100	<0.100
SO4	7.46	5.08
pH	5.74	5.79
DO	1.06	2.61
ORP	56.4	32.0

MW-8	11/20/18	01/21/19
FE	36.0	34.8
NO3	<0.100	<0.100
SO4	<5.00	<5.00
pH	6.03	6.10
DO	2.00	1.81
ORP	-4.3	-26.0

MW-6	11/20/18	01/21/19
FE	62.5	89.5
NO3	<0.100	<0.100
SO4	<5.00	<5.00
pH	6.09	6.35
DO	3.15	6.95
ORP	-15.6	-73.0

MW-5	11/20/18	01/21/19
FE	<0.0500	0.342
NO3	0.250	0.244
SO4	<5.00	<5.00
pH	4.53	5.07
DO	2.20	3.56
ORP	280.9	183.0

LEGEND

- MONITORING WELL LOCATION
- DEEP MONITORING WELL LOCATION
- VAPOR EXTRACTION WELL LOCATION
- AIR SPARGE WELL LOCATION
- APPROXIMATE PROPERTY LINE
- G — GAS LINE
- OE — OVERHEAD ELECTRIC LINE
- W — WATER LINE
- SA — SANITARY SEWER
- SYSTEM TRENCH
- AS — AIR SPARGE
- SVE — SOIL VAPOR EXTRACTION

ANALYTES

- *FE* — FERROUS IRON *(mg/L)*
- *NO3* — NITRATE *(mg/L)*
- *SO4* — SULFATE *(mg/L)*
- *pH* — *pH (su)*
- *DO* — DISSOLVED OXYGEN *(mg/L)*
- *ORP* — OXIDATION REDUCTION POTENTIAL *(mV)*

(mg/L) □ MILLIGRAMS PER LITER
(su) □ STANDARD UNITS
(mV) □ MILLIVOLTS
BOLD □ ANALYTICAL CONSTITUENT DETECTED

NOTE

WELLS CONSIDERED WITHIN THE DISSOLVED-PHASE BENZENE PLUME ARE SHOWN IN RED□WELLS OUTSIDE THE PLUME ARE SHOWN IN GREEN

N

0 50 100

APPROXIMATE SCALE (FEET)

Stantec
601 Grassmere Park Road, Suite 22
Nashville, TN 37211
PHONE: (615)885-1144 FAX: (615)885-1102

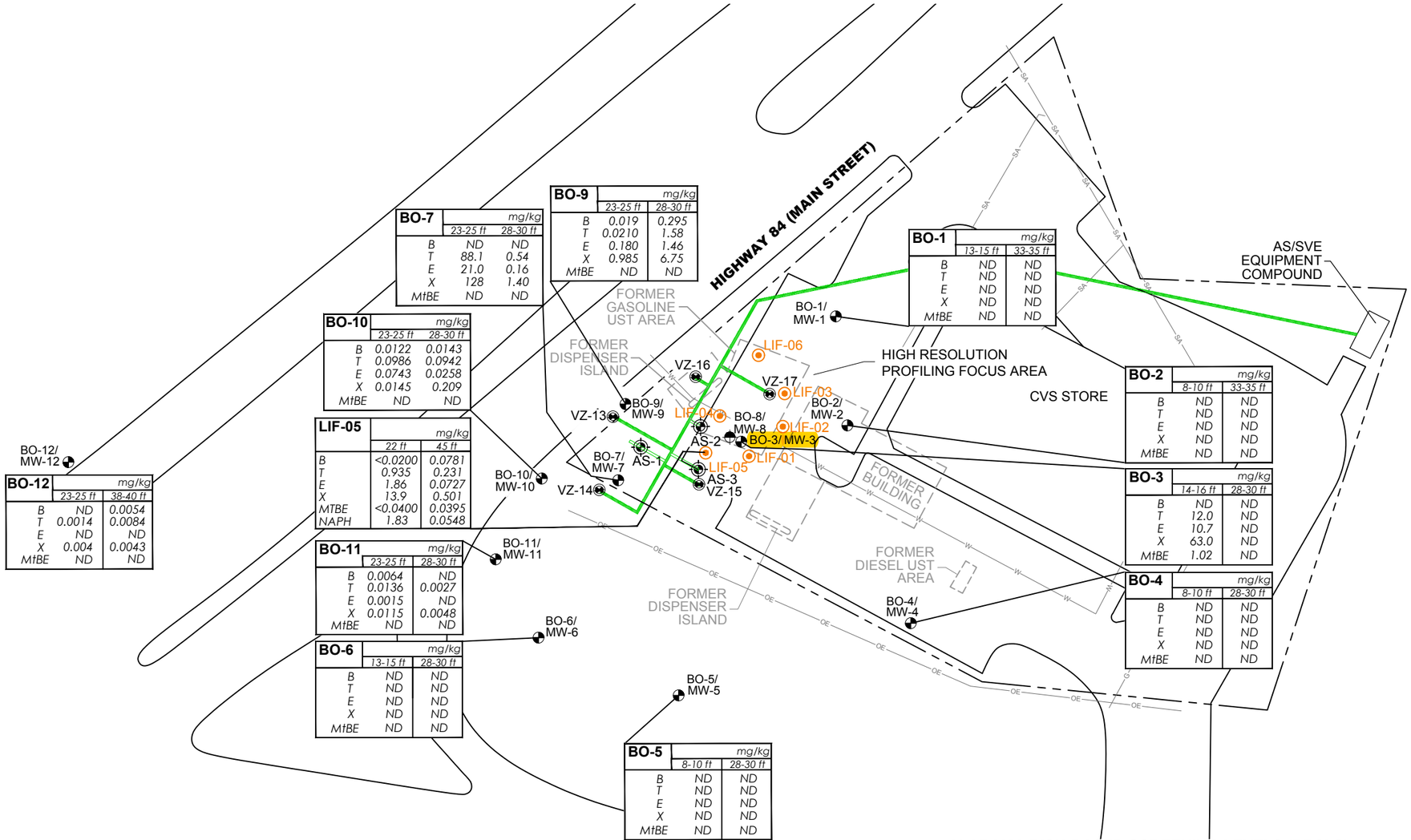
FOR:
FORMER CIRCLE
(MEDICAL CENTER) BP
1098 ROSS CLARK CIRCLE
DOTHAN, ALABAMA

MONITORED NATURAL ATTENUATION PARAMETERS IN GROUNDWATER

FIGURE: **5**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
212201283	JRO	RMN/EEO	CS	02/13/19

V:\2122\ACTIVE\212201283\05_REPORT_DELIV\DELIVERABLE\REPORTS\DOTHAN\CP_60_SULFATE_FEASIBILITY\FIGURES\DWG_212201283_GW_60RPT.DWG



BO-1	mg/kg	
	13-15 ft	33-35 ft
B	ND	ND
T	ND	ND
E	ND	ND
X	ND	ND
MtBE	ND	ND

BO-2	mg/kg	
	8-10 ft	33-35 ft
B	ND	ND
T	ND	ND
E	ND	ND
X	ND	ND
MtBE	ND	ND

BO-3	mg/kg	
	14-16 ft	28-30 ft
B	ND	ND
T	12.0	ND
E	10.7	ND
X	63.0	ND
MtBE	1.02	ND

BO-4	mg/kg	
	8-10 ft	28-30 ft
B	ND	ND
T	ND	ND
E	ND	ND
X	ND	ND
MtBE	ND	ND

BO-5	mg/kg	
	8-10 ft	28-30 ft
B	ND	ND
T	ND	ND
E	ND	ND
X	ND	ND
MtBE	ND	ND

BO-6	mg/kg	
	13-15 ft	28-30 ft
B	ND	ND
T	ND	ND
E	ND	ND
X	ND	ND
MtBE	ND	ND

BO-7	mg/kg	
	23-25 ft	28-30 ft
B	ND	ND
T	88.1	0.54
E	21.0	0.16
X	128	1.40
MtBE	ND	ND

BO-9	mg/kg	
	23-25 ft	28-30 ft
B	0.019	0.295
T	0.0210	1.58
E	0.180	1.46
X	0.985	6.75
MtBE	ND	ND

BO-10	mg/kg	
	23-25 ft	28-30 ft
B	0.0122	0.0143
T	0.0986	0.0942
E	0.0743	0.0258
X	0.0145	0.209
MtBE	ND	ND

LIF-05	mg/kg	
	22 ft	45 ft
B	<0.0200	0.0781
T	0.935	0.231
E	1.86	0.0727
X	13.9	0.501
MTBE	<0.0400	0.0395
NAPH	1.83	0.0548

BO-11	mg/kg	
	23-25 ft	28-30 ft
B	0.0064	ND
T	0.0136	0.0027
E	0.0015	ND
X	0.0115	0.0048
MtBE	ND	ND

BO-12	mg/kg	
	23-25 ft	38-40 ft
B	ND	0.0054
T	0.0014	0.0084
E	ND	ND
X	0.004	0.0043
MtBE	ND	ND

ALABAMA RISK-BASED SCREENING LEVELS (RBSLS):

BENZENE (B) = 0.497 mg/kg*/ 0.648 mg/kg **
TOLUENE (T) = 95.1 mg/kg*/ 276 mg/kg **
ETHYLBENZENE = 351 mg/kg*/ 277 mg/kg **
XYLENES = 142 mg/kg*/ 457 mg/kg **
METHYL TERTIARY-BUTYL ETHER (MTBE) =910 mg/kg*/ 0.662 mg/kg **
NAPHTHALENE (NAPH) = 127 mg/kg*/ 44.4 mg/kg **

* MOST-CONSERVATIVE FROM SUBSURFACE SOIL LEVELS FOR INDOOR AND OUTDOOR AIR FOR COMMERCIAL AND CONSTRUCTION WORKERS.
** GROUNDWATER RESOURCE PROTECTION TARGET CONCENTRATIONS WITH A POINT OF EXPOSURE OF 555 FEET.

LEGEND

- MONITORING WELL LOCATION
- DEEP MONITORING WELL LOCATION
- VAPOR EXTRACTION WELL LOCATION
- AIR SPARGE WELL LOCATION
- APPROXIMATE PROPERTY LINE
- G — GAS LINE
- OE — OVERHEAD ELECTRIC LINE
- W — WATER LINE
- SA — SANITARY SEWER
- SYSTEM TRENCH
- AS — AIR SPARGE
- SVE — SOIL VAPOR EXTRACTION
- ULTRA-VIOLET OPTICAL SCREENING TOOL (UVOST) BORING LOCATION
- ft — FEET
- mg/kg — MILLIGRAMS PER KILOGRAM
- *ND* — NOT DETECTED
- INDICATES EXCEEDANCE OF RBSLs

N

0 50 100

APPROXIMATE SCALE (FEET)

Stantec
601 Grassmere Park Road, Suite 22
Nashville, TN 37211
PHONE: (615)885-1144 FAX: (615)885-1102

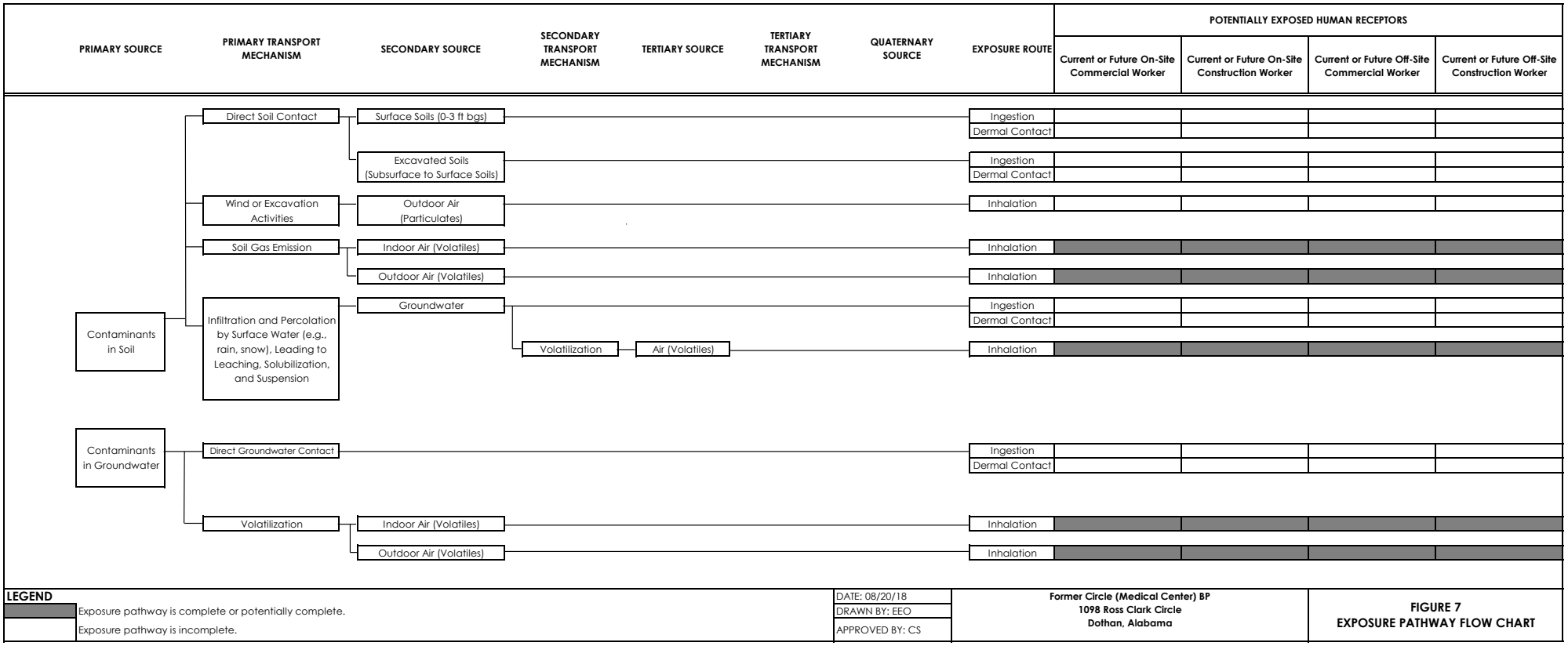
FOR:
FORMER CIRCLE
(MEDICAL CENTER) BP
1098 ROSS CLARK CIRCLE
DOTHAN, ALABAMA

CONSTITUENT CONCENTRATIONS IN SOIL

FIGURE: **6**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
212201283	JRO	RMN/EEO	CS	08/22/18

V:\2122\ACTIVE\212201283\05_REPORT_DELIV\DELIVERABLE\REPORTS\DOTHAN\ADEM_PRESENTATION_2018\FIGURES\DWG_212201283_ADEM_PRESENT_2018.DWG



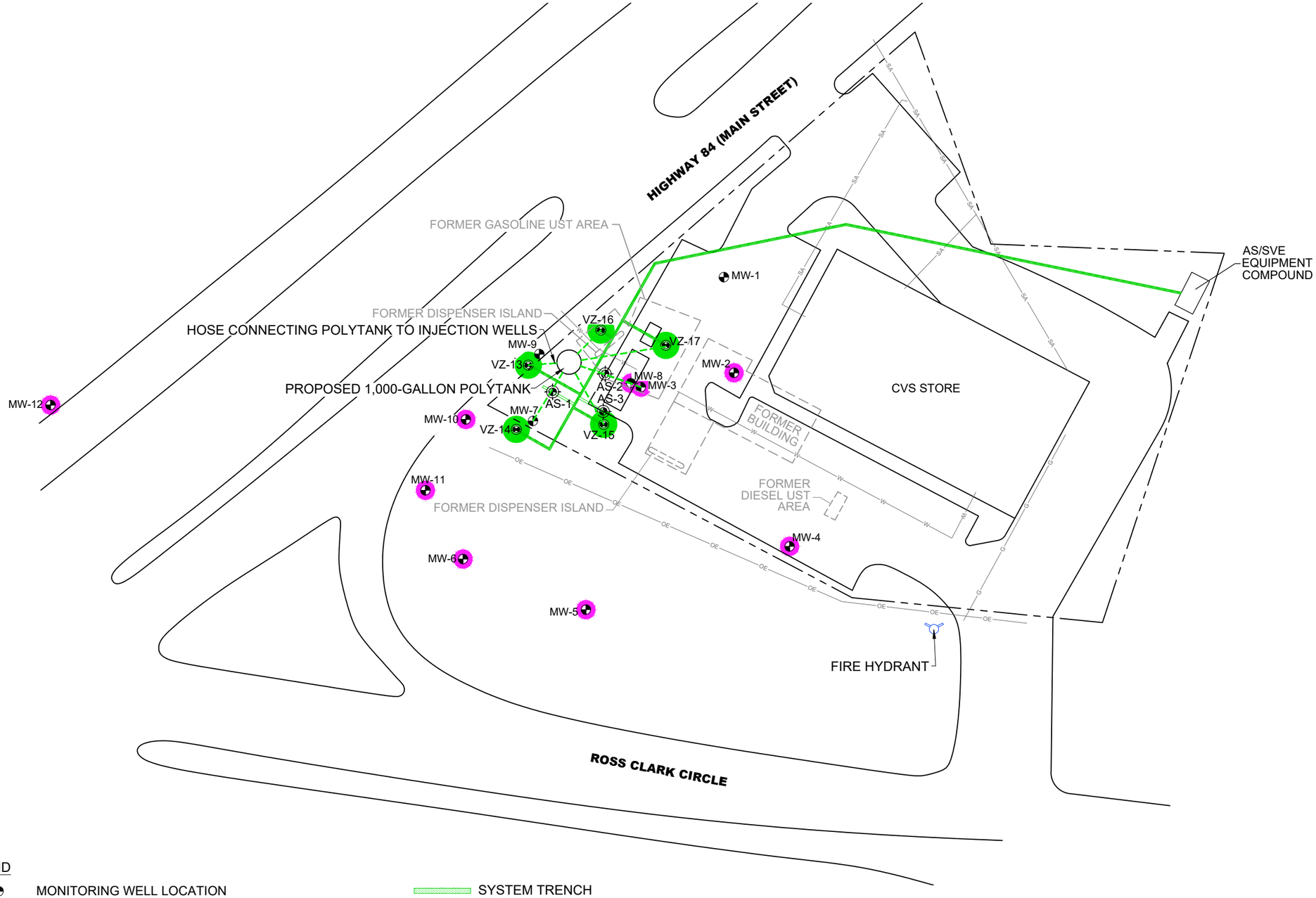
LEGEND

- Exposure pathway is complete or potentially complete.
- Exposure pathway is incomplete.

DATE: 08/20/18
DRAWN BY: EEO
APPROVED BY: CS

Former Circle (Medical Center) BP
1098 Ross Clark Circle
Dothan, Alabama

FIGURE 7
EXPOSURE PATHWAY FLOW CHART



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0 50 100

APPROXIMATE SCALE (FEET)

LEGEND

- MONITORING WELL LOCATION
- DEEP MONITORING WELL LOCATION
- VAPOR EXTRACTION WELL LOCATION
- AIR SPARGE WELL LOCATION
- APPROXIMATE PROPERTY LINE
- GAS LINE
- OVERHEAD ELECTRIC LINE
- WATER LINE
- SANITARY SEWER
- SYSTEM TRENCH
- AS AIR SPARGE
- SVE SOIL VAPOR EXTRACTION
- PROPOSED SULFATE INJECTION WELL LOCATION
- PROPOSED OBSERVATION WELL

Stantec
601 Grassmere Park Road, Suite 22
Nashville, TN 37211
PHONE: (615)885-1144 FAX: (615)885-1102

FOR:
FORMER CIRCLE
(MEDICAL CENTER) BP
1098 ROSS CLARK CIRCLE
DOTHAN, ALABAMA

SITE PLAN SHOWING SULFATE INJECTION LAYOUT

FIGURE: **8**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
212201283	JRO	RMN/EEO	CS	06/06/19

V:\1826\ACTIVE\212201283\05_REPORT_DELIV\DELIVERABLE\REPORTS\DOTHAN\CP_58_PILOT_STUDY\FIGURES\DWG_212201283_RPT2019.DWG

TABLES

Table 1
Groundwater Elevation Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Date of Measurement	Top of Casing Elevation (ft)	Depth to GW (ft-btoc)	PSH Thickness (ft)	Potentiometric Elevation (ft)
MW-1	12/08/98	94.56	18.50	0.00	76.06
	02/24/00	94.56	23.31	0.00	71.25
	08/02/00	94.56	25.40	0.00	69.16
	04/26/01	94.56	21.55	0.00	73.01
	07/16/01	94.56	19.85	0.00	74.71
	03/27/02	94.56	21.23	0.00	73.33
	06/06/02	94.56	21.61	0.00	72.95
	11/08/05	94.56	20.60	0.00	73.96
	05/03/06	94.56	20.10	0.00	74.46
	08/16/06	94.56	22.19	0.00	72.37
	10/25/06	94.56	21.66	0.00	72.90
	02/14/07	94.56	18.74	0.00	75.82
	10/03/07	94.56	25.26	0.00	69.30
	12/17/07	94.56	26.36	0.00	68.20
	04/23/08	94.56	21.03	0.00	73.53
	07/10/08	94.56	24.55	0.00	70.01
	03/18/09	94.56	21.59	0.00	72.97
	06/24/09	94.56	19.15	0.00	75.41
	09/17/09	94.56	12.18	0.00	82.38
	12/01/09	94.56	17.00	0.00	77.56
	09/01/10	94.56	16.82	0.00	77.74
	12/01/10	94.56	17.05	0.00	77.51
	11/20/11	94.56	24.79	0.00	69.77
	01/25/12	94.56	26.28	0.00	68.28
	05/10/12	94.56	24.37	0.00	70.19
	08/02/12	94.56	19.27	0.00	75.29
	10/26/12	94.56	15.84	0.00	78.72
	01/29/13	94.56	18.20	0.00	76.36
	10/08/13	94.56	16.28	0.00	78.28
	01/08/14	94.56	16.55	0.00	78.01
	03/19/14	94.56	16.51	0.00	78.05
	03/27/14	94.56	18.86	0.00	75.70
	06/10/14	94.56	17.35	0.00	77.21
	06/25/14	94.56	17.06	0.00	77.50
	10/29/14	94.56	18.70	0.00	75.86
	02/19/15	94.56	19.02	0.00	75.54
	05/07/15	94.56	21.22	0.00	73.34
	08/05/15	94.56	21.50	0.00	73.06
	09/23/15	94.56	22.25	0.00	72.31
	11/10/15	94.56	20.49	0.00	74.07
	02/09/16	94.56	16.20	0.00	78.36
	04/26/16	94.56	15.89	0.00	78.67
	07/28/16	94.56	19.36	0.00	75.20
	09/14/16	94.56	18.14	0.00	76.42
	12/12/16	94.56	18.66	0.00	75.90
	03/06/17	94.56	15.99	0.00	78.57
	05/31/17	94.56	17.51	0.00	77.05
MW-2	12/08/98	95.46	20.22	0.00	75.24
	02/24/00	95.46	25.26	0.00	70.20
	08/02/00	95.46	26.99	0.00	68.47
	04/26/01	95.46	23.08	0.00	72.38
	07/16/01	95.46	21.61	0.00	73.85
	03/27/02	95.46	23.26	0.00	72.20
	06/06/02	95.46	23.26	0.00	72.20
	11/08/05	95.46	22.35	0.00	73.11
	05/03/06	95.46	22.60	0.00	72.86
	08/16/06	95.46	24.81	0.00	70.65
	10/25/06	95.46	25.26	0.00	70.20
	02/14/07	95.46	22.49	0.00	72.97
	10/03/07	95.46	26.92	0.00	68.54
	12/17/07	95.46	28.02	0.00	67.44

Table 1
Groundwater Elevation Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Date of Measurement	Top of Casing Elevation (ft)	Depth to GW (ft-btoc)	PSH Thickness (ft)	Potentiometric Elevation (ft)
MW-2	04/23/08	95.46	22.94	0.00	72.52
CONT	07/10/08	95.46	25.24	0.00	70.22
	03/18/09	95.46	23.22	0.00	72.24
	06/24/09	95.46	20.89	0.00	74.57
	09/17/09	95.46	18.10	0.00	77.36
	12/01/09	95.46	17.90	0.00	77.56
	09/01/10	95.46	21.35	0.00	74.11
	12/01/10	95.46	21.02	0.00	74.44
	11/20/11	95.46	26.54	0.00	68.92
	01/25/12	95.46	27.78	0.00	67.68
	05/10/12	95.46	25.96	0.00	69.50
	08/02/12	95.46	24.58	0.00	70.88
	10/26/12	95.46	20.69	0.00	74.77
	01/29/13	95.46	21.50	0.00	73.96
	10/08/13	95.46	19.25	0.00	76.21
	01/08/14	95.46	20.12	0.00	75.34
	03/19/14	95.46	20.67	0.00	74.79
	03/27/14	95.46	20.49	0.00	74.97
	06/10/14	95.46	19.34	0.00	76.12
	06/25/14	95.46	19.76	0.00	75.70
	10/29/14	95.46	21.39	0.00	74.07
	02/19/15	95.46	21.48	0.00	73.98
	05/07/15	95.46	22.71	0.00	72.75
	08/05/15	95.46	22.79	0.00	72.67
	09/23/15	95.46	22.73	0.00	72.73
	11/10/15	95.46	22.55	0.00	72.91
	02/09/16	95.46	18.31	0.00	77.15
	04/26/16	95.46	18.20	0.00	77.26
	07/28/16	95.46	21.27	0.00	74.19
	09/14/16	95.46	21.10	0.00	74.36
	12/12/16	95.46	22.21	0.00	73.25
	03/06/17	95.46	19.19	0.00	76.27
	05/31/17	95.46	19.90	0.00	75.56
	11/19/18	95.46	19.61	0.00	75.85
	01/20/19	95.46	17.33	0.00	78.13
MW-3	12/08/98	94.22	21.10	0.00	73.12
	02/24/00	94.22	30.54	5.94	68.14
	08/02/00	94.22	30.45	4.22	66.94
	04/26/01	94.22	30.54	7.24	69.11
	07/16/01	94.22	26.28	3.84	70.82
	03/27/02	94.22	25.37	1.32	69.84
	06/06/02	94.22	25.97	2.12	69.84
	11/08/05	94.22	24.15	2.63	72.04
	05/03/06	94.22	25.62	2.73	70.65
	07/25/06	94.22	27.30	2.71	68.95
	08/16/06	94.22	27.29	2.41	68.74
	09/26/06	94.22	27.33	2.19	68.53
	10/25/06	94.22	27.29	1.74	68.24
	11/09/06	94.22	27.27	1.84	68.33
	12/28/06	94.22	27.27	3.03	69.22
	02/14/07	94.22	27.77	4.02	69.47
	08/30/07	94.22	Dry	NA	NA
	07/01/02	94.22	Dry	NA	NA
	10/03/07	94.22	27.77	1.15	67.31
	12/17/07	94.22	Dry	NA	NA
	02/12/08	94.22	27.25	2.57	68.90
	04/02/08	94.22	27.25	3.89	69.89
	04/23/08	94.22	27.25	3.90	69.90
	07/10/08	94.22	27.30	5.18	70.81
	01/14/09	94.22	27.20	3.87	69.92
	02/25/09	94.22	27.21	3.89	69.93
	03/18/09	94.22	27.76	4.14	69.57
	03/30/09	94.22	24.35	0.00	69.87
	04/22/09	94.22	22.60	0.00	71.62

Table 1
Groundwater Elevation Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Date of Measurement	Top of Casing Elevation (ft)	Depth to GW (ft-btoc)	PSH Thickness (ft)	Potentiometric Elevation (ft)
MW-3	06/24/09	94.22	22.18	0.03	72.06
CONT	07/22/09	94.22	29.10	0.00	65.12
	09/17/09	94.22	19.13	0.00	75.09
	10/28/09	94.22	17.24	0.00	76.98
	11/30/09	94.22	18.98	0.00	75.24
	12/15/09	94.22	19.10	0.00	75.12
	06/15/10	94.22	21.44	0.00	72.78
	09/01/10	94.22	22.18	0.00	72.04
	12/01/10	94.22	23.10	0.00	71.12
	10/06/11	94.22	26.40	0.75	68.38
	10/27/11	94.22	26.50	0.90	68.40
	11/20/11	94.22	Dry	NA	NA
	01/05/12	94.22	26.72	0.00	67.50
	01/25/12	94.22	Dry	NA	NA
	05/10/12	94.22	27.16	0.44	67.39
	06/24/12	94.22	27.20	0.50	67.40
	08/02/12	94.22	Dry[1]	3.78	NA
	08/24/12	94.22	25.52	0.07	68.75
	09/06/12	94.22	24.80	0.00	69.42
	10/17/12	94.22	22.82	0.00	71.40
	10/26/12	94.22	22.97	0.00	71.25
	12/05/12	94.22	23.85	0.00	70.37
	01/29/13	94.22	21.50	0.00	72.72
	01/30/13	94.22	23.92	0.00	70.30
	07/11/13	94.22	22.70	0.00	71.52
	08/10/13	94.22	21.08	0.00	73.14
	08/30/13	94.22	21.73	0.00	72.49
	10/08/13	94.22	20.68	0.00	73.54
	10/30/13	94.22	20.62	0.00	73.60
	11/12/13	94.22	21.90	0.00	72.32
	12/18/13	94.22	22.31	0.00	71.91
	01/08/14	94.22	21.30	0.00	72.92
	03/19/14	94.22	21.46	0.00	72.76
	03/27/14	94.22	21.33	0.00	72.89
	05/20/14	94.22	19.50	0.00	74.72
	06/09/14	94.22	20.09	0.00	74.13
	06/10/14	94.22	20.09	0.00	74.13
	06/25/14	94.22	20.43	0.00	73.79
	07/10/14	94.22	20.01	0.00	74.21
	08/13/14	94.22	20.52	0.00	73.70
	08/27/14	94.22	20.91	0.00	73.31
	09/11/14	94.22	21.70	0.00	72.52
	09/17/14	94.22	21.68	0.00	72.54
	10/03/14	94.22	22.51	0.00	71.71
	10/28/14	94.22	22.78	0.00	71.44
	10/29/14	94.22	22.79	0.00	71.43
	12/18/14	94.22	23.42	0.00	70.80
	01/07/15	94.22	23.02	0.00	71.20
	02/19/15	94.22	23.54	0.00	70.68
	04/02/15	94.22	23.33	0.00	70.89
	04/08/15	94.22	23.36	0.00	70.86
	05/07/15	94.22	23.22	0.00	71.00
	05/18/15	94.22	24.20	0.00	70.02
	06/16/15	94.22	24.22	0.00	70.00
	06/30/15	94.22	24.20	0.00	70.02
	07/14/15	94.22	25.20	0.00	69.02
	07/30/15	94.22	25.38	0.00	68.84
	08/05/15	94.22	23.58	0.00	70.64
	09/02/15	94.22	25.88	0.00	68.34
	09/23/15	94.22	24.60	0.00	69.62

Table 1
Groundwater Elevation Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Date of Measurement	Top of Casing Elevation (ft)	Depth to GW (ft-btoc)	PSH Thickness (ft)	Potentiometric Elevation (ft)
MW-3	10/06/15	94.22	24.79	0.00	69.43
CONT	11/10/15	94.22	23.01	0.00	71.21
	02/09/16	94.22	18.90	0.00	75.32
	04/26/16	94.22	18.62	0.00	75.60
	06/03/16	94.22	23.82	0.00	70.40
	06/23/16	94.22	20.62	0.00	73.60
	07/07/16	94.22	21.93	0.00	72.29
	07/28/16	94.22	21.49	0.00	72.73
	08/09/16	94.22	21.79	0.00	72.43
	08/23/16	94.22	21.68	0.00	72.54
	09/14/16	94.22	22.09	0.00	72.13
	12/12/16	94.22	23.00	0.00	71.22
	03/06/17	94.22	19.97	0.00	74.25
	05/31/17	94.22	21.57	0.00	72.65
	11/19/18	94.22	19.27	0.00	74.95
	01/20/19	94.22	17.45	0.00	76.77
MW-4	12/08/98	94.44	19.59	0.00	74.85
	02/24/00	94.44	24.11	0.00	70.33
	08/02/00	94.44	26.26	0.00	68.18
	04/26/01	94.44	20.63	0.00	73.81
	07/16/01	94.44	20.02	0.00	74.42
	03/27/02	94.44	21.47	0.00	72.97
	06/06/02	94.44	21.88	0.00	72.56
	11/08/05	94.44	21.26	0.00	73.18
	05/03/06	94.44	22.05	0.00	72.39
	08/16/06	94.44	24.00	0.00	70.44
	02/14/07	94.44	21.15	0.00	73.29
	10/03/07	94.44	25.70	0.00	68.74
	12/17/07	94.44	26.40	0.00	68.04
	04/23/08	94.44	21.01	0.00	73.43
	07/10/08	94.44	23.68	0.00	70.76
	03/18/09	94.44	21.11	0.00	73.33
	06/24/09	94.44	19.21	0.00	75.23
	09/17/09	94.44	17.69	0.00	76.75
	12/01/09	94.44	17.85	0.00	76.59
	12/15/09	94.44	17.85	0.00	76.59
	09/01/10	94.44	21.20	0.00	73.24
	12/01/10	94.44	21.08	0.00	73.36
	11/20/11	94.44	25.98	0.00	68.46
	01/25/12	94.44	25.90	0.00	68.54
	05/10/12	94.44	23.77	0.00	70.67
	08/02/12	94.44	24.38	0.00	70.06
	10/26/12	94.44	19.49	0.00	74.95
	01/29/13	94.44	21.15	0.00	73.29
	10/08/13	94.44	18.48	0.00	75.96
	01/08/14	94.44	19.40	0.00	75.04
	03/19/14	94.44	18.37	0.00	76.07
	03/27/14	94.44	18.50	0.00	75.94
	06/25/14	94.44	18.63	0.00	75.81
	10/29/14	94.44	21.40	0.00	73.04
	02/19/15	94.44	21.47	0.00	72.97
	05/07/15	94.44	20.21	0.00	74.23
	08/05/15	94.44	20.02	0.00	74.42
	11/10/15	94.44	16.43	0.00	78.01
	02/09/16	94.44	14.84	0.00	79.60
	04/26/16	94.44	16.33	0.00	78.11
	07/28/16	94.44	19.98	0.00	74.46
	09/14/16	94.44	20.31	0.00	74.13
	12/12/16	94.44	20.02	0.00	74.42
	03/06/17	94.44	17.61	0.00	76.83
	05/31/17	94.44	19.62	0.00	74.82
	11/19/18	94.44	16.48	0.00	77.96
	01/20/19	94.44	16.53	0.00	77.91
MW-5	02/24/00	90.92	22.77	0.00	68.15
	08/02/00	90.92	25.03	0.00	65.89
	04/26/01	90.92	20.21	0.00	70.71
	07/16/01	90.92	19.66	0.00	71.26

Table 1
Groundwater Elevation Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Date of Measurement	Top of Casing Elevation (ft)	Depth to GW (ft-btoc)	PSH Thickness (ft)	Potentiometric Elevation (ft)
MW-5	03/27/02	90.92	20.79	0.00	70.13
CONT	06/06/02	90.92	20.79	0.00	70.13
	11/08/05	90.92	18.99	0.00	71.93
	05/03/06	90.92	20.45	0.00	70.47
	08/16/06	90.92	22.53	0.00	68.39
	10/25/06	90.92	23.05	0.00	67.87
	02/14/07	90.92	20.60	0.00	70.32
	10/03/07	90.92	24.20	0.00	66.72
	12/17/07	90.92	25.11	0.00	65.81
	04/23/08	90.92	20.43	0.00	70.49
	07/10/08	90.92	22.48	0.00	68.44
	03/18/09	90.92	20.42	0.00	70.50
	06/24/09	90.92	18.21	0.00	72.71
	09/17/09	90.92	17.15	0.00	73.77
	12/01/09	90.92	16.80	0.00	74.12
	09/01/10	90.92	19.11	0.00	71.81
	12/01/10	90.92	19.05	0.00	71.87
	11/20/11	90.92	24.37	0.00	66.55
	01/25/12	90.92	24.89	0.00	66.03
	05/10/12	90.92	23.80	0.00	67.12
	08/02/12	90.92	24.00	0.00	66.92
	10/26/12	90.92	19.60	0.00	71.32
	01/29/13	90.92	20.90	0.00	70.02
	10/08/13	90.92	17.41	0.00	73.51
	01/08/14	90.92	17.35	0.00	73.57
	03/19/14	90.92	17.06	0.00	73.86
	03/27/14	90.92	17.08	0.00	73.84
	06/25/14	90.92	17.23	0.00	73.69
	10/29/14	90.92	20.10	0.00	70.82
	02/19/15	90.92	20.36	0.00	70.56
	05/07/15	90.92	18.79	0.00	72.13
	08/05/15	90.92	19.86	0.00	71.06
	11/10/15	90.92	15.29	0.00	75.63
	02/09/16	90.92	13.66	0.00	77.26
	04/26/16	90.92	15.01	0.00	75.91
	07/28/16	90.92	18.33	0.00	72.59
	09/14/16	90.92	18.88	0.00	72.04
	12/12/16	90.92	19.30	0.00	71.62
	03/06/17	90.92	16.51	0.00	74.41
	05/31/17	90.92	18.57	0.00	72.35
	11/19/18	90.92	15.82	0.00	75.10
	01/20/19	90.92	14.87	0.00	76.05
MW-6	02/24/00	91.38	23.78	0.00	67.60
	08/02/00	91.38	25.83	0.00	65.55
	04/26/01	91.38	21.28	0.00	70.10
	07/16/01	91.38	21.05	0.00	70.33
	03/27/02	91.38	21.91	0.00	69.47
	06/06/02	91.38	21.72	0.00	69.66
	11/08/05	91.38	19.68	0.00	71.70
	05/03/06	91.38	21.29	0.00	70.09
	08/16/06	91.38	23.39	0.00	67.99
	10/25/06	91.38	24.09	0.00	67.29
	02/14/07	91.38	21.98	0.00	69.40
	10/03/07	91.38	25.09	0.00	66.29
	12/17/07	91.38	26.03	0.00	65.35
	04/23/08	91.38	21.73	0.00	69.65
	07/10/08	91.38	23.48	0.00	67.90
	03/18/09	91.38	21.60	0.00	69.78
	06/24/09	91.38	19.45	0.00	71.93
	09/17/09	91.38	18.48	0.00	72.90
	12/01/09	91.38	18.13	0.00	73.25
	09/01/10	91.38	19.52	0.00	71.86
	12/01/10	91.38	19.38	0.00	72.00
	11/20/11	91.38	25.20	0.00	66.18
	01/25/12	91.38	26.15	0.00	65.23

Table 1
Groundwater Elevation Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Date of Measurement	Top of Casing Elevation (ft)	Depth to GW (ft-btoc)	PSH Thickness (ft)	Potentiometric Elevation (ft)
MW-6	05/10/12	91.38	24.73	0.00	66.65
CONT	08/02/12	91.38	25.26	0.00	66.12
	10/26/12	91.38	21.14	0.00	70.24
	01/23/13	91.38	22.79	0.00	68.59
	01/29/13	91.38	22.36	0.00	69.02
	10/08/13	91.38	18.68	0.00	72.70
	01/08/14	91.38	18.85	0.00	72.53
	03/27/14	91.38	18.39	0.00	72.99
	06/10/14	91.38	17.74	0.00	73.64
	06/25/14	91.38	18.30	0.00	73.08
	10/29/14	91.38	21.05	0.00	70.33
	02/19/15	91.38	20.71	0.00	70.67
	08/05/15	91.38	20.90	0.00	70.48
	09/23/15	91.38	22.23	0.00	69.15
	11/10/15	91.38	18.68	0.00	72.70
	02/09/16	91.38	15.33	0.00	76.05
	04/26/16	91.38	16.21	0.00	75.17
	07/28/16	91.38	19.32	0.00	72.06
	09/14/16	91.38	19.77	0.00	71.61
	12/12/16	91.38	20.47	0.00	70.91
	03/06/17	91.38	17.81	0.00	73.57
	05/31/17	91.38	19.75	0.00	71.63
	11/19/18	91.38	17.48	0.00	73.90
	01/20/19	91.38	15.99	0.00	75.39
MW-7	02/24/00	94.13	27.34	0.42	67.11
	08/02/00	94.13	30.28	3.84	66.73
	04/26/01	94.13	27.34	3.64	69.52
	07/16/01	94.13	28.69	5.95	69.90
	03/27/02	94.13	25.97	1.07	68.96
	06/06/02	94.13	27.05	2.75	69.14
	11/08/05	94.13	26.46	4.94	71.38
	05/03/06	94.13	27.63	4.15	69.61
	07/25/06	94.13	29.14	4.04	68.02
	08/16/06	94.13	29.55	4.13	67.68
	09/26/06	94.13	30.30	4.66	67.33
	10/25/06	94.13	30.30	4.38	67.12
	11/09/06	94.13	30.30	4.32	67.07
	12/28/06	94.13	30.30	4.45	67.17
	02/14/07	94.13	30.30	5.90	68.26
	08/30/07	94.13	30.30	4.00	66.83
	09/13/07	94.13	30.30	3.98	66.82
	10/03/07	94.13	30.25	3.53	66.53
	12/17/07	94.13	30.30	2.56	65.75
	02/12/08	94.13	30.30	5.39	67.87
	04/02/08	94.13	30.25	6.47	68.73
	04/23/08	94.13	30.30	6.48	68.69
	07/10/08	94.13	30.30	4.82	67.45
	01/14/09	94.13	30.30	6.70	68.86
	02/25/09	94.13	30.28	6.70	68.88
	03/18/09	94.13	29.65	6.56	69.40
	03/30/09	94.13	25.27	0.24	69.04
	04/22/09	94.13	23.62	0.10	70.59
	06/24/09	94.13	23.21	0.11	71.00
	07/22/09	94.13	23.01	0.01	71.13
	08/19/09	94.13	22.45	0.14	71.79
	09/17/09	94.13	21.49	0.02	72.66
	10/28/09	94.13	20.42	0.04	73.74
	11/30/09	94.13	21.72	0.32	72.65
	12/15/09	94.13	21.31	0.00	72.82
	06/15/10	94.13	22.75	0.04	71.41
	09/01/10	94.13	23.60	0.12	70.62
	12/01/10	94.13	24.65	0.00	69.48
	10/06/11	94.13	27.34	0.59	67.23
	10/27/11	94.13	27.32	0.60	67.26

Table 1
Groundwater Elevation Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Date of Measurement	Top of Casing Elevation (ft)	Depth to GW (ft-btoc)	PSH Thickness (ft)	Potentiometric Elevation (ft)
MW-7	11/20/11	94.13	29.22	0.80	65.51
CONT	01/05/12	94.13	28.30	2.00	67.33
	01/25/12	94.13	30.70	1.65	64.67
	05/10/12	94.13	28.05	4.66	69.58
	06/24/12	94.13	29.92	2.14	65.82
	08/02/12	94.13	29.91	1.96	65.69
	08/24/12	94.13	27.40	0.60	67.18
	09/06/12	94.13	26.95	0.97	67.91
	10/17/12	94.13	24.95	3.65	71.92
	10/26/12	94.13	24.96	0.00	69.17
	12/05/12	94.13	25.66	0.00	68.47
	01/29/13	94.13	25.57	0.00	68.56
	01/30/13	94.13	25.57	0.00	68.56
	07/11/13	94.13	23.71	0.00	70.42
	08/10/13	94.13	22.36	0.00	71.77
	08/30/13	94.13	22.90	0.00	71.23
	10/08/13	94.13	22.05	0.00	72.08
	10/30/13	94.13	21.94	0.00	72.19
	11/12/13	94.13	23.15	0.00	70.98
	12/18/13	94.13	23.45	0.00	70.68
	01/08/14	94.13	22.47	0.00	71.66
	03/19/14	94.13	22.35	0.00	71.78
	03/27/14	94.13	22.26	0.00	71.87
	05/20/14	94.13	20.56	0.00	73.57
	06/09/14	94.13	21.13	0.00	73.00
	06/10/14	94.13	21.13	0.00	73.00
	06/25/14	94.13	21.60	0.00	72.53
	07/10/14	94.13	20.10	0.00	74.03
	08/13/14	94.13	20.07	0.00	74.06
	08/27/14	94.13	20.77	0.00	73.36
	09/11/14	94.13	23.25	0.00	70.88
	09/17/14	94.13	23.01	0.00	71.12
	10/03/14	94.13	23.71	0.00	70.42
	10/28/14	94.13	23.90	0.00	70.23
	10/29/14	94.13	23.90	0.00	70.23
	12/18/14	94.13	24.86	0.00	69.27
	01/07/15	94.13	24.20	0.00	69.93
	02/19/15	94.13	24.45	0.00	69.68
	04/02/15	94.13	24.82	0.00	69.31
	04/08/15	94.13	24.73	0.00	69.40
	05/08/15	94.13	24.01	0.00	70.12
	05/18/15	94.13	25.20	0.00	68.93
	06/16/15	94.13	25.40	0.00	68.73
	06/30/15	94.13	25.90	0.00	68.23
	07/14/15	94.13	26.38	0.00	67.75
	07/30/15	94.13	26.98	0.00	67.15
	08/05/15	94.13	24.44	0.00	69.69
	09/02/15	94.13	26.99	0.00	67.14
	09/23/15	94.13	25.46	0.00	68.67
	10/06/15	94.13	25.89	0.00	68.24
	11/10/15	94.13	23.50	0.00	70.63
	02/09/16	94.13	19.71	0.00	74.42
	04/26/16	94.13	19.75	0.00	74.38
	06/03/16	94.13	24.56	0.00	69.57
	06/23/16	94.13	21.56	0.00	72.57
	07/07/16	94.13	22.87	0.00	71.26
	07/28/16	94.13	22.40	0.00	71.73
	08/09/16	94.13	22.69	0.00	71.44
	08/23/16	94.13	22.70	0.00	71.43
	09/14/16	94.13	22.81	0.00	71.32
	12/12/16	94.13	23.88	0.00	70.25
	03/06/17	94.13	21.40	0.00	72.73
	05/31/17	94.13	22.88	0.00	71.25

Table 1
Groundwater Elevation Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Date of Measurement	Top of Casing Elevation (ft)	Depth to GW (ft-btoc)	PSH Thickness (ft)	Potentiometric Elevation (ft)
MW-8	02/24/00	94.42	26.90	0.00	67.52
	08/02/00	94.42	28.50	0.00	65.92
	04/26/01	94.42	25.15	0.00	69.27
	07/16/01	94.42	24.98	0.00	69.44
	03/27/02	94.42	25.06	0.00	69.36
	06/06/02	94.42	24.90	0.00	69.52
	11/08/05	94.42	24.22	0.00	70.20
	05/03/06	94.42	24.05	0.00	70.37
	08/16/06	94.42	26.22	0.00	68.20
	10/25/06	94.42	26.90	0.00	67.52
	02/14/07	94.42	25.72	0.00	68.70
	10/03/07	94.42	28.05	0.00	66.37
	12/17/07	94.42	29.11	0.00	65.31
	04/23/08	94.42	25.24	0.00	69.18
	07/10/08	94.42	26.59	0.00	67.83
	03/18/09	94.42	24.98	0.00	69.44
	06/24/09	94.42	23.85	0.00	70.57
	09/17/09	94.42	21.09	0.00	73.33
	12/01/09	94.42	20.77	0.00	73.65
	12/15/09	94.42	20.35	0.00	74.07
	06/15/10	94.42	22.11	0.00	72.31
	09/01/10	94.42	23.10	0.00	71.32
	12/01/10	94.42	24.31	0.00	70.11
	11/20/11	94.42	28.43	0.00	65.99
	01/25/12	94.42	29.33	0.00	65.09
	02/22/12	94.42	29.28	0.00	65.14
	05/10/12	94.42	28.59	0.00	65.83
	08/02/12	94.42	29.09	0.00	65.33
	10/26/12	94.42	24.70	0.00	69.72
	11/20/12	94.42	24.95	0.00	69.47
	01/23/13	94.42	25.08	0.00	69.34
	01/29/13	94.42	25.24	0.00	69.18
	10/08/13	94.42	22.14	0.00	72.28
	01/08/14	94.42	22.20	0.00	72.22
	03/19/14	94.42	22.55	0.00	71.87
	03/27/14	94.42	22.31	0.00	72.11
	06/10/14	94.42	21.13	0.00	73.29
	06/25/14	94.42	21.43	0.00	72.99
	10/29/14	94.42	23.14	0.00	71.28
	02/19/15	94.42	24.93	0.00	69.49
	05/07/15	94.42	24.70	0.00	69.72
	08/05/15	94.42	24.13	0.00	70.29
	09/23/15	94.42	24.95	0.00	69.47
	11/10/15	94.42	24.36	0.00	70.06
	02/09/16	94.42	21.60	0.00	72.82
	04/26/16	94.42	20.46	0.00	73.96
	07/28/16	94.42	22.30	0.00	72.12
	09/14/16	94.42	22.78	0.00	71.64
	12/12/16	94.42	23.98	0.00	70.44
	03/06/17	94.42	21.21	0.00	73.21
	05/31/17	94.42	22.81	0.00	71.61
	11/19/18	94.42	21.32	0.00	73.10
	01/20/19	94.42	19.50	0.00	74.92
MW-9	04/26/01	93.98	25.22	0.10	68.84
	07/16/01	93.98	24.20	0.01	69.79
	03/27/02	93.98	27.53	3.22	68.87
	06/06/02	93.98	27.95	3.90	68.96
	11/08/05	93.98	26.46	4.74	71.38
	05/03/06	93.98	28.12	4.86	69.51
	07/25/06	93.98	29.54	4.75	68.00
	08/16/06	93.98	29.85	4.69	67.65
	09/26/06	93.98	31.18	5.25	66.74
	10/25/06	93.98	30.74	4.82	66.86
	11/09/06	93.98	30.24	4.52	67.13

Table 1
Groundwater Elevation Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Date of Measurement	Top of Casing Elevation (ft)	Depth to GW (ft-btoc)	PSH Thickness (ft)	Potentiometric Elevation (ft)
MW-9	12/28/06	93.98	30.25	5.26	67.68
CONT	02/14/07	93.98	30.42	5.81	67.92
	08/30/07	93.98	31.70	5.39	66.32
	09/13/07	93.98	31.70	5.39	66.32
	10/03/07	93.98	32.08	5.28	65.86
	12/17/07	93.98	33.50	5.62	64.70
	02/12/08	93.98	30.84	5.69	67.41
	04/02/08	93.98	30.24	6.46	68.59
	04/23/08	93.98	30.29	6.51	68.57
	07/10/08	93.98	30.64	5.24	67.27
	01/14/09	93.98	30.00	6.29	68.70
	02/25/09	93.98	30.00	6.30	68.71
	03/18/09	93.98	28.85	5.05	68.92
	03/30/09	93.98	25.55	0.55	68.84
	04/22/09	93.98	23.97	0.52	70.40
	06/24/09	93.98	23.06	0.02	70.94
	07/22/09	93.98	23.02	0.01	70.97
	08/19/09	93.98	22.80	0.48	71.54
	09/17/09	93.98	22.34	0.86	72.29
	10/28/09	93.98	21.12	0.34	73.12
	11/30/09	93.98	21.68	0.14	72.41
	12/15/09	93.98	21.70	0.00	72.28
	06/15/10	93.98	22.54	0.04	71.47
	09/01/10	93.98	23.24	0.02	70.76
	12/01/10	93.98	24.65	0.05	69.37
	10/06/11	93.98	28.89	2.59	67.03
	10/27/11	93.98	28.87	2.57	67.04
	11/20/11	93.98	29.16	0.00	64.82
	12/15/11	93.98	28.64	0.00	65.34
	01/05/12	93.98	28.83	0.00	65.15
	01/25/12	93.98	29.35	0.00	64.63
	02/22/12	93.98	28.29	0.00	65.69
	05/10/12	93.98	28.29	0.00	65.69
	06/24/12	93.98	27.90	0.00	66.08
	08/02/12	93.98	28.40	0.00	65.58
	08/24/12	93.98	27.20	0.00	66.78
	09/06/12	93.98	26.47	0.00	67.51
	10/17/12	93.98	25.17	0.00	68.81
	10/26/12	93.98	25.13	0.00	68.85
	12/05/12	93.98	24.75	0.00	69.23
	01/29/13	93.98	25.65	0.00	68.33
	01/30/13	93.98	25.65	0.00	68.33
	07/11/13	93.98	24.10	0.00	69.88
	08/10/13	93.98	22.61	0.00	71.37
	08/30/13	93.98	23.20	0.00	70.78
	10/08/13	93.98	22.18	0.00	71.80
	10/30/13	93.98	22.07	0.00	71.91
	11/12/13	93.98	23.20	0.00	70.78
	12/18/13	93.98	23.59	0.00	70.39
	01/08/14	93.98	22.71	0.00	71.27
	03/19/14	93.98	22.52	0.00	71.46
	03/27/14	93.98	22.40	0.00	71.58
	05/20/14	93.98	20.75	0.00	73.23
	06/09/14	93.98	21.24	0.00	72.74
	06/10/14	93.98	21.24	0.00	72.74
	06/25/14	93.98	21.66	0.00	72.32
	07/10/14	93.98	21.23	0.00	72.75
	08/13/14	93.98	20.03	0.00	73.95
	08/27/14	93.98	20.82	0.00	73.16
	09/11/14	93.98	23.29	0.00	70.69

Table 1
Groundwater Elevation Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Date of Measurement	Top of Casing Elevation (ft)	Depth to GW (ft-btoc)	PSH Thickness (ft)	Potentiometric Elevation (ft)
MW-9	09/17/14	93.98	23.29	0.00	70.69
CONT	10/03/14	93.98	23.75	0.00	70.23
	10/28/14	93.98	23.14	0.00	70.84
	10/29/14	93.98	23.84	0.00	70.14
	12/18/14	93.98	16.09	0.00	77.89
	01/07/15	93.98	15.20	0.00	78.78
	02/19/15	93.98	24.47	0.00	69.51
	04/02/15	93.98	25.01	0.00	68.97
	04/08/15	93.98	24.55	0.00	69.43
	05/08/15	93.98	24.19	0.00	69.79
	05/18/15	93.98	25.01	0.00	68.97
	06/16/15	93.98	25.52	0.00	68.46
	06/30/15	93.98	25.07	0.00	68.91
	07/14/15	93.98	25.97	0.00	68.01
	07/30/15	93.98	26.10	0.00	67.88
	08/05/15	93.98	23.90	0.00	70.08
	09/02/15	93.98	25.78	0.00	68.20
	09/23/15	93.98	25.11	0.00	68.87
	10/06/15	93.98	25.01	0.00	68.97
	11/10/15	93.98	23.89	0.00	70.09
	02/09/16	93.98	20.04	0.00	73.94
	04/26/16	93.98	19.79	0.00	74.19
	06/03/16	93.98	25.20	0.00	68.78
	06/23/16	93.98	21.55	0.00	72.43
	07/07/16	93.98	22.78	0.00	71.20
	07/28/16	93.98	22.24	0.00	71.74
	08/09/16	93.98	22.61	0.00	71.37
	08/23/16	93.98	22.85	0.00	71.13
	09/14/16	93.98	22.69	0.00	71.29
	12/12/16	93.98	23.74	0.00	70.24
	03/06/17	93.98	21.51	0.00	72.47
	05/31/17	93.98	23.09	0.00	70.89
MW-10	04/26/01	93.95	25.03	0.00	68.92
	07/16/01	93.95	24.09	0.00	69.86
	03/27/02	93.95	25.03	0.00	68.92
	06/06/02	93.95	24.83	0.00	69.12
	11/08/05	93.95	22.65	0.00	71.30
	05/03/06	93.95	24.37	0.00	69.58
	08/16/06	93.95	26.30	0.00	67.65
	10/25/06	93.95	27.00	0.00	66.95
	02/14/07	93.95	25.88	0.00	68.07
	10/03/07	93.95	28.05	0.00	65.90
	12/17/07	93.95	29.03	0.00	64.92
	04/23/08	93.95	25.34	0.00	68.61
	07/10/08	93.95	26.60	0.00	67.35
	03/18/09	93.95	25.10	0.00	68.85
	06/24/09	93.95	22.97	0.00	70.98
	09/17/09	93.95	21.90	0.00	72.05
	12/01/09	93.95	21.54	0.00	72.41
	09/01/10	93.95	23.40	0.00	70.55
	12/01/10	93.95	24.60	0.00	69.35
	11/20/11	93.95	28.36	0.02	65.61
	01/25/12	93.95	29.25	0.00	64.70
	02/22/12	93.95	28.64	0.00	65.31
	04/06/12	93.95	27.65	0.00	66.30
	05/10/12	93.95	28.21	0.00	65.74
	08/02/12	93.95	28.42	0.02	65.55
	08/24/12	93.95	27.05	0.02	66.92
	10/26/12	93.95	25.02	0.00	68.93
	01/29/13	93.95	25.61	0.00	68.34
	10/08/13	93.95	22.11	0.00	71.84
	01/08/14	93.95	22.64	0.00	71.31

Table 1
Groundwater Elevation Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Date of Measurement	Top of Casing Elevation (ft)	Depth to GW (ft-btoc)	PSH Thickness (ft)	Potentiometric Elevation (ft)
MW-10	03/19/14	93.95	22.30	0.00	71.65
CONT	03/27/14	93.95	22.22	0.00	71.73
	06/10/14	93.95	21.13	0.00	72.82
	06/25/14	93.95	21.58	0.00	72.37
	10/29/14	93.95	23.91	0.00	70.04
	02/19/15	93.95	24.32	0.00	69.63
	05/07/15	93.95	23.99	0.00	69.96
	08/05/15	93.95	24.35	0.00	69.60
	09/23/15	93.95	25.35	0.00	68.60
	11/10/15	93.95	23.52	0.00	70.43
	02/09/16	93.95	19.90	0.00	74.05
	04/26/16	93.95	19.75	0.00	74.20
	07/28/16	Not Found			
	09/14/16	93.95	22.76	0.00	71.19
	12/12/16	93.95	24.08	0.00	69.87
	03/06/17	93.95	21.60	0.00	72.35
	05/31/17	93.95	23.01	0.00	70.94
	11/19/18	93.95	21.34	0.00	72.61
	01/20/19	93.95	19.59	0.00	74.36
MW-11	04/26/01	93.44	24.58	0.00	68.86
	07/16/01	93.44	26.36	0.00	67.08
	03/27/02	93.44	24.64	0.00	68.80
	06/06/02	93.44	24.37	0.00	69.07
	11/08/05	93.44	22.20	0.00	71.24
	05/03/06	93.44	23.96	0.00	69.48
	08/16/06	93.44	25.89	0.00	67.55
	10/25/06	93.44	26.60	0.00	66.84
	02/14/07	93.44	25.49	0.00	67.95
	10/03/07	93.44	27.68	0.00	65.76
	12/17/07	93.44	28.60	0.00	64.84
	04/23/08	93.44	24.93	0.00	68.51
	07/10/08	93.44	26.20	0.00	67.24
	03/18/09	93.44	24.65	0.00	68.79
	06/24/09	93.44	22.53	0.00	70.91
	09/17/09	93.44	21.50	0.00	71.94
	12/01/09	93.44	21.12	0.00	72.32
	09/01/10	93.44	22.96	0.00	70.48
	12/01/10	93.44	24.29	0.00	69.15
	11/20/11	93.44	27.91	0.00	65.53
	01/25/12	93.44	28.87	0.00	64.57
	05/10/12	93.44	27.80	0.00	65.64
	08/02/12	93.44	28.03	0.00	65.41
	10/26/12	93.44	24.63	0.00	68.81
	01/29/13	93.44	25.25	0.00	68.19
	10/08/13	93.44	21.69	0.00	71.75
	01/08/14	93.44	22.13	0.00	71.31
	03/19/14	93.44	21.85	0.00	71.59
	03/27/14	93.44	21.73	0.00	71.71
	06/10/14	93.44	20.64	0.00	72.80
	06/25/14	93.44	21.12	0.00	72.32
	10/29/14	93.44	23.50	0.00	69.94
	02/19/15	93.44	23.78	0.00	69.66
	05/07/15	93.44	23.53	0.00	69.91
	08/05/15	93.44	23.93	0.00	69.51
	09/23/15	93.44	24.91	0.00	68.53
	11/10/15	93.44	23.02	0.00	70.42
	02/09/16	93.44	19.37	0.00	74.07
	04/26/16	93.44	19.28	0.00	74.16
	07/28/16	93.44	21.74	0.00	71.70
	09/14/16	93.44	21.33	0.00	72.11
	12/12/16	93.44	23.54	0.00	69.90
	03/06/17	93.44	21.03	0.00	72.41
	05/31/17	93.44	22.57	0.00	70.87
	11/19/18	93.44	20.88	0.00	72.56
	01/20/19	93.44	19.10	0.00	74.34

Table 1
Groundwater Elevation Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Date of Measurement	Top of Casing Elevation (ft)	Depth to GW (ft-btoc)	PSH Thickness (ft)	Potentiometric Elevation (ft)
MW-12	04/26/01	95.54	26.71	0.00	68.83
	03/27/02	95.54	26.22	0.00	69.32
	06/06/02	95.54	25.80	0.00	69.74
	11/08/05	95.54	21.20	0.00	74.34
	05/03/06	95.54	25.64	0.00	69.90
	08/16/06	95.54	27.58	0.00	67.96
	10/25/06	95.54	29.65	0.00	65.89
	02/14/07	95.54	28.59	0.00	66.95
	10/03/07	95.54	29.24	0.00	66.30
	12/17/07	95.54	30.28	0.00	65.26
	04/23/08	95.54	27.34	0.00	68.20
	07/10/08	95.54	28.05	0.00	67.49
	03/18/09	95.54	26.80	0.00	68.74
	06/24/09	95.54	24.52	0.00	71.02
	09/17/09	95.54	24.35	0.00	71.19
	09/01/10	95.54	24.22	0.00	71.32
	12/01/10	95.54	23.99	0.00	71.55
	01/25/12	95.54	31.40	0.00	64.14
	05/10/12	95.54	30.70	0.00	64.84
	08/02/12	95.54	31.02	0.00	64.52
	10/26/12	95.54	33.20	0.00	62.34
	01/29/13	95.54	27.80	0.00	67.74
	10/08/13	95.54	24.03	0.00	71.51
	01/08/14	95.54	23.22	0.00	72.32
	03/27/14	95.54	24.02	0.00	71.52
	06/25/14	95.54	24.20	0.00	71.34
	10/29/14	95.54	25.65	0.00	69.89
	02/19/15	95.54	25.95	0.00	69.59
	05/07/15	95.54	25.20	0.00	70.34
	08/05/15	95.54	25.38	0.00	70.16
	11/10/15	95.54	26.23	0.00	69.31
	02/09/16	95.54	27.12	0.00	68.42
	04/26/16	95.54	21.01	0.00	74.53
	07/28/16	95.54	23.17	0.00	72.37
	09/14/16	95.54	24.08	0.00	71.46
	12/12/16	95.54	26.12	0.00	69.42
	03/06/17	95.54	23.96	0.00	71.58
	05/31/17	95.54	24.91	0.00	70.63
	11/19/18	95.54	23.00	0.00	72.54
	01/20/19	95.54	21.03	0.00	74.51
VZ-13	11/08/05	93.32	22.84	0.00	70.48
	05/03/06	93.32	24.41	0.00	68.91
	07/25/06	93.32	25.87	0.00	67.45
	08/16/06	93.32	26.28	0.00	67.04
	10/25/06	93.32	27.09	0.00	66.23
	02/14/07	93.32	27.09	1.41	67.29
	10/03/07	93.32	33.53	7.13	65.14
	12/17/07	93.32	33.80	6.18	64.16
	04/02/08	93.32	31.70	8.33	67.87
	04/23/08	93.32	31.70	8.33	67.87
	07/10/08	93.32	31.78	9.23	68.46
	03/18/09	93.32	30.24	7.36	68.60
	03/30/09	93.32	25.40	0.50	68.30
	04/22/09	93.32	23.30	0.15	70.13
	06/24/09	93.32	23.12	0.01	70.21
	09/17/09	93.32	23.21	0.01	70.12
	10/28/09	93.32	21.42	0.87	72.55
	11/30/09	93.32	21.99	0.07	71.38
	12/15/09	93.32	21.80	0.00	71.52
	06/15/10	93.32	22.60	0.03	70.74
	09/01/10	93.32	23.13	0.02	70.21
	12/01/10	93.32	20.11	0.00	73.21
	11/20/11	93.32	29.22	0.00	64.10
	01/25/12	93.32	29.45	0.00	63.87

Table 1
Groundwater Elevation Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Date of Measurement	Top of Casing Elevation (ft)	Depth to GW (ft-btoc)	PSH Thickness (ft)	Potentiometric Elevation (ft)
VZ-13	02/22/12	93.32	28.84	0.00	64.48
CONT	04/06/12	93.32	27.75	0.00	65.57
	04/18/12	93.32	27.97	0.00	65.35
	05/10/12	93.32	28.34	0.00	64.98
	08/02/12	93.32	28.45	0.00	64.87
	08/24/12	93.32	27.27	0.00	66.05
	10/26/12	93.32	25.20	0.02	68.14
	12/05/12	93.32	25.68	0.00	67.64
	01/29/13	93.32	25.74	0.00	67.58
	07/11/13	93.32	24.15	0.00	69.17
	10/08/13	93.32	22.28	0.00	71.04
	01/08/14	93.32	22.83	0.00	70.49
	03/19/14	93.32	22.54	0.00	70.78
	03/27/14	93.32	22.44	0.00	70.88
	06/10/14	93.32	21.31	0.00	72.01
	06/25/14	93.32	21.74	0.00	71.58
	09/11/14	93.32	23.35	0.00	69.97
	10/03/14	93.32	24.85	0.00	68.47
	10/29/14	93.32	22.56	0.00	70.76
	02/19/15	93.32	24.37	0.00	68.95
	05/07/15	93.32	24.22	0.00	69.10
	08/05/15	93.32	24.25	0.00	69.07
	09/23/15	93.32	25.36	0.00	67.96
	11/10/15	93.32	22.93	0.00	70.39
	02/09/16	93.32	20.48	0.00	72.84
	04/26/16	93.32	19.91	0.00	73.41
	07/28/16	93.32	22.29	0.00	71.03
	09/14/16	93.32	22.81	0.00	70.51
	12/12/16	93.32	24.04	0.00	69.28
	03/06/17	93.32	20.01	0.00	73.31
	05/31/17	93.32	23.17	0.00	70.15
	11/19/18	93.32	21.49	0.00	71.83
	01/20/19	93.32	19.70	0.00	73.62
VZ-14	11/08/05	93.24	22.20	0.00	71.04
	05/03/06	93.24	24.16	0.00	69.08
	07/25/06	93.24	25.45	0.00	67.79
	08/16/06	93.24	26.15	0.00	67.09
	10/25/06	93.24	26.95	0.00	66.29
	02/14/07	93.24	25.72	0.00	67.52
	02/14/07	93.24	25.72	0.00	67.52
	10/03/07	93.24	27.95	0.00	65.29
	12/17/07	93.24	29.02	0.07	64.27
	04/02/08	93.24	25.15	0.03	68.11
	04/23/08	93.24	25.15	0.03	68.11
	07/10/08	93.24	26.60	0.05	66.68
	03/18/09	93.24	25.06	0.00	68.18
	06/24/09	93.24	22.94	0.00	70.30
	09/17/09	93.24	22.08	0.00	71.16
	12/01/09	93.24	21.19	0.00	72.05
	06/15/10	93.24	22.18	0.00	71.06
	09/01/10	93.24	23.25	0.00	69.99
	12/01/10	93.24	24.49	0.00	68.75
	11/20/11	93.24	28.36	0.00	64.88
	01/25/12	93.24	29.12	0.00	64.12
	04/18/12	93.24	27.68	0.00	65.56
	05/10/12	93.24	28.13	0.00	65.11
	08/02/12	93.24	28.14	0.00	65.10
	08/24/12	93.24	22.62	0.00	70.62
	10/26/12	93.24	24.80	0.00	68.44
	01/29/13	93.24	25.50	0.00	67.74
	07/11/13	93.24	23.31	0.00	69.93
	10/08/13	93.24	21.90	0.00	71.34
	01/08/14	93.24	22.18	0.00	71.06

Table 1
Groundwater Elevation Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Date of Measurement	Top of Casing Elevation (ft)	Depth to GW (ft-btoc)	PSH Thickness (ft)	Potentiometric Elevation (ft)
VZ-14	03/19/14	93.24	21.99	0.00	71.25
CONT	03/27/14	93.24	21.97	0.00	71.27
	06/10/14	93.24	20.81	0.00	72.43
	06/25/14	93.24	21.30	0.00	71.94
	09/11/14	93.24	23.10	0.00	70.14
	10/29/14	93.24	23.71	0.00	69.53
	02/19/15	93.24	24.23	0.00	69.01
	05/07/15	93.24	23.75	0.00	69.49
	08/05/15	93.24	24.19	0.00	69.05
	09/23/15	93.24	25.26	0.00	67.98
	11/10/15	93.24	21.41	0.00	71.83
	02/09/16	93.24	14.84	0.00	78.40
	04/26/16	93.24	19.35	0.00	73.89
	07/28/16	93.24	22.06	0.00	71.18
	09/14/16	93.24	22.59	0.00	70.65
	12/12/16	93.24	23.11	0.00	70.13
	03/06/17	93.24	20.61	0.00	72.63
	05/31/17	93.24	22.51	0.00	70.73
	11/19/18	93.24	20.18	0.00	73.06
	01/20/19	93.24	18.72	0.00	74.52
VZ-15	11/08/05	94.08	23.81	0.51	70.65
	05/03/06	94.08	25.15	0.39	69.22
	07/25/06	94.08	27.16	0.75	67.48
	08/16/06	94.08	22.08	0.38	72.29
	10/25/06	94.08	30.40	3.72	66.47
	02/14/07	94.08	31.41	6.38	67.46
	10/03/07	94.08	35.09	9.31	65.97
	12/17/07	94.08	33.57	8.90	67.19
	04/02/08	94.08	31.89	7.77	68.02
	04/23/08	94.08	31.89	7.77	68.02
	07/10/08	94.08	32.64	6.87	66.59
	03/18/09	94.08	29.85	7.85	70.12
	03/30/09	94.08	26.64	1.50	68.57
	04/22/09	94.08	26.18	2.57	69.83
	06/24/09	94.08	21.17	0.01	72.92
	09/17/09	94.08	21.11	1.01	73.73
	09/29/09	94.08	23.82	2.36	72.03
	10/28/09	94.08	20.38	0.37	73.98
	11/30/09	94.08	22.26	0.18	71.96
	12/15/09	94.08	22.38	0.00	71.70
	06/15/10	94.08	23.70	0.00	70.38
	09/01/10	94.08	23.79	0.03	70.31
	12/01/10	94.08	22.15	0.11	72.01
	11/20/11	94.08	33.85	6.15	64.84
	01/25/12	94.08	32.92	3.88	64.07
	02/22/12	94.08	32.85	6.15	65.84
	04/06/12	94.08	31.21	7.71	68.65
	04/18/12	94.08	26.73	0.00	67.35
	05/10/12	94.08	34.04	6.89	65.21
	08/02/12	94.08	32.70	7.16	66.75
	08/24/12	94.08	31.50	5.25	66.52
	10/26/12	94.08	26.29	1.15	68.65
	12/05/12	94.08	26.82	1.02	68.03
	01/29/13	94.08	25.75	0.10	68.41
	07/11/13	94.08	25.04	0.89	69.71
	10/08/13	94.08	23.11	0.70	71.50
	01/08/14	94.08	23.71	0.70	70.90
	03/19/14	94.08	23.30	0.56	71.20
	03/27/14	94.08	22.76	0.03	71.34
	05/20/14	94.08	21.12	0.02	72.98
	06/10/14	94.08	21.66	0.01	72.43
	06/25/14	94.08	22.10	0.00	71.98
	09/11/14	94.08	23.81	0.00	70.27
	10/29/14	94.08	23.73	0.00	70.35

Table 1
Groundwater Elevation Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Date of Measurement	Top of Casing Elevation (ft)	Depth to GW (ft-btoc)	PSH Thickness (ft)	Potentiometric Elevation (ft)
VZ-15	02/19/15	94.08	24.81	0.00	69.27
CONT	05/07/15	94.08	24.55	0.05	69.57
	08/05/15	94.08	24.90	0.02	69.20
	09/23/15	94.08	25.95	0.04	68.09
	11/10/15	94.08	24.08	0.00	70.00
	02/09/16	94.08	20.30	0.00	73.78
	04/26/16	94.08	17.10	0.00	76.98
	07/28/16	94.08	22.31	0.00	71.77
	09/14/16	94.08	23.21	0.00	70.87
	12/12/16	94.08	24.37	0.00	69.71
	03/06/17	94.08	21.79	0.00	72.29
	05/31/17	94.08	23.31	0.00	70.77
	11/19/18	94.08	21.50	0.00	72.58
	01/20/19	94.08	19.84	0.00	74.24
VZ-16	11/08/05	94.04	22.22	0.00	71.82
	05/03/06	94.04	22.28	0.00	71.76
	07/25/06	94.04	22.88	0.00	71.16
	08/16/06	94.04	25.82	0.00	68.22
	10/25/06	94.04	26.42	0.00	67.62
	02/14/07	94.04	24.91	0.00	69.13
	10/03/07	94.04	28.05	0.00	65.99
	12/17/07	94.04	29.10	0.00	64.94
	04/02/08	94.04	24.95	0.00	69.09
	04/23/08	94.04	24.95	0.00	69.09
	07/10/08	94.04	26.22	0.00	67.82
	03/18/09	94.04	24.17	0.00	69.87
	06/24/09	94.04	22.85	0.00	71.19
	09/17/09	94.04	22.82	0.00	71.22
	12/01/09	94.04	19.60	0.00	74.44
	06/15/10	94.04	22.11	0.00	71.93
	09/01/10	94.04	21.55	0.00	72.49
	12/01/10	94.04	23.16	0.00	70.88
	11/20/11	94.04	27.66	0.00	66.38
	01/25/12	94.04	29.02	0.00	65.02
	05/10/12	94.04	25.57	0.00	68.47
	08/02/12	94.04	25.85	0.00	68.19
	10/26/12	94.04	21.95	0.00	72.09
	01/29/13	94.04	23.07	0.00	70.97
	10/08/13	94.04	20.62	0.00	73.42
	01/08/14	94.04	21.15	0.00	72.89
	03/19/14	94.04	22.05	0.00	71.99
	03/27/14	94.04	22.11	0.00	71.93
	06/10/14	94.04	20.70	0.00	73.34
	06/25/14	94.04	20.62	0.00	73.42
	10/29/14	94.04	22.53	0.00	71.51
	02/19/15	94.04	24.06	0.00	69.98
	05/07/15	94.04	23.77	0.00	70.27
	08/05/15	94.04	24.25	0.00	69.79
	09/23/15	94.04	25.36	0.00	68.68
	11/10/15	94.04	23.81	0.00	70.23
	02/09/16	94.04	19.61	0.00	74.43
	04/26/16	94.04	19.41	0.00	74.63
	07/28/16	94.04	22.14	0.00	71.90
	09/14/16	94.04	16.18	0.00	77.86
	12/12/16	94.04	22.94	0.00	71.10
	03/06/17	94.04	20.00	0.00	74.04
	05/31/17	94.04	21.61	0.00	72.43
	11/19/18	94.04	20.11	0.00	73.93
	01/20/19	94.04	18.38	0.00	75.66
VZ-17	11/08/05	93.46	20.55	0.00	72.91
	05/03/06	93.46	20.64	0.00	72.82
	07/25/06	93.46	20.84	0.00	72.62
	08/16/06	93.46	21.79	0.00	71.67
	10/25/06	93.46	23.85	0.00	69.61
	02/14/07	93.46	21.40	0.00	72.06
	10/03/07	93.46	25.92	0.00	67.54
	12/17/07	93.46	26.98	0.00	66.48

Table 1
Groundwater Elevation Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Date of Measurement	Top of Casing Elevation (ft)	Depth to GW (ft-btoc)	PSH Thickness (ft)	Potentiometric Elevation (ft)
VZ-17	04/02/08	93.46	22.06	0.00	71.40
CONT	04/23/08	93.46	22.07	0.00	71.39
	07/10/08	93.46	23.12	0.00	70.34
	03/18/09	93.46	22.56	0.00	70.90
	06/24/09	93.46	20.30	0.00	73.16
	09/17/09	93.46	20.30	0.00	73.16
	06/15/10	93.46	19.99	0.00	73.47
	09/01/10	93.46	19.28	0.00	74.18
	11/20/11	93.46	25.26	0.00	68.20
	01/25/12	93.46	27.02	0.19	66.58
	02/22/12	93.46	26.25	0.10	67.29
	04/18/12	93.46	24.92	0.05	68.58
	05/10/12	93.46	25.44	0.00	68.02
	05/24/12	93.46	24.56	0.00	68.90
	06/28/12	93.46	24.70	0.00	68.76
	08/02/12	93.46	22.50	0.00	70.96
	10/26/12	93.46	18.64	0.00	74.82
	01/29/13	93.46	19.40	0.00	74.06
	10/08/13	93.46	17.76	0.00	75.70
	01/08/14	93.46	18.80	0.00	74.66
	03/19/14	93.46	19.85	0.00	73.61
	03/27/14	93.46	19.74	0.00	73.72
	06/10/14	93.46	18.38	0.00	75.08
	06/25/14	93.46	18.44	0.00	75.02
	09/11/14	93.46	19.66	0.00	73.80
	10/29/14	93.46	20.33	0.00	73.13
	02/19/15	93.46	24.06	0.00	69.40
	05/07/15	93.46	21.71	0.00	71.75
	08/05/15	93.46	22.18	0.00	71.28
	09/23/15	93.46	23.35	0.00	70.11
	11/10/15	93.46	21.26	0.00	72.20
	02/09/16	93.46	17.05	0.00	76.41
	04/26/16	93.46	16.95	0.00	76.51
	07/28/16	93.46	18.53	0.00	74.93
	09/14/16	93.46	14.47	0.00	78.99
	12/12/16	93.46	20.55	0.00	72.91
	03/06/17	93.46	15.35	0.00	78.11
	05/31/17	93.46	19.18	0.00	74.28
	11/19/18	93.46	17.51	0.00	75.95
	01/20/19	93.46	15.90	0.00	77.56
AS-1	09/14/16	94.43	23.48	0.00	70.95
	12/12/16	94.43	24.68	0.00	69.75
	03/06/17	94.43	22.28	0.00	72.15
	05/31/17	94.43	23.63	0.00	70.80
AS-2	09/14/16	94.45	0.58	0.00	93.87
	12/12/16	94.45	0.40	0.00	94.05
	03/06/17	94.45	0.40	0.00	94.05
	05/31/17	94.45	0.40	0.00	94.05
AS-3	09/14/16	94.56	23.50	0.00	71.06
	12/12/16	94.56	24.81	0.00	69.75
	03/06/17	94.56	22.36	0.00	72.20
	05/31/17	94.56	23.74	0.00	70.82

Notes:
GW = groundwater
PSH = Phase-Separated Hydrocarbons
ft = feet
ft-btoc = feet below top of casing
NA = not applicable
NM = not measured
[1] PSH thickness assumes depth to GW equals total depth of well

Table 2
Groundwater Analytical Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylenes (mg/L)	Total BTEX (mg/L)	MTBE (mg/L)	Naphthalene (mg/L)
MW-1	12/08/98	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	02/24/00	0.0012	0.0197	0.0185	0.162	0.2014	BDL	0.0038
	04/26/01	0.172	2.71	0.97	7.58	11.432	0.035	0.0892
	03/27/02	1.06	18.4	1.78	12.2	33.44	BDL	0.204
	06/06/02	1.02	27.3	1.8	16.7	46.82	BDL	0.194
	05/03/06	0.85	24	1.8	12	38.65	BDL	NA
	08/16/06	0.86	24	2.5	17	44.36	0.11	NA
	10/25/06	0.82	19	2.6	16	38.42	0.15	NA
	02/14/07	0.38	3.6	1.6	4.3	9.88	0.092	NA
	10/03/07	0.39	21	2.1	14	37.49	0.099	0.05
	12/18/07	0.70	36	2.3	14	53.00	0.072	NA
	04/23/08	0.040	3	0.46	2.6	6.100	<0.001	0.050
	07/10/08	0.17	12	1.6	9.9	23.67	<0.20	<0.20
	03/18/09	0.022	2.4	0.68	3.9	7.002	0.047	NA
	06/25/09	0.028	2	0.46	0.28	2.768	0.12	NA
	09/17/09	0.016	0.91	0.24	2	3.166	0.067	NA
	05/10/12	<0.050	9.2	2.00	11	22.20	<0.10	NA
	10/08/13	0.032	2.7	0.73	5.8	9.262	0.072	NA
	10/29/14	<0.020	8.9	3.10	18.0	30.00	<0.020	NA
	09/15/16	<0.0250	0.335	0.464	2.91	3.71	<0.0250	<0.125
GRP SOURCE SSTL		0.384	76.7	53.7	198	NE	1.53	1.53
MW-2	12/08/98	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	02/24/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	04/26/01	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	03/27/02	BDL	BDL	BDL	BDL	BDL	0.0058	BDL
	06/06/02	BDL	BDL	BDL	BDL	BDL	0.0053	BDL
	05/03/06	0.001	BDL	BDL	BDL	0.001	BDL	NA
	08/16/06	0.00082	0.008	0.0012	0.0074	0.01742	<0.001	NA
	10/25/06	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	02/14/07	0.00056	<0.005	<0.0005	<0.0015	0.00056	<0.001	NA
	10/03/07	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	<0.001
	12/18/07	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	04/23/08	<0.001	<0.005	<0.001	<0.003	<0.010	<0.001	<0.005
	07/10/08	0.00071	<0.005	<0.0005	0.002	0.00271	<0.001	<0.001
	03/18/09	0.0010	<0.005	<0.0005	<0.0015	0.0010	<0.001	NA
	06/25/09	0.0019	<0.005	<0.0005	<0.0015	0.0019	0.0011	NA
	09/17/09	0.0022	<0.005	<0.0005	0.0029	0.0051	0.0052	NA
	05/10/12	0.0029	<0.005	<0.0005	<0.0015	0.0029	<0.0010	NA
	10/08/13	0.0098	<0.005	<0.0005	<0.0015	0.0098	0.0018	NA
	10/29/14	<0.0010	<0.0050	<0.0010	<0.0030	<0.010	<0.0010	NA
	09/15/16	0.00436	<0.00500	<0.00100	<0.00300	0.00436	<0.00100	<0.00500
	11/20/18	0.00603	<0.00100	<0.00100	<0.00300	0.00603	<0.00100	NA
	01/21/19	<0.00100	<0.00100	<0.00100	<0.00300	<0.00600	<0.00100	NA
GRP SOURCE SSTL		0.384	76.7	53.7	198	NE	1.53	1.53

Table 2
Groundwater Analytical Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylenes (mg/L)	Total BTEX (mg/L)	MTBE (mg/L)	Naphthalene (mg/L)
MW-3	12/08/98	28.5	39.4	3.2	18.1	89.2	172	0.457
	02/24/00	Not Sampled – 5.94 feet of product						
	04/26/01	Not Sampled – 7.24 feet of product						
	03/27/02	Not Sampled – 1.32 feet of product						
	06/06/02	Not Sampled – 2.12 feet of product						
	05/03/06	Not Sampled – 2.73 feet of product						
	08/16/06	Not Sampled – 2.41 feet of product						
	10/25/06	Not Sampled – 1.74 feet of product						
	02/14/07	Not Sampled – 4.02 feet of product						
	10/03/07	Not Sampled – 1.15 feet of product						
	12/18/07	Not Sampled – Dry						
	04/23/08	Not Sampled – 3.90 feet of product						
	07/10/08	Not Sampled – 5.18 feet of product						
	03/18/09	Not Sampled – 4.14 feet of product						
	06/25/09	Not Sampled – 0.03 feet of product						
	09/17/09	38	50	3.5	24	115.5	59	NA
	12/15/09	40	57	3.4	23	123.4	12	NA
	09/01/10	46	78	5.2	34	163.2	110	NA
	12/01/10	32	45	2.9	17	96.9	30	NA
	11/20/11	Not Sampled – Dry						
	01/25/12	Not Sampled – Dry						
	05/10/12	Not Sampled - 0.44 feet of product						
	08/02/12	Not Sampled - 3.78 feet of product						
	10/26/12	26	44	3.5	23	96.5	43	NA
	01/29/13	36	50	4.1	27	117.1	35	NA
	10/08/13	260	560	<50	300	1,120	61	NA
	01/08/14	22	30	<5	<15	52	26	NA
	03/27/14	28	44	2.8	19	94	22	NA
	06/25/14	44	47	2.6	17	111	18	NA
	10/29/14	60	69	3	20	152	0.33	NA
	02/19/15	43	62	2.8	19	127	37	NA
	05/07/15	39	55	2.9	19	116	21	NA
	08/05/15	49	65	3.5	24	142	32	NA
	11/11/15	44.8	54.8	3.17	20.1	122.9	15.4	NA
	02/09/16	37.0	63.0	2.97	23.4	126.4	34.4	NA
	04/26/16	38.6	76.6	9.12	61.9	186.2	7.14	NA
	07/28/16	24.6	36.4	2.40	14.8	78.2	22.6	NA
	09/15/16	39.1	49.5	2.92	20.3	111.8	27.3	<1.25
	12/12/16	24.6	58.8	3.45	24.2	111.1	8.03	0.585
	03/06/17	24.2	34.7	1.28	11.1	71.3	15.8	<1.00
	05/31/17	39.4	46.3	2.30	16.7	104.7	20.6	<1.00
	11/20/18	36.5	66.8	3.30	22.9	129.5	11.0	NA
	01/21/19	15.3	37.3	2.74	19.3	74.6	3.77	NA
GRP SOURCE SSTL		0.384	76.7	53.7	198	NE	1.53	1.53
MW-4	12/08/98	BDL	BDL	BDL	BDL	BDL	0.0033	BDL
	02/24/00	0.001	BDL	BDL	BDL	0.001	0.0014	0.0191
	04/26/01	0.0018	BDL	BDL	0.0022	0.004	BDL	0.03921
	03/27/02	0.001	BDL	BDL	BDL	0.001	BDL	0.104
	06/06/02	0.0024	BDL	BDL	0.0023	0.0047	0.0022	0.08501
	05/03/06	0.0011	BDL	BDL	BDL	0.0011	BDL	NA
	08/16/06	0.0013	<0.005	<0.0005	<0.0015	0.0013	<0.001	NA
	10/25/06	Not Sampled – Well Inaccessible						
	02/14/07	0.0006	<0.005	<0.0005	<0.0015	0.0006	<0.001	NA
	10/03/07	0.00084	<0.005	<0.0005	<0.0015	0.00084	<0.001	0.0029
	12/18/07	0.00055	<0.005	<0.0005	<0.0015	0.00055	<0.001	NA
	04/23/08	<0.001	<0.005	<0.001	<0.003	<0.010	<0.001	<0.005
	07/10/08	0.00098	<0.005	0.00056	0.0036	0.00514	<0.001	<0.001
	03/18/09	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	06/25/09	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	09/17/09	<0.0005	<0.005	<0.0005	0.0018	0.00180	<0.001	NA
	05/10/12	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	10/08/13	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	10/29/14	<0.0010	<0.0050	<0.0010	<0.0030	<0.010	<0.0010	NA

Table 2
Groundwater Analytical Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylenes (mg/L)	Total BTEX (mg/L)	MTBE (mg/L)	Naphthalene (mg/L)
MW-4	09/14/16	<0.00100	<0.00500	<0.00100	<0.00300	<0.010	<0.00100	0.0112
CONT	11/20/18	<0.00100	0.00141	<0.00100	<0.00300	0.00141	<0.00100	NA
	01/21/19	<0.00100	<0.00100	<0.00100	<0.00300	<0.00600	<0.00100	NA
GRP POC SSTL		0.125	25	17.5	198	NE	0.5	0.5
MW-5	02/24/00	BDL	BDL	BDL	BDL	BDL	0.0014	BDL
	04/26/01	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	03/27/02	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	06/06/02	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	05/03/06	BDL	BDL	BDL	BDL	BDL	BDL	NA
	08/16/06	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	10/25/06	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	02/14/07	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	10/03/07	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	<0.001
	12/18/07	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	04/23/08	<0.001	<0.005	<0.001	<0.003	<0.010	<0.001	<0.005
	07/10/08	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	<0.001
	03/18/09	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	06/25/09	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	09/17/09	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	05/10/12	<0.0005	<0.005	<0.0005	0.0072	0.0072	<0.001	NA
	10/08/13	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	01/08/14	<0.0010	<0.0050	<0.0010	<0.0030	<0.010	<0.0010	NA
	03/27/14	<0.0010	<0.0050	<0.0010	<0.0030	<0.010	<0.0010	NA
	10/29/14	<0.0010	<0.0050	<0.0010	<0.0030	<0.010	<0.0010	NA
	09/14/16	<0.00100	<0.00500	<0.00100	<0.00300	<0.010	<0.00100	<0.00500
	11/20/18	<0.00100	<0.00100	<0.00100	<0.00300	<0.00600	<0.00100	NA
	01/21/19	<0.00100	<0.00100	<0.00100	<0.00300	<0.00600	<0.00100	NA
GRP POC SSTL		0.125	25	17.5	198	NE	0.5	0.5
MW-6	02/24/00	0.0036	0.0033	0.002	0.0154	0.0243	0.0049	BDL
	04/26/01	0.0128	0.0351	0.0265	0.155	0.2294	0.0506	BDL
	03/27/02	0.0118	0.0635	0.0793	0.177	0.3316	0.0137	BDL
	06/06/02	0.0187	0.0401	0.042	0.079	0.1798	0.0401	BDL
	05/03/06	0.011	BDL	0.00052	0.0016	0.01312	0.012	NA
	08/16/06	0.0038	<0.005	0.0012	0.0023	0.0073	0.0036	NA
	10/25/06	0.0067	<0.005	0.0028	0.0032	0.0127	0.0056	NA
	02/14/07	0.019	0.017	0.031	0.054	0.121	0.023	NA
	10/03/07	0.0078	<0.005	0.0028	0.0045	0.0151	0.0056	<0.0001
	12/18/07	0.001	<0.005	0.0051	0.0072	0.0133	0.014	NA
	04/23/08	0.0092	0.020	0.042	0.098	0.1692	<0.001	<0.005
	07/10/08	0.025	0.0099	0.020	0.016	0.0709	0.034	<0.001
	03/18/09	0.0099	0.020	0.056	0.16	0.2459	0.0028	NA
	06/25/09	0.024	0.014	0.028	0.082	0.148	0.056	NA
	09/17/09	0.024	0.011	0.042	0.096	0.173	0.028	NA
	01/25/12	0.0031	<0.005	0.0056	0.008	0.0166	0.0048	NA
	05/10/12	0.0140	<0.005	0.0078	0.011	0.0328	0.046	NA
	08/02/12	0.0050	<0.005	0.0016	0.003	0.0091	0.046	NA
	10/26/12	0.027	0.038	0.094	0.23	0.389	0.034	NA
	01/29/13	0.027	0.022	0.075	0.13	0.254	0.040	NA
	10/08/13	0.019	0.0054	0.065	0.078	0.1674	0.026	NA
	01/08/14	0.0040	0.0055	0.044	0.057	0.1105	<0.0010	NA
	03/27/14	0.0024	<0.0050	0.0082	0.007	0.0172	<0.0010	NA
	06/25/14	0.0035	<0.0050	0.029	0.022	0.0545	<0.0010	NA
	10/29/14	0.0029	<0.0050	<0.0010	<0.0030	0.0029	<0.0010	NA
	02/19/15	0.0031	<0.0050	0.023	0.0058	0.0319	<0.0010	NA
	05/07/15	0.0027	<0.0050	0.031	0.0079	0.0416	<0.0010	NA
	08/05/15	0.0036	<0.0050	0.0082	<0.0030	0.0118	<0.0010	NA
	11/11/15	0.00234	<0.0050	0.0138	0.0198	0.0359	<0.0010	NA
	02/09/16	0.00122	0.0127	0.0903	0.141	0.245	<0.0010	NA
	04/27/16	<0.00100	0.00652	0.0511	0.0767	0.1343	<0.00100	NA
	07/29/16	0.00120	<0.00500	0.0114	<0.00300	0.0126	<0.00100	NA
	09/14/16	0.00151	<0.00500	0.00410	<0.00300	0.0056	<0.00100	<0.00500
	12/12/16	0.00110	0.00722	0.00713	0.0442	0.0597	<0.00100	0.00826
	03/06/17	0.00119	0.0181	0.0111	0.0575	0.0879	<0.00100	0.00763

Table 2
Groundwater Analytical Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylenes (mg/L)	Total BTEX (mg/L)	MTBE (mg/L)	Naphthalene (mg/L)
MW-6 CONT	05/31/17	<0.00100	<0.00100	0.00119	<0.00300	0.00119	<0.00100	<0.00500
	11/20/18	<0.00100	<0.00100	0.00249	<0.00300	0.00249	<0.00100	NA
	01/21/19	<0.00100	0.00321	0.0366	0.0316	0.0714	<0.00100	NA
GRP POC SSTL		0.125	25	17.5	198	NE	0.5	0.5
MW-7	02/24/00	Not Sampled – 0.42 feet of product						
	04/26/01	Not Sampled – 3.64 feet of product						
	03/27/02	Not Sampled – 1.07 feet of product						
	06/06/02	Not Sampled – 2.75 feet of product						
	05/03/06	Not Sampled – 4.15 feet of product						
	08/16/06	Not Sampled – 4.13 feet of product						
	10/25/06	Not Sampled – 4.38 feet of product						
	02/14/07	Not Sampled – 5.90 feet of product						
	10/03/07	Not Sampled – 3.53 feet of product						
	12/18/07	Not Sampled – 2.56 feet of product						
	04/23/08	Not Sampled – 6.48 feet of product						
	07/10/08	Not Sampled – 4.82 feet of product						
	03/18/09	Not Sampled – 6.56 feet of product						
	06/25/09	Not Sampled – 0.11 feet of product						
	09/17/09	Not Sampled – 0.02 feet of product						
	12/15/09	5.3	50	4.3	28	87.6	<0.50	NA
	09/01/10	Not Sampled – 0.80 feet of product						
	12/01/10	5	49	3.4	22	79.4	<1.0	NA
	01/25/12	Not Sampled –1.65 feet of product						
	05/10/12	Not Sampled –4.66 feet of product						
	08/02/12	Not Sampled - 1.96 feet of product						
	10/26/12	5.3	68	4.4	27	104.7	<0.10	NA
	01/29/13	1.8	50	3.9	27	82.7	<2.5	NA
	10/08/13	<5.0	170	31	240	441	<10.0	NA
	01/08/14	<2.0	23	<2.0	16	39	<2.0	NA
	03/27/14	<0.50	67	9	70	146	<0.50	NA
	06/25/14	<0.50	27	2.9	23	52.9	<0.50	NA
	10/29/14	<0.050	32	3.8	29	64.8	<0.050	NA
	02/19/15	<1.0	37	3.6	28	68.6	<0.050	NA
	05/07/15	0.11	34	3.0	21	58.1	<0.25	NA
	08/05/15	<0.50	44	4.0	28	76.0	<0.50	NA
	11/11/15	<0.500	42.3	4.61	33.4	80.31	<0.500	NA
	02/09/16	<0.500	4.97	2.06	19.3	26.33	<0.500	NA
	04/27/16	0.151	5.24	3.10	24.6	33.09	<0.0500	NA
	07/29/16	<0.500	20.4	3.60	26.8	50.8	<0.500	NA
	09/15/16	<0.250	22.1	3.77	27.2	53.1	<0.250	<1.25
	12/12/16	<0.500	33.2	5.36	39.1	77.7	<0.500	<2.50
	03/06/17	0.0808	29.8	4.40	34.7	69.0	<0.0500	0.858
	05/31/17	<0.0500	1.81	0.429	3.14	5.38	<0.0500	<0.250
GRP SOURCE SSTL		0.384	76.7	53.7	198	NE	1.53	1.53

Table 2
Groundwater Analytical Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylenes (mg/L)	Total BTEX (mg/L)	MTBE (mg/L)	Naphthalene (mg/L)
MW-8	02/24/00	0.544	0.216	0.0281	0.132	0.9201	0.423	0.0015
	04/26/01	0.253	BDL	BDL	0.0055	0.2585	0.364	BDL
	03/27/02	1.36	BDL	BDL	0.053	1.413	0.41	0.00549
	06/06/02	2.53	BDL	BDL	0.115	2.645	0.47	0.0355
	05/03/06	0.024	BDL	0.0012	0.013	0.0382	0.03	NA
	08/16/06	0.50	0.028	0.0081	0.14	0.6761	0.075	NA
	10/25/06	0.85	0.039	0.017	0.18	1.086	0.095	NA
	02/14/07	0.28	0.016	0.015	0.19	0.501	0.064	NA
	10/03/07	1.1	0.0052	0.014	0.14	1.2592	0.13	<0.025
	12/18/07	1.1	<0.12	0.017	0.16	1.277	0.18	NA
	04/23/08	0.42	<0.005	<0.001	0.057	0.477	0.11	<0.005
	07/10/08	1.7	<0.050	<0.005	0.20	1.9	0.42	<0.050
	03/18/09	0.23	<0.005	0.0024	0.047	0.2794	0.14	NA
	06/25/09	3.0	0.26	0.14	0.90	4.30	0.61	NA
	09/17/09	2.4	0.098	0.017	0.28	2.80	0.40	NA
	12/15/09	3.6	0.15	0.020	0.57	4.34	0.68	NA
	09/01/10	8.2	1.8	0.720	4.40	15.12	1.50	NA
	12/01/10	6.0	1.4	0.410	2.50	10.31	1.30	NA
	11/20/11	19.0	8.7	1.300	8.00	37.00	2.60	NA
	01/25/12	13.0	4.4	0.970	5.80	24.17	1.90	NA
	05/10/12	16.0	6.9	1.200	7.20	31.30	2.10	NA
	08/02/12	13.0	4.4	0.890	5.20	23.49	1.30	NA
	10/26/12	0.22	<0.10	<0.010	0.05	0.27	0.20	NA
	01/29/13	6.10	<2.5	0.360	1.80	8.26	0.76	NA
	10/08/13	24	17	1.5	7.9	50.40	1.8	NA
	01/08/14	15	8	0.4	2.9	26.19	1.1	NA
	03/27/14	26	21	1.1	6.4	54.50	1.5	NA
	06/25/14	28	25	1.7	9.5	64.20	1.7	NA
	10/29/14	30	26	1.8	11.0	68.80	0.9	NA
	02/19/15	25	22	1.4	7.9	56.30	1.2	NA
	05/07/15	30	31	2.1	12.0	75.10	1.1	NA
	08/05/15	37	40	2.5	15.0	94.50	1.2	NA
	11/11/15	22.7	23.2	1.89	9.90	57.69	0.902	NA
	02/09/16	37.6	30.7	3.98	29.8	102.1	1.46	NA
	04/26/16	19.1	18.1	1.75	7.25	46.20	0.615	NA
	07/28/16	17.9	16.7	1.94	7.36	43.9	0.690	NA
	09/15/16	17.5	14.6	1.84	6.82	40.8	0.671	<0.500
	12/12/16	0.0660	0.232	0.0263	0.147	0.471	0.00107	0.00905
	03/06/17	15.6	17.4	1.46	5.71	40.2	0.407	<0.500
	05/31/17	17.7	18.4	1.83	7.25	45.2	0.449	<0.500
	11/20/18	11.5	9.70	1.90	3.93	27.0	0.167	NA
	01/21/19	12.7	10.7	2.21	4.42	30.0	0.189	NA
GRP SOURCE SSTL		0.384	76.7	53.7	198	NE	1.53	1.53

Table 2
Groundwater Analytical Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylenes (mg/L)	Total BTEX (mg/L)	MTBE (mg/L)	Naphthalene (mg/L)
MW-9	04/26/01			Not Sampled – 0.10 feet of product				
	03/27/02			Not Sampled – 3.22 feet of product				
	06/06/02			Not Sampled – 3.90 feet of product				
	05/03/06			Not Sampled – 4.86 feet of product				
	08/16/06			Not Sampled – 4.69 feet of product				
	10/25/06			Not Sampled – 4.82 feet of product				
	02/14/07			Not Sampled – 5.81 feet of product				
	10/03/07			Not Sampled – 5.28 feet of product				
	12/18/07			Not Sampled – 5.62 feet of product				
	04/23/08			Not Sampled – 6.51 feet of product				
	07/10/08			Not Sampled – 5.24 feet of product				
	03/18/09			Not Sampled – 5.05 feet of product				
	06/25/09			Not Sampled – 0.02 feet of product				
	09/17/09			Not Sampled – 0.86 feet of product				
	12/15/09	8.1	63	5.2	36	112.3	<1.0	NA
	09/01/10			Not Sampled – 0.02 feet of product				
	12/01/10			Not Sampled – 0.05 feet of product				
	11/20/11	0.52	1.3	0.13	1.2	3.15	0.18	NA
	01/25/12	0.51	3.3	0.32	2.9	7.03	0.27	NA
	05/10/12	1.8	5.8	0.62	5.3	13.52	<0.02	NA
	08/02/12	1.1	16.0	2.0	18.0	37.1	<0.20	NA
	10/26/12	1.1	35.0	3.9	28.0	68.0	<0.10	NA
	01/29/13	1.4	57.0	4.6	34.0	97.0	<0.50	NA
	10/08/13	0.12	17.0	2.0	14.0	33.12	<0.050	NA
	01/08/14	0.14	21.0	3.2	25.0	49.34	<0.10	NA
	03/27/14	0.76	42.0	3.9	27.0	73.66	<0.050	NA
	06/25/14	<0.50	17.0	1.8	15.0	33.8	<0.50	NA
	10/29/14	10	30.0	2.4	20.0	62.4	<0.050	NA
	02/19/15	0.19	21.0	3.0	24.0	48.19	<0.050	NA
	05/07/15	0.13	21.0	2.6	22.0	45.73	<0.10	NA
	08/05/15	<0.50	26.0	3.0	26.0	55.0	<0.50	NA
	11/11/15	<0.500	5.17	0.561	6.95	12.68	<0.500	NA
	02/09/16	<0.0500	2.82	0.414	5.13	8.36	<0.0500	NA
	04/27/16	0.0124	2.58	0.396	3.67	6.66	0.0155	NA
	07/28/16	0.957	16.5	2.26	14.9	34.6	0.0709	NA
	09/14/16	0.122	18.0	2.33	18.4	38.9	<0.100	0.714
	12/12/16	0.107	34.1	3.29	31.1	68.6	0.0228	0.776
	03/06/17	0.0286	14.7	2.39	18.7	35.8	<0.0100	0.697
	05/31/17	<0.100	22.3	3.60	26.4	52.3	<0.100	0.615
GRP SOURCE SSTL		0.384	76.7	53.7	198	NE	1.53	1.53

Table 2
Groundwater Analytical Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylenes (mg/L)	Total BTEX (mg/L)	MTBE (mg/L)	Naphthalene (mg/L)
MW-10	04/26/01	6.47	49.6	2.92	17.8	76.79	BDL	0.246
	03/27/02	5.26	37.8	2.68	17	62.74	BDL	0.336
	06/06/02	4.03	49.7	2.52	15.8	72.05	BDL	0.322
	05/03/06	0.11	24.0	2.3	15	41.41	0.13	NA
	08/16/06	0.13	34.0	2.8	18	54.93	0.11	NA
	10/25/06	0.20	36.0	3.7	25	64.90	0.32	NA
	02/14/07	0.18	8.4	3.1	9.6	21.28	0.12	NA
	10/03/07	0.15	28.0	3.1	14	45.25	0.088	<0.005
	12/18/07	0.053	31.0	3.7	23	57.753	0.21	NA
	04/23/08	0.26	33.0	4.2	25	62.46	<0.10	0.55
	07/10/08	0.27	45.0	4.8	61	111.07	0.24	<0.050
	03/18/09	0.098	29.0	3.3	20	52.398	0.15	NA
	06/25/09	0.086	19.0	2.9	19	40.986	0.36	NA
	09/17/09	0.059	16.0	2.5	17	35.559	0.085	NA
	09/01/10	1.00	18.0	5.3	33	57.3	1.4	NA
	12/01/10	<0.050	15.0	3.0	19	37	0.19	NA
	11/20/11	Not Sampled – 0.02 feet of product						
	01/25/12	0.170	10.0	2.5	16	28.670	0.10	NA
	05/10/12	<0.050	13.0	3.6	24.0	40.60	0.43	NA
	08/02/12	Not Sampled - 0.02 feet of product						
	10/26/12	<0.025	10	3.8	23	36.8	<0.050	NA
	01/29/13	12	440	47	350	849	<5.0	NA
	10/08/13	0.017	4.0	2.4	15	21.417	0.15	NA
	01/08/14	<0.10	5.8	2.5	17	25.3	<0.10	NA
	03/27/14	<0.050	6.0	3.4	23	32.4	<0.050	NA
	06/25/14	<0.050	3.4	2.6	17	23	<0.050	NA
	10/29/14	<0.025	4.9	2.9	18	25.8	<0.025	NA
	02/19/15	<0.050	5.0	3.7	24	32.7	<0.050	NA
	05/07/15	<0.0083	3.4	3.0	16	22.4	<0.025	NA
	08/05/15	<0.050	3.3	3.2	20	26.5	<0.050	NA
	11/11/15	<0.050	2.86	2.90	18.9	24.66	<0.050	NA
	02/09/16	<0.0500	2.08	2.41	15.4	19.9	<0.0500	NA
	04/27/16	<0.0500	1.16	1.67	10.4	13.2	<0.0500	NA
	09/14/16	<0.100	1.94	2.62	16.6	21.2	<0.100	<0.500
	12/13/16	<0.0100	2.80	3.12	20.8	26.7	<0.0100	0.400
	03/06/17	<0.00500	1.26	1.47	10.1	12.8	<0.00500	0.333
	05/31/17	<0.0500	1.83	2.64	16.4	20.9	<0.0500	0.380
	11/20/18	<0.200	1.19	2.37	15.7	19.3	<0.00100	NA
	01/21/19	<0.100	0.682	1.85	11.8	14.3	<0.100	NA
GRP SOURCE SSTL		0.384	76.7	53.7	198	NE	1.53	1.53

Table 2
Groundwater Analytical Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylenes (mg/L)	Total BTEX (mg/L)	MTBE (mg/L)	Naphthalene (mg/L)
MW-11	04/26/01	0.0595	0.194	0.033	0.156	0.4425	BDL	0.00256
	03/27/02	0.0881	0.0681	0.0061	0.135	0.2973	0.0011	0.015
	06/06/02	0.0043	BDL	BDL	0.0013	0.0056	BDL	BDL
	05/03/06	0.00083	BDL	BDL	BDL	0.00083	BDL	NA
	08/16/06	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	10/25/06	0.01	<0.005	0.016	0.012	0.038	0.0013	NA
	02/14/07	0.36	3.0	0.46	2.3	6.12	0.014	NA
	10/03/07	0.42	1.9	0.54	2.2	5.06	0.031	<0.005
	12/18/07	0.0057	<0.005	0.0035	0.0061	0.0153	<0.001	NA
	04/23/08	0.015	0.093	0.028	0.12	0.256	<0.001	<0.005
	07/10/08	0.11	0.29	0.052	0.48	0.932	0.014	<0.010
	03/18/09	0.035	0.11	0.0088	0.16	0.314	<0.001	NA
	06/25/09	<0.0005	<0.005	<0.0005	<0.0015	0.008	<0.001	NA
	09/17/09	0.30	3.0	0.63	3.2	7.130	0.024	NA
	09/01/10	0.00051	<0.005	<0.005	0.0028	0.003	<0.001	NA
	12/01/10	0.16	1.1	0.45	1.4	3.11	0.038	NA
	01/25/12	2.7	16	1.4	6.6	26.70	<0.20	NA
	05/10/12	0.52	4.2	0.83	6.6	12.15	0.099	NA
	08/02/12	2.00	24	2.0	16	44.00	0.062	NA
	10/26/12	4.20	22	1.9	12	40.10	<0.20	NA
	01/29/13	6.10	38	3.2	19	66.30	<1.0	NA
	10/08/13	0.0028	<0.0050	0.0047	0.0086	0.0161	<0.0010	NA
	01/08/14	<0.0010	<0.0050	<0.0010	<0.0030	<0.010	<0.0010	NA
	03/27/14	0.0063	0.055	0.0220	0.074	0.1573	<0.0010	NA
	06/25/14	<0.0010	<0.0050	<0.0010	<0.0030	<0.010	<0.0010	NA
	10/29/14	<0.0010	<0.0050	<0.0010	<0.0030	<0.010	<0.0010	NA
	02/19/15	<0.0010	<0.0050	<0.0010	<0.0030	<0.010	<0.0010	NA
	05/07/15	<0.0010	<0.0050	<0.0010	<0.0030	<0.010	<0.0010	NA
	08/05/15	<0.0010	<0.0050	<0.0010	<0.0030	<0.010	<0.0010	NA
	11/11/15	<0.0010	<0.0050	<0.0010	0.00352	0.0035	<0.0010	NA
	04/27/16	<0.00100	<0.00500	<0.00100	<0.00300	<0.010	<0.00100	NA
	07/28/16	<0.00100	<0.00500	<0.00100	<0.00300	<0.010	<0.00100	NA
	09/14/16	0.00134	0.00655	0.00613	0.0242	0.0382	<0.00100	<0.00500
	12/13/16	<0.00100	0.0227	0.0120	0.101	0.136	<0.00100	0.0129
	03/06/17	0.00316	0.0343	0.0219	0.0574	0.1168	<0.00100	0.00728
	05/31/17	0.0305	0.231	0.182	0.411	0.855	<0.00100	0.0225
	11/20/18	<0.00100	<0.00100	<0.00100	<0.00300	<0.00600	<0.00100	NA
	01/21/19	<0.00100	<0.00100	<0.00100	0.00764	0.00764	<0.00100	NA
GRP POC SSTL		0.125	25	17.5	198	NE	0.5	0.5
MW-12	04/26/01	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	03/27/01	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	06/06/02	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	05/03/06	BDL	BDL	BDL	BDL	BDL	BDL	NA
	08/16/06	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	10/25/06	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	02/14/07	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	10/03/07	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	<0.0001
	12/18/07	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	04/23/08	<0.001	<0.005	<0.001	<0.003	<0.010	<0.001	<0.005
	07/10/08	<0.0005	<0.005	<0.0005	0.0016	0.0016	<0.001	<0.001
	03/18/09	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	06/25/09	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	09/17/09	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	05/10/12	<0.0005	<0.005	<0.0005	<0.0015	<0.0075	<0.001	NA
	10/08/13	<0.0005	<0.005	0.002	0.013	<0.0075	<0.001	NA
	10/29/14	<0.0010	<0.0050	<0.0010	<0.0030	<0.010	<0.0010	NA
	09/15/16	<0.00100	<0.00500	<0.00100	<0.00300	<0.010	<0.00100	<0.00500
	11/20/18	<0.00100	<0.00100	<0.00100	0.00380	0.00380	<0.00100	NA
	01/21/19	<0.00100	<0.00100	<0.00100	<0.00300	<0.00600	<0.00100	NA
GRP POC SSTL		0.125	25	17.5	198	NE	0.5	0.5

Table 2
Groundwater Analytical Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylenes (mg/L)	Total BTEX (mg/L)	MTBE (mg/L)	Naphthalene (mg/L)
VZ-13	12/15/09	13	47.0	3.5	23	86.5	0.66	NA
	09/01/10	Not Sampled – 0.02 feet of product						
	11/20/11	3.9	13.0	0.94	8.8	26.64	0.48	NA
	01/25/12	2.9	12.0	1.0	8.3	24.2	0.34	NA
	05/10/12	14	31.0	2.4	18	65.4	3.8	NA
	08/02/12	3.1	37.0	3.5	27	70.6	<0.50	NA
	10/26/12	Not Sampled – 0.02 feet of product						
	01/29/13	2.1	39.0	3.0	25	69.1	<1.0	NA
	10/08/13	1.2	42.0	3.8	33	80.0	0.056	NA
	01/08/14	1.3	41.0	3.6	32	77.9	<0.25	NA
	03/27/14	9.1	42.0	2.2	17	70.3	1.4	NA
	06/25/14	3.3	35.0	2.5	20	60.8	<0.50	NA
	10/29/14	9.4	25.0	1.9	16	52.3	<0.25	NA
	02/19/15	0.57	22	3.0	26	51.6	<0.050	NA
	05/07/15	0.37	21	2.3	20	43.7	<0.20	NA
	08/05/15	0.54	16	1.2	20	37.7	<0.50	NA
	11/11/15	<0.0010	<0.0050	<0.0010	<0.0030	<0.010	<0.001	NA
	02/09/16	1.06	4.21	0.288	3.99	9.55	0.516	NA
	04/26/16	1.74	13.2	1.34	12.2	28.5	0.548	NA
	07/28/16	4.03	13.7	1.18	10.1	29.0	1.14	NA
	09/15/16	<0.00100	<0.00500	0.0112	0.0115	0.0227	<0.00100	<0.00500
	12/13/16	0.265	16.3	2.65	26.3	45.5	0.102	0.837
	03/06/17	0.334	11.1	1.71	15.9	29.0	0.0555	0.911
	05/31/17	0.613	16.2	2.44	19.7	39.0	<0.500	<2.50
	11/20/18	0.362	20.1	3.38	27.7	51.5	<0.0200	NA
	01/21/19	<0.250	20.5	4.10	33.3	57.9	<0.250	NA
GRP SOURCE SSTL		0.384	76.7	53.7	198	NE	1.53	1.53
VZ-14	09/01/10	0.8	11.0	1.5	10	23.3	<0.001	NA
	12/01/10	0.49	14.0	2	14	30.49	<0.05	NA
	11/20/11	0.25	2.2	0.66	3.0	6.11	<0.025	NA
	01/25/12	0.22	7.6	1.8	14.0	23.62	<0.20	NA
	05/10/12	0.20	3.0	0.92	6.0	10.12	<0.10	NA
	08/02/12	0.0068	0.034	0.048	0.55	0.6388	0.018	NA
	10/26/12	<0.00050	<0.0050	0.0029	0.032	0.0349	<0.0010	NA
	01/29/13	<0.00050	0.0051	0.0079	0.027	0.040	0.0014	NA
	10/08/13	0.0013	<0.0050	0.0023	0.014	0.018	0.0039	NA
	10/29/14	<0.0010	<0.0050	<0.0010	0.0043	0.0043	<0.0010	NA
	05/07/15	<0.0010	<0.0050	0.0024	0.0055	0.0079	<0.0010	NA
	09/15/16	2.49	26.4	2.86	20.9	52.7	<2.00	<10.0
	11/20/18	<0.00100	<0.00100	<0.00100	<0.00300	<0.00600	<0.00100	NA
	01/21/19	<0.00100	0.00747	0.00202	0.0171	0.0266	<0.00100	NA
GRP SOURCE SSTL		0.384	76.7	53.7	198	NE	1.53	1.53

Table 2
Groundwater Analytical Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylenes (mg/L)	Total BTEX (mg/L)	MTBE (mg/L)	Naphthalene (mg/L)
VZ-15	12/15/09	26.0	62.0	4.3	29.0	121.3	<0.5	NA
	09/01/10	Not Sampled – 0.03 feet of product						
	12/01/10	Not Sampled – 0.11 feet of product						
	11/20/11	Not Sampled – 6.15 feet of product						
	01/25/12	Not Sampled – 3.88 feet of product						
	05/10/12	Not Sampled – 6.89 feet of product						
	08/02/12	Not Sampled – 7.16 feet of product						
	10/26/12	Not Sampled –1.15 feet of product						
	01/29/13	Not Sampled – 0.10 feet of product						
	10/08/13	Not Sampled – 0.70 feet of product						
	10/08/14	Not Sampled – 0.71 feet of product						
	03/27/14	Not Sampled – 0.03 feet of product						
	06/25/14	8.3	56	2.8	21	88.1	<0.50	NA
	10/29/14	6.6	58	3.8	27	95.4	<0.10	NA
	02/19/15	7.8	66	4.7	32	110.5	<0.20	NA
	05/07/15	Not Sampled – 0.05 feet of product						
	11/11/15	4.31	59.7	4.22	30.9	99.13	<0.500	NA
	02/09/16	4.19	60.4	5.16	41.8	111.6	<0.500	NA
	04/27/16	2.28	59.4	14.8	118	194	<0.500	NA
	07/28/16	2.90	30.8	2.49	21.6	57.8	<0.0500	NA
	09/15/16	<2.50	30.4	3.11	25.5	59.0	<2.50	<12.5
	03/06/17	2.46	43.9	2.77	23.6	72.7	<0.250	<1.25
	05/31/17	3.16	50.1	3.81	29.3	86.4	<0.250	<1.25
	11/20/18	1.04	34.1	3.10	24.8	63.0	<0.500	NA
	01/21/19	0.798	31.2	2.91	23.6	58.5	<0.500	NA
GRP SOURCE SSTL		0.384	76.7	53.7	198	NE	1.53	1.53
VZ-16	12/01/10	15.0	50.0	2.4	16	83.4	<0.5	NA
	01/25/12	6.8	15.0	0.72	7.5	30.02	<0.25	NA
	05/10/12	23.0	24.0	1.5	12	60.5	<0.10	NA
	08/02/12	14.0	22.0	1.1	8.9	46.0	<0.10	NA
	10/26/12	1.1	7.3	0.18	3	11.58	<0.10	NA
	01/29/13	2.7	17.0	0.67	6.9	27.27	<0.50	NA
	10/08/13	0.40	1.9	0.22	1.6	4.12	0.013	NA
	01/08/14	0.63	7.4	0.44	3.4	11.87	<0.010	NA
	03/27/14	9.9	25	1.2	8.6	44.70	<0.010	NA
	06/25/14	0.038	0.17	0.020	0.26	0.49	<0.010	NA
	10/29/14	0.78	5.2	0.36	3.4	9.74	<0.050	NA
	02/19/15	1.7	20	1.4	11	34.10	<0.10	NA
	05/07/15	0.80	9.4	0.51	4.2	14.91	<0.050	NA
	08/05/15	1.40	23.1	0.927	8.3	33.73	<0.0100	NA
	11/11/15	0.528	3.09	0.392	2.47	6.48	<0.200	NA
	02/09/16	0.284	3.34	0.413	2.90	6.94	<0.200	NA
	04/26/16	1.24	4.09	0.676	4.46	10.47	<0.200	NA
	07/28/16	12.8	7.71	0.971	5.45	26.9	<0.0500	NA
	09/15/16	9.03	15.0	1.12	6.78	31.9	<0.100	<0.500
	12/13/16	0.807	8.28	0.716	5.22	15.02	<0.00500	0.173
	03/06/17	2.60	9.87	0.704	4.50	17.67	<0.0500	<0.250
	05/31/17	1.97	10.3	1.34	7.74	21.4	<0.0500	<0.250
	11/20/18	<0.100	2.83	0.306	1.32	4.46	<0.100	NA
	01/21/19	0.106	5.46	1.03	6.00	12.60	<0.0500	NA
GRP SOURCE SSTL		0.384	76.7	53.7	198	NE	1.53	1.53

Table 2
Groundwater Analytical Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylenes (mg/L)	Total BTEX (mg/L)	MTBE (mg/L)	Naphthalene (mg/L)
VZ-17	01/25/12	Not Sampled – 0.19 feet of product						
	05/10/12	15	52	3	20	90	<1.0	NA
	08/02/12	41	49	2.4	18.0	110.4	<1.0	NA
	10/26/12	30	37	1.8	15.0	83.8	<0.25	NA
	01/29/13	21	30	1.8	14.0	66.8	<0.50	NA
	10/08/13	30	43	2.4	16	91.4	0.20	NA
	01/08/14	33	40	1.7	14	88.7	<0.25	NA
	03/27/14	13	42	1.7	11	67.7	<0.10	NA
	06/25/14	24	38	1.6	12	75.6	<0.50	NA
	10/29/14	49	51	2.8	20	122.8	<0.10	NA
	02/19/15	37	49	2.2	15	103.2	<1.0	NA
	05/07/15	19	40	2.2	15	76.2	<0.25	NA
	08/05/15	20.4	48.9	3.11	21	93.01	<0.500	NA
	11/11/15	9.49	35.3	2.62	17.1	64.51	<0.500	NA
	02/09/16	20.4	42.2	2.76	21.4	86.8	<0.500	NA
	04/26/16	15.3	25.3	1.24	10.2	52.0	<0.500	NA
	07/28/16	9.44	21.7	1.26	10.1	42.5	0.0406	NA
	09/15/16	9.69	15.5	0.778	5.82	31.8	<0.200	<1.00
	12/13/16	10.0	19.1	1.50	12.3	42.9	<0.0500	0.565
	03/07/17	11.0	23.9	0.956	6.88	42.7	<0.200	<1.00
	05/31/17	28.1	41.7	1.98	12.0	83.8	<0.200	<1.00
	11/20/18	23.5	45.9	2.60	14.6	86.6	<0.100	NA
	01/21/19	22.4	50.0	2.33	15.4	90.1	<0.500	NA
GRP SOURCE SSTL		0.384	76.7	53.7	198	NE	1.53	1.53

Notes:

BTEX = Benzene, toluene, ethylbenzene, and xylenes analyzed using EPA Method 8260B
MTBE = Methyl Tertiary-Butyl Ether analyzed using EPA Method 8260B
BDL = below detection limit
mg/L = milligrams per liter
EPA = United States Environmental Protection Agency
NA = not analyzed
NE = Not established for this compound
GRP = groundwater protection
POC = point of compliance
SSTL = site-specific target level

Table 3
Monitored Natural Attenuation Parameter Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Sample Date	Ferrous Iron (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	pH (su)	DO (mg/L)	ORP (mV)	SRB Population Levels (cfu/mL)
MW-2	11/20/18	<0.0500	**5.07**	**5.01**	4.88	1.60	203.6	<1
	01/21/19	<0.0500	**4.53**	**5.04**	4.62	3.33	273.0	<1
MW-3	11/20/18	**6.85**	<0.100	<5.00	5.71	2.81	32.3	325 - 1,400
	01/21/19	**7.62**	<0.100	**6.86**	6.08	1.95	-6.0	6,000 - 27,000
MW-4	11/20/18	<0.0500	**0.982**	<5.00	4.82	2.11	213.5	<1
	01/21/19	<0.0500	**2.45**	<5.00	4.89	1.35	234.0	5 - 20
MW-5	11/20/18	<0.0500	**0.250**	<5.00	4.53	2.20	280.9	20 - 75
	01/21/19	**0.342**	**0.244**	<5.00	5.07	3.56	183.0	<1
MW-6	11/20/18	**62.5**	<0.100	<5.00	6.09	3.15	-15.6	20 - 75
	01/21/19	**89.5**	<0.100	<5.00	6.35	6.95	-73.0	20 - 75
MW-8	11/20/18	**36.0**	<0.100	<5.00	6.03	2.00	-4.3	1,400 - 6,000
	01/21/19	**34.8**	<0.100	<5.00	6.10	1.81	-26.0	6,000 - 27,000
MW-10	11/20/18	**4.55**	<0.100	<5.00	4.99	2.77	184.2	325 - 1,400
	01/21/19	**4.18**	<0.100	<5.00	4.99	1.68	142.0	75 - 325
MW-11	11/20/18	**0.0650**	<0.100	<5.00	5.15	4.33	173.8	20 - 75
	01/21/19	<0.0500	<0.100	<5.00	4.45	2.84	215.0	<1
MW-12	11/20/18	<0.0500	**1.26**	<5.00	4.89	5.34	206.0	<1
	01/21/19	<0.0500	**1.63**	<5.00	4.53	4.05	267.0	<1
VZ-13	11/20/18	**6.82**	<0.100	<5.00	5.28	2.76	79.6	75 - 325
	01/21/19	**5.50**	<0.100	<5.00	5.36	1.74	95.0	75 - 325
VZ-14	11/20/18	**0.368**	**0.120**	**11.1**	7.00	5.30	40.5	20 - 75
	01/21/19	**0.272**	**0.106**	**13.8**	6.79	3.29	-6.0	20 - 75
VZ-15	11/20/18	**0.921**	<0.100	**7.46**	5.74	1.06	56.4	6,000 - 27,000
	01/21/19	**4.47**	<0.100	**5.08**	5.79	2.61	32.0	6,000 - 27,000

Table 3
Monitored Natural Attenuation Parameter Data
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	Sample Date	Ferrous Iron (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	pH (su)	DO (mg/L)	ORP (mV)	SRB Population Levels (cfu/mL)
VZ-16	11/20/18	**7.18**	<0.100	<5.00	6.33	0.96	-57.1	1,400 - 6,700
	01/21/19	**14.0**	<0.100	<5.00	6.28	1.73	-44.0	6,000 - 27,000
VZ-17	11/20/18	**14.4**	<0.100	**5.49**	5.73	1.17	-43.4	6,000 - 27,000
	01/21/19	**15.2**	<0.100	**10.3**	5.93	2.42	-13.0	6,000 - 27,000

Notes:
Ferrous iron is a field parameter with a holding time of 15 minutes and the holding time could not be met for all samples.
Ferrous Iron analyzed using SM 3500 Fe B-2011
Nitrate and Sulfate analyzed using EPA Method 9056A
SM = Standard Method
EPA = United States Environmental Protection Agency
DO = dissolved oxygen
ORP = oxidation reduction potential
SRB = sulfate reducing bacteria
mg/L = milligrams per liter
su = standard unit
mV = millivolts
cfu/mL = colony-forming units per milliliter
Bold = constituent detected

Table 4
High Vacuum Extraction Recovery Data
Former Circle (Medical Center) BP
Dothan, Alabama

DATE	DURATION (HOURS)	TOTAL LIQUID REMOVED (GALLONS)	HYDROCARBONS REMOVED (POUNDS)	HYDROCARBONS REMOVED (GALLONS)	EXTRACTION WELLS
08/02-03/00	24	Unknown	1,537.00	249	MW-3 and MW-7
07/16/01	24	1,650	2,196.00	356	MW-3, MW-7 and MW-9
03/19/09	8	1,816	434.00	70	MW-3, MW-7, MW-9, VZ-13 and VZ-15
06/03/09	8	1,000	200.80	32.598	MW-3, MW-9, VZ-13, VZ-14 and VZ-15
09/29/09	8	1,250	17.70	2.873	MW-3, MW-7, VZ-13, VZ-14 and VZ-15
12/01/09	8	1,457	6.06	0.983	MW-3, MW-7, MW-9, VZ-13 and VZ-15
08/17/10	8	1,700	17.890	2.904	MW-3, MW-7, MW-9, VZ-13 and VZ-15
11/22/10	8	1,500	21.28	3.454	MW-7, MW-9, VZ-13 and VZ-15
01/18/12	8	900	214.49	34.820	MW-7, MW-10, VZ-14 and VZ-15
04/19/12	8	500	689.04	111.857	MW-7, VZ-13, VZ-15 and VZ-17
05/24/12	8	300	280.54	45.542	MW-3, MW-7 and VZ-15
06/28/12	8	500	614.33	99.729	MW-3, MW-7, VZ-15 and VZ-16
08/14/12	8	525	649.98	105.516	MW-3, MW-7, VZ-15 and VZ-16
10/18/12	8	500	363.17	58.956	MW-3, MW-7, VZ-15 and VZ-17
11/20/12	8	600	60.25	9.781	MW-3, MW-7, VZ-15 and VZ-17
01/23/13	8	500	58.48	9.490	MW-3,VZ-13, VZ-15 and VZ-17
03/19/14	8	550	33.77	5.482	MW-3, VZ-13, VZ-15, VZ-16 and VZ-17
06/10/14	8	1,825	35.25	5.722	MW-3, VZ-13, VZ-15 and VZ-17
09/23/15	8	1,530	70.39	11.426	MW-3, VZ-13, VZ-15, VZ-16 and VZ-17
07/08/16	8	1,500	17.72	2.876	MW-3, VZ-13/VZ-16 (combined), VZ-15 and VZ-17
09/21/16	8	880	15.62	2.535	MW-3, VZ-13/VZ-16 (combined), VZ-15 and VZ-17
12/21/16	8	800	8.36	1.357	MW-3, VZ-15, VZ-16 and VZ-17
TOTALS	**208**	**21,783**	**7,542.12**	**1,222.90**	

Table 5
Groundwater Analytical Data Trends Summary
Former Circle (Medical Center) BP
Dothan, Alabama

Well ID	COC	Mann-Kendall Trend (Last 10 Events)	First-Order Trend (All Events)
MW-1	Benzene	Decreasing	
MW-3	Benzene	Decreasing	
	MTBE	Decreasing	
MW-7	Benzene	Decreasing	
MW-8	Benzene	Decreasing	
	MTBE	Decreasing	
MW-9	Benzene	Decreasing	
MW-10	Benzene	Stable	
MW-11	Benzene	Non-Stable	Decreasing
VZ-13	Benzene	Non-Stable	Decreasing
	MTBE	Non-Stable	Decreasing
VZ-14	Benzene	Non-Stable	Decreasing
VZ-15	Benzene	Decreasing	
VZ-16	Benzene	Non-Stable	Decreasing
VZ-17	Benzene	Increasing	Stable

Notes:

COC = Constituent of Concern

MTBE = Methyl Tertiary-Butyl Ether

APPENDIX A
ADEM CORRESPONDENCE

LANCE R. LEFLEUR
DIRECTOR

KAY IVEY
GOVERNOR

Alabama Department of Environmental Management
adem.alabama.gov

1400 Coliseum Blvd. 36110-2400 ▪ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ▪ FAX (334) 271-7950

May 9, 2019

Mr. Foy Tatum, President
Halstead Contractors
5455 Troy Highway
Montgomery, Alabama 36116

Dear Mr. Tatum:

RE: REVIEW OF REVISED MODIFIED CORRECTIVE ACTION PLAN DATED APRIL 12, 2019 (CP#57)
Former Circle (Medical Center) BP
1098 Ross Clark Circle
Dothan, Houston County, Alabama
Facility I.D. No.: **20503-069-002586**
UST Incident No.: **UST98-09-01**
ADEM File Code: **UST980901/CORR09908**

The Department has received and reviewed the revised Modified Corrective Action Plan dated April 12, 2019. Based on this review, the Department has provided the following comment:

- The Department requests that dedicated injection wells be proposed within the plan for the injection event.

Cost proposals #61, #62, #63, #64, #65, and #66 are denied at this time.

Please submit a revised Modified Corrective Action Plan and corresponding cost proposals to the Department by **August 2, 2019**.

Should there be any questions regarding this matter, please contact me at (334) 274-4206.

Sincerely,

Jeff Aul, Hydrogeologist
UST Corrective Action State Fund Section
Groundwater Branch, Land Division
JLA/aw

Cc: Stantec Consulting Corporation-
601 Grassmere Park Road, Suite 22
Nashville, TN 37211

Birmingham Branch
110 Vulcan Road
Birmingham, AL 35209-4702
(205) 942-6168
(205) 941-1603 (FAX)

Decatur Branch
2715 Sandlin Road, S.W.
Decatur, AL 35603-1333
(256) 353-1713
(256) 340-9359 (FAX)

Mobile Branch
2204 Perimeter Road
Mobile, AL 36615-1131
(251) 450-3400
(251) 479-2593 (FAX)

Mobile-Coastal
3664 Dauphin Street, Suite B
Mobile, AL 36608
(251) 304-1176
(251) 304-1189 (FAX)

LANCE R. LEFLEUR
DIRECTOR

KAY IVEY
GOVERNOR

Alabama Department of Environmental Management
adem.alabama.gov
1400 Coliseum Blvd. 36110-2400 ▪ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ▪ FAX (334) 271-7950

May 24, 2019

Mr. Foy Tatum, President
Halstead Contractors
5455 Troy Highway
Montgomery, Alabama 36116

Dear Mr. Tatum:

RE: REVIEW OF CAP REVIEW RESPONSE LETTER DATED MAY 16, 2019 (CP#57)
Former Circle (Medical Center) BP
1098 Ross Clark Circle
Dothan, Houston County, Alabama
Facility I.D. No.: **20503-069-002586**
UST Incident No.: **UST98-09-01**
ADEM File Code: **UST980901/CORR02205**

The Department has received and reviewed the Corrective Action Plan Review Response Letter dated May 16, 2019. The Department will allow injections into the eight remediation wells that have been installed at this site (VZ-13 through VZ-17 and AS-1 through AS-3). Please submit a revised Corrective Action Plan and corresponding cost proposals to the Department by **August 2, 2019**.

Should there be any questions regarding this matter, please contact me at (334) 274-4206.

Sincerely,

Jeff Aul, Hydrogeologist
UST Corrective Action State Fund Section
Groundwater Branch
Land Division

JLA/aw

Cc: Stantec Consulting Corporation-
601 Grassmere Park Road, Suite 22
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2715 Sandlin Road, S.W.
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(256) 340-9359 (FAX)

Mobile Branch
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Mobile, AL 36615-1131
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(251) 479-2593 (FAX)

Mobile-Coastal
3664 Dauphin Street, Suite B
Mobile, AL 36608
(251) 304-1176
(251) 304-1189 (FAX)

APPENDIX B
ADEM FORMS

UST RELEASE FACT SHEET

GENERAL INFORMATION:

SITE NAME: Former Circle (Medical Center) BP

ADDRESS: 1098 Ross Clark Circle, Dothan, Houston County, AL

FACILITY I.D. NO.: 2 0 5 0 3 - 0 6 9 - 0 0 2 5 8 6

UST INCIDENT NO.: U S T 9 8 - 0 9 - 0 1

RESULTS OF EXPOSURE ASSESSMENT:

How many private drinking water wells are located within 1,000 ft. of site?	0
How many public water supply wells are located within 1 mile of the site?	0
Have any drinking water supply wells been impacted by contamination from this release?	0
Is there an imminent threat of contamination to any drinking water wells?	☐ Yes ☑ No
Have vapors or contaminated groundwater posed a threat to the public?	☐ Yes ☑ No
Are any underground utilities impacted or imminently threatened by the release?	☐ Yes ☑ No
Have surface waters been impacted by the release?	☐ Yes ☑ No
Is there an imminent threat of contamination to surface waters?	☐ Yes ☑ No
What is the type of surrounding population?	Commercial

CONTAMINATION DESCRIPTION:

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

Free product present in wells? ☐ Yes ☑ No Maximum thickness measured: N/A

Maximum TPH concentrations measured in soil: N/A

Maximum BTEX or PAH concentrations measured in groundwater: Max BTEX on 01/21/19 - 90.1 mg/L

ADEM Form #479 8/02

ADEM GROUNDWATER BRANCH
UST SITE CLASSIFICATION SYSTEM
CHECKLIST

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

SITE NAME:	Former Circle (Medical Center) BP
SITE ADDRESS:	1098 Ross Clark Circle
	Dothan, Houston County, AL
FACILITY I.D. NO.:	20503-069-002586
UST INCIDENT NO.:	UST98-09-01
OWNER NAME:	Dth Es Tu Malade? #1, LLC
OWNER ADDRESS:	5455 Troy Hwy., Montgomery, Al. 36116
NAME & ADDRESS OF PERSON COMPLETING THIS FORM:	Cassidy Sutherland
	Stantec Consulting Services Inc.
	601 Grassmere Park Road, Ste. 22, Nashville, Tennessee 37211

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.		X
A.2	Vapor concentrations at or approaching explosive levels are present in subsurface utility system(s), but no buildings or residences are impacted.		X
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.		X
B.2	An active domestic water supply well, domestic water supply line or domestic surface water intake is impacted or immediately threatened.		X
B.3	The release is located within a designated Wellhead Protection Area I.		X
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.		X
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.		X

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.		X
D.2	A non-potable water supply well is impacted or immediately threatened.		X
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.		X
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.		X
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.		X
F.2	Groundwater is impacted and a domestic well is located within 1,000 feet of the site.		X
F.3	Contaminated soils and/or groundwater are located within designated Wellhead Protection Areas (Areas II or III).		X
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.		X
GLASS H	SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS		
H.1	Impacted surface water, storm water or groundwater discharges within 500 feet of a surface water body used for human drinking water, whole body water-contact sports, or habitat to a protected or listed endangered plant and animal species.		X
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.	X	

ADDITIONAL COMMENTS:

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

Enter the determined classification ranking:	I.1

APPENDIX C
SOIL BORING AND WELL CONSTRUCTION LOGS

BONDURANT Environmental Consultants, Inc.

MONITOR WELL CROSS SECTION

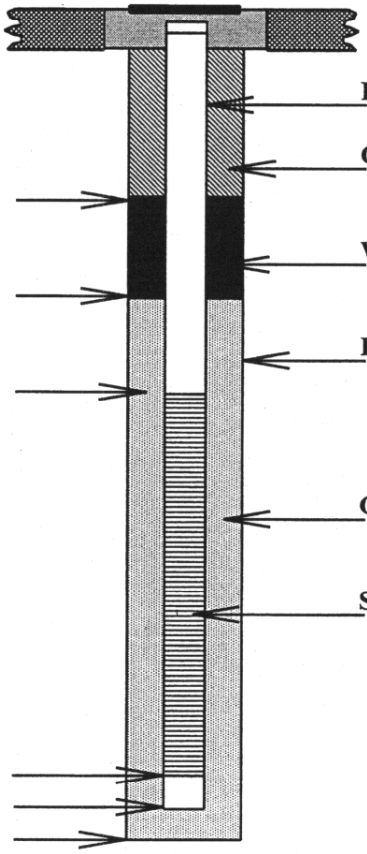
MW-1

CLIENT: Halstead
LOCATION: Former Circle BP
1098 Ross Clark Circle
Dothan, Alabama

File No.:	540.001
Ground Surface Elevation:	94.94
Top of Riser Elevation:	94.56
Screened Interval Elevation:	74.26 - 54.86
Bottom of Seal Elevation:	76.25
Date Installed:	12/2/98

ELEVATION (ft)

GROUND SURFACE	94.94
TOP OF RISER PIPE	94.56
TOP OF SEAL	78.25
BOTTOM OF SEAL	76.25
TOP OF SCREEN	74.26
BOTTOM OF SCREEN	54.86
BOTTOM OF WELL	54.11
BOTTOM OF BOREHOLE	54.11



FLUSH MOUNTED COVER
LOCKING CAP
RISER PIPE 2 inch Dia. Sch 40 PVC
GROUT Cement/Bentonite
WELL SEAL Bentonite Chips
BOREHOLE DIAMETER 6.25 inches
GRADED SAND PACK 20/40
SLOTTED SCREEN 2 inch Diameter
0.010 Slot Size

SECTION VIEW
(NOT TO SCALE)

Remarks:

BONDURANT Environmental Consultants, Inc.

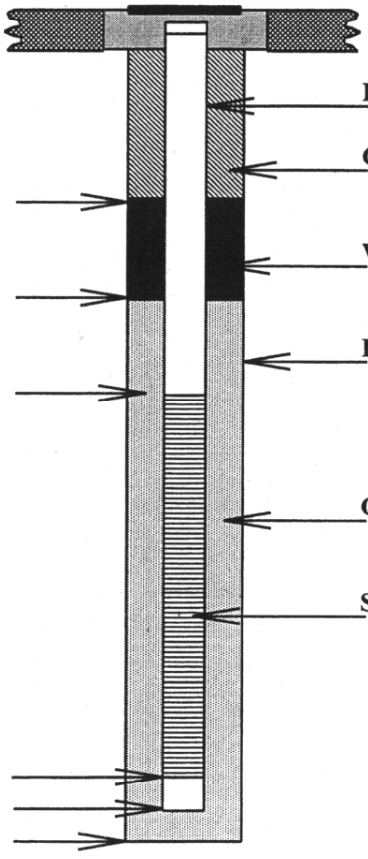
MONITOR WELL CROSS SECTION

MW-2

CLIENT: Halstead
LOCATION: Former Circle BP
1098 Ross Clark Circle
Dothan, Alabama

File No.:	540.001
Ground Surface Elevation:	95.58
Top of Riser Elevation:	95.43
Screened Interval Elevation:	78.87 - 59.47
Bottom of Seal Elevation:	76.75
Date Installed:	12/2/98

ELEVATION (ft)



GROUND SURFACE	95.58		
TOP OF RISER PIPE	95.43	**FLUSH MOUNTED COVER** **LOCKING CAP**	
		RISER PIPE	2 inch Dia. Sch 40 PVC
		GROUT	Cement/Bentonite
TOP OF SEAL	78.50		
		WELL SEAL	Bentonite Chips
BOTTOM OF SEAL	76.75		
		BOREHOLE DIAMETER	6.25 inches
TOP OF SCREEN	78.87		
		GRADED SAND PACK	20/40
		SLOTTED SCREEN	2 inch Diameter
			0.010 Slot Size
BOTTOM OF SCREEN	59.47		
BOTTOM OF WELL	58.72		
BOTTOM OF BOREHOLE	55.58		

SECTION VIEW
(NOT TO SCALE)

Remarks:

BONDURANT Environmental Consultants, Inc.

MONITOR WELL CROSS SECTION

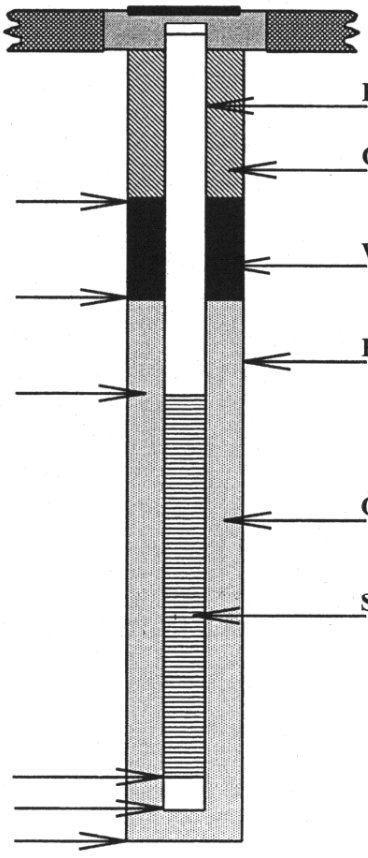
MW-3

CLIENT: Halstead
LOCATION: Former Circle BP
1098 Ross Clark Circle
Dothan, Alabama

File No.:	540.001
Ground Surface Elevation:	94.44
Top of Riser Elevation:	94.19
Screened Interval Elevation:	83.89 - 64.54
Bottom of Seal Elevation:	85.90
Date Installed:	12/2/98

ELEVATION (ft)

GROUND SURFACE	94.44
TOP OF RISER PIPE	94.19
TOP OF SEAL	87.25
BOTTOM OF SEAL	85.90
TOP OF SCREEN	83.89
BOTTOM OF SCREEN	64.54
BOTTOM OF WELL	63.65
BOTTOM OF BOREHOLE	63.65



FLUSH MOUNTED COVER
LOCKING CAP
RISER PIPE 2 inch Dia. Sch 40 PVC
GROUT Cement/Bentonite
WELL SEAL Bentonite Chips
BOREHOLE DIAMETER 6.25 inches
GRADED SAND PACK 20/40
SLOTTED SCREEN 2 inch Diameter
0.010 Slot Size

SECTION VIEW
(NOT TO SCALE)

Remarks:

BONDURANT Environmental Consultants, Inc.

MONITOR WELL CROSS SECTION

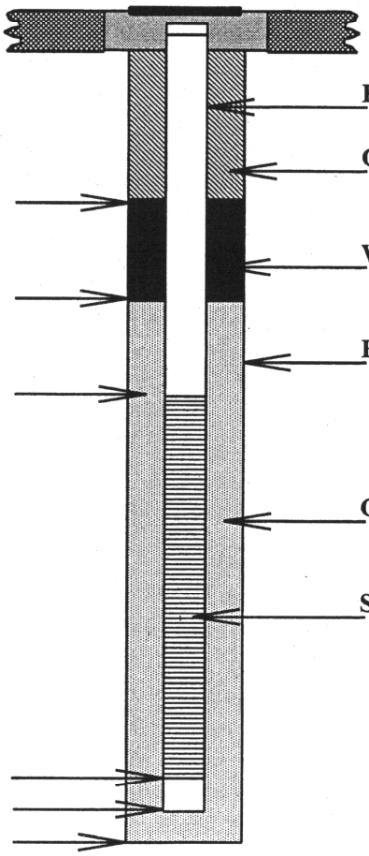
MW-4

CLIENT: Halstead
LOCATION: Former Circle BP
1098 Ross Clark Circle
Dothan, Alabama

File No.:	540.001
Ground Surface Elevation:	94.77
Top of Riser Elevation:	94.40
Screened Interval Elevation:	84.08 - 59.70
Bottom of Seal Elevation:	86.35
Date Installed:	12/2/98

ELEVATION (ft)

GROUND SURFACE	94.77
TOP OF RISER PIPE	94.40
TOP OF SEAL	87.46
BOTTOM OF SEAL	86.35
TOP OF SCREEN	84.08
BOTTOM OF SCREEN	59.70
BOTTOM OF WELL	59.33
BOTTOM OF BOREHOLE	59.33



FLUSH MOUNTED COVER
LOCKING CAP
RISER PIPE 2 inch Dia. Sch 40 PVC
GROUT Cement/Bentonite
WELL SEAL Bentonite Chips
BOREHOLE DIAMETER 6.25 inches
GRADED SAND PACK 20/40
SLOTTED SCREEN 2 inch Diameter
0.010 Slot Size

SECTION VIEW
(NOT TO SCALE)

Remarks:

BONDURANT Environmental Consultants, Inc.

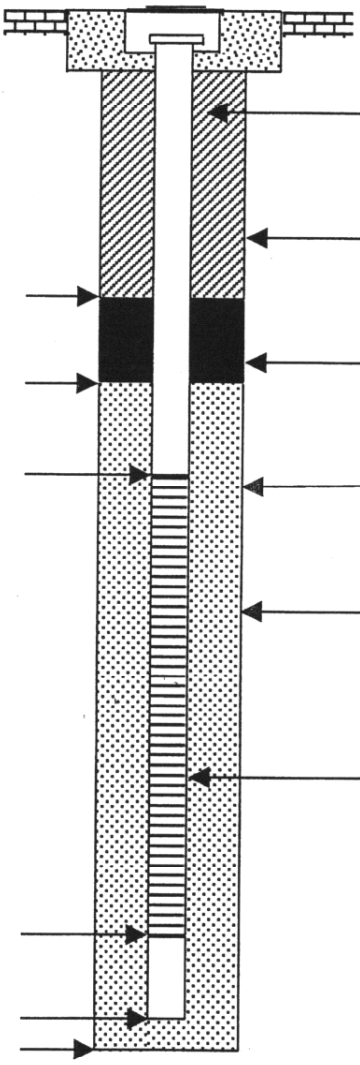
MONITOR WELL CROSS SECTION

MW-5

CLIENT:	Halstead Contractors	**File No.:**	682.001
LOCATION:	Former Medical Center BP	**Ground Surface Elevation (feet):**	91.25
	1098 Ross Clark Circle	**Top of Riser Elevation (feet):**	90.92
	Dothan, Alabama	**Screened Interval (feet):**	80.64-61.29
		Date Installed:	2/15/00

ELEVATION* (feet)

GROUND SURFACE: 91.25
TOP OF RISER PIPE: 90.92



FLUSH MOUNTED COVER
PVC CLEAN-OUT CAP
RISER PIPE:
2" Diameter Sch. 40 PVC

GROUT:
Cement-Bentonite Mixture

TOP OF SEAL: 84.1

WELL SEAL:
3/8" Bentonite Pellets

BOTTOM OF SEAL: 82.6

TOP OF SCREEN: 80.64

BOREHOLE DIAMETER:
6 1/4 "

GRADED SAND PACK:
20/40

SCREEN PIPE:
2" Diameter Sch. 40 PVC

SCREEN SLOT SIZE:
0.01"

BOTTOM OF SCREEN: 61.29

BOTTOM OF WELL SUMP: 60.40
BOTTOM OF BOREHOLE: 59.5

NOT TO SCALE

REMARK: Monitor well constructed in soil boring BO-5

***-Elevations are referenced to:** a site benchmark designated at 100.00 feet

BONDURANT Environmental Consultants, Inc.

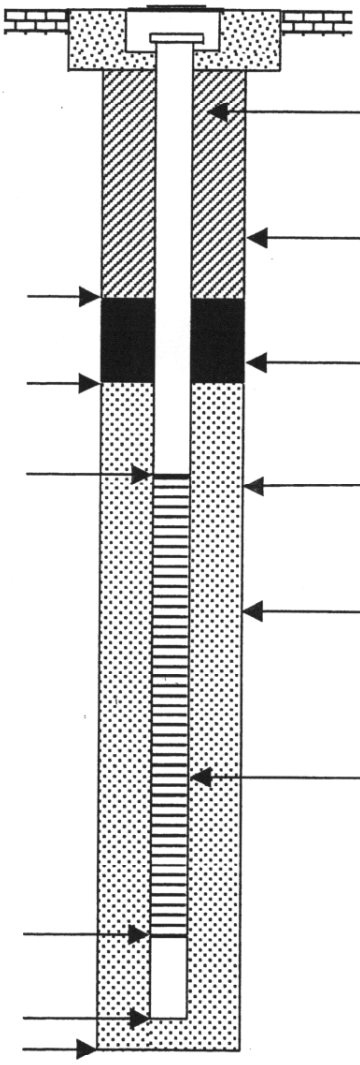
MONITOR WELL CROSS SECTION

MW-6

CLIENT:	Halstead Contractors	**File No.:**	682.001
LOCATION:	Former Medical Center BP	**Ground Surface Elevation (feet):**	91.45
	1098 Ross Clark Circle	**Top of Riser Elevation (feet):**	91.38
	Dothan, Alabama	**Screened Interval (feet):**	81.18-61.74
		Date Installed:	2/16/00

ELEVATION* (feet)

GROUND SURFACE: 91.45
TOP OF RISER PIPE: 91.38



FLUSH MOUNTED COVER
PVC CLEAN-OUT CAP
RISER PIPE:
2" Diameter Sch. 40 PVC

GROUT:
Cement-Bentonite Mixture

TOP OF SEAL: 84.7

WELL SEAL:
3/8" Bentonite Pellets

BOTTOM OF SEAL: 83.2

TOP OF SCREEN: 81.18

BOREHOLE DIAMETER:
6 1/4 "

GRADED SAND PACK:
20/40

SCREEN PIPE:
2" Diameter Sch. 40 PVC

SCREEN SLOT SIZE:
0.01"

BOTTOM OF SCREEN: 61.74

BOTTOM OF WELL SUMP: 60.86
BOTTOM OF BOREHOLE: 60.5

NOT TO SCALE

REMARK: Monitor well constructed in soil boring BO-6

***-Elevations are referenced to:** a site benchmark designated at 100.00 feet

BONDURANT Environmental Consultants, Inc.

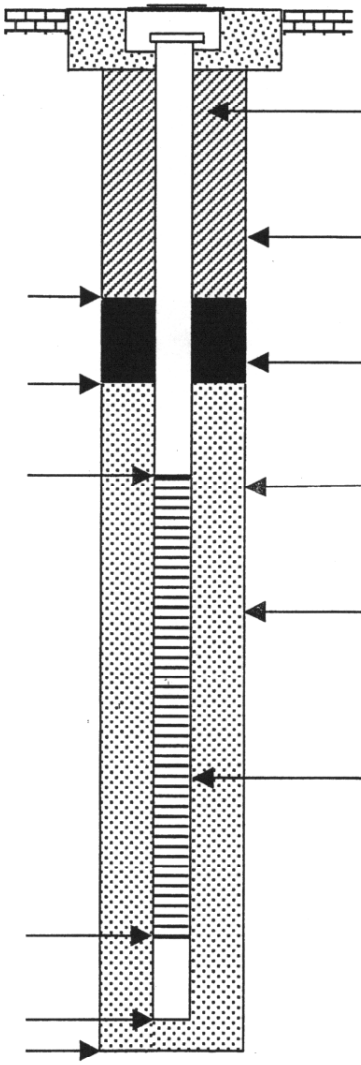
MONITOR WELL CROSS SECTION

MW-7

CLIENT:	Halstead Contractors	**File No.:**	682.001
LOCATION:	Former Medical Center BP	**Ground Surface Elevation (feet):**	94.33
	1098 Ross Clark Circle	**Top of Riser Elevation (feet):**	94.13
	Dothan, Alabama	**Screened Interval (feet):**	83.83-64.53
		Date Installed:	2/16/00

ELEVATION* (feet)

GROUND SURFACE: 94.33
TOP OF RISER PIPE: 94.13



FLUSH MOUNTED COVER
PVC CLEAN-OUT CAP
RISER PIPE:
2" Diameter Sch. 40 PVC

GROUT:
Cement-Bentonite Mixture

TOP OF SEAL: 87.3

WELL SEAL:
3/8" Bentonite Pellets

BOTTOM OF SEAL: 85.8

TOP OF SCREEN: 83.83

BOREHOLE DIAMETER:
6 1/4 "

GRADED SAND PACK:
20/40

SCREEN PIPE:
2" Diameter Sch. 40 PVC

SCREEN SLOT SIZE:
0.01"

BOTTOM OF SCREEN: 64.53

BOTTOM OF WELL SUMP: 63.61
BOTTOM OF BOREHOLE: 63.5

NOT TO SCALE

REMARK: Monitor well constructed in soil boring BO-7

***-Elevations are referenced to:** a site benchmark designated at 100.00 feet

BONDURANT Environmental Consultants, Inc.

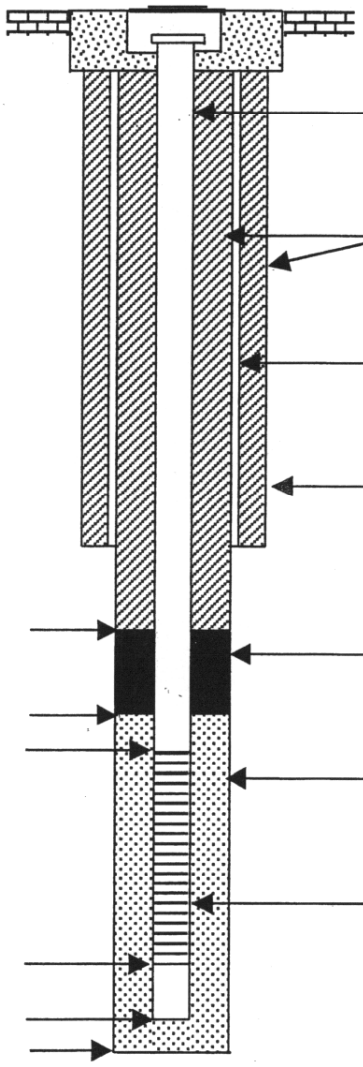
MONITOR WELL CROSS SECTION

MW-8

CLIENT:	Halstead Contractors	**File No.:**	682.001
LOCATION:	Former Medical Center BP	**Ground Surface Elevation (feet):**	94.56
	1098 Ross Clark Circle	**Top of Riser Elevation (feet):**	94.42
	Dothan, Alabama	**Screened Interval (feet):**	50.34-41.06
		Date Installed:	2/16/00

ELEVATION* (feet)

GROUND SURFACE: 94.56
TOP OF RISER PIPE: 94.42



FLUSH MOUNTED COVER
PVC CLEAN-OUT CAP
RISER PIPE:
2" Diameter Sch. 40 PVC

GROUT:
Cement-Bentonite Mixture

SURFACE CASING:
6" Diameter Schedule 40 PVC
(casing installed to 28 feet bgs)
BOREHOLE DIAMETER:
8 1/4 "

TOP OF SEAL: 53.8
BOTTOM OF SEAL: 52.3
TOP OF SCREEN: 50.34
BOTTOM OF SCREEN: 41.06
BOTTOM OF WELL SUMP: 40.15
BOTTOM OF BOREHOLE: 40.1

WELL SEAL:
3/8" Bentonite Pellets

GRADED SAND PACK:
20/40

SCREEN PIPE:
2" Diameter Sch. 40 PVC
SCREEN SLOT SIZE:
0.01"

NOT TO SCALE

REMARK: Monitor well constructed in soil boring BO-8

***-Elevations are referenced to:** a site benchmark designated at 100.00 feet

BONDURANT Environmental Consultants, Inc.

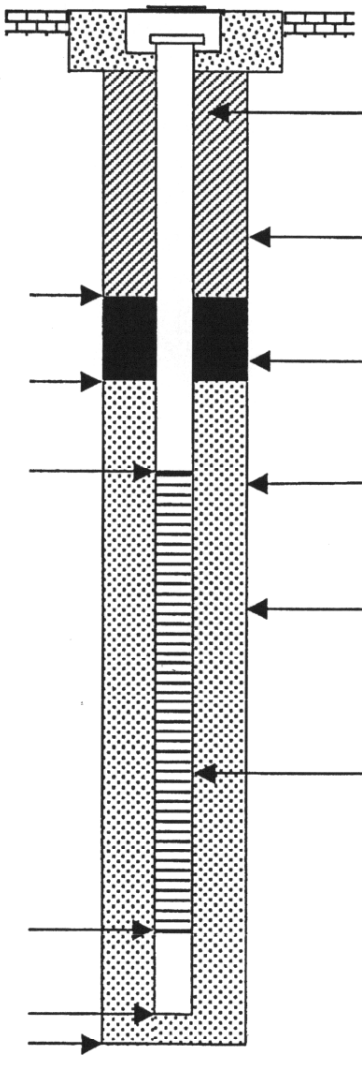
MONITOR WELL CROSS SECTION

MW-9

CLIENT:	Halstead Contractors	**File No.:**	682.003
LOCATION:	Former Medical Center BP	**Ground Surface Elevation (feet):**	94.18
	1098 Ross Clark Circle	**Top of Riser Elevation (feet):**	93.98
	Dothan, Alabama	**Screened Interval (feet):**	85.42-60.95
		Date Installed:	4/18/01

ELEVATION* (feet)

GROUND SURFACE: 94.18
TOP OF RISER PIPE: 93.98



FLUSH MOUNTED COVER
PVC CLEAN-OUT CAP
RISER PIPE:
2" Diameter Sch. 40 PVC

GROUT:
Cement-Bentonite Mixture

TOP OF SEAL: 88.4

WELL SEAL:
3/8" Bentonite Pellets

BOTTOM OF SEAL: 87.4

TOP OF SCREEN: 85.42

BOREHOLE DIAMETER:
6 1/4 "

GRADED SAND PACK:
20/40

SCREEN PIPE:
2" Diameter Sch. 40 PVC

SCREEN SLOT SIZE:
0.01"

BOTTOM OF SCREEN: 60.95

BOTTOM OF WELL SUMP: 60.23
BOTTOM OF BOREHOLE: 60.1

NOT TO SCALE

REMARK: Monitor well constructed in soil boring BO-9

***-Elevations are referenced to:** a site benchmark designated at 100.00 feet

BONDURANT Environmental Consultants, Inc.

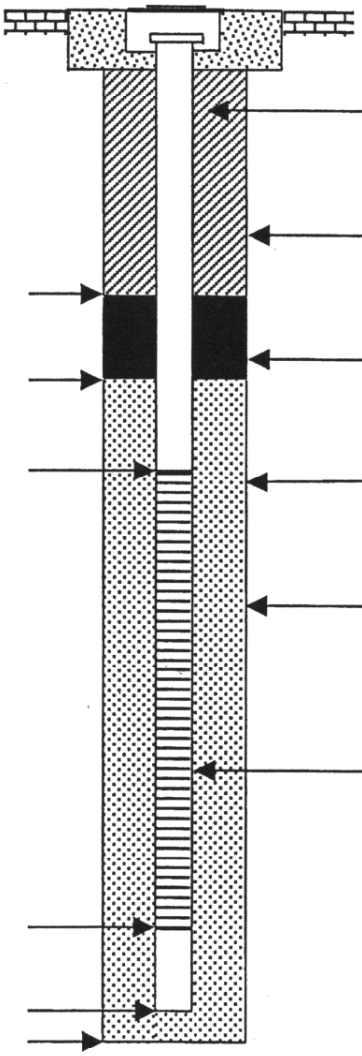
MONITOR WELL CROSS SECTION

MW-10

CLIENT:	Halstead Contractors	**File No.:**	682.003
LOCATION:	Former Medical Center BP	**Ground Surface Elevation (feet):**	94.17
	1098 Ross Clark Circle	**Top of Riser Elevation (feet):**	93.95
	Dothan, Alabama	**Screened Interval (feet):**	85.28-60.77
		Date Installed:	4/18/01

ELEVATION* (feet)

GROUND SURFACE: 94.17
TOP OF RISER PIPE: 93.95



TOP OF SEAL: 88.4
BOTTOM OF SEAL: 87.4
TOP OF SCREEN: 85.28
BOTTOM OF SCREEN: 60.77
BOTTOM OF WELL SUMP: 60.06
BOTTOM OF BOREHOLE: 60.0

FLUSH MOUNTED COVER
PVC CLEAN-OUT CAP
RISER PIPE:
2" Diameter Sch. 40 PVC

GROUT:
Cement-Bentonite Mixture

WELL SEAL:
3/8" Bentonite Pellets

BOREHOLE DIAMETER:
6 1/4 "

GRADED SAND PACK:
20/40

SCREEN PIPE:
2" Diameter Sch. 40 PVC

SCREEN SLOT SIZE:
0.01"

NOT TO SCALE

REMARK: Monitor well constructed in soil boring BO-10

***-Elevations are referenced to:** a site benchmark designated at 100.00 feet

BONDURANT Environmental Consultants, Inc.

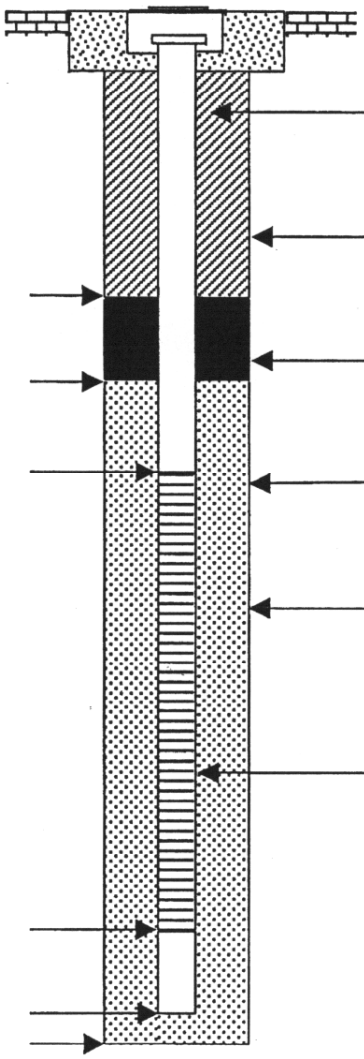
MONITOR WELL CROSS SECTION

MW-11

CLIENT:	Halstead Contractors	**File No.:**	682.003
LOCATION:	Former Medical Center BP	**Ground Surface Elevation (feet):**	93.75
	1098 Ross Clark Circle	**Top of Riser Elevation (feet):**	93.44
	Dothan, Alabama	**Screened Interval (feet):**	84.63-60.25
		Date Installed:	4/18/01

ELEVATION* (feet)

GROUND SURFACE: 93.75
TOP OF RISER PIPE: 93.44



FLUSH MOUNTED COVER
PVC CLEAN-OUT CAP
RISER PIPE:
2" Diameter Sch. 40 PVC

GROUT:
Cement-Bentonite Mixture

TOP OF SEAL: 87.6

WELL SEAL:
3/8" Bentonite Pellets

BOTTOM OF SEAL: 86.6

TOP OF SCREEN: 84.63

BOREHOLE DIAMETER:
6 1/4 "

GRADED SAND PACK:
20/40

SCREEN PIPE:
2" Diameter Sch. 40 PVC

SCREEN SLOT SIZE:
0.01"

BOTTOM OF SCREEN: 60.25

BOTTOM OF WELL SUMP: 59.53
BOTTOM OF BOREHOLE: 59.5

NOT TO SCALE

REMARK: Monitor well constructed in soil boring BO-11

***-Elevations are referenced to:** a site benchmark designated at 100.00 feet

BONDURANT Environmental Consultants, Inc.

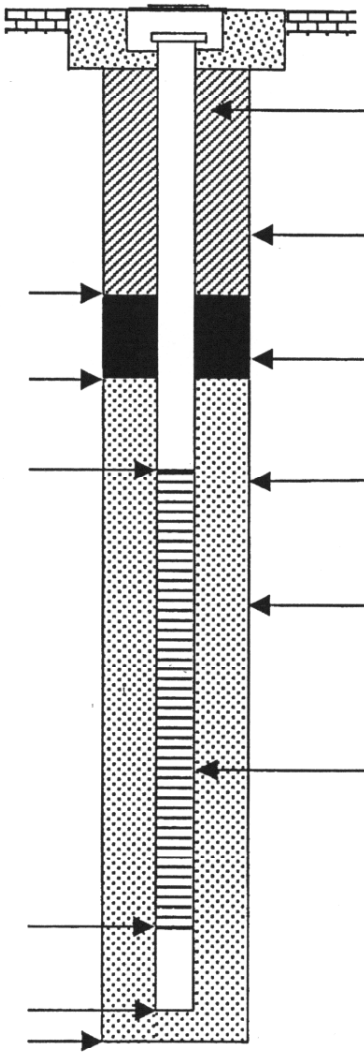
MONITOR WELL CROSS SECTION

MW-12

CLIENT:	Halstead Contractors	**File No.:**	682.003
LOCATION:	Former Medical Center BP	**Ground Surface Elevation (feet):**	95.83
	1098 Ross Clark Circle	**Top of Riser Elevation (feet):**	95.54
	Dothan, Alabama	**Screened Interval (feet):**	81.86-52.36
		Date Installed:	4/18/01

ELEVATION* (feet)

GROUND SURFACE: 95.83
TOP OF RISER PIPE: 95.54



TOP OF SEAL: 84.8

BOTTOM OF SEAL: 83.8

TOP OF SCREEN: 81.86

BOTTOM OF SCREEN: 52.36

BOTTOM OF WELL SUMP: 51.58
BOTTOM OF BOREHOLE: 51.0

FLUSH MOUNTED COVER
PVC CLEAN-OUT CAP
RISER PIPE:
2" Diameter Sch. 40 PVC

GROUT:
Cement-Bentonite Mixture

WELL SEAL:
3/8" Bentonite Pellets

BOREHOLE DIAMETER:
6 1/4 "

GRADED SAND PACK:
20/40

SCREEN PIPE:
2" Diameter Sch. 40 PVC

SCREEN SLOT SIZE:
0.01"

NOT TO SCALE

REMARK: Monitor well constructed in soil boring BO-12

***-Elevations are referenced to:** a site benchmark designated at 100.00 feet

BONDURANT Environmental Consultants, Inc.

SOIL BORING LOG

BO-1

CLIENT: Halstead
LOCATION: Former Circle BP
1098 Ross Clark Circle
Dothan, Alabama

File No.: 541.001
Date Installed: 12/2/98
Drilling Co.: QAT
Rig Type: CME-55
Hole Diameter: 6.25
Logged By: B. Hamilton

Depth of Sample	Sample	Water Level	Headspace Reading (ppm)	SPT	Description of Material
5	☒		0	6,8,10,12	SANDY CLAY (SC), orange and tan, dry
10	☒		1	6,7,8,11	SANDY CLAY (CL), orange and tan, dry
15	☒		6.8	4,5,5,5	CLAYEY SAND (SP), orange and white, dry
20	☒		4.8	4,5,5,6	CLAYEY SAND (SP), orange and white, moist
25	☒		2.6	4,5,5,7	CLAYEY SAND (SP), orange and white, moist
30	☒		0.8	2,9,9,7	CLAYEY SAND (SP), orange and white, moist
35	☒		1.4	4,6,8,8	CLAYEY SAND (SP), orange and white, moist
40					Soil boring BO-1 was terminated at 40 feet bgs.
45					
50					

■ Shelby Tube
☒ Std. Penetration Test
▯ Auger Cuttings
▨ No Recovery
▽ Water First Noted
▼ Static Water Level

Notes:
1. Laboratory geotechnical testing not performed.
2. SPT - Standard Penetration Test

BONDURANT Environmental Consultants, Inc.

SOIL BORING LOG

BO-2

CLIENT: Halstead
LOCATION: Former Circle BP
1098 Ross Clark Circle
Dothan, Alabama

File No.: 541.001
Date Installed: 12/2/98
Drilling Co.: QAT
Rig Type: CME-55
Hole Diameter: 6.25
Logged By: B. Hamilton

Depth of Sample	Sample	Water Level	Headspace Reading (ppm)	SPT	Description of Material
5	☒		7.2	5,3,3,3	SILT (ST), with rock fragments, brown, dry
10	☒		14.6	4,4,6,6	SANDY CLAY (CL), with rock fragements, brown and orange, dry
15	☒		2.8	4,6,8,8	CLAYEY SAND (SP), orange and white, dry
20	☒		1.6	4,6,5,5	CLAYEY SAND (SP), orange and white, moist
25	☒		0.0	3,3,4,3	CLAYEY SAND (SP), orange and white, dry
30	☒		0.0	4,7,7,9	CLAYEY SAND (SP), orange and white, moist
35	☒		0.0	3,5,5,8	CLAYEY SAND (SP), orange and white, moist
40					Soil boring BO-2 was terminated at 40 feet bgs.
45					
50					

■ Shelby Tube
☒ Std. Penetration Test
▯ Auger Cuttings
▨ No Recovery
▽ Water First Noted
▼ Static Water Level

Notes:
1. Laboratory geotechnical testing not performed.
2. SPT - Standard Penetration Test

BONDURANT Environmental Consultants, Inc.

SOIL BORING LOG

BO-3

CLIENT: Halstead
LOCATION: Former Circle BP
1098 Ross Clark Circle
Dothan, Alabama

File No.: 541.001
Date Installed: 12/2/98
Drilling Co.: QAT
Rig Type: CME-55
Hole Diameter: 6.25
Logged By: B. Hamilton

Depth of Sample	Sample	Water Level	Headspace Reading (ppm)	SPT	Description of Material
	X				Fill
	X		9.4	6,5,5,4	Fill
5	X		15.8	7,5,9,8	SANDY CLAY (CL), brown and orange, dry
	X		14.6	6,7,8,9	SANDY CLAY (CL), tan and orange, hydrocarbon odor, dry
	X		48.8	7,8,8,10	CLAYEY SAND (SP), orange and white, hydrocarbon odor,dry
10	X		94.4	0,8,10,1	CLAYEY SAND (SP), orange and white, hydrocarbon odor,dry
	X		135.6	5,4,4,4	CLAYEY SAND (SP), orange and white, hydrocarbon odor,dry
	X		380.8	3,3,4,3	CLAYEY SAND (SP), orange and white, hydrocarbon odor,dry
15	X		246.3	2,3,3,2	CLAYEY SAND (SP), orange and white, hydrocarbon odor,moist
	X		145.4	2,2,4,3	CLAYEY SAND (SP), orange and white, hydrocarbon odor,moist
	X		126.0	4,4,5,4	CLAYEY SAND (SP), orange and white, hydrocarbon odor,moist
20	X		100.4	4,2,2,4	CLAYEY SAND (SP), orange and white, hydrocarbon odor,moist
	X		152.4	1,1,1,1	CLAYEY SAND (SP), orange and white, hydrocarbon odor,moist
	X		150.2	2,4,4,3	CLAYEY SAND (SP), orange and white, hydrocarbon odor,moist
25	X		186.2	3,3,4,5	CLAYEY SAND (SP), orange and white, hydrocarbon odor,moist
					Soil boring BO-3 was terminated at 30 feet bgs.
30					
35					
40					
45					
50					

■ Shelby Tube
⊠ Std. Penetration Test
▯ Auger Cuttings
▨ No Recovery
▽ Water First Noted
▼ Static Water Level

Notes:
1. Laboratory geotechnical testing not performed.
2. SPT - Standard Penetration Test

BONDURANT Environmental Consultants, Inc.

SOIL BORING LOG

BO-4

CLIENT: Halstead
LOCATION: Former Circle BP
1098 Ross Clark Circle
Dothan, Alabama

File No.: 541.001
Date Installed: 12/2/98
Drilling Co.: QAT
Rig Type: CME-55
Hole Diameter: 6.25
Logged By: B. Hamilton

Depth of Sample	Sample	Water Level	Headspace Reading (ppm)	SPT	Description of Material
5	☒		2.4	8,9,7,4	SILTY CLAY (CL), brown, dry
10	☒		18.6	7,5,9,5	SILTY CLAY (CL), brown, dry
15	☒		10.6	6,9,11,10	CLAYEY SAND (SP), orange and white, dry
20	☒		9.8	6,4,8,7	CLAYEY SAND (SP), orange and white, moist
25	☒		2.6	2,3,4,4	CLAYEY SAND (SP), orange and white, dry
30	☒		0.0	4,2,2,4	CLAYEY SAND (SP), orange and white, moist
35		▽			
40					Soil boring BO-4 was terminated at 40 feet bgs.
45					
50					

■ Shelby Tube
☒ Std. Penetration Test
▯ Auger Cuttings
▨ No Recovery
▽ Water First Noted
▼ Static Water Level

Notes:
1. Laboratory geotechnical testing not performed.
2. SPT - Standard Penetration Test

BONDURANT Environmental Consultants, Inc.

SOIL BORING LOG

BO-5

CLIENT:	Halstead Contractors	**File No.:**	682.001
LOCATION:	Former Medical Center BP	**Date Installed:**	2/15/00
	1098 Ross Clark Circle	**Drilling Co.:**	Q.A.T. Labs
	Dothan, Alabama	**Rig Type:**	CME-55
		Hole Diameter:	6.25
		Logged By:	B. Hamilton

Depth of Sample	Sample	Water Level	Headspace Reading (ppm)	SPT	Description of Material
5	☒		0.0	7-10-11	SANDY CLAY; orange with brown; mostly fine sand; silty; tightly packed; dry; no hydrocarbon odor
10	☒		13.8	8-8-10	SANDY CLAY; orange and red; mostly fine sand; tightly packed; dry; no hydrocarbon odor
15	☒		8.8	6-7-8	CLAYEY SAND; orange and red; mostly fine sand; tightly packed; dry; no hydrocarbon odor
20	☒		6.4	5-5-4	CLAYEY SAND; red and white; mostly fine sand; tightly packed; moist; no hydrocarbon odor
25	☒	▼	5.6	4-5-6	CLAYEY SAND; red and white; mostly fine sand; tightly packed; moist; no hydrocarbon odor
30	☒	▽	4.2	3-5-5	CLAYEY SAND; red and white; mostly fine sand; tightly packed; wet; no hydrocarbon odor
35					Soil boring BO-5 was terminated 30 feet bgs due to saturated soil conditions and was completed as monitor well MW-5.
40					
45					
50					

■ Shelby Tube
☒ Std. Penetration Test
▯ Auger Cuttings
▨ No Recovery
▽ Water First Noted
▼ Static Water Level

Notes:

1. Laboratory geotechnical testing not performed
2. SPT - Standard Penetration Test

BONDURANT Environmental Consultants, Inc.

SOIL BORING LOG

BO-6

CLIENT:	Halstead Contractors	**File No.:**	682.001
LOCATION:	Former Medical Center BP	**Date Installed:**	2/16/00
	1098 Ross Clark Circle	**Drilling Co.:**	Q.A.T. Labs
	Dothan, Alabama	**Rig Type:**	CME-55
		Hole Diameter:	6.25
		Logged By:	B. Hamilton

Depth of Sample	Sample	Water Level	Headspace Reading (ppm)	SPT	Description of Material
5	☒		2.8	11-9-10	SANDY CLAY; tan; mostly fine sand; tightly packed; dry; no hydrocarbon odor
10	☒		75.0	14-16-16	SANDY CLAY; red and gray; mostly fine sand; tightly packed; dry; no hydrocarbon odor
15	☒		110.0	13-13-11	SANDY CLAY; red and gray; mostly fine sand; tightly packed; dry; slight hydrocarbon odor
20	☒		92.0	10-11-16	SANDY CLAY; red and gray; mostly fine sand; tightly packed; dry; slight hydrocarbon odor
25	☒	▼	70.0	14-14-18	SANDY CLAY; red and gray; mostly fine sand; tightly packed; moist; slight hydrocarbon odor
30	☒	▽	60.0	8-10-14	SANDY CLAY; red and gray; mostly fine sand; tightly packed; wet; slight hydrocarbon odor
35					Soil boring BO-6 was terminated 30 feet bgs due to saturated soil conditions and was completed as monitor well MW-6.
40					
45					
50					

■ Shelby Tube
☒ Std. Penetration Test
▯ Auger Cuttings
▨ No Recovery
▽ Water First Noted
▼ Static Water Level

Notes:

1. Laboratory geotechnical testing not performed
2. SPT - Standard Penetration Test

BONDURANT Environmental Consultants, Inc.

SOIL BORING LOG

BO-7

CLIENT: Halstead Contractors
LOCATION: Former Medical Center BP
1098 Ross Clark Circle
Dothan, Alabama

File No.: 682.001
Date Installed: 2/16/00
Drilling Co.: Q.A.T. Labs
Rig Type: CME-55
Hole Diameter: 6.25
Logged By: B. Hamilton

Depth of Sample	Sample	Water Level	Headspace Reading (ppm)	SPT	Description of Material
5	☒		140.0	5-5-4	SANDY CLAY; orange and yellow; mostly fine sand; tightly packed; dry; slight hydrocarbon odor
10	☒		180.0	5-8-9	SANDY CLAY; red and orange; mostly fine sand; tightly packed; dry; heavy hydrocarbon odor
15	☒		325.0	8-8-10	CLAYEY SAND; red and orange; mostly fine sand; tightly packed; dry; heavy hydrocarbon odor
20	☒		500+	8-7-10	CLAYEY SAND; red and gray; mostly fine sand; tightly packed; dry; heavy hydrocarbon odor
25	☒		500+	8-8-12	CLAYEY SAND; red and gray; mostly fine sand; tightly packed; moist; very heavy hydrocarbon odor
		▼			
30	☒		500+	4-5-8	CLAYEY SAND; red and gray; mostly fine sand; tightly packed; wet; heavy hydrocarbon odor
					Soil boring BO-7 was terminated 30 feet bgs due to saturated soil conditions and was completed as monitor well MW-7.
35					
40					
45					
50					

■ Shelby Tube
☒ Std. Penetration Test
▯ Auger Cuttings
▨ No Recovery
▽ Water First Noted
▼ Static Water Level

Notes:
1. Laboratory geotechnical testing not performed
2. SPT - Standard Penetration Test

BONDURANT Environmental Consultants, Inc.

SOIL BORING LOG

BO-8

CLIENT:	Halstead Contractors	**File No.:**	682.001
LOCATION:	Former Medical Center BP	**Date Installed:**	2/15-16/00
	1098 Ross Clark Circle	**Drilling Co.:**	Q.A.T. Labs
	Dothan, Alabama	**Rig Type:**	CME-55
		Hole Diameter:	8.25
		Logged By:	B. Hamilton

Depth of Sample	Sample	Water Level	Headspace Reading (ppm)	SPT	Description of Material
10			NA	NA	SANDY CLAY; orange and yellow; slight hydrocarbon odor
20			NA	NA	SANDY CLAY; red and orange; slight hydrocarbon odor
		▼			
30			NA	NA	CLAYEY SAND; red and orange; wet; slight hydrocarbon odor
					6 inch PVC surface casing installed to 28 feet bgs
40	■		NA	NA	CLAYEY SAND; red and orange; wet; slight hydrocarbon odor
50			NA	NA	CLAYEY SAND; red and orange; wet; slight hydrocarbon odor
60					Soil boring BO-8 was terminated at the target depth of 55 feet bgs and was completed as Typ III monitor well MW-8.
70					
80					
90					
100					

■ Shelby Tube

▨ Std. Penetration Test

▯ Auger Cuttings

▧ No Recovery

▽ Water First Noted

▼ Static Water Level

Notes:

1. Laboratory geotechnical testing performed on the 33-35 foot sample
2. SPT - Standard Penetration Test

BONDURANT Environmental Consultants, Inc.

SOIL BORING LOG

BO-9

CLIENT: Halstead Contractors
LOCATION: Former Medical Center BP
1098 Ross Clark Circle
Dothan, Alabama

File No.: 682.003
Date Installed: 4/18/01
Drilling Co.: Q.A.T. Labs
Rig Type: CME-55
Hole Diameter: 6.25
Logged By: B. Hamilton

Depth of Sample	Sample	Water Level	Headspace Reading (ppm)	SPT	Description of Material
5	☒		0.0	7-8-8	SANDY CLAY; orange with brown; mostly fine sand; silty; tightly packed; dry; no hydrocarbon odor
10	☒		54.0	3-3-5	SANDY CLAY; orange and red; mostly fine sand; tightly packed; dry; no hydrocarbon odor
15	☒		120.8	5-5-4	CLAYEY SAND; orange and red; mostly fine sand; tightly packed; dry; slight hydrocarbon odor
20	☒		225.0	4-5-5	CLAYEY SAND; orange and red; mostly fine sand; tightly packed; dry; slight hydrocarbon odor
25	☒	▼	242.0	5-5-5	CLAYEY SAND; orange and red; mostly fine sand; tightly packed; dry; heavy hydrocarbon odor
30	☒	▽	230.0	4-5-5	CLAYEY SAND; orange and red; mostly fine sand; tightly packed; dry; heavy hydrocarbon odor
35					Soil boring BO-9 was terminated 30 feet bgs due to saturated soil conditions and was completed as monitor well MW-9.
40					
45					
50					

■ Shelby Tube
☒ Std. Penetration Test
▯ Auger Cuttings
▨ No Recovery
▽ Water First Noted
▼ Static Water Level

Notes:
1. Laboratory geotechnical testing not performed
2. SPT - Standard Penetration Test

BONDURANT Environmental Consultants, Inc.

SOIL BORING LOG

BO-10

CLIENT: Halstead Contractors
LOCATION: Former Medical Center BP
1098 Ross Clark Circle
Dothan, Alabama

File No.: 682.003
Date Installed: 4/18/01
Drilling Co.: Q.A.T. Labs
Rig Type: CME-55
Hole Diameter: 6.25
Logged By: B. Hamilton

Depth of Sample	Sample	Water Level	Headspace Reading (ppm)	SPT	Description of Material
5	☒		0.0	5-6-7	SANDY CLAY; orange with tan; mostly fine sand; silty; tightly packed; dry; no hydrocarbon odor
10	☒		4.2	5-6-6	SANDY CLAY; orange with tan; mostly fine sand; silty; tightly packed; dry; no hydrocarbon odor
15	☒		54.0	6-7-7	SANDY CLAY; orange with tan; mostly fine sand; silty; tightly packed; dry; no hydrocarbon odor
20	☒		175.0	4-7-8	CLAYEY SAND; orange and red; mostly fine sand; tightly packed; dry; slight hydrocarbon odor
25	☒	▼	210.0	4-4-5	CLAYEY SAND; orange and red; mostly fine sand; tightly packed; dry; slight hydrocarbon odor
30	☒	▽	230.0	2-2-3	CLAYEY SAND; orange and red; mostly fine sand; tightly packed; wet; slight hydrocarbon odor
35					Soil boring BO-10 was terminated 30 feet bgs due to saturated soil conditions and was completed as monitor well MW-10.
40					
45					
50					

■ Shelby Tube
☒ Std. Penetration Test
▯ Auger Cuttings
▨ No Recovery
▽ Water First Noted
▼ Static Water Level

Notes:
1. Laboratory geotechnical testing not performed
2. SPT - Standard Penetration Test

BONDURANT Environmental Consultants, Inc.

SOIL BORING LOG

BO-11

CLIENT: Halstead Contractors
LOCATION: Former Medical Center BP
1098 Ross Clark Circle
Dothan, Alabama

File No.: 682.003
Date Installed: 4/18/01
Drilling Co.: Q.A.T. Labs
Rig Type: CME-55
Hole Diameter: 6.25
Logged By: B. Hamilton

Depth of Sample	Sample	Water Level	Headspace Reading (ppm)	SPT	Description of Material
5	☒		0.0	4-4-5	SILTY CLAY; orange with brown; silty; tightly packed; dry; no hydrocarbon odor
10	☒		0.0	5-6-6	SANDY CLAY; orange with tan; mostly fine sand; silty; tightly packed; dry; no hydrocarbon odor
15	☒		1.4	5-6-6	SANDY CLAY; orange with tan; mostly fine sand; silty; tightly packed; dry; no hydrocarbon odor
20	☒		2.6	7-8-8	CLAYEY SAND; orange and tan; mostly fine sand; tightly packed; dry; no hydrocarbon odor
25	☒	▼	6.4	7-7-8	CLAYEY SAND; orange and tan; mostly fine sand; tightly packed; dry; no hydrocarbon odor
30	☒	▽	1.4	7-8-7	CLAYEY SAND; orange and tan; mostly fine sand; tightly packed; dry; no hydrocarbon odor
					Soil boring BO-11 was terminated 30 feet bgs due to saturated soil conditions and was completed as monitor well MW-11.
35					
40					
45					
50					

■ Shelby Tube
☒ Std. Penetration Test
▯ Auger Cuttings
▨ No Recovery
▽ Water First Noted
▼ Static Water Level

Notes:
1. Laboratory geotechnical testing not performed
2. SPT - Standard Penetration Test

BONDURANT Environmental Consultants, Inc.

SOIL BORING LOG

BO-12

CLIENT: Halstead Contractors
LOCATION: Former Medical Center BP
1098 Ross Clark Circle
Dothan, Alabama

File No.: 682.003
Date Installed: 4/18/01
Drilling Co.: Q.A.T. Labs
Rig Type: CME-55
Hole Diameter: 6.25
Logged By: B. Hamilton

Depth of Sample	Sample	Water Level	Headspace Reading (ppm)	SPT	Description of Material
5	☒		0.0	4-6-6	SILTY CLAY; orange with brown; silty; tightly packed; dry; no hydrocarbon odor
10	☒		0.0	4-5-5	SANDY CLAY; orange with tan; mostly fine sand; silty; tightly packed; dry; no hydrocarbon odor
15	☒		0.0	7-9-9	SANDY CLAY; orange with white; mostly fine sand; silty; tightly packed; dry; no hydrocarbon odor
20	☒		1.4	7-9-10	SANDY CLAY; orange with white; mostly fine sand; silty; tightly packed; dry; no hydrocarbon odor
25	☒	▼	5.4	4-5-5	SANDY CLAY; orange with white; mostly fine sand; silty; tightly packed; dry; no hydrocarbon odor
30	☒	▽	2.8	6-7-7	SANDY CLAY; orange with white; mostly fine sand; silty; tightly packed; moist; no hydrocarbon odor
35	☒		1.4	7-7-8	SANDY CLAY; orange with white; mostly fine sand; silty; tightly packed; moist; no hydrocarbon odor
40	☒		0.8	4-3-3	SANDY CLAY; orange with white; mostly fine sand; silty; tightly packed; wet; no hydrocarbon odor
45					Soil boring BO-12 was terminated 40 feet bgs due to saturated soil conditions and was completed as monitor well MW-12.
50					

■ Shelby Tube
☒ Std. Penetration Test
▯ Auger Cuttings
▨ No Recovery
▽ Water First Noted
▼ Static Water Level

Notes:
1. Laboratory geotechnical testing not performed
2. SPT - Standard Penetration Test

BONDURANT Environmental Consultants, Inc.

MONITOR WELL CROSS SECTION

VZ-13

CLIENT:	Halstead Contractors	**File No.:**	682.12FmrBP
LOCATION:	Former Medical Center BP	**Top of Riser Elevation (feet):**	Not Surveyed
	1098 Ross Clark Circle	**Ground Surface Elevation (feet):**	Not Surveyed
	Dothan, Alabama	**Screened Depth (feet btoc):**	15.70-35.16
		Date Installed:	3/20/03

Depth* (feet btoc)

TOP OF RISER PIPE: 0.00

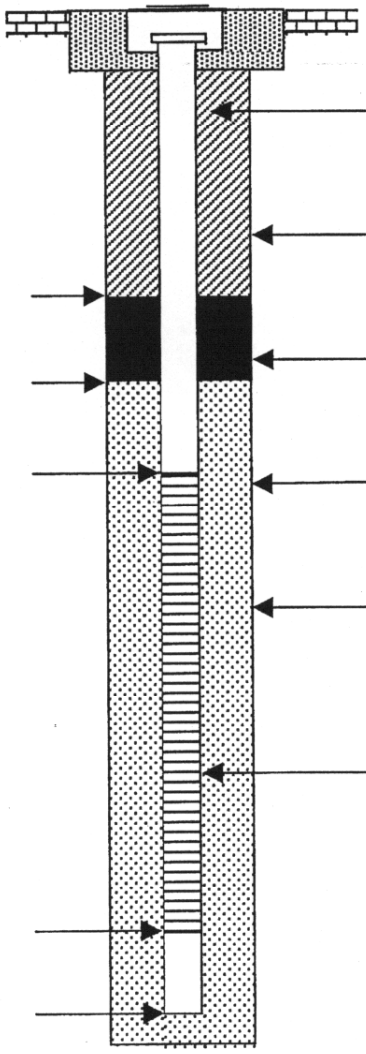
TOP OF SEAL: 12.2

BOTTOM OF SEAL: 13.7

TOP OF SCREEN: 15.70

BOTTOM OF SCREEN: 35.16

BOTTOM OF WELL SUMP: 35.74



FLUSH MOUNTED COVER
PVC CLEAN-OUT CAP
RISER PIPE:
4" Diameter Sch. 40 PVC

GROUT:
Cement-Bentonite Mixture

WELL SEAL:
3/8" Bentonite Pellets

BOREHOLE DIAMETER:
8 1/4 "

GRADED SAND PACK:
20/40

SCREEN PIPE:
4" Diameter Sch. 40 PVC

SCREEN SLOT SIZE:
0.01"

NOT TO SCALE

REMARK: Monitor well constructed in soil boring BO-13

BONDURANT Environmental Consultants, Inc.

MONITOR WELL CROSS SECTION

VZ-14

CLIENT:	Halstead Contractors	**File No.:**	682.12FmrBP
LOCATION:	Former Medical Center BP	**Top of Riser Elevation (feet):**	Not Surveyed
	1098 Ross Clark Circle	**Ground Surface Elevation (feet):**	Not Surveyed
	Dothan, Alabama	**Screened Depth (feet btoc):**	16.14-35.56
		Date Installed:	3/20/03

Depth* (feet btoc)

TOP OF RISER PIPE: 0.00

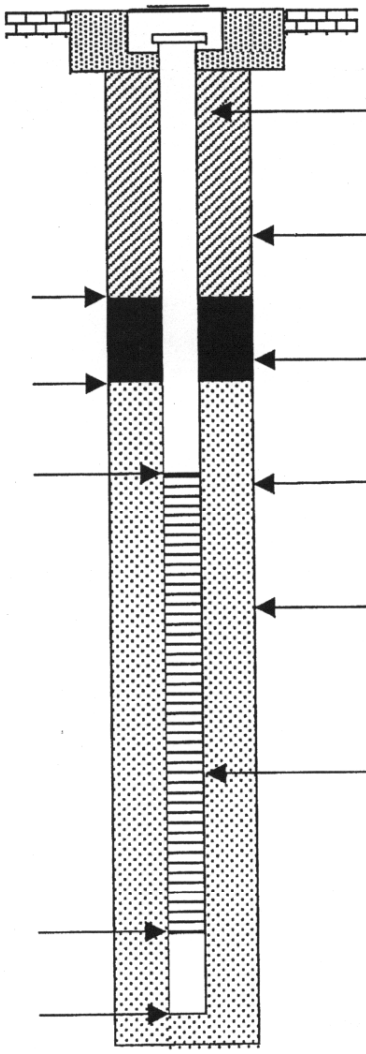
TOP OF SEAL: 12.6

BOTTOM OF SEAL: 14.1

TOP OF SCREEN: 16.14

BOTTOM OF SCREEN: 35.56

BOTTOM OF WELL SUMP: 36.15



FLUSH MOUNTED COVER
PVC CLEAN-OUT CAP
RISER PIPE:
4" Diameter Sch. 40 PVC

GROUT:
Cement-Bentonite Mixture

WELL SEAL:
3/8" Bentonite Pellets

BOREHOLE DIAMETER:
8 1/4 "

GRADED SAND PACK:
20/40

SCREEN PIPE:
4" Diameter Sch. 40 PVC

SCREEN SLOT SIZE:
0.01"

NOT TO SCALE

REMARK: Monitor well constructed in soil boring BO-14

BONDURANT Environmental Consultants, Inc.

MONITOR WELL CROSS SECTION

VZ-15

CLIENT:	Halstead Contractors	**File No.:**	682.12FmrBP
LOCATION:	Former Medical Center BP	**Top of Riser Elevation (feet):**	Not Surveyed
	1098 Ross Clark Circle	**Ground Surface Elevation (feet):**	Not Surveyed
	Dothan, Alabama	**Screened Depth (feet btoc):**	17.39-36.75
		Date Installed:	3/20/03

Depth* (feet btoc)

TOP OF RISER PIPE: 0.00

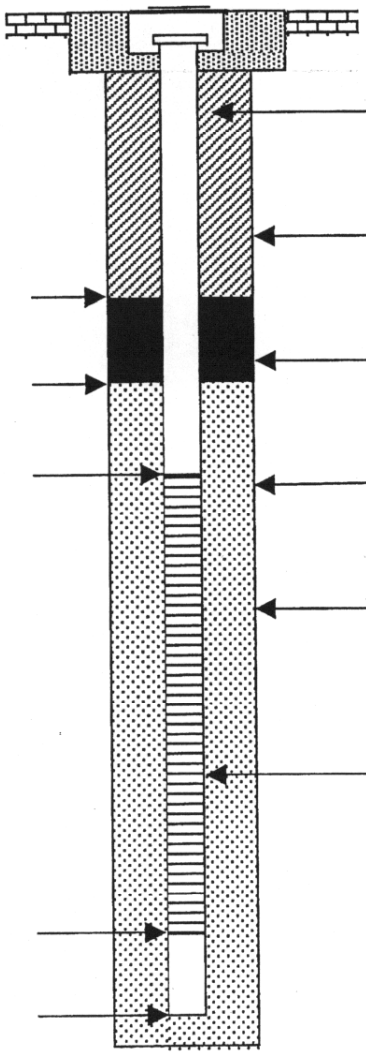
TOP OF SEAL: 13.9

BOTTOM OF SEAL: 15.4

TOP OF SCREEN: 17.39

BOTTOM OF SCREEN: 36.75

BOTTOM OF WELL SUMP: 37.43



FLUSH MOUNTED COVER
PVC CLEAN-OUT CAP
RISER PIPE:
4" Diameter Sch. 40 PVC

GROUT:
Cement-Bentonite Mixture

WELL SEAL:
3/8" Bentonite Pellets

BOREHOLE DIAMETER:
8 1/4 "

GRADED SAND PACK:
20/40

SCREEN PIPE:
4" Diameter Sch. 40 PVC

SCREEN SLOT SIZE:
0.01"

NOT TO SCALE

REMARK: Monitor well constructed in soil boring BO-15

BONDURANT Environmental Consultants, Inc.

MONITOR WELL CROSS SECTION

VZ-16

CLIENT:	Halstead Contractors	**File No.:**	682.12FmrBP
LOCATION:	Former Medical Center BP	**Top of Riser Elevation (feet):**	Not Surveyed
	1098 Ross Clark Circle	**Ground Surface Elevation (feet):**	Not Surveyed
	Dothan, Alabama	**Screened Depth (feet btoc):**	15.86-35.22
		Date Installed:	3/20/03

Depth* (feet btoc)

TOP OF RISER PIPE: 0.00

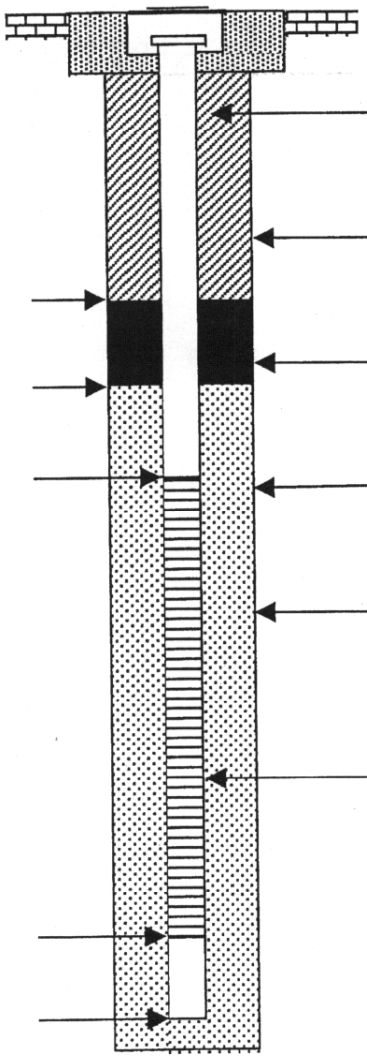
TOP OF SEAL: 12.4

BOTTOM OF SEAL: 13.9

TOP OF SCREEN: 15.86

BOTTOM OF SCREEN: 35.22

BOTTOM OF WELL SUMP: 35.90



FLUSH MOUNTED COVER
PVC CLEAN-OUT CAP
RISER PIPE:
4" Diameter Sch. 40 PVC

GROUT:
Cement-Bentonite Mixture

WELL SEAL:
3/8" Bentonite Pellets

BOREHOLE DIAMETER:
8 1/4 "

GRADED SAND PACK:
20/40

SCREEN PIPE:
4" Diameter Sch. 40 PVC

SCREEN SLOT SIZE:
0.01"

NOT TO SCALE

REMARK: Monitor well constructed in soil boring BO-16

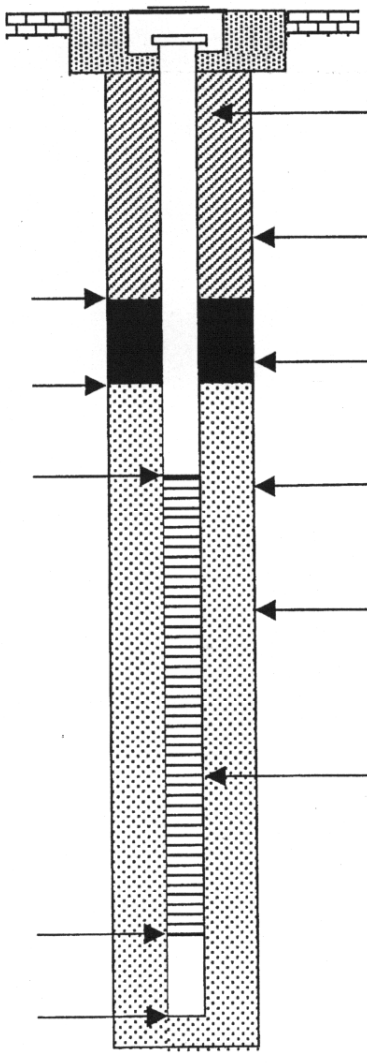
BONDURANT Environmental Consultants, Inc.

MONITOR WELL CROSS SECTION

VZ-17

CLIENT:	Halstead Contractors	**File No.:**	682.12FmrBP
LOCATION:	Former Medical Center BP	**Top of Riser Elevation (feet):**	Not Surveyed
	1098 Ross Clark Circle	**Ground Surface Elevation (feet):**	Not Surveyed
	Dothan, Alabama	**Screened Depth (feet btoc):**	15.45-34.82
		Date Installed:	3/21/03

Depth* (feet btoc)



TOP OF RISER PIPE: 0.00

TOP OF SEAL: 12.0

BOTTOM OF SEAL: 13.5

TOP OF SCREEN: 15.45

BOTTOM OF SCREEN: 34.82

BOTTOM OF WELL SUMP: 35.50

FLUSH MOUNTED COVER
PVC CLEAN-OUT CAP
RISER PIPE:
4" Diameter Sch. 40 PVC

GROUT:
Cement-Bentonite Mixture

WELL SEAL:
3/8" Bentonite Pellets

BOREHOLE DIAMETER:
8 1/4 "

GRADED SAND PACK:
20/40

SCREEN PIPE:
4" Diameter Sch. 40 PVC

SCREEN SLOT SIZE:
0.01"

NOT TO SCALE

REMARK: Monitor well constructed in soil boring BO-17

Stantec Consulting Corporation

SOIL BORING LOG

SB-1

CLIENT: Halstead Contractors
LOCATION: Former Medical Center BP
1098 Ross Clark Circle
Dothan, AL

Project No.: 212201283
Date Installed: 6/22/2011
Drilling Co.: Singley Environmental
Rig Type: Mobile 59
Hole Diameter: 6 inch
Logged By: G. Budd

Depth of Sample	Sample	Water Level	Headspace Reading (ppm)	SPT	Description of Material
					Utility Clearance conducted by hand utilizing post hole diggers and hand augers from 0 to 4 feet. Soil description from auger cuttings. Grass and brown topsoil to 0.5 feet grading to brown silty clay with some fine sand.
10					Clay; brown, silty with some fine, sand to 40 feet.
20					
30					
40	▽				Sand; clayey, pink, quartz, fine, well graded, to 60 feet. Wet at approximately 40 feet.
50					
60					Clay; red-brown, fat, with some fine sand to 62.0 feet.
					Soil boring SB-1 was terminated at 62 feet bgs and was subsequently converted into Air Sparge well AS-1.
70					
80					
90					

■ Shelby Tube
▯ Post Hole
▽ Water First Noted
☒ Std. Penetration Test
▨ No Recovery
▼ Static Water Level

Notes:
1. Laboratory geotechnical testing not performed
2. SPT - Standard Penetration Test

Stantec Consulting Corporation

SOIL BORING LOG

SB-2

CLIENT: Halstead Contractors
LOCATION: Former Medical Center BP
1098 Ross Clark Circle
Dothan, AL

Project No.: 212201283
Date Installed: 6/21/2011
Drilling Co.: Singley Environmental
Rig Type: Mobile 59
Hole Diameter: 6 inch
Logged By: G. Budd

Depth of Sample	Sample	Water Level	Headspace Reading (ppm)	SPT	Description of Material
					Utility Clearance conducted by hand utilizing post hole diggers and hand augers from 0 to 4 feet. Soil description from auger cuttings. Grass and brown topsoil to 0.5 feet grading to brown silty clay with some fine sand.
10					Clay; brown, silty with some fine, sand to 40 feet.
20					
30					
40	▽				Sand; clayey, pink, quartz, fine, well graded, to 60 feet. Wet at approximately 40 feet.
50					
60					Clay; red-brown, fat, with some fine sand to 63.5 feet.
70					Soil boring SB-2 was terminated at 63.5 feet bgs and was subsequently converted into Air Sparge well AS-2.
80					
90					

■ Shelby Tube
▯ Post Hole
▽ Water First Noted
☒ Std. Penetration Test
▨ No Recovery
▼ Static Water Level

Notes:
1. Laboratory geotechnical testing not performed
2. SPT - Standard Penetration Test

Stantec Consulting Corporation

SOIL BORING LOG

SB-3

CLIENT: Halstead Contractors
LOCATION: Former Medical Center BP
1098 Ross Clark Circle
Dothan, AL

Project No.: 212201283
Date Installed: 6/22/2011
Drilling Co.: Singley Environmental
Rig Type: Mobile 59
Hole Diameter: 6 inch
Logged By: G. Budd

Depth of Sample	Sample	Water Level	Headspace Reading (ppm)	SPT	Description of Material
					Utility Clearance conducted by hand utilizing post hole diggers and hand augers from 0 to 4 feet. Soil description from auger cuttings. Grass and brown topsoil to 0.5 feet grading to brown silty clay with some fine sand.
10					Clay; brown, silty with some fine, sand to 40 feet.
20					
30					
40	▽				Sand; clayey, pink, quartz, fine, well graded, wet to 60 feet.
50					
60					Clay; red-brown, fat, with some fine sand to 62.0 feet.
					Soil boring SB-3 was terminated at 62 feet bgs and was subsequently converted into Air Sparge well AS-1.
70					
80					
90					

■ Shelby Tube
▯ Post Hole
▽ Water First Noted
☒ Std. Penetration Test
▨ No Recovery
▼ Static Water Level

Notes:
1. Laboratory geotechnical testing not performed
2. SPT - Standard Penetration Test

Stantec Consulting Corporation

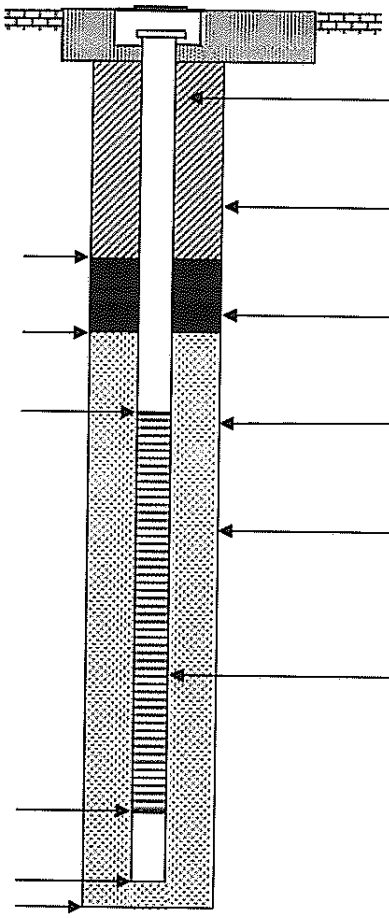
MONITOR WELL CROSS SECTION

AS-1

CLIENT:	Halstead Contractors	**File No.:**	212201283
LOCATION:	Former Medical Center BP	**Top of Riser Elevation (feet):**	94.43
	1098 Ross Clark Circle	**Screened Interval (feet):**	35.21-33.21
	Dothan, AL	**Date Installed:**	6/22/2011

ELEVATION* (feet)

GROUND SURFACE: 94.71
TOP OF RISER PIPE: 94.43



TOP OF SEAL: 40.21
BOTTOM OF SEAL: 39.21
TOP OF SCREEN: 35.21
BOTTOM OF SCREEN: 33.21
BOTTOM OF WELL SUMP: 32.71
BOTTOM OF BOREHOLE: 32.71

FLUSH MOUNTED COVER
PVC CLEAN-OUT CAP
RISER PIPE:
2" Diameter Sch. 40 PVC

GROUT:
Cement-Bentonite Mixture

WELL SEAL:
3/8" Bentonite Pellets

BOREHOLE DIAMETER:
6 inches

GRADED SAND PACK:
20/40

SCREEN PIPE:
2" Diameter Sch. 40 PVC

SCREEN SLOT SIZE:
0.01"

NOT TO SCALE

REMARK: Recovery well for Air Sparge remediation sysytem

***-Elevations are referenced to:** Top of casing of Monitor well MW-7

Stantec Consulting Corporation

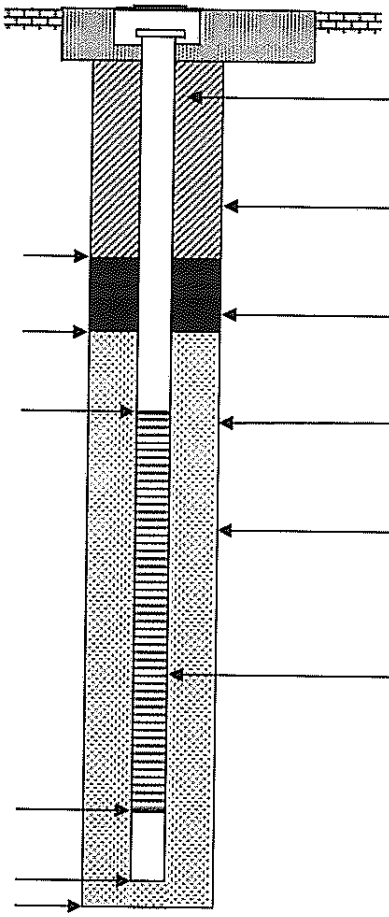
MONITOR WELL CROSS SECTION

AS-2

CLIENT:	Halstead Contractors	**File No.:**	212201283
LOCATION:	Former Medical Center BP	**Top of Riser Elevation (feet):**	94.45
	1098 Ross Clark Circle	**Screened Interval (feet):**	33.87-31.87
	Dothan, AL	**Date Installed:**	6/21/2011

ELEVATION* (feet)

GROUND SURFACE: 94.87
TOP OF RISER PIPE: 94.45



TOP OF SEAL: 38.87
BOTTOM OF SEAL: 37.87
TOP OF SCREEN: 33.87
BOTTOM OF SCREEN: 31.87
BOTTOM OF WELL SUMP: 31.37
BOTTOM OF BOREHOLE: 31.37

FLUSH MOUNTED COVER
PVC CLEAN-OUT CAP
RISER PIPE:
2" Diameter Sch. 40 PVC

GROUT:
Cement-Bentonite Mixture

WELL SEAL:
3/8" Bentonite Pellets

BOREHOLE DIAMETER:
6 inches

GRADED SAND PACK:
20/40

SCREEN PIPE:
2" Diameter Sch. 40 PVC

SCREEN SLOT SIZE:
0.01"

NOT TO SCALE

REMARK: Recovery well for Air Sparge remediation sysytem

***-Elevations are referenced to:** Top of casing of Monitor well MW-7

Stantec Consulting Corporation

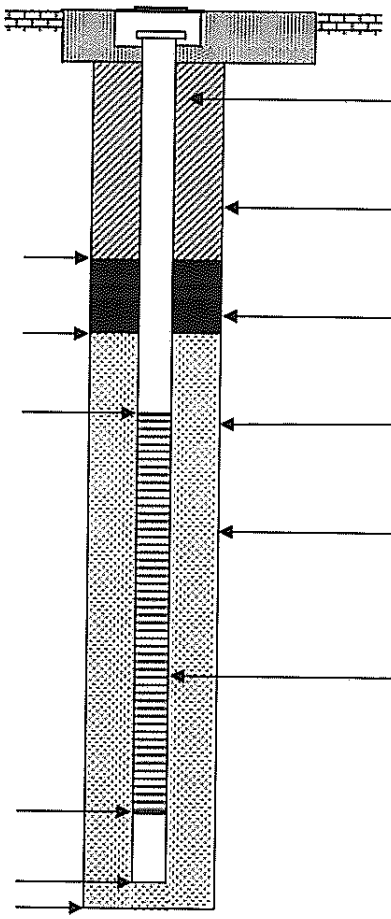
MONITOR WELL CROSS SECTION

AS-3

CLIENT:	Halstead Contractors	**File No.:**	212201283
LOCATION:	Former Medical Center BP	**Top of Riser Elevation (feet):**	94.56
	1098 Ross Clark Circle	**Screened Interval (feet):**	33.31-35.31
	Dothan, AL	**Date Installed:**	6/22/2011

ELEVATION* (feet)

GROUND SURFACE: 94.81
TOP OF RISER PIPE: 94.56



TOP OF SEAL: 39.81
BOTTOM OF SEAL: 37.81
TOP OF SCREEN: 35.31
BOTTOM OF SCREEN: 33.31
BOTTOM OF WELL SUMP: 32.81
BOTTOM OF BOREHOLE: 32.81

FLUSH MOUNTED COVER
PVC CLEAN-OUT CAP
RISER PIPE:
2" Diameter Sch. 40 PVC

GROUT:
Cement-Bentonite Mixture

WELL SEAL:
3/8" Bentonite Pellets

BOREHOLE DIAMETER:
6 inches

GRADED SAND PACK:
20/40

SCREEN PIPE:
2" Diameter Sch. 40 PVC

SCREEN SLOT SIZE:
0.01"

NOT TO SCALE

REMARK: Recovery well for Air Sparge remediation sysytem

***-Elevations are referenced to:** Top of casing of Monitor well MW-7

PROJECT: **CVS-Dothan**
LOCATION: **Dothan, AL**
PROJECT NUMBER: **212201283**

WELL / PROBEHOLE / BOREHOLE NO:
PAGE 1 OF 2 **LIF-05**

Stantec

DRILLING: STARTED: **3/22/18** COMPLETED: **3/22/18**
INSTALLATION: STARTED: **NA** COMPLETED: **NA**
DRILLING COMPANY: **Dakota**
DRILLING EQUIPMENT: **Geoprobe 6620DT**
DRILLING METHOD: **Direct Push**
SAMPLING EQUIPMENT: **Macrocore**

NORTHING (ft): NA EASTING (ft): NA
GROUND ELEV (ft): NA TOC ELEV (ft): NA
INITIAL DTW (ft): **22** BOREHOLE DEPTH (ft): **45**
STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): NA
WELL CASING DIA. (in): **---** BOREHOLE DIA.(in): **2**
LOGGED BY: **Mike Pilot** CHECKED BY: **Rachel Norman**

Depth (feet)	Graphic Log	USCS	Description	Sample	Soil Sample	Measured Recovery (feet)	Headspace PID (units)	Depth (feet)
			FILL				NA	
		ML	**CLAY WITH TRACE FINES** ; ML; orange; low-medium plasticity; no odor; black mineral deposits			3.75/5	0.5	
5							0.5	5
		ML	**SILTY CLAY** ; ML; tan; low plasticity; no odor; red mineral deposits			5/5	0.5	
			@ 9' fines increase					
10							0.0	10
		ML	**SILTY CLAY** ; ML; light gray with some brown; no odor			3/3		
		SM	**SAND WITH TRACE SILT** ; SM; red; fine-grained; no odor				0.0	
		CL	**CLAY** ; CL; gray to tan; medium plasticity; no odor; red mineral deposits				0.0	
		SM	**SAND WITH TRACE SILT** ; SM; red; no odor; very fine to fine grained			2/2	0.0	
15								15
		CL	**CLAY** ; CL; tan; high plasticity; no odor; red mineral deposits				1.8	
						4/4	28.5	
		SM	**SAND WITH TRACE SILT** ; SM; red; slight odor; very fine to fine grained				1508	20
20		ML	**SILTY CLAY** ; ML; tan; moist; very strong odor; red mineral deposits			4/4		
			Wet @ 22'		LIF-05-Soil-20180322-22' @ 1225		4486	▽
		SM	**SAND WITH TRACE SILT** ; SM; red; very fine-grained; moist; strong odor				3463	
25		ML	**SILTY CLAY** ; ML; tan; very strong odor; red mineral deposits			4/4		25
							3784	
		ML	**SILTY SAND WITH SOME FINES** ; ML; red; loose; wet; very strong petroleum odor				1576	
						4/4		
30		ML	**SILTY CLAY** ; ML; tan; low plasticity; strong odor; red mineral deposits				2076	30
		ML	**SILTY SAND WITH SOME FINES** ; ML; red; loose; wet; very strong petroleum odor				1387	
						2.5/4		
		ML	**SILTY CLAY** ; ML; tan; low plasticity; slight odor; red mineral deposits				1451	
35		ML	**SILTY SAND WITH SOME FINES** ; ML; red; low plasticity; wet; strong odor; stiffness increases with depth				424	35
						3/3		
							1386	
		SM	**SAND AND SILT MIXTURE** ; SM; red; loose; wet; very fine to medium grained, odor				381	
			@ 39' clay and sand mix			3/3		

GEO FORM 304 DOTHAN1.GPJ STANTEC ENVIRO TEMPLATE 010509.GDT 4/27/18

PROJECT: **CVS-Dothan**
LOCATION: **Dothan, AL**
PROJECT NUMBER: **212201283**

WELL / PROBEHOLE / BOREHOLE NO:
PAGE 2 OF 2 **LIF-05**

Stantec

DRILLING: STARTED: **3/22/18** COMPLETED: **3/22/18**
INSTALLATION: STARTED: **NA** COMPLETED: **NA**
DRILLING COMPANY: **Dakota**
DRILLING EQUIPMENT: **Geoprobe 6620DT**
DRILLING METHOD: **Direct Push**
SAMPLING EQUIPMENT: **Macrocore**

NORTHING (ft): NA EASTING (ft): NA
GROUND ELEV (ft): NA TOC ELEV (ft): NA
INITIAL DTW (ft): **22** BOREHOLE DEPTH (ft): **45**
STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): NA
WELL CASING DIA. (in): **---** BOREHOLE DIA.(in): **2**
LOGGED BY: **Mike Pilot** CHECKED BY: **Rachel Norman**

Depth (feet)	Graphic Log	USCS	Description	Sample	Soil Sample	Measured Recovery (feet)	Headspace PID (units)	Depth (feet)
		SW	**SAND WITH CLAY MIXTURE** ; SW; well graded; very fine to course grained. magenta mineral deposits, medium density, odor				656 680	
		SW	**SAND WITH CLAY MIXTURE** ; SW; white; medium to coarse-grained; medium dense; strong odor; red mineral deposits, Clay content decreases with depth		LIF-05-Soil-20180322-45' @ 1220	4/4	663	
45			Borehole terminated at 45 feet.					45

GEO FORM 304 DOTHAN1.GPJ STANTEC ENVIRO TEMPLATE 010509.GDT 4/27/18

APPENDIX D
CORRECTIVE ACTION SYSTEM EFFECTIVENESS MONITORING REPORT

SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name:	Former Circle (Medical Center) BP		
Facility I. D. No.	20503-069-002586	**Incident No.**	UST98-09-01
Year:	2019	**Reporting Period:**	Nov. 2018 - Feb. 2019
Consultant:	Stantec Consulting Services Inc.	**Project Manager:**	Erin O'Malley

Section 1 - Summary of Corrective Action

Groundwater:

	Pump & Treat		Total Fluid Pumps (elec)		Product Only Skimmer Pumps (elec)
			Total Fluid Pumps (pneu)		Product Only Skimmer Pumps (pneu)
					Product Only Skimmer Pumps (other)
	Air Sparging				
	Multiphase Extraction System		With Off-gas Treatment		Without Off-gas Treatment

Recovery Trenches: 585 Length (feet) 2 Width (feet) 2 Depth (feet)

Number of Groundwater Recovery Wells: Number of MPE Wells:

Number of Air Injection Wells: 3

Number of Air Extraction Wells: 5

Startup Dates: Groundwater Pump & Treat | Multiphase Extraction System | Bioventing

Type of Water Treatment System:		Packed-Tower Stripper				Tray-Type Stripper	
		Carbon		Diffuser		Other:	
Disposition of Treated Water:		Infiltration Gallery/Wells				Sanitary Sewer	
		Off-site		NPDES		Other:	

Soil:

	Vapor Extraction System		With Off-gas Treatment			Without Off-gas Treatment	
Number of Vapor Extraction Wells:	5	Type:		Carbon		Thermox	Catox
	Bioventing System						
Number of Bioventing Wells:							

Comments:	The system consists of a soil vapor extraction (SVE) system from MK.
	Air sparge (AS) system installed August 17, 2011 to optimize recovery
	AS system shut down on February 22, 2012, due to free product.
	AS turned back on September 17, 2014; off for repairs April 6 through June 22, 2016
	Approval to bypass the carbon on the SVE system on August 9, 2016.
	AS system off/repairs required March 7, 2017. SVE system shut off per ADEM on March 14, 2017.

Date System Installed:	11/07/05	System Startup Date:	11/08/05	

SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name:	Former Circle (Medical Center) BP		
Facility I. D. No.	20503-069-002586	**Incident No.**	UST98-09-01
Year:	2019	**Reporting Period:**	Nov. 2018 - Feb. 2019
Consultant:	Stantec Consulting Services Inc.	**Project Manager:**	Erin O'Malley

Section 1 - Summary of Corrective Action (continued)

Major Equipment On-site:	Brand	Serial Number	Type	Capacity	Warranty Expiration Date
Skimmer Pumps:					
Groundwater Pumps:					
Pretreatment/Filter:					
Air Stripper:					
Transfer Pumps:					
Air Compressor:	Becker	KDT-3.1	Oil-less	10 HP	08/17/12
Blower/Vacuum Pump:	MK	MK9841		8 HP	Expired
Oil-Water Separator:					
Multiphase Extraction.:					

	Brand	Serial Number	Unit Size
Vapor Phase Carbon:			
Water Phase Carbon:			

Enclosure Type:		Fence		Building		Skid		Other:	

Telemetry:	Model Number:	None	Serial Number:	

Comments: The equipment onsite consists of a SVE system and air sparge system from MK Environmental. The SVE system consists of a 8 HP Gast regenerative blower to extract vapors. The A/S system was installed August 17, 2011 and consists of a 10 HP oil-less Becker compressor. The equipment is housed in a 12 x 14 foot framed equipment building. The system components are interlocked with a control panel equipped with an hour meter. The SVE system is equipped with a phase monitor equipped with an auto-restart and timer to allow the system to be re-started in the event of a power failure.

SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name:	Former Circle (Medical Center) BP		
Facility I. D. No.	20503-069-002586	**Incident No.**	UST98-09-01
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Consultant:	Stantec Consulting Services Inc.	**Project Manager:**	Erin O'Malley

Section 2 - Site Map/System Layout

Attach a map which shows the system layout, well locations, adjacent properties, north arrow, buildings, etc.

Additionally, provide a treatment schematic drawing.

Section 3 - Well Inventory Table (Onsite and Offsite Wells)

Monitoring Wells

Well Number	Date Installed	Diameter (inches)	Screened Interval (feet)		Well Number	Date Installed	Diameter (inches)	Screened Interval (feet)	
MW-1	12/02/98	2	20.30	39.70	**MW-9**	04/18/01	2	8.56	33.03
MW-2	12/02/98	2	16.56	36.71	**MW-10**	04/18/01	2	8.67	33.18
MW-3	12/03/98	2	10.30	29.65	**MW-11**	04/18/01	2	8.81	33.19
MW-4	12/03/98	2	10.32	34.70	**MW-12**	04/18/01	2	13.68	43.18
MW-5	02/15/00	2	10.28	29.63					
MW-6	02/16/00	2	10.20	29.64					
MW-7	02/16/00	2	10.30	29.60					
MW-8	02/16/00	2	44.08	53.36					

Recovery Wells

Well Number	Date Installed	Diameter (inches)	Screened Interval (feet)		Well Number	Date Installed	Diameter (inches)	Screened Interval (feet)	

MultiPhase Extraction Wells

Well Number	Date Installed	Diameter (inches)	Screened Interval (feet)		Well Number	Date Installed	Diameter (inches)	Screened Interval (feet)	

Injection (Air Sparge) Wells

Well Number	Date Installed	Diameter (inches)	Screened Interval (feet)		Well Number	Date Installed	Diameter (inches)	Screened Interval (feet)	
AS-1	06/22/11	2	59.5	61.5					
AS-2	06/21/11	2	61.0	63.0					
AS-3	06/22/11	2	59.5	61.5					

Additional Monitoring/Other Wells (SVE Wells)

Well Number	Date Installed	Diameter (inches)	Screened Interval (feet)		Well Number	Date Installed	Diameter (inches)	Screened Interval (feet)	
VZ-13	3/20/03	4	15.70	35.16	**VZ-17**	3/21/03	4	15.45	34.82
VZ-14	3/20/03	4	16.14	35.56					
VZ-15	3/20/03	4	17.39	36.75					
VZ-16	3/20/03	4	15.86	35.22					

SYSTEM-EFFECTIVENESS MONITORING REPORT

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Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

Section 4 - System Down Time Summary (Year to Date)					
Year	Qtr	Dates		No. Days	Explanation of Down Time
		From	To		(Indicate Corrective Measures Taken)
2006	1			0	
2006	2			0	
2006	3			0	
2006	4			0	
2007	3			0	
2007	4			0	
2008	1			0	
2008	2			0	
2009	1			0	
2009	2			0	
2009	3			0	
2009	4			0	
2010	1			0	
2010	2			0	
2010	3			0	
2010	4			0	
2011	1			0	
2011	2			0	
2011	3			0	
2011	4	10/06/11	10/27/11	11	SVE operating; A/S down; repaired A/S electrical panel
2012	1	01/01/12	01/31/12	0	
2012	2	02/01/12	02/22/12	0	AS unit shut dowm; SVE still operation for free product recovery
2012	2	02/23/12	4/31/12	0	
2012	2	05/01/12	07/31/12	0	
2012	3	08/01/12	10/31/12	0	
2012	4	11/01/12	01/31/13	0	
Days System Not Operating:			This Period	0.0	Year to Date 0.0

SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

Section 4 - System Down Time Summary (Year to Date)					
Year	Qtr	Dates		No. Days	Explanation of Down Time
		From	To		(Indicate Corrective Measures Taken)
2013	3	07/01/13	07/11/13	10	Re-start SVE system; AS system off pending UIC permit approval
2013	3	07/12/13	08/10/13	0	
2013	3	08/11/13	08/30/13	0	
2013	3	08/31/13	09/18/13	0	
2013	3	09/19/13	10/09/13	0	
2013	4	10/10/13	10/30/13	0	
2013	4	10/31/13	11/12/13	0	
2013	4	11/13/13	12/18/13	0	
2013	4	12/19/13	01/08/14	0	
2014	1	01/09/14	01/20/14	0	
2014	1	01/21/14	03/05/14	0	
2014	1	03/06/14	03/19/14	0	
2014	1	03/19/14	03/19/14	1	HVE event
2014	1	03/20/14	03/27/14	0	
2014	2	03/28/14	04/07/14	0	
2014	2	04/08/14	05/20/14	0	
2014	2	05/21/14	06/09/14	0	
2014	2	06/10/14	06/10/14	1	HVR event
2014	2	06/11/14	06/25/14	0	
2014	3	06/26/14	07/10/14	0	
2014	3	07/11/14	08/13/14	0	
2014	3	08/14/14	08/27/14	0	
2014	3	08/08/14	09/11/14	0	
2014	3	09/12/14	09/17/14	0	Turn on AS
2014	3	09/18/14	10/03/14	0	
2014	3	10/04/14	10/28/14	0	
2014	4	10/29/14	11/22/14	0	
2014	4	11/23/14	12/18/14	0	
2015	1	12/19/14	01/07/15	0	
2015	1	01/08/15	01/17/15	0	
2015	2	01/18/15	02/19/15	0	
2015	2	02/20/15	04/02/15	0	
2015	2	04/03/15	04/08/15	0	AS off, SVE on, trouble shoot AS
2015	2	04/09/15	04/22/15	0	AS off, SVE on, take apart AS, clean
2015	2	04/23/15	05/07/15	0	AS off, SVE on, wait for new parts for AS
2015	2	05/08/15	05/18/15	0	AS returned to operation, SVE on
2015	3	05/19/15	06/16/15	0	
2015	3	06/17/15	06/30/15	0	

SYSTEM-EFFECTIVENESS MONITORING REPORT

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Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

Section 4 - System Down Time Summary (Year to Date)					
Year	Qtr	Dates		No. Days	Explanation of Down Time
		From	To		(Indicate Corrective Measures Taken)
2015	3	07/01/15	07/14/15	0	
2015	3	07/15/15	07/30/15	0	
2015	3	07/31/15	08/05/15	0	
2015	3	08/06/15	09/02/15	0	
2015	3	09/03/15	09/22/15	0	
2015	3	09/22/15	09/23/15	0	HVR Event
2015	3	09/24/15	10/06/15	0	
2015	3	10/07/15	11/10/15	0	
2015	4	11/11/15	12/02/15	0	
2015	4	12/03/15	12/16/15	0	
2015	4	12/17/15	01/14/16	0	
2016	1	01/15/16	02/03/16	0	
2016	1	02/04/16	02/24/16	0	
2016	1	02/25/16	03/08/16	0	
2016	1	03/09/16	03/31/16	0	
2016	1	04/01/16	04/06/16	0	AS off, needs repairs
2016	1	04/07/16	04/25/16	0	
2016	2	04/26/16	05/23/16	0	Hour meter rolled over since last O&M
2016	2	05/24/16	06/03/16	0	Hour meter not functioning properly
2016	2	06/04/16	06/22/16	0	AS repaired and returned to operation
2016	2	06/04/16	06/23/16	0	
2016	2	06/24/16	07/07/16	0	HVE Event
2016	2	07/08/16	07/27/16	0	Sparge system down on arrival; restarted
2016	3	07/28/16	08/09/16	0	Sparge system down on arrival; restarted
2016	3	08/10/16	08/23/16	0	Sparge system down on arrival; restarted
2016	3	08/24/16	09/07/16	0	
2016	3	09/08/16	09/20/16	0	Sparge system down on arrival; restarted
2016	3	09/21/16	10/06/16	0	Sparge system down on arrival; restarted
2016	3	10/07/16	10/19/16	0	
2016	4	10/19/16	11/03/16	0	
2016	4	11/03/16	11/15/16	0	
2016	4	11/15/16	12/13/16	0	
2016	4	12/13/16	12/20/16	0	Sparge system down on arrival; restarted
2016	4	12/20/16	01/09/17	0	
2017	4	01/09/17	01/24/17	0	
2017	4	01/24/17	02/08/17	0	Sparge system down on arrival; restarted
2017	1	02/08/17	02/20/17	0	
2017	1	02/20/17	03/07/17	0	
2017	1	03/07/17	03/14/17	0	AS off, needs repairs
2017	1	03/14/17	04/30/17	0	SVE system shut down per ADEM
Days System Not Operating:			This Period	0.0	Year to Date 0.0

SYSTEM-EFFECTIVENESS MONITORING REPORT

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Section 5 - Site Visit Summary							
Date	Maintenance (Section 7)	Sampling (Section 6)	Sched. System Monitoring	Other	Name	Company	Title
11/08/05	no	yes	no	Start-up	D. Carroll	SECOR	Technician
11/10/05	no	no	no	Routine	D. Carroll	SECOR	Technician
03/07/06	no	no	no	Re-Start	D. Carroll	SECOR	Technician
03/30/06	no	no	yes	Routine	D. Carroll	SECOR	Technician
04/18/06	no	no	yes	Re-Start	D. Carroll	SECOR	Technician
05/03/06	no	yes	yes	Qtr Sample	D. Carroll	SECOR	Technician
05/18/06	no	no	yes	Routine	D. Carroll	SECOR	Technician
07/11/06	no	no	yes	Routine	D. Carroll	SECOR	Technician
07/25/06	yes	no	yes	Routine	D. Carroll	SECOR	Technician
08/15/06	no	yes	yes	Qtr Sample	D. Carroll	SECOR	Technician
08/31/06	yes	no	yes	Routine	D. Carroll	SECOR	Technician
09/26/06	yes	no	yes	Routine	D. Carroll	SECOR	Technician
10/25/06	yes	yes	yes	Qtr Sample	D. Carroll	SECOR	Technician
11/09/06	yes	no	yes	Routine	D. Carroll	SECOR	Technician
11/29/06	yes	no	yes	Routine	D. Carroll	SECOR	Technician
12/28/06	yes	no	yes	Routine	D. Carroll	SECOR	Technician
01/17/07	yes	no	yes	Routine	D. Carroll	SECOR	Technician
02/14/07	yes	yes	yes	Qtr Sample	D. Carroll	SECOR	Technician
08/30/07	yes	no	yes	Routine	D. Carroll	SECOR	Technician
09/13/07	yes	no	yes	Routine	D. Carroll	SECOR	Technician
10/02/07	yes	yes	yes	Routine	D. Carroll	SECOR	Technician
10/03/07	no	no	yes	Qtr Sample	D. Carroll	SECOR	Technician
11/29/07	yes	no	yes	Routine	D. Carroll	SECOR	Technician
12/18/07	no	yes	yes	Qtr Sample	D. Carroll	SECOR	Technician
01/17/08	no	no	yes	Routine	D. Carroll	SECOR	Technician
02/12/08	no	no	yes	Routine	D. Carroll	SECOR	Technician
02/26/08	yes	no	yes	Routine	D. Carroll	SECOR	Technician
03/12/08	no	no	yes	Routine	D. Carroll	SECOR	Technician
04/02/08	no	no	yes	Routine	D. Carroll	SECOR	Technician
04/23/08	no	yes	yes	Qtr Sample	D. Carroll	SECOR	Technician
05/29/08	yes	no	yes	Routine	D. Carroll	STANTEC	Technician
06/17/08	no	no	yes	Routine	D. Carroll	STANTEC	Technician
07/03/08	no	yes	yes	Routine	D. Carroll	STANTEC	Technician
07/10/08	no	yes	yes	Qtr Sample	D. Carroll	STANTEC	Technician
01/14/09	no	no	yes	Routine	D. Carroll	STANTEC	Technician
02/25/09	no	no	yes	Routine	D. Carroll	STANTEC	Technician
03/18/09	no	yes	yes	Routine	D. Carroll	STANTEC	Technician
03/19/09	no	yes	yes	Qtr Sample	D. Carroll	STANTEC	Technician
03/30/09	no	no	yes	Routine	D. Carroll	STANTEC	Technician
04/22/09	no	no	yes	Routine	D. Carroll	STANTEC	Technician
06/02/09	no	no	yes	Routine	D. Carroll	STANTEC	Technician

SYSTEM-EFFECTIVENESS MONITORING REPORT

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Section 5 - Site Visit Summary							
Date	Maintenance (Section 7)	Sampling (Section 6)	Sched. System Monitoring	Other	Name	Company	Title
06/24/09	no	yes	yes	Routine	D. Carroll	STANTEC	Technician
06/25/09	no	yes	yes	Qtr Sample	D. Carroll	STANTEC	Technician
07/22/09	no	no	yes	Routine	D. Carroll	STANTEC	Technician
08/19/09	no	no	yes	Routine	D. Carroll	STANTEC	Technician
09/16/09	no	yes	yes	Routine	D. Carroll	STANTEC	Technician
09/17/09	no	yes	yes	Routine	D. Carroll	STANTEC	Technician
09/28/09	no	no	yes	Routine	D. Carroll	STANTEC	Technician
10/28/09	no	no	yes	Routine	D. Carroll	STANTEC	Technician
11/30/09	no	no	yes	Routine	D. Carroll	STANTEC	Technician
12/15/09	no	no	yes	Routine	D. Carroll	STANTEC	Technician
06/15/10	no	no	no	Routine	D. Carroll	STANTEC	Technician
07/14/10	no	no	no	Routine	D. Carroll	STANTEC	Technician
08/25/10	no	no	no	Routine	D. Carroll	STANTEC	Technician
08/31/10	no	yes	yes	Routine	D. Carroll	STANTEC	Technician
09/23/10	no	no	yes	Routine	D. Carroll	STANTEC	Technician
10/06/10	no	no	yes	Routine	D. Carroll	STANTEC	Technician
10/28/10	yes	no	yes	Routine	D. Carroll	STANTEC	Technician
11/09/10	yes	no	yes	Routine	D. Carroll	STANTEC	Technician
11/30/10	no	no	yes	Routine	D. Carroll	STANTEC	Technician
12/01/10	no	yes	yes	Qtr Sample	D. Carroll	STANTEC	Technician
10/06/11	no	No	Yes	Routine	D. Carroll	STANTEC	Technician
10/27/11	yes	No	Yes	Routine	D. Carroll	STANTEC	Technician
11/20/11	No	yes	yes	Qtr Sample	G. Budd	STANTEC	Geologist
11/21/11	No	No	Yes	Routine	D. Carroll	STANTEC	Technician
12/15/11	No	no	Yes	Routine	D. Carroll	STANTEC	Technician
01/05/12	No	No	Yes	Routine	D. Carroll	STANTEC	Technician
01/17/12	No	No	yes	Routine	D. Carroll	STANTEC	Technician
01/18/12	No	no	no	HVE	D. Carroll	STANTEC	Technician
01/24/12	No	Yes	Yes	Routine	D. Carroll	STANTEC	Technician
01/25/12	No	Yes	no	Qtr Sample	D. Carroll	STANTEC	Technician
02/22/12	No	No	no	Qtr Sample	D. Carroll	STANTEC	Technician
04/06/12	No	No	no	Qtr Sample	D. Carroll	STANTEC	Technician
04/18/12	No	No	no	Qtr Sample	D. Carroll	STANTEC	Technician
05/10/12	No	No	no	Qtr Sample	D. Carroll	STANTEC	Technician
01/25/12	No	No	no	Qtr Sample	D. Carroll	STANTEC	Technician
01/25/12	No	No	no	Qtr Sample	D. Carroll	STANTEC	Technician
02/22/12	Yes	no	no	Routine	D. Carroll	STANTEC	Technician
04/06/12	no	no	yes	Routine	D. Carroll	STANTEC	Technician
04/18/12	yes	no	yes	Carbon	D. Carroll	STANTEC	Technician
04/19/12	no	no	yes	HVE	D. Carroll	STANTEC	Technician
05/10/12	no	yes	yes	Qtr Sample	G. Budd	STANTEC	Geologist

SYSTEM-EFFECTIVENESS MONITORING REPORT

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Section 5 - Site Visit Summary							
Date	Maintenance (Section 7)	Sampling (Section 6)	Sched. System Monitoring	Other	Name	Company	Title
05/17/12	no	yes	yes	O/M	D. Carroll	STANTEC	Technician
05/24/12	no	no	no	HVE	D. Carroll	STANTEC	Technician
06/24/12	no	no	yes	O/M	D. Carroll	STANTEC	Technician
06/28/12	no	no	no	HVE	D. Carroll	STANTEC	Technician
08/02/12	no	yes	yes	O/M	D. Carroll	STANTEC	Technician
08/14/12	no	no	no	HVE	D. Carroll	STANTEC	Technician
08/24/12	no	no	yes	O/M	D. Carroll	STANTEC	Technician
09/06/12	no	no	yes	O/M	D. Carroll	STANTEC	Technician
10/17/12	no	no	yes	O/M	D. Carroll	STANTEC	Technician
10/18/12	no	no	no	HVE	D. Carroll	STANTEC	Technician
10/26/12	no	yes	yes	O/M	D. Carroll	STANTEC	Technician
11/20/12	no	no	no	HVE	D. Carroll	STANTEC	Technician
12/05/12	Yes	no	yes	O/M	D. Carroll	STANTEC	Technician
01/23/13	no	no	no	HVE	D. Carroll	STANTEC	Technician
01/29/13	no	yes	no	Qtr Sample	D. Carroll	STANTEC	Technician
01/30/13	yes	yes	yes	Air/OM	D. Carroll	STANTEC	Technician
07/11/13	yes	no	yes	OM	D. Carroll	STANTEC	Technician
08/10/13	yes	no	yes	OM	D. Carroll	STANTEC	Technician
08/30/13	no	no	yes	OM	D. Carroll	STANTEC	Technician
09/18/13	no	no	yes	OM	D. Carroll	STANTEC	Technician
10/08/13	no	yes	yes	GWM	D. Carroll	STANTEC	Technician
10/09/13	no	yes	yes	Air/OM	D. Carroll	STANTEC	Technician
10/30/13	yes	no	yes	OM	D. Carroll	STANTEC	Technician
11/12/13	yes	no	yes	OM	D. Carroll	STANTEC	Technician
12/18/13	yes	no	yes	OM	D. Carroll	STANTEC	Technician
01/08/14	no	yes	yes	GWM	D. Carroll	STANTEC	Technician
01/09/14	no	yes	yes	Air/OM	D. Carroll	STANTEC	Technician
01/20/14	no	no	yes	OM	D. Carroll	STANTEC	Technician
03/05/14	no	no	yes	OM	D. Carroll	STANTEC	Technician
03/19/14	yes	no	yes	HVE	D. Carroll	STANTEC	Technician
03/27/14	no	yes	yes	GWM	G. Budd	STANTEC	Geologist
03/27/14	no	yes	yes	Air/OM	D.Carroll	STANTEC	Technician
04/07/14	no	no	yes	OM	D.Carroll	STANTEC	Technician
05/20/14	yes	no	yes	OM	D.Carroll	STANTEC	Technician
06/09/14	yes	no	yes	OM	D.Carroll	STANTEC	Technician
06/10/14	yes	no	yes	HVE	D.Carroll	STANTEC	Technician
06/25/14	yes	yes	yes	OM	D.Carroll	STANTEC	Technician
07/10/14	yes	no	yes	OM	D.Carroll	STANTEC	Technician
08/13/14	yes	no	yes	OM	D.Carroll	STANTEC	Technician
08/27/14	yes	no	yes	OM	D.Carroll	STANTEC	Technician
09/11/14	yes	no	yes	OM	D.Carroll	STANTEC	Technician

SYSTEM-EFFECTIVENESS MONITORING REPORT

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Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
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Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

Section 5 - Site Visit Summary							
Date	Maintenance (Section 7)	Sampling (Section 6)	Sched. System Monitoring	Other	Name	Company	Title
09/17/14	yes	no	yes	OM	D.Carroll	STANTEC	Technician
10/03/14	yes	no	yes	OM	D.Carroll	STANTEC	Technician
10/28/14	yes	no	yes	OM	D.Carroll	STANTEC	Technician
10/29/14	yes	yes	yes	OM	D.Carroll	STANTEC	Technician
11/24/14	no	no	yes	OM	D.Carroll	STANTEC	Technician
12/18/14	no	no	yes	OM	D.Carroll	STANTEC	Technician
01/07/15	no	no	yes	OM	D.Carroll	STANTEC	Technician
02/19/15	no	yes	yes	OM	D.Wilcox	STANTEC	Project Mgr.
04/02/15	no	no	yes	OM	D.Carroll	STANTEC	Technician
04/08/15	yes	no	yes	OM	D.Carroll	STANTEC	Technician
04/22/15	yes	no	yes	OM	D.Carroll	STANTEC	Technician
05/07/15	yes	yes	yes	OM	D.Carroll	STANTEC	Technician
05/18/15	yes	no	yes	OM	D.Carroll	STANTEC	Technician
06/16/15	no	no	yes	OM	D.Carroll	STANTEC	Technician
06/30/15	no	no	yes	OM	D.Carroll	STANTEC	Technician
07/14/15	no	no	yes	OM	D.Carroll	STANTEC	Technician
07/30/15	no	no	yes	OM	D.Carroll	STANTEC	Technician
08/05/15	no	yes	yes	OM	D.Carroll	STANTEC	Technician
09/02/15	yes	no	yes	OM	D.Carroll	STANTEC	Technician
09/22/15	yes	no	yes	OM	D.Carroll	STANTEC	Technician
09/23/15	no	no	no	HVE	D.Carroll	STANTEC	Technician
10/06/15	yes	no	yes	OM	D.Carroll	STANTEC	Technician
11/10/15	yes	yes	yes	Sampling/Air/OM	C. Barnes	STANTEC	Technician
12/02/15	yes	no	yes	OM	D.Carroll	STANTEC	Technician
12/16/15	yes	no	yes	OM	D.Carroll	STANTEC	Technician
01/14/16	yes	no	yes	OM	D.Carroll	STANTEC	Technician
02/03/16	yes	yes	yes	Air/OM	D.Carroll	STANTEC	Technician
02/09/16	no	yes	no	Sampling	D.Carroll	STANTEC	Technician
02/24/16	yes	no	yes	OM	D.Carroll	STANTEC	Technician
03/08/16	yes	no	yes	OM	D.Carroll	STANTEC	Technician
03/31/16	yes	no	yes	OM	D.Carroll	STANTEC	Technician
04/06/16	yes	no	yes	OM	D.Carroll	STANTEC	Technician
04/07/16	no	no	no	OM	D.Carroll	STANTEC	Technician
04/25/16	yes	no	yes	Air/OM	D.Carroll	STANTEC	Technician
04/26/16	no	yes	no	Sampling	D.Carroll	STANTEC	Technician
04/27/16	no	yes	no	Sampling	D.Carroll	STANTEC	Technician
05/03/16	no	no	no	Shut off SVE	D.Carroll	STANTEC	Technician
05/06/16	no	no	no	Turn on SVE	D. Carroll	STANTEC	Technician
05/23/16	yes	no	yes	OM	D.Carroll	STANTEC	Technician
06/03/16	no	no	yes	OM	D.Carroll	STANTEC	Technician
06/22/16	yes	no	no	AS repairs	D.Carroll	STANTEC	Technician

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Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

Section 5 - Site Visit Summary							
Date	Maintenance (Section 7)	Sampling (Section 6)	Sched. System Monitoring	Other	Name	Company	Title
06/23/16	no	no	yes	OM	G. Ackerman	STANTEC	Technician
07/07/16	yes	no	yes	OM	W. Cline	STANTEC	Technician
07/08/16	no	no	no	HVE	W. Cline	STANTEC	Technician
07/27/16	yes	no	yes	OM	W. Cline	STANTEC	Technician
07/28/16	no	yes	yes	Sampling	M. Buckreis	STANTEC	Technician
08/09/16	yes	no	yes	OM	W. Cline	STANTEC	Technician
08/23/16	yes	no	yes	OM	W. Cline	STANTEC	Technician
09/07/16	yes	no	yes	OM	W. Cline	STANTEC	Technician
09/14-15/16	no	yes	no	Sampling	M. Buckreis	STANTEC	Technician
09/20/16	yes	no	yes	OM	W. Cline	STANTEC	Technician
09/21/16	no	no	no	HVE	W. Cline	STANTEC	Technician
10/06/16	yes	no	yes	OM	W. Cline	STANTEC	Technician
10/19/16	yes	no	yes	OM	W. Cline	STANTEC	Technician
11/03/16	yes	no	yes	OM	W. Cline	STANTEC	Technician
11/15/16	yes	no	yes	OM	W. Cline	STANTEC	Technician
12/12/16	no	yes	no	Sampling	M. Buckreis	STANTEC	Technician
12/13/16	no	yes	no	Sampling	M. Buckreis	STANTEC	Technician
12/13/16	yes	no	yes	OM	W. Cline	STANTEC	Technician
12/20/16	yes	no	yes	OM	W. Cline	STANTEC	Technician
12/21/16	no	no	no	HVE	W. Cline	STANTEC	Technician
01/09/17	yes	no	yes	OM	W. Cline	STANTEC	Technician
01/24/17	yes	no	yes	OM	W. Cline	STANTEC	Technician
02/08/17	yes	no	yes	OM	W. Cline	STANTEC	Technician
02/20/17	yes	no	yes	OM	W. Cline	STANTEC	Technician
03/06/17	no	yes	no	Sampling	M. Buckreis	STANTEC	Technician
03/07/17	no	yes	no	Sampling	M. Buckreis	STANTEC	Technician
03/07/17	yes	no	yes	OM	W. Cline	STANTEC	Technician
03/14/17	yes	no	yes	OM	W. Cline	STANTEC	Technician
05/31/17	no	yes	no	Sampling	M. Buckreis	STANTEC	Technician
11/19-20/2018	no	yes	no	Sampling	M. Buckreis	STANTEC	Technician
01/20-21/2019	no	yes	no	Sampling	M. Buckreis	STANTEC	Technician

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Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

Section 6 - History of Sampling (Current Year to Date)											
		Date of	EPA Method(s) and Sampling Location(s)						Sampled By		
Year	QTR	Sampling						Media	Name	Company	Title
2006	1	05/03/06	Precarbon	TO3				Air	D. Carroll	SECOR	Tech.
2006	1	05/03/06	Postcarbon	TO3				Air	D. Carroll	SECOR	Tech.
2006	1	05/03/06	MW-1	8021				GW	D. Carroll	SECOR	Tech.
2006	1	05/03/06	MW-2	8021				GW	D. Carroll	SECOR	Tech.
2006	1	05/03/06	MW-4	8021				GW	D. Carroll	SECOR	Tech.
2006	1	05/03/06	MW-5	8021				GW	D. Carroll	SECOR	Tech.
2006	1	05/03/06	MW-6	8021				GW	D. Carroll	SECOR	Tech.
2006	1	05/03/06	MW-8	8021				GW	D. Carroll	SECOR	Tech.
2006	1	05/03/06	MW-10	8021				GW	D. Carroll	SECOR	Tech.
2006	1	05/03/06	MW-11	8021				GW	D. Carroll	SECOR	Tech.
2006	1	05/03/06	MW-12	8021				GW	D. Carroll	SECOR	Tech.
2006	2	08/15/06	Precarbon	TO3				Air	D. Carroll	SECOR	Tech.
2006	2	08/15/06	Postcarbon	TO3				Air	D. Carroll	SECOR	Tech.
2006	2	08/16/06	MW-1	8021				GW	D. Carroll	SECOR	Tech.
2006	2	08/16/06	MW-2	8021				GW	D. Carroll	SECOR	Tech.
2006	2	08/16/06	MW-4	8021				GW	D. Carroll	SECOR	Tech.
2006	2	08/16/06	MW-5	8021				GW	D. Carroll	SECOR	Tech.
2006	2	08/16/06	MW-6	8021				GW	D. Carroll	SECOR	Tech.
2006	2	08/16/06	MW-8	8021				GW	D. Carroll	SECOR	Tech.
2006	2	08/16/06	MW-10	8021				GW	D. Carroll	SECOR	Tech.
2006	2	08/16/06	MW-11	8021				GW	D. Carroll	SECOR	Tech.
2006	2	08/16/06	MW-12	8021				GW	D. Carroll	SECOR	Tech.
2006	3	10/25/06	Precarbon	TO3				Air	D. Carroll	SECOR	Tech.
2006	3	10/25/06	Postcarbon	TO3				Air	D. Carroll	SECOR	Tech.
2006	3	10/25/06	MW-1	8021				GW	D. Carroll	SECOR	Tech.
2006	3	10/25/06	MW-2	8021				GW	D. Carroll	SECOR	Tech.
2006	3	10/25/06	MW-5	8021				GW	D. Carroll	SECOR	Tech.
2006	3	10/25/06	MW-6	8021				GW	D. Carroll	SECOR	Tech.
2006	3	10/25/06	MW-8	8021				GW	D. Carroll	SECOR	Tech.
2006	3	10/25/06	MW-10	8021				GW	D. Carroll	SECOR	Tech.
2006	3	10/25/06	MW-11	8021				GW	D. Carroll	SECOR	Tech.
2006	3	10/25/06	MW-12	8021				GW	D. Carroll	SECOR	Tech.
2006	4	02/14/07	Precarbon	TO3				Air	D. Carroll	SECOR	Tech.
2006	4	02/14/07	Postcarbon	TO3				Air	D. Carroll	SECOR	Tech.
2006	4	02/15/07	MW-1	8021				GW	D. Carroll	SECOR	Tech.
2006	4	02/15/07	MW-2	8021				GW	D. Carroll	SECOR	Tech.
2006	4	02/15/07	MW-4	8021				GW	D. Carroll	SECOR	Tech.
2006	4	02/15/07	MW-5	8021				GW	D. Carroll	SECOR	Tech.
2006	4	02/15/07	MW-6	8021				GW	D. Carroll	SECOR	Tech.
2006	4	02/15/07	MW-8	8021				GW	D. Carroll	SECOR	Tech.
2006	4	02/15/07	MW-10	8021				GW	D. Carroll	SECOR	Tech.

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Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

Section 6 - History of Sampling (Current Year to Date)											
		Date of	EPA Method(s) and Sampling Location(s)						Sampled By		
Year	QTR	Sampling						Media	Name	Company	Title
2006	4	02/15/07	MW-11	8021				GW	D. Carroll	SECOR	Tech.
2006	4	02/15/07	MW-12	8021				GW	D. Carroll	SECOR	Tech.
2007	3	10/02/07	Precarbon	TO3				Air	D. Carroll	SECOR	Tech.
2007	3	10/02/07	Postcarbon	TO3				Air	D. Carroll	SECOR	Tech.
2007	3	10/03/07	MW-1	8021				GW	D. Carroll	SECOR	Tech.
2007	3	10/03/07	MW-2	8021				GW	D. Carroll	SECOR	Tech.
2007	3	10/03/07	MW-5	8021				GW	D. Carroll	SECOR	Tech.
2007	3	10/03/07	MW-6	8021				GW	D. Carroll	SECOR	Tech.
2007	3	10/03/07	MW-8	8021				GW	D. Carroll	SECOR	Tech.
2007	3	10/03/07	MW-10	8021				GW	D. Carroll	SECOR	Tech.
2007	3	10/03/07	MW-11	8021				GW	D. Carroll	SECOR	Tech.
2007	3	10/03/07	MW-12	8021				GW	D. Carroll	SECOR	Tech.
2007	4	12/18/07	Precarbon	TO3				Air	D. Carroll	SECOR	Tech.
2007	4	12/18/07	Postcarbon	TO3				Air	D. Carroll	SECOR	Tech.
2007	4	12/18/07	MW-1	8021				GW	D. Carroll	SECOR	Tech.
2007	4	12/18/07	MW-2	8021				GW	D. Carroll	SECOR	Tech.
2007	4	12/18/07	MW-4	8021				GW	D. Carroll	SECOR	Tech.
2007	4	12/18/07	MW-5	8021				GW	D. Carroll	SECOR	Tech.
2007	4	12/18/07	MW-6	8021				GW	D. Carroll	SECOR	Tech.
2007	4	12/18/07	MW-8	8021				GW	D. Carroll	SECOR	Tech.
2007	4	12/18/07	MW-10	8021				GW	D. Carroll	SECOR	Tech.
2007	4	12/18/07	MW-11	8021				GW	D. Carroll	SECOR	Tech.
2007	4	12/18/07	MW-12	8021				GW	D. Carroll	SECOR	Tech.
2008	1	04/22/08	Precarbon	TO3				Air	D. Carroll	SECOR	Tech.
2008	1	04/22/08	Postcarbon	TO3				Air	D. Carroll	SECOR	Tech.
2008	1	04/23/08	MW-1	8260B				GW	D. Carroll	SECOR	Tech.
2008	1	04/23/08	MW-2	8260B				GW	D. Carroll	SECOR	Tech.
2008	1	04/23/08	MW-4	8260B				GW	D. Carroll	SECOR	Tech.
2008	1	04/23/08	MW-5	8260B				GW	D. Carroll	SECOR	Tech.
2008	1	04/23/08	MW-6	8260B				GW	D. Carroll	SECOR	Tech.
2008	1	04/23/08	MW-8	8260B				GW	D. Carroll	SECOR	Tech.
2008	1	04/23/08	MW-10	8260B				GW	D. Carroll	SECOR	Tech.
2008	1	04/23/08	MW-11	8260B				GW	D. Carroll	SECOR	Tech.
2008	1	04/23/08	MW-12	8260B				GW	D. Carroll	SECOR	Tech.
2008	1	07/03/08	Precarbon	TO3				Air	D. Carroll	STANTEC	Tech.
2008	1	07/03/08	Postcarbon	TO3				Air	D. Carroll	STANTEC	Tech.
2008	1	07/10/08	MW-1	8260B				GW	D. Carroll	STANTEC	Tech.
2008	1	07/10/08	MW-2	8260B				GW	D. Carroll	STANTEC	Tech.
2008	1	07/10/08	MW-4	8260B				GW	D. Carroll	STANTEC	Tech.
2008	1	07/10/08	MW-5	8260B				GW	D. Carroll	STANTEC	Tech.
2008	1	07/10/08	MW-6	8260B				GW	D. Carroll	STANTEC	Tech.

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Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

Section 6 - History of Sampling (Current Year to Date)											
		Date of	EPA Method(s) and Sampling Location(s)						Sampled By		
Year	QTR	Sampling						Media	Name	Company	Title
2008	1	07/10/08	MW-8	8260B				GW	D. Carroll	STANTEC	Tech.
2008	1	07/10/08	MW-10	8260B				GW	D. Carroll	STANTEC	Tech.
2008	1	07/10/08	MW-11	8260B				GW	D. Carroll	STANTEC	Tech.
2008	1	07/10/08	MW-12	8260B				GW	D. Carroll	STANTEC	Tech.
2009	1	3/19/09	Precarbon	TO3				Air	D. Carroll	STANTEC	Tech.
2009	1	3/19/09	Postcarbon	TO3				Air	D. Carroll	STANTEC	Tech.
2009	1	3/18/09	MW-1	8260B				GW	D. Carroll	STANTEC	Tech.
2009	1	3/18/09	MW-2	8260B				GW	D. Carroll	STANTEC	Tech.
2009	1	3/18/09	MW-4	8260B				GW	D. Carroll	STANTEC	Tech.
2009	1	3/18/09	MW-5	8260B				GW	D. Carroll	STANTEC	Tech.
2009	1	3/18/09	MW-6	8260B				GW	D. Carroll	STANTEC	Tech.
2009	1	3/18/09	MW-8	8260B				GW	D. Carroll	STANTEC	Tech.
2009	1	3/18/09	MW-10	8260B				GW	D. Carroll	STANTEC	Tech.
2009	1	3/18/09	MW-11	8260B				GW	D. Carroll	STANTEC	Tech.
2009	1	3/18/09	MW-12	8260B				GW	D. Carroll	STANTEC	Tech.
2009	2	6/24/09	Precarbon	TO3				Air	D. Carroll	STANTEC	Tech.
2009	2	6/24/09	Postcarbon	TO3				Air	D. Carroll	STANTEC	Tech.
2009	2	6/25/09	MW-1	8260B				GW	D. Carroll	STANTEC	Tech.
2009	2	6/25/09	MW-2	8260B				GW	D. Carroll	STANTEC	Tech.
2009	2	6/25/09	MW-4	8260B				GW	D. Carroll	STANTEC	Tech.
2009	2	6/25/09	MW-5	8260B				GW	D. Carroll	STANTEC	Tech.
2009	2	6/25/09	MW-6	8260B				GW	D. Carroll	STANTEC	Tech.
2009	2	6/25/09	MW-8	8260B				GW	D. Carroll	STANTEC	Tech.
2009	2	6/25/09	MW-10	8260B				GW	D. Carroll	STANTEC	Tech.
2009	2	6/25/09	MW-11	8260B				GW	D. Carroll	STANTEC	Tech.
2009	2	6/25/09	MW-12	8260B				GW	D. Carroll	STANTEC	Tech.
2009	2	9/17/09	Precarbon	TO3				Air	D. Carroll	STANTEC	Tech.
2009	2	9/17/09	Postcarbon	TO3				Air	D. Carroll	STANTEC	Tech.
2009	2	9/17/09	MW-1	8260B				GW	D. Carroll	STANTEC	Tech.
2009	2	9/17/09	MW-2	8260B				GW	D. Carroll	STANTEC	Tech.
2009	2	9/17/09	MW-3	8260B				GW	D. Carroll	STANTEC	Tech.
2009	2	9/17/09	MW-4	8260B				GW	D. Carroll	STANTEC	Tech.
2009	2	9/17/09	MW-5	8260B				GW	D. Carroll	STANTEC	Tech.
2009	2	9/17/09	MW-6	8260B				GW	D. Carroll	STANTEC	Tech.
2009	2	9/17/09	MW-8	8260B				GW	D. Carroll	STANTEC	Tech.
2009	2	9/17/09	MW-10	8260B				GW	D. Carroll	STANTEC	Tech.
2009	2	9/17/09	MW-11	8260B				GW	D. Carroll	STANTEC	Tech.
2009	2	9/17/09	MW-12	8260B				GW	D. Carroll	STANTEC	Tech.
2009	4	12/15/09	MW-3	8021				GW	D. Carroll	STANTEC	Tech.
2009	4	12/15/09	MW-7	8021				GW	D. Carroll	STANTEC	Tech.
2009	4	12/15/09	MW-8	8021				GW	D. Carroll	STANTEC	Tech.

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Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

Section 6 - History of Sampling (Current Year to Date)											
		Date of	EPA Method(s) and Sampling Location(s)						Sampled By		
Year	QTR	Sampling						Media	Name	Company	Title
2009	4	12/15/09	MW-9	8021				GW	D. Carroll	STANTEC	Tech.
2009	4	12/15/09	VZ-13	8021				GW	D. Carroll	STANTEC	Tech.
2009	4	12/15/09	VZ-15	8021				GW	D. Carroll	STANTEC	Tech.
2010	3	09/01/10	MW-3	8021				GW	D. Carroll	STANTEC	Tech.
2010	3	09/01/10	MW-8	8021				GW	D. Carroll	STANTEC	Tech.
2010	3	09/01/10	MW-10	8021				GW	D. Carroll	STANTEC	Tech.
2010	3	09/01/10	MW-11	8021				GW	D. Carroll	STANTEC	Tech.
2010	3	09/01/10	VZ-14	8021				GW	D. Carroll	STANTEC	Tech.
2010	4	12/01/10	Precarbon	TO3				Air	D. Carroll	STANTEC	Tech.
2010	4	12/01/10	Postcarbon	TO3				Air	D. Carroll	STANTEC	Tech.
2010	4	12/01/10	MW-3	8021				GW	D. Carroll	STANTEC	Tech.
2010	4	12/01/10	MW-7	8021				GW	D. Carroll	STANTEC	Tech.
2010	4	12/01/10	MW-8	8021				GW	D. Carroll	STANTEC	Tech.
2010	4	12/01/10	MW-10	8021				GW	D. Carroll	STANTEC	Tech.
2010	4	12/01/10	MW-11	8021				GW	D. Carroll	STANTEC	Tech.
2010	4	12/01/10	VZ-14	8021				GW	D. Carroll	STANTEC	Tech.
2010	4	12/01/10	VZ-16	8021				GW	D. Carroll	STANTEC	Tech.
2011	4	11/20/11	MW-8	8021				GW	G. Budd	STANTEC	Geologist
2011	4	11/20/11	MW-9	8021				GW	D. Carroll	STANTEC	Tech.
2011	4	11/20/11	VZ-13	8021				GW	D. Carroll	STANTEC	Tech.
2011	4	11/20/11	VZ-14	8021				GW	D. Carroll	STANTEC	Tech.
2011	4	11/21/11	INF	8021				AIR	G. Budd	STANTEC	Geologist
2011	4	11/21/11	EXH	8021				AIR	G. Budd	STANTEC	Geologist
2012	1	01/24/12	INF	8021				AIR	D. Carroll	STANTEC	Technician
2012	1	01/24/12	EXH	8021				AIR	D. Carroll	STANTEC	Technician
2012	1	01/25/12	MW-6	8021				GW	D. Carroll	STANTEC	Technician
2012	1	01/25/12	MW-8	8021				GW	D. Carroll	STANTEC	Technician
2012	1	01/25/12	MW-9	8021				GW	D. Carroll	STANTEC	Technician
2012	1	01/25/12	MW-10	8021				GW	D. Carroll	STANTEC	Technician
2012	1	01/25/12	MW-11	8021				GW	D. Carroll	STANTEC	Technician
2012	1	01/25/12	VZ-13	8021				GW	D. Carroll	STANTEC	Technician
2012	1	01/25/12	VZ-14	8021				GW	D. Carroll	STANTEC	Technician
2012	1	01/25/12	VZ-16	8021				GW	D. Carroll	STANTEC	Technician
2012	2	05/10/12	MW-1	8021				GW	G. Budd	STANTEC	Technician
2012	2	05/10/12	MW-2	8021				GW	G. Budd	STANTEC	Technician
2012	2	05/10/12	MW-4	8021				GW	G. Budd	STANTEC	Technician
2012	2	05/10/12	MW-5	8021				GW	G. Budd	STANTEC	Technician
2012	2	05/10/12	MW-6	8021				GW	G. Budd	STANTEC	Technician
2012	2	05/10/12	MW-8	8021				GW	G. Budd	STANTEC	Technician
2012	2	05/10/12	MW-9	8021				GW	G. Budd	STANTEC	Technician
2012	2	05/10/12	MW-10	8021				GW	G. Budd	STANTEC	Technician

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Section 6 - History of Sampling (Current Year to Date)											
		Date of	EPA Method(s) and Sampling Location(s)						Sampled By		
Year	QTR	Sampling						Media	Name	Company	Title
2012	2	05/10/12	MW-11	8021				GW	G. Budd	STANTEC	Technician
2012	2	05/10/12	MW-12	8021				GW	G. Budd	STANTEC	Technician
2012	2	05/10/12	VZ-13	8021				GW	G. Budd	STANTEC	Technician
2012	2	05/10/12	VZ-14	8021				GW	G. Budd	STANTEC	Technician
2012	2	05/10/12	VZ-16	8021				GW	G. Budd	STANTEC	Technician
2012	2	05/10/12	VZ-17	8021				GW	G. Budd	STANTEC	Geologist
2012	2	05/17/12	INF	M-18				Air	D. Carroll	STANTEC	Technician
2012	2	05/17/12	EXH	M-18				Air	D. Carroll	STANTEC	Technician
2012	2	08/02/12	MW-6	8021				GW	D. Carroll	STANTEC	Technician
2012	2	08/02/12	MW-8	8021				GW	D. Carroll	STANTEC	Technician
2012	2	08/02/12	MW-9	8021				GW	D. Carroll	STANTEC	Technician
2012	2	08/02/12	MW-11	8021				GW	D. Carroll	STANTEC	Technician
2012	2	08/02/12	VZ-13	8021				GW	D. Carroll	STANTEC	Technician
2012	2	08/02/12	VZ-14	8021				GW	D. Carroll	STANTEC	Technician
2012	2	08/02/12	VZ-16	8021				GW	D. Carroll	STANTEC	Technician
2012	2	08/02/12	VZ-17	8021				GW	D. Carroll	STANTEC	Technician
2012	2	08/02/12	INF	8021				Air	D. Carroll	STANTEC	Technician
2012	2	08/02/12	EXH	8021				Air	D. Carroll	STANTEC	Technician
2012	2	10/26/12	MW-3	8021				GW	D. Carroll	STANTEC	Technician
2012	3	10/26/12	MW-6	8021				GW	D. Carroll	STANTEC	Technician
2012	3	10/26/12	MW-7	8021				GW	D. Carroll	STANTEC	Technician
2012	3	10/26/12	MW-8	8021				GW	D. Carroll	STANTEC	Technician
2012	3	10/26/12	MW-9	8021				GW	D. Carroll	STANTEC	Technician
2012	3	10/26/12	MW-10	8021				GW	D. Carroll	STANTEC	Technician
2012	3	10/26/12	MW-11	8021				GW	D. Carroll	STANTEC	Technician
2012	3	10/26/12	VZ-14	8021				GW	D. Carroll	STANTEC	Technician
2012	3	10/26/12	VZ-16	8021				GW	D. Carroll	STANTEC	Technician
2012	3	10/26/12	VZ-17	8021				GW	D. Carroll	STANTEC	Technician
2012	2	10/26/12	INF	8021				Air	D. Carroll	STANTEC	Technician
2012	2	10/26/12	EXH	8021				Air	D. Carroll	STANTEC	Technician
2013	3	10/08/13	MW-1	8021				GW	D. Carroll	STANTEC	Technician
2013	3	10/08/13	MW-2	8021				GW	D. Carroll	STANTEC	Technician
2013	3	10/08/13	MW-3	8021				GW	D. Carroll	STANTEC	Technician
2013	3	10/08/13	MW-4	8021				GW	D. Carroll	STANTEC	Technician
2013	3	10/08/13	MW-5	8021				GW	D. Carroll	STANTEC	Technician
2013	3	10/08/13	MW-6	8021				GW	D. Carroll	STANTEC	Technician
2013	3	10/08/13	MW-7	8021				GW	D. Carroll	STANTEC	Technician
2013	3	10/08/13	MW-8	8021				GW	D. Carroll	STANTEC	Technician
2013	3	10/08/13	MW-9	8021				GW	D. Carroll	STANTEC	Technician
2013	3	10/08/13	MW-10	8021				GW	D. Carroll	STANTEC	Technician
2013	3	10/08/13	MW-11	8021				GW	D. Carroll	STANTEC	Technician
2013	3	10/08/13	MW-12	8021				GW	D. Carroll	STANTEC	Technician
2013	3	10/08/13	VZ-13	8021				GW	D. Carroll	STANTEC	Technician
2013	3	10/08/13	VZ-14	8021				GW	D. Carroll	STANTEC	Technician
2013	3	10/08/13	VZ-16	8021				GW	D. Carroll	STANTEC	Technician
2013	3	10/08/13	VZ-17	8021				GW	D. Carroll	STANTEC	Technician
2013	3	10/09/13	INF	M18-MOD				Air	D. Carroll	STANTEC	Technician
2013	3	10/09/13	EXH	M18-MOD				Air	D. Carroll	STANTEC	Technician

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Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

Section 6 - History of Sampling (Current Year to Date)											
		Date of	EPA Method(s) and Sampling Location(s)						Sampled By		
Year	QTR	Sampling						Media	Name	Company	Title
2013	4	01/29/13	MW-3	8021				GW	D. Carroll	STANTEC	Technician
2013	4	01/29/13	MW-6	8021				GW	D. Carroll	STANTEC	Technician
2013	4	01/29/13	MW-7	8021				GW	D. Carroll	STANTEC	Technician
2013	4	01/29/13	MW-8	8021				GW	D. Carroll	STANTEC	Technician
2013	4	01/29/13	MW-9	8021				GW	D. Carroll	STANTEC	Technician
2013	4	01/29/13	MW-10	8021				GW	D. Carroll	STANTEC	Technician
2013	4	01/29/13	VZ-13	8021				GW	D. Carroll	STANTEC	Technician
2013	4	01/29/13	VZ-14	8021				GW	D. Carroll	STANTEC	Technician
2013	4	01/29/13	VZ-16	8021				GW	D. Carroll	STANTEC	Technician
2013	4	01/29/13	VZ-17	8021				GW	D. Carroll	STANTEC	Technician
2013	4	01/30/13	INF	M18-MOD				Air	D. Carroll	STANTEC	Technician
2013	4	01/30/13	EXH	M18-MOD				Air	D. Carroll	STANTEC	Technician
2014	4	01/09/14	INF	M18-MOD				Air	D. Carroll	STANTEC	Technician
2014	4	01/09/14	EXH	M18-MOD				Air	D. Carroll	STANTEC	Technician
2014	4	01/08/14	MW-3	8021				GW	D. Carroll	STANTEC	Technician
2014	4	01/08/14	MW-5	8021				GW	D. Carroll	STANTEC	Technician
2014	4	01/08/14	MW-6	8021				GW	D. Carroll	STANTEC	Technician
2014	4	01/08/14	MW-7	8021				GW	D. Carroll	STANTEC	Technician
2014	4	01/08/14	MW-8	8021				GW	D. Carroll	STANTEC	Technician
2014	4	01/08/14	MW-9	8021				GW	D. Carroll	STANTEC	Technician
2014	4	01/08/14	MW-10	8021				GW	D. Carroll	STANTEC	Technician
2014	4	01/08/14	MW-11	8021				GW	D. Carroll	STANTEC	Technician
2014	4	01/08/14	VZ-13	8021				GW	D. Carroll	STANTEC	Technician
2014	4	01/08/14	VZ-16	8021				GW	D. Carroll	STANTEC	Technician
2014	4	01/08/14	VZ-17	8021				GW	D. Carroll	STANTEC	Technician

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Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

Section 6 - History of Sampling (Current Year to Date)											
		Date of	EPA Method(s) and Sampling Location(s)						Sampled By		
Year	QTR	Sampling						Media	Name	Company	Title
2014	1	03/27/14	VZ-17	8021				GW	Greg Budd	STANTEC	Technician
2014	1	03/27/14	MW-5	8021				GW	Greg Budd	STANTEC	Technician
2014	1	03/27/14	MW-6	8021				GW	Greg Budd	STANTEC	Technician
2014	1	03/27/14	MW-7	8021				GW	Greg Budd	STANTEC	Technician
2014	1	03/27/14	MW-8	8021				GW	Greg Budd	STANTEC	Technician
2014	1	03/27/14	MW-9	8021				GW	Greg Budd	STANTEC	Technician
2014	1	03/27/14	MW-10	8021				GW	Greg Budd	STANTEC	Technician
2014	1	03/27/14	MW-11	8021				GW	Greg Budd	STANTEC	Technician
2014	1	03/27/14	VZ-13	8021				GW	Greg Budd	STANTEC	Technician
2014	1	03/27/14	VZ-16	8021				GW	Greg Budd	STANTEC	Technician
2014	1	03/27/14	VZ-17	8021				GW	Greg Budd	STANTEC	Technician
2014	1	03/27/14	INF	M18-MOD				Air	D. Carroll	STANTEC	Technician
2014	1	03/27/14	EXH	M18-MOD				Air	D. Carroll	STANTEC	Technician
2014	2	06/25/14	MW-3	8260				GW	D. Carroll	STANTEC	Technician
2014	2	06/25/14	MW-6	8260				GW	D. Carroll	STANTEC	Technician
2014	2	06/25/14	MW-7	8260				GW	D. Carroll	STANTEC	Technician
2014	2	06/25/14	MW-8	8260				GW	D. Carroll	STANTEC	Technician
2014	2	06/25/14	MW-9	8260				GW	D. Carroll	STANTEC	Technician
2014	2	06/25/14	MW-10	8260				GW	D. Carroll	STANTEC	Technician
2014	2	06/25/14	MW-11	8260				GW	D. Carroll	STANTEC	Technician
2014	2	06/25/14	VZ-13	8260				GW	D. Carroll	STANTEC	Technician
2014	2	06/25/14	VZ-15	8260				GW	D. Carroll	STANTEC	Technician
2014	2	06/25/14	VZ-16	8260				GW	D. Carroll	STANTEC	Technician
2014	2	06/25/14	VZ-17	8260				GW	D. Carroll	STANTEC	Technician
2014	2	06/25/14	INF	M18-MOD				Air	D. Carroll	STANTEC	Technician
2014	2	06/25/14	EXH	M18-MOD				Air	D. Carroll	STANTEC	Technician
2014	3	10/28/14	INF	M18-MOD				Air	D. Carroll	STANTEC	Technician
2014	3	10/28/14	EXH	M18-MOD				Air	D. Carroll	STANTEC	Technician
2014	3	10/29/14	MW-3	8260				GW	D. Carroll	STANTEC	Technician
2014	3	10/29/14	MW-7	8021				GW	D. Carroll	STANTEC	Technician
2014	3	10/29/14	MW-8	8021				GW	D. Carroll	STANTEC	Technician
2014	3	10/29/14	MW-9	8021				GW	D. Carroll	STANTEC	Technician
2014	3	10/29/14	VZ-13	8021				GW	D. Carroll	STANTEC	Technician
2014	3	10/29/14	VZ-14	8021				GW	D. Carroll	STANTEC	Technician
2014	3	10/29/14	VZ-15	8021				GW	D. Carroll	STANTEC	Technician
2014	3	10/29/14	VZ-16	8021				GW	D. Carroll	STANTEC	Technician
2014	3	10/29/14	VZ-17	8021				GW	D. Carroll	STANTEC	Technician
2014	3	10/29/14	MW-1	8021				GW	D. Carroll	STANTEC	Technician
2014	3	10/29/14	MW-2	8021				GW	D. Carroll	STANTEC	Technician
2014	3	10/29/14	MW-4	8021				GW	D. Carroll	STANTEC	Technician
2014	3	10/29/14	MW-5	8021				GW	D. Carroll	STANTEC	Technician

SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

Section 6 - History of Sampling (Current Year to Date)

Year	QTR	Date of Sampling	EPA Method(s) and Sampling Location(s)					Media	Sampled By		
									Name	Company	Title
2014	3	10/29/14	MW-6	8021				GW	D. Carroll	STANTEC	Technician
2014	3	10/29/14	MW-10	8021				GW	D. Carroll	STANTEC	Technician
2014	3	10/29/14	MW-11	8021				GW	D. Carroll	STANTEC	Technician
2014	3	10/29/14	MW-12	8021				GW	D. Carroll	STANTEC	Technician
2015	4	02/19/15	MW-3	8260				GW	D. Wilcox	STANTEC	Proj. Mgr.
2015	4	02/19/15	MW-6	8260				GW	D. Wilcox	STANTEC	Proj. Mgr.
2015	4	02/19/15	MW-7	8260				GW	D. Wilcox	STANTEC	Proj. Mgr.
2015	4	02/19/15	MW-8	8260				GW	D. Wilcox	STANTEC	Proj. Mgr.
2015	4	02/19/15	MW-9	8260				GW	D. Wilcox	STANTEC	Proj. Mgr.
2015	4	02/19/15	MW-10	8260				GW	D. Wilcox	STANTEC	Proj. Mgr.
2015	4	02/19/15	MW-11	8260				GW	D. Wilcox	STANTEC	Proj. Mgr.
2015	4	02/19/15	VZ-13	8260				GW	D. Wilcox	STANTEC	Proj. Mgr.
2015	4	02/19/15	VZ-15	8260				GW	D. Wilcox	STANTEC	Proj. Mgr.
2015	4	02/19/15	VZ-16	8260				GW	D. Wilcox	STANTEC	Proj. Mgr.
2015	4	02/19/15	VZ-17	8260				GW	D. Wilcox	STANTEC	Proj. Mgr.
2015	4	02/19/15	INF	M18-MOD				Air	D. Wilcox	STANTEC	Proj. Mgr.
2015	4	02/19/15	EXH	M18-MOD				Air	D. Wilcox	STANTEC	Proj. Mgr.
2015	1	05/07/15	INF	M18-MOD				Air	D. Carroll	STANTEC	Technician
2015	1	05/07/15	EXH	M18-MOD				Air	D. Carroll	STANTEC	Technician
2015	1	05/07/15	MW-3	8260				GW	D. Carroll	STANTEC	Technician
2015	1	05/07/15	MW-6	8260				GW	D. Carroll	STANTEC	Technician
2015	1	05/07/15	MW-7	8260				GW	D. Carroll	STANTEC	Technician
2015	1	05/07/15	MW-8	8260				GW	D. Carroll	STANTEC	Technician
2015	1	05/07/15	MW-9	8260				GW	D. Carroll	STANTEC	Technician
2015	1	05/07/15	MW-10	8260				GW	D. Carroll	STANTEC	Technician
2015	1	05/07/15	MW-11	8260				GW	D. Carroll	STANTEC	Technician
2015	1	05/07/15	VZ-13	8260				GW	D. Carroll	STANTEC	Technician
2015	1	05/07/15	VZ-14	8260				GW	D. Carroll	STANTEC	Technician
2015	1	05/07/15	VZ-16	8260				GW	D. Carroll	STANTEC	Technician
2015	1	05/07/15	VZ-17	8260				GW	D. Carroll	STANTEC	Technician
2015	2	08/05/15	MW-3	8260				GW	D. Carroll	STANTEC	Technician
2015	2	08/05/15	MW-6	8260				GW	D. Carroll	STANTEC	Technician
2015	2	08/05/15	MW-7	8260				GW	D. Carroll	STANTEC	Technician
2015	2	08/05/15	MW-8	8260				GW	D. Carroll	STANTEC	Technician
2015	2	08/05/15	MW-9	8260				GW	D. Carroll	STANTEC	Technician
2015	2	08/05/15	MW-10	8260				GW	D. Carroll	STANTEC	Technician
2015	2	08/05/15	MW-11	8260				GW	D. Carroll	STANTEC	Technician
2015	2	08/05/15	VZ-13	8260				GW	D. Carroll	STANTEC	Technician
2015	2	08/05/15	VZ-14	8260				GW	D. Carroll	STANTEC	Technician
2015	2	08/05/15	VZ-16	8260				GW	D. Carroll	STANTEC	Technician
2015	2	08/06/15	VZ-17	8261				GW	D. Carroll	STANTEC	Technician

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Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

Section 6 - History of Sampling (Current Year to Date)											
		Date of	EPA Method(s) and Sampling Location(s)					Sampled By			
Year	QTR	Sampling					Media	Name	Company	Title
2015	3	11/11/15	INF	M18-MOD			Air	C. Barnes	STANTEC	Technician
2015	3	11/11/15	EXH	M18-MOD			Air	C. Barnes	STANTEC	Technician
2015	3	11/11/15	EXH	M18-MOD			Air	C. Barnes	STANTEC	Technician
2015	3	11/11/15	MW-3	8260			GW	C. Barnes	STANTEC	Technician
2015	3	11/11/15	MW-6	8260			GW	C. Barnes	STANTEC	Technician
2015	3	11/11/15	MW-7	8260			GW	C. Barnes	STANTEC	Technician
2015	3	11/11/15	MW-8	8260			GW	C. Barnes	STANTEC	Technician
2015	3	11/11/15	MW-9	8260			GW	C. Barnes	STANTEC	Technician
2015	3	11/11/15	MW-10	8260			GW	C. Barnes	STANTEC	Technician
2015	3	11/11/15	MW-11	8260			GW	C. Barnes	STANTEC	Technician
2015	3	11/11/15	VZ-13	8260			GW	C. Barnes	STANTEC	Technician
2015	3	11/11/15	VZ-15	8260			GW	C. Barnes	STANTEC	Technician
2015	3	11/11/15	VZ-16	8260			GW	C. Barnes	STANTEC	Technician
2015	3	11/11/15	VZ-17	8260			GW	C. Barnes	STANTEC	Technician
2016	4	02/03/16	INF	M18-MOD			Air	D. Carroll	STANTEC	Technician
2016	4	02/03/16	EXH	M18-MOD			Air	D. Carroll	STANTEC	Technician
2016	4	02/09/16	MW-3	8260			GW	D. Carroll	STANTEC	Technician
2016	4	02/09/16	MW-6	8260			GW	D. Carroll	STANTEC	Technician
2016	4	02/09/16	MW-7	8260			GW	D. Carroll	STANTEC	Technician
2016	4	02/09/16	MW-8	8260			GW	D. Carroll	STANTEC	Technician
2016	4	02/09/16	MW-9	8260			GW	D. Carroll	STANTEC	Technician
2016	4	02/09/16	MW-10	8260			GW	D. Carroll	STANTEC	Technician
2016	4	02/09/16	VZ-13	8260			GW	D. Carroll	STANTEC	Technician
2016	4	02/09/16	VZ-15	8260			GW	D. Carroll	STANTEC	Technician
2016	4	02/09/16	VZ-16	8260			GW	D. Carroll	STANTEC	Technician
2016	4	02/09/16	VZ-17	8260			GW	D. Carroll	STANTEC	Technician
2016	1	04/25/16	INF	M18-MOD			Air	D. Carroll	STANTEC	Technician
2016	1	04/25/16	EXH	M18-MOD			Air	D. Carroll	STANTEC	Technician
2016	1	04/26/16	MW-3	8260			GW	D. Carroll	STANTEC	Technician
2016	1	04/27/16	MW-6	8260			GW	D. Carroll	STANTEC	Technician
2016	1	04/27/16	MW-7	8260			GW	D. Carroll	STANTEC	Technician
2016	1	04/26/16	MW-8	8260			GW	D. Carroll	STANTEC	Technician
2016	1	04/27/16	MW-9	8260			GW	D. Carroll	STANTEC	Technician
2016	1	04/27/16	MW-10	8260			GW	D. Carroll	STANTEC	Technician
2016	1	04/27/16	MW-11	8260			GW	D. Carroll	STANTEC	Technician
2016	1	04/26/16	VZ-13	8260			GW	D. Carroll	STANTEC	Technician
2016	1	04/27/16	VZ-15	8260			GW	D. Carroll	STANTEC	Technician
2016	1	04/26/16	VZ-16	8260			GW	D. Carroll	STANTEC	Technician
2016	1	04/26/16	VZ-17	8260			GW	D. Carroll	STANTEC	Technician
2016	2	07/27/16	INF	M18-MOD			Air	W. Cline	STANTEC	Technician
2016	2	07/27/16	EXH	M18-MOD			Air	W. Cline	STANTEC	Technician

SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

Section 6 - History of Sampling (Current Year to Date)

		Date of	EPA Method(s) and Sampling Location(s)					Sampled By			
Year	QTR	Sampling						Media	Name	Company	Title
2016	2	07/28/16	MW-3	8260				GW	M. Buckreis	STANTEC	Technician
2016	2	07/29/16	MW-6	8260				GW	M. Buckreis	STANTEC	Technician
2016	2	07/29/16	MW-7	8260				GW	M. Buckreis	STANTEC	Technician
2016	2	07/28/16	MW-8	8260				GW	M. Buckreis	STANTEC	Technician
2016	2	07/28/16	MW-9	8260				GW	M. Buckreis	STANTEC	Technician
2016	2	07/28/16	VZ-13	8260				GW	M. Buckreis	STANTEC	Technician
2016	2	07/28/16	VZ-15	8260				GW	M. Buckreis	STANTEC	Technician
2016	2	07/28/16	VZ-16	8260				GW	M. Buckreis	STANTEC	Technician
2016	2	07/28/16	VZ-17	8260				GW	M. Buckreis	STANTEC	Technician
2016	3	09/15/16	MW-1	8260				GW	M. Buckreis	STANTEC	Technician
2016	3	09/15/16	MW-2	8260				GW	M. Buckreis	STANTEC	Technician
2016	3	09/15/16	MW-3	8260				GW	M. Buckreis	STANTEC	Technician
2016	3	09/14/16	MW-4	8260				GW	M. Buckreis	STANTEC	Technician
2016	3	09/14/16	MW-5	8260				GW	M. Buckreis	STANTEC	Technician
2016	3	09/14/16	MW-6	8260				GW	M. Buckreis	STANTEC	Technician
2016	3	09/15/16	MW-7	8260				GW	M. Buckreis	STANTEC	Technician
2016	3	09/15/16	MW-8	8260				GW	M. Buckreis	STANTEC	Technician
2016	3	09/14/16	MW-9	8260				GW	M. Buckreis	STANTEC	Technician
2016	3	09/14/16	MW-10	8260				GW	M. Buckreis	STANTEC	Technician
2016	3	09/14/16	MW-11	8260				GW	M. Buckreis	STANTEC	Technician
2016	3	09/15/16	MW-12	8260				GW	M. Buckreis	STANTEC	Technician
2016	3	09/15/16	VZ-13	8260				GW	M. Buckreis	STANTEC	Technician
2016	3	09/15/16	VZ-14	8260				GW	M. Buckreis	STANTEC	Technician
2016	3	09/15/16	VZ-15	8260				GW	M. Buckreis	STANTEC	Technician
2016	3	09/15/16	VZ-16	8260				GW	M. Buckreis	STANTEC	Technician
2016	3	09/15/16	VZ-17	8260				GW	M. Buckreis	STANTEC	Technician
2016	4	12/12/16	MW-3	8260				GW	M. Buckreis	STANTEC	Technician
2016	4	12/12/16	MW-6	8260				GW	M. Buckreis	STANTEC	Technician
2016	4	12/12/16	MW-7	8260				GW	M. Buckreis	STANTEC	Technician
2016	4	12/12/16	MW-8	8260				GW	M. Buckreis	STANTEC	Technician
2016	4	12/12/16	MW-9	8260				GW	M. Buckreis	STANTEC	Technician
2016	4	12/13/16	MW-10	8260				GW	M. Buckreis	STANTEC	Technician
2016	4	12/13/16	MW-11	8260				GW	M. Buckreis	STANTEC	Technician
2016	4	12/13/16	VZ-13	8260				GW	M. Buckreis	STANTEC	Technician
2016	4	12/13/16	VZ-16	8260				GW	M. Buckreis	STANTEC	Technician
2016	4	12/13/16	VZ-17	8260				GW	M. Buckreis	STANTEC	Technician
2017	1	03/06/17	MW-3	8260				GW	M. Buckreis	STANTEC	Technician
2017	1	03/06/17	MW-6	8260				GW	M. Buckreis	STANTEC	Technician
2017	1	03/06/17	MW-7	8260				GW	M. Buckreis	STANTEC	Technician
2017	1	03/06/17	MW-8	8260				GW	M. Buckreis	STANTEC	Technician
2017	1	03/06/17	MW-9	8260				GW	M. Buckreis	STANTEC	Technician
2017	1	03/06/17	MW-10	8260				GW	M. Buckreis	STANTEC	Technician
2017	1	03/06/17	MW-11	8260				GW	M. Buckreis	STANTEC	Technician
2017	1	03/06/17	VZ-13	8260				GW	M. Buckreis	STANTEC	Technician
2017	1	03/06/17	VZ-15	8260				GW	M. Buckreis	STANTEC	Technician
2017	1	03/06/17	VZ-16	8260				GW	M. Buckreis	STANTEC	Technician
2017	1	03/07/17	VZ-17	8260				GW	M. Buckreis	STANTEC	Technician
2017	2	05/31/17	MW-3	8260				GW	M. Buckreis	STANTEC	Technician
2017	2	05/31/17	MW-6	8260				GW	M. Buckreis	STANTEC	Technician
2017	2	05/31/17	MW-7	8260				GW	M. Buckreis	STANTEC	Technician
2017	2	05/31/17	MW-8	8260				GW	M. Buckreis	STANTEC	Technician
2017	2	05/31/17	MW-9	8260				GW	M. Buckreis	STANTEC	Technician
2017	2	05/31/17	MW-10	8260				GW	M. Buckreis	STANTEC	Technician
2017	2	05/31/17	MW-11	8260				GW	M. Buckreis	STANTEC	Technician
2017	2	05/31/17	VZ-13	8260				GW	M. Buckreis	STANTEC	Technician
2017	2	05/31/17	VZ-15	8260				GW	M. Buckreis	STANTEC	Technician
2017	2	05/31/17	VZ-16	8260				GW	M. Buckreis	STANTEC	Technician
2017	2	05/31/17	VZ-17	8260				GW	M. Buckreis	STANTEC	Technician
2018	4	11/20/18	MW-2	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician

SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

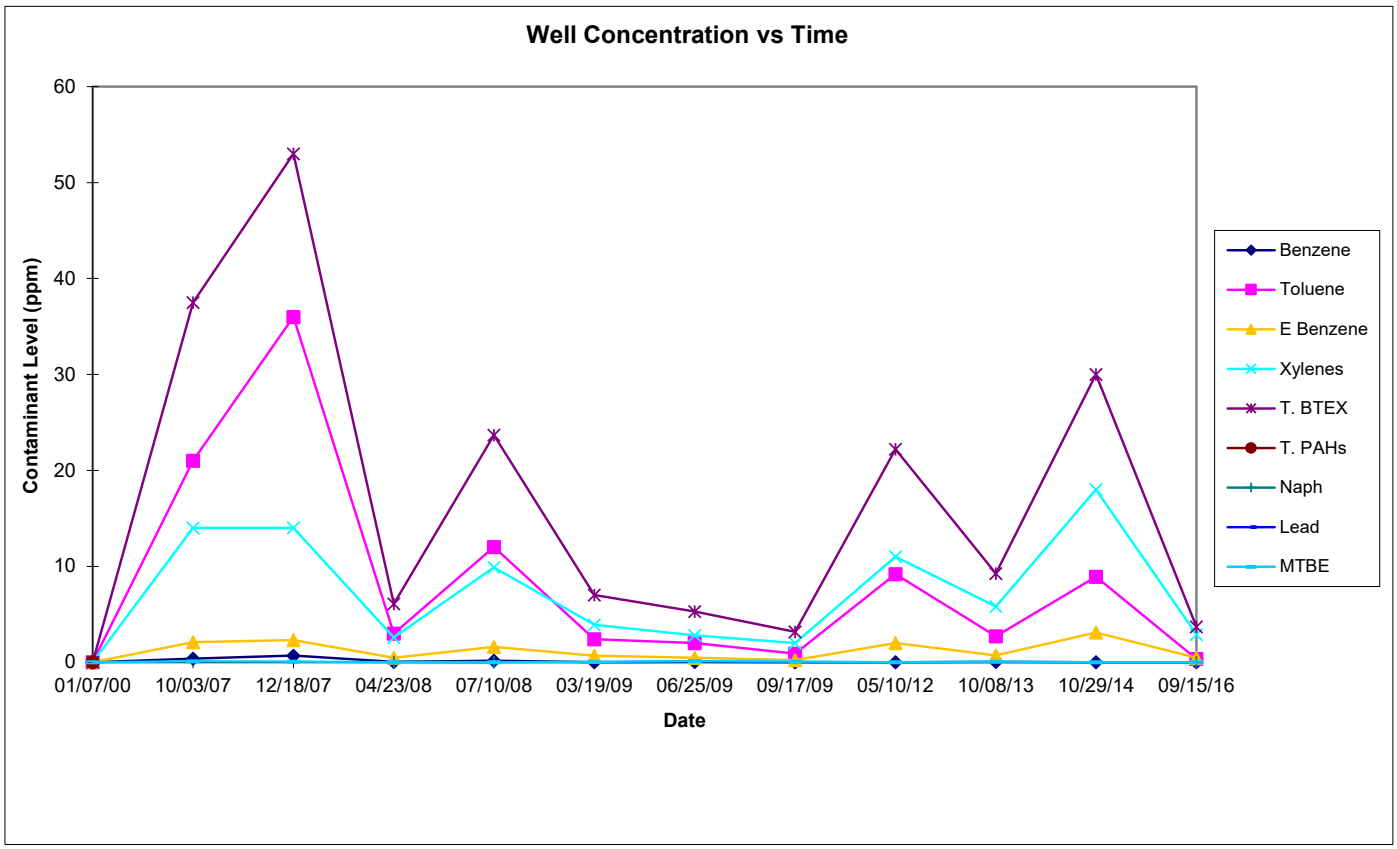
Section 6 - History of Sampling (Current Year to Date)											
		Date of	EPA Method(s) and Sampling Location(s)						Sampled By		
Year	QTR	Sampling						Media	Name	Company	Title
2018	4	11/20/18	MW-3	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2018	4	11/20/18	MW-4	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2018	4	11/20/18	MW-5	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2018	4	11/20/18	MW-6	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2018	4	11/20/18	MW-8	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2018	4	11/20/18	MW-10	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2018	4	11/20/18	MW-11	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2018	4	11/20/18	MW-12	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2018	4	11/20/18	VZ-13	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2018	4	11/21/18	VZ-14	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2018	4	11/20/18	VZ-15	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2018	4	11/20/18	VZ-16	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2018	4	11/20/18	VZ-17	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2019	1	01/21/19	MW-2	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2019	1	01/21/19	MW-3	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2019	1	01/21/19	MW-4	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2019	1	01/21/19	MW-5	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2019	1	01/21/19	MW-6	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2019	1	01/21/19	MW-8	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2019	1	01/21/19	MW-10	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2019	1	01/21/19	MW-11	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2019	1	01/21/19	MW-12	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2019	1	01/21/19	VZ-13	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2019	1	01/21/19	VZ-14	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2019	1	01/21/19	VZ-15	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2019	1	01/21/19	VZ-16	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician
2019	1	01/21/19	VZ-17	8260	3500	9056		GW	M. Buckreis	STANTEC	Technician

SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

MW-1

Section 6 - Monitoring/Recovery Well Concentration Data (mg/l) [Currect Event Plus Previous 10 Events & Initial Event]												
Well No: MW-1												
Date	01/07/00	10/03/07	12/18/07	04/23/08	07/10/08	03/19/09	06/25/09	09/17/09	05/10/12	10/08/13	10/29/14	09/15/16
PSH (feet)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	BDL	0.39	0.70	0.040	0.170	0.022	0.028	0.016	<0.050	0.032	<0.020	<0.0250
Toluene	BDL	21	36	3	12	2.4	2	0.91	9.2	2.7	8.9	0.335
E Benzene	BDL	2.1	2.3	0.46	1.60	0.68	0.46	0.24	2.00	0.73	3.1	0.464
Xylenes	BDL	14	14	2.6	9.9	3.9	2.8	2.0	11.0	5.8	18.0	2.91
T. BTEX	BDL	37.49	53.00	6.10	23.67	7.00	5.29	3.17	22.20	9.26	30.00	3.71
T. PAHs	BDL											
Naph				0.050	<0.20							<0.125
Lead												
MTBE	BDL	0.099	0.072	<0.001	<0.20	0.047	0.12	0.067	<0.10	0.072	<0.020	<0.0250

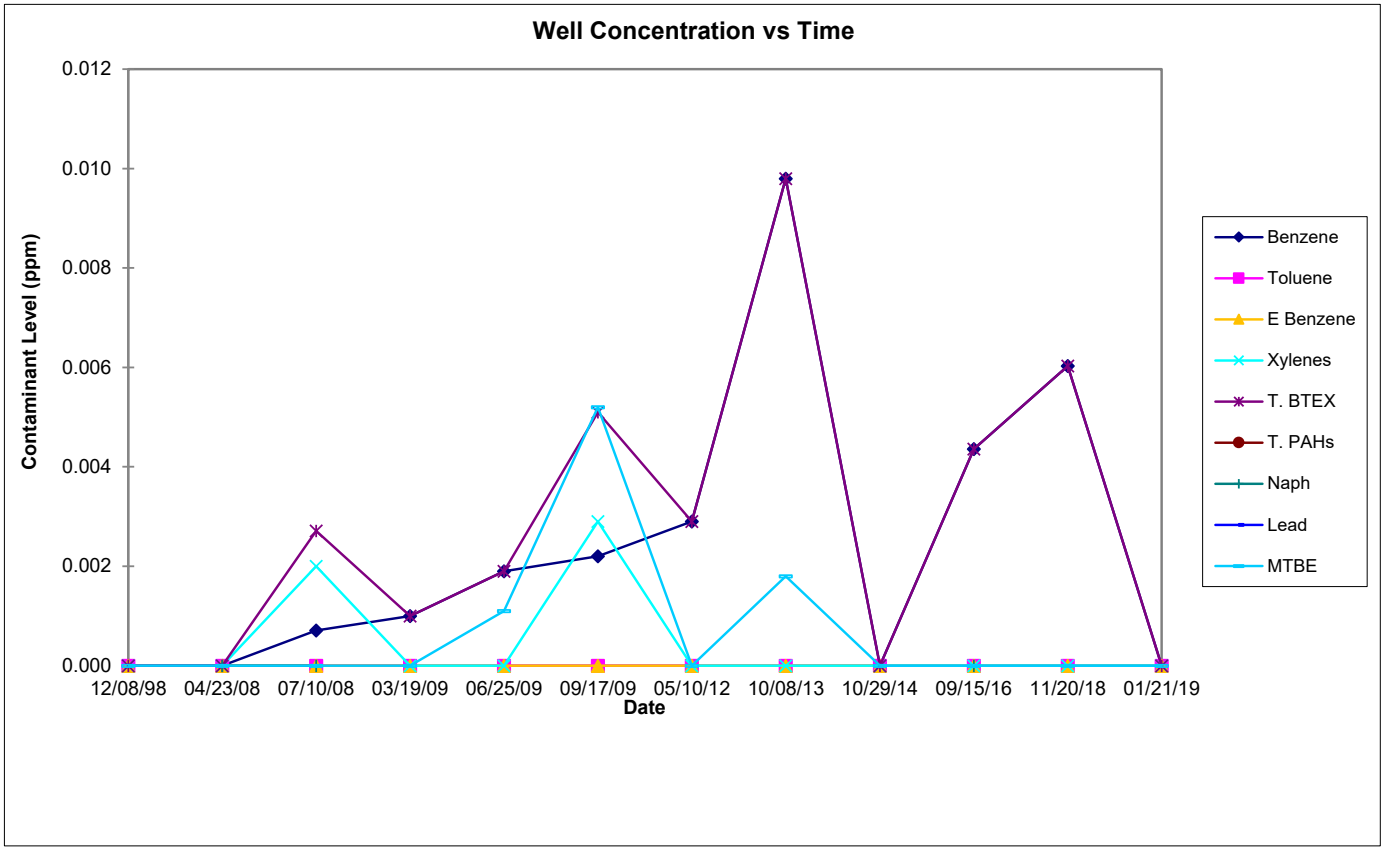


SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

MW-2

Section 6 - Monitoring/Recovery Well Concentration Data (mg/l) [Currect Event Plus Previous 10 Events & Initial Event]												
Well No: MW-2												
Date	12/08/98	04/23/08	07/10/08	03/19/09	06/25/09	09/17/09	05/10/12	10/08/13	10/29/14	09/15/16	11/20/18	01/21/19
PSH (feet)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	BDL	<0.001	0.00071	0.0010	0.0019	0.0022	0.0029	0.0098	<0.0010	0.00436	0.00603	<0.00100
Toluene	BDL	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.00500	<0.00100	<0.00100
E Benzene	BDL	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0010	<0.00100	<0.00100	<0.00100
Xylenes	BDL	<0.003	0.002	<0.0015	<0.0015	0.0029	<0.0015	<0.0015	<0.0030	<0.00300	<0.00300	<0.00300
T. BTEX	BDL	<0.010	0.00271	0.0010	0.0019	0.0051	0.0029	0.0098	<0.010	0.00436	0.00603	<0.00600
T. PAHs												
Naph		<0.005	<0.001							<0.00500		
Lead												
MTBE	BDL	<0.001	<0.001	<0.001	0.0011	0.0052	<0.0010	0.0018	<0.0010	<0.00100	<0.00100	<0.00100

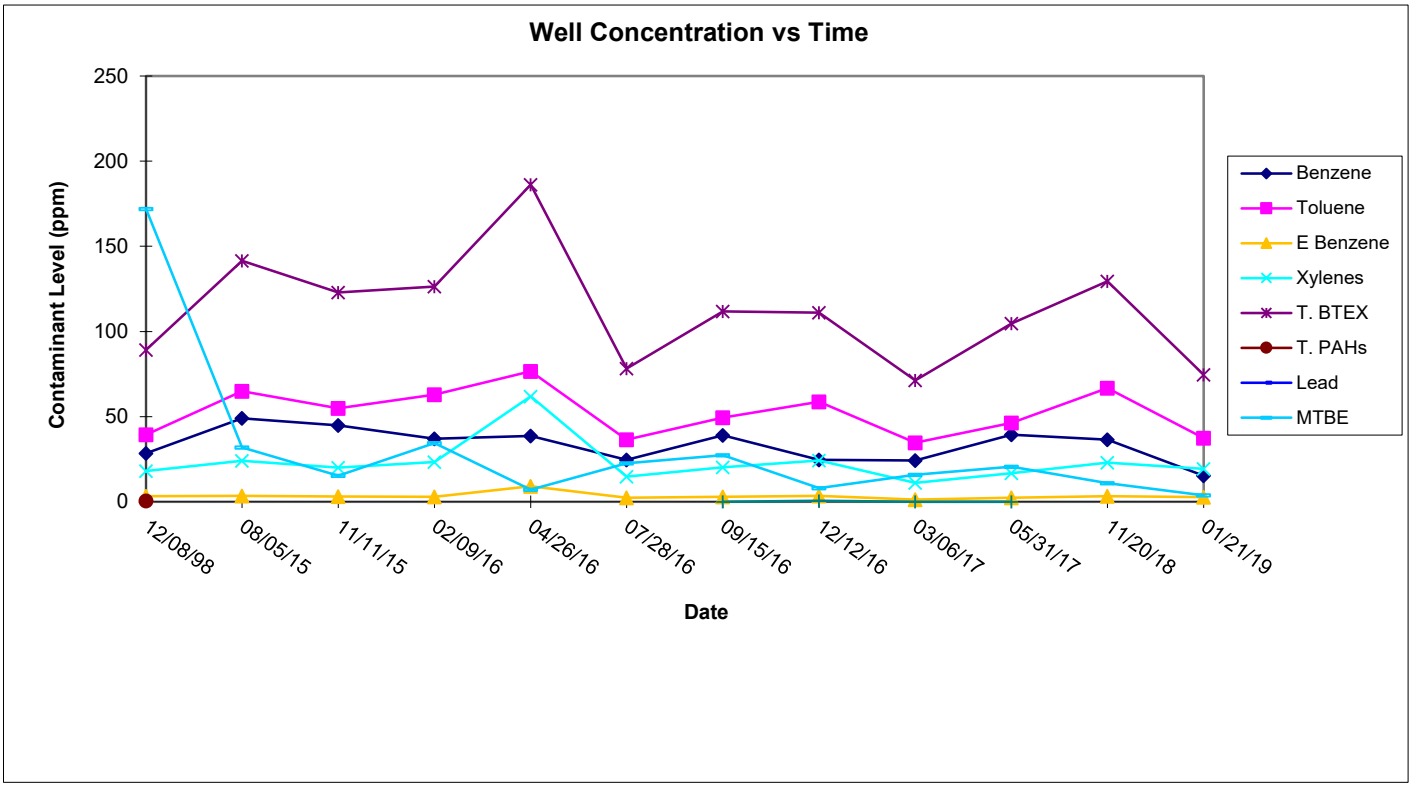


SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

MW-3

Section 6 - Monitoring/Recovery Well Concentration Data (mg/l) [Curect Event Plus Previous 10 Events & Initial Event]												
Well No:	MW-3											
Date	12/08/98	08/05/15	11/11/15	02/09/16	04/26/16	07/28/16	09/15/16	12/12/16	03/06/17	05/31/17	11/20/18	01/21/19
PSH (feet)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	28.5	49	44.8	37.0	38.6	24.6	39.1	24.6	24.2	39.4	36.5	15.3
Toluene	39.4	65	54.8	63.0	76.6	36.4	49.5	58.8	34.7	46.3	66.8	37.3
E Benzene	3.2	3.5	3.17	2.97	9.12	2.40	2.92	3.45	1.28	2.30	3.30	2.74
Xylenes	18.1	24	20.1	23.4	61.9	14.8	20.3	24.2	11.1	16.7	22.9	19.3
T. BTEX	89.2	141.5	122.9	126.4	186.2	78.2	111.8	111.1	71.3	104.7	129.5	74.6
T. PAHs	0.457											
Naph							<1.25	0.585	<1.00	<1.00		
Lead												
MTBE	172	32.00	15.4	34.4	7.1	22.6	27.3	8.03	15.8	20.6	11.0	3.77

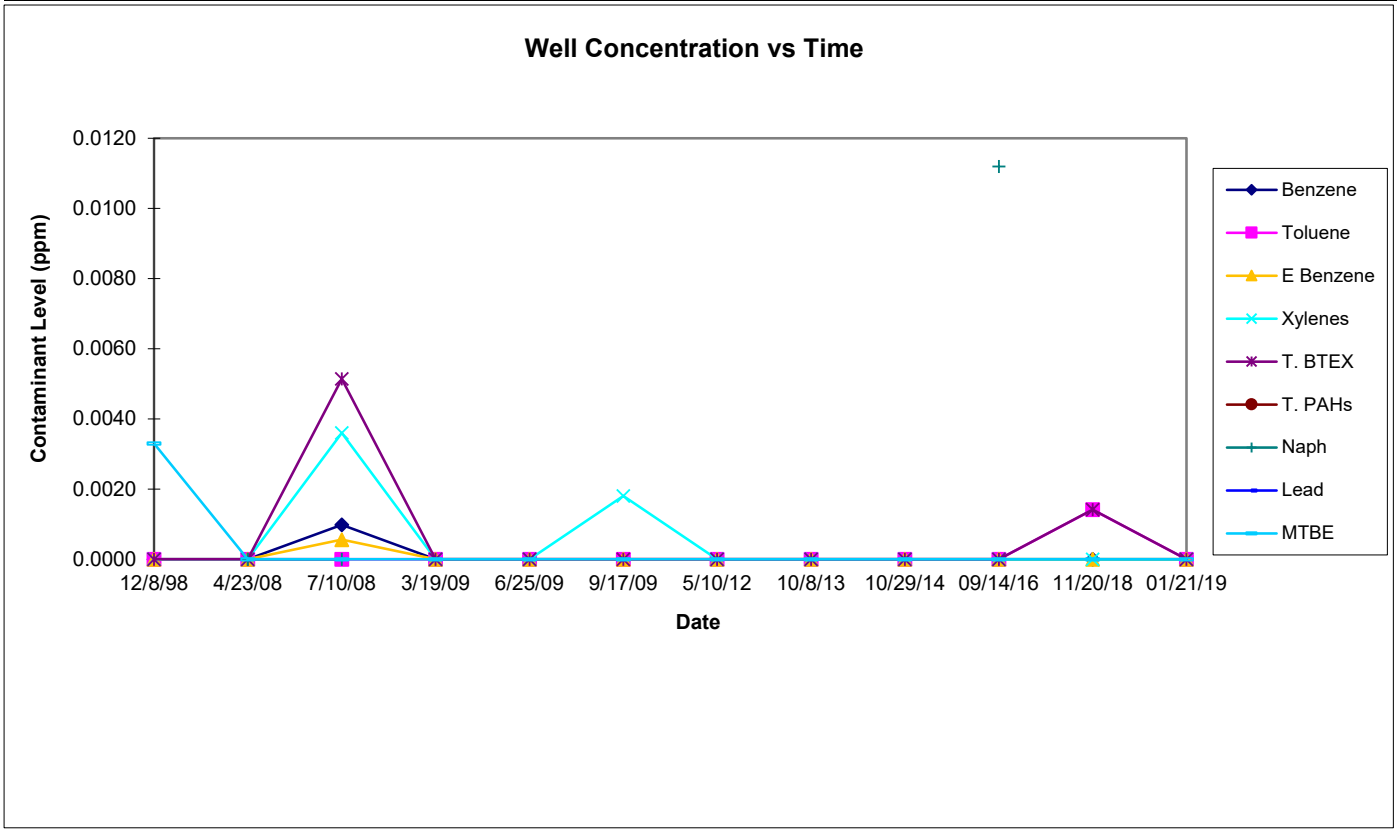


SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

MW-4

Section 6 - Monitoring/Recovery Well Concentration Data (mg/l) [Currect Event Plus Previous 10 Events & Initial Event]												
Well No:	MW-4											
Date	12/8/98	4/23/08	7/10/08	3/19/09	6/25/09	9/17/09	5/10/12	10/8/13	10/29/14	09/14/16	11/20/18	01/21/19
PSH (feet)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	BDL	<0.001	0.00098	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0010	<0.00100	<0.00100	<0.00100
Toluene	BDL	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.00500	0.00141	<0.00100
E Benzene	BDL	<0.001	0.00056	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0010	<0.00100	<0.00100	<0.00100
Xylenes	BDL	<0.003	0.0036	<0.0015	<0.0015	0.0018	<0.0015	<0.0015	<0.0030	<0.00300	<0.00300	<0.00300
T. BTEX	BDL	<0.010	0.00514	<0.0075	<0.0075	<0.0075	<0.0075	<0.0075	<0.010	<0.010	0.00141	<0.00600
T. PAHs												
Naph		<0.005	<0.001							0.0112		
Lead												
MTBE	0.0033	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.00100	<0.00100	<0.00100

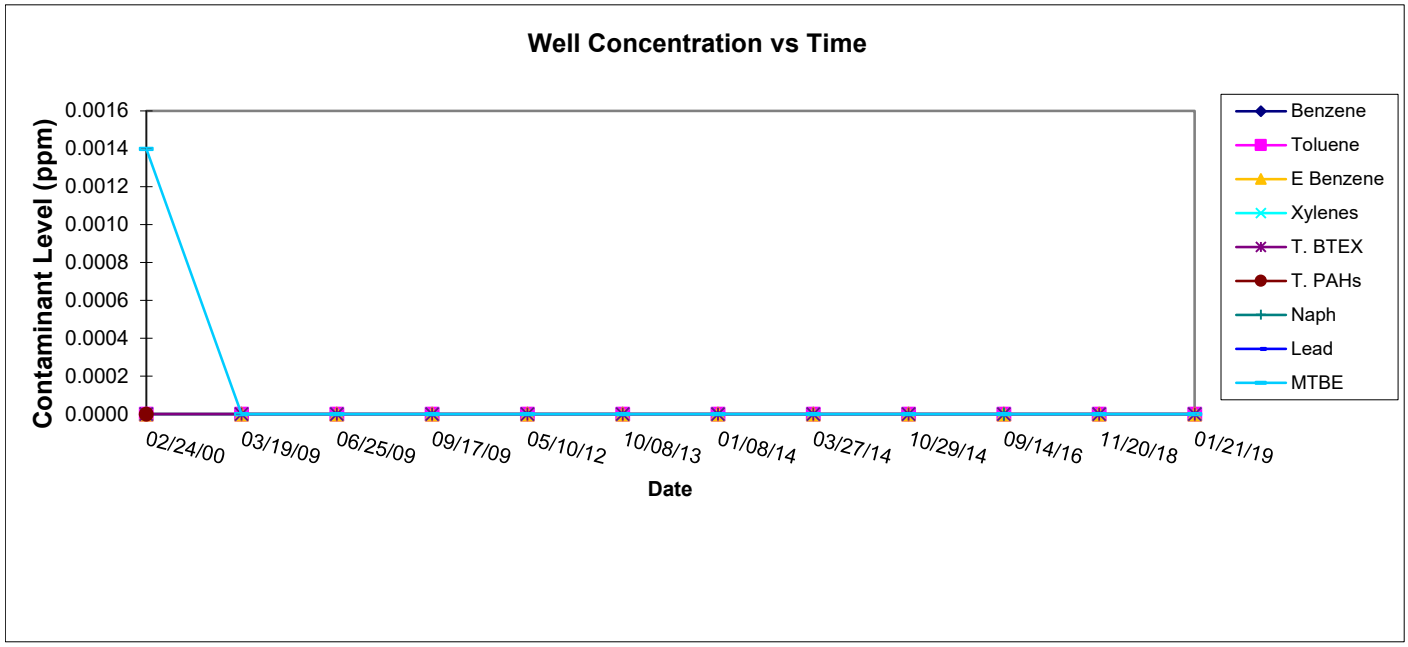


SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

MW-5

Section 6 - Monitoring/Recovery Well Concentration Data (mg/l) [Currect Event Plus Previous 10 Events & Initial Event]												
Well No:	MW-5											
Date	02/24/00	03/19/09	06/25/09	09/17/09	05/10/12	10/08/13	01/08/14	03/27/14	10/29/14	09/14/16	11/20/18	01/21/19
PSH (feet)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	BDL	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0010	<0.0010	<0.0010	<0.00100	<0.00100	<0.00100
Toluene	BDL	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.0050	<0.00500	<0.00100	<0.00100
E Benzene	BDL	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0010	<0.0010	<0.0010	<0.00100	<0.00100	<0.00100
Xylenes	BDL	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0030	<0.0030	<0.0030	<0.00300	<0.00300	<0.00300
T. BTEX	BDL	<0.0075	<0.0075	<0.0075	<0.0075	<0.0075	<0.010	<0.010	<0.010	<0.010	<0.00600	<0.00600
T. PAHs	BDL											
Naph										<0.00500		
Lead												
MTBE	0.0014	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.00100	<0.00100	<0.00100

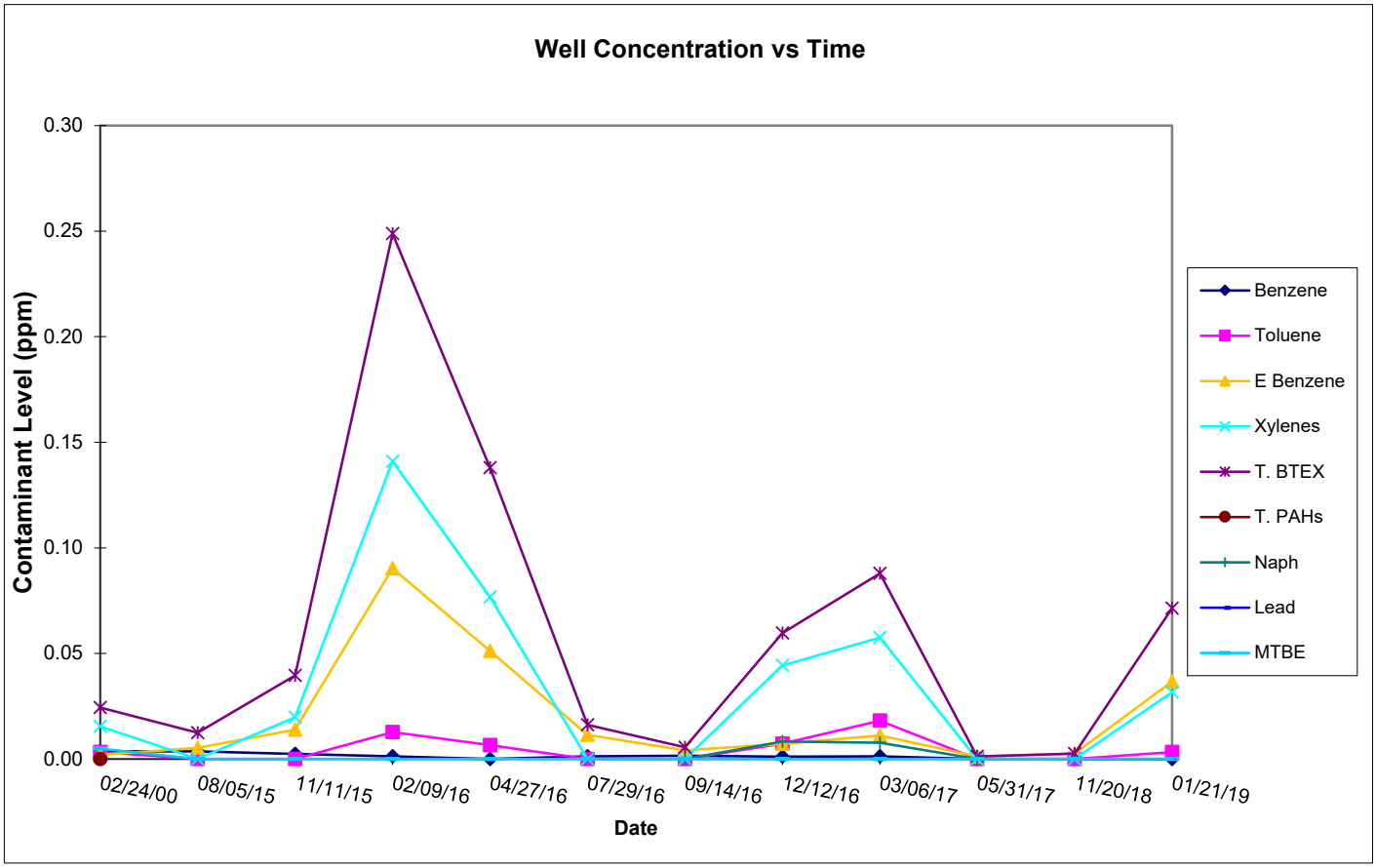


SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

MW-6

Section 6 - Monitoring/Recovery Well Concentration Data (mg/l) [Curect Event Plus Previous 10 Events & Initial Event]												
Well No:	**MW-6**											
Date	2/24/00	08/05/15	11/11/15	02/09/16	04/27/16	07/29/16	09/14/16	12/12/16	03/06/17	05/31/17	11/20/18	01/21/19
PSH (feet)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	0.0036	0.0036	0.00234	0.00122	<0.0010	0.00120	0.00151	0.00110	0.00119	<0.00100	<0.00100	<0.00100
Toluene	0.0033	<0.005	<0.005	0.0127	0.00652	<0.00500	<0.00500	0.00722	0.0181	<0.00100	<0.00100	0.00321
E Benzene	0.002	0.0052	0.0138	0.0903	0.0511	0.0114	0.00410	0.00713	0.0111	0.00119	0.00249	0.0366
Xylenes	0.0154	<0.0030	0.0198	0.141	0.0767	<0.00300	<0.00300	0.0442	0.0575	<0.00300	<0.00300	0.0316
T. BTEX	0.0243	0.0124	0.0395	0.249	0.138	0.0162	0.00561	0.05965	0.0879	0.00119	0.00249	0.0714
T. PAHs	BDL											
Naph							<0.00500	0.00826	0.00763	<0.00500		
Lead												
MTBE	0.0049	<0.0010	<0.0010	<0.0010	<0.0010	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100

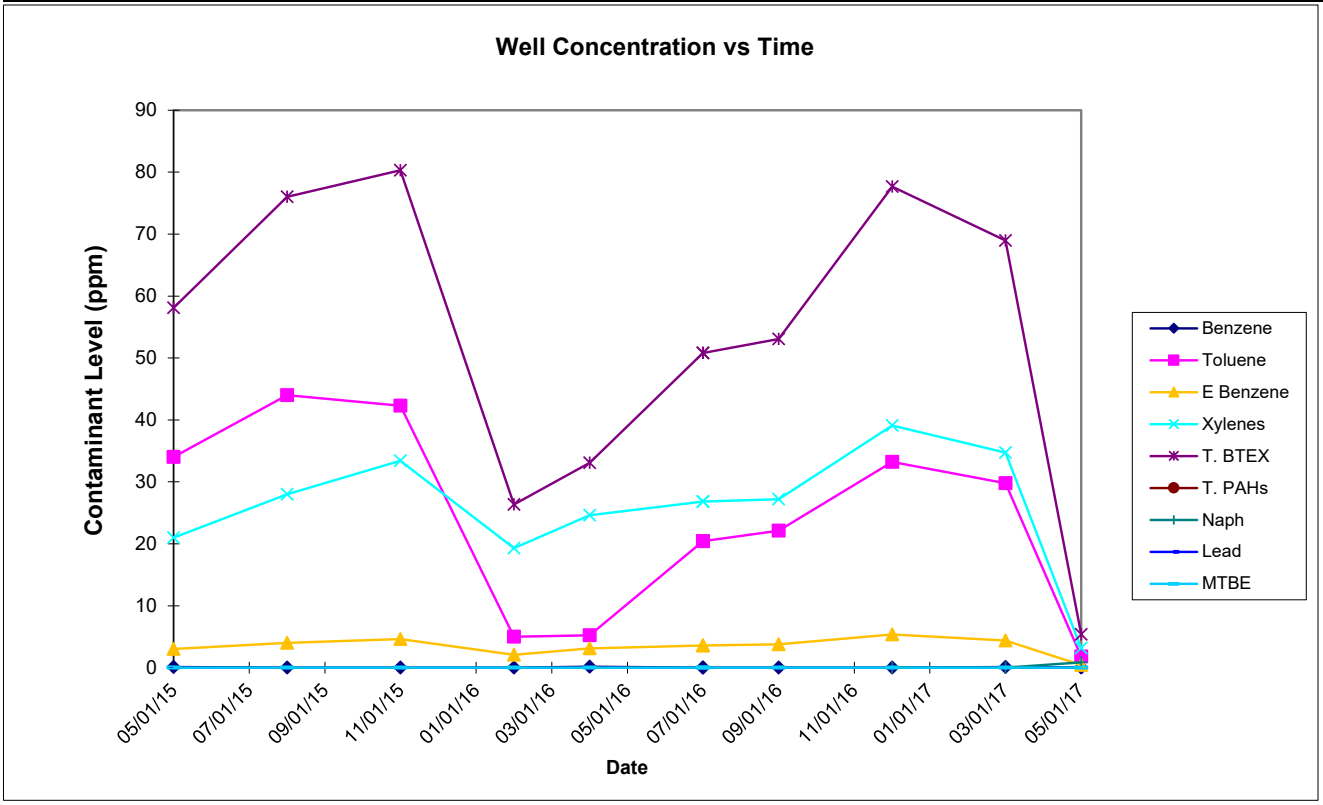


SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

MW-7

	Section 6 - Monitoring/Recovery Well Concentration Data (mg/l) [Curect Event Plus Previous 10 Events & Initial Event]											
Well No:	MW-7											
Date	01/29/13	05/07/15	08/05/15	11/11/15	02/09/16	04/27/16	07/29/16	07/29/16	09/15/16	12/12/16	03/06/17	05/31/17
PSH (feet)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	1.8	0.11	<0.50	<0.500	<0.500	0.151	<0.500	<0.500	<0.250	<0.500	0.0808	<0.0500
Toluene	50	34	44.0	42.3	4.97	5.24	20.4	20.4	22.1	33.2	29.8	1.81
E Benzene	3.9	3.0	4.0	4.61	2.06	3.10	3.60	3.60	3.77	5.36	4.40	0.429
Xylenes	27	21	28.0	33.4	19.3	24.6	26.8	26.8	27.2	39.1	34.7	3.14
T. BTEX	82.7	58.1	76.0	80.3	26.3	33.1	50.8	50.8	53.1	77.7	69.0	5.38
T. PAHs												
Naph									<1.25	<2.50	0.858	<0.250
Lead												
MTBE	<2.5	<0.25	<0.50	<0.500	<0.500	<0.500	<0.500	<0.500	<0.250	<0.500	<0.0500	<0.0500

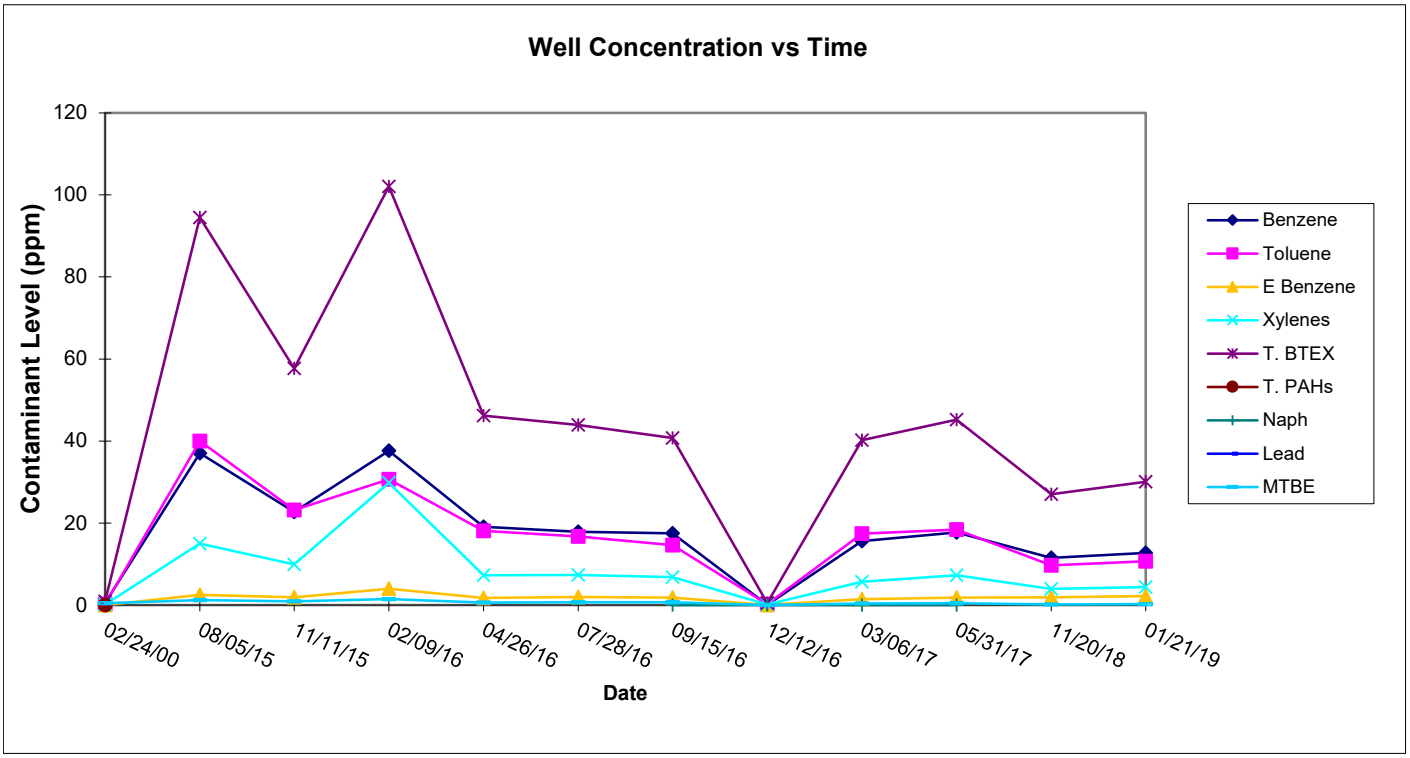


SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

MW-8

Section 6 - Monitoring/Recovery Well Concentration Data (mg/l) [Currect Event Plus Previous 10 Events & Initial Event]												
Well No:	MW-8											
Date	02/24/00	08/05/15	11/11/15	02/09/16	04/26/16	07/28/16	09/15/16	12/12/16	03/06/17	05/31/17	11/20/18	01/21/19
PSH (feet)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	0.544	37	22.7	37.6	19.1	17.9	17.5	0.0660	15.6	17.7	11.5	12.7
Toluene	0.216	40	23.2	30.7	18.1	16.7	14.6	0.232	17.4	18.4	9.70	10.7
E Benzene	0.0281	2.5	1.89	3.98	1.75	1.94	1.84	0.0263	1.46	1.83	1.90	2.21
Xylenes	0.132	15.0	9.90	29.8	7.25	7.36	6.82	0.147	5.71	7.25	3.93	4.42
T. BTEX	0.9201	94.5	57.7	102.1	46.2	43.9	40.8	0.471	40.2	45.2	27.0	30.0
T. PAHs	0.0015											
Naph							<0.500	0.00905	<0.500	<0.500		
Lead												
MTBE	0.423	1.2	0.902	1.460	0.615	0.690	0.671	0.00107	0.407	0.449	0.167	0.189

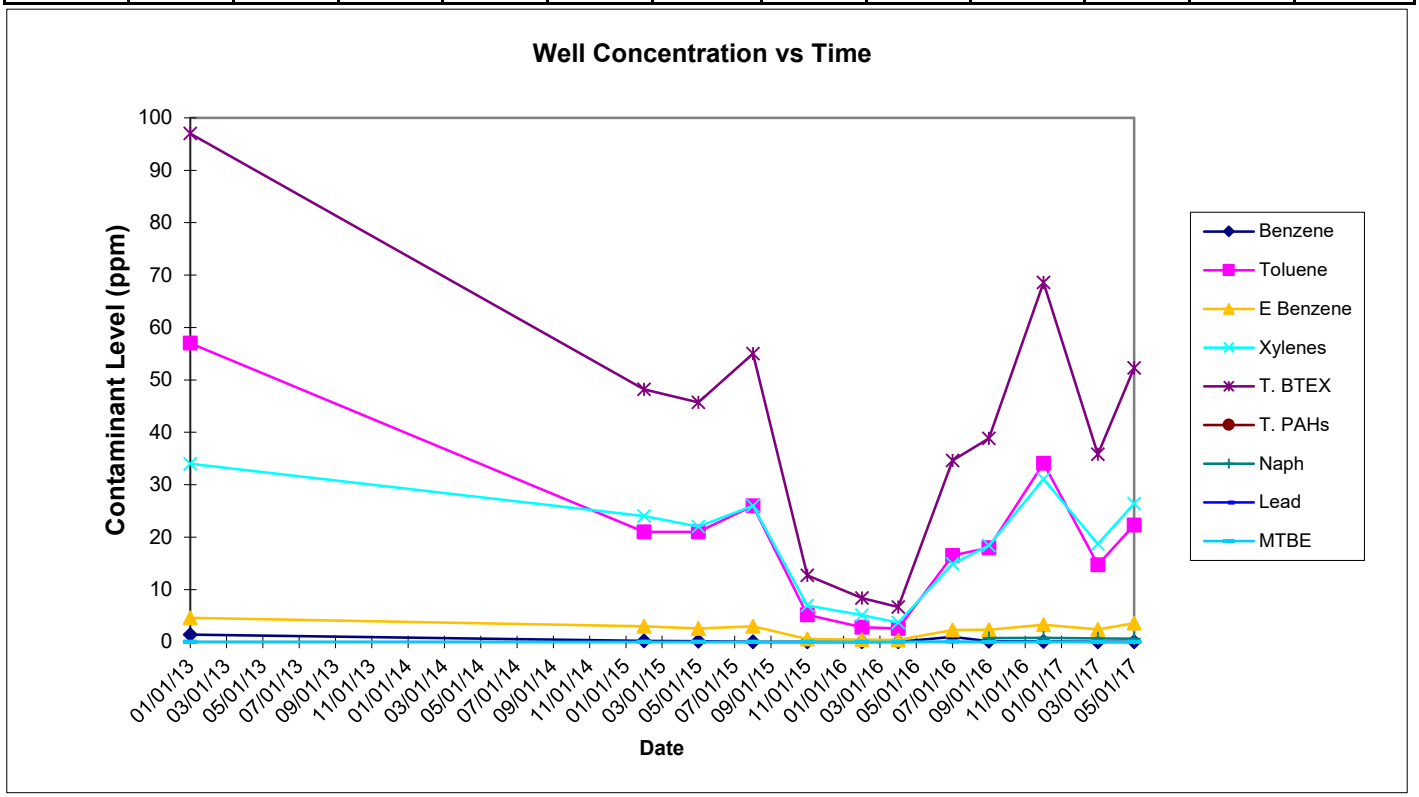


SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

MW-9

Section 6 - Monitoring/Recovery Well Concentration Data (mg/l) [Currect Event Plus Previous 10 Events & Initial Event]												
Well No:	**MW-9**											
Date	01/29/13	02/19/15	05/07/15	08/05/15	11/11/15	02/09/16	04/27/16	07/28/16	09/14/16	12/12/16	03/06/17	05/31/17
PSH (feet)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	1.4	0.19	0.13	<0.50	<0.500	<0.0500	0.0124	0.957	0.122	0.107	0.0286	<0.100
Toluene	57.0	21	21	26	5.17	2.82	2.58	16.5	18.0	34.1	14.7	22.3
E Benzene	4.6	3.0	2.6	3.0	0.561	0.414	0.396	2.26	2.33	3.29	2.39	3.60
Xylenes	34.0	24	22	26	6.95	5.13	3.67	14.9	18.4	31.1	18.7	26.4
T. BTEX	97.0	48.2	45.7	55.0	12.7	8.36	6.66	34.6	38.9	68.6	35.8	52.3
T. PAHs												
Naph									0.714	0.776	0.697	0.615
Lead												
MTBE	<0.50	<0.050	<0.10	<0.50	<0.500	<0.0500	0.0155	0.0709	<0.100	0.0228	<0.0100	<0.100

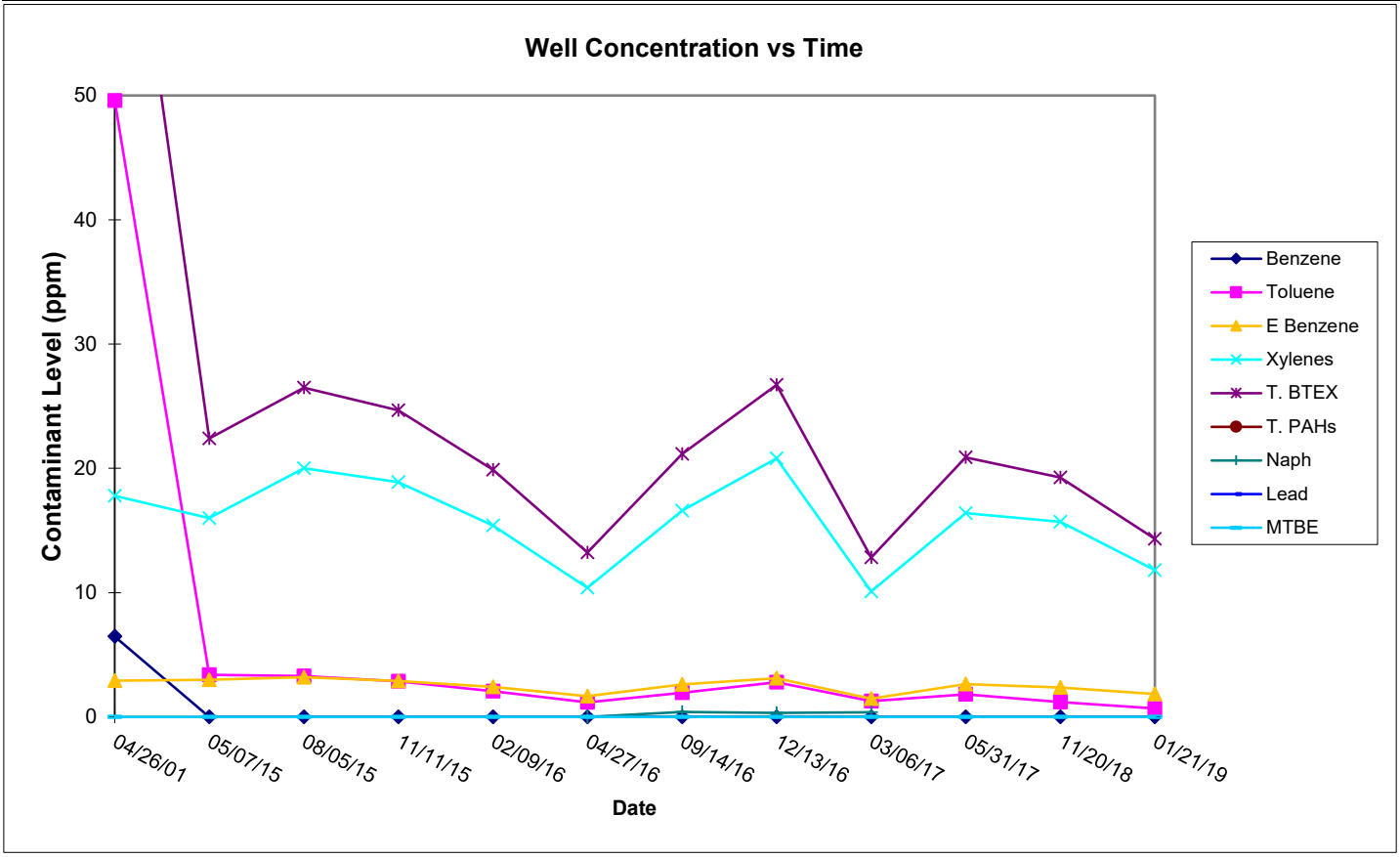


SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

MW-10

Section 6 - Monitoring/Recovery Well Concentration Data (mg/l) [Curret Event Plus Previous 10 Events & Initial Event]												
Well No:	MW-10											
Date	04/26/01	05/07/15	08/05/15	11/11/15	02/09/16	04/27/16	09/14/16	12/13/16	03/06/17	05/31/17	11/20/18	01/21/19
PSH (feet)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	6.47	<0.0083	<0.050	<0.050	<0.0500	<0.0500	<0.100	<0.0100	<0.00500	<0.0500	<0.200	<0.100
Toluene	49.6	3.4	3.3	2.86	2.08	1.16	1.94	2.80	1.26	1.83	1.19	0.682
E Benzene	2.92	3.0	3.2	2.90	2.41	1.67	2.62	3.12	1.47	2.64	2.37	1.85
Xylenes	17.8	16	20	18.9	15.4	10.4	16.6	20.8	10.1	16.4	15.7	11.8
T. BTEX	76.79	22.4	26.5	24.7	19.9	13.23	21.2	26.7	12.8	20.9	19.3	14.3
T. PAHs	0.246											
Naph							<0.500	0.400	0.333	0.380		
Lead												
MTBE	BDL	<0.025	<0.050	<0.0500	<0.0500	<0.0500	<0.100	<0.0100	<0.00500	<0.0500	<0.00100	<0.100

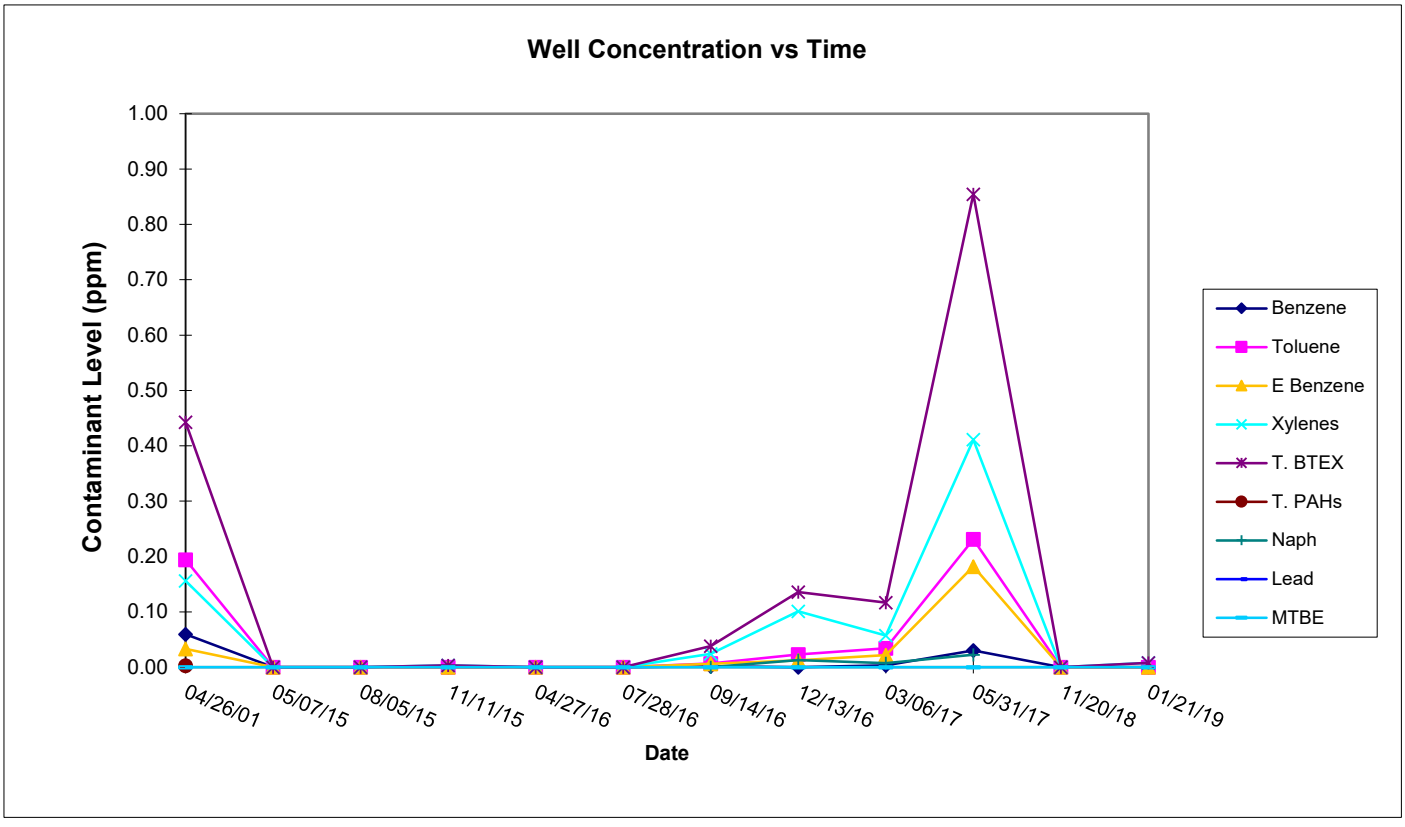


SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

MW-11

Section 6 - Monitoring/Recovery Well Concentration Data (mg/l) [Currect Event Plus Previous 10 Events & Initial Event]												
Well No:	MW-11											
Date	04/26/01	05/07/15	08/05/15	11/11/15	04/27/16	07/28/16	09/14/16	12/13/16	03/06/17	05/31/17	11/20/18	01/21/19
PSH (feet)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	0.0595	<00010	<00010	<00010	<0.0010	<0.00100	0.00134	<0.00100	0.00316	0.0305	<0.00100	<0.00100
Toluene	0.194	<0.0050	<0.0050	<0.0050	<0.0050	<0.00500	0.00655	0.0227	0.0343	0.231	<0.00100	<0.00100
E Benzene	0.033	<0.0010	<0.0010	<0.0010	<0.0010	<0.00100	0.00613	0.0120	0.0219	0.182	<0.00100	<0.00100
Xylenes	0.156	<0.0030	<0.0030	0.00352	<0.0030	<0.00300	0.0242	0.101	0.0574	0.411	<0.00300	0.00764
T. BTEX	0.4425	<0.010	<0.010	0.00352	<0.010	<0.010	0.0382	0.136	0.1168	0.855	<0.00600	0.00764
T. PAHs	0.00256											
Naph							<0.00500	0.0129	0.00728	0.0225		
Lead												
MTBE	BDL	<0.0010	<0.0010	<0.0010	<0.0010	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100

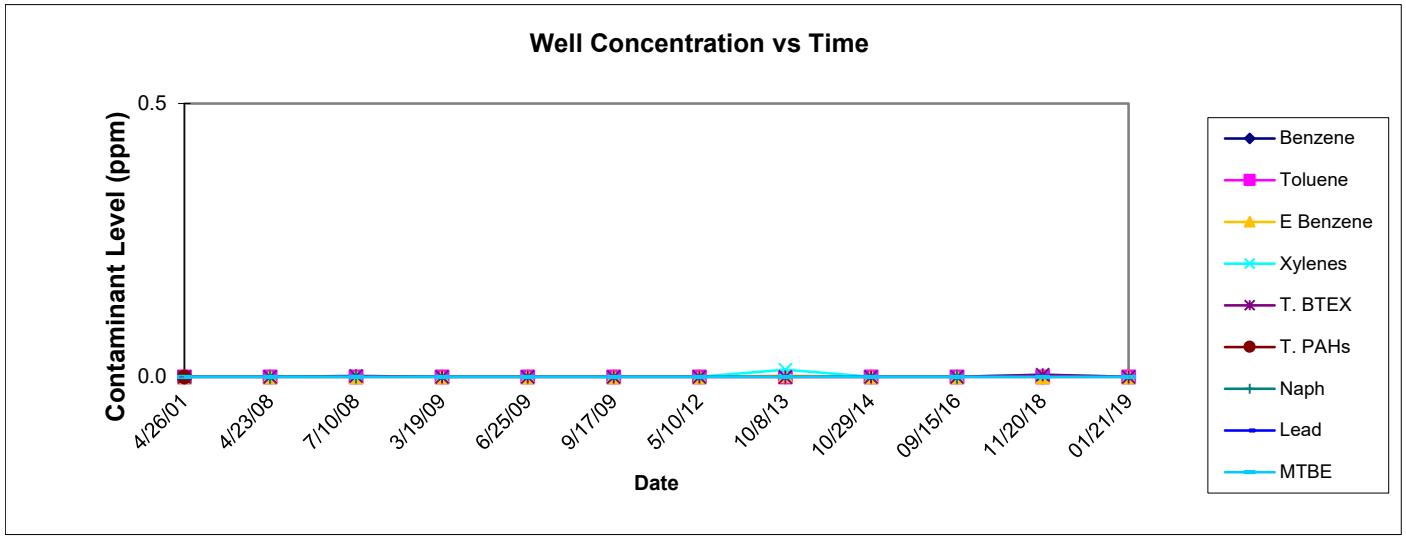


SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

MW-12

Section 6 - Monitoring/Recovery Well Concentration Data (mg/l) [Currect Event Plus Previous 10 Events & Initial Event]												
Well No:	MW-12											
Date	4/26/01	4/23/08	7/10/08	3/19/09	6/25/09	9/17/09	5/10/12	10/8/13	10/29/14	09/15/16	11/20/18	01/21/19
PSH (feet)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	BDL	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0010	<0.00100	<0.00100	<0.00100
Toluene	BDL	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.00500	<0.00100	<0.00100
E Benzene	BDL	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.002	<0.0010	<0.00100	<0.00100	<0.00100
Xylenes	BDL	<0.003	0.0016	<0.0015	<0.0015	<0.0015	<0.0015	0.013	<0.0030	<0.00300	0.00380	<0.00300
T. BTEX	BDL	<0.010	0.0016	<0.0075	<0.0075	<0.0075	<0.0075	<0.0075	<0.010	<0.010	0.00380	<0.00600
T. PAHs	BDL											
Naph		<0.005	<0.001							<0.00500		
Lead												
MTBE	BDL	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.00100	<0.00100	<0.00100

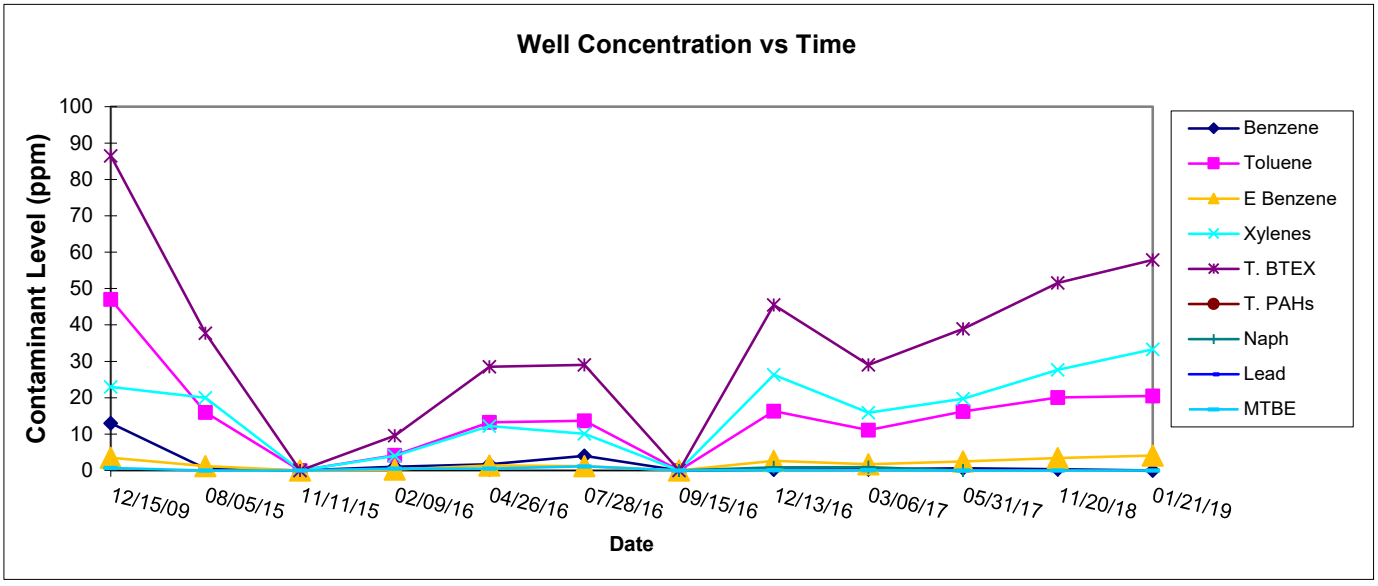


SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

VZ-13

Section 6 - Monitoring/Recovery Well Concentration Data (mg/l) [Currect Event Plus Previous 10 Events & Initial Event]												
Well No:	**VZ-13**											
Date	12/15/09	08/05/15	11/11/15	02/09/16	04/26/16	07/28/16	09/15/16	12/13/16	03/06/17	05/31/17	11/20/18	01/21/19
PSH (feet)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	13	0.54	<0.001	1.06	1.74	4.03	<0.00100	0.265	0.334	0.613	0.362	<0.250
Toluene	47	16	<0.005	4.21	13.2	13.7	<0.00500	16.3	11.1	16.2	20.1	20.5
E Benzene	3.5	1.2	<0.001	0.288	1.340	1.18	0.0112	2.65	1.71	2.44	3.38	4.10
Xylenes	23	20	<0.003	3.99	12.2	10.1	0.0115	26.3	15.9	19.7	27.7	33.3
T. BTEX	86.5	37.74	<0.010	9.55	28.48	29.0	0.0227	45.5	29.0	39.0	51.5	57.9
T. PAHs												
Naph							<0.00500	0.837	0.911	<2.50		
Lead												
MTBE	0.66	<0.50	<0.001	0.516	0.548	1.14	<0.00100	0.102	0.0555	<0.500	<0.0200	<0.250

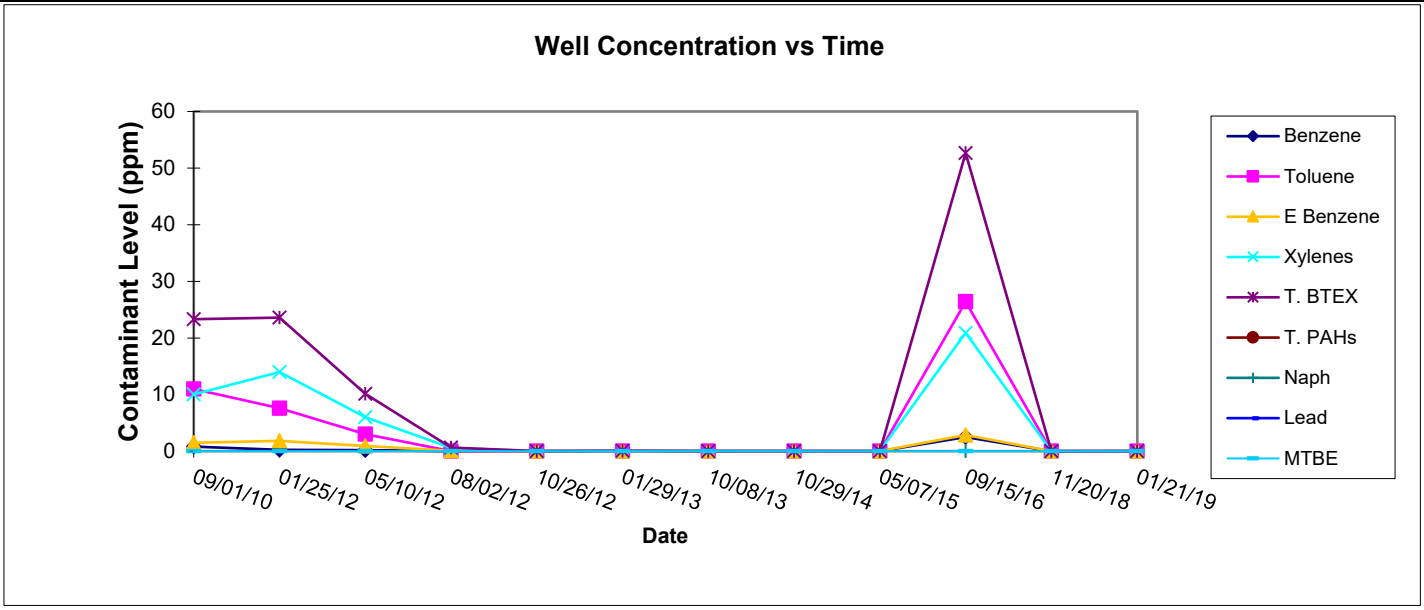


SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

VZ-14

Section 6 - Monitoring/Recovery Well Concentration Data (mg/l) [Currect Event Plus Previous 10 Events & Initial Event]												
Well No:	**VZ-14**											
Date	09/01/10	01/25/12	05/10/12	08/02/12	10/26/12	01/29/13	10/08/13	10/29/14	05/07/15	09/15/16	11/20/18	01/21/19
PSH (feet)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	0.8	0.22	0.20	0.0068	<0.00050	<0.005	0.0013	<0.0010	<0.0010	2.49	<0.00100	<0.00100
Toluene	11	7.6	3.0	0.034	<0.0050	0.0051	<0.0050	<0.0050	<0.0050	26.4	<0.00100	0.00747
E Benzene	1.5	1.8	0.92	0.048	0.0029	0.0079	0.0023	<0.0010	0.0024	2.86	<0.00100	0.00202
Xylenes	10.0	14	6	0.55	0.0320	0.027	0.014	0.0043	0.0055	20.9	<0.00300	0.0171
T. BTEX	23.3	23.62	10.12	0.6388	0.0349	0.040	0.018	0.0043	0.0079	52.7	<0.00600	0.0266
T. PAHs												
Naph										<10.0		
Lead												
MTBE	<0.001	<0.20	<0.10	0.018	<0.0010	0.0014	0.0039	<0.0010	<0.0010	<2.00	<0.00100	<0.00100

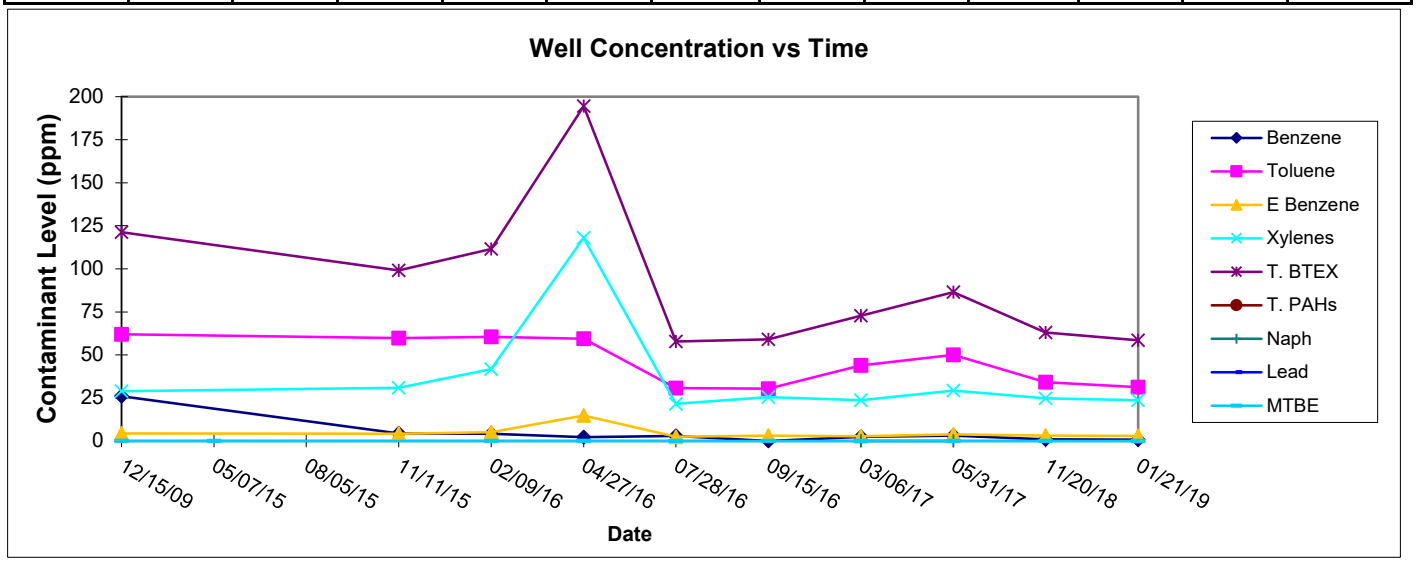


SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

VZ-15

Section 6 - Monitoring/Recovery Well Concentration Data (mg/l) [Currect Event Plus Previous 10 Events & Initial Event]												
Well No:	**VZ-15**											
Date	12/15/09	05/07/15	08/05/15	11/11/15	02/09/16	04/27/16	07/28/16	09/15/16	03/06/17	05/31/17	11/20/18	01/21/19
PSH (feet)	0.00	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	26			4.31	4.19	2.28	2.9	<2.50	2.46	3.16	1.04	0.798
Toluene	62			59.7	60.4	59.4	30.8	30.4	43.9	50.1	34.1	31.2
E Benzene	4.3			4.22	5.16	14.8	2.49	3.11	2.77	3.81	3.10	2.91
Xylenes	29			30.9	41.8	118.0	21.6	25.5	23.6	29.3	24.8	23.6
T. BTEX	121.3			99.1	111.6	194.5	57.8	59.0	72.7	86.4	63.0	58.5
T. PAHs												
Naph									<12.5	<1.25		
Lead												
MTBE	<0.5	<0.20			<0.500	<0.500	<0.500	<0.500	<2.50	<0.250	<0.500	<0.500

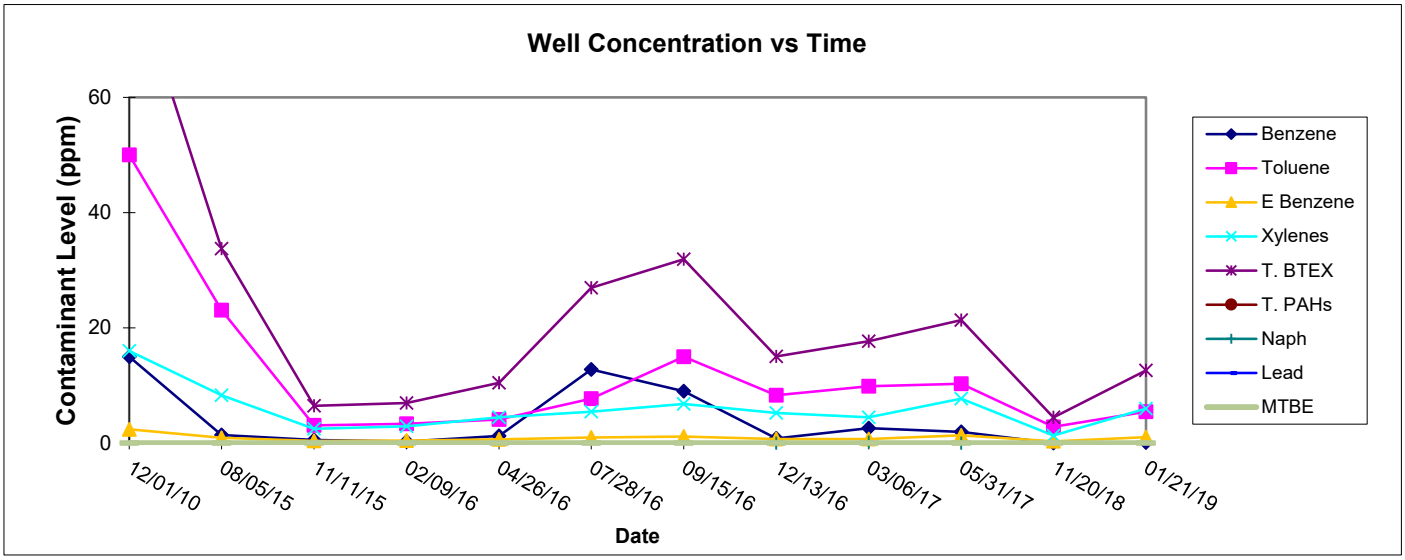


SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

VZ-16

Section 6 - Monitoring/Recovery Well Concentration Data (mg/l) [Currect Event Plus Previous 10 Events & Initial Event]												
Well No:	**VZ-16**											
Date	12/01/10	08/05/15	11/11/15	02/09/16	04/26/16	07/28/16	09/15/16	12/13/16	03/06/17	05/31/17	11/20/18	01/21/19
PSH (feet)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	15	1.40	0.528	0.284	1.240	12.8	9.03	0.807	2.60	1.97	<0.100	0.106
Toluene	50	23.1	3.09	3.34	4.09	7.71	15.0	8.28	9.87	10.3	2.83	5.46
E Benzene	2.4	0.927	0.392	0.413	0.676	0.971	1.12	0.716	0.704	1.34	0.306	1.03
Xylenes	16	8.3	2.47	2.90	4.46	5.45	6.78	5.22	4.50	7.74	1.32	6.00
T. BTEX	83.4	33.7	6.5	6.94	10.47	26.9	31.9	15.02	17.67	21.4	4.46	12.60
T. PAHs												
Naph								<0.500	0.173	<0.250		
Lead												
MTBE	<0.50	<0.050	<0.0100	<0.0100	<0.200	<0.200	<0.0500	<0.100	<0.00500	<0.0500	<0.100	<0.0500

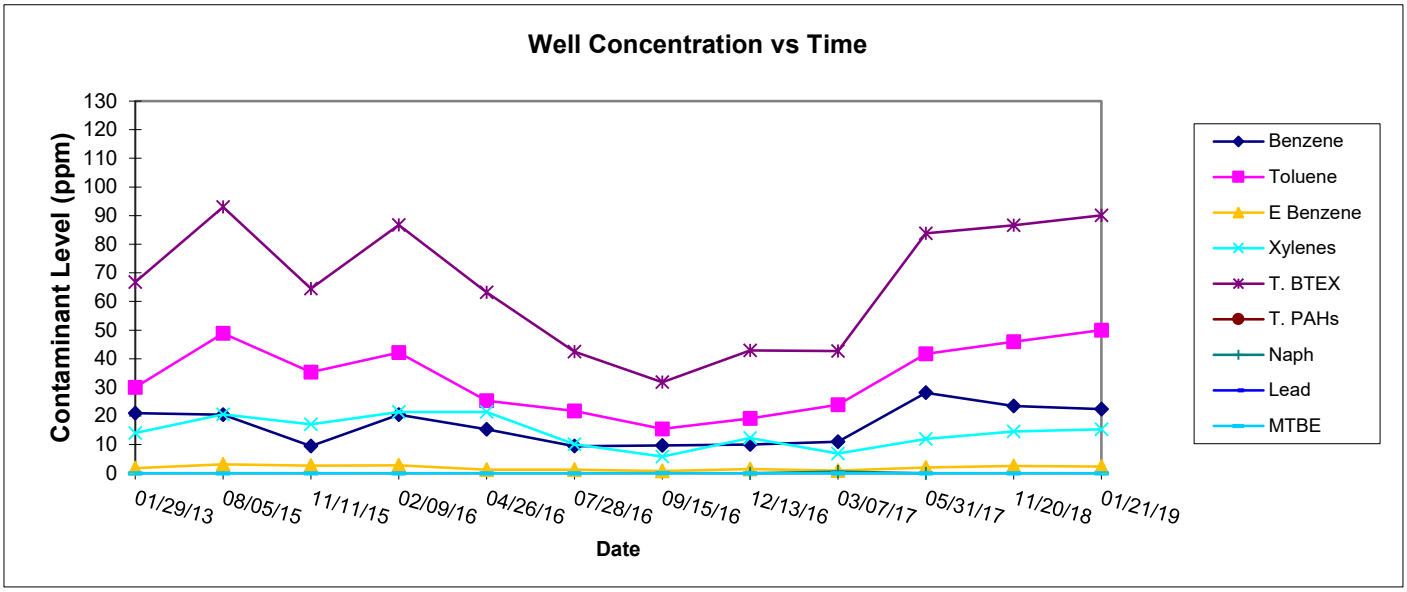


SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

VZ-17

Section 6 - Monitoring/Recovery Well Concentration Data (mg/l) [Currect Event Plus Previous 10 Events & Initial Event]												
Well No:	**VZ-17**											
Date	01/29/13	08/05/15	11/11/15	02/09/16	04/26/16	07/28/16	09/15/16	12/13/16	03/07/17	05/31/17	11/20/18	01/21/19
PSH (feet)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	21.00	20.4	9.49	20.4	15.3	9.44	9.69	10.0	11.0	28.1	23.5	22.4
Toluene	30.0	48.9	35.3	42.2	25.3	21.7	15.5	19.1	23.9	41.7	45.9	50.0
E Benzene	1.8	3.11	2.62	2.76	1.24	1.26	0.778	1.50	0.956	1.98	2.60	2.33
Xylenes	14	20.6	17.1	21.4	21.4	10.1	5.82	12.3	6.88	12.0	14.6	15.4
T. BTEX	66.80	93.01	64.51	86.8	63.2	42.5	31.8	42.9	42.7	83.8	86.6	90.1
T. PAHs												
Naph								<1.00	0.565	<1.00		
Lead												
MTBE	<0.50	<0.25	<0.500	<0.500	<0.500	<0.500	0.0406	<0.200	<0.0500	<0.200	<0.100	<0.500



SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name:	Former Circle (Medical Center) BP		
Facility I. D. No.	20503-069-002586	**Incident No.**	UST98-09-01
Year:	2019	**Reporting Period:**	Nov. 2018 - Feb. 2019
Consultant:	Stantec Consulting Services Inc.	**Project Manager:**	Erin O'Malley

Section 7 - History of Major Maintenance/Repair Activities Since System Start-up	
Date	Description of Work Performed*
04/18/06	Removed two of the four carbon drums on the exhaust of the SVE system.
07/25/06	Evacuated water/condensation from all vacuum lines.
08/31/06	Evacuated water/condensation from all vacuum lines. Replaced exhaust flex hose.
09/26/06	Evacuated water/condensation from all vacuum lines.
10/25/06	Evacuated water/condensation from all vacuum lines.
11/09/06	Evacuated water/condensation from all vacuum lines.
11/29/06	Evacuated water/condensation from all vacuum lines.
12/28/06	Evacuated water/condensation from all vacuum lines.
01/17/07	Evacuated water/condensation from all vacuum lines.
02/14/07	Evacuated water/condensation from all vacuum lines.
08/30/07	Evacuated water/condensation from all vacuum lines. Replaced well cap for VZ-15.
11/29/07	Evacuated water/condensation from RW-13 and RW-15 vacuum lines.
02/26/08	Replaced ambient air filter.
05/29/08	Evacuated water/condensation from RW-13 and RW-15 vacuum lines.
10/28/10	Evacuated water/condensation from RW-13 and RW-15 vacuum lines.
08/17/11	Added air sparge unit
10/27/11	Repaired damage from sprinkler on electrical panel
02/22/12	Turned Off air sparge unit
04/18/12	Carbon swap
07/11/13	Re-started SVE system for CP-41; AS system remains off pending UIC
09/17/14	Took off carbon and restarted air sparge system
04/22/15	Repaired and cleaned inside components of air sparge. Vendor sent wrong parts. Reordered
05/18/15	Replaced vanes on air sparge blower. Returned AS to operation.
02/24/16	Sparge system down upon arrival; restarted
03/08/16	Sparge system off upon arrival. Backflowed VZ-15.
04/06/16	Vanes on sparge system went bad; shut down system.
04/25/16	Sparge sytem shut down.
06/22/16	Repaired vanes on air sparge blower. Returned AS to operation.
07/27/16	Sparge system down upon arrival; restarted.
08/09/16	Sparge system down upon arrival; restarted.
08/23/16	Sparge system down upon arrival; restarted.
09/20/16	Sparge system down upon arrival; restarted.
10/06/16	Sparge system down upon arrival; restarted.
12/13/16	Sparge system down upon arrival; restarted.
01/24/17	Sparge system down upon arrival; restarted.
03/07/17	Vanes on sparge system went bad; shut down system.
03/14/17	SVE system shut down per ADEM

*Indicate whether the work was performed by consultant, equipment manufacturer, etc.

SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name:	Former Circle (Medical Center) BP		
Facility I. D. No.	20503-069-002586	**Incident No.**	UST98-09-01
Year:	2019	**Reporting Period:**	Nov. 2018 - Feb. 2019
Consultant:	Stantec Consulting Services Inc.	**Project Manager:**	Erin O'Malley

Section 9 - Groundwater Extraction Information								
		Flow Rate (gpm)						
	Well No.							
Design Flow Rate for Groundwater Extraction:								
Actual Average Flow Rate During First Month:								
Actual Average Flow Rate Since Startup:								
Total Gallons Pumped:								
Number of Days Pumping Occurred:								
Reporting Period Average Flow Rate:								
	Pump Operation:		Continual					

Section 10 - Vapor Extraction Information								
		Air Flow Rate (cfm)						
	Well No.	VZ-13	VZ-14	VZ-15	VZ-16	VZ-17		Total
Design Flow Rate for Vapor Extraction System:								80
Actual Average Flow Rate During First Month:								59.6
Actual Average Flow Rate Since Startup (31):								138.26
Reporting Period Average Flow Rate:								NA
	Blower Operation:		Continual					

SYSTEM-EFFECTIVENESS MONITORING REPORT

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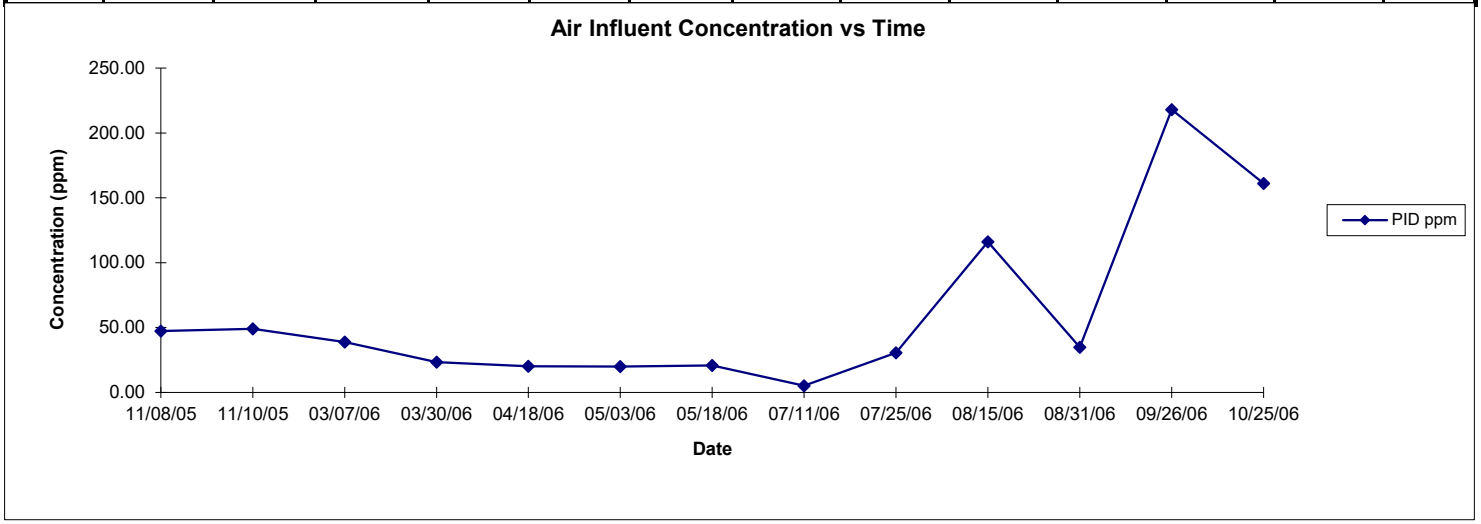
Section 12 - Air Effluent Concentration Data (per permit requirements)
Provide similar table and graph for each vapor extraction point monitored

Effluent Readings by Event [Current Event Plus 10 Previous Events & Initial Event]

Point of Measurement:			**Influent (Pre Carbon)**										
Date	11/08/05	11/10/05	03/07/06	03/30/06	04/18/06	05/03/06	05/18/06	07/11/06	07/25/06	08/15/06	08/31/06	09/26/06	10/25/06
PID ppm	47.40	49.00	38.80	23.40	20.20	20.00	20.90	5.20	30.50	116.00	34.80	218.00	161.00
Laboratory Analysis:													
TPH ppm	0.0012					0.012				1.160			0.760
BTEXppb	0.0003135					0.0021200				0.1637			0.09279
Other													
Other													



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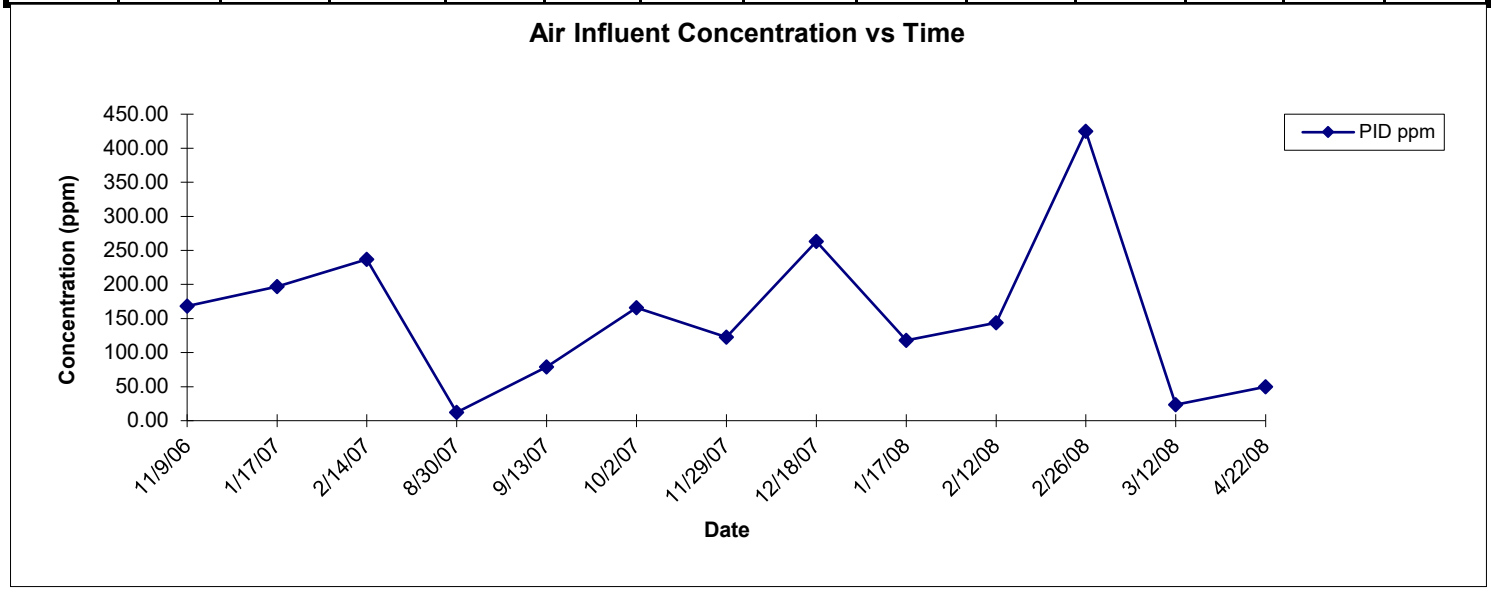
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

Section 12 - Air Effluent Concentration Data (per permit requirements) Provide similar table and graph for each vapor extraction point monitored													
Effluent Readings by Event [Current Event Plus 10 Previous Events & Initial Event]													
Point of Measurement:	Influent (Pre Carbon)												
Date	11/9/06	1/17/07	2/14/07	8/30/07	9/13/07	10/2/07	11/29/07	12/18/07	1/17/08	2/12/08	2/26/08	3/12/08	4/22/08
PID ppm	168.00	197.00	237.00	12.20	78.80	166.00	122.40	263.00	118.00	144.00	425.00	23.50	50.00
Laboratory Analysis:													
TPH ppm			0.440			1.000		1.480					0.192
BTEXppb			0.07781			0.13458		0.25967					0.04044
Other													
Other													



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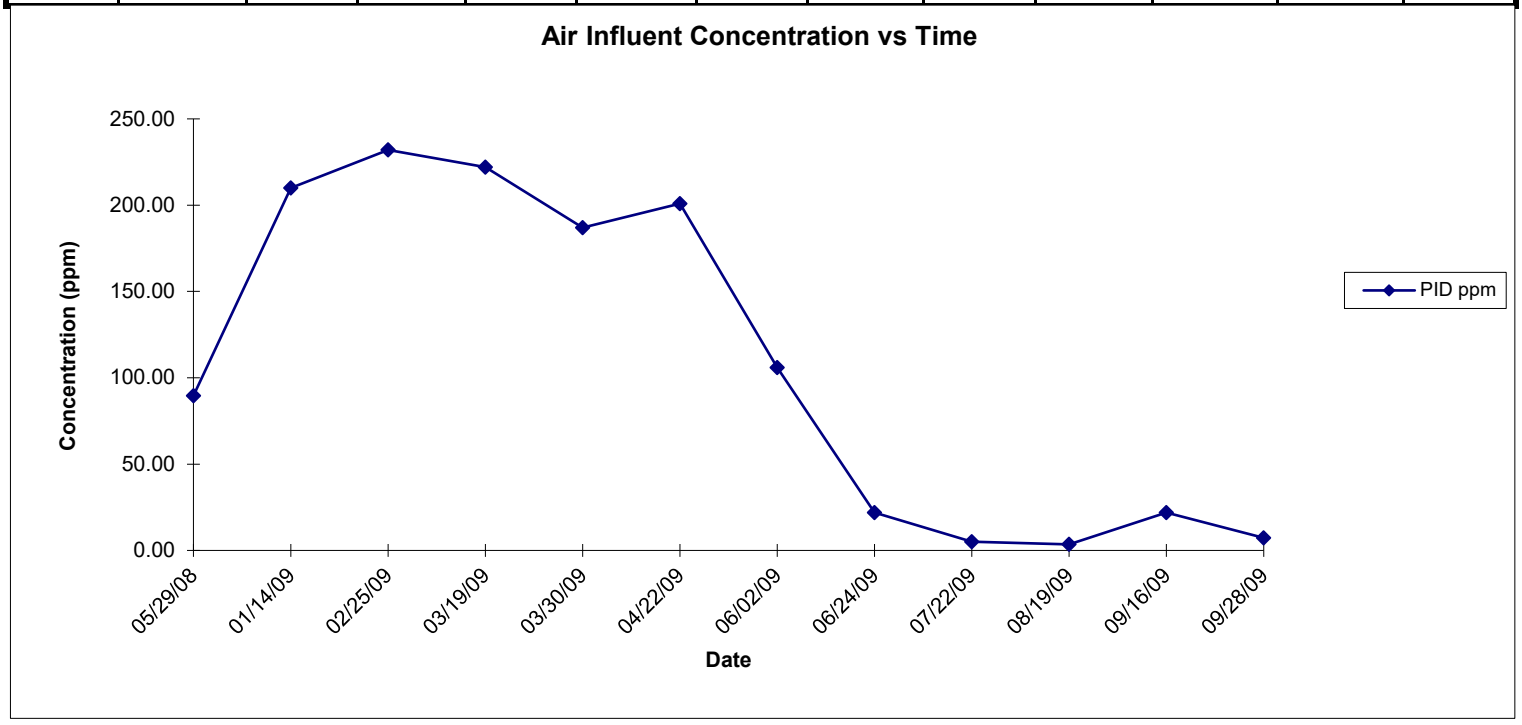
Section 12 - Air Effluent Concentration Data (per permit requirements)
Provide similar table and graph for each vapor extraction point monitored

Effluent Readings by Event [Current Event Plus 10 Previous Events & Initial Event]

Point of Measurement:	Influent (Pre Carbon)											
Date	05/29/08	01/14/09	02/25/09	03/19/09	03/30/09	04/22/09	06/02/09	06/24/09	07/22/09	08/19/09	09/16/09	09/28/09
PID ppm	89.70	210.00	232.00	222.00	187.00	201.00	106.00	22.00	5.10	3.50	22.00	7.20
Laboratory Analysis:												
TPH ppm				0.336				0.052			0.04	
BTEXppb				0.02389				0.001472			0.0001	
Other												
Other												



SYSTEM-EFFECTIVENESS MONITORING REPORT

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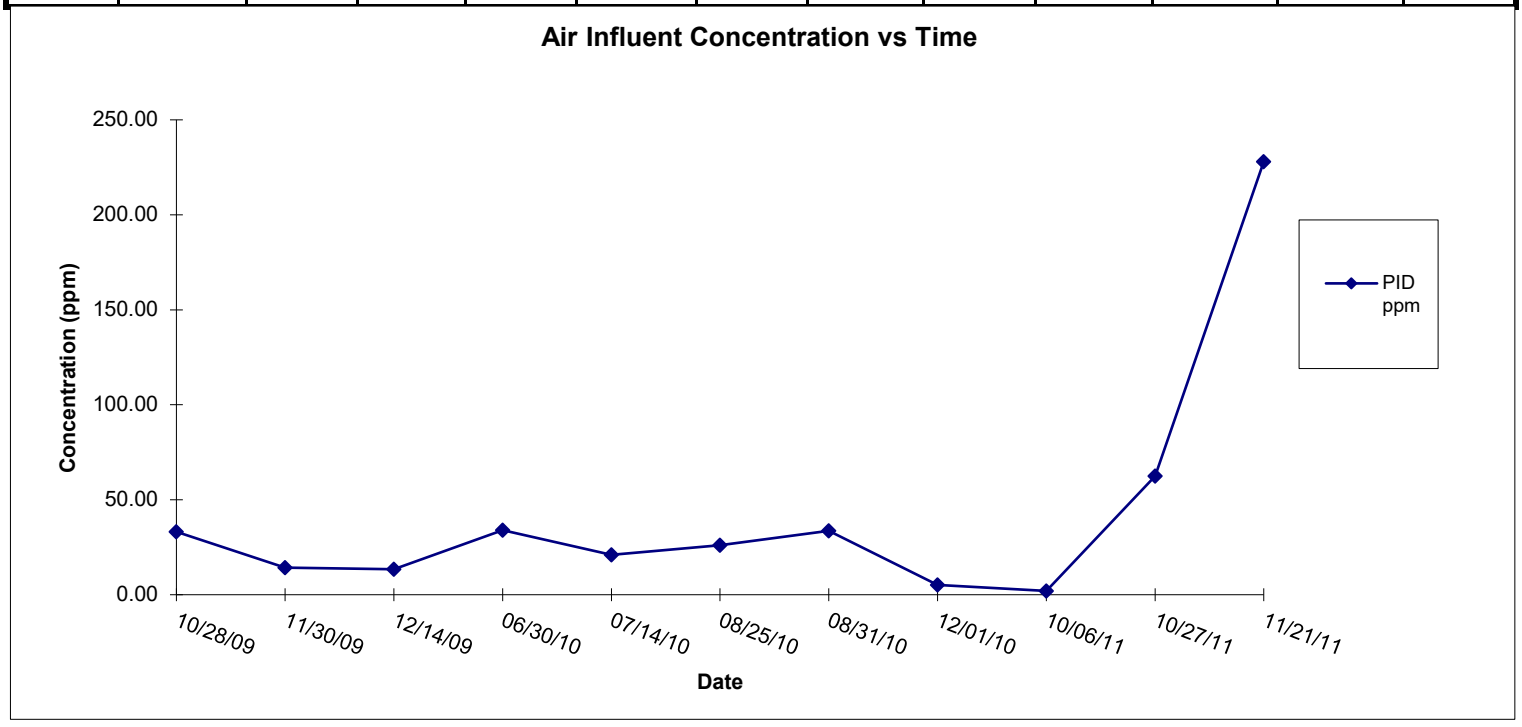
Section 12 - Air Effluent Concentration Data (per permit requirements)
Provide similar table and graph for each vapor extraction point monitored

Effluent Readings by Event [Current Event Plus 10 Previous Events & Initial Event]

Point of Measurement:			Influent (Pre Carbon)									
Date	10/28/09	11/30/09	12/14/09	06/30/10	07/14/10	08/25/10	08/31/10	12/01/10	10/06/11	10/27/11	11/21/11	
PID ppm	33.20	14.20	13.50	34.00	21.00	26.00	33.70	5.20	2.00	62.40	228.00	
Laboratory Analysis:												
TPH ppm			<0.0040				0.17	0.14			0.7	
BTEXppb			0.00001				0.036	0.012			0.0834	
Other												
Other												



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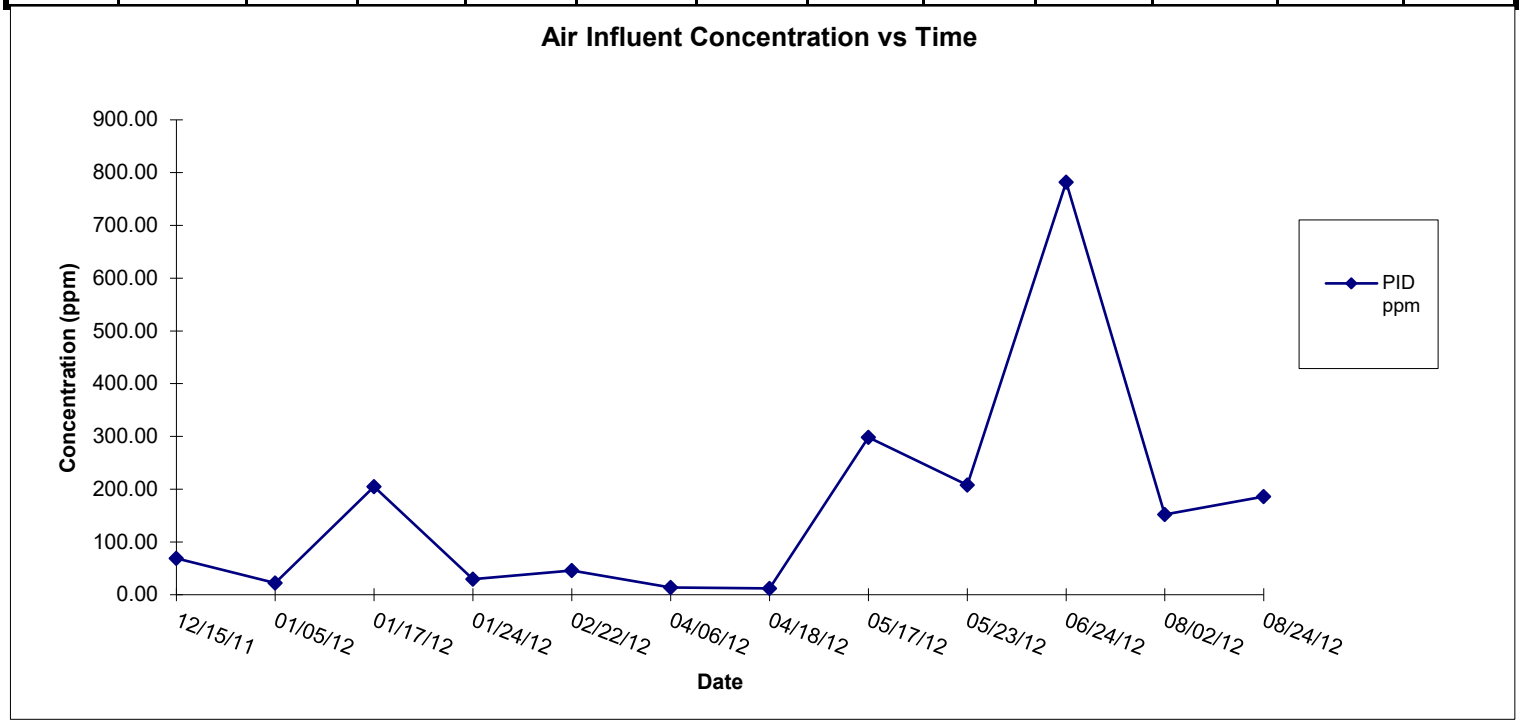
Section 12 - Air Effluent Concentration Data (per permit requirements)
Provide similar table and graph for each vapor extraction point monitored
Effluent Readings by Event [Current Event Plus 10 Previous Events & Initial Event]

Point of Measurement:			Influent (Pre Carbon)									
Date	12/15/11	01/05/12	01/17/12	01/24/12	02/22/12	04/06/12	04/18/12	05/17/12	05/23/12	06/24/12	08/02/12	08/24/12
PID ppm	68.80	22.50	205.00	29.30	45.80	13.90	12.00	298.00	208.00	782.00	152.00	186.00
Laboratory Analysis:												
TPH ppm				0.124				1.76			1.12	
BTEXppb				0.02000				0.0118			0.016	
Other												
Other												



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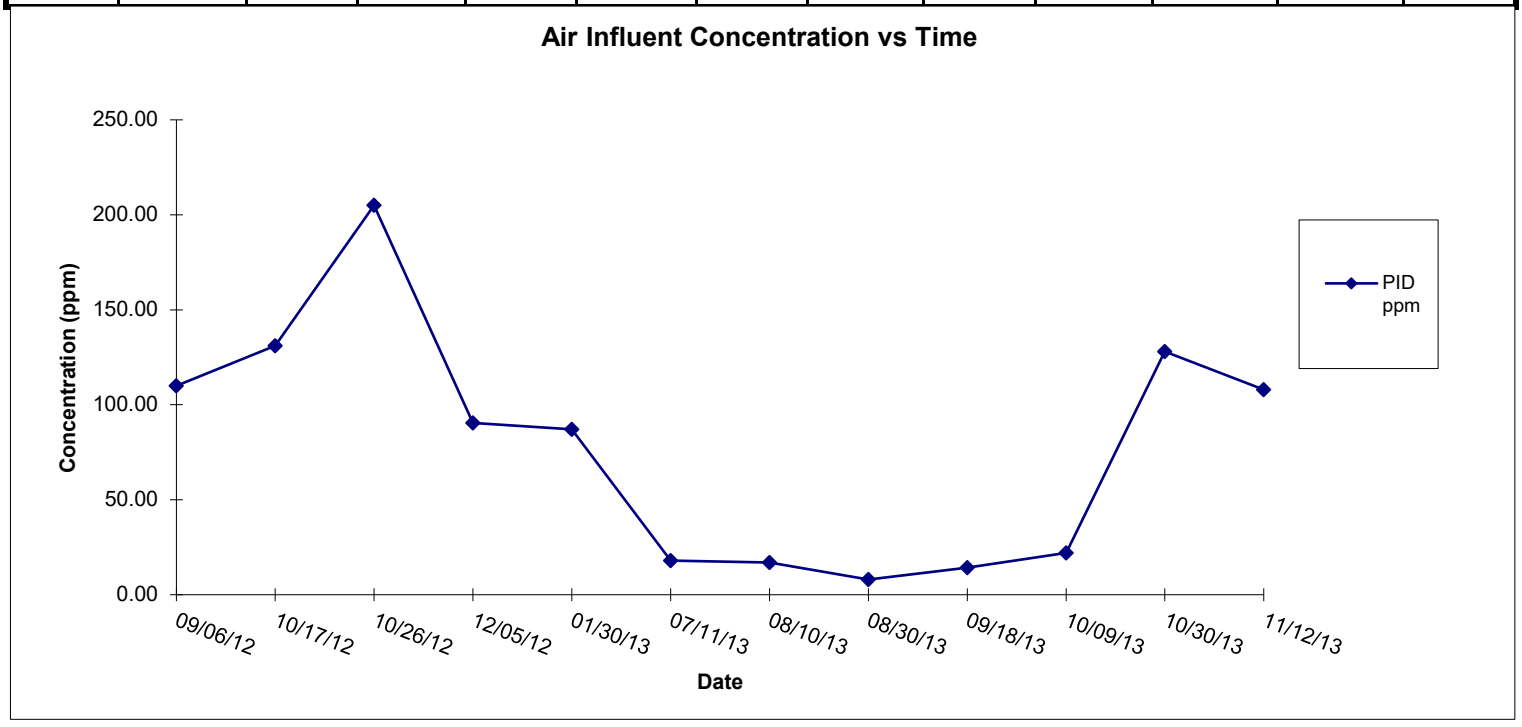
Section 12 - Air Effluent Concentration Data (per permit requirements)
Provide similar table and graph for each vapor extraction point monitored
Effluent Readings by Event [Current Event Plus 10 Previous Events & Initial Event]

Point of Measurement:			Influent (Pre Carbon)									
Date	09/06/12	10/17/12	10/26/12	12/05/12	01/30/13	07/11/13	08/10/13	08/30/13	09/18/13	10/09/13	10/30/13	11/12/13
PID ppm	110.00	131.00	205.00	90.50	87.00	18.00	17.00	8.00	14.20	22.00	128.00	108.00
Laboratory Analysis:												
TPH ppm			2.680		0.720					<0.10		
BTEXppb			0.19602		0.08123					<0.0004		
Other												
Other												



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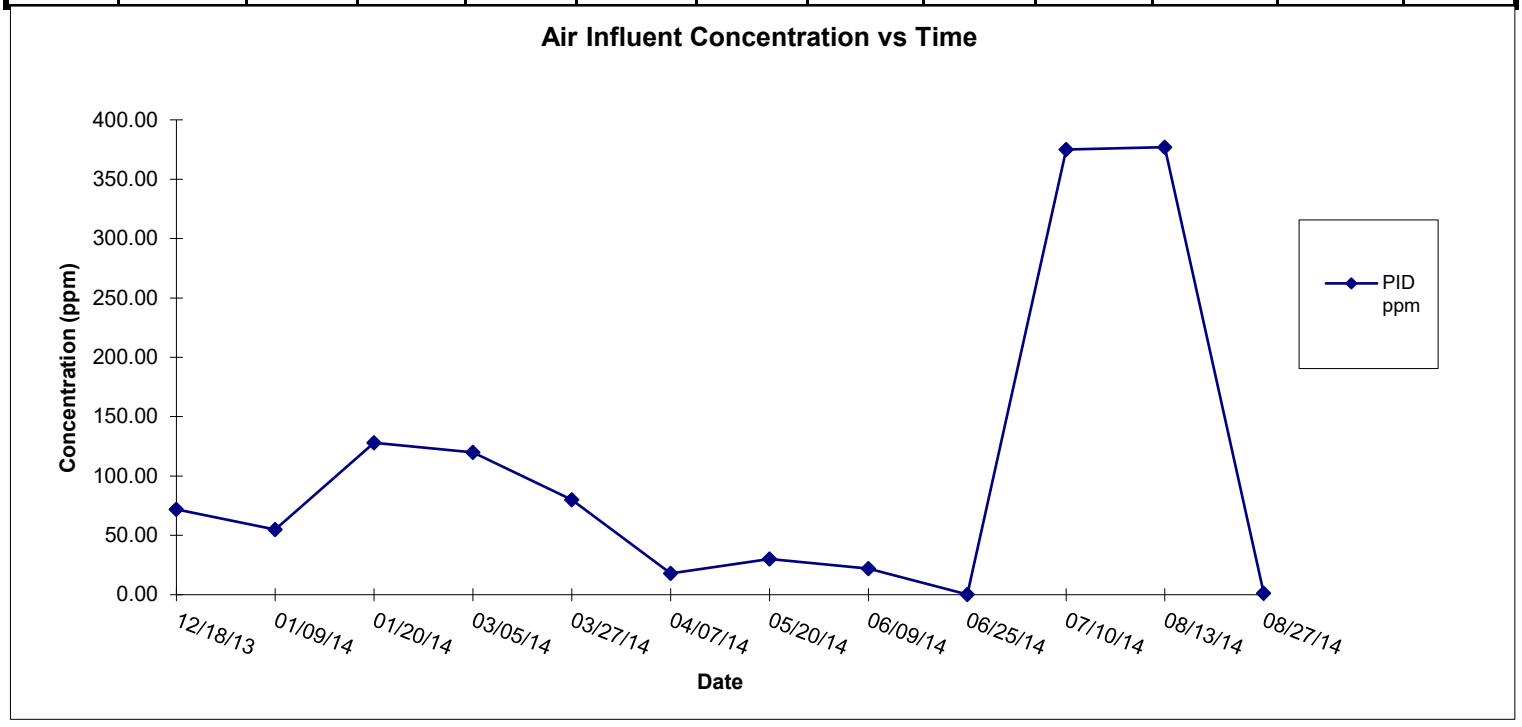
Provide similar table and graph for each vapor extraction point monitored
Effluent Readings by Event [Current Event Plus 10 Previous Events & Initial Event]

Point of Measurement:			Influent (Pre Carbon)									
Date	12/18/13	01/09/14	01/20/14	03/05/14	03/27/14	04/07/14	05/20/14	06/09/14	06/25/14	07/10/14	08/13/14	08/27/14
PID ppm	72.00	55.00	128.00	120.00	80.00	18.00	30.00	22.00	0.20	375.0	377.0	1.20
Laboratory Analysis:												
TPH ppm		<0.0004			<0.0004				<0.0004			
BTEXppb		<0.000001			<0.000001				<0.000001			
Other												
Other												



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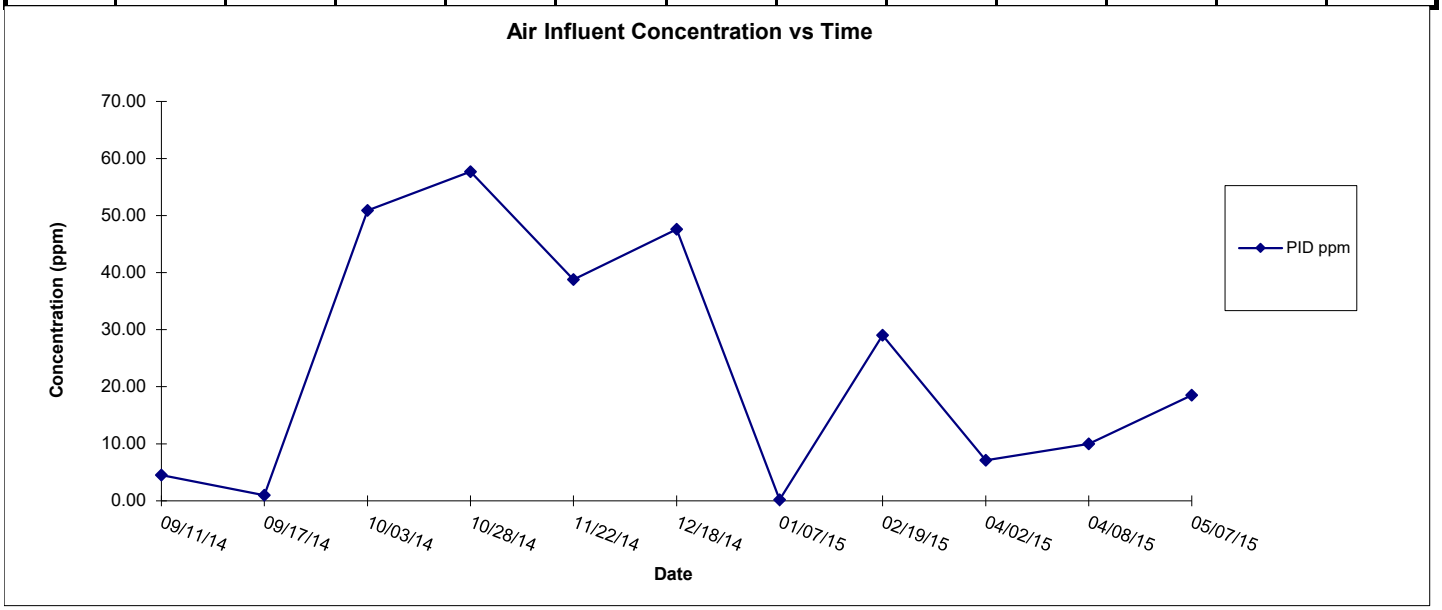
Provide similar table and graph for each vapor extraction point monitored
Effluent Readings by Event [Current Event Plus 10 Previous Events & Initial Event]

Point of Measurement:			Influent									
Date	09/11/14	09/17/14	10/03/14	10/28/14	11/22/14	12/18/14	01/07/15	02/19/15	04/02/15	04/08/15	05/07/15	
PID ppm	4.50	1.00	50.90	57.70	38.8	47.60	0.20	29.00	7.1	10	18.5	
Laboratory Analysis:												
TPH ppm				1.360				0.0056			0.66	
BTEXppb				0.066901				0.001743			0.0426	
Other												
Other												



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Section 12 - Air Effluent Concentration Data (per permit requirements)
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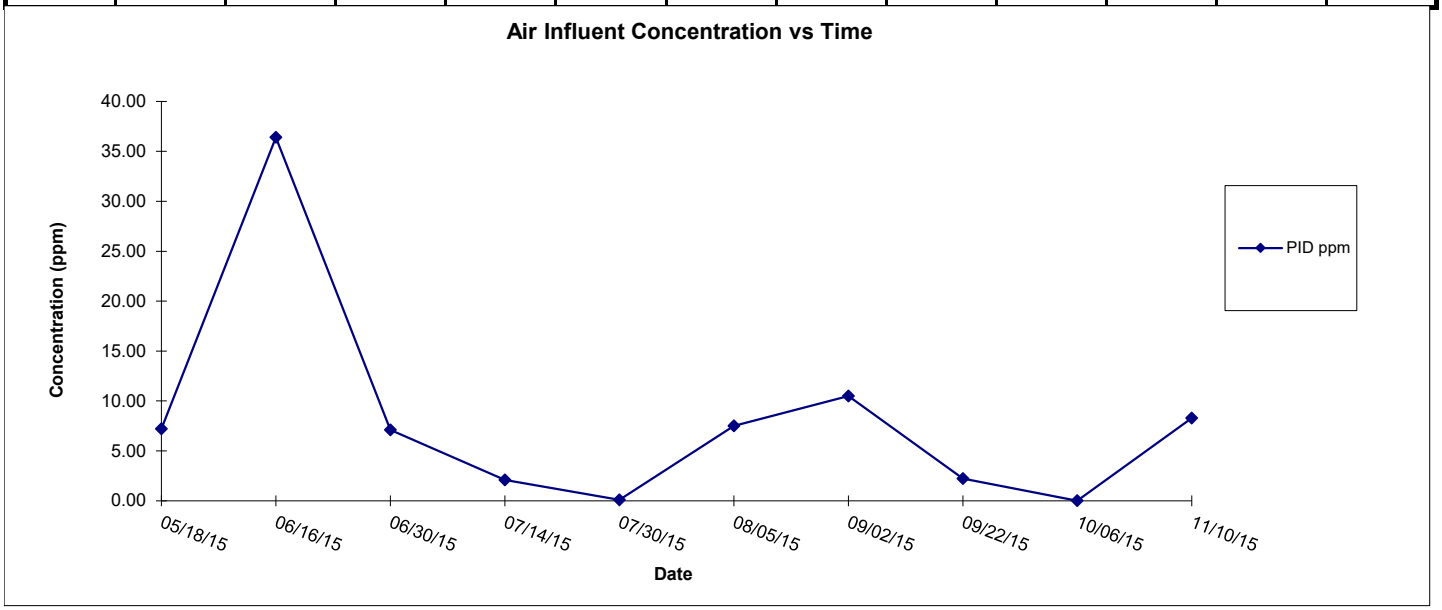
Effluent Readings by Event [Current Event Plus 10 Previous Events & Initial Event]

Point of Measurement:			Influent									
Date	05/18/15	06/16/15	06/30/15	07/14/15	07/30/15	08/05/15	09/02/15	09/22/15	10/06/15	11/10/15		
PID ppm	7.20	36.40	7.10	2.10	0.1	7.50	10.5	2.22	0.01	8.3		
Laboratory Analysis:												
TPH ppm						1.120				0.00001		
BTEXppb						0.197				0.00001		
Other												
Other												



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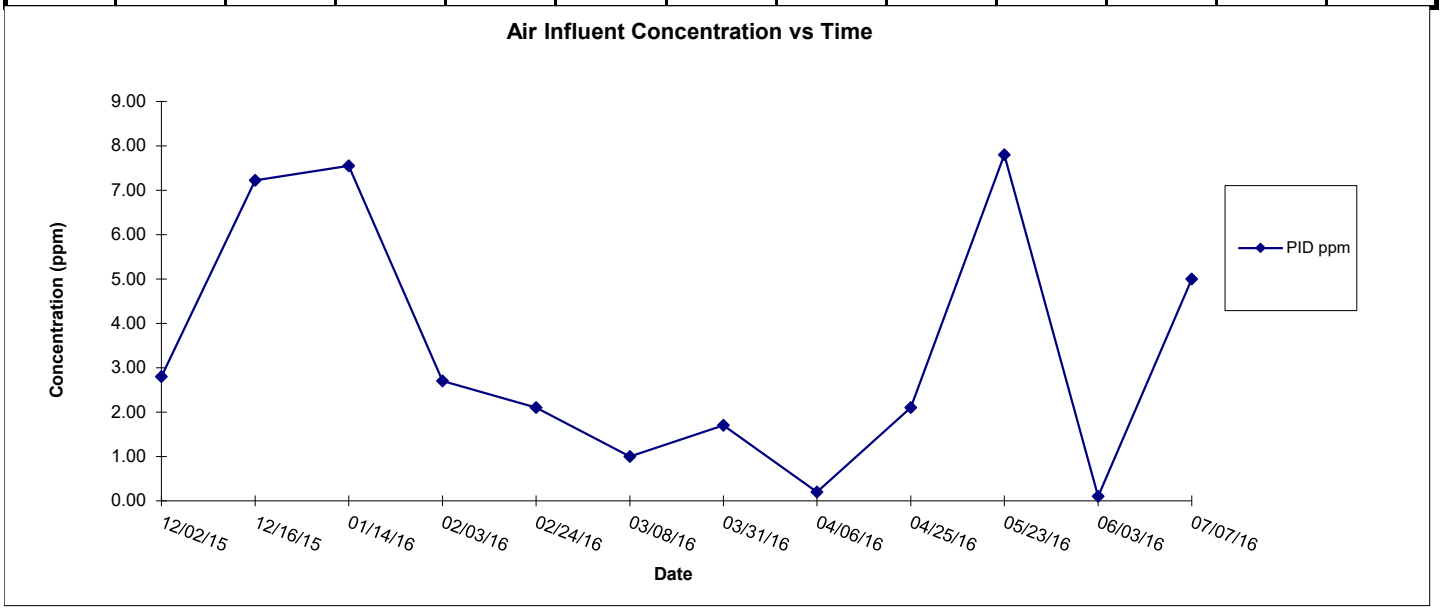
Effluent Readings by Event [Current Event Plus 10 Previous Events & Initial Event]

Point of Measurement:			Influent									
Date	12/02/15	12/16/15	01/14/16	02/03/16	02/24/16	03/08/16	03/31/16	04/06/16	04/25/16	05/23/16	06/03/16	07/07/16
PID ppm	2.80	7.22	7.55	2.70	2.10	1.00	1.70	0.20	2.10	7.8	0.1	5.00
Laboratory Analysis:												
TPH ppm				<0.1					0.811			
BTEXppb				<2.4					1000.5			
Other												
Other												



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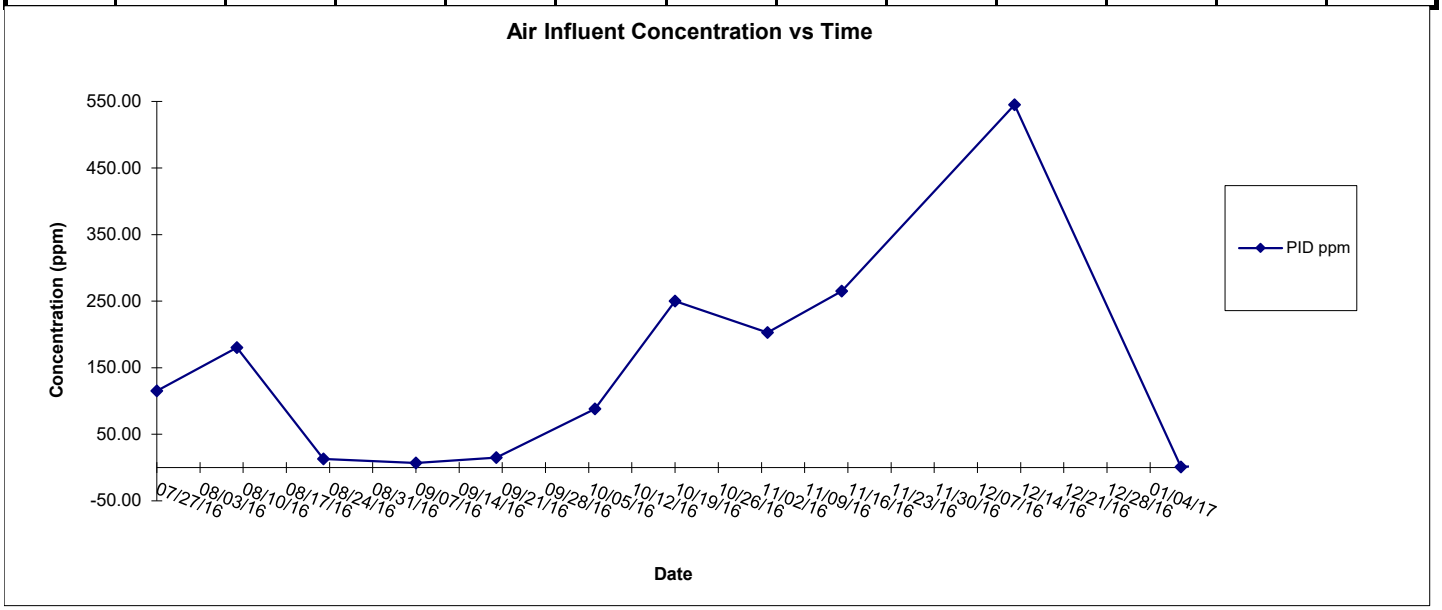
Effluent Readings by Event [Current Event Plus 10 Previous Events & Initial Event]

Point of Measurement:			Influent									
Date	07/27/16	08/09/16	08/23/16	09/07/16	09/20/16	10/06/16	10/19/16	11/03/16	11/15/16	12/13/16	12/20/17	01/09/17
PID ppm	115.00	180.00	13.00	7.00	15.00	88.00	250.00	203.00	265.00	545.0	155.0	1.00
Laboratory Analysis:												
TPH ppm	77.3000											
BTEXppb	96.0000000											
Other												
Other												



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Section 12 - Air Effluent Concentration Data (per permit requirements)
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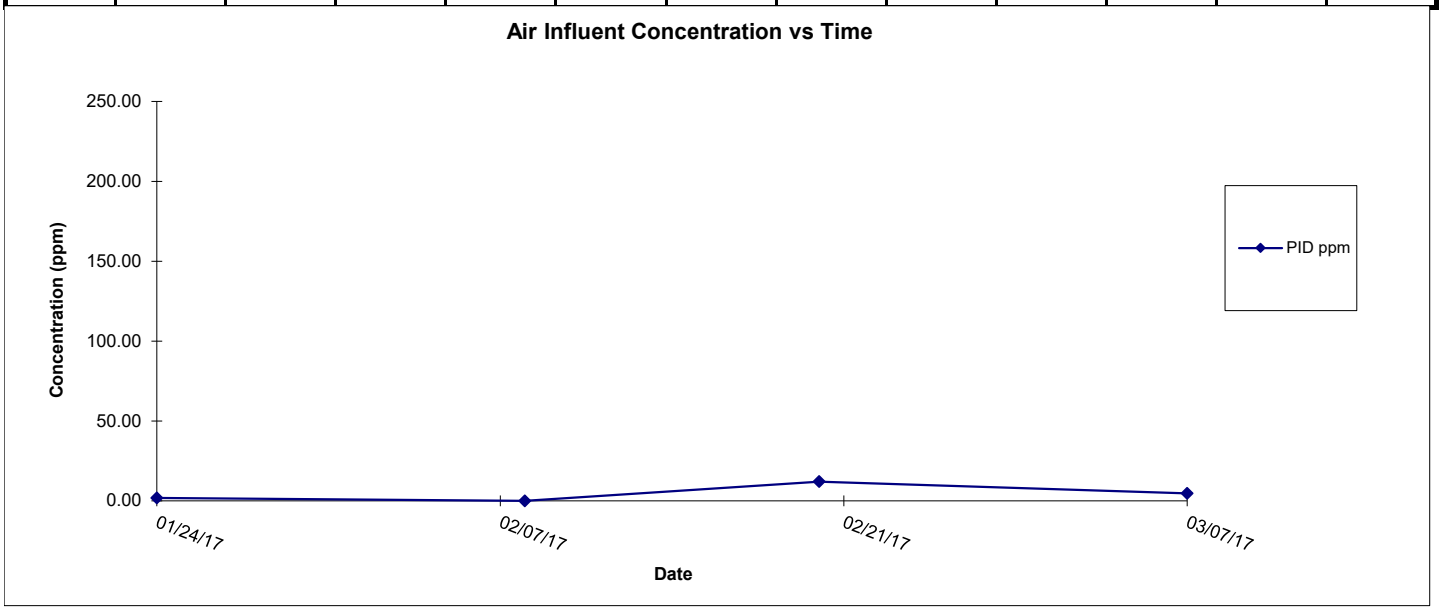
Effluent Readings by Event [Current Event Plus 10 Previous Events & Initial Event]

Point of Measurement:	Influent											
Date	01/24/17	02/08/17	02/20/17	03/07/17								
PID ppm	1.80	0.00	12.00	4.60								
Laboratory Analysis:												
TPH ppm												
BTEXppb												
Other												
Other												



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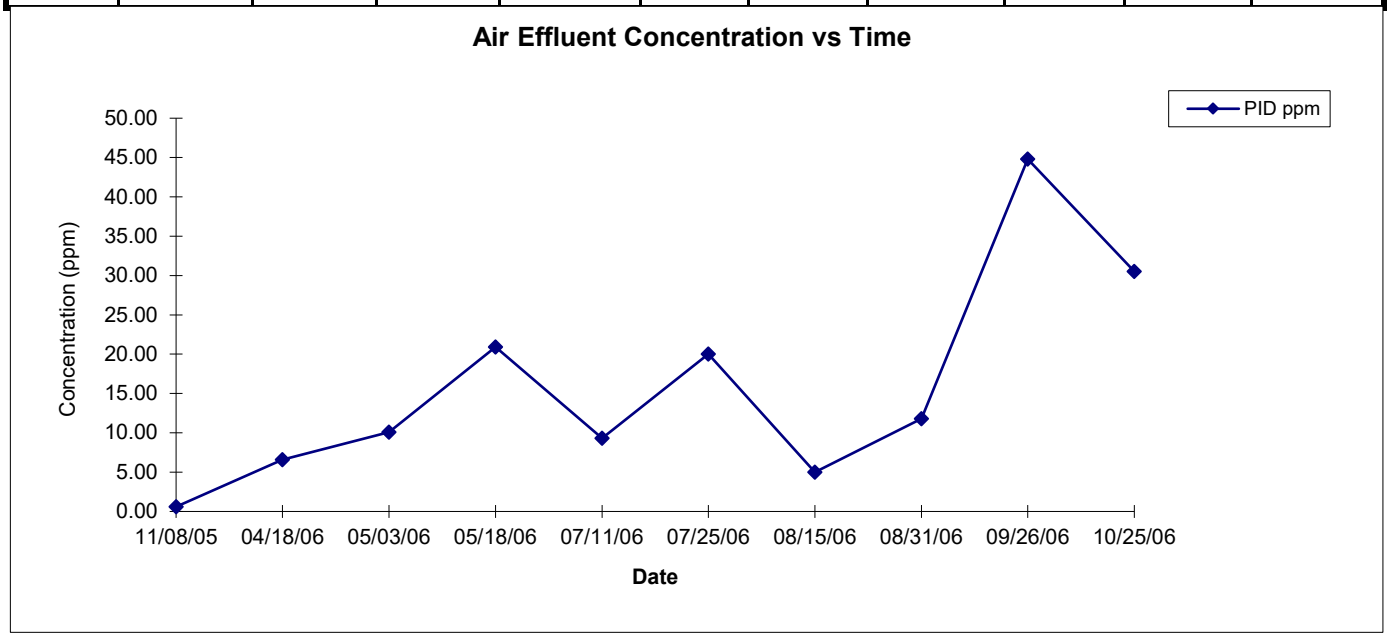
Section 12 - Air Effluent Concentration Data (per permit requirements)
Provide similar table and graph for each vapor extraction point monitored

Effluent Readings by Event [Current Event Plus 10 Previous Events & Initial Event]

Point of Measurement:			Exhaust (Post Carbon)							
Date	11/08/05	04/18/06	05/03/06	05/18/06	07/11/06	07/25/06	08/15/06	08/31/06	09/26/06	10/25/06
PID ppm	0.60	6.60	10.10	20.90	9.30	20.00	5.00	11.80	44.80	30.50
Laboratory Analysis:										
TPH ppm	0.0012		0.004				0.0204			0.0072
BTEXppm	0.0003135		0.001				0.00403			0.00147
Other										
Other										



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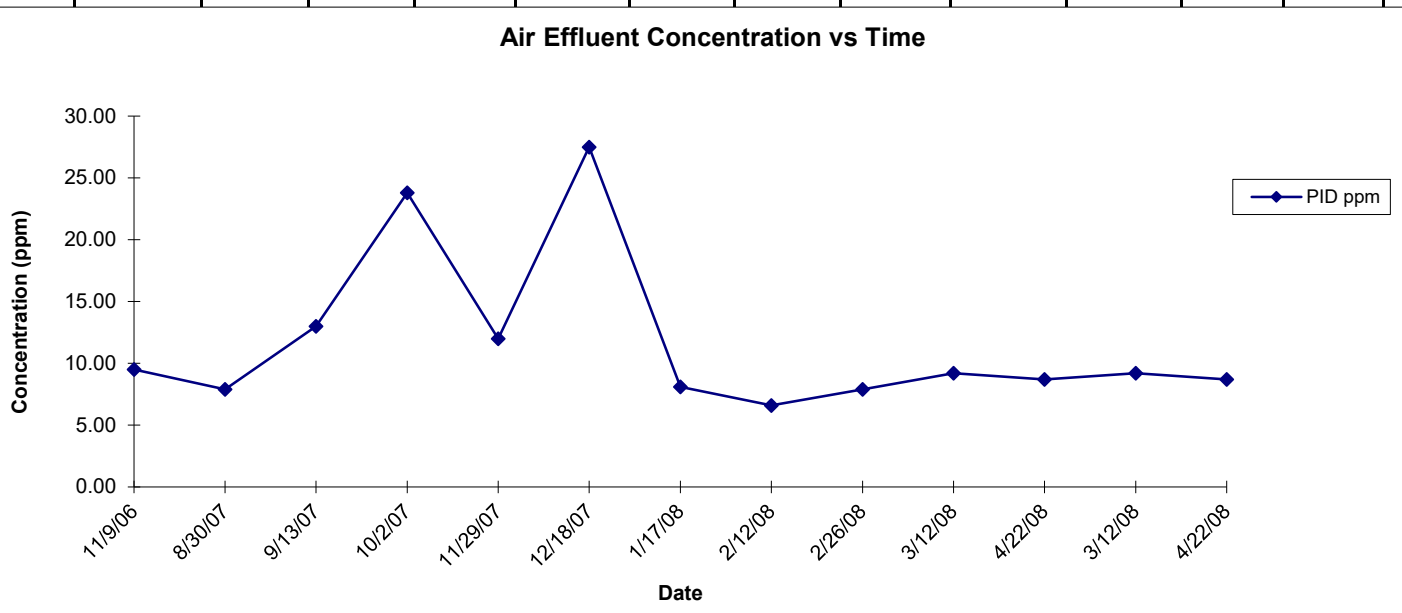
Section 12 - Air Effluent Concentration Data (per permit requirements)
Provide similar table and graph for each vapor extraction point monitored

Effluent Readings by Event [Current Event Plus 10 Previous Events & Initial Event]

Point of Measurement:	Exhaust (Post Carbon)												
Date	11/9/06	8/30/07	9/13/07	10/2/07	11/29/07	12/18/07	1/17/08	2/12/08	2/26/08	3/12/08	4/22/08	3/12/08	4/22/08
PID ppm	9.50	7.90	13.00	23.80	12.00	27.50	8.10	6.60	7.90	9.20	8.70	9.20	8.70
Laboratory Analysis:													
TPH ppm				0.052		0.400					0.044		0.044
BTEXppm				0.007		0.010					0.00756		0.00756
Other													
Other													



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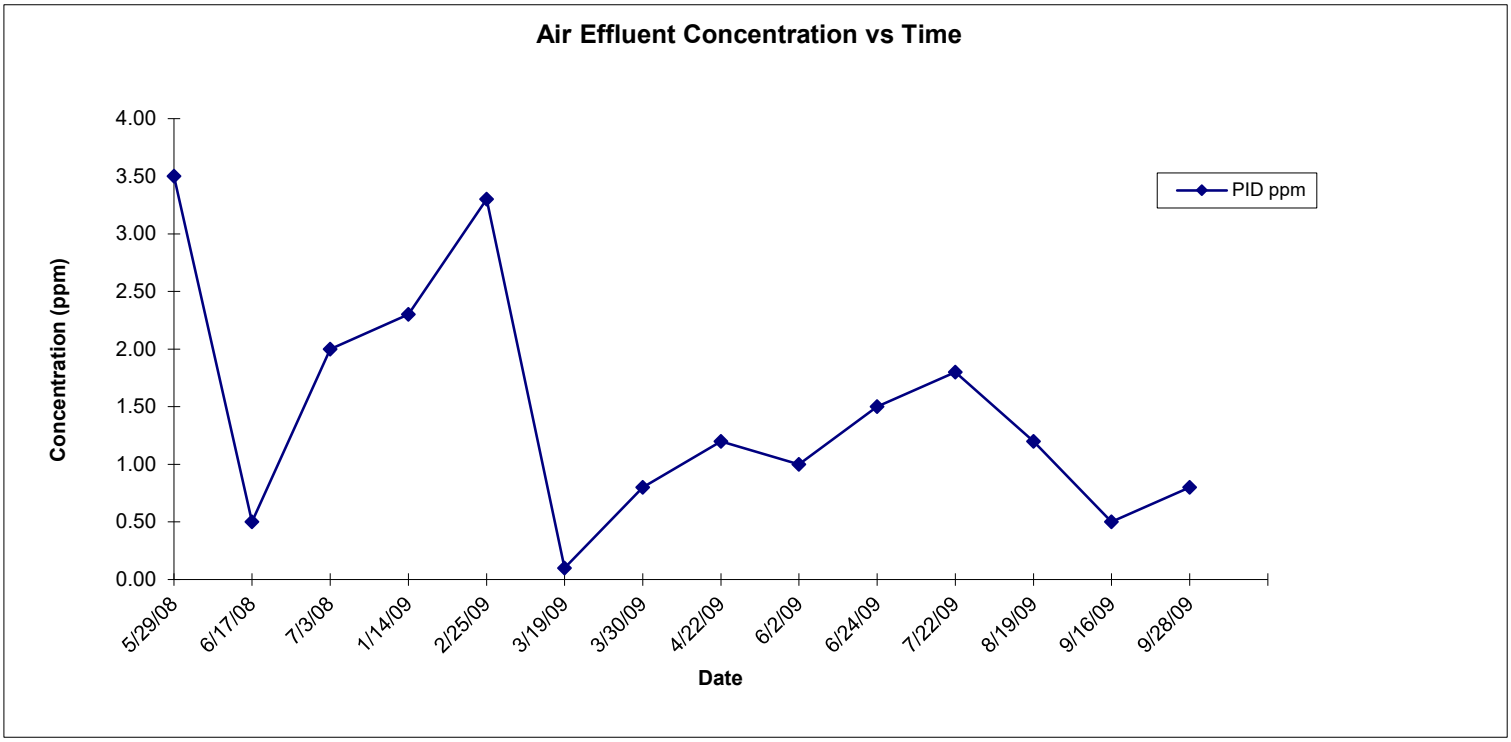
Section 12 - Air Effluent Concentration Data (per permit requirements)
Provide similar table and graph for each vapor extraction point monitored

Effluent Readings by Event [Current Event Plus 10 Previous Events & Initial Event]															
Point of Measurement:			Exhaust (Post Carbon)												
Date	5/29/08	6/17/08	7/3/08	1/14/09	2/25/09	3/19/09	3/30/09	4/22/09	6/2/09	6/24/09	7/22/09	8/19/09	9/16/09	9/28/09	
PID ppm	3.50	0.50	2.00	2.30	3.30	0.10	0.80	1.20	1.00	1.50	1.80	1.20	0.50	0.80	
Laboratory Analysis:															
TPH ppm			0.020			0.0088				0.0188			0.00376		
BTEXppm			0.00302			0.00146				0.00026			0.0007		
Other															
Other															



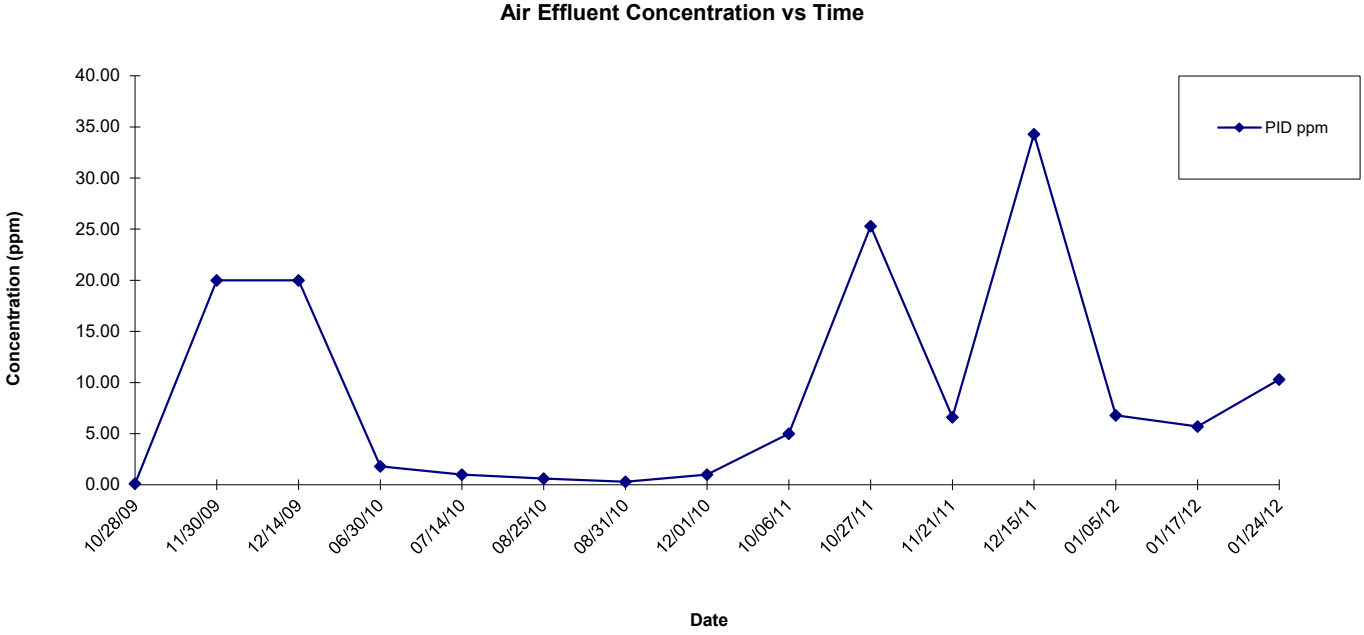
SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

Section 12 - Air Effluent Concentration Data (per permit requirements)
Provide similar table and graph for each vapor extraction point monitored

Effluent Readings by Event [Current Event Plus 10 Previous Events & Initial Event]

Point of Measurement:	Exhaust (Post Carbon)														
Date	10/28/09	11/30/09	12/14/09	06/30/10	07/14/10	08/25/10	08/31/10	12/01/10	10/06/11	10/27/11	11/21/11	12/15/11	01/05/12	01/17/12	01/24/12
PID ppm	0.10	20.00	20.00	1.80	1.00	0.60	0.30	1.00	5.00	25.30	6.60	34.30	6.80	5.70	10.30
Laboratory Analysis:															
TPH ppm			0.00000				0.008	0.0048			0.260				0.12
BTEXppm			0.00020				0.0008	0.0002			0.039				0.001
Other															
Other															



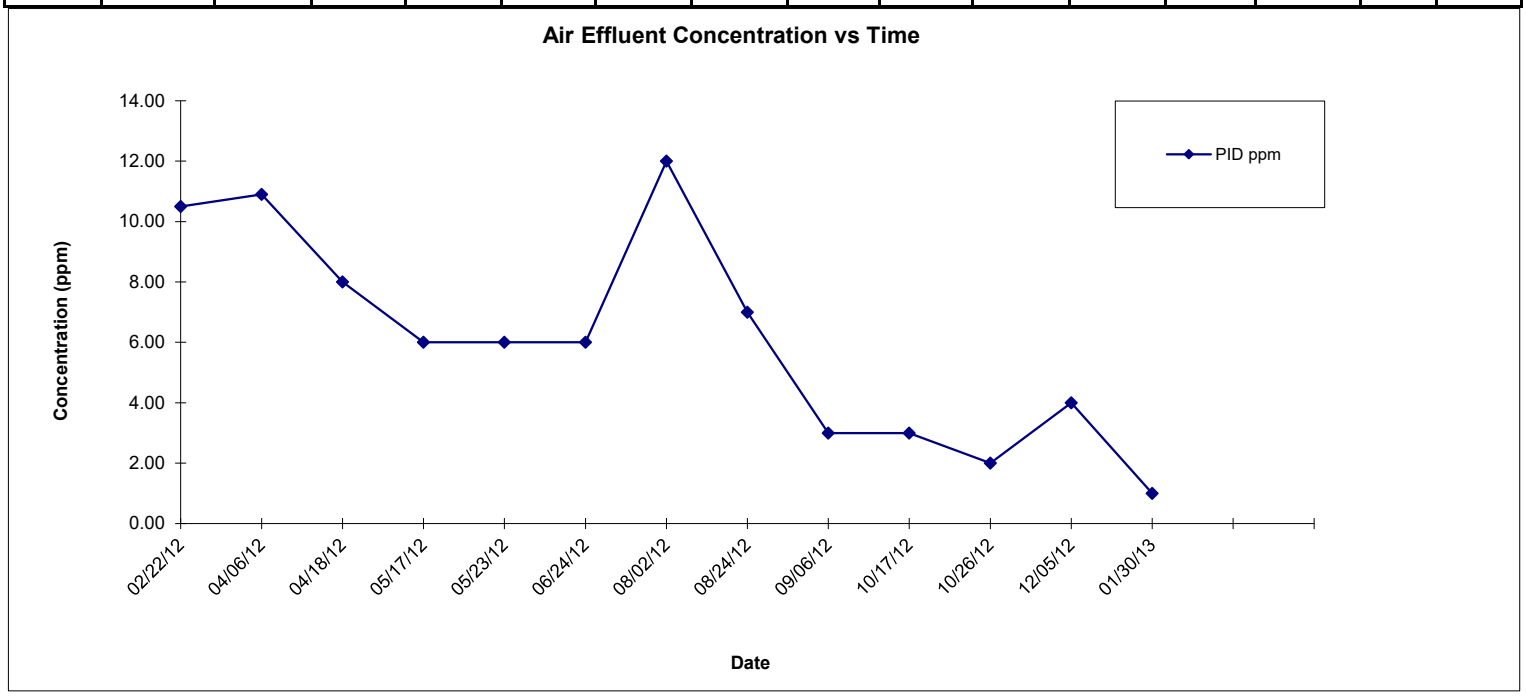
SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name:	Former Circle (Medical Center) BP		
Facility I. D. No.	20503-069-002586	**Incident No.**	UST98-09-01
Year:	2019	**Reporting Period:**	Nov. 2018 - Feb. 2019
Consultant:	Stantec Consulting Services Inc.	**Project Manager:**	Erin O'Malley

Section 12 - Air Effluent Concentration Data (per permit requirements)
Provide similar table and graph for each vapor extraction point monitored

Effluent Readings by Event [Current Event Plus 10 Previous Events & Initial Event]

Point of Measurement:			Exhaust (Post Carbon)												
Date	02/22/12	04/06/12	04/18/12	05/17/12	05/23/12	06/24/12	08/02/12	08/24/12	09/06/12	10/17/12	10/26/12	12/05/12	01/30/13		
PID ppm	10.50	10.90	8.00	6.00	6.00	6.00	12.00	7.00	3.00	3.00	2.00	4.00	1.00		
Laboratory Analysis:															
TPH ppm				0.026			0.010				0.006		0.0004		
BTEXppm				0.00035			0.000090				0.00077		0.0000013		
Other															
Other															



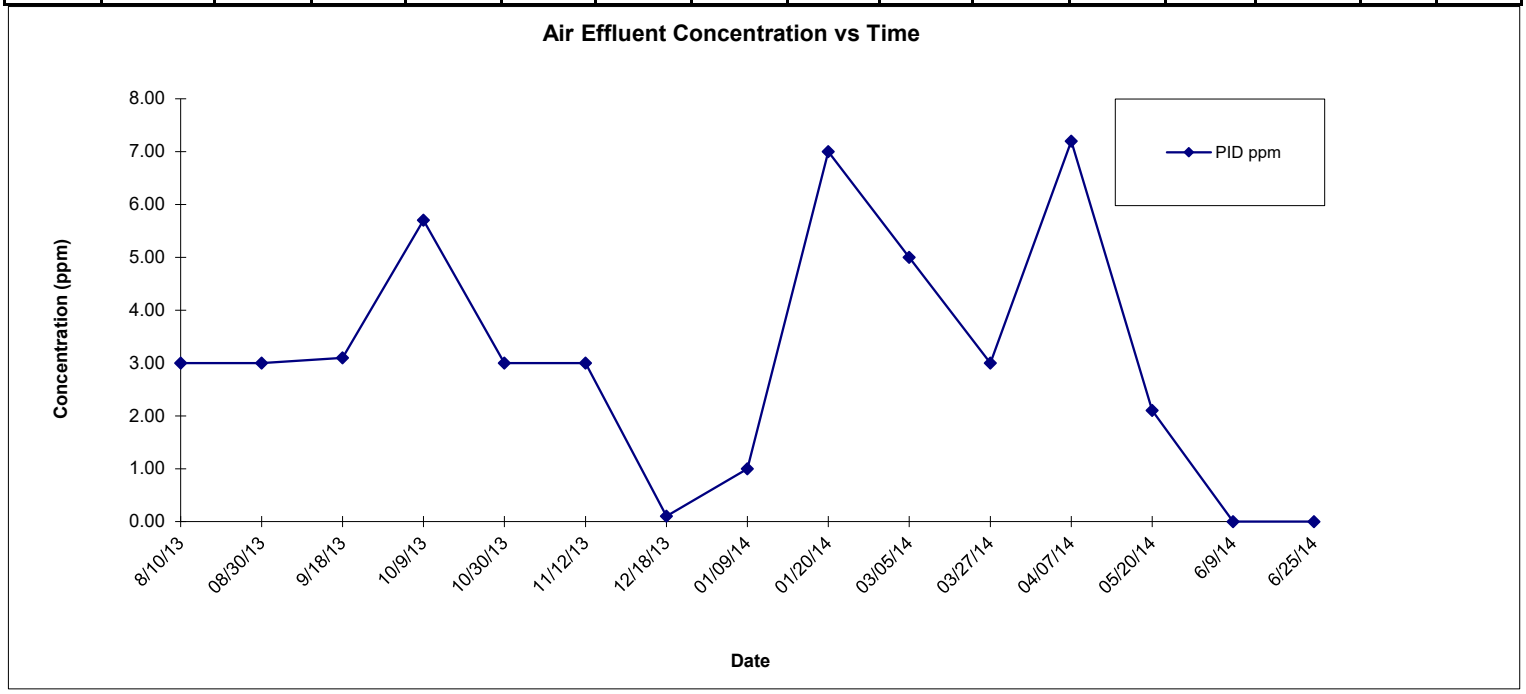
SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name:	Former Circle (Medical Center) BP		
Facility I. D. No.	20503-069-002586	**Incident No.**	UST98-09-01
Year:	2019	**Reporting Period:**	Nov. 2018 - Feb. 2019
Consultant:	Stantec Consulting Services Inc.	**Project Manager:**	Erin O'Malley

Section 12 - Air Effluent Concentration Data (per permit requirements)
Provide similar table and graph for each vapor extraction point monitored

Effluent Readings by Event [Current Event Plus 10 Previous Events & Initial Event]

Point of Measurement:	Exhaust (Post Carbon)														
Date	8/10/13	08/30/13	9/18/13	10/9/13	10/30/13	11/12/13	12/18/13	01/09/14	01/20/14	03/05/14	03/27/14	04/07/14	05/20/14	6/9/14	6/25/14
PID ppm	3.00	3.00	3.10	5.70	3.00	3.00	0.10	1.00	7.00	5.00	3.00	7.20	2.10	0.00	0.00
Laboratory Analysis:															
TPH ppm				0.0000100				<0.00004			<0.00004				0.0000017
BTEXppm				0.0004				<0.0000097			<0.0000097				<0.00041
Other															
Other															



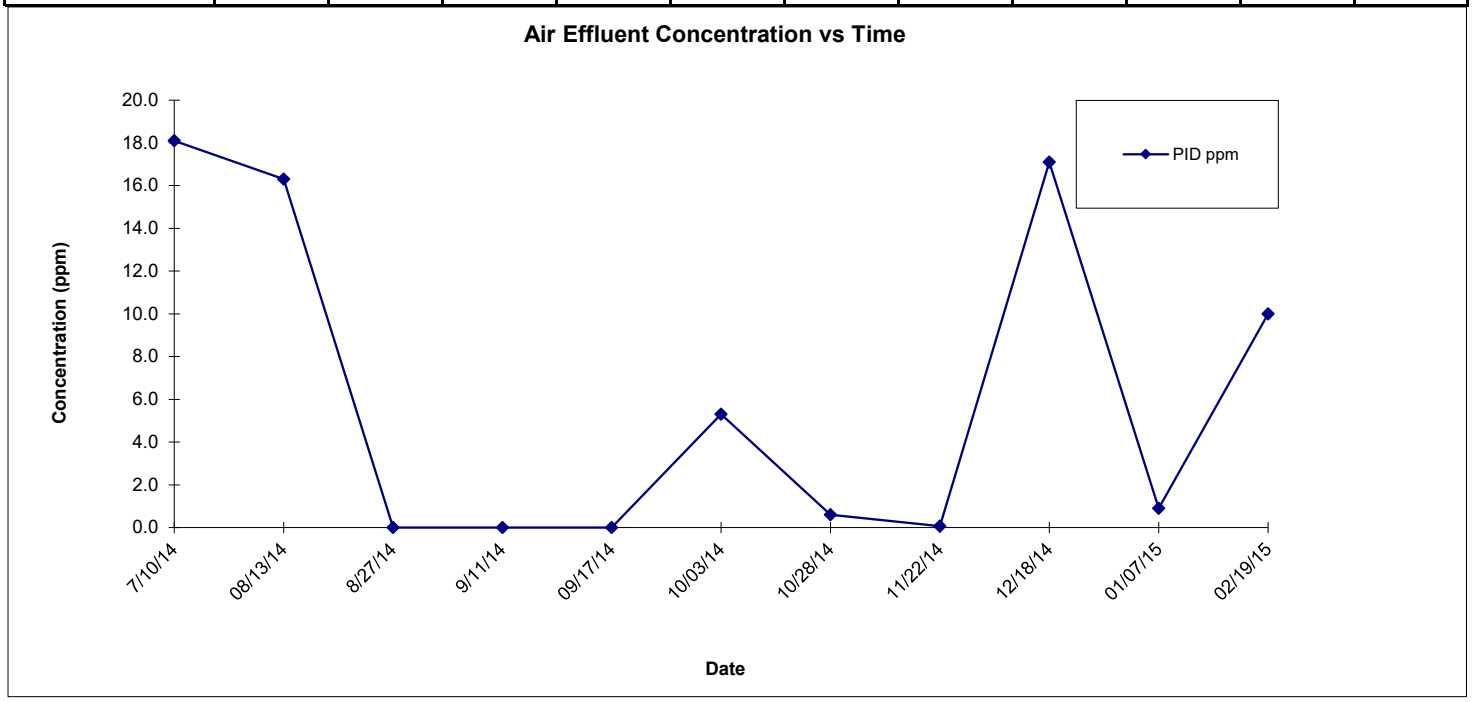
SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name:	Former Circle (Medical Center) BP		
Facility I. D. No.	20503-069-002586	**Incident No.**	UST98-09-01
Year:	2019	**Reporting Period:**	Nov. 2018 - Feb. 2019
Consultant:	Stantec Consulting Services Inc.	**Project Manager:**	Erin O'Malley

Section 12 - Air Effluent Concentration Data (per permit requirements)
Provide similar table and graph for each vapor extraction point monitored

Effluent Readings by Event [Current Event Plus 10 Previous Events & Initial Event]

Point of Measurement:	Exhaust (Post Carbon)										
Date	7/10/14	08/13/14	8/27/14	9/11/14	09/17/14	10/03/14	10/28/14	11/22/14	12/18/14	01/07/15	02/19/15
PID ppm	18.1	16.3	0.00	0.00	0.00	5.3	0.6	0.07	17.10	0.90	10.00
Laboratory Analysis:											
TPH ppm							0.0056				0.009600
BTEXppm							0.0004877				0.003081
Other											
Other											



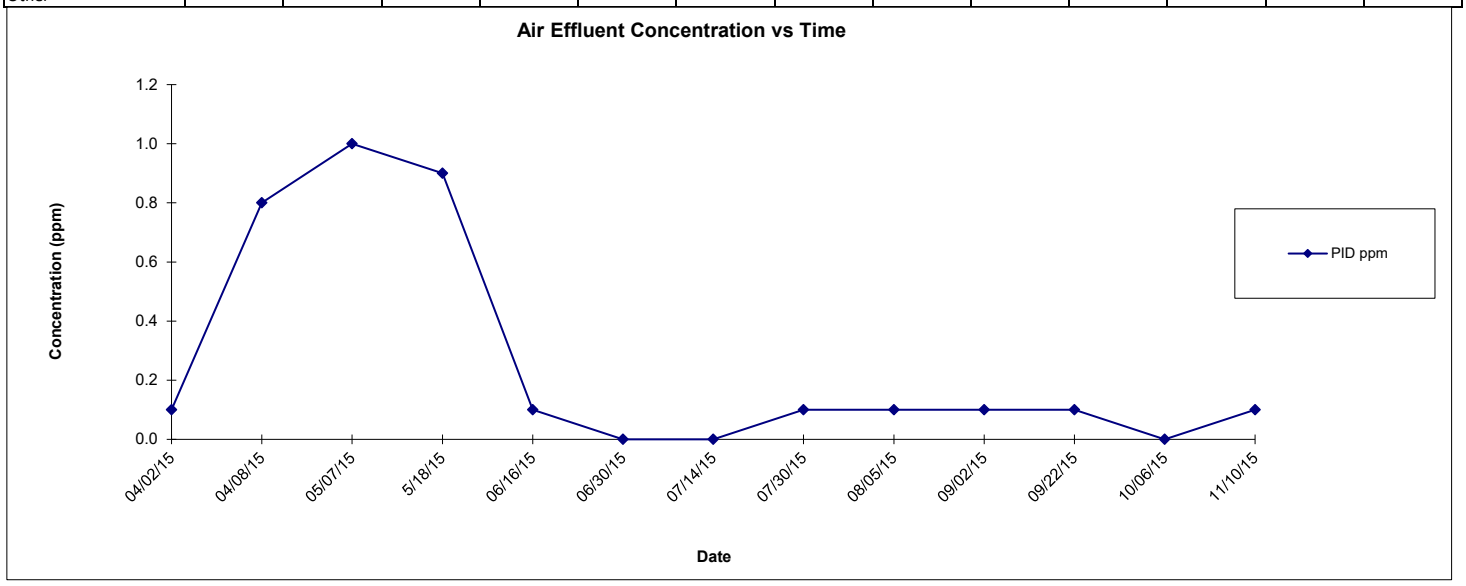
SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name:	Former Circle (Medical Center) BP		
Facility I. D. No.	20503-069-002586	**Incident No.**	UST98-09-01
Year:	2019	**Reporting Period:**	Nov. 2018 - Feb. 2019
Consultant:	Stantec Consulting Services Inc.	**Project Manager:**	Erin O'Malley

Section 12 - Air Effluent Concentration Data (per permit requirements)
Provide similar table and graph for each vapor extraction point monitored

Effluent Readings by Event [Current Event Plus 10 Previous Events & Initial Event]

Point of Measurement:	Exhaust												
Date	04/02/15	04/08/15	05/07/15	5/18/15	06/16/15	06/30/15	07/14/15	07/30/15	08/05/15	09/02/15	09/22/15	10/06/15	11/10/15
PID ppm	0.1	0.8	1.00	0.90	0.10	0.0	0.0	0.10	0.10	0.10	0.10	0.00	0.10
Laboratory Analysis:													
TPH ppm			0.015						0.0092				
BTEXppm			0.0019						0.00196				
Other													
Other													



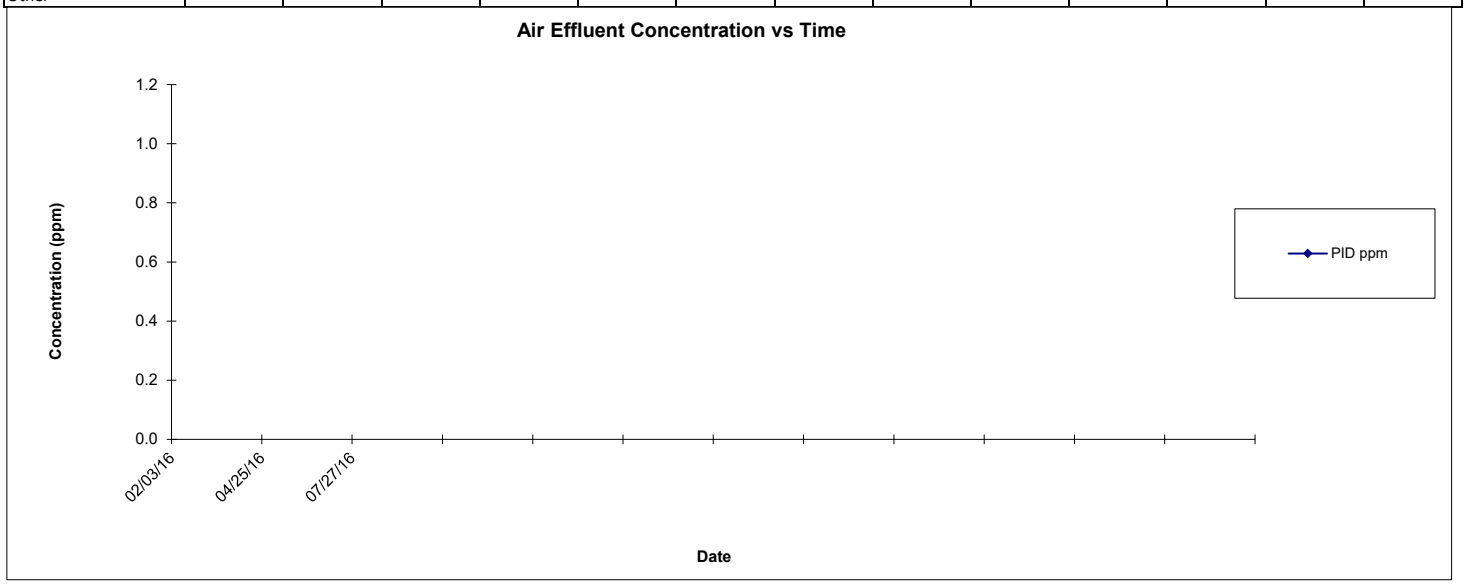
SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name:	Former Circle (Medical Center) BP		
Facility I. D. No.	20503-069-002586	**Incident No.**	UST98-09-01
Year:	2019	**Reporting Period:**	Nov. 2018 - Feb. 2019
Consultant:	Stantec Consulting Services Inc.	**Project Manager:**	Erin O'Malley

Section 12 - Air Effluent Concentration Data (per permit requirements)
Provide similar table and graph for each vapor extraction point monitored

Effluent Readings by Event [Current Event Plus 10 Previous Events & Initial Event]

Point of Measurement:			Exhaust										
Date	02/03/16	04/25/16	07/27/16										
PID ppm													
Laboratory Analysis:													
TPH ppm	<0.1	<0.05	3.840000										
BTEXppm	0.0024	0.02080	0.006000										
Other													
Other													



SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name:	Former Circle (Medical Center) BP		
Facility I. D. No.	20503-069-002586	**Incident No.**	UST98-09-01
Year:	2019	**Reporting Period:**	Nov. 2018 - Feb. 2019
Consultant:	Stantec Consulting Services Inc.	**Project Manager:**	Erin O'Malley

Section 15a - Free Product Information

Is free product currently present at the site?	No	If yes, when was it discovered?	02/24/00
If no, was free product ever present?		If yes, when was it last observed?	08/02/12
List wells containing free product and provide thicknesses (inches):	**MW-3**: 7.24 (max.);		

MW-3

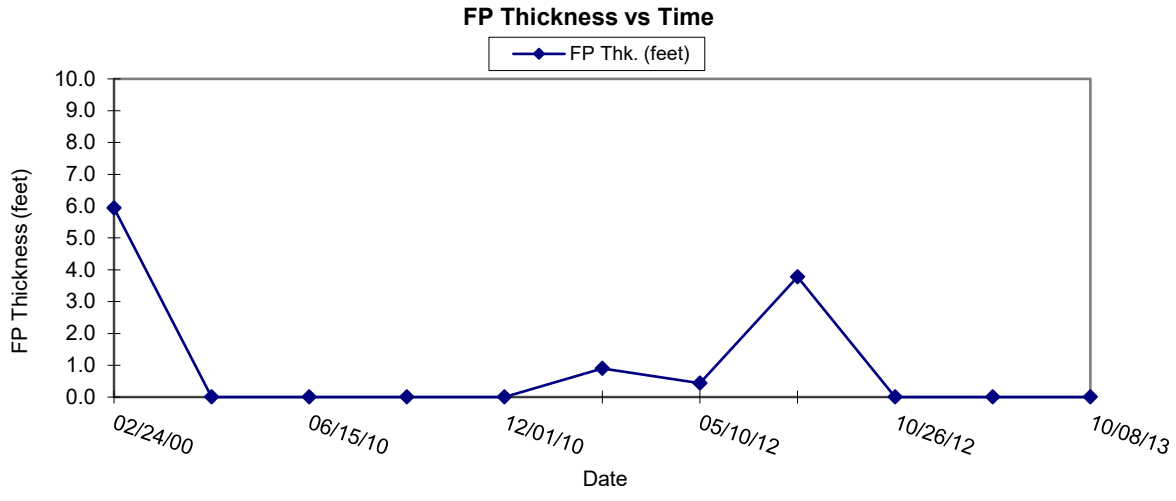
Recovery Method	This Period		Year to Date		Startup to Date	
Passive	0	gals.	0	gals.	0	gals.
Bailing	0	gals.	0	gals.	0	gals.
Automated	0	gals.	0	gals.	0	gals.
Vacuum Extraction	0	gals.	0	gals.	0	gals.
Other (dewatering etc)	0	gals.	0	gals.	0	gals.
Total FP Recovered:	0	gals.	0	gals.	0	gals.

Free Product Recovery (gals) [Current Event Plus Previous 10 Events and Initial Event]

Well No:	MW-3										
Date	02/24/00	12/15/09	06/15/10	09/01/10	12/01/10	01/05/12	05/10/12	08/02/12	10/26/12	01/29/13	10/08/13
Vol. Rec.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FP Thk. (feet)	5.94	0.00	0.00	0.00	0.00	0.90	0.44	3.78	0.00	0.00	0.00
GW ELEVATION	68.14	75.12	72.78	72.04	71.12	68.18	67.39	67.46	71.25	70.30	73.54
Method	None	SVE	SVE	SVE	SVE	SVE/HVR	SVE/HVR	SVE/HVR	SVE/HVR	SVE/HVR	SVE/HVR
Date FP Discovered:		02/24/00									

Summary of Free Product Recovered (gals) - Cumulative Totals by Year

Year	2000	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
Vol. Rec.	0	0	0	0	0	0	0	0	0	0	0



SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name:	Former Circle (Medical Center) BP		
Facility I. D. No.	20503-069-002586	**Incident No.**	UST98-09-01
Year:	2019	**Reporting Period:**	Nov. 2018 - Feb. 2019
Consultant:	Stantec Consulting Services Inc.	**Project Manager:**	Erin O'Malley

Section 15a - Free Product Information

Is free product currently present at the site?	No	If yes, when was it discovered?	02/24/00
If no, was free product ever present?		If yes, when was it last observed?	08/02/12
List wells containing free product and provide thicknesses (inches):		**MW-7**: 6.566 (max.)	
	MW-7		

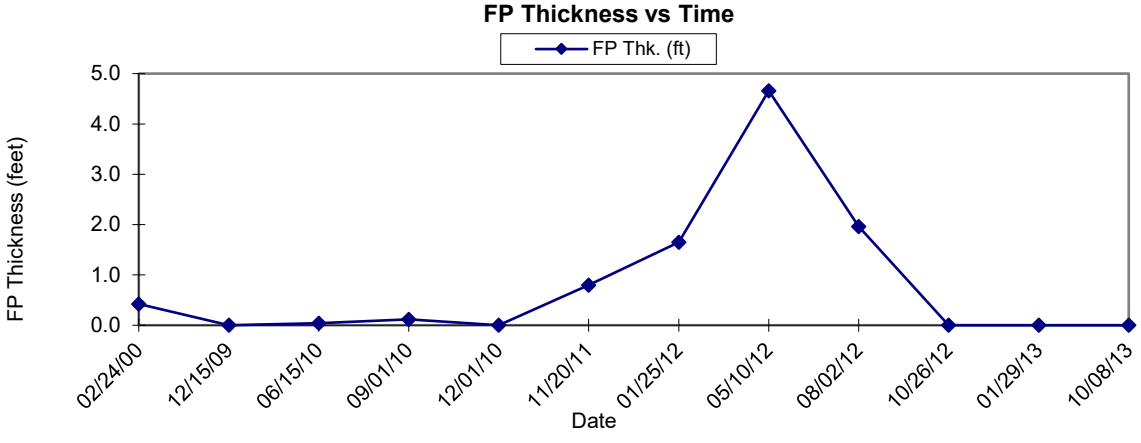
Recovery Method	This Period		Year to Date		Startup to Date	
Passive	0	gals.	0	gals.	0	gals.
Bailing	0	gals.	0	gals.	0	gals.
Automated	0	gals.	0	gals.	0	gals.
Vacuum Extraction	0	gals.	0	gals.	0	gals.
Other (dewatering etc)	0	gals.	0	gals.	0	gals.
Total FP Recovered:	0	gals.	0	gals.	0	gals.

Free Product Recovery (gals) [Current Event Plus Previous 10 Events and Initial Event]

Well No:	MW-7											
Date	02/24/00	12/15/09	06/15/10	09/01/10	12/01/10	11/20/11	01/25/12	05/10/12	08/02/12	10/26/12	01/29/13	10/08/13
Vol. Rec.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FP Thk. (ft)	0.42	0.00	0.04	0.12	0.00	0.80	1.65	4.66	1.96	0.00	0.00	0.00
GW EL.	67.11	72.82	71.37	70.62	69.48	64.91	64.67	69.58	65.69	69.17	68.56	72.08
Method	SVE	SVE	SVE	SVE	SVE	SVE	SVE/HVR	SVE/HVR	SVE/HVR	SVE/HVR	SVE/HVR	SVE/HVR
Date FP Discovered:		06/15/10										

Summary of Free Product Recovered (gals) - Cumulative Totals by Year

Year	2000	2001	2002	2005	2006	2007	2008	2009	2010	2011	2012	Total
Vol. Rec.	0	0	0	0	0	0	0	0	0	0	0	0



SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name:	Former Circle (Medical Center) BP		
Facility I. D. No.	20503-069-002586	**Incident No.**	UST98-09-01
Year:	2019	**Reporting Period:**	Nov. 2018 - Feb. 2019
Consultant:	Stantec Consulting Services Inc.	**Project Manager:**	Erin O'Malley

Section 15a - Free Product Information

Is free product currently present at the site?	No	If yes, when was it discovered?	04/26/01
If no, was free product ever present?		If yes, when was it last observed?	12/01/10
List wells containing free product and provide thicknesses (inches):	**MW-9**: 6.51 (max.)		
	MW-9		

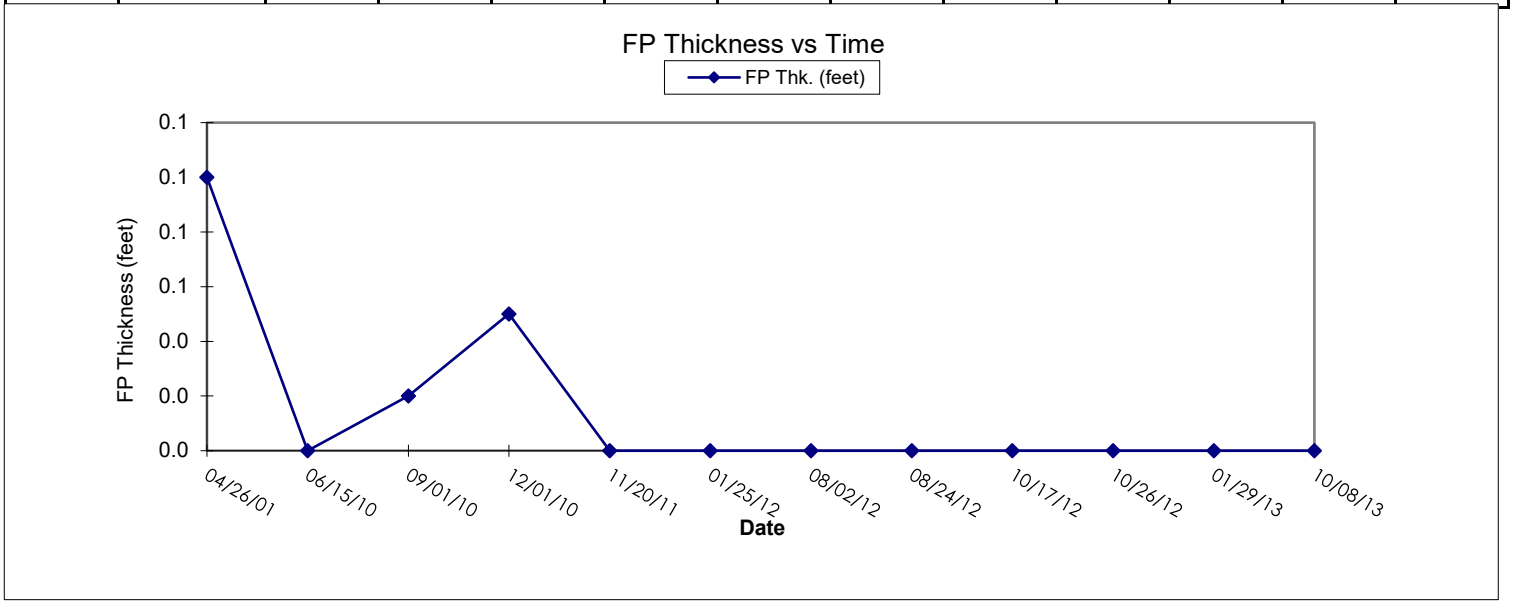
Recovery Method	This Period		Year to Date		Startup to Date	
Passive	0	gals.	0	gals.	0	gals.
Bailing	0	gals.	0	gals.	0	gals.
Automated	0	gals.	0	gals.	0	gals.
Vacuum Extraction	0	gals.	0	gals.	0	gals.
Other (dewatering etc)	0	gals.	0	gals.	0	gals.
Total FP Recovered:	0	gals.	0	gals.	0	gals.

Free Product Recovery (gals) [Current Event Plus Previous 10 Events and Initial Event]

Well No:	MW-9											
Date	04/26/01	06/15/10	09/01/10	12/01/10	11/20/11	01/25/12	08/02/12	08/24/12	10/17/12	10/26/12	01/29/13	10/08/13
Vol. Rec.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FP Thk. (fe	0.10	0.00	0.02	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GW Elev.	68.84	72.31	70.76	69.37	64.82	64.63	65.58	64.63	68.81	68.85	68.33	72.28
Method	None	SVE	SVE	SVE	SVE	SVE/HVR	SVE/HVR	SVE/HVR	SVE/HVR	SVE/HVR	SVE/HVR	SVE/HVR
Date FP Discovered:		4/26/01										

Summary of Free Product Recovered (gals) - Cumulative Totals by Year

Year	2001	2002	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Vol. Rec.	0	0	0	0	0	0	0	0	0	0	0	0



SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name:	Former Circle (Medical Center) BP		
Facility I. D. No.	20503-069-002586	**Incident No.**	UST98-09-01
Year:	2019	**Reporting Period:**	Nov. 2018 - Feb. 2019
Consultant:	Stantec Consulting Services Inc.	**Project Manager:**	Erin O'Malley

Section 15a - Free Product Information

Is free product currently present at the site?	No	If yes, when was it discovered?	02/14/07
If no, was free product ever present?		If yes, when was it last observed?	01/29/13
List wells containing free product and provide thicknesses (inches):	**VZ-13**: 9.23 (max.)		
	VZ-13		

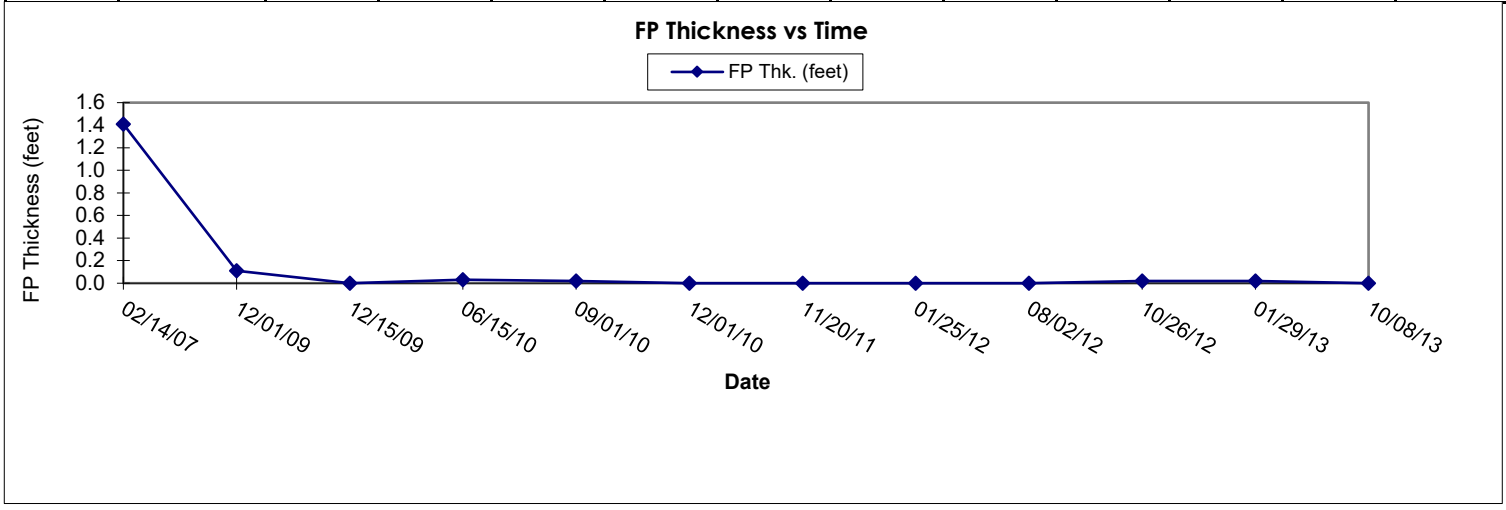
Recovery Method	This Period		Year to Date		Startup to Date	
Passive	0	gals.	0	gals.	0	gals.
Bailing	0	gals.	0	gals.	0	gals.
Automated	0	gals.	0	gals.	0	gals.
Vacuum Extraction	0	gals.	0	gals.	0	gals.
Other (dewatering etc)	0	gals.	0	gals.	0	gals.
Total FP Recovered:	0	gals.	0	gals.	0	gals.

Free Product Recovery (gals) [Current Event Plus Previous 10 Events and Initial Event]

Well No:	VZ-13											
Date	2/14/07	12/01/09	12/15/09	06/15/10	09/01/10	12/01/10	11/20/11	01/25/12	08/02/12	10/26/12	01/29/13	10/08/13
Vol. Rec.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FP Thk. (fe	1.41	0.11	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.02	0.02	0.00
GW Elev.	*	71.64	71.52	70.71	70.21	73.21	64.10	63.87	64.87	68.14	67.58	71.04
Method	SVE	SVE	SVE	SVE	SVE	SVE	SVE	SVE	SVE	SVE	SVE	SVE
Date FP Discovered:		06/15/10										

Summary of Free Product Recovered (gals) - Cumulative Totals by Year

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Vol. Rec.	0	0	0	0	0	0	0	0	0	0	0	0



SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name:	Former Circle (Medical Center) BP		
Facility I. D. No.	20503-069-002586	**Incident No.**	UST98-09-01
Year:	2019	**Reporting Period:**	Nov. 2018 - Feb. 2019
Consultant:	Stantec Consulting Services Inc.	**Project Manager:**	Erin O'Malley

Section 15a - Free Product Information

Is free product currently present at the site?	No	If yes, when was it discovered?	12/17/07
If no, was free product ever present?		If yes, when was it last observed?	09/29/09
List wells containing free product and provide thicknesses (inches):	**VZ-14**: 0.07 (max.);		

VZ-14

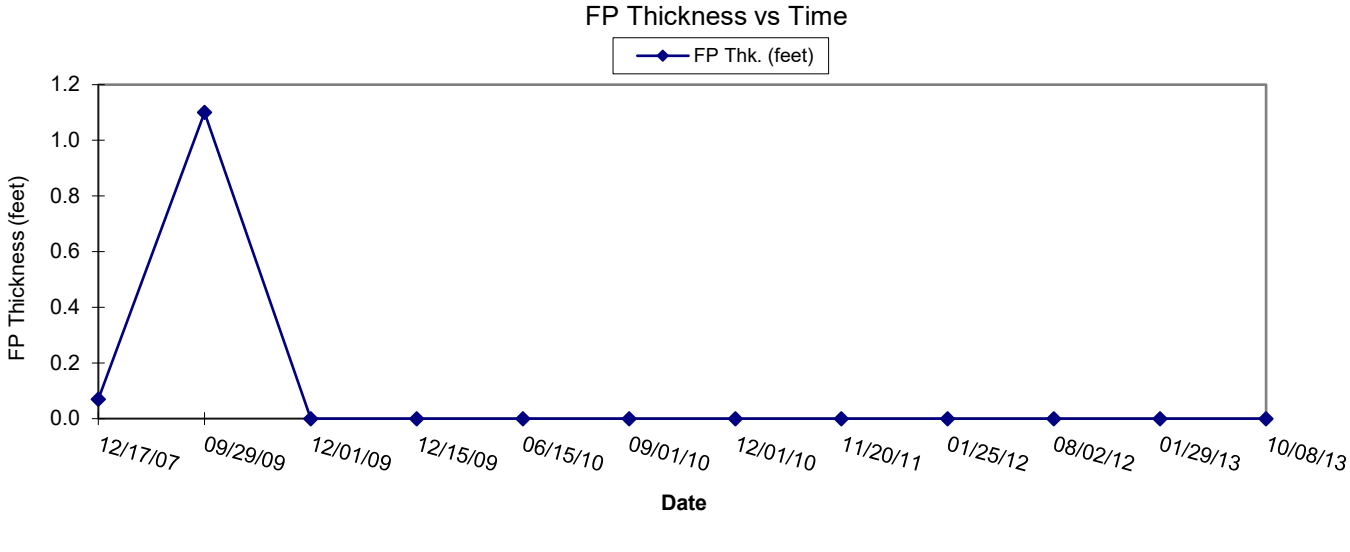
Recovery Method	This Period		Year to Date		Startup to Date	
Passive	0	gals.	0	gals.	0	gals.
Bailing	0	gals.	0	gals.	0	gals.
Automated	0	gals.	0	gals.	0	gals.
Vacuum Extraction	0	gals.	0	gals.	0	gals.
Other (dewatering etc)	0	gals.	0	gals.	0	gals.
Total FP Recovered:	0	gals.	0	gals.	0	gals.

Free Product Recovery (gals) [Current Event Plus Previous 10 Events and Initial Event]

Well No:	VZ-14											
Date	12/17/07	09/29/09	12/01/09	12/15/09	06/15/10	09/01/10	12/01/10	11/20/11	01/25/12	08/02/12	01/29/13	10/08/13
Vol. Rec.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FP Thk. (fe	0.07	1.10	ND	NM	0.00	ND	ND	ND	ND	ND	ND	ND
GW Elev.	*	71.87	72.05		71.06	69.99	68.75	64.88	64.12	65.10	67.74	71.34
Method	SVE	SVE	SVE		SVE	SVE	SVE	SVE	SVE	SVE	SVE	SVE
Date FP Discovered:		12/17/07										

Summary of Free Product Recovered (gals) - Cumulative Totals by Year

Year	2007	2008	2009	2010	2011	2012						Total
Vol. Rec.	0	0	0	0	0							0



SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name:	Former Circle (Medical Center) BP		
Facility I. D. No.	20503-069-002586	**Incident No.**	UST98-09-01
Year:	2019	**Reporting Period:**	Nov. 2018 - Feb. 2019
Consultant:	Stantec Consulting Services Inc.	**Project Manager:**	Erin O'Malley

Section 15a - Free Product Information

Is free product currently present at the site?	No	If yes, when was it discovered?	11/08/05
If no, was free product ever present?		If yes, when was it last observed?	09/23/15
List wells containing free product and provide thicknesses (inches):		**VZ-15**: 9.31 (max.	
	VZ-15		

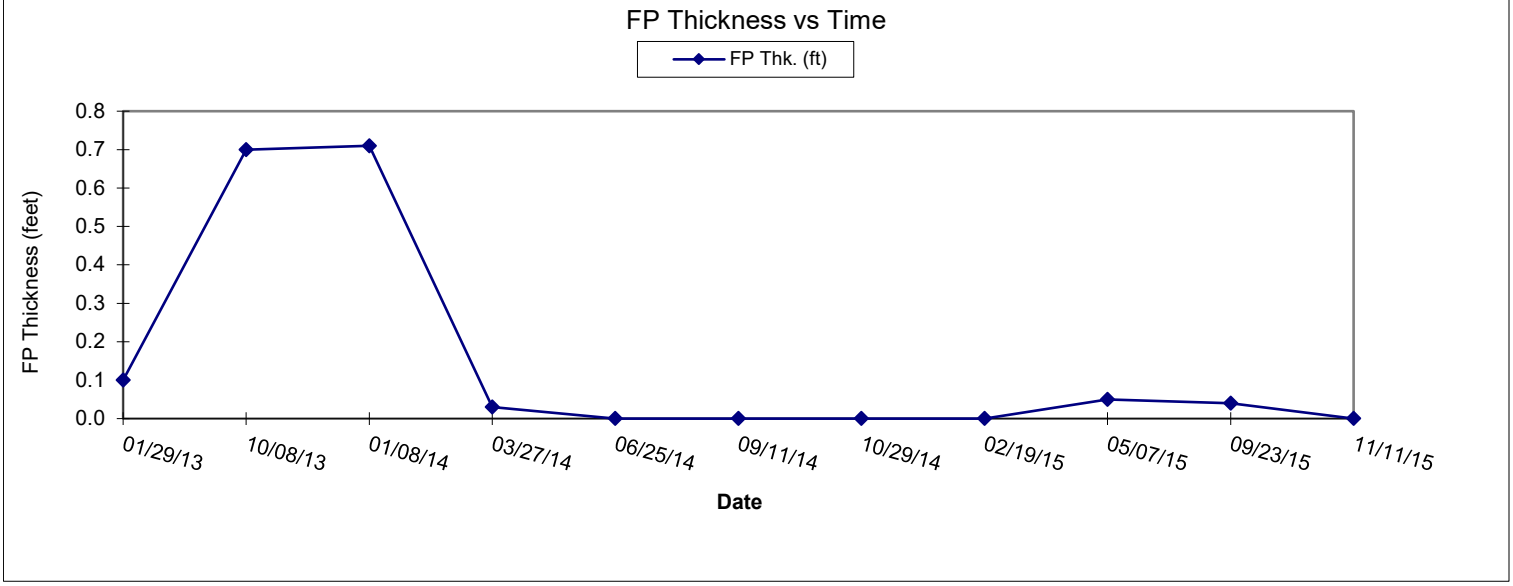
Recovery Method	This Period		Year to Date		Startup to Date	
Passive	0	gals.	0	gals.	0	gals.
Bailing	0	gals.	0	gals.	0	gals.
Automated	0	gals.	0	gals.	0	gals.
Vacuum Extraction	0	gals.	0	gals.	0	gals.
Other (dewatering etc)	0	gals.	0	gals.	0	gals.
Total FP Recovered:	0	gals.	0	gals.	0	gals.

Free Product Recovery (gals) [Current Event Plus Previous 10 Events and Initial Event]

Well No:	VZ-15											
Date	04/06/12	01/29/13	10/08/13	01/08/14	03/27/14	06/25/14	09/11/14	10/29/14	02/19/15	05/07/15	09/23/15	11/11/15
Vol. Rec.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FP Thk. (ft)	7.71	0.10	0.70	0.71	0.03	0.00	0.00	0.00	0.00	0.05	0.04	0.00
GW Elev.	68.65	68.41	71.50	70.90	71.34	71.98	70.27	70.35	69.27	69.57	68.68	70.00
Method	SVE	SVE	SVE	SVE	SVE	SVE	SVE	SVE	SVE	SVE	SVE	SVE
Date FP Discovered:		11/08/05										

Summary of Free Product Recovered (gals) - Cumulative Totals by Year

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Vol. Rec.	0	0	0	0	0	0	0	0	0	0	0	0

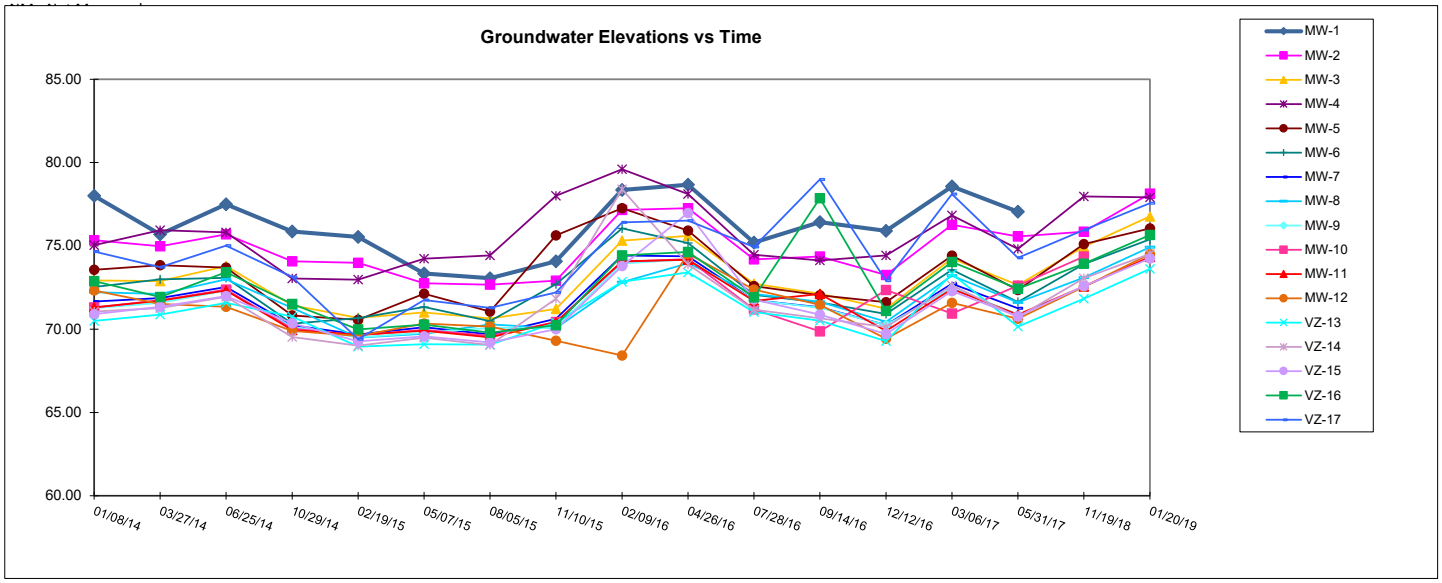


SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586 **Incident No.** UST98-09-01
Year: 2019 **Reporting Period:** Nov. 2018 - Feb. 2019
Consultant: Stantec Consulting Services Inc. **Project Manager:** Erin O'Malley

Section 15b - Groundwater Potentiometric Surface Map

Date	01/08/14	03/27/14	06/25/14	10/29/14	02/19/15	05/07/15	08/05/15	11/10/15	02/09/16	04/26/16	07/28/16	09/14/16	12/12/16	03/06/17	05/31/17	11/19/18	01/20/19
MW-1	78.01	75.70	77.50	75.86	75.54	73.34	73.06	74.07	78.36	78.67	75.20	76.42	75.90	78.57	77.05	NM	NM
MW-2	75.34	74.97	75.70	74.07	73.98	72.75	72.67	72.91	77.15	77.26	74.19	74.36	73.25	76.27	75.56	75.85	78.13
MW-3	72.92	72.89	73.79	71.43	70.68	71.00	70.64	71.21	75.32	75.6	72.73	72.13	71.22	74.25	72.65	74.95	76.77
MW-4	75.04	75.94	75.81	73.04	72.97	74.23	74.42	78.01	79.60	78.11	74.46	74.13	74.42	76.83	74.82	77.96	77.91
MW-5	73.57	73.84	73.69	70.82	70.56	72.13	71.06	75.63	77.26	75.91	72.59	72.04	71.62	74.41	72.35	75.10	76.05
MW-6	72.53	72.99	73.08	70.33	70.67	71.33	70.48	72.70	76.05	75.17	72.06	71.61	70.91	73.57	71.63	73.90	75.39
MW-7	71.66	71.87	72.53	70.23	69.68	70.12	69.69	70.63	74.42	74.38	71.73	71.32	70.25	72.73	71.25	NM	NM
MW-8	72.22	72.11	72.99	71.28	69.49	69.72	70.29	70.06	72.82	73.96	72.12	71.64	70.44	73.21	71.61	73.10	74.92
MW-9	71.27	71.58	72.32	70.14	69.51	69.79	70.08	70.09	73.94	74.19	71.74	71.29	70.24	72.47	70.89	NM	NM
MW-10	71.31	71.73	72.37	70.04	69.63	69.96	69.60	70.43	74.05	74.2	NF	71.19	69.87	72.35	70.94	72.61	74.36
MW-11	71.31	71.71	72.32	69.94	69.66	69.91	69.51	70.42	74.07	74.16	71.70	72.11	69.90	72.41	70.87	72.56	74.34
MW-12	72.32	71.52	71.34	69.89	69.59	70.34	70.16	69.31	68.42	74.53	72.37	71.46	69.42	71.58	70.63	72.54	74.51
VZ-13	70.49	70.88	71.58	70.76	68.95	69.10	69.07	70.39	72.84	73.41	71.03	70.51	69.28	73.31	70.15	71.83	73.62
VZ-14	71.06	71.27	71.94	69.53	69.01	69.49	69.05	71.83	78.40	73.89	71.18	70.65	70.13	72.63	70.73	73.06	74.52
VZ-15	70.90	71.34	71.98	70.35	69.27	69.57	69.20	70.00	73.78	76.98	71.77	70.87	69.71	72.29	70.77	72.58	74.24
VZ-16	72.89	71.93	73.42	71.51	69.98	70.27	69.79	70.23	74.43	74.63	71.90	77.86	71.10	74.04	72.43	73.93	75.66
VZ-17	74.66	73.72	75.02	73.13	69.40	71.75	71.28	72.20	76.41	76.51	74.93	78.99	72.91	78.11	74.28	75.95	77.56

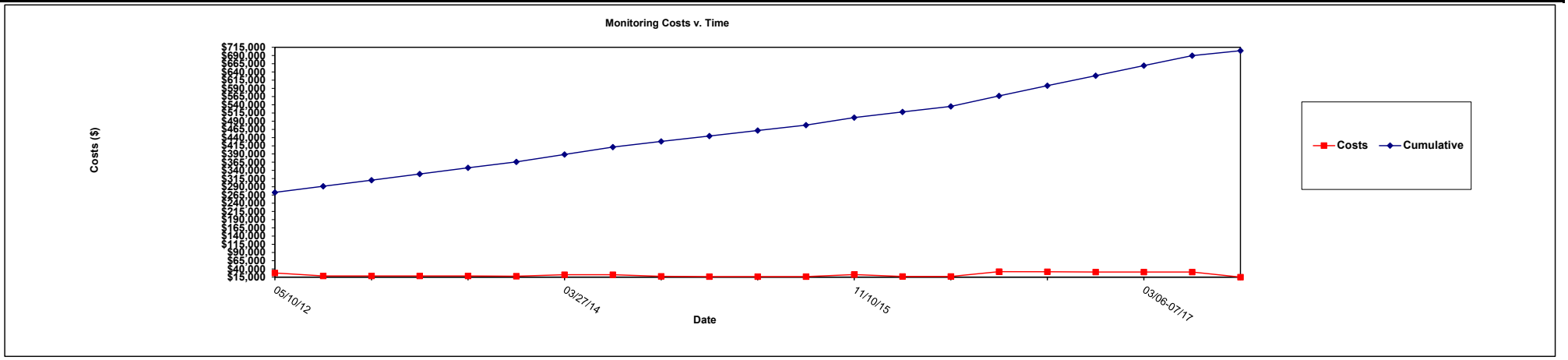


SYSTEM-EFFECTIVENESS MONITORING REPORT

Facility Name: Former Circle (Medical Center) BP
Facility I. D. No. 20503-069-002586
Year: 2019
Consultant: Stantec Consulting Services Inc.

Incident No. UST98-09-01
Reporting Period: Nov. 2018 - Feb. 2019
Project Manager: Erin O'Malley

Section 16 - Monitoring & LPH Recovery Costs v. Time																					
Date	05/10/12	08/02/12	10/26/12	01/31/13	10/08/13	01/08/14	03/27/14	06/25/14	10/29/14	02/19/15	05/07/15	08/05/15	11/10/15	02/09/16	04/27/16	07/28/16	09/14-15/16	12/12-13/16	03/06-07/17	05/31/17	03/08/19
Reference	CP37	CP38	CP39	CP40	CP41	CP42	CP43	CP44	CP45	CP46	CP47	CP48	CP49	CP50	CP51	CP52	CP53	CP54	CP55	CP-56	CP-60
Costs	$27,876	$18,653	$18,653	$18,653	$18,846	$18,015	$22,515	$22,515	$17,437	$16,551	$16,551	$16,551	$22,870	$17,113	$17,113	$31,648	$31,491	$30,380	$30,380	$30,380	$15,152
Cumulative	$273,090	$291,743	$310,396	$329,049	$347,895	$365,910	$388,425	$410,940	$428,377	$444,928	$461,479	$478,030	$500,900	$518,013	$535,126	$566,774	$598,265	$628,645	$659,024	$689,404	$704,556



APPENDIX E
GROUNDWATER ANALYTICAL DATA TRENDS ANALYSIS

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

Notice: This form is the DNR supplied spreadsheet referenced in Appendices A of Comm 46 and NR 746, Wis. Adm. Code. It is provided to consultants as an optional tool for groundwater contaminant trend analysis to support site closure requests under s. Comm 46.07, Comm 46.08, NR 746.07, NR 746.08, Wis. Adm. Code. Use this form or a manual method when seeking case closure under those rules. Earlier versions of this form should not be used.

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Site Name : Dothan			BRRTS No. =		Well Number = MW-1	

	Compound ->	Benzene					
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	12/18/07	0.70					
2	04/23/08	0.040					
3	07/10/08	0.17					
4	03/18/09	0.022					
5	06/25/09	0.028					
6	09/17/09	0.016					
7	05/10/12	0.050					
8	10/08/13	0.032					
9	10/29/14	0.020					
10	09/15/16	0.025					
	Mann Kendall Statistic (S) =	-19.0	0.0	0.0	0.0	0.0	0.0
	Number of Rounds (n) =	10	0	0	0	0	0
	Average =	0.11	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Standard Deviation =	0.212	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Coefficient of Variation(CV)=	1.923	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Error Check, Blank if No Errors Detected			n<4	n<4	n<4	n<4	n<4
Trend ≥ 80% Confidence Level		**DECREASING**	n<4	n<4	n<4	n<4	n<4
Trend ≥ 90% Confidence Level		**DECREASING**	n<4	n<4	n<4	n<4	n<4
Stability Test, If No Trend Exists at			n<4	n<4	n<4	n<4	n<4
80% Confidence Level		NA	n<4	n<4	n<4	n<4	n<4

Data Entry By = ALM	Date = 22-May-18	Checked By = EEO

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

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Site Name = Dothan			BRRTS No. =		Well Number = MW-3	
Compound ->	Benzene	MTBE				
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	11/11/15	44.8	15.4				
2	02/09/16	37.0000	34.4				
3	04/26/16	38.6000	7.14				
4	07/28/16	24.6000	22.6				
5	09/15/16	39.1000	27.3				
6	12/12/16	24.6000	8.03				
7	03/06/17	24.2000	15.8				
8	05/31/17	39.40000	20.6				
9	11/20/18	36.5000	11				
10	01/21/19	15.30000	3.77				
	Mann Kendall Statistic (S) =	-18.0	-13.0	0.0	0.0	0.0	0.0
	Number of Rounds (n) =	10	10	0	0	0	0
	Average =	32.41	16.60	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Standard Deviation =	9.460	9.686	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Coefficient of Variation(CV)=	0.292	0.583	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Error Check, Blank if No Errors Detected				n<4	n<4	n<4	n<4
Trend ≥ 80% Confidence Level		**DECREASING**	**DECREASING**	n<4	n<4	n<4	n<4
Trend ≥ 90% Confidence Level		**DECREASING**	No Trend	n<4	n<4	n<4	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		NA	NA	n<4 n<4	n<4 n<4	n<4 n<4	n<4 n<4

Data Entry By = ALM	Date = 13-Mar-19	Checked By = EEO

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

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Site Name : Dothan			BRRTS No. =		Well Number = MW-7	
Compound ->	Benzene					
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	05/07/15	0.11					
2	08/05/15	0.5					
3	11/11/15	0.5					
4	02/09/16	0.5000					
5	04/27/16	0.1510					
6	07/29/16	0.5000					
7	09/15/16	0.2500					
8	12/12/16	0.5000					
9	03/06/17	0.0808					
10	05/31/17	0.05000					
	Mann Kendall Statistic (S) =	-13.0	0.0	0.0	0.0	0.0	0.0
	Number of Rounds (n) =	10	0	0	0	0	0
	Average =	0.31	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Standard Deviation =	0.203	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Coefficient of Variation(CV)=	0.645	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Error Check, Blank if No Errors Detected			n<4	n<4	n<4	n<4	n<4
Trend ≥ 80% Confidence Level		**DECREASING**	n<4	n<4	n<4	n<4	n<4
Trend ≥ 90% Confidence Level		No Trend	n<4	n<4	n<4	n<4	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		NA	n<4 n<4	n<4 n<4	n<4 n<4	n<4 n<4	n<4 n<4

Data Entry By = ALM Date = 22-May-18 Checked By = EEO

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

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Site Name = Dothan			BRRTS No. =		Well Number = MW-8	
Compound ->	Benzene	MTBE				
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	11/11/15	22.7	0.902				
2	02/09/16	37.6000	1.46				
3	04/26/16	19.1000	0.615				
4	07/28/16	17.9000	0.69				
5	09/15/16	17.5000	0.671				
6	12/12/16	0.0660	0.00107				
7	03/06/17	15.6000	0.407				
8	05/31/17	17.70000	0.449				
9	11/20/18	11.5000	0.167				
10	01/21/19	12.70000	0.189				
	Mann Kendall Statistic (S) =	-29.0	-27.0	0.0	0.0	0.0	0.0
	Number of Rounds (n) =	10	10	0	0	0	0
	Average =	17.24	0.56	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Standard Deviation =	9.426	0.422	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Coefficient of Variation(CV)=	0.547	0.759	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Error Check, Blank if No Errors Detected				n<4	n<4	n<4	n<4
Trend ≥ 80% Confidence Level		**DECREASING**	**DECREASING**	n<4	n<4	n<4	n<4
Trend ≥ 90% Confidence Level		**DECREASING**	**DECREASING**	n<4	n<4	n<4	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		NA	NA	n<4 n<4	n<4 n<4	n<4 n<4	n<4 n<4

Data Entry By = ALM	Date = 13-Mar-19	Checked By = EEO

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

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Site Name : Dothan			BRRTS No. =		Well Number = MW-9	
Compound ->	Benzene					
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	05/07/15	0.13					
2	08/05/15	0.5					
3	11/11/15	0.5					
4	02/09/16	0.0500					
5	04/27/16	0.0124					
6	07/28/16	0.9570					
7	09/14/16	0.1220					
8	12/12/16	0.1070					
9	03/06/17	0.0286					
10	05/31/17	0.10000					
	Mann Kendall Statistic (S) =	-14.0	0.0	0.0	0.0	0.0	0.0
	Number of Rounds (n) =	10	0	0	0	0	0
	Average =	0.25	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Standard Deviation =	0.306	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Coefficient of Variation(CV)=	1.222	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Error Check, Blank if No Errors Detected			n<4	n<4	n<4	n<4	n<4
Trend ≥ 80% Confidence Level		**DECREASING**	n<4	n<4	n<4	n<4	n<4
Trend ≥ 90% Confidence Level		No Trend	n<4	n<4	n<4	n<4	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		NA	n<4 n<4	n<4 n<4	n<4 n<4	n<4 n<4	n<4 n<4

Data Entry By = ALM Date = 22-May-18 Checked By = EEO

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

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Site Name : Dothan			BRRTS No. =		Well Number = MW-10	

	Compound ->	Benzene					
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	08/05/15	0.05					
2	11/11/15	0.0500					
3	02/09/16	0.0500					
4	04/27/16	0.0500					
5	09/14/16	0.1000					
6	12/13/16	0.0100					
7	03/06/17	0.0050					
8	05/31/17	0.05000					
9	11/20/18	0.2000					
10	01/21/19	0.10000					
	Mann Kendall Statistic (S) =	8.0	0.0	0.0	0.0	0.0	0.0
	Number of Rounds (n) =	10	0	0	0	0	0
	Average =	0.07	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Standard Deviation =	0.056	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Coefficient of Variation(CV)=	0.845	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Error Check, Blank if No Errors Detected			n<4	n<4	n<4	n<4	n<4
Trend ≥ 80% Confidence Level		No Trend	n<4	n<4	n<4	n<4	n<4
Trend ≥ 90% Confidence Level		No Trend	n<4	n<4	n<4	n<4	n<4
Stability Test, If No Trend Exists at		**CV <= 1**	n<4	n<4	n<4	n<4	n<4
80% Confidence Level		**STABLE**	n<4	n<4	n<4	n<4	n<4

Data Entry By = ALM	Date = 13-Mar-19	Checked By = EEO

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

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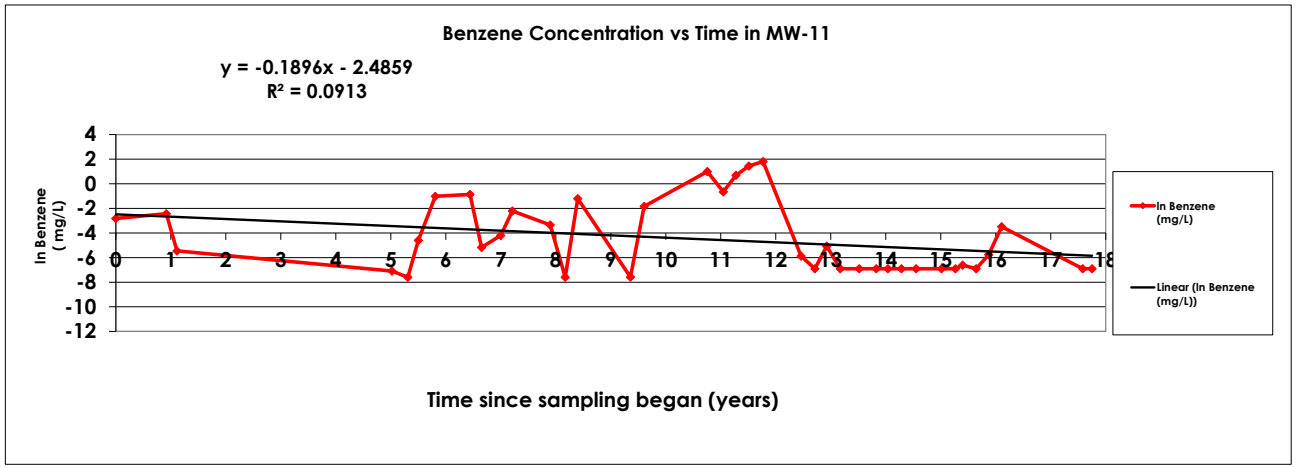
Site Name = Dothan			BRRTS No. =		Well Number = MW-11	
Compound ->	Benzene					
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	08/05/15	0.001					
2	11/11/15	0.0010					
3	04/27/16	0.0010					
4	07/28/16	0.0010					
5	09/14/16	0.0013					
6	12/13/16	0.0010					
7	03/06/17	0.0032					
8	05/31/17	0.03050					
9	11/20/18	0.0010					
10	01/21/19	0.00100					
Mann Kendall Statistic (S) =		10.0	0.0	0.0	0.0	0.0	0.0
Number of Rounds (n) =		10	0	0	0	0	0
Average =		0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Standard Deviation =		0.009	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Coefficient of Variation(CV)=		2.206	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Error Check, Blank if No Errors Detected			n<4	n<4	n<4	n<4	n<4
Trend ≥ 80% Confidence Level		No Trend	n<4	n<4	n<4	n<4	n<4
Trend ≥ 90% Confidence Level		No Trend	n<4	n<4	n<4	n<4	n<4
Stability Test, If No Trend Exists at		**CV > 1**	n<4	n<4	n<4	n<4	n<4
80% Confidence Level		**NON-STABLE**	n<4	n<4	n<4	n<4	n<4

Data Entry By = ALM	Date = 13-Mar-19	Checked By = EEO

First-Order Trend Analysis for Benzene at Well MW-11 Based on Data Since 2001

Former Circle (Medical Center) BP
Dothan, Alabama

Sampling Date	Benzene (mg/L)	ln Benzene (mg/L)	Elapsed time since 04/26/01 (years)
04/26/01	0.0595	-2.82	0.00
03/27/02	0.0881	-2.43	0.92
06/06/02	0.0043	-5.45	1.11
05/03/06	0.00083	-7.09	5.02
08/16/06	0.0005	-7.60	5.31
10/25/06	0.01	-4.61	5.50
02/14/07	0.36	-1.02	5.81
10/03/07	0.42	-0.87	6.44
12/18/07	0.0057	-5.17	6.65
04/23/08	0.015	-4.20	7.00
07/10/08	0.11	-2.21	7.21
03/18/09	0.035	-3.35	7.90
06/25/09	0.0005	-7.60	8.17
09/17/09	0.30	-1.20	8.40
09/01/10	0.00051	-7.58	9.36
12/01/10	0.16	-1.83	9.61
01/25/12	2.7	0.99	10.76
05/10/12	0.52	-0.65	11.05
08/02/12	2.00	0.69	11.28
10/26/12	4.20	1.44	11.51
01/29/13	6.10	1.81	11.77
10/08/13	0.0028	-5.88	12.46
01/08/14	0.0010	-6.91	12.71
03/27/14	0.0063	-5.07	12.93
06/25/14	0.0010	-6.91	13.17
10/29/14	0.0010	-6.91	13.52
02/19/15	0.0010	-6.91	13.83
05/07/15	0.0010	-6.91	14.04
08/05/15	0.0010	-6.91	14.28
11/11/15	0.0010	-6.91	14.55
04/27/16	0.0010	-6.91	15.01
07/28/16	0.0010	-6.91	15.27
09/14/16	0.00134	-6.62	15.40
12/13/16	0.0010	-6.91	15.64
03/06/17	0.00316	-5.76	15.87
05/31/17	0.0305	-3.49	16.11
11/20/18	0.0010	-6.91	17.58
01/21/19	0.0010	-6.91	17.75
Mean Last 4 Events	**0.009**		



State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

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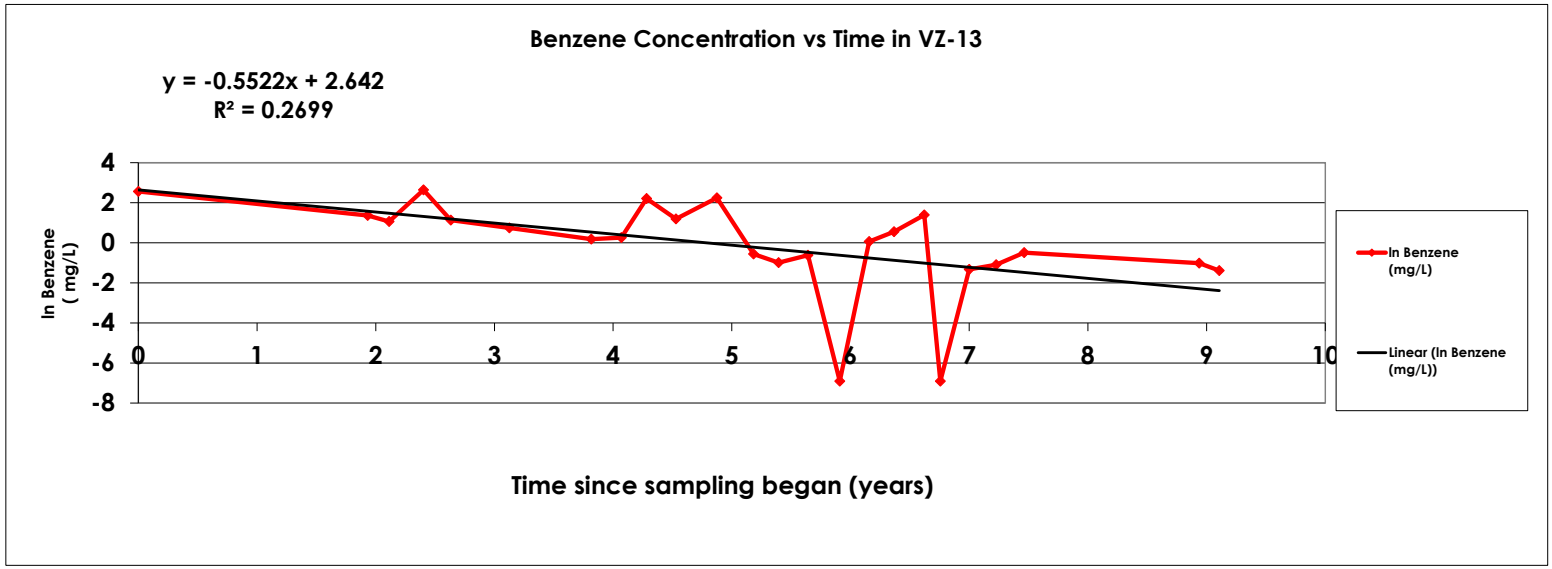
Site Name = Dothan				BRRTS No. =		Well Number = VZ-13	
	Compound ->	Benzene	MTBE				
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	11/11/15	0.001	0.001				
2	02/09/16	1.0600	0.516				
3	04/26/16	1.7400	0.548				
4	07/28/16	4.0300	1.14				
5	09/15/16	0.0010	0.001				
6	12/13/16	0.2650	0.102				
7	03/06/17	0.3340	0.0555				
8	05/31/17	0.61300	0.5				
9	11/20/18	0.3620	0.02				
10	01/21/19	0.25000	0.25				
	Mann Kendall Statistic (S) =	-2.0	-2.0	0.0	0.0	0.0	0.0
	Number of Rounds (n) =	10	10	0	0	0	0
	Average =	0.87	0.31	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Standard Deviation =	1.232	0.367	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Coefficient of Variation(CV)=	1.423	1.170	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Error Check, Blank if No Errors Detected				n<4	n<4	n<4	n<4
Trend ≥ 80% Confidence Level		No Trend	No Trend	n<4	n<4	n<4	n<4
Trend ≥ 90% Confidence Level		No Trend	No Trend	n<4	n<4	n<4	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		CV > 1 NON-STABLE	CV > 1 NON-STABLE	n<4 n<4	n<4 n<4	n<4 n<4	n<4 n<4

Data Entry By = ALM	Date = 13-Mar-19	Checked By = EEO

First-Order Trend Analysis for Benzene at Well VZ-13 Based on Data Since 2009

Former Circle (Medical Center) BP
Dothan, Alabama

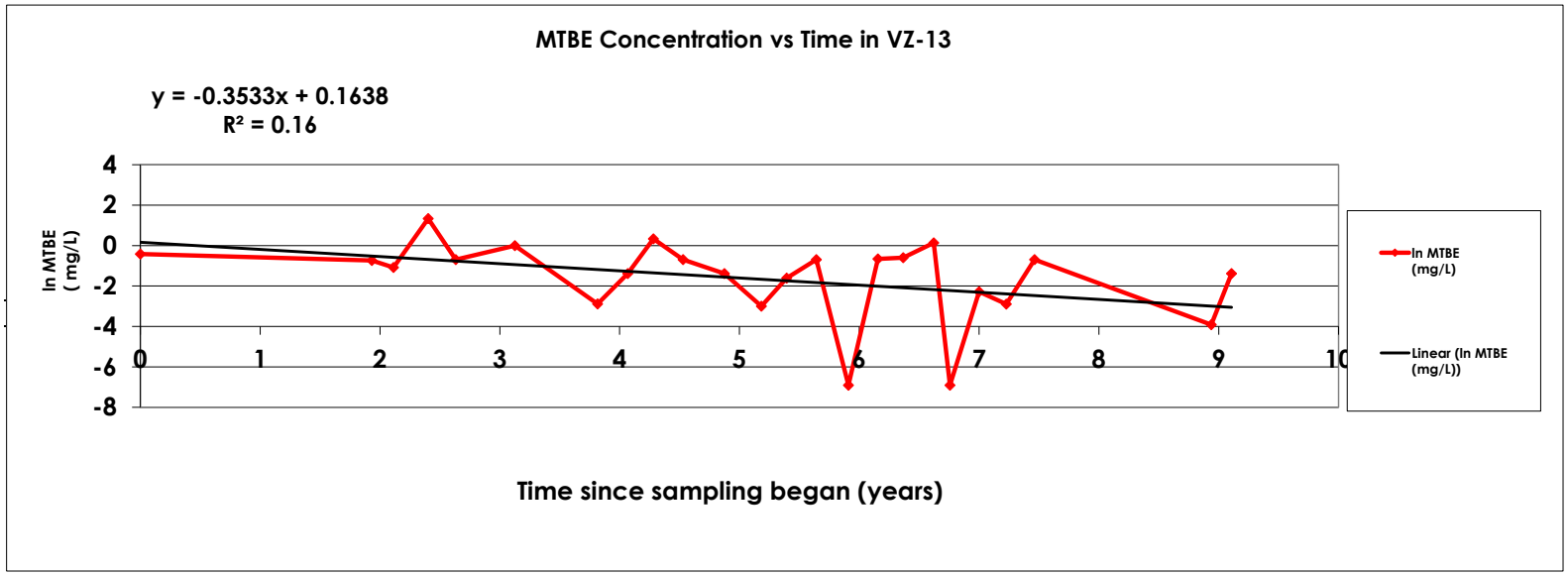
Sampling Date	Benzene (mg/L)	ln Benzene (mg/L)	Elapsed time since 12/15/09 (years)
12/15/09	13	2.56	0.00
11/20/11	3.9	1.36	1.93
01/25/12	2.9	1.06	2.11
05/10/12	14	2.64	2.40
08/02/12	3.1	1.13	2.63
01/29/13	2.1	0.74	3.13
10/08/13	1.2	0.18	3.82
01/08/14	1.3	0.26	4.07
03/27/14	9.1	2.21	4.28
06/25/14	3.3	1.19	4.53
10/29/14	9.4	2.24	4.87
02/19/15	0.57	-0.56	5.18
05/07/15	0.37	-0.99	5.39
08/05/15	0.54	-0.62	5.64
11/11/15	0.001	-6.91	5.91
02/09/16	1.06	0.06	6.16
04/26/16	1.74	0.55	6.37
07/28/16	4.03	1.39	6.62
09/15/16	0.001	-6.91	6.76
12/13/16	0.265	-1.33	7.00
03/06/17	0.334	-1.10	7.23
05/31/17	0.613	-0.49	7.46
11/20/18	0.362	-1.02	8.94
01/21/19	0.250	-1.39	9.11
Mean Last 4 Events	**0.390**		



First-Order Trend Analysis for MTBE at Well VZ-13 Based on Data Since 2009

Former Circle (Medical Center) BP
Dothan, Alabama

Sampling Date	MTBE (mg/L)	ln MTBE (mg/L)	Elapsed time since 12/15/09 (years)
12/15/09	0.66	-0.42	0.00
11/20/11	0.48	-0.73	1.93
01/25/12	0.34	-1.08	2.11
05/10/12	3.8	1.34	2.40
08/02/12	0.5	-0.69	2.63
01/29/13	1	0.00	3.13
10/08/13	0.056	-2.88	3.82
01/08/14	0.25	-1.39	4.07
03/27/14	1.4	0.34	4.28
06/25/14	0.5	-0.69	4.53
10/29/14	0.25	-1.39	4.87
02/19/15	0.05	-3.00	5.18
05/07/15	0.2	-1.61	5.39
08/05/15	0.5	-0.69	5.64
11/11/15	0.001	-6.91	5.91
02/09/16	0.516	-0.66	6.16
04/26/16	0.548	-0.60	6.37
07/28/16	1.14	0.13	6.62
09/15/16	0.001	-6.91	6.76
12/13/16	0.102	-2.28	7.00
03/06/17	0.0555	-2.89	7.23
05/31/17	0.5	-0.69	7.46
11/20/18	0.020	-3.91	8.94
01/21/19	0.250	-1.39	9.11
Mean Last 4 Events	**0.206**		



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Department of Natural Resources
Remediation and Redevelopment Program

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

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Site Name = Dothan			BRRTS No. =		Well Number = VZ-14	

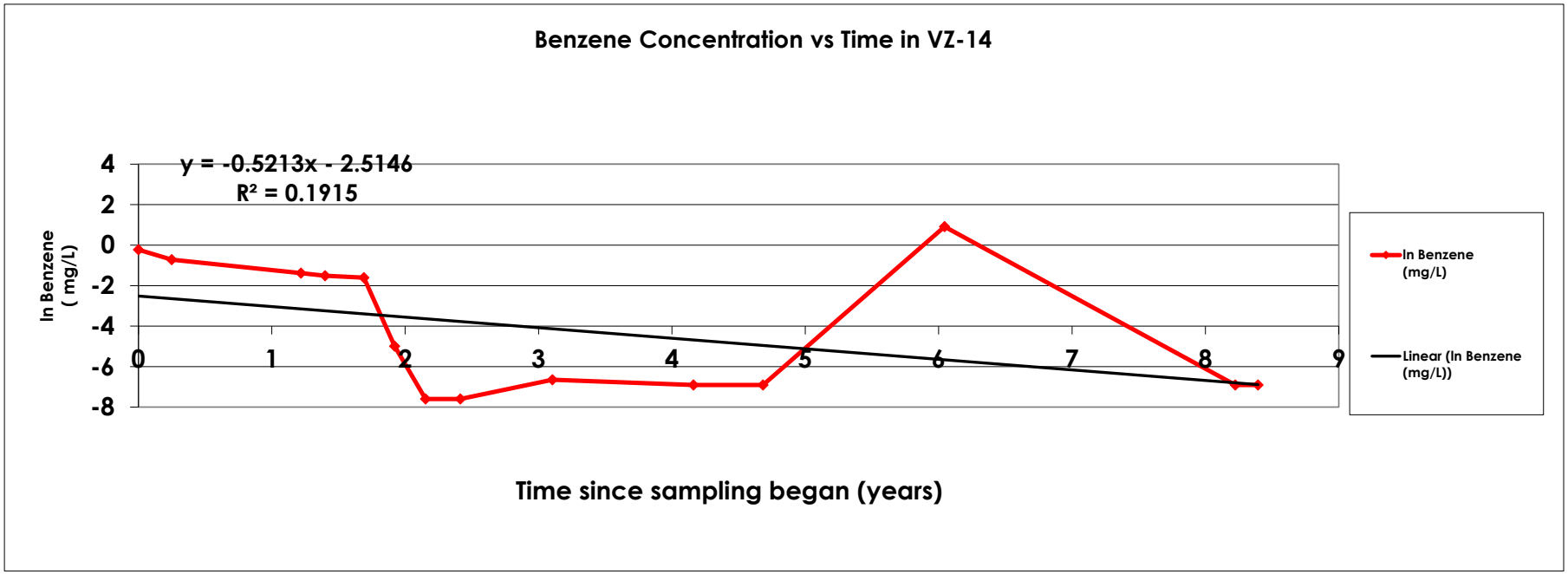
	Compound ->	Benzene					
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	05/10/12	0.2					
2	08/02/12	0.0068					
3	10/26/12	0.0005					
4	01/29/13	0.0005					
5	10/08/13	0.0013					
6	10/29/14	0.0010					
7	05/07/15	0.0010					
8	09/15/16	2.49000					
9	11/20/18	0.0010					
10	01/21/19	0.00100					
	Mann Kendall Statistic (S) =	-4.0	0.0	0.0	0.0	0.0	0.0
	Number of Rounds (n) =	10	0	0	0	0	0
	Average =	0.27	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Standard Deviation =	0.782	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Coefficient of Variation(CV)=	2.894	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Error Check, Blank if No Errors Detected			n<4	n<4	n<4	n<4	n<4
Trend ≥ 80% Confidence Level		No Trend	n<4	n<4	n<4	n<4	n<4
Trend ≥ 90% Confidence Level		No Trend	n<4	n<4	n<4	n<4	n<4
Stability Test, If No Trend Exists at		**CV > 1**	n<4	n<4	n<4	n<4	n<4
80% Confidence Level		**NON-STABLE**	n<4	n<4	n<4	n<4	n<4

Data Entry By = ALM	Date = 13-Mar-19	Checked By = EEO

First-Order Trend Analysis for Benzene at Well VZ-14 Based on Data Since 2010

Former Circle (Medical Center) BP
Dothan, Alabama

Sampling Date	Benzene (mg/L)	ln Benzene (mg/L)	Elapsed time since 09/01/10 (years)
09/01/10	0.8	-0.22	0.00
12/01/10	0.49	-0.71	0.25
11/20/11	0.25	-1.39	1.22
01/25/12	0.22	-1.51	1.40
05/10/12	0.2	-1.61	1.69
08/02/12	0.0068	-4.99	1.92
10/26/12	0.0005	-7.60	2.15
01/29/13	0.0005	-7.60	2.41
10/08/13	0.0013	-6.65	3.10
10/29/14	0.001	-6.91	4.16
05/07/15	0.001	-6.91	4.68
09/15/16	2.49	0.91	6.04
11/20/18	0.001	-6.91	8.22
01/21/19	0.001	-6.91	8.39
Mean Last 4 Events	**0.623**		



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Site Name = Dothan			BRRTS No. =		Well Number = VZ-15	

	Compound ->	Benzene					
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	02/19/15	7.8					
2	11/11/15	4.3100					
3	02/09/16	4.1900					
4	04/27/16	2.2800					
5	07/28/16	2.9000					
6	09/15/16	2.5000					
7	03/06/17	2.4600					
8	05/31/17	3.16000					
9	11/20/18	1.0400					
10	01/21/19	0.79800					
	Mann Kendall Statistic (S) =	-31.0	0.0	0.0	0.0	0.0	0.0
	Number of Rounds (n) =	10	0	0	0	0	0
	Average =	3.14	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Standard Deviation =	1.993	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Coefficient of Variation(CV)=	0.634	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Error Check, Blank if No Errors Detected			n<4	n<4	n<4	n<4	n<4
Trend ≥ 80% Confidence Level		**DECREASING**	n<4	n<4	n<4	n<4	n<4
Trend ≥ 90% Confidence Level		**DECREASING**	n<4	n<4	n<4	n<4	n<4
Stability Test, If No Trend Exists at			n<4	n<4	n<4	n<4	n<4
80% Confidence Level		NA	n<4	n<4	n<4	n<4	n<4

Data Entry By = ALM	Date = 13-Mar-19	Checked By = EEO

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

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Form 4400-215 (2/2001)

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Instructions: Do not change formulas or other information in cells with a blue background, only cells with a yellow background are used for data entry. To use the spreadsheet, provide at least four rounds and not more than ten rounds of data that is not seasonally affected. Use consistent units. The spreadsheet contains several error checks, and a data entry error may cause "DATA ERR" or "DATE ERR" to be displayed. Dates that are not consecutive will show an error message and will not display the test results. The spreadsheet tests the data for both increasing and decreasing trends at both 80 percent and 90 percent confidence levels. If a declining trend is present at 80 percent but not at 90 percent, a site is still eligible for closure under Comm 46 and NR 746 provided that other conditions in those rules are met. If an increasing or decreasing trend is not present, an additional coefficient of variation test is used to test for stability, as proposed by Wiedemeier et al, 1999. For additional information, refer to the Interim Guidance on Natural Attenuation for Petroleum Releases, dated October 1999. Refer to the guidance for recommendations on data entry for non-detect values.

Site Name : Dothan | BRRTS No. = | Well Number = VZ-16

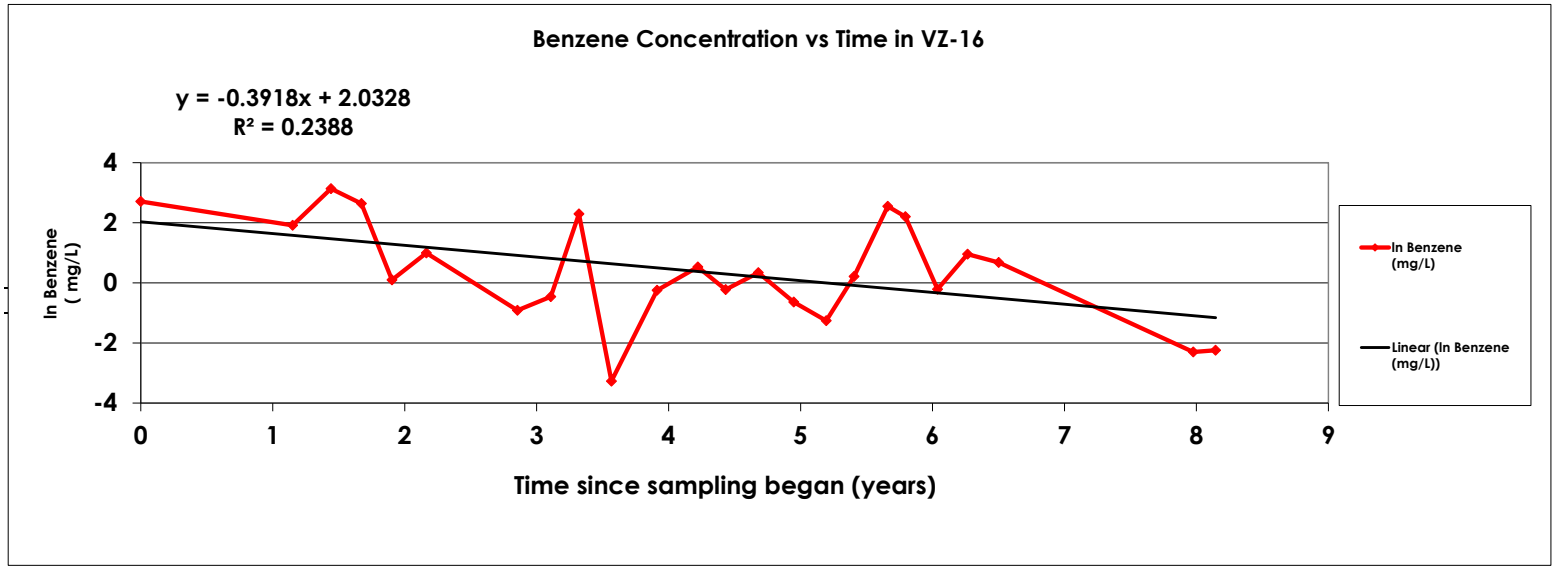
	Compound ->	Benzene					
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	11/11/15	0.528					
2	02/09/16	0.2840					
3	04/26/16	1.2400					
4	07/28/16	12.8000					
5	09/15/16	9.0300					
6	12/13/16	0.8070					
7	03/06/17	2.6000					
8	05/31/17	1.97000					
9	11/20/18	0.1000					
10	01/21/19	0.10600					
	Mann Kendall Statistic (S) =	-7.0	0.0	0.0	0.0	0.0	0.0
	Number of Rounds (n) =	10	0	0	0	0	0
	Average =	2.95	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Standard Deviation =	4.369	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Coefficient of Variation(CV)=	1.483	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Error Check, Blank if No Errors Detected			n<4	n<4	n<4	n<4	n<4
Trend ≥ 80% Confidence Level		No Trend	n<4	n<4	n<4	n<4	n<4
Trend ≥ 90% Confidence Level		No Trend	n<4	n<4	n<4	n<4	n<4
Stability Test, If No Trend Exists at		**CV > 1**	n<4	n<4	n<4	n<4	n<4
80% Confidence Level		**NON-STABLE**	n<4	n<4	n<4	n<4	n<4

Data Entry By = ALM | Date = 13-Mar-19 | Checked By = EEO

First-Order Trend Analysis for Benzene at Well VZ-16 Based on Data Since 2010

Former Circle (Medical Center) BP
Dothan, Alabama

Sampling Date	Benzene (mg/L)	ln Benzene (mg/L)	Elapsed time since 12/01/10 (years)
12/01/10	15.0	2.71	0.00
01/25/12	6.8	1.92	1.15
05/10/12	23.0	3.14	1.44
08/02/12	14.0	2.64	1.67
10/26/12	1.1	0.10	1.90
01/29/13	2.7	0.99	2.16
10/08/13	0.40	-0.92	2.85
01/08/14	0.63	-0.46	3.11
03/27/14	9.9	2.29	3.32
06/25/14	0.038	-3.27	3.57
10/29/14	0.78	-0.25	3.91
02/19/15	1.7	0.53	4.22
05/07/15	0.80	-0.22	4.43
08/05/15	1.40	0.34	4.68
11/11/15	0.528	-0.64	4.95
02/09/16	0.284	-1.26	5.19
04/26/16	1.24	0.22	5.41
07/28/16	12.8	2.55	5.66
09/15/16	9.03	2.20	5.79
12/13/16	0.807	-0.21	6.04
03/06/17	2.60	0.96	6.27
05/31/17	1.97	0.68	6.50
11/20/18	0.10	-2.30	7.98
01/21/19	0.11	-2.24	8.15
Mean Last 4 Events	**1.194**		



State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

Notice: This form is the DNR supplied spreadsheet referenced in Appendices A of Comm 46 and NR 746, Wis. Adm. Code. It is provided to consultants as an optional tool for groundwater contaminant trend analysis to support site closure requests under s. Comm 46.07, Comm 46.08, NR 746.07, NR 746.08, Wis. Adm. Code. Use this form or a manual method when seeking case closure under those rules. Earlier versions of this form should not be used.

Instructions: Do not change formulas or other information in cells with a blue background, only cells with a yellow background are used for data entry. To use the spreadsheet, provide at least four rounds and not more than ten rounds of data that is not seasonally affected. Use consistent units. The spreadsheet contains several error checks, and a data entry error may cause "DATA ERR" or "DATE ERR" to be displayed. Dates that are not consecutive will show an error message and will not display the test results. The spreadsheet tests the data for both increasing and decreasing trends at both 80 percent and 90 percent confidence levels. If a declining trend is present at 80 percent but not at 90 percent, a site is still eligible for closure under Comm 46 and NR 746 provided that other conditions in those rules are met. If an increasing or decreasing trend is not present, an additional coefficient of variation test is used to test for stability, as proposed by Wiedemeier et al, 1999. For additional information, refer to the Interim Guidance on Natural Attenuation for Petroleum Releases, dated October 1999. Refer to the guidance for recommendations on data entry for non-detect values.

Site Name = Dothan			BRRTS No. =		Well Number = VZ-17	

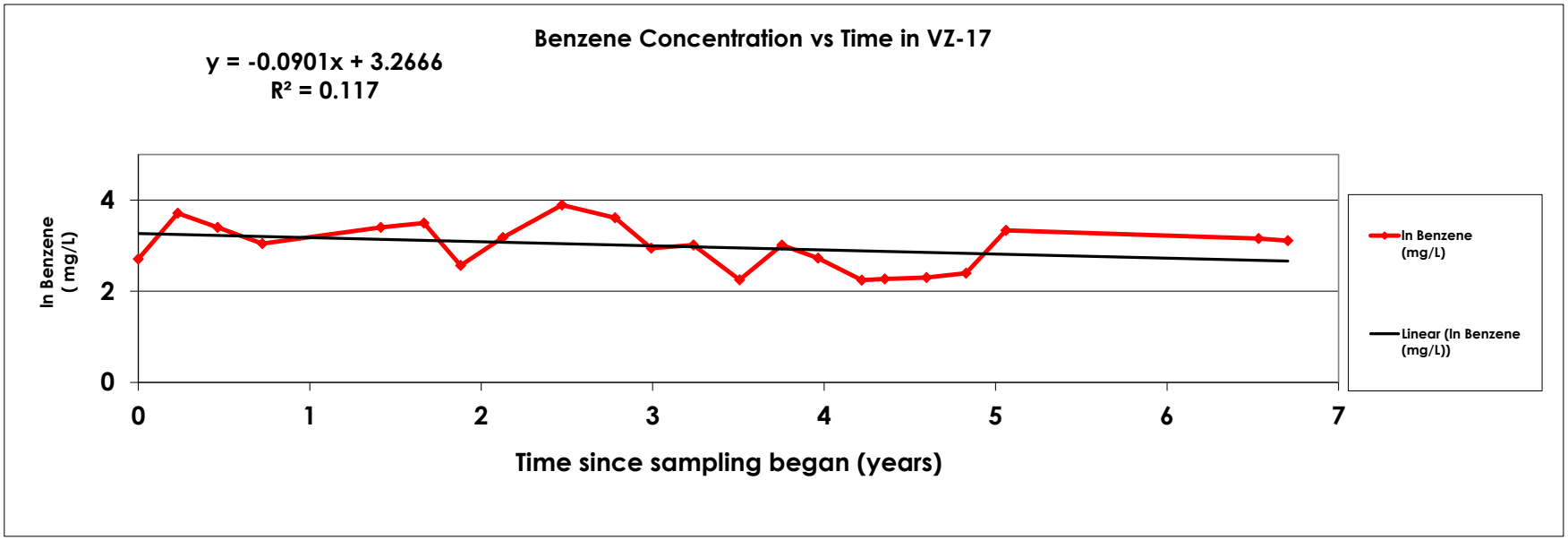
	Compound ->	Benzene					
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	11/11/15	9.49					
2	02/09/16	20.4000					
3	04/26/16	15.3000					
4	07/28/16	9.4400					
5	09/15/16	9.6900					
6	12/13/16	10.0000					
7	03/07/17	11.0000					
8	05/31/17	28.10000					
9	11/20/18	23.5000					
10	01/21/19	22.40000					
	Mann Kendall Statistic (S) =	19.0	0.0	0.0	0.0	0.0	0.0
	Number of Rounds (n) =	10	0	0	0	0	0
	Average =	15.93	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Standard Deviation =	7.068	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Coefficient of Variation(CV)=	0.444	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Error Check, Blank if No Errors Detected			n<4	n<4	n<4	n<4	n<4
Trend ≥ 80% Confidence Level		INCREASING	n<4	n<4	n<4	n<4	n<4
Trend ≥ 90% Confidence Level		INCREASING	n<4	n<4	n<4	n<4	n<4
Stability Test, If No Trend Exists at			n<4	n<4	n<4	n<4	n<4
80% Confidence Level		NA	n<4	n<4	n<4	n<4	n<4

Data Entry By = ALM	Date = 13-Mar-19	Checked By = EEO

First-Order Trend Analysis for Benzene at Well VZ-17 Based on Data Since 2012

Former Circle (Medical Center) BP
Dothan, Alabama

Sampling Date	Benzene (mg/L)	ln Benzene (mg/L)	Elapsed time since 05/10/12 (years)
05/10/12	15	2.71	0.00
08/02/12	41	3.71	0.23
10/26/12	30	3.40	0.46
01/29/13	21	3.04	0.72
10/08/13	30	3.40	1.41
01/08/14	33	3.50	1.67
03/27/14	13	2.56	1.88
06/25/14	24	3.18	2.13
10/29/14	49	3.89	2.47
02/19/15	37	3.61	2.78
05/07/15	19.0	2.94	2.99
08/05/15	20.40	3.02	3.24
11/11/15	9.49	2.25	3.51
02/09/16	20.40	3.02	3.75
04/26/16	15.3	2.73	3.96
07/28/16	9.44	2.24	4.22
09/15/16	9.69	2.27	4.35
12/13/16	10.0	2.30	4.60
03/07/17	11.0	2.40	4.83
05/31/17	28.1	3.34	5.06
11/20/18	23.5	3.16	6.53
01/21/19	22.4	3.11	6.70
Mean Last 4 Events	**21.25**		



APPENDIX F
ADEM UIC CLASS V WELL PERMIT APPLICATION REQUIREMENTS GUIDANCE

ADEM UIC Class V Well Permit Application Requirements Guidance

To apply for a Class V permit, an owner or operator of a new or existing well(s) shall submit a permit application to the Department which shall include the following information:

(a) Name, address and phone number of the owner and, if different, the name, address and phone number of the property owner and operator. (CLEARLY IDENTIFY THE PERMIT APPLICANT AND RESPONSIBLE OFFICIAL.)

(b) Facility name, address, phone number (if applicable) and physical location (if different from the address). Provide a description of the location of each proposed injection well or well field. (INCLUDE ANY SYSTEM FOR WHICH THE PERMIT APPLICATION IS BEING SUBMITTED.)

(c) A map(s) which shows the location of proposed injection well(s), public and private water supply wells, source water assessment areas meeting the requirements of rule 335-7-5, well head protection areas meeting the requirements of rule 335-7-12, surface waters and other pertinent surface features such as roads, natural or man made drainage courses, residences, and other structures within the area of review. The area of review should extend a minimum of 0.5 mile around the proposed injection well(s).

(d) A description of the fluids and/or pollutants to be injected and proposed operational procedures which include estimated average and maximum daily injection rates and volume of fluids and identification of all pollutants and their concentrations to be injected. (INCLUDE SUPPORTING DOCUMENTATION AND CALCULATIONS WHERE APPLICABLE.)

(e) The design, plans, construction specifications and other pertinent information of the treatment system, injection well(s), sampling system, and ground water monitoring well(s) required by the Department.

Monitoring wells shall be located and constructed in accordance with approved plans and shall conform to the following requirements:

1. The monitoring well configuration shall be designed to detect pollutant movement away from the well or well field;

2. The monitoring well plan shall be designed to detect pollution in the USDW into which injection is permitted and any other USDW which the Department determines may or has the potential to be impacted by the permitted injection and any associated facility or activity in the area of review;

3. An adequate number of monitoring wells shall extend into all USDW's, likely to be affected, to detect any movement of fluids and/or pollutants injected, process by-products or formation fluids into the USDW;

4. A plugging and abandonment plan may be required for a monitoring well when the Director deems it is necessary in order to prevent pollution of a USDW.

For the purposes of determining the bottom elevation of a subsurface fluid distribution system, the seasonal high ground water elevation or soil restrictive layer shall be determined either by measurement of ground water levels or by identification of natural soil features indicative of soil saturation. A minimum separation distance between the bottom elevation of a subsurface fluid distribution system and the seasonal high ground water elevation or soil restrictive feature shall be established by the Department based upon the proposed disposal technology to allow for the protection of groundwater quality and for the proper functioning of the subsurface distribution system. (INCLUDE ALL SOILS DATA WHERE APPLICABLE)

(f) Hydrogeological data determined to be necessary by the Department such as depth to ground water, direction of ground water flow, topographic description, physiographic province, etc. Also Include Form 531, boring log(s) for the site, a topographic map with site location marked and a cover letter summarizing the site information.

(g) When required, the financial responsibility requirements in subparagraph (1)(h) of rule 335-6-8-.09 shall be demonstrated. A permit application for discharge of treated sanitary waste must include a demonstration of compliance with any applicable requirement for financial viability certification.

(h) A certification described in subparagraph (1)(o) of rule 335-6-8-.09 (SEE PARAGRAPH BELOW) signed by the responsible official described by subparagraph (1)(n) of rule 335-6-8-.09

> "I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

INDICATE THE RESPONSIBLE OFFICIAL DESCRIBED BELOW:
1. In the case of a corporation, a principal executive officer of at least the level of vice-president;
2. In the case of a partnership, a general partner;
3. In the case of a sole proprietorship, the owner;
4. In the case of a municipal, state, federal, or other public agency, either a principal executive officer or ranking elected official.

FURTHER INSTRUCTIONS:

The Department may require submittal of additional information concerning any permit application when that information is required to evaluate the potential for pollution of a USDW or surface water or to determine permit conditions necessary to protect a USDW or surface water.

A permit application will not be processed until a completed application is received by the Department with the appropriate permit fee in accordance with rule 335-1-6. (FOR A NEW CLASS V UIC PERMIT THE CURRENT APPLICATION FEE PLUS A GREENFIELD FEE WILL APPLY- SEE RULE 335-1-1)

Applications for reissuance shall comply with rule 335-6-8-.10, except that previously submitted information need not be submitted unless requested by the Department.

Studies, engineering reports, plans and specifications, plugging and abandonment plans, well logs, drilling logs, and other technical submittals involve the practice of engineering and/or land surveying, as those terms are defined in Code of Alabama 1975, as amended, §§ 34-11-1 to 34-11-37; and/or the practice of geology, as that term is defined in Code of Alabama 1975, as amended, §§ 34-41-1 to 34-41-24. It is the responsibility of any person preparing or submitting such submissions to ensure compliance with these laws and any regulations promulgated thereunder, as may be required by the State Board of Registration for Professional Engineers and Land Surveyors and/or the Alabama Board of Licensure for Professional Geologists. All submissions, or parts thereof, which are required by State law to be prepared by a licensed engineer, land surveyor, or geologist, must include the engineer's, land surveyor's, and/or geologist's signature and/or seal, as required by the applicable licensure laws.

Engineering plans and information submitted with the permit application must be completed and certified by a Professional Engineer licensed in the state of Alabama. Geological information submitted with the permit application must be completed and certified by a Professional Geologist licensed in the State of Alabama.

APPENDIX G
HEALTH AND SAFETY PLAN AND JOURNEY MANAGEMENT PLAN

Site-Specific Health and Safety Plan for Groundwater Monitoring and Sulfate Injection

Former Circle (Medical Center)
BP
1098 Ross Clark Circle
Dothan, Alabama 36301

Prepared for:
Dth Es Tu Malade? #1, LLC
5455 Troy Highway
Montgomery, AL 36116

Prepared by:
Stantec Consulting Services Inc.
601 Grassmere Park Road
Suite 22
Nashville, TN 37211

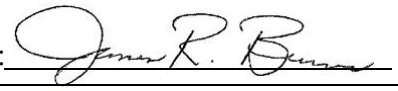
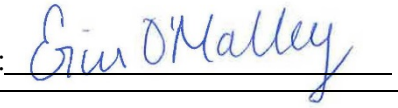
March 15, 2019

Purpose and Approval

Our work can be hazardous, and it is imperative that we never forget that! It is the purpose of this site-specific Health and Safety Plan (HASP) to proactively aid Stantec employees in:

- Identifying and understanding the risks/hazards they are likely to encounter at the site.
- Mitigating those risks/hazards.

Stantec's policy is to complete our work on this site without any type of incident (injury, illness, impact to the environment, impact to property and equipment). In order to achieve this goal, the project team will work together to perform an effective hazard assessment. The team will then establish appropriate precautions and communicate these daily among project staff. Staff will be responsible for communicating changing field conditions to the project management so these conditions and appropriate precautions may be re-evaluated as needed. Staff will implement **STOP WORK AUTHORITY** at any time they believe that conditions may be inherently unsafe or might cause damage to property or harm to the environment. Staff may refuse to participate in work they believe will be unsafe. If such conditions exist, staff will communicate immediately with the Project Manager to resolve the situation. We expect all subcontractors and project personnel to share this goal.

Client: Dth Es Tu Malade? #1, LLC		**Site Name:** Former Circle (Medical Center) BP
Project Name: CVS-Dothan		**Project Number:** 212201283
Start Date: 3/15/2019		**End Date:** 12/31/2019
Plan Review Date: 9/15/2019 (Last day of expected fieldwork or no longer than 6 months).		
Jim Burns Stantec Project Manager	Signature: 	Date: 03/20/19
Erin O'Malley Stantec Peer Reviewer	Signature: 	Date: 03/20/19

The health and safety guidelines in this HASP were prepared exclusively for this site. This HASP will be amended (with changes recorded on the HASP Modification Log) if site conditions, scope of work, training dates, personnel, or other critical items change before the scheduled HASP review date above. This HASP is intended to be used in conjunction with the Team Field Binder, which will be available on site. Contents of this binder are listed in Attachment 1.

HASP Modification Log

HASP Section	Description of Revision	Revision Date	Approved By
All	Comprehensive Annual Review & Update	1/31/15	M. Winkler T. Madsen T. Flora D.Burnia
All	Comprehensive Annual Review & Update	5/12/17 K. Dingman	5/26/17 E. O'Malley
All	Comprehensive Annual Review & Update	3/8/18 K. Dingman	3/12/18 E. O'Malley
All	Comprehensive Annual Review & Update, and modify SOW	3/15/19 R. Norman	3/20/19 E. O'Malley

Acknowledgement and Agreement Form

"Zero Tolerance for Incidents of ANY Kind.
Work Together to Ensure A SAFE and High Quality Project"

This HASP has been developed for the purpose of proactively aiding Stantec employees in identifying, understanding, and mitigating the risks/hazards they are likely to encounter at the site. This HASP may also be used as a guidance document by properly trained and experienced Stantec subcontractors and clients; Stantec is readily available to assist subcontractors in identifying and addressing their employees' risks; however, sub-contractors and other contractors at the site must develop their own HASP to address the hazards faced by their own employees.

All parties are required to review Attachment 12, ***Preventing Serious Injury & Fatalities Field Guide*** prior to commencing work. All parties conducting site activities are required to coordinate their activities and practices with the Stantec Site Health and Safety Officer (SHSO). Stantec has provided a copy of this HASP to contractors in the interest of full disclosure of hazards of which we may be aware and to satisfy Stantec's responsibilities under the Occupational Safety and Health Administration (OSHA) Hazard Communication standard. Similarly, contractors are required to inform Stantec of any hazards of which they are aware or that the contractor's work on site might possibly pose to Stantec employees including (but not limited to) the Safety Data Sheets (SDS) for chemicals the contractor may bring on site. This HASP should NOT be understood by contractors to provide information on all of the hazards to which a contractor's employees may be exposed as a result of their work. Stantec claims no responsibility for use of this HASP by others for purposes unrelated to this project.

Your signature below confirms the following: you have read and understand the hazards and associated mitigation measures discussed in this HASP; you have received training and medical surveillance according to this HASP and the OSHA Standard on Hazardous Waste Operations and Emergency Response (29 CFR 1910.120), as applicable; you understand that sub-contractors and contractors must develop their own HASP for their employees; and you understand that you could be prohibited by the SHSO or other Stantec personnel from working on this project for not complying with any aspect of this HASP.

(All Stantec and subcontractor personnel must sign.)

Name	Signature	Company	Date

Acknowledgement and Agreement Form (cont.)

Name	Signature	Company	Date

Table of Contents

March 15, 2019

ATTACHMENTS

Attachment 1 Stantec Field Safety Reference Binder Checklist
Attachment 2 Risk Management Strategy Forms (RMS-2 and RMS-3)
Attachment 3 Ground Disturbance Forms (SWP 213a and SWP 213b)
Attachment 4 Job Safety Analyses
Attachment 5 Personal Protective Equipment Assessment
Attachment 6 Permit to Work & Daily Tailgate Meeting
Attachment 7 Job Hazard Assessment
Attachment 8 Site Health and Safety Quiz
Attachment 9 Safety Data Sheets
Attachment 10 Equipment Calibration / Air Monitoring Logs
Attachment 11 Journey Management Plan
Attachment 12 Preventing Serious Injury & Fatalities Field Guide

Emergency Response
March 15, 2019

1.0 Emergency Response

1.1 PHONE NUMBERS

The nearest telephone is the cell phone carried by the Stantec SHSO and/or Stantec Project Staff: Wes Cline (916) 281-7459 / Mark Buckreis (615) 828-1778.
The nearest land-line telephone is: CVS Pharmacy (334) 794-7798

Emergency Response			
Name		**Telephone**	**Verification**
Hospital	Southeast Alabama Medical Center 1108 Ross Clark Circle Dothan, Alabama 36301	(334) 793-8111	3/13/19 AM
Occupational Clinic	OccMed Solutions LLC 3124 Ross Clark Cir Dothan, AL 36303	(334) 678-9123 8:00-5:00 M-F	3/13/19 AM
Medical Guidance and Treatment Options	WorkCare	(888) 449-7787 (24 hrs./day, 7 days/week)	3/13/19 AM
Ambulance	Dothan Ambulance Service	911 or (334) 792-4118	3/13/19 AM
Police/ Fire Department	Dothan PD	911 or (334) 615-3000	3/13/19 AM
Spill Response	Eagle/SWS	(877) 742-4215	3/13/19 AM
Environmental Response	National Response Center (24-hour hotline)	(800) 424-8802	3/13/19 AM
Alabama Emergency Management Agency (AEMA)	Emergency Response (24-hour)	(800) 843-0699	3/13/19 AM
Alabama Dept. of Environmental Management (ADEM)	Emergency Response (24-hour hotline)	(334) 850-6621	3/13/19 AM
Poison Control	U.S. National Poison Control Center (24-hour hotline)	(800) 222-1222	3/13/19 AM
Agency / Line Locator			
National Line Locator	National 811 Call-Before-You-Dig Hotline (24-hour hotline)	811	3/13/19 AM
State Line Locator	Alabama One Call	(800) 292-8525	3/13/19 AM

Emergency Response
March 15, 2019

Private Line Locator	GPR Systems, Inc.	(205) 410-0243	3/13/19 AM
Local Public Works Department	Dothan Utilities (Water) & Dothan Utilities (Power)	(334) 615-3302	3/13/19 AM
Local Gas and Electric Utility	SEAGD	(334) 222-4177	3/13/19 AM
Regulatory Agency	Alabama Department of Environmental Management Central Office	(334) 271-7700	3/13/19 AM

Emergency Response
March 15, 2019

Project Team Phone Numbers			
Name		**Telephone**	**Verification**
Stantec Project Manager	Jim Burns	(517) 349-9499 Office (517) 202-7168 Cell	3/13/19 AM
Stantec Task Manager	Erin O'Malley	(517) 349-9499 Office (517) 515-8455 Cell	3/13/19 AM
Stantec SHSO	Wes Cline	(615) 499-7168 Office (916) 281-7459 Cell	3/13/19 AM
Stantec Project Staff	Mark Buckreis	(615) 499-7152 Office (615) 828-1778 Cell	3/13/19 AM
Stantec Business Unit Leader	Damon Brown	(801) 743-4811 Office (385) 242-9976 Cell	3/13/19 AM
Director for HSSE Operations	Keith Kuhlmann	(841) 907-6900 Office (740) 816-6170 Cell	3/13/19 AM
HSSE Vice President	Jon Lessard	(713) 587-5754 Office (281) 513-5538 Cell	3/13/19 AM
Regional HSSE Manager, US West	Tony Wong	(805) 250-2860 Office (805) 234-6227 Cell	3/13/9 AM
Regional HSSE Manager, US South	Randy Jones	(615) 499-7161 Office (907) 707-9305 Cell	3/13/19 AM
Regional HSSE Manager, US Northeast	Fred Miller	(610) 235-7315 Cell	3/13/19 AM
Regional HSSE Manager, US Central	Wes Cline	(615) 499-7168 Office (916) 281-7459 Cell	3/13/19 AM
Stantec Workers Compensation Coordinator (WCCC)	Melissa Helton	(513) 720-3706 Cell	3/13/19 AM
Senior Human Resources Consultant (US)	Trey Griffin	(859) 422-3025 Office (859) 967-9118 Cell	3/13/19 AM

Emergency Response
March 15, 2019

1.2 DIRECTIONS AND MAP TO THE HOSPITAL

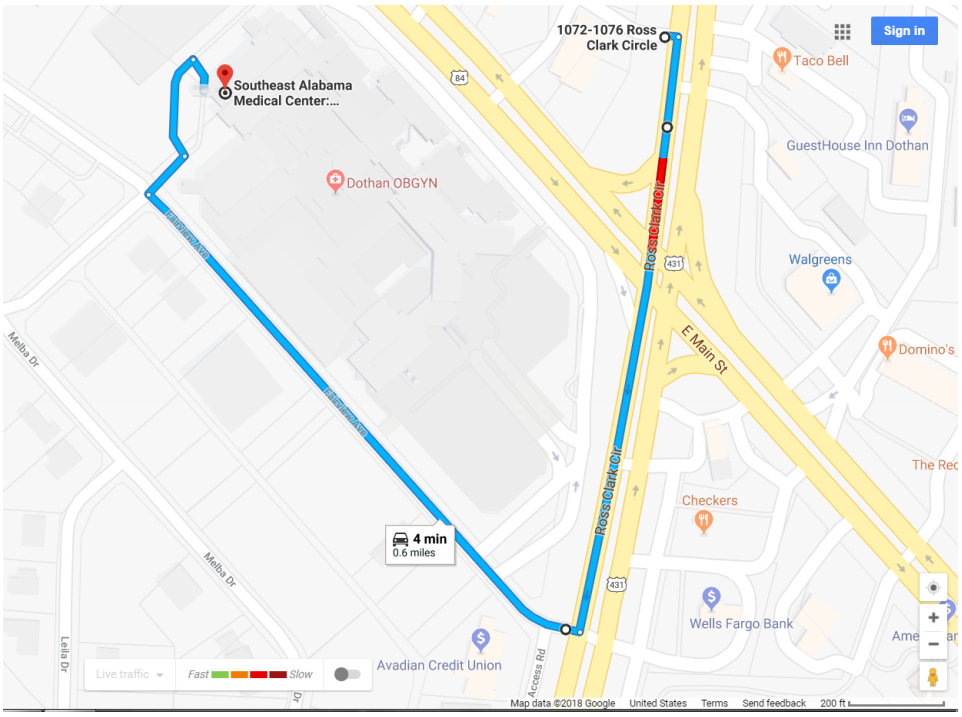
A hospital with an emergency room or urgent care facility is the preferred choice for treatment of a severe or potentially life-threatening injury. **The SHSO will verify and validate the route** to the hospital by driving it before work begins.

Southeast Alabama Medical Center (Noland Hospital) - 911 or (334) 793-8111

Head south on Ross Clark Cir
0.2 mi

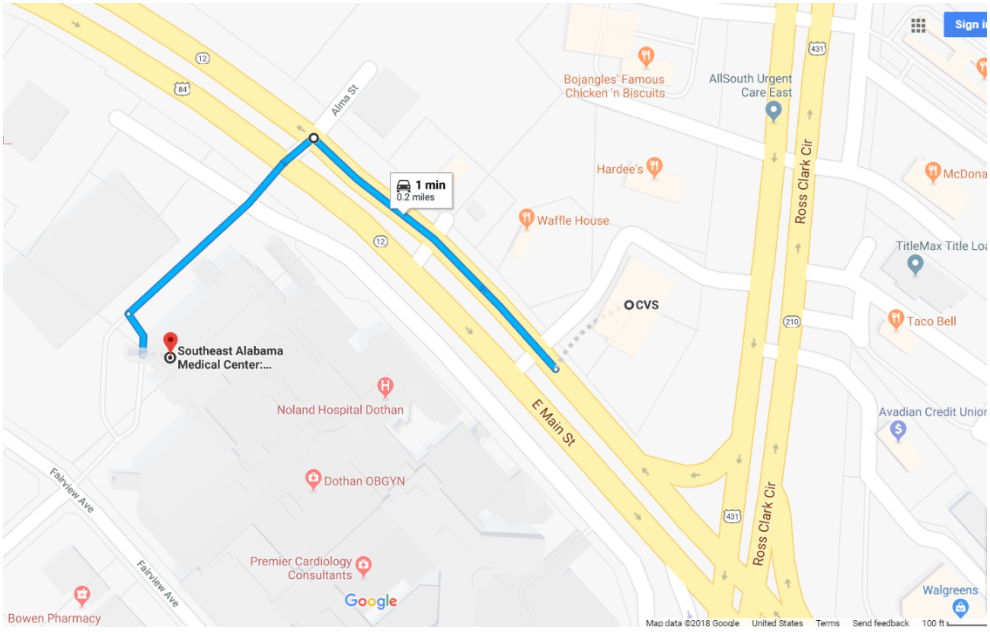
Turn right onto Fairview Ave
226 ft

Destination will be on the right



Emergency Response
March 15, 2019

Alternate Hospital Route



1.3 DIRECTIONS AND MAP TO OCCUPATIONAL CLINIC

An occupational clinic is the preferred choice for treatment of a non-life-threatening injury. **The SHSO will verify and validate the route** to the occupational clinic by driving it before work begins.

OccMed Solutions LLC
3124 Ross Clark Cir
Dothan, AL 36303
Phone: 334-678-9123

8:00 am to 5:00 pm, Mon-Fri

Driving Directions

From: 1098 Ross Clark Circle
Dothan, AL 36301

New Start Address

To: 3124 Ross Clark Cir
Dothan, AL 36303

1. 102 ft

   Head **south** on **Ross Clark Cir**

2. 4.3 mi

   Turn **right** onto **E Main St**

3. 0.2 mi

   Turn **right** onto **Ross Clark Cir**

   Destination will be on the right

4.6 mi, Estimated driving time: 11 minutes

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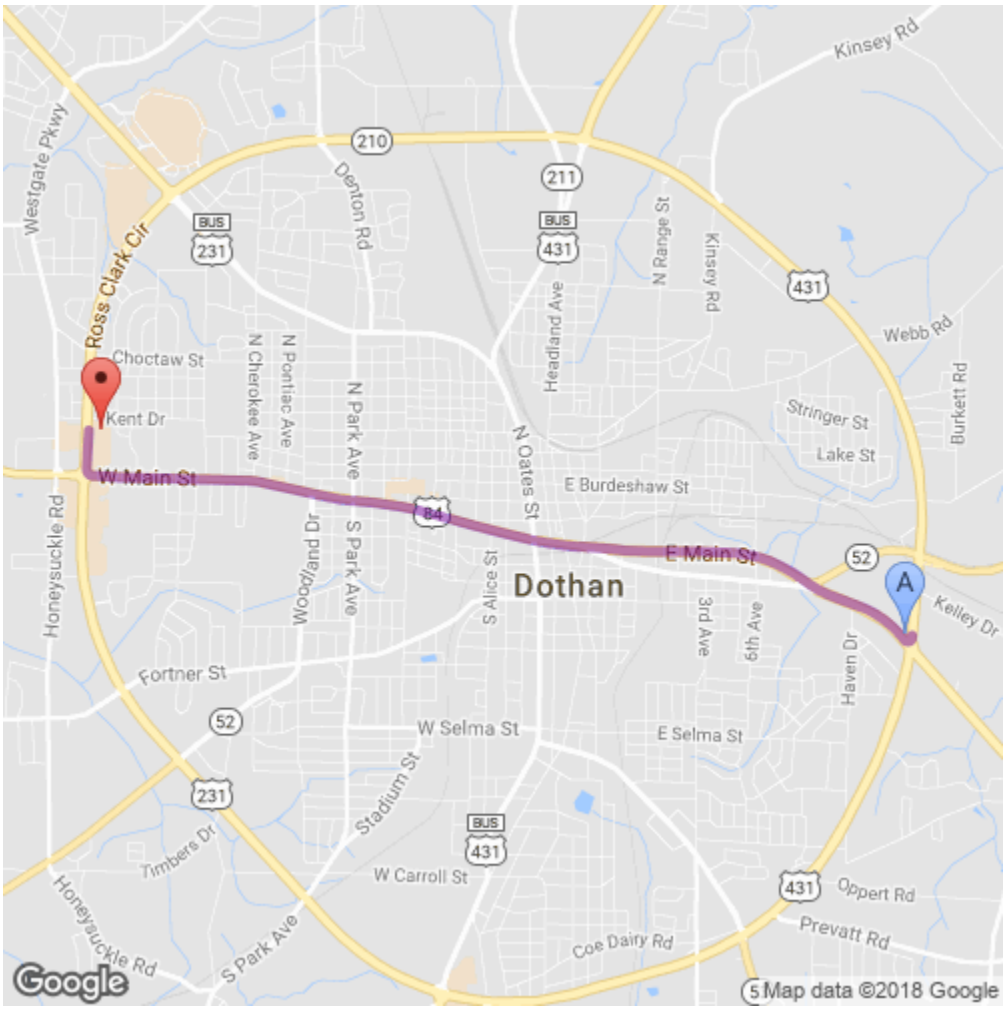

1.4 EMERGENCY RESPONSE PROCEDURES: EVACUATION

In the event of an on-site or off-site emergency requiring site evacuation (e.g., fire, release, explosion, etc.), the following procedures will be followed:

- Stop Work and notify the SHSO.
- Evacuate the site and go to the emergency meeting location if safe conditions exist. **The gathering location will be determined by the STANTEC SHSO upon arrival on site. It is the responsibility of the SHSO to annotate the Site Plan with the gathering location position and to disseminate that info to all site personnel during the Daily Production Safety Meeting and any other appropriate time after that.** Maintain a safe distance from the source.
- Check in with the SHSO at the emergency meeting location. The SHSO will take attendance once all personnel have gathered.
- Dial 911 or the appropriate emergency response number(s) listed in Section 1.1. When in doubt, emergency response personnel shall be notified. State the problem clearly and completely. Remain on the line until dismissed by the operator.
- Only attempt to extinguish small fires with portable dry chemical equipment on-hand.
- The SHSO is responsible for notifying the Stantec Project Manager. The Stantec Project Manager will initiate appropriate incident reporting procedures as described in Section 1.7.
- Do not re-enter the emergency site without specific approval from emergency response personnel.

Randomly scheduled evacuation drills may be conducted at any time during field activities.

1.5 EMERGENCY RESPONSE PROCEDURES: INJURY OR ILLNESS

If an injury or illness occurs, take the following action:

- Stop Work, stabilize the situation, and secure the site.
- Administer First Aid for the person immediately using a first aid and blood-borne pathogens kit.
- Determine if emergency response (fire/ambulance) is necessary. If so, call 911 or the appropriate emergency response number(s) listed in Section 1.1 on the closest available phone. Provide the location of the injured person and other details as requested.
- If emergency decontamination is required:
    - Immediately remove any contaminated personal protective equipment (PPE) or clothing.
    - If possible, wash contaminated area with mild soap and water.
    - Personnel assisting the contaminated individual will don the proper PPE to avoid unnecessary exposures.
- For all injuries or illness, even minor cuts, scratches, and bruises, notify the SHSO immediately.
- After the victim(s)/site have been stabilized, the SHSO is responsible for notifying the Stantec Project Manager. The Stantec Project Manager will initiate appropriate incident reporting procedures as described in Section 1.7.
- The SHSO will assume responsibility during a medical emergency until more qualified emergency response personnel arrive at the site as needed.

1.5.1 Injury or Illness Requiring Hospital/Clinic Service WITHOUT Ambulance Service

For injuries or illnesses requiring medical care from a hospital or occupational clinic without requiring ambulance services, the following procedures will be taken immediately:

- The SHSO will ensure prompt transportation of the injured person to a hospital or occupational clinic and make immediate notification to the Stantec PM. The Stantec Project Manager will initiate appropriate incident reporting procedures as described in Section 1.7.
- As applicable, the Stantec HES Team will facilitate communication between the injured person and Stantec subscribed service for occupational injuries (WorkCare)
- A representative of Stantec will accompany the injured person and remain at the medical facility until the employee is ready to return.
- If the driver of the vehicle is not familiar with directions to the hospital, a second person shall accompany the driver and the injured employee to navigate the route to the hospital.
- If it is necessary for the SHSO to accompany the injured employee, provisions will be made to have another employee, properly trained and certified in First Aid, to act as the temporary SHSO.
- If the injured employee is able to return to the job site the same day, he/she will bring with him/her a statement from the doctor containing such information as:

  - Date
  - Employee's name
  - Diagnosis
  - Date he/she is able to return to work, regular or light duty
  - Date he/she is to return to doctor for follow-up appointment, if necessary
  - Signature and address of doctor
- The SHSO is responsible for notifying the Stantec Project Manager. The Stantec Project Manager will initiate appropriate incident reporting procedures as described in Section 1.7.

If the injured employee is unable to return to the job site the same day, the employee who transported him will bring this information back to the job site and report it to the SHSO who will then communicate it to the Stantec Project Manager. The Stantec Project Manager will initiate appropriate incident reporting procedures as described in Section 1.7.

1.5.2 Injury or Illness Requiring Hospital Service WITH Ambulance Service

Injuries or illnesses requiring hospital service with ambulance services include severe head injuries, amputations, heart attacks, heat stroke, etc. The following procedures will be taken immediately:

- Call 911 or the emergency contact number listed in Section 1.1 for ambulance service.
- Notify the SHSO.
- Administer First Aid until ambulance service arrives.
- One designated representative will accompany the injured employee to the medical facility and remain at the facility until full diagnosis and other relevant information is obtained.
- If the injured employee is able to return to the job site the same day, he/she will bring with him/her a statement from the doctor containing such information as:
  - Date
  - Employee's name
  - Diagnosis
  - Date he/she is able to return to work, regular or light duty
  - Date he/she is to return to doctor for follow-up appointment, if necessary
  - Signature and address of doctor
- The SHSO is responsible for notifying the Stantec Project Manager. The Stantec Project Manager will initiate appropriate incident reporting procedures as described in Section 1.7.

If the injured employee is unable to return to the job site the same day, the employee who transported him will bring this information back to the job site and report it to the SHSO who will then communicate it to the Stantec Project Manager. The Stantec Project Manager will initiate appropriate incident reporting procedures as described in Section 1.7.

1.5.3 Death of an Individual or Hospitalization of Three or More Employees

The emergency response procedures in Section 1.5.2 will be followed.

The Stantec Project Manager will notify Stantec Human Resources immediately, then follow the reporting procedures listed in Section 1.7. Human Resources will notify the local OSHA office within 8 hours of the incident or fatality.

1.6 EMERGENCY RESPONSE PROCEDURES: SPILLS OR CUT LINES

Prior to any ground disturbance activities, Stantec's Pre-Ground Disturbance Worksheet (SWP 213a **MUST** be completed. Documents are located in Attachment 3 of this HASP.

In the event of a spill/release, follow this plan:

- Stop Work, stabilize the situation, and secure the site.
- Stay upwind of the spill/release.
- Wear appropriate PPE.
- Turn off equipment and other sources of ignition.
- Turn off pumps and shut valves to stop the flow/leak.
- Plug the leak or collect drippings, when possible.
- Use sorbent pads to collect product and impede its flow, if possible.
- Call Fire Department immediately if fire or emergency develops.
- Notify the SHSO as soon as possible. The SHSO is responsible for notifying the Stantec Project Manager.
- Based on agreements, contact the emergency spill contractor for containment of free product. The contacts for this project will be Dothan Fire Department and Eagle/SWS.
- Do not transport or approve transportation of contaminated soils or product until proper manifests have been completed and approved. Be aware that soil/product may meet criteria for hazardous waste.
- Do not sign manifests as generator of wastes unless you have been given appropriate training and approval for signing on behalf of the generator. Contact the Stantec Project manager or a Waste Compliance Manager to discuss waste transportation.

The Stantec Project Manager will initiate the incident reporting procedure listed in Section 1.7. Dth Es Tu Malade? #1, LLC will own the incident investigation and reporting process for spills and releases that occur on their sites, including assessment and classification of the incident.

1.7 INCIDENT REPORTING PROCEDURES

INSTRUCTION GUIDE FOR INTERNAL INCIDENT REPORTING FOR THE STANTEC TEAM

This section outlines the procedures that will be followed in the event of an incident. A flowchart and a table with necessary contact information (phone numbers, fax numbers, and email addresses) for incident reporting are also provided.

In the event of an incident (injuries, spills, non-conformance events, permit exceedances, and potential incidents (near losses)):

1. Stop work, stabilize the situation, secure the site and notify the SHSO. **If you are unsure whether or not something should be reported, Stop Work and proceed with notification anyway.**
   - **Employees Requiring Medical Attention:**
     i. For life threatening injuries, **immediately contact 911**. The injured employee will be accompanied by the SHSO to the medical facility.
     ii. When an employee requests medical attention for a non- life threatening injury, and **after alerting the Stantec Project Manager**; the employee should **immediately call Melissa Helton, Stantec's Worker's Claims Coordinator at 513-720-3706 for assistance.**
     iii. The employee will be taken to the approved clinic that is identified in Section 1.0 for first treatment care.

2. The SHSO will make **VERBAL** notification to the Stantec Project Manager immediately (within the hour). If verbal notification can't be made to the Stantec Project Manager, verbal notification **must** be made to one of the Stantec H&S Team Members.

3. The Stantec Project Manager will make internal notifications* to the following: and
   - Stantec H&S Team Members (Keith Kuhlmann or Jon Lessard and one of the Regional HSSE Managers (Wes Cline, Randy Jones, Fred Miller or Tony Wong). ***Note: Incidents involving injury, potential injury, or report of pain, soreness, or discomfort requires immediate notification to a Stantec H&S Team Members to develop a plan for assessment and care.***

4. The Stantec Project Manager will obtain concurrence from at least one of the Stantec H&S Team Members regarding client reporting requirements and those client reporting requirements will be completed.

5. The SHSO or Stantec Project Manager will submit an initial copy of the Stantec Incident Investigation/Near Loss Investigation (IINLI) (RMS-3) Form to Stantec's Health Safety & Environment group (via email: to hse@stantec.com) within 24 hours of the event. The final report is due within 5 business days.

Stantec HSSE Team Notification Phone Numbers:

Keith Kuhlmann	Office (941) 907-6900	Cell (740) 816-6170
Jon Lessard	Office (713) 587-5754	Cell (281) 513-5538
Randy Jones	Office (615) 499-7161	Cell (907) 707-9305
Fred Miller	Office (610) 235-7315	Cell (610) 235-7315
Tony Wong	Office (805) 250-2860	Cell (805) 234-6227
Wes Cline	Office (615) 499-7168	Cell (916) 281-7459

Stantec's Health Safety & Environment Group
Fax (780) 969-2030 E-mail = hse@stantec.com

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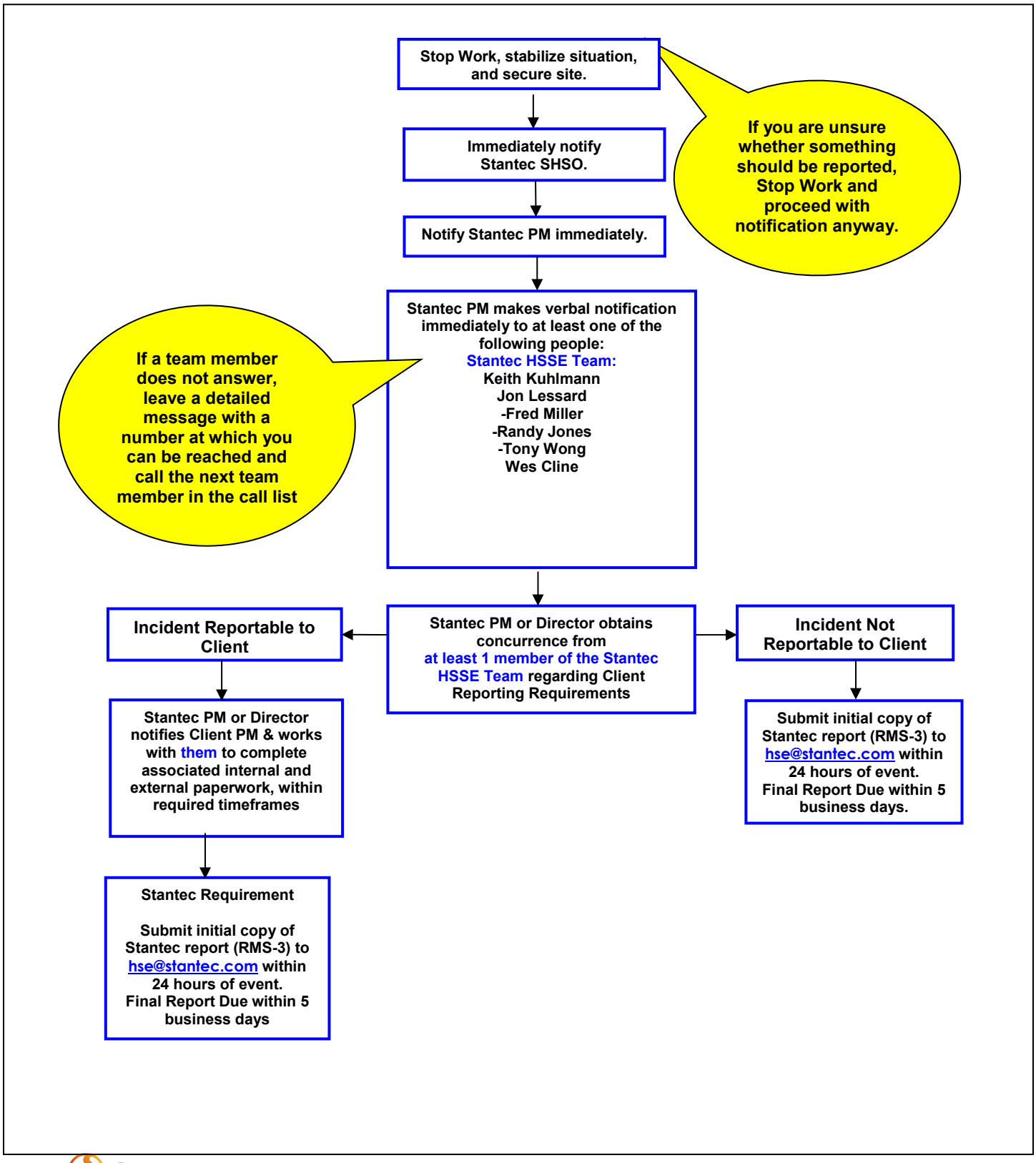

2.0 Scope of Work

The scope of this project is to:

- Quarterly groundwater monitoring and sampling
- Sulfate Injection

Therefore, this HASP was prepared for the use of Stantec personnel while performing the following tasks:

1. Driving To/From the Job Site
2. Gauge monitor wells
3. Sample monitor wells
4. Sulfate injection

The above-stated tasks will be conducted in a manner consistent with the methods and assumptions outlined in the: *Revised Modified Corrective Action Plan (CP-57).* All work plans referenced in this HASP will be available for Stantec personnel.

3.0 Site Background and Chemical Hazards

Stantec Consulting Services Inc. (Stantec) was retained by Dth Es Tu Malade? #1, LLC to perform corrective-action activities for Former Circle (Medical Center) BP located at 1098 Ross Clark Circle, Dothan, Alabama.

The site is a former BP service station and is now a CVS Pharmacy Store (#4878). The groundwater monitor well network at the site consists of twelve monitor wells (MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, MW-11 and MW-12). Installation of the SVE system was completed in November 2005. Start-up of the SVE system was initiated on March 7, 2006. The recovery well network consists of five four-inch diameter vapor-extraction wells (VZ-13, VZ-14, VZ-15, VZ-16 and VZ-17).

The installation of an AS system to augment the reduction of dissolved hydrocarbon constituents as requested by the Alabama Department of Environmental Management (ADEM) was completed on August 17, 2011. Additionally, three 2-inch air sparge (AS-1, AS-2, and AS-3) were installed June 21 through 22, 2011. The wells were located within the SVE recovery well network and spaced approximately 20 feet apart. The SVE and AS systems were shut down on March 14, 2017.

Groundwater monitoring is required by ADEM to confirm that remediation has reduced chemicals of concern to concentrations less than risk based corrective action remedial goals. Groundwater monitoring is typically performed on a quarterly basis.

The chemicals of concern at the site include phase-separated hydrocarbons (PSH), benzene, toluene, ethylbenzene, total xylenes, methyl tertiary butyl ether (MTBE), and naphthalene. Groundwater samples are analyzed using EPA method 8260.

Constituents of Potential Concern and Maximum Concentrations			
Constituent	**Sample Date**	**Media**	**Concentration (mg/L)**
Benzene	10/08/13	Groundwater	260
Toluene	10/08/13	Groundwater	560
Ethylbenzene	01/29/13	Groundwater	47
Total Xylenes	01/29/13	Groundwater	350
MTBE	12/08/98	Groundwater	172
Naphthalene	03/06/17	Groundwater	0.911

4.0 Potential Airborne Concerns

POTENTIAL AIRBORNE CHEMICALS ONSITE IN THIS PROJECT REVIEW THIS TABLE AND CONTACT SHSO WITH QUESTIONS						
CHEMICAL (OR CLASS)	**OSHA PEL ACGIH TLV**	**OTHER PERTINENT LIMITS**	**WARNING PROPERTIES**	**ROUTES OF EXPOSURE OR IRRITATION**	**ACUTE HEALTH EFFECTS**	**CHRONIC HEALTH EFFECTS & TARGET ORGANS**
TPH_d	FedOSHA PEL 400 ppm	NIOSH REL 350 ppm	Yellowish to light brown liquid	Inhalation, skin absorption, ingestion, skin and/or eye contact.	Nausea, eye irritation, increased blood pressure, headache, light-headedness, loss of appetite, poor coordination, and difficulty concentrating. [Potential occupational carcinogen	Kidneys, circulatory system
TPHg	CalOSHA PEL 300 ppm FedOSHA PEL None Established No REL Established TLV 300 ppm	CalOSHA STEL 500 ppm	Clear liquid with a characteristic odor	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; dermatitis; headache, fatigue, blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonia (aspiration liquid); possible liver, kidney damage; [Potential occupational carcinogen]	Eyes, skin, respiratory system, central nervous system, liver, kidneys
Benzene (1910.1028)	Cal/FedOSHA PEL 1.0 ppm TLV 0.5.0 ppm	CalOSHA & FedOSHA STEL 5.0 ppm NIOSH REL 0.1 ppm IDLH 500 ppm	Characteristic benzene odor	Inhalation, Dermal, ingestion, eyes	Skin (dermatitis), eye, respiratory tract irritant, headache, dizziness, nausea.	Carcinogen, CNS, eye damage, bone marrow, blood, skin,

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POTENTIAL AIRBORNE CHEMICALS ONSITE IN THIS PROJECT REVIEW THIS TABLE AND CONTACT SHSO WITH QUESTIONS						
CHEMICAL (OR CLASS)	**OSHA PEL ACGIH TLV**	**OTHER PERTINENT LIMITS**	**WARNING PROPERTIES**	**ROUTES OF EXPOSURE OR IRRITATION**	**ACUTE HEALTH EFFECTS**	**CHRONIC HEALTH EFFECTS & TARGET ORGANS**
	(skin)					leukemia.
Toluene	CalOSHA PEL 10 ppm FedOSHA PEL 200 ppm TLV 50 ppm	NIOSH REL 100 ppm TWA; 150 ppm STEL IDLH 500 ppm CalOSHA C 500 ppm CalOSHA STEL 150 ppm	Sweet, pungent, benzene-like odor	Inhalation, dermal, ingestion, eyes	Skin (dermatitis) eye, respiratory tract irritant, headache, dizziness, weakness, and fatigue.	CNS, liver, kidneys, skin.
Ethylbenzene	CalOSHA PEL 5 ppm FedOSHA PEL 100 ppm TLV 100 ppm	PEL-STEL 125 ppm TLV STEL 125 ppm NIOSH REL 100 ppm; REL-STEL 125 ppm IDLH 800 ppm CalOSHA STEL 30 ppm	Pungent aromatic odor	Inhalation, dermal, ingestion, eyes	Skin/eye/mucous membrane irritant, headache, dizziness, drowsiness	Eyes, respiratory tract, skin, CNS, blood, kidneys, liver.
Xylenes	Cal/FedOSHA PEL 100 ppm TLV 100 ppm	TLV STEL 500 ppm NIOSH REL 100 ppm REL STEL 100 ppm IDLH 900 ppm CalOSHA C 300 ppm CalOSHA STEL 150 ppm	Aromatic odor	Inhalation, dermal, ingestion, eyes	Throat and skin irritant (dermatitis), headache, nausea, drowsiness, fatigue	CNS, liver, kidneys, skin, gastrointestinal damage, eye damage
Methyl Tertiary Butyl Ether (MTBE)	CalOSHA PEL 40 ppm FedOSHA PEL None Established TLV 40 ppm	AIHA WEEL 100 ppm.	Flammable liquid with a distinctive, disagreeable odor	Inhalation, dermal, ingestion	Irritated nose, throat, headache, dizziness, nausea, sleepiness	CNS, liver, kidney, gastrointestinal damage, potential carcinogen

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Abbreviation	Explanation
AIHA WEEL	Workplace Environmental Exposure Limits set by the AIHA (American Industrial Hygiene Association)
C	Ceiling Limit
CNS	Central Nervous System
CVS	Cardiovascular System
IDLH	Immediately Dangerous to Life or Health
NIOSH	National Institute for Occupation Safety and Health
PEL	Permissible Exposure Limit
REL	Recommended Exposure Limit set by NIOSH
SKIN	Skin Absorption
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value set by the ACGIH (American Conference of Governmental Industrial Hygienists)

4.1 AIR MONITORING & ACTION LEVELS

The Level for Respirator Use is the concentration at which a respirator will be put on; it does not require the job to stop. The respirator is a tool to be used while determining why the exposure has reached that concentration. Take action to reduce the concentration using engineering controls such as water mist, spray foam, plastic cover, etc.

The Level for Work Stoppage is the concentration at which work on the job will stop. Determine why exposures have reached that concentration and how they can be reduced. Site evacuation is not necessary at this level. Implement engineering controls to reduce the concentration, and then resume work.

Photoionization detectors (PIDs) are used for general hydrocarbon monitoring; an example would be benzene, toluene, ethylbenzene, and xylene, common on gasoline station sites. The PID typically uses either a 10.6 eV lamp (responds to pentane and higher hydrocarbons), or 11.7 eV lamp (responds to ethane [weakly], propane and higher hydrocarbons) to ionize and detect the gas. The PID will measure hydrocarbons that are ionized, and therefore is a general screening device, not a chemical-specific measurement instrument. The Levels for Work Stoppage are based on measurements taken using PIDs calibrated with isobutylene; PIDs calibrated with gases other than isobutylene may have a different response factor.

Contact Tony Wong (see Sec. 1.7) for guidance on air monitoring requirements in the following cases:

- You wish to modify the Action Levels based on particular knowledge of contaminants and site conditions.
- When calibrating with a calibration gas other than isobutylene.
- On sites impacted with chemicals other than petroleum products.

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CHEMICAL (OR CLASS)	MONITORING EQUIENT	TASK	MONITORING FREQUENCY/ LOCATION	LEVEL FOR RESPIRATOR USE	LEVEL FOR WORK STOPPAGE
Volatile Organic Vapors	Photoionization Detector (PID). Ultra Rae or Draeger Pump and Tubes for benzene (model 0.5/a).	During disruption of potentially contaminated soil, air monitor in breathing zone and at designated perimeter locations from start of mobilization to completion and demobilization.	Sampling should be continuous during the project during activities where contaminated media maybe present. Conduct monitoring in breathing zone and record the readings at least every 15 minutes. Sample at the exclusion zone boundaries every 30 minutes. Sample designated perimeter locations during construction activities. If 5 ppm in breathing zone on PID, collect a Draeger tube or use UltraRae for benzene at a frequency of 1 or 2 tubes per hour. **If Draeger tubes will not be use on the project, please remove references.**	Respirator to be used will be full-face piece respirator with organic vapor/P 100 combination cartridges. If 25 ppm on PID is sustained in breathing zone for 2 minutes, and no benzene tube discoloration. DON Respirator. If <25 ppm on PID and color change (less than one) appears on tube DON RESPIRATOR. At donning respirator level, determine cause of exposure and implement engineering controls to reduce concentrations.	50 ppm in breathing zone and no benzene tube discoloration. Stop work if tube indicates > 1ppm for benzene. Continuously attempt to determine cause of exposure and usage of engineering controls to attempt to never reach the stop work level.
Oxygen/LEL	Combustible Gas Meter	Disruption of soil. Disconnecting and removal of piping. Removal of the tank. Removal of contaminated soil.	From start of disruption of potentially contaminated soil through removal of any contaminated soil.	< 19.5% use supplied air.	> 10% LEL
Total particulate	MIE Data Ram	Soil disruption during excavation.	Continuous. Move the device around the boundaries of the exclusion zone.	10 mg/m3	15 mg/m3

Potential Airborne Concerns
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CHEMICAL (OR CLASS)	MONITORING EQUIENT	TASK	MONITORING FREQUENCY/ LOCATION	LEVEL FOR RESPIRATOR USE	LEVEL FOR WORK STOPPAGE
PCBs	Personal air sampling pumps using NIOSH Method 5503 consisting of an SKC 226-39 tube and 13mm glass pre-filter	During first two days soil disruption to understand the level of exposure.	Collect 4 samples for each of two days plus one blank for QC	0.5 ppm. Analysis should be requested with prompt turnaround.	2 ppm

5.0 Other Site Hazards

5.1 PHYSICAL HAZARDS

The most likely physical hazards at the site are:

- Slips, trips, and falls
- Pinch points and sharp objects
- Vehicle traffic
- Manual handling
- Heavy equipment with rotating parts (drill rig)
- Weather, including heat and cold stress
- Underground and overhead utilities
- Noise
- Uneven terrain (curbs and gutters)
- Pedestrians
- Exposure to nuisance dust

JSAs appropriate for this project are included in Attachment 4. If a new task arises, a JSA will be written, reviewed, copied, and required on site (along with relevant SOP) to complete that particular task. The PPE Hazard Assessment Checklist in Attachment 5 will be reviewed and updated if necessary prior to the start of any new task to identify hazards and applicable PPE.

5.2 WEATHER AND NATURAL DISASTERS

Hazards associated with weather and natural disasters may include, but are not limited to, effects of heat (heat exhaustion, heat stroke), effects of cold (hypothermia, frostbite), high winds/tornados, heavy rain, lightning/thunderstorms, heavy snow, ice, flooding, etc.

Heat Exhaustion

What are the symptoms?

HEADACHES; DIZZINESS OR LIGHTHEADEDNESS; WEAKNESS; MOOD CHANGES SUCH AS IRRITABILITY, CONFUSION, OR THE INABILITY TO THINK STRAIGHT; UPSET STOMACH; VOMITING; DECREASED OR DARK-COLORED URINE; FAINTING OR PASSING OUT; AND PALE, CLAMMY SKIN

What should you do?

- Act immediately. If not treated, heat exhaustion may advance to heat stroke or death.
- Move the victim to a cool, shaded area to rest. Don't leave the person alone. If symptoms include dizziness or lightheadedness, lay the victim on his or her back and raise the legs 6 to 8 inches. If symptoms include nausea or upset stomach, lay the victim on his or her side.
- Loosen and remove any heavy clothing.
- Have the person drink cool water (about a cup every 15 minutes) unless sick to the stomach.
- Cool the person's body by fanning and spraying with a cool mist of water or applying a wet cloth to the person's skin.
- Call 911 for emergency help if the person does not feel better in a few minutes.

Heat Stroke–A Medical Emergency

What are the symptoms?

DRY, PALE SKIN WITH NO SWEATING; HOT, RED SKIN THAT LOOKS SUNBURNED; MOOD CHANGES SUCH AS IRRITABILITY, CONFUSION, OR THE INABILITY TO THINK STRAIGHT; SEIZURES OR FITS; AND UNCONCIOUSNESS WITH NO RESPONSE

What should you do?

- Call 911 for emergency help immediately.
- Move the victim to a cool, shaded area. Don't leave the person alone. Lay the victim on his or her back. Move any nearby objects away from the person if symptoms include seizures or fits. If symptoms include nausea or upset stomach, lay the victim on his or her side.
- Loosen and remove any heavy clothing.
- Have the person drink cool water (about a cup every 15 minutes) if alert enough to drink something, unless sick to the stomach.
- Cool the person's body by fanning and spraying with a cool mist of water or wiping the victim with a wet cloth or covering him or her with a wet sheet.
- Place ice packs under the armpits and groin area.

Heat

To protect you from heat, perform the heaviest work at the coolest part of the day; drink plenty of cool water; wear light, loose-fitting, breathable clothing; and take frequent, short breaks in the shade. Certain medications, having a previous heat-related illness, and wearing PPE such as a respirator or protective suit can put you at increased risk.

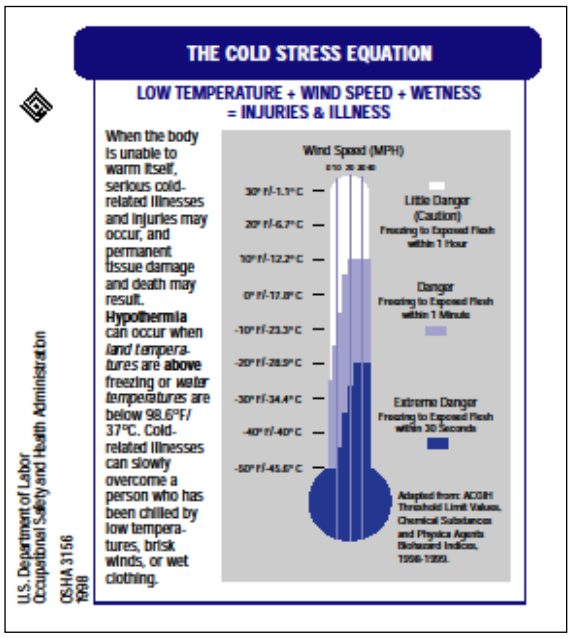
To prepare for work in extreme heat, you should:

- Build an emergency kit that includes plenty of potable water. Include some chemical instant cold packs to use on workers whose bodies require emergency cooling.
- Make a communications plan for periodic check-ins between field staff, the SHSO, and the Stantec Project Manager.
- Listen to local weather forecasts and stay aware of upcoming temperature changes.
- Know that the elderly, young, sick, or overweight are more likely to become victims of excessive heat and may need extra vigilance.
- Be aware that people working in urban areas may be at greater risk from the effects of a prolonged heat wave than are people in rural areas.
- Get trained in first aid to learn how to recognize and treat heat-related emergencies

While working in extreme heat, you should:

- Periodically check the radio, your smartphone, or other source for critical weather updates from the National Weather Service (NWS).
- Never leave a person alone in a closed vehicle.
- Stay in shade as much as possible and limit exposure to the sun.
- Eat well-balanced, light, and regular meals. Avoid using salt tablets unless directed to do so by a physician.

- Drink plenty of water; even if you do not feel thirsty. Avoid drinks with caffeine. Persons who have epilepsy or heart, kidney, or liver disease; are on fluid-restricted diets; or have a problem with fluid retention should consult a doctor before increasing liquid intake.
- Dress in loose-fitting, lightweight, and light-colored clothes that cover as much skin as possible. Avoid dark colors because they absorb the sun's rays.
- Protect face and head by wearing a wide-brimmed hard hat.
- Avoid strenuous work during the warmest part of the day. Use a buddy system when working in extreme heat, and take frequent breaks.
- Check on co-workers for signs of heat stress.
- Adhere to your communications plan for periodic check-ins between field staff, the SHSO, and the Stantec PROJECT MANAGER.



Cold

To protect yourself from cold, perform the bulk of the work during the warmest part of the day, wear proper PPE and clothing to insulate the body from the cold and protect the body from coming into contact with moisture, take frequent breaks in a warm, dry shelter, use the buddy system, and eat warm, high-calorie foods.

To prepare for work in extreme cold, you should do the following:

- Add an emergency kit to your vehicle which includes:
  - Sand or kitty litter to improve traction.
  - Snow shovels, ice scraper, and other snow removal equipment.
  - Blankets to keep you warm if you get stuck.
- Make a communications plan for periodic check-ins between field staff, the SHSO, and the Stantec Project Manager.
- Listen to local weather forecasts and stay aware of changing weather conditions.
- Get trained in first aid and learn how to recognize and treat cold-related emergencies.

While working in extreme cold, you should:

- Walk carefully on snowy or icy surfaces.
- Avoid overexertion, which can bring on a heart attack.
- Keep dry. Change wet clothing frequently to prevent a loss of body heat. Wet clothing loses all of its insulating value and transmits heat rapidly.
- Watch for signs of frostbite. These include loss of feeling and white or pale appearance in extremities such as fingers, toes, ear lobes, and the tip of the nose. If symptoms are detected, seek shelter and call for medical help immediately.
- Watch for signs of hypothermia. These include uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness, and apparent exhaustion. If symptoms of hypothermia are detected, get the victim to a warm location, remove wet clothing, warm the center of the body first and give warm, non-alcoholic beverages if the victim is conscious. Get medical help as soon as possible.
- Drive only if it is absolutely necessary. If you must drive: travel in the day; don't travel alone; keep others informed of your schedule; stay on main roads and avoid back road shortcuts.
- Let someone know your destination, your route, and when you expect to arrive. If your car gets stuck along the way, help can be sent along your predetermined route.

Tornados

Quick facts you should know about tornadoes:

- They may strike quickly, with little or no warning.
- They may appear nearly transparent until dust and debris are picked up or a cloud forms in the funnel.
- The average forward speed of a tornado is 30 mph, but may vary from stationary to 70 mph.
- Tornadoes are most frequently reported east of the Rocky Mountains during spring and summer months.
- Peak tornado season in the southern states is March through May; in the northern states, it is late spring through early summer.
- Tornadoes are most likely to occur between 3 pm and 9 pm, but can occur at any time.

Before a Tornado

- Make a communications plan for how field personnel will contact each other and the Stantec Project Manager in the event of an emergency.
- Know the location of the site's emergency muster point and the location of the nearest suitable place to seek shelter against a tornado.
- Listen to NOAA Weather Radio or to commercial radio or television newscasts for the latest information. In any emergency, always listen to the instructions given by local emergency management officials.
- Be alert to changing weather conditions. Look for approaching storms, including the following danger signs:
    - Dark, often greenish sky
    - Large hail
    - A large, dark, low-lying cloud (particularly if rotating)
    - Loud roar, similar to a freight train.

During a Tornado

If you observe any of the storm danger signs listed above, or if your area is under a tornado warning, seek shelter immediately! Most injuries associated with high winds are from flying debris, so remember to protect your head.

IF YOU ARE IN:	THEN:
A structure (e.g. residence, small building, school, nursing home, hospital, factory, shopping center, high-rise building)	• Go to a pre-designated shelter area such as a safe room, basement, storm cellar, or the lowest building level. If there is no basement, go to the center of an interior room on the lowest level (closet, interior hallway) away from corners, windows, doors, and outside walls. Put as many walls as possible between you and the outside. Get under a sturdy table and use your arms to protect your head and neck. • In a high-rise building, go to a small interior room or hallway on the lowest floor possible. • Put on sturdy shoes. • Do not open windows.
A trailer or mobile home	• Get out immediately and go to the lowest floor of a sturdy, nearby building or a storm shelter. Mobile homes, even if tied down, offer little protection from tornadoes.
The outside with no shelter	• Immediately get into a vehicle, buckle your seat belt and try to drive to the closest sturdy shelter. • If your vehicle is hit by flying debris while you are driving, pull over and park. • Stay in the car with the seat belt on. Put your head down below the windows; cover your head with your hands and a blanket, coat or other cushion if possible. • If you can safely get noticeably lower than the level of the roadway, leave your car and lie in that area, covering your head with your hands • Do not get under an overpass or bridge. You are safer in a low, flat location. • Never try to outrun a tornado in urban or congested areas in a car or truck. Instead, leave the vehicle immediately for safe shelter. • Watch out for flying debris. Flying debris from tornadoes causes most fatalities and injuries.

Other Site Hazards
March 15, 2019

After a Tornado

Injury may result from the direct impact of a tornado or it may occur afterward when people walk among debris and enter damaged buildings. A study of injuries after a tornado in Marion, Illinois, showed that 50 percent of the tornado-related injuries were suffered during rescue attempts, cleanup and other post-tornado activities. Nearly a third of the injuries resulted from stepping on nails. Because tornadoes often damage power lines, gas lines or electrical systems, there is a risk of fire, electrocution or an explosion. Protecting yourself and your coworkers requires promptly treating any injuries suffered during the storm and using extreme care to avoid further hazards.

Check for injuries. Do not attempt to move seriously injured people unless they are in immediate danger of further injury. Get medical assistance immediately. If someone has stopped breathing, begin CPR if you are trained to do so. Stop a bleeding injury by applying direct pressure to the wound. Have any puncture wound evaluated by a physician. If you are trapped, try to attract attention to your location.

Here are some general safety precautions that could help you avoid injury after a tornado:

- Continue to monitor your radio, television, or smartphone for emergency information.
- Wear sturdy shoes or boots, long sleeves and gloves when handling or walking on or near debris.
- Be aware of hazards from exposed nails and broken glass.
- Do not touch downed power lines or objects in contact with downed lines. Report electrical hazards to the police and the utility company.
- Cooperate fully with public safety officials.
- Respond to requests for volunteer assistance by police, fire fighters, emergency management and relief organizations, but do not go into damaged areas unless assistance has been requested. Your presence could hamper relief efforts and you could endanger yourself.
- Be careful when entering any structure that has been damaged. Structural, electrical, or gas-leak hazards may be present.
- In general, if you suspect any damage to the building you are in, shut off electrical power, natural gas, and propane tanks to avoid fire, electrocution, or explosions.
- If it is dark when you are inspecting a building, use a flashlight rather than a candle or open-flame light source to avoid the risk of fire or explosion.
- If you see frayed wiring or sparks, or if there is an odor of something burning, you should immediately shut off the electrical system at the main circuit breaker if you have not done so already.
- If you smell gas or suspect a leak, turn off the main gas valve, open all windows and leave the building immediately. Notify the gas company, the police or fire departments, or State Fire Marshal's office and do not turn on the lights, light matches, smoke or do anything that could cause a spark. Do not return to the building until you are told it is safe to do so.
- Clean up spilled flammable liquids and other potentially hazardous materials.

Other Site Hazards
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A thunderstorm, a lightning storm, thundershower or simply a storm, is a form of turbulent weather characterized by the presence of lightning and its acoustic effect on the Earth's atmosphere known as thunder. Thunderstorms are usually accompanied by strong winds, heavy rain and sometimes snow, sleet, hail, or no precipitation at all. Thunderstorms may line up in a series or rain band, known as a squall line. Strong or severe thunderstorms may rotate, known as supercells. Thunderstorms result from the rapid upward movement of warm, moist air. They can occur inside warm, moist air masses and at fronts.

Thunderstorms can generally form and develop in any particular geographic location, perhaps most frequently within areas located at mid-latitude when warm moist air collides with cooler air. Thunderstorms are responsible for the development and formation of many severe weather phenomena.. Damage that results from thunderstorms is mainly inflicted by downburst winds, large hailstones, and flash flooding caused by heavy precipitation. Stronger thunderstorm cells are capable of producing tornadoes and waterspouts.

Most thunderstorms come and go fairly uneventfully; however, any thunderstorm can become severe, and all thunderstorms, by definition, present the danger of lightning.

Below is a list of safety precautions to employ when thunderstorms approach during field activities.

- Know the names of local counties, cities, and towns, as these are how warnings are described.
- Monitor forecasts and know whether thunderstorms are likely in the area.
- Cancel or reschedule outdoor events (to avoid being caught outdoors when a storm hits).
- Avoid open areas like hilltops, fields, and beaches.
- Recognize the signs of an oncoming thunder and lightning storm. Keep an eye at the sky. Look for darkening skies, flashes of lightning, or increasing winds. Lightning often precedes rain, so don't wait for the rain to begin. If you hear the sound of thunder, go to a safe place immediately.

Should a thunderstorm arise during field activities the following steps should be implemented:

STOP WORK – the moment you hear the sound of thunder.

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SEEK SHELTER

- Look for a large, enclosed building when a thunder or lightning storm threatens. That's the best choice.
- If you are in a car and it has a hard top, stay inside and keep the windows rolled up.
- Avoid small sheds and lean-tos or partial shelters, like pavilions.
- Stay at least a few feet away from open windows, sinks, toilets, tubs, showers, electric boxes and outlets, and appliances. Lightning can flow through these systems and "jump" to a person.
- Avoid using regular telephones, except in an emergency. If lightning hits the telephone lines, it could flow to the phone. Cell or cordless phones, not connected to the building's wiring, are safe to use.

IF YOU ARE CAUGHT OUTSIDE

(If you are unable to reach a safe building or car, knowing what to do can save your life.)

- If your skin tingles or your hair stands on the end, a lightning strike may be about to happen. Crouch down on the balls of your feet with your feet close together. Keep your hands on your knees and lower your head. Get as low as possible without touching your hands or knees to the ground. **DO NOT LIE DOWN!**
- If you are in the woods, look for an area of shorter trees. Crouch down away from tree trunks.
- If you're with a group of people stay about 15 feet from each other.
- Stay away from wire fences, metal equipment, metal pipes, rails and other metallic paths which could carry lightning to you from some distance away.

Stop work will lifted 30 minutes after the last observed lightning strike or thunder.

5.3 BIOLOGICAL HAZARDS

Biological hazards may include, but are not limited to, bees/wasps, spiders, snakes, stray dogs, and poisonous/allergenic plants.

The most likely biological hazards at the site are bees/wasps and spiders, and these may be encountered during a number of tasks including: opening well vault covers; opening core or sample boxes; working in tall grass, weeds, or brush; cleaning or moving materials; performing site assessment, etc.

5.3.1 Bees/Wasps

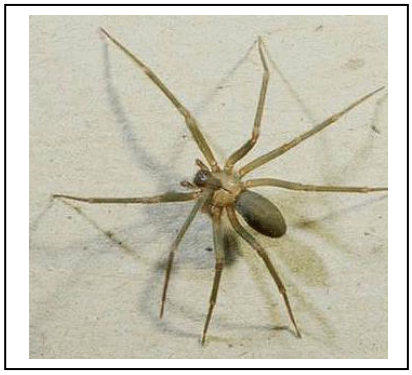
To mitigate hazards associated with bees/wasps:

- Avoid known locations of bees/wasps.
- Keep your eyes and ears open for swarms.
- Look for insects flying in and out of openings such as a crack in the wall, an open pipe end, or a well vault lid.
- Be cautious of tall grass as some bees build their hives at ground level.
- Be cautious of pointed structures, especially in barns, storage sheds, and outbuildings as bees often build hives in those structures.
- Avoid wearing citrus or floral aftershaves or perfumes as bees/wasps may be attracted to these odors.
- Wear light colored clothing as insects are generally attracted to dark colors.
- Fill in cracks or crevices and close open ends of pipes when bees/wasps are not around.
- Leave the area as quickly as possible if a nest has been disturbed. Do not retrieve nearby belongings. Do not stand still. Do not try to fight them.

If stung by a bee or wasp, wash the area with soap and water, and use Benadryl from the First Aid kit. If you have been stung over 15 times or are having symptoms other than pain and swelling, seek emergency medical assistance immediately. Staff that are allergic will carry an EpiPen® as prescribed by a doctor.

5.3.2 Spiders

Spider Bites



It's estimated that wherever we go we are never more than a few feet away from a spider. There are more than 500 different kinds of spiders in Illinois, living in a variety of habitats. Yet only a few species are frequently found indoors. A few others are peri-domestic -- encountered on and around the exteriors of structures, into which they occasionally wander.

Most spiders are harmless, one exception is the brown recluse (or violin) spider. If you are bitten:

- Wash the area carefully with soap and water. Do this two to three times a day until skin is healed.
- Apply cool compresses.
- Give acetaminophen (Tylenol®) for pain.
- To protect against infection, apply an antibiotic ointment and keep hands washed.
- If you have any reason to suspect a bite from a black widow or brown recluse spider, apply ice to the bite site and head for the emergency room. Symptoms include:

- A deep blue or purple area around the bite, surrounded by a whitish ring and a large outer red ring
- Body rash
- Muscle spasms, tightness, and stiffness
- Abdominal pain
- Headache or fever
- General feeling of sickness
- Lack of appetite
- Joint pain
- Nausea or vomiting

To mitigate hazards associated with spiders:

- Be cautious when opening well boxes, pipes, electrical and equipment panels.
- Be cautious when moving materials and/or tools inside the remediation compound; i.e. corners of the compound or any area where it's dry and dark.
- Open well boxes, drums, electrical and equipment panels, etc., slowly and be prepared to step back quickly.
- Visually inspect the work area before placing your hands into a dark space/enclosed area.
- Use a flashlight to visually inspect the work area for spiders and spider webs.
- Wear appropriate gloves. Never place a bare hand into a dark space/enclosed area.
- Use a brush or equivalent long handled tool to sweep away spider webs and dirt, etc., to clear your work area.
- Proceed with caution and continue to visually inspect your work area.
- Leave the area immediately if a spider has been encountered. Move work materials out of the way. Do not use insect sprays or pesticides as these may cause contamination of sampling.

5.3.3 Snakes

Copperhead

Snakes can cause significant injury during our work and could be present at the site especially when there are vegetated areas of the site. There are four species of poisonous snakes found in North America. Poisonous snake bites rarely cause death, but still cause a serious level of illness and pain. The four poisonous snakes are the Copperhead, the Rattler (several types), the Cottonmouth, and the Eastern Coral. If there is potential for venomous snakes, have a herpetologist come and remove the snakes to ensure a safe work area. Non-poisonous snakes can still bite and may cause bleeding, infection, and scarring.

Other Site Hazards
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Rattlesnake

Follow these precautions to minimize exposure with snakes.

- Be familiar with your surroundings.
- If you see a snake, back away slowly and do not touch it.
- Leave snakes alone. Many people are bitten because they try to kill a snake or get a closer look at it.
- Stay out of tall grass unless you wear thick leather boots or chaps.
- Keep hands and feet out of areas you can't see.
- Be cautious and alert when working around brush and debris.

If bitten by a snake, remain calm and follow the mitigation measures outlined below.

First Aid:

Do's:

- CALL IMMEDIATELY for emergency medical assistance.
- Remain calm.
- Immobilize the bitten area and try to stay as quite as possible.
- Remove jewelry, because swelling tends to progress rapidly.
- Apply a loose splint to reduce movement of the affected area, but make sure it is loose enough that it won't restrict blood flow.

Cottonmouth

Western Coral

Don'ts:

- Don't try to capture the snake. (Try to take a picture so identification can be made at a later time).
- Don't use a tourniquet.
- Don't apply Ice.
- Don't cut the wound or attempt to remove the venom.

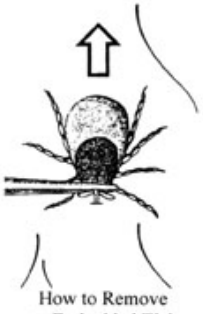
Prevention:

- Wear long pants and long sleeves when walking through heavy brush, tall grass, and densely wooded areas.
- Wear tall boots.
- Turn over rocks and other things on the ground with something that can provide adequate distance in case a snake is underneath.
- If walking in tall grasses walk with a stick or pole and poke the grass ahead of you.

Eastern Coral

The SHSO will immediately transport the victim to the hospital or send for appropriate medical assistance.

5.3.4 Tick Bites



Although at least 15 species of ticks occur in Illinois, only a few of these ticks are likely to be encountered by people: American dog tick, lone star tick, blacklegged (deer) tick, brown dog tick and winter tick.

The best way to protect yourself against tick-borne illness is to avoid tick bites. This includes avoiding known tick-infested areas. However, if you are working in wooded areas or areas with tall grass and weeds, follow these precautions to help prevent tick bites and decrease the risk of disease:

- Wear protective clothing such as long-sleeved shirts, long trousers, boots or sturdy shoes and a head covering. (Ticks are easier to detect on light-colored clothing). Tuck trouser cuffs in socks or tape the area where pants and socks meet so ticks cannot crawl under clothing.
- Apply insect repellent containing DEET primarily to clothes. Apply repellents sparingly to exposed skin. Do not apply to the face. Be sure and wash treated skin after coming indoors. Use repellents containing permethrin to treat clothes (especially pants and socks and shoes) but not skin. Always follow label directions; do not misuse or overuse repellents.
- Walk in the center of trails so weeds do not brush against you. Individuals who sit on the ground or disturb leaf litter on the forest floor may encounter ticks.
- Check yourself frequently for ticks. Most ticks seldom attach quickly and rarely transmit disease organisms until they have been attached four or more hours.
- If ticks are crawling on the outside of clothes, they can be removed with masking tape or cellophane tape. A ring of tape can be made around the hand by leaving

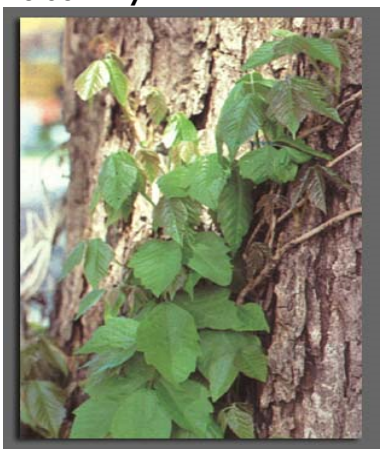
the sticky side out and attaching the two ends. Ticks will stick to the tape which can then be folded over and then placed in the trash.

- Remove any tick promptly. The mouthparts of a tick are barbed and may remain embedded and lead to infection at bite site if not removed promptly. Do not burn the tick with a match or cover it with petroleum jelly or nail polish. Do not use bare hands to remove the tick because tick secretions may carry disease. The best way to remove a tick is to grasp it firmly with tweezers as close to the skin as possible and gently, but firmly, pull it straight out. Do not twist or jerk the tick. If tweezers are not available, grasp the tick with a piece of tissue or cloth or whatever can be used as a barrier between your fingers and the tick. Ticks can be safely disposed of by placing them in a container of soapy water or alcohol, sticking them to tape or flushing them down the toilet. If you want to have the tick identified, put it in a small vial of alcohol.
- Wash the bite area and your hands thoroughly with soap and water and apply an antiseptic to the bite site.
- If you have an unexplained illness with fever, contact a physician. Be sure to tell the physician if you have been outdoors in areas where ticks were present or traveled to areas where tick-borne diseases are common.

5.3.5 Poisonous Plants

Poison ivy, poison sumac, stinging nettles, blackberries, and other noxious or thorny plants may be encountered on Site.

Poison Ivy



SITE-SPECIFIC HEALTH AND SAFETY PLAN FOR GROUNDWATER MONITORING AND SULFATE INJECTION

Other Site Hazards
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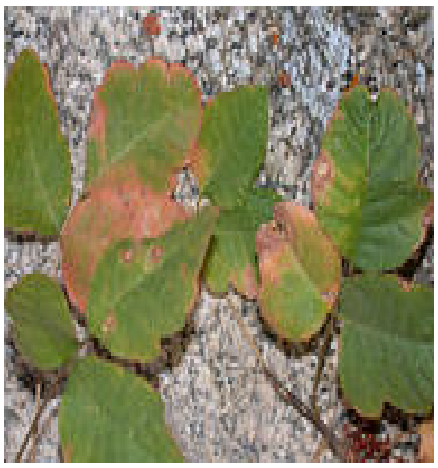
- The compound leaves of poison ivy consist of three pointed leaflets; the middle leaflet has a much longer stalk than the two side ones. The leaflet edges can be smooth or toothed but are rarely lobed. The leaves vary greatly in size, from 8 to 55 mm (0.31" to 2.16") in length. They are reddish when they emerge in the spring, turn green during the summer, and become various shades of yellow, orange or red in the autumn. Small greenish flowers grow in bunches attached to the main stem close to where each leaf joins it. Later in the season, clusters of poisonous, berrylike drupes form. They are whitish, with a waxy look.

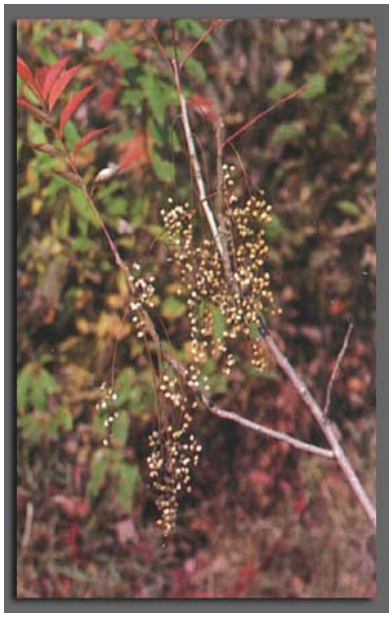
Poison Oak


- Poison oak usually does not climb as a vine, but occurs as a low growing shrub. Stems generally grow upright. Leaflets occur in threes, as in other ivy, but are lobed, somewhat as the leaves of some kinds of oak trees.
- The middle leaflet usually is lobed alike on both margins and resembles a small oak leaf, while the two lateral leaflets are often irregularly lobed. The range in size of leaves varies considerably, even on the same plant.

Poison Sumac





- Mature plants range in height from 5 to 6 feet to small trees that may reach 25 feet. Poison sumac shrubs usually do not have a symmetrical treelike appearance. Usually, they lean and have branched stems with about the same diameter from ground level to middle height.

- Leaves of poison sumac consist of 7 to 13 leaflets arranged in pairs with a single leaflet at the end of the midrib. The leaflets are elongated oval without marginal teeth or serration. They are 3 to 4 inches long, 1 to 2 inches wide, and have a smooth, velvety texture. In early spring their color is bright orange. Later, they become dark green and glossy on the upper surface, and pale green on the lower, and have scarlet midribs (a very distinctive feature). In the early fall, leaves turn to a brilliant red-orange or russet shade.

- The small yellowish-green flowers are borne in clusters on slender stems arising from the axis of leaves along the smaller branches. Flowers mature into ivory-white or green-colored fruits resembling those of poison oak or poison ivy, but usually are less compact and hang in loose clusters that may be 10 to 12 inches in length.

Stinging Nettle

- The stinging nettle grows to 1-2 meter tall in the summer and dying down to the ground in winter. It has very distinctively yellow, widely spreading roots. The soft green leaves are 3-15 cm long, with a strongly serrated margin, a cordate base and an acuminate tip.

- Both the leaves and the stems are covered with brittle, hollow, silky hairs as a defense against grazing animals.

- The cause of the sting is from three chemicals - a histamine to irritate the skin, acetylcholine to bring on a burning sensation and hydroxytryptamine to encourage the other two chemicals.

- Bare skin brushing up against a stinging nettle plant will break the delicate defensive hairs and release the trio of chemicals, usually resulting in a temporary and painful skin rash similar to poison ivy, though the nettle's rash and duration are much weaker.

Other Site Hazards
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Recommendations for Protecting Workers

Employers should protect their workers from poisonous plants by training them about:

- Their risk of exposure to poisonous plants
- How to identify poisonous plants
- How to prevent exposure to poisonous plants
- What they should do if they are exposed to poisonous plants

Prevention

Workers can prevent contact with poisonous plants by taking these steps:

- Wear long sleeves, long pants, boots, and gloves.
    - Wash exposed clothing separately in hot water with detergent.
- Barrier skin creams, such as a lotion containing bentoquatum, may offer some protection before contact.
    - Barrier creams should be washed off and reapplied twice a day.
- After use, clean tools with rubbing alcohol (isopropanol or isopropyl alcohol) or soap and lots of water. Urushiol can remain active on the surface of objects for up to 5 years.
    - Wear disposable gloves during this process.
- Do not burn plants that may be poison ivy, poison oak, or poison sumac.
    - Inhaling smoke from burning plants can cause severe allergic respiratory problems.
- Be able to identify local varieties of these poisonous plants throughout the seasons and differentiating them from common nonpoisonous look-a-likes are the major keys to avoiding exposure.

Employers should prevent workers from being exposed to burning poisonous plants whenever possible. However, when exposure to burning poisonous plants is unavoidable, employers should provide workers with:

- A NIOSH-certified half-face piece particulate respirator rated R–95, P–95, or better.
- These respirators should protect against exposure to burning poisonous plants, but will not protect against all possible combustion products in smoke, such as carbon monoxide.
- Respirators must be worn correctly and consistently throughout the time they are used.
- For respirators to be effective there must be a tight seal between the user's face and the respirator.
- Respirators must be used in the context of a written comprehensive respiratory protection
- Program (see OSHA Respiratory Protection standard 29 CFR 1910.134).

First Aid

Workers who have come in contact with poisonous plants should:

- Immediately rinse skin with rubbing alcohol, specialized poison plant washes, degreasing soap (such as dishwashing soap) or detergent, and lots of water.
    - Rinse frequently so that wash solutions do not dry on the skin and further spread the urushiol.
- Scrub under nails with a brush.
- Apply wet compresses, calamine lotion, or hydrocortisone cream to the skin to reduce itching and blistering.
    - Follow the directions on any creams and lotions. Do not apply to broken skin, such as open blisters.
    - Oatmeal baths may relieve itching.
- An antihistamine such as diphenhydramine (Benadryl) can be taken to help relieve itching.
    - Follow directions on the package.
    - Drowsiness may occur.
    - If children come in contact with work clothing contaminated with urushiol, a pediatrician should be contacted to determine appropriate dosage.
- In severe cases or if the rash is on the face or genitals, seek professional medical attention.
- Call 911 or go to a hospital emergency room if the worker is suffering a severe allergic reaction, such as swelling or difficulty breathing, or has had a severe reaction in the past.

5.3.6 Coyotes

Coyotes are mostly active at night and during the early morning and late evening hours. In areas where they are not disturbed by human activities, and during cooler times of the year, they may be active throughout the day. Urban coyotes are becoming very tolerant of human activities. Young coyotes tend to be more active during daylight hours than adults.

- Never Feed a Coyote - Deliberately feeding a coyote puts you and other personnel at risk.
- Coyotes are attracted to food, water, and shelter.
- Don't Inadvertently Feed Coyotes - By leaving food or garbage outside where they can get to it, you may be inadvertently feeding coyotes.
- Use the Proper Type of Trash Can - Use a trash can that closes and/or can clamp shut. If you leave garbage outside, don't use garbage bags as trash containers.
- Clear Brush & Dense Weeds - By clearing these areas, this will reduce protective cover for coyotes and make the area less attractive to rodents. Coyotes may be attracted to areas where rodents are concentrated, such as wood and brush piles and seed storage areas.

In the event that you should ever encounter a coyote, here are several tips from experts:

- Use Negative Reinforcement - If coyotes begin frequenting your area, let them know they're not welcome. Make loud noises, throw rocks, or spray them with a garden hose. For everyone's safety, it is essential that coyotes retain their natural wariness of humans.
- If Coyote Problems Persist - Contact local city government/animal control or 911 for assistance.

5.3.7 Migratory Birds

A review of the Migratory Bird Treaty Act (50 CFR 21) was completed. There are no Site activities that could be subject to these requirements. To protect migratory birds, workers will not be allowed to hunt, take, capture, kill carry or transport birds, nests or eggs at the Site.

5.3.8 Drug Paraphernalia

If drug paraphernalia (i.e. used needles) is found at the site, field staff should notify their Stantec supervisor, Jim Burns (517) 202-7168. Field staff should not touch or attempt to dispose of these items. Instead, a cone or other warning device should be placed near or on top of the items to warn others not to touch.

6.0 Site Control and Safety Procedures

Procedures described in this section are intended to aid Stantec personnel in mitigating site risks and hazards.

Daily Tailgate Meeting (DTM)
A DTM will be held on-site (and documented) each morning and afternoon involving all staff and subcontractors on-site to review the scope of work, discuss and address potential hazards, and answer any relevant questions before work begins. The topics of the meeting will include, at a minimum, general health and safety procedures, reviewing health and safety policies, and reviewing the JHA and JSA(s) for the tasks to be conducted. Additional safety meetings may be conducted if the scope of work changes during the day, or if other health and safety issues are identified. The DTM form is located in Attachment 6.

Driving

- Review the Stantec Safe Driving Procedures provided on-site.
- Utilize the Journey Hazard Assessment Card to identify potential driving/journey/traffic hazards before each trip. Copies of the Journey Hazard Assessment Card are located on-site.
- Utilize the Vehicle Usage Log at least once a day for each vehicle driven for Stantec business to identify potential vehicle issues/hazards. Copies of the Vehicle Usage Logs are located on-site.
- Have each team member who will travel to/from the site review the site-specific Journey Management Plan (JMP) before traveling to identify routes of travel and potential driving/journey/traffic hazards. JMP(s) will be kept with each traveling employee throughout the entire course of travel.
- Before a driver enters a vehicle, Get Out and Look (GOAL). Conduct a 360 degree walk-around of the vehicle to look for bystanders, traffic, obstacles, damage, and leaks in order to reduce the risk of striking unknown objects in the environment.
- When a driver leaves a vehicle, the engine shall be turned off, the transmission placed in park (placed in first gear or reverse for manual transmission), the parking brake set, the keys removed from the ignition and all doors closed. Exception to this is for operational needs/power take off (e.g., vacuum trucks, drill rigs, or other similar vehicles). Vehicles that fall into this exception category must have the parking brake set and wheels chocked.
- A Stantec Vehicle Collision Kit will be kept in every vehicle used for Stantec project work. A copy of the Stantec Vehicle Collision Kit is located on site.
- Emergency Situations and Vehicle Breakdowns
    - If the vehicle becomes disabled, it shall be parked with all wheels off the main roadway whenever possible.
    - When exiting the vehicle, personnel shall not place themselves between oncoming traffic and the disabled vehicle.
    - If the vehicle becomes disabled within 500 feet of a curve, crest of a hill, or other visual obstruction, the driver shall place warning devices such as reflective triangles in that direction to provide passing traffic with ample warning.

Recommended placement of warning devices shall be no less than 100 feet or more than 500 feet from the disabled vehicle.

- If the vehicle becomes disabled on a divided or one-way highway, the recommended placement of warning devices shall be so that the first is 200 feet to the rear, the second is 100 feet to the rear, and the third is not more than ten feet to the rear. Warning devices should be placed less than two feet to the roadside of the widest portion of the vehicle or load.
- If the vehicle becomes disabled (not including a flat tire), a professional emergency roadside assistance company will be contacted to tow or enable the vehicle. If such company is not available, proper towing equipment (tow strap, cables or other equipment specifically designed for towing) must be used.

Drug and Alcohol Testing

Following an incident, Stantec will follow the incident reporting procedures. If appropriate, Stantec will include drug and alcohol testing, consistent with Stantec's Policies and Procedures, as well as the client's contractual requirements for testing.

Exclusion Zone and Decontamination

No eating, drinking, or smoking within the exclusion zone. These activities will be conducted only in designated areas of the site. Use of hand held electrical devices, including cell phones (with the exception of intrinsically safe devices) are prohibited in the exclusion zone. Personnel will properly decontaminate after leaving an exclusion zone. Decontamination procedures may involve disposing of Tyveks, latex gloves, etc. in a decontamination zone located immediately outside of the exclusion zone. At a minimum, personnel will wash any exposed skin before leaving a site using soap and water or pre-moistened cleansing towels. Stantec will evaluate the hazards and develop site-specific decontamination procedures to address the chemical hazards at each site. These procedures can be found in the JSAs in Attachment 4.

Fit for Duty

Safety is influenced by many factors, but the most important is the health and well-being of Stantec's employees and partners. Physical and mental health is just as important as good tools, good practices, and good job planning. Fit for Duty forms are located in Attachment 2.

These questions are designed to help you do a quick self-assessment of your physical and mental health. Any concerns resulting from your assessment regarding your ability to carry out your job responsibilities safely and in good health need to be discussed with your supervisor before starting work.

- Am I feeling good today and ready to work at my typical level of physical activity and responsibility?
- Do I have any sprains, strains, areas of weakness, or soreness?
- Am I managing multiple areas of stress?
- Am I well hydrated?
- Any physically demanding activities recently (chores, sports, hobbies)?
- Am I well rested with a good energy level? When did I eat last?
- Am I taking any medications that can make me drowsy or adversely affect my safe performance?
- Any cuts or scrapes are clean and bandaged?

- Did I remember to bring with me my health maintenance medications (blood pressure, diabetes, cholesterol, heart, etc.)?

If your answers to any of the questions above indicate that you may not be ready to work, contact your supervisor immediately to discuss a plan of action.

HASP Inspections
The site-specific HASP should be inspected in the field by the SHSO or other Stantec personnel to determine the effectiveness of the plan. Any deficiencies should be corrected and changes will be recorded on the HASP Modification Log.

Jewelry Safety
Jewelry can be dangerous and shall not be worn during field activities. Large earrings, long necklaces, loose-fitting bracelets, rings, watches, etc. can become entangled in machinery and cause removal of limbs, as well as be conductive of electricity.

Job Hazard Assessment (JHA)
A JHA will be developed during the pre-planning phase of the project. JHAs will be completed for all field jobs and focused on the control, removal, or reduction of hazards potentially inherent in each job; and in the context of the project scope, contractors selected, and anticipated work locations. The JHAs and project HASP will be used to enhance crew training, improve the efficiency of the job, and provide a foundation for behavior based safety (BBS) observations. On-site workers must review the JHA during a Pre-Field Kickoff Meeting to ensure a thorough hazard analysis was performed and documented. The JHA form is located in Attachment 7.

Job Safety Analysis (JSA)
JSAs will be prepared, reviewed, and approved prior to mobilizing to the field. Applicable JSAs will be reviewed in detail on a daily basis by all affected on-site workers and/or visitors. For each job step listed in a JSA, the person(s) responsible for the critical actions to mitigate the hazards will be listed by their full names. JSAs will be field modified ("dirtied up") based on the site-specific conditions and changing circumstances encountered by the JSA owner and SHSO each day. Any revisions to the JSAs will be hand written into the JSAs, forwarded to the project manager, and communicated during the daily debriefing, PTW meeting, or tailgate meeting. JSAs applicable to this project are located in Attachment 4.

Management of Change (MOC)
The purpose of managing change is to reduce the potential for incidents associated with the ongoing changes inherent in the management of Stantec projects. Stantec has developed a procedure to ensure all change events are systematically reviewed, communicated, approved and documented. Changed conditions include personnel changes including subcontractors, property owner changes, equipment changes, scope changes, project schedule changes or changes in materials that may be a permanent or temporary change.

The MOC process outlined below will be implemented by Stantec project staff and our subcontractors to effectively manage changed conditions when warranted.

1. Temporary "Stop Work" to assess and communicate the need for a MOC to the Stantec Project Manager;

2. Document the MOC plan;
3. Evaluate health and safety and environmental impacts associated with the changed item;
4. Evaluate budget and schedule impacts associated with the changed item;
5. Implement the MOC plan, and;
6. Document completion of MOC tasks.

Manual Handling

Any tasks that involve lifting, pulling, pushing, or carrying materials by hand shall be conducted in accordance with Stantec's Handling Standard. The goals of the standard are to:

- Plan the work activity and try to eliminate manual handling through pre-job planning.
- If manual handling is the only option then ensure workers stay within lifting and carrying limits.
- Eliminate or mitigate manual handling incidents by using proper lifting, pushing/pulling, and carrying techniques.

During the project planning and pre-job analyses, project managers and field crews shall complete a JHA and/or JSA for any manual lifting, pushing, pulling, or carrying that will be required. Before manually handling objects, ensure that the Hand Safety Guideline has been reviewed and that proper PPE is worn. Required manual handling activities shall conform to the following limits, where "ideal" and "non-ideal" refer to the type of body posture used:

Type of Lift	Number of Persons	Maximum Weight
Non-ideal	1	25 lbs(11kg)
Ideal	1	50 lbs (22kg)
Ideal Team	2 or more	100 lbs (45kg)

Position	# of Persons	Hand Contact	Maximum Weight	Max Travel Distance
Front of Body	1	2	50 lbs (22kg)	10 yds/m
Front of Body	1	2	40 lbs (18 kg)	20 yds/m
Front or Side of Body	1	2 or top handle	30 lbs (13kg)	30 yds/m

Permits

Permits may include, but are not limited to, access agreements, discharge permits (i.e. NPDES permits, air permits), building permits, well installation, and should be on discussed and verified before work begins. A UIC permit is maintained for air sparging.

Permit To Work (PTW)
Field work cannot begin until an authorized PTW is in effect each day. The PTW assures that authorized and properly trained people (Qualified PTW Approvers) have verified the daily scope of work, communicated foreseeable hazards and risks, and taken steps to implement appropriate control measures. A PTW form is included in Attachment 6.

All hazards and applicable safety precautions shall be discussed with the field team and any subcontractors before a PTW is authorized. If there are conflicting activities where safety may be compromised, those issues must be resolved before the PTW is authorized. A PTW is not placed into effect until it has been signed by the Qualified PTW Approver and a representative of each subcontractor as acknowledgement of the work to be performed that day. If the scope of work includes any high-risk tasks, the Qualified PTW Approver must document that the Project Manager has been notified and has given their acceptance before the PTW becomes valid. Copies of the completed PTW should be provided to each field team.

Personal Protective Equipment (PPE) Assessment
A PPE Assessment must be completed and documented during the pre-planning phase of the project. The PPE Assessment determines additional PPE beyond the minimum standard Level D that will be required for the project based on the anticipated tasks and activities on site. Any additional PPE requirements identified by the assessment must be specified in the JSA for the relevant task to which they apply. The completed PPE Assessment form must be signed by the Stantec Project Manager and included in this HASP as Attachment 5. Refer to the Stantec's *Required Personal Protective Equipment* document for additional information.

The minimum standard PPE at the site is Level D and proper work attire, which includes a hard hat, safety glasses with side shields, safety-toe boots, hi-viz leather/work gloves (specific glove type to be determined by the PPE assessment), hi-viz chemical resistant gloves when handling chemical or hazardous substances, hi-viz reflective safety vest, long sleeve shirt, and pants. Clothing that is frayed, torn, excessively baggy, or has a hood or drawstring shall not be worn.

Pre-Entry Briefing
All on-site workers and visitors will receive a pre-entry briefing prior to accessing work areas of the site. The briefing will include reviewing contents of the HASP, signing the Acknowledgement and Agreement Form, and completing the Site Health and Safety Quiz (Attachment 8). Completed quizzes will be kept with the project files. The briefing for visitors may be abbreviated to be fit-for-purpose based on the intent of the visit.

Preventing Serious Injury & Fatalities (PSI&F) Field Guide
This field guide supplements but does not replace existing permitting procedures and safe work practices. It should be used in conjunction with the PPE Assessment, JSAs, and other hazard assessment procedures to comprehensively assess each job. The PSI&F Field Guide is included as Attachment 12 and applies to work involving:

- Confined Space
- Electrical Work
- Excavation
- Hot Work
- Lifting & Rigging

- Marine Work
- Motor Vehicles
- Work at Heights
- Other high-risk activities

Safety Data Sheets

Safety Data Sheets (SDSs) will be available in Attachment 9 for all chemicals that will be brought on site by Stantec. The chemical(s) that Stantec will bring to the site are Alconox soap and Epsom Salt. ***Note: Subcontractors must provide copies of SDSs for chemicals they bring to the site in their own HASPs.***

Shutoff Valves/Switches

The SHSO will identify the location of shutoff valves and switches for utilities and products on the Site Plan and disseminate this information to all site personnel and visitors as appropriate.

Site Security

Security of our staff, subcontractors, equipment, and the public is of paramount importance to Stantec. Employees are trained in hazard recognition and will follow standard policies and procedures to report and mitigate site security issues/hazards if identified. Note that security consideration is different than traffic guidance and control, which also impacts security to some extent. Security refers to personal safety and freedom from theft or violence. The following items will be evaluated when considering security measures at the site:

- Daytime activities at the site (e.g., gas station only, gas station with convenience store, etc.);
- Recent criminal activity at the site and nearby areas (ask site owner/operator and the police);
- Work hours (security concerns may be different depending on the time of day); and
- Lighting at the site (thieves are generally dissuaded from stealing on well-lit sites).

Standard security measures will be implemented on site to minimize the potential for loss at the site. Standard security measures include properly maintained lighting, functioning locks for windows/doors/equipment storage areas, and maintaining control of tools and equipment when not in use. Security may be implemented in a variety of ways:

- Orange construction fence (minimal security);
- Chain link fencing;
- Extra lighting;
- Specialized locks; and/or
- Contract security.

SITE-SPECIFIC HEALTH AND SAFETY PLAN FOR GROUNDWATER MONITORING AND SULFATE INJECTION

Site Control and Safety Procedures
March 15, 2019

Site Tobacco Use

Stantec maintains a smoke-free work environment at job sites. Smoking or the use of smokeless tobacco, or e-cigarettes is not permitted inside the exclusion zone or work zone. Designated smoking areas will be identified and depicted on job site maps at the start of the project for personnel who are smokers. Site personnel who are smokers will be required to extinguish all smoking material in a designated smoking receptacle. Sites located in remove areas or areas where fire hazards are a concern, a portable smoking pole will be utilized in the designated smoking area to dispose cigarettes. Stantec employees and subcontractors must adhere to this practice at all times, while working onsite.

Site Access and Layout

Before mobilizing to the site for an event, the property owner(s) will be notified. The property is a CVS Pharmacy Store. Ingress and egress to and from the site is from Ross Clark Circle by way of driveway entrance. The exclusion zone will be set around individual well locations using barricades and other delineators.

Stop Work Authority

All on-site personnel are empowered, are expected, and have the responsibility to stop their own work and the work of co-workers or other contractors if any person's safety or the environment is at risk. **NO** repercussions will result from this action.

Site or project conditions that are possible reasons to stop work and to consider modifications to the HASP include:

- Recognition of new or unidentified hazards
- PPE breakthrough or unexpected degradation
- Unusual odors that can't be identified
- Unexplained, elevated readings on an organic vapor monitor
- Unexpected changes in soil coloration or texture that might indicate undisclosed contamination.

This list is not comprehensive and should be used only as guidance. Whenever Stop Work Authority is exercised, the occurrence should be documented.

Traffic Guidance

Incidents on sites have shown the need for a site-specific Traffic Guidance and Control Plan. The SHSO and project staff will develop a Traffic Guidance and Control Plan and disseminate this information to all site personnel. This plan will consider the amount of traffic at a site and provide for the safety of all workers. Equipment and resources to be considered as part of traffic guidance and control include:

- Vehicle hazard lights (tail and headlights)
- Delineators and orange construction fencing
- Placement of vehicles as barriers between workers and traffic
- Rotating amber hazard lights that can be placed on top of vehicles
- Professionally trained flaggers

Other considerations for the Traffic Guidance and Control Plan include:

- Requiring personal vehicles (that aren't being used as barriers) to park as far away from potential traffic as possible.
- Cordoning off as much space as is necessary to ensure our safety. This will be discussed with property owners and tenants, as it may mean closing down additional gasoline pumps, etc.
- Identifying traffic flow routes and parking areas for heavy equipment (e.g., vacuum trucks, drill rigs, etc.) and establishing site speed limits.
- Reviewing local regulations for: formally developed traffic guidance and control plans signed by licensed individuals, police details, flagmen, hours of activity, closure of streets, etc.

Utility Location & Clearance (include copies of relevant forms needed)
The objective of this safe work practice is to provide standard practices and procedures to help mitigate the potential of encountering, puncturing, compromising or disrupting service to buried and overhead utility service lines, municipal or third party owned utility services, underground storage tank (UST) system components and other subsurface property service lines or systems (e.g., septic leach fields, etc.) during intrusive activities. Intrusive activities include, but not limited to drilling, soil boring, well installation or abandonment, excavating, trenching, air knifing, auguring, grading, driving rods or piles, potholing, or installing posts.

During the pre-job planning phase, the Stantec project team is responsible for:

- Reviewing all available site plans (e.g. client-provided "as-built" drawings or previous Stantec site plans) for potential site features (i.e., utilities, underground infrastructure, etc.) and sign off on the Stantec Pre-Ground Disturbance Worksheet & Approval Form.

Completed forms must be signed by the Stantec Project Manager and attached to this HASP for workers' reference on-site.

When on-site and before intrusive work begins, the SHSO is responsible for:

- Reviewing the completed SWP 213a Pre-Ground Disturbance Worksheet
- Completing Stantec's SWP 213b Ground Disturbance Form,
- Locating all overhead hazards such as elevated utility lines, utility poles, or canopies,
- If any work locations or circumstances constitute high risk activity (in accordance with the Permit to Work Process), then Project Manager's acceptance on the PTW is required before work begins.

No utility locate or ground disturbance activities at this time.

Work Hours
Work on this project will be conducted during the hours of 7:00 AM to 7:00 PM, Monday through Friday.

7.0 Waste Management

A. Waste Generation (Type(s)/Quantities Expected):

Anticipated (YES/NO): YES

B. Potential Waste Streams

Waste Stream	**Type** (Liquid, Solid, Sludge, Other (describe))	**Non-hazardous**	**Hazardous** (Specify Characteristics)	**Quantity**	**Packaging Requirements**	**Storage Location** (on-site
Asbestos regulated material						
Petroleum distillates and water mixture						
Purge water	Liquid	X		165 gallons	Drums	Onsite until removed by Environmental Products & Services of Vermont, Inc.
Drilling cuttings (soil)						
Soil (excavation or trenching)						
Decontamination water	Liquid	X		Minimal	NA	NA
Construction debris						
Used PPE	Solid	X			Garbage bags	Onsite – remove into dumpster

C. Disposal and/or Treatment Methods Proposed (Expected):

All wastes will be labeled, sampled and analyzed for all applicable chemicals of potential concern and physical properties (e.g., pH, vapor pressure, etc.) to ensure proper waste characterization

Well development and purge water will be temporarily stored on-site in 55-gallon drums and will be removed by Environmental Products & Services of Vermont, Inc. (EPS), a licensed waste hauler, to an approved waste facility for recycling.

Dth Es Tu Malade? #1, LLC will be responsible for the categorization and transportation of all waste generated on this Site. All materials will be disposed of or treated in accordance with federal, state and local regulations as selected and arranged by Stantec. The client, Dth Es Tu Malade? #1, LLC will be responsible for signing the manifest.

8.0 Project Team Information

8.1 TRAINING

Site personnel will be trained and certified in hazardous waste operations and emergency response as follows:

- 40-Hour HAZWOPER Training;
- Annual 8-Hour Refresher [29 CFR 1910.120(e)(8)];
- First Aid/CPR Training;
- Physical examination consistent with 29 Code of Federal Regulations (CFR) 1910.120 (and 8 California Code of Regulations (CCR) 5192, if applicable);
- Supervisory 8-hour Training [29 CFR 1910.120(e)(4)] for the Site Manager/SHSO; and

Stantec Safety Requirements:
In addition to the above-mentioned trainings, Stantec personnel are required to have training in our behavior-based safety program, ALLY. Stantec's ALLY system will be used to provide all employees with a safe, healthy, loss-free workplace and prevent or reduce losses using behavior-based tools and proven management techniques. These tools and techniques include: Stop Work Authority, Hazard Assessment and Mitigation, Last Minute Risk Assessment (LMRA), Job Safety Analyses, SAFE Observations, and reporting near losses and losses.

Other requirements include training in defensive driving. Respirator fit tests are required for respirator use.

Client-Specific Safety Procedures:
Stantec and its subcontractors working on this site must be trained in and use a behavior based safety system.

Project Team Training Dates						
Name	**40Hr HAZ**	**8Hr Ref**	**CPR / First Aid**	**Physical**	**Defensive Driving Training**	**Fit Test**
Jim Burns	4/11/87	7/31/18	6/6/17	12/9/16	12/16/14	--
Erin O'Malley	11/15/07	1/7/19	5/18/18	9/13/18	1/2/18	6/5/18
Wes Cline	5/18/07	1/24/19	3/26/19	9/12/18	10/23/17	7/12/13
Mark Buckreis	10/22/99	2/23/19	6/6/17	8/24/18	6/21/11	--

Project Team Information
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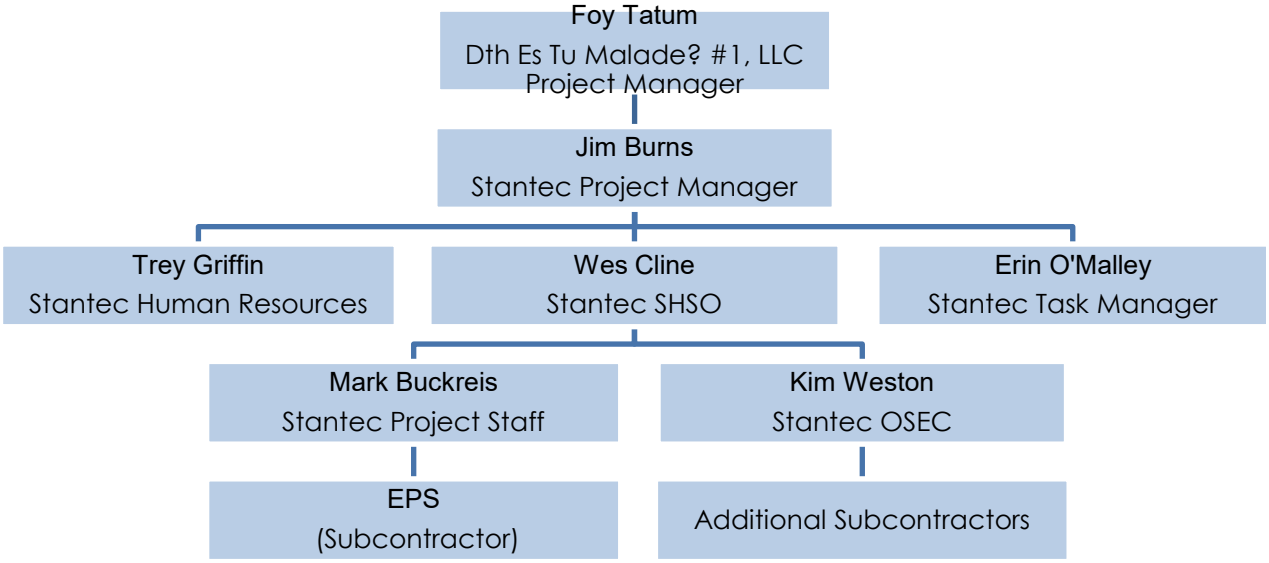
Subcontractor Personnel Training Dates								
Name	**40Hr HAZ**	**8Hr Ref**	**CPR / First Aid**	**Physical**	**ALLY Training**	**Defensive Driving Training**	**SHSO Training**	**Fit Test**

Notes:
40Hr HAZ = 40-Hour HAZWOPER
8Hr Ref = 8-Hour HAZWOPER Refresher

8.2 ORGANIZATION AND RESPONSIBILITIES

An organization chart for project personnel is provided below.



SITE-SPECIFIC HEALTH AND SAFETY PLAN FOR GROUNDWATER MONITORING AND SULFATE INJECTION

Project Team Information
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A table summarizing responsibilities for project personnel is provided below.

Project Job Title	General Project Responsibilities
Project Manager	Provide all known analytical data gathered by others and notice of hazards. Provide access to site and available emergency response capabilities.
Stantec Project Manager	Overall financial and logistics. Contact client and subs to understand all hazards. Discuss with SHSO. Follow-up all incidents upon notice.
Stantec Site Health and Safety Officer	Conduct work in accordance with JSA and this HASP. Report all incidents and near misses immediately to Stantec Project Manager.
Stantec Human Resources	Assist with incident review, recordkeeping.
Stantec Office Safety and Environment Coordinator	Manage Health and Safety responsibilities for personnel in Office. Assist employees with setting up training and attending/completing necessary courses.
Stantec Project Staff	Oversee/implement field activities.

Attachment 1

Stantec Field Safety Reference Binder Checklist

Stantec Field Safety Reference Binder Checklist

Instructions: Review your Stantec Field Binder prior to starting work and ensure applicable contents are included. Sign and date the checklist and include with the HASP.

Included			General Content	Comments
Yes	No	N/A		
			Site Specific Workplan	
			Permits and Access Agreements	
			Field and Safety Supplies Checklist	
			Traffic Control Plan(s)	
			Vehicle Usage Log	
			Haz ID / Stop Work Form	
			Heat Illness Prevention Plan (SWP 113c)	
			SAFE Observation Forms	
			Hand Safety Expectations	
			Cell Phone Policy	
			Sampling Field Data Sheets	
			Boring Logs	
			Well Construction Logs	
			Drilling & Air Knife Checklist	Chevron Sites: clear to 8 ft
			Vacuum Truck Safety Quiz	
			Emergency Drill Form	
			Vehicle Collision Kit	
			Stantec Incident Reporting Procedures	
			Chevron Incident Reporting Process	
			Safety Certifications	Available upon request from project manager.
			SSE Form	
			Operational Discipline	
			Management of Change	
			On-Site Inspection Form	
			End of Job Evaluation Form	
			Audit Guidance	
			Onsite Waste & Recyclable Material Inspection	
Signature:				**Date:**

For questions concerning the contents of this field binder, please contact Brent at brent.lucyk@stantec.com or Patrick at patrick.herrmann@stantec.com.

Version 2 - May 2017

Attachment 2

Risk Management Strategy Forms (RMS-2 and RMS-3)

Stantec

Field Level Risk Assessment (RMS 2)

	Project Number:	**Date:**	Date
Project Name:			
Project Location:			
Description of Work:			

Review of STOP Work Authority with staff and subs	Yes ☐	
Tools and appropriate PPE inspected before use	Yes ☐	
Emergency plan adequate and communicated	Yes ☐	
HASP/RMS1 reviewed with staff on site	Yes ☐	
Last Minute Risk Assessment process reviewed	Yes ☐	
If the answer to any of the questions above is not "Yes" Stop work and contact your supervisor.		
Field crews have certifications on site	Yes ☐	N/A ☐
Utility locates on site and understood	Yes ☐	N/A ☐
Working alone plan in place	Yes ☐	N/A ☐
Work permits completed	Yes ☐	N/A ☐
Client site safety meeting conducted/attended	Yes ☐	N/A ☐

Meeting details

Pre-start time:

Weather:	Tailgate discussion Leader Name:	Tailgate Leader Signature:
Notes:		

Mid-day time:

Weather:	Tailgate discussion Leader Name:	Tailgate Leader Signature:
Notes		

Stantec

Field Level Risk Assessment (RMS 2)

End of day time:		
Weather:	Tailgate discussion Leader Name:	Tailgate Leader Signature:
Notes:		

Identify critical risk(s) that staff may encounter on this project.

 Driving	 Working at Heights	 Traffic Control	 Wildlife, Insects, and Vegetation	 Mobile and Heavy Equipment	 Environments with Water or Ice
☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes
 Ground Disturbance	 Ergonomic Hazards and Manual Handling	 Hazardous Materials and Environments	 Control of Hazardous Energy	 Hot Work	 Confined Spaces
☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes

Review each task/step for your activity, identify potential critical risks and energy, list controls, identify the person and what could trigger you to stop your work today.

	**Thermal:** Open flame, electric ignition sources (including phones and friction), hot or cold surfaces, liquids or gasses, weather conditions including humidity levels and snow/ice		**Gravity**: Falling objects, collapsing objects, slipping, tripping or falling
	**Chemical:** Flammable vapors, reactive hazards, carcinogens or other toxic compounds, corrosives, pyrophorics, combustibles, oxygen deficient atmospheres, fumes, dusts, naturally occurring gases		**Motion**: Vehicles (car, truck, ATV, ARGO, boat, snowmobile, bicycles, transit, mobile equipment, trailer), workers and other people (lifting, pushing, pulling, carrying, use of hand and power tools, body position, walking), flowing water, sprung branches
	**Biological**: Animals, bacteria, viruses, insects, blood borne pathogens (needles), poisonous and noxious plants, contaminated water, human behaviors (protesters, concerned citizens, onlookers)		**Mechanical**: Rotating equipment (augers, pulleys, drive shafts), compressed springs, drive belts, conveyors and motors
	**Radiation**: Welding, NORMs (Naturally Occurring Radioactive Material), X rays, Nuclear Densometers, Lasers, Microwaves, Solar, Radioactive waste and sources		**Electrical**: Power and communication lines (overhead and buried), static charge, lightning, energized equipment, wiring, batteries, GFCI cords/plugs, lighting levels, double insulated tools, wet environment
	**Noise**: Stationary or mobile equipment, impact noise, high pressure release, impact of noise on communication		**Pressure**: pressure piping, compressed cylinders (fire extinguisher, calibration gas, propane), control lines, vessels, tanks, hoses, pneumatic and hydraulic equipment

Field Level Risk Assessment (RMS 2)

Job Safety Analysis (JSA)				
	Basic job steps	**Energy**	**Controls**	**Person responsible**
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

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Field Level Risk Assessment (RMS 2)

Review / Sign-off

Print the company that you work for, your name and initial beside your fitness level under the corresponding time column:
Fit for Duty = F Alternate Plan = AP

Company name	**Print your name**	**Time:**	**Time:**	**Time:**
		F:	**F:**	**F:**
		AP:	**AP:**	**AP:**
		F:	**F:**	**F:**
		AP:	**AP:**	**AP:**
		F:	**F:**	**F:**
		AP:	**AP:**	**AP:**
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		F:	**F:**	**F:**
		AP:	**AP:**	**AP:**

For work-related symptoms or injuries, and speak to medical professional for guidance and treatment options contact

WorkCare

(24-hour service)

1-888-449-7787

Workers' Compensation Claims Coordinator (Canada)
Ph. 905-944-6854; cell 416-951-5663

Workers' Compensation Claims Coordinator (US)
cell: 513-720-3706

Last-Minute Risk Assessment (LMRA)

Are you ready to work safely?

Always remember your Stop Work Authority.

1. STOP and Think

2. Look around

Is the work area safe?
Will my work endanger others?
Will other people pose risk?

3. Assess risk

Do I clearly understand the task?
Will lifting or manual handing be required?
Potential for slips, trips and falls?
Are there driving or vehicle concerns?
Have I considered all underground services?
Moving or pressurized equipment?

4. Control risk

What can I do to control hazards?
Do I have the right tools?
Is the SWP **(safe work practice)** appropriate?
Do I have the appropriate PPE?
Are emergency plans in place?

5. Begin/Resume work

If you're unsure, talk to your supervisor

Stantec

Field Level Risk Assessment (RMS 2)
Four (4) Day Extension

This form is intended to extend the Energy Wheel RMS2 for a period of 4 additional days on one site. If work will last longer than the days provided on this form please start a new RMS2 to refresh hazard awareness. The day 1 RMS2 must be on site and reviewed as part of this extension.

	Project Number:		**Date:** Date
Project Name:			
Project Location:			
Description of Work:			

	Day 2	Day 3	Day 4	Day 5
Review of STOP Work Authority with staff and subs	Yes ☐	Yes ☐	Yes ☐	Yes ☐
Tools and appropriate PPE inspected before use	Yes ☐	Yes ☐	Yes ☐	Yes ☐
Emergency plan adequate and communicated	Yes ☐	Yes ☐	Yes ☐	Yes ☐
HASP/RMS1 reviewed with staff on site	Yes ☐	Yes ☐	Yes ☐	Yes ☐
Last Minute Risk Assessment process reviewed	Yes ☐	Yes ☐	Yes ☐	Yes ☐

If the answer to any of the questions above is not "Yes" Stop work and contact your supervisor.

	Day 2	Day 3	Day 4	Day 5
Field crews have certifications on site	Yes ☐ N/A ☐	Yes ☐ N/A ☐	Yes ☐ N/A ☐	Yes ☐ N/A ☐
Utility locates on site and understood	Yes ☐ N/A ☐	Yes ☐ N/A ☐	Yes ☐ N/A ☐	Yes ☐ N/A ☐
Working alone plan in place	Yes ☐ N/A ☐	Yes ☐ N/A ☐	Yes ☐ N/A ☐	Yes ☐ N/A ☐
Work permits completed	Yes ☐ N/A ☐	Yes ☐ N/A ☐	Yes ☐ N/A ☐	Yes ☐ N/A ☐
Client site safety meeting conducted/attended	Yes ☐ N/A ☐	Yes ☐ N/A ☐	Yes ☐ N/A ☐	Yes ☐ N/A ☐
Are there additional critical risks, JSA tasks or energy hazards? If yes, update the JSA and communicate to the team	Yes ☐ N/A ☐	Yes ☐ N/A ☐	Yes ☐ N/A ☐	Yes ☐ N/A ☐

Meeting details

Day 2

Date:	Weather:
Pre-start time:	am/pm
Notes:	
Mid-day time:	am/pm
Notes:	
End of day time:	am/pm
Notes:	

Tailgate Discussion Leader Name:	Tailgate Leader Signature:

Stantec

Field Level Risk Assessment (RMS 2)
Four (4) Day Extension

Day 3	
Date:	Weather:
Pre-start time:	am/pm
Notes:	
Mid-day time:	am/pm
Notes:	
End of day time:	am/pm
Notes:	
Tailgate Discussion Leader Name:	Tailgate Leader Signature:
Day 4	
Date:	Weather:
Pre-start time:	am/pm
Notes:	
Mid-day time:	am/pm
Notes:	
End of day time:	am/pm
Notes:	
Tailgate Discussion Leader Name:	Tailgate Leader Signature:

Stantec

Field Level Risk Assessment (RMS 2)
Four (4) Day Extension

Day 5	
Date:	Weather:
Pre-start time:	am/pm
Notes:	
Mid-day time:	am/pm
Notes:	
End of day time:	am/pm
Notes:	

Tailgate Discussion Leader Name:	Tailgate Leader Signature:

Stantec

Field Level Risk Assessment (RMS 2)
Four (4) Day Extension

Review / Sign-off

Print the company that you work for, your name and indicate which fitness level you are under the corresponding time column:
Fit for Duty = F Alternate Plan = AP

		Date:			Date:			Date:			Date:		
Company name	**Print your name**	**Time:**	**Time:**	**Time:**	**Time:**	**Time:**	**Time:**	**Time:**	**Time:**	**Time:**	**Time:**	**Time:**	**Time:**

For work-related symptoms or injuries, and speak to medical professional for guidance and treatment options contact

WorkCare

(24-hour service)

1-888-449-7787

Workers' Compensation Claims Coordinator (Canada)
Ph. 905-944-6854; cell 416-951-5663

Workers' Compensation Claims Coordinator (US)
cell: 513-720-3706

Last-Minute Risk Assessment (LMRA)

Are you ready to work safely?

Always remember your Stop Work Authority.

1. STOP and Think

2. Look around

Is the work area safe?
Will my work endanger others?
Will other people pose risk?

3. Assess risk

Do I clearly understand the task?
Will lifting or manual handing be required?
Potential for slips, trips and falls?
Are there driving or vehicle concerns?
Have I considered all underground services?
Moving or pressurized equipment?

4. Control risk

What can I do to control hazards?
Do I have the right tools?
Is the SWP **(safe work practice)** appropriate?
Do I have the appropriate PPE?
Are emergency plans in place?

5. Begin/Resume work

If you're unsure, talk to your supervisor

HSSE EVENT REPORT – RMS3

Incidents involving injury, potential injury, or report of pain, soreness, or discomfort must be reported immediately (within one hour) to a supervisor. Supervisors will then immediately contact their HSSE manager/advisor to discuss incident severity and determine further notification. This form must be completed and **submitted within 24 hours** of any incident. Do not delay submission waiting for signatures. **Email to hsse@stantec.com or fax unsigned report to (780) 969-2030** and file locally in compliance with the corporate records retention policy and practices once all signatures have been obtained.

SECTION 1: GENERAL INFORMATION			
Office location:		BC number:	
Location of incident:			
Incident date:		Incident time:	
Incident reported-date:		Incident reported-time:	
Project name:		Project number:	
Client name:			
Person in charge:		Person in charge phone:	

SECTION 2: INVOLVED STANTEC EMPLOYEE INFORMATION (if more than one identify extras in incident details below)			
Name:		Phone:	
Job position:		Group name:	
Time employee began work:		Job experience (in years)	
Type of employment:	Full Time ☐ ; Visitor ☐ ; Contract ☐ ; Volunteer ☐ ; Seasonal ☐		
Supervisor:		Supervisor phone:	

SECTION 3: INCIDENT DETAILS	
Type of Incident:	*incident types marked with an asterisk, please complete sections 1, 2 and 3 and sign below. **See StanNet for a list of Incident Type Definitions**

Incident Severity (0-4 Serious):		**Incident Likelihood: (1-4 Very Likely)**	
☐ **Report Only*	☐ First Aid	☐ Motor Vehicle Incident	☐ 3rd Party Incident (i.e., Public)
☐ **Hazard Identification*	☐ Medical Aid – No Lost Time	☐ Property Damage - Vehicle	☐ Spill or Release
☐ **Near Miss*	☐ Restricted Work	☐ Property Damage - Other	☐ Utility Strike
☐ **Safety Opportunity*	☐ Lost Time	☐ Security	☐ Fire/Explosion/Flood
☐ ***Critical Risk?***	☐ Fatality	☐ Contractor Recordable Incident	☐ Stop Work Authority
☐ ***High Potential Incident?***	☐ Violence or Harassment	☐ Non-compliance	☐ Work Refusal

Describe incident in detail: (include any issues related to people, equipment, materials, environment, and processes)

Immediate corrective actions taken:

Submitted by (add signature):

Canada East (Atlantic) – Kyle Ferguson (902-240-3847); Canada East (ON) – Jared Memory (647-969-3709);
Canada East (Quebec) – Claudine Tremblay (514-668-4820); Canada Mountain – Shawna Robichaud (587-894-2635);
Canada Prairies – Yvonne Beattie (780-616-8909); International – Kev Metcalfe (780-231-2185); US Northeast – Fred Miller (610-235-7315);
US Central – Wes Cline (916 281-7459); US South – Randy Jones (615 499-7161); US West – Tony Wong (805-234-6227);
Australia & New Zealand – Martin Holliday (+61 409 869 449)

SECTION 4: MEDICAL INFORMATION	
Name of first aid attendant:	Injury recorded in first aid log? Yes ☐ No ☐ N/A ☐
Description of first aid or medical treatment administered:	
Clinic/hospital sent to:	
Attending physician/paramedic (if known):	

Area of Injury – Please check all that apply:

						Left		Right	Left		Right	Left		Right	Left		Right
☐	Head	☐	Teeth	☐	Upper back	☐	Shoulder	☐	☐	Wrist	☐	☐	Hip	☐	☐	Ankle	☐
☐	Face	☐	Neck	☐	Lower back	☐	Arm	☐	☐	Hand	☐	☐	Thigh	☐	☐	Foot	☐
☐	Eye(s)	☐	Chest	☐	Abdomen	☐	Elbow	☐	☐	Finger(s)	☐	☐	Knee	☐	☐	Toe(s)	☐
☐	Ear(s)			☐	Pelvis	☐	Forearm	☐				☐	Lower Leg	☐			
☐	Other	Specify															

Has the injured employee had a previous similar injury or disability?	Yes ☐	No ☐

SECTION 5: PROPERTY OR VEHICLE DAMAGE: STANTEC			
Ownership Details (choose one):	☐ Rented (attach rental agreement)	☐ Stantec Owned	☐ Personal (employee vehicle)
Year, Make, and Model of Vehicle:		Vehicle ID # (VIN)	
Nature of damage:		Estimated cost of damage:	$
Description of damaged property:			
Attending police officer (if known):		Badge #:	
Copy of police report received	Yes ☐ No ☐ If yes, file number:	(attach copy of police report)	

PROPERTY OR VEHICLE DAMAGE: 3RD PARTY			
Name of owner and contact number:			
Year, Make, and Model of Vehicle:		License Plate Number:	
Insurer and Policy Number:			
Injured parties? Yes ☐ No ☐	If yes, describe Injuries:		
Diagram or photographs attached?	Yes ☐ No ☐		

WITNESS INFORMATION - #1			
Name:		Phone Number:	
Witness statement provided?	Yes (attached) ☐	No ☐	

WITNESS INFORMATION - #2			
Name:		Phone Number:	
Witness statement provided?	Yes (attached) ☐	No ☐	

SECTION 6: SPILL OR RELEASE			
Substance:			
Quantity:		Employee(s) exposed via:	☐ Inhalation ☐ Contact ☐ Ingestion ☐ n/a
Off-site impacts observed or anticipated?	Yes ☐ No ☐ If yes, describe:		
Name of regulatory agencies contacted:			
Contact name, number, date and time of call:			

SECTION 7: ANALYSIS

DIRECT CAUSES

A. ACTIONS TO IMPROVE (check off as many as necessary)

- ☐ Operating equipment without authority
- ☐ Lack of warning
- ☐ Did not secure
- ☐ Operating at improper speed
- ☐ Disabling/removing safety devices
- ☐ Using defective/improper equipment
- ☐ Using equipment improperly
- ☐ Did not use personal protective equipment (PPE)
- ☐ Improper loading
- ☐ Improper placement
- ☐ Improper lifting or handling
- ☐ Improper position for a task
- ☐ Servicing equipment in operation
- ☐ Horseplay
- ☐ Procedure, policy, or practice, not followed
- ☐ Hazard or risk not identified
- ☐ Inattention
- ☐ Communication/coordination needs improvement
- ☐ Influence of alcohol or drugs suspected
- ☐ Did not check/monitor
- ☐ Did not react or correct

B. CONDITIONS TO IMPROVE (check off as many as necessary)

- ☐ Inadequate guards/barriers
- ☐ Improper/inadequate PPE
- ☐ Defective tools or equipment
- ☐ Congested work area
- ☐ Inadequate warning system
- ☐ Fire and explosion hazards
- ☐ Poor housekeeping; disorder
- ☐ Noise exposure
- ☐ Radiation exposure
- ☐ Temperature extremes
- ☐ Inadequate or excess illumination
- ☐ Inadequate ventilation
- ☐ Presence of harmful materials or environment
- ☐ Instructions/procedures need improvement
- ☐ Inadequate information/data
- ☐ Preparation/planning needs improvement
- ☐ Opportunity to improve support/assistance
- ☐ Road conditions
- ☐ Weather conditions
- ☐ Communications need improvement (hardware/software)

ROOT CAUSES

C. PERSONAL FACTORS (check off as many as necessary)

- ☐ Physical Capability
- ☐ Physical Stress
- ☐ Mental Stress
- ☐ Lack of Skill
- ☐ Lack of Knowledge
- ☐ Improper Motivation
- ☐ Abuse or Misuse
- ☐ Mental/Psychological Capability

D. JOB FACTORS (check off as many as necessary)

- ☐ Leadership or supervision
- ☐ Engineering
- ☐ Purchasing
- ☐ Maintenance (scheduled or preventative)
- ☐ Tools or equipment
- ☐ Work standards
- ☐ Excessive wear and tear
- ☐ Communications
- ☐ Other: Specify

SECTION 8: FOLLOW-UP

Short-term:	**Corrective Action**	**Assigned To**	**Target Date**	**Completion Date**
Long-term:	**Corrective Action**	**Assigned To**	**Target Date**	**Completion Date**

REVIEW COMMENTS		
Involved Employee Comments:		
Signature: Job Title:	Print Name:	Date:
Supervisor/Project Manager:		
Signature: Job Title:	Print Name:	Date:
HSSE Representative (OSEC/JH&S Committee/HSSE Manager/HSSE Advisor):		
Signature: Job Title:	Print Name:	Date:
Management Review: (☐ not applicable)		
Signature: Job Title:	Print Name:	Date:
Additional Comments:		

Attachment 3

Ground Disturbance Forms

(SWP 213a and SWP 213b)

HEALTH, SAFETY, SECURITY, AND ENVIRONMENT
PRE-GROUND DISTURBANCE WORKSHEET & APPROVAL FORM
SWP-213A

Stantec

SECTION ONE: PROJECT INFORMATION		
Project Number: Project Number	Project Name: Project Name	
Client: Client		Date: Date
Street Address: Address	City: City	Province/Territory/State: Click here to enter text
Lot / Concession: Click here to enter text	Public or Private Property: Property Type	
Nearest Intersection: Click here to enter text		
Additional Information: Click here to enter text		
Planned Excavation Method: ☐ Mechanical ☐ Daylighting ☐ Hand Digging ☐ Combination (Specify): Click here to enter text		
Number of boreholes or extent of excavation: Click here to enter text	Maximum depth of ground disturbance: Click here to enter text	
Work Description (provide detail information as to what work is planned and how it will be executed): Click here to enter text		

SECTION TWO: PRE-GROUND DISTURBANCE VERIFICATION		
Type of Property (check all that apply): ☐ Residential ☐ Commercial ☐ Industrial ☐ Institutional ☐ Vacant ☐ Roadway ☐ Boulevard ☐ Recreational ☐ Basement ☐ Agricultural ☐ Forested ☐ Other: Click here to enter text		
Reviewed site information to identify subsurface utility infrastructure relevant to planned site activities. (Review legal land surveys, easements, right of ways, historical plot plans, previous site investigation, soil surveys, boring logs, etc.)	☐ Yes	
	☐ No	Justification is required if No or N/A: Click here to enter text
	☐ N/A	
Most recent as-built drawings, site plans, surveys obtained. (Including UST, product, and vent lines, building layout.)	☐ Yes	
	☐ No	Justification is required if No or N/A: Click here to enter text
	☐ N/A	
City/County utilities drawings obtained	☐ Yes	
	☐ No	Justification is required if No or N/A: Click here to enter text
	☐ N/A	
Interview/discussion with site owner / site representative with knowledge of site subsurface utility infrastructure conducted.	☐ Yes	
	☐ No	Justification is required if No or N/A: Click here to enter text
	☐ N/A	

Site access / permission has been secured.	☐ Yes	
	☐ No	Justification is required if No or N/A: Click here to enter text
	☐ N/A	
The site owner/tenant has been contacted and the scope of work has been discussed.	☐ Yes	
	☐ No	Justification is required if No or N/A: Click here to enter text
	☐ N/A	
Public utility locates have been performed by all public utility companies or their locate service provider(s) within required timeframe. **Record public utility locate information in section 3 below.**	☐ Yes	
	☐ No	If No, do not proceed until corrected.
Private utility locates have been performed by a qualified private utility company. **Record private utility locate information in section 3 below.**	☐ Yes	
	☐ No	Justification is required if No or N/A: Click here to enter text
	☐ N/A	
Crossing agreements for all utility infrastructure owners are in place and conditions have been met.	☐ Yes	If yes, please list all crossing agreements and attach agreements:
	1	Click here to enter text
	2	Click here to enter text
	3	Click here to enter text
	☐ No	Justification is required if No or N/A: Click here to enter text
	☐ N/A	
Third party utility infrastructure owners have been given 48 hours' notice of crossing or encroachment.	☐ Yes	
	☐ No	Justification is required if No or N/A: Click here to enter text
	☐ N/A	
The utility infrastructure owner's representative required to be present when exposing or excavating near / across their infrastructure.	☐ Yes	
	☐ No	Justification is required if No or N/A: Click here to enter text
	☐ N/A	
All applicable local, provincial, territorial, state, and federal permits have been obtained.	☐ Yes	Attach a copy of all permits.
	☐ No	Justification is required if No or N/A: Click here to enter text
	☐ N/A	
Sub-contractor prequalified through Stantec prequalification process.	☐ Yes	
	☐ No	If No, do not proceed until corrected.

SECTION THREE: SITE UTILITY INFRASTRUCTURE CHECKLIST

One Call confirmation number (If applicable): Click here to enter text

Natural Gas – Distribution

☐ Verified as not applicable to the work area through written confirmation from the utility infrastructure owner. Move to next utility infrastructure item in this list.			
Utility Infrastructure Owner: Click here to enter text		Emergency Contact #: Click here to enter text	
Date of Locate: Date	Mark and Email/Fax ☐ or Site Meet Requested ☐		
Located by: Click here to enter text		Locate Expiry Date: Date	
Conditions: Click here to enter text			
Correct address listed on utility locate report?	☐ Yes ☐ No	If no, do not proceed until corrected.	
Limits of locate encompasses entire work area or property boundaries?	☐ Yes ☐ No	If no, do not proceed until corrected.	
Written locate report or authorization to proceed reviewed?	☐ Yes ☐ No	If no, do not proceed until corrected.	

Natural Gas - Pipeline

☐ Verified as not applicable to the work area through written confirmation from the utility infrastructure owner. Move to next infrastructure item in this list.			
Utility Infrastructure Owner: Click here to enter text		Emergency Contact #: Click here to enter text	
Date of Locate: Date	Mark and Email/Fax ☐ or Site Meet Requested ☐		
Located by: Click here to enter text		Locate Expiry Date: Date	
Conditions: Click here to enter text			
Correct address listed on utility locate report?	☐ Yes ☐ No	If no, do not proceed until corrected.	
Limits of locate encompasses entire work area or property boundaries?	☐ Yes ☐ No	If no, do not proceed until corrected.	
Written locate report or authorization to proceed reviewed?	☐ Yes ☐ No	If no, do not proceed until corrected.	

Petroleum Products - Pipeline

☐ Verified as not applicable to the work area through written confirmation from the utility infrastructure owner. Move to next infrastructure item in this list.			
Utility Infrastructure Owner: Click here to enter text		Emergency Contact #: Click here to enter text	
Date of Locate: Date	Mark and Email/Fax ☐ or Site Meet Requested ☐		
Located by: Click here to enter text		Locate Expiry Date: Date	
Conditions: Click here to enter text			
Correct address listed on utility locate report?	☐ Yes ☐ No	If no, do not proceed until corrected.	
Limits of locate encompasses entire work area or property boundaries?	☐ Yes ☐ No	If no, do not proceed until corrected.	
Written locate report or authorization to proceed reviewed?	☐ Yes ☐ No	If no, do not proceed until corrected.	

Steam - Pipeline	☐ Verified as not applicable to the work area through written confirmation from the utility infrastructure owner. Move to next infrastructure item in this list.			
	Utility Infrastructure Owner: Click here to enter text		Emergency Contact #: Click here to enter text	
	Date of Locate: Date	Mark and Email/Fax ☐ or Site Meet Requested ☐		
	Located by: Click here to enter text		Locate Expiry Date: Date	
	Conditions: Click here to enter text			
	Correct address listed on utility locate report?	☐ Yes ☐ No	If no, do not proceed until corrected.	
	Limits of locate encompasses entire work area or property boundaries?	☐ Yes ☐ No	If no, do not proceed until corrected.	
	Written locate report or authorization to proceed reviewed?	☐ Yes ☐ No	If no, do not proceed until corrected.	

Electrical Power	☐ Verified as not applicable to the work area through written confirmation from the utility infrastructure owner. Move to next infrastructure item in this list.			
	Utility Infrastructure Owner: Click here to enter text		Emergency Contact #: Click here to enter text	
	Date of Locate: Date	Mark and Email/Fax ☐ or Site Meet Requested ☐		
	Located by: Click here to enter text		Locate Expiry Date: Date	
	Conditions: Click here to enter text			
	Correct address listed on utility locate report?	☐ Yes ☐ No	If no, do not proceed until corrected.	
	Limits of locate encompasses entire work area or property boundaries?	☐ Yes ☐ No	If no, do not proceed until corrected.	
	Written locate report or authorization to proceed reviewed?	☐ Yes ☐ No	If no, do not proceed until corrected.	

Telecom	☐ Verified as not applicable to the work area through written confirmation from the utility infrastructure owner. Move to next infrastructure item in this list.			
	Utility Infrastructure Owner: Click here to enter text		Emergency Contact #: Click here to enter text	
	Date of Locate: Date	Mark and Email/Fax ☐ or Site Meet Requested ☐		
	Located by: Click here to enter text		Locate Expiry Date: Date	
	Conditions: Click here to enter text			
	Correct address listed on utility locate report?	☐ Yes ☐ No	If no, do not proceed until corrected.	
	Limits of locate encompasses entire work area or property boundaries?	☐ Yes ☐ No	If no, do not proceed until corrected.	
	Written locate report or authorization to proceed reviewed?	☐ Yes ☐ No	If no, do not proceed until corrected.	

Fiber Optic	☐ Verified as not applicable to the work area through written confirmation from the utility infrastructure owner. Move to next infrastructure item in this list.			
	Utility Infrastructure Owner: Click here to enter text		Emergency Contact #: Click here to enter text	
	Date of Locate: Date	Mark and Email/Fax ☐ or Site Meet Requested ☐		
	Located by: Click here to enter text		Locate Expiry Date: Date	
	Conditions: Click here to enter text			
	Correct address listed on utility locate report?	☐ Yes ☐ No	If no, do not proceed until corrected.	
	Limits of locate encompasses entire work area or property boundaries?	☐ Yes ☐ No	If no, do not proceed until corrected.	
	Written locate report or authorization to proceed reviewed?	☐ Yes ☐ No	If no, do not proceed until corrected.	

Cable	☐ Verified as not applicable to the work area through written confirmation from the utility infrastructure owner. Move to next infrastructure item in this list.			
	Utility Infrastructure Owner: Click here to enter text		Emergency Contact #: Click here to enter text	
	Date of Locate: Date	Mark and Email/Fax ☐ or Site Meet Requested ☐		
	Located by: Click here to enter text		Locate Expiry Date: Date	
	Conditions: Click here to enter text			
	Correct address listed on utility locate report?	☐ Yes ☐ No	If no, do not proceed until corrected.	
	Limits of locate encompasses entire work area or property boundaries?	☐ Yes ☐ No	If no, do not proceed until corrected.	
	Written locate report or authorization to proceed reviewed?	☐ Yes ☐ No	If no, do not proceed until corrected.	

Water	☐ Verified as not applicable to the work area through written confirmation from the utility infrastructure owner. Move to next infrastructure item in this list.			
	Utility Infrastructure Owner: Click here to enter text		Emergency Contact #: Click here to enter text	
	Date of Locate: Date	Mark and Email/Fax ☐ or Site Meet Requested ☐		
	Located by: Click here to enter text		Locate Expiry Date: Date	
	Conditions: Click here to enter text			
	Correct address listed on utility locate report?	☐ Yes ☐ No	If no, do not proceed until corrected.	
	Limits of locate encompasses entire work area or property boundaries?	☐ Yes ☐ No	If no, do not proceed until corrected.	
	Written locate report or authorization to proceed reviewed?	☐ Yes ☐ No	If no, do not proceed until corrected.	

Storm Sewer	☐ Verified as not applicable to the work area through written confirmation from the utility infrastructure owner. Move to next infrastructure item in this list.			
	Utility Infrastructure Owner: Click here to enter text		Emergency Contact #: Click here to enter text	
	Date of Locate: Date	Mark and Email/Fax ☐	or	Site Meet Requested ☐
	Located by: Click here to enter text		Locate Expiry Date: Date	
	Conditions: Click here to enter text			
	Correct address listed on utility locate report?	☐ Yes ☐ No		If no, do not proceed until corrected.
	Limits of locate encompasses entire work area or property boundaries?	☐ Yes ☐ No		If no, do not proceed until corrected.
	Written locate report or authorization to proceed reviewed?	☐ Yes ☐ No		If no, do not proceed until corrected.

Sanitary Sewer	☐ Verified as not applicable to the work area through written confirmation from the utility infrastructure owner. Move to next item in this list.			
	Utility Infrastructure Owner: Click here to enter text		Emergency Contact #: Click here to enter text	
	Date of Locate: Date	Mark and Email/Fax ☐	or	Site Meet Requested ☐
	Located by: Click here to enter text		Locate Expiry Date: Date	
	Conditions: Click here to enter text			
	Correct address listed on utility locate report?	☐ Yes ☐ No		If no, do not proceed until corrected.
	Limits of locate encompasses entire work area or property boundaries?	☐ Yes ☐ No		If no, do not proceed until corrected.
	Written locate report or authorization to proceed reviewed?	☐ Yes ☐ No		If no, do not proceed until corrected.

Private Utility Locator	**Is the ground disturbance work area located on private property? ☐ Yes ☐ No** If the ground disturbance is on private property, this section must be completed.			
	Private utility locate company: Click here to enter text		Emergency Contact #: Click here to enter text	
	Locator Name: Click here to enter text			
	Locate Methodology Used:	☐ Electromagnetic (EM) cable locating ☐ Ground Penetrating Radar (GPR) ☐ Other (Specify): Click here to enter text		
	Date of Locate: Date		Locate Expiry Date: Date	
	Conditions: Click here to enter text			
	Correct address listed on utility locate report?	☐ Yes ☐ No		If no, do not proceed until corrected.
	Limits of locate encompasses entire work area or property boundaries?	☐ Yes ☐ No		If no, do not proceed until corrected.
	Written locate report or authorization to proceed reviewed?	☐ Yes ☐ No		If no, do not proceed until corrected.

Borehole clearance and/or daylighting techniques must be implemented when ground disturbance is taking place within a critical zone, municipal/county right-of-way, an area congested with underground utility infrastructure, or if the information obtained during the completion of the Pre-Ground Disturbance Worksheet & Approval Form (SWP-213a) fails to provide sufficient information to accurately identify the location of all subsurface utilities within your project limits.

APPROVAL TO PROCEED WITH FIELD ACTIVITIES		
CLIENT APPROVAL:		
PRINT:	SIGNATURE:	DATE:
PROJECT MANAGER APPROVAL:		
PRINT:	SIGNATURE:	DATE:

HEALTH, SAFETY, SECURITY, AND ENVIRONMENT
ABOVEGROUND/UNDERGROUND UTILITY INFRASTRUCTURE CHECKLIST
SWP-213B

Stantec

SECTION ONE: PROJECT INFORMATION		
Project Number:	Project Name:	
Client:		Date:
Street Address:	City:	Province/Territory/State:

SECTION TWO: PRE-GROUND DISTURBANCE CHECKLIST		
All involved site personnel have reviewed and understand the site specific RMS1/HASP.	☐ Yes	
	☐ No	If No, do not proceed until corrected.
Performed tailgate meeting with all involved site personnel and documented on Field Level Risk Assessment (RMS2).	☐ Yes	
	☐ No	If No, do not proceed until corrected.
Hard copy of all available ground disturbance documentation is on site (SWP-213a, public and private utility locates, site maps, as-built drawings, engineering, or design drawings) and have been reviewed by all involved site personnel. **Verbal authorization is not acceptable.**	☐ Yes	
	☐ No	If No, do not proceed until corrected.
Verified that the public and private utility locates match the location to be excavated/drilled (physical address, direction, measurements from features).	☐ Yes	
	☐ No	If No, do not proceed until corrected.
Limits of locate encompasses entire work area for all utility locate reports.	☐ Yes	
	☐ No	If No, do not proceed until corrected.
Where permits are required, they have been reviewed, and permit conditions understood by all involved site personnel.	☐ Yes	
	☐ No	If No, do not proceed until corrected.
	☐ N/A	Justification is required if N/A:
Site owner has been notified of ground disturbance activities.	☐ Yes	
	☐ No	If No, do not proceed until corrected.
	☐ N/A	Justification is required if N/A:
All utility locate markings are clear and visible.	☐ Yes	
	☐ No	If No, do not proceed until corrected.
All overhead hazards have been identified, a safe distance has been maintained, and signage is in place (if required).	☐ Yes	
	☐ No	If No, do not proceed until corrected.
The location of all emergency shut-off switches is known and have been tested on ground disturbance equipment on site.	☐ Yes	
	☐ No	If No, do not proceed until corrected.
The work area has been secured if required. Note: Use level 3 traffic control when there is heavy equipment or power tools in areas near electrically energized or rotating equipment.	☐ Yes	
	☐ No	If No, do not proceed until corrected.
	☐ N/A	Justification is required if N/A:
Fire extinguisher(s), first aid kit, eye wash station, and spill kit are present and located in an easily accessible location for the prompt use by any worker at all times when work is in progress.	☐ Yes	
	☐ No	If No, do not proceed until corrected.

SECTION THREE: SITE UTILITY INFRASTRUCTURE CHECKLIST			
Location of all-natural gas meters and associated private infrastructure (i.e. boiler, HVAC, generator, BBQ, pool heater, etc.) and all interconnecting lines identified.	☐ Yes	Locate Expiry Date:	Emergency #:
	☐ No	Justification is required if No or N/A:	
	☐ N/A		
Orientation, arrangement, location, dimension of underground storage tanks identified.	☐ Yes	Locate Expiry Date:	Emergency #:
	☐ No	Justification is required if No or N/A:	
	☐ N/A		
Burial depth of tank determined, if relevant.	☐ Yes	Locate Expiry Date:	Emergency #:
	☐ No	Justification is required if No or N/A:	
	☐ N/A		
Presence of petroleum product lines and vent lines identified.	☐ Yes	Locate Expiry Date:	Emergency #:
	☐ No	Justification is required if No or N/A:	
	☐ N/A		
Presence of underground lines for instrumentation, process analyzer, and motor-operated valves are identified.	☐ Yes	Locate Expiry Date:	Emergency #:
	☐ No	Justification is required if No or N/A:	
	☐ N/A		
Presence of underground pipelines associated with pumps and pump galleries, manifolds, tank fields, compressors, production wells, loading racks and equipment identified.	☐ Yes	Locate Expiry Date:	Emergency #:
	☐ No	Justification is required if No or N/A:	
	☐ N/A		
Critical zones have been identified within the ground disturbance work area. • 5 m/16.5 ft. of pipeline crossing area, or the distance defined in the pipeline crossing agreement • 3 m/10 ft. distance from edge of tank; pumps and pump galleries; manifolds; on/below-grade transformers; compressors; production wells; flow lines; loading racks; other process equipment; operating dispenser islands and suspected hazardous/critical utilities; product lines; other subsurface structures; and entire area between tank field and dispensers at retail sites	☐ Yes		
	☐ No	Justification is required if No or N/A:	
	☐ N/A		

The utility infrastructure owner/representative has inspected the crossings or encroachment areas prior to beginning work.	☐ Yes		
	☐ No	Justification is required if No or N/A:	
	☐ N/A		
All conditions of the Crossing Agreements have been met.	☐ Yes		
	☐ No	If No, do not proceed until corrected.	
	☐ N/A	Justification is required if N/A:	
All operators are aware of the mechanical excavation zone as discussed in the tailgate meeting.	☐ Yes		
	☐ No	If No, do not proceed until corrected.	
All ground disturbance equipment inspections have been documented prior to the start of work.	☐ Yes		
	☐ No	If No, do not proceed until corrected.	
Location of all electrical meters, transformers, vaults, junction boxes, generators, street/exterior lighting, lighted signs, traffic signals, receptacles and all associated interconnecting lines are identified.	☐ Yes	Locate Expiry Date:	Emergency #:
	☐ No	If No, do not proceed until corrected.	
	☐ N/A	Justification is required if N/A:	
Location of all telecommunication and associated subsurface lines are identified.	☐ Yes	Locate Expiry Date:	Emergency #:
	☐ No	If No, do not proceed until corrected.	
	☐ N/A	Justification is required if N/A:	
Location of all fiber optic lines are identified.	☐ Yes	Locate Expiry Date:	Emergency #:
	☐ No	If No, do not proceed until corrected.	
	☐ N/A	Justification is required if N/A:	
Location of all cable lines are identified.	☐ Yes	Locate Expiry Date:	Emergency #:
	☐ No	If No, do not proceed until corrected.	
	☐ N/A	Justification is required if N/A:	
Location of all water valves, fire hydrants, post indicator valves, water wells and all associated interconnecting (including irrigation) lines are identified. Note: If non-conductive lines (concrete, untraced PVC) are potentially in the ground disturbance area, identify means of identification in comments section.	☐ Yes	Locate Expiry Date:	Emergency #:
	☐ No	If No, do not proceed until corrected.	
	☐ N/A	Justification is required if N/A:	
Comments:			

Location of all storm manholes, catch basins, storm sewer oil/water separators, and all associated interconnecting lines are identified. Note: If non-conductive lines (concrete, untraced PVC) are potentially in the ground disturbance area, identify means of identification in comments section.	☐ Yes	Locate Expiry Date:	Emergency #:
	☐ No	If No, do not proceed until corrected.	
	☐ N/A	Justification is required if N/A:	
Comments:			
Location of all sanitary manholes, sanitary sewer oil/water separators, cleanouts, septic tanks and all associated interconnecting lines are identified. Note: If non-conductive lines (concrete, untraced PVC) are potentially in the ground disturbance area, identify means of identification in comments section.	☐ Yes	Locate Expiry Date:	Emergency #:
	☐ No	If No, do not proceed until corrected.	
	☐ N/A	Justification is required if N/A:	
Comments:			
Location of all other surface features indicative of subsurface utility infrastructure are identified (i.e. pipeline marker signs, ground depressions, asphalt/surface scaring, distressed vegetation, historical locate markings, etc.)	☐ Yes	Locate Expiry Date:	Emergency #:
	☐ No	If No, do not proceed until corrected.	
	☐ N/A	Justification is required if N/A:	
Comments:			

Completed by (print name):	**Company:**
Signature:	**Date:**

Attachment 4

Job Safety Analyses

Driving

Job Safety Analysis

Date(s) JSA Used:

Work Site: CVS Pharmacy Store #4878 (CVS Dothan)

JSA is valid for up to one week.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Leather work gloves while securing cargo.

Prior to making the trip ensure you have the following:

- hard hat
- reflective safety vest
- long pants and long sleeve shirt
- steel toed boots
- ANSI approved safety glasses w/ side shields

Vehicle Description

Driver(s) name:

Vehicle make/model/color:

Vehicle plate number:

Daily Vehicle Inspections

	Satisfactory							Unsatisfactory
	SA	SU	M	TU	W	TH	F	
Verify no evidence of damage/vandalism	☐	☐	☐	☐	☐	☐	☐	☐
Verify no evidence of leaking fluids	☐	☐	☐	☐	☐	☐	☐	☐
Verify proper operation of ALL light systems	☐	☐	☐	☐	☐	☐	☐	☐
Verify no dashboard warning lights are lit	☐	☐	☐	☐	☐	☐	☐	☐
Check operation of horn	☐	☐	☐	☐	☐	☐	☐	☐
Make sure seatbelts are in working condition	☐	☐	☐	☐	☐	☐	☐	☐
Secure cargo in vehicle and/or in bed of truck	☐	☐	☐	☐	☐	☐	☐	☐
Check fuel level (> 1/4 full)	☐	☐	☐	☐	☐	☐	☐	☐
Check following items are in vehicle:								
Roadside safety kit which includes FA/BBP kit, ABC fire extinguisher, flashlight, tire gauge, roadside warning triangles, etc.	☐	☐	☐	☐	☐	☐	☐	☐
JMP including vehicle collision kit (RMS 3)	☐	☐	☐	☐	☐	☐	☐	☐

Actions taken to resolve unsatifactory conditions: _____

Weekly Vehicle Inspections

	Satisfactory	Unsatisfactory
Check washer fluid levels & condition of wiper blades	☐	☐
Check all tires for wear & proper inflation	☐	☐
Check engine's fluid levels: oil, brake, coolant, transmission, and power steering.	☐	☐

Actions taken to resolve unsatifactory conditions: _____

Signature verification that all inspections have been completed: _____

Signature verification that a Vehicle Usage Log has been completed: _____

PERFORM HAZARD RECOGNITION AND CONTROL (HRAC)	PERFORM LAST-MINUTE RISK ASSESSMENT (LMRA)

Do not proceed until it is safe.

Stantec

1) Stop and think

2) Look around
- Is the work area safe?
- Will my work endanger others?
- Will other people pose risk?

3) Assess risk
- Do I clearly understand the task?
- Will lifting be required?
- Potential for slips, trips and falls?
- Are there driving or vehicle concerns?
- Have I considered all underground services?
- Moving or pressurized equipment?

4) Control risks
- What can I do to control hazards?
- Do I have the right tools?
- Is the SWP (safe work procedure) appropriate?
- Do I have the appropriate PPE?
- Are emergency plans in place?

5) Begin / resume work
- if unsure, talk to your supervisor

JOB STEP *activity/sequence of job tasks*	**HAZARDS** *list potential hazards*	**WHAT, HOW, WHERE, or WHEN** *explain the result from exposure to potential hazards*	**CRITICAL ACTIONS TO MITIGATE HAZARD** *list control measures to eliminate or protect against potential hazards*	**PERSON(S) RESPONSIBLE** (write in name(s))	**VERIFICATION** (sign prior to work)
1. PRE-TRIP -inspect vehicle	mechanical	Vehicle accident or personal injury due to malfunctioning equipment.	Complete the vehicle inspection form. Address any unsafe findings before starting trip.		
	motion	Vehicle accident or ergonomic strain due to improperly adjusted seat, mirrors, and steering wheel.	Adjust seat, all mirrors, and steering wheel for easy and comfortable use by driver.		
2. PRE-TRIP -load and secure cargo	motion gravity	Person loading cargo could sustain injury to fingers/hands from doors, tailgates, tool boxes, etc. Back strain could result from improper lifting and twisting.	Wear leather work gloves and follow manual handling guidelines when loading and securing any cargo. Use proper body mechanics while lifting. Keep hands and fingers out of pinch points.		
	motion	Cargo gets lost, damaged, or shifts during trip if not adequately secured in the vehicle. Cargo becomes a projectile in the event of a sudden change in motion of the vehicle, potentially injuring people or damaging equipment/vehicles.	Properly load and secure any cargo inside the vehicle, in the truck bed, and on the trailer. Install bed mats, cargo bars, cargo net, and floor mats in truck as necessary. Use tie downs as necessary to secure cargo in the vehicle, truck bed, or on the trailer.		
3. PRE-TRIP -review documents	mechanical	Driver and passenger(s) could need assistance on road side or could be in the hospital and nobody within Stantec is aware of it.	Communicate to others your destination and estimated arrival time and call them when you arrive.		

JOB STEP *activity/sequence of job tasks*	**HAZARDS** *list potential hazards*	**WHAT, HOW, WHERE, or WHEN** *explain the result from exposure to potential hazards*	**CRITICAL ACTIONS TO MITIGATE HAZARD** *list control measures to eliminate or protect against potential hazards*	**PERSON(S) RESPONSIBLE** (write in name(s))	**VERIFICATION** (sign prior to work)
	chemical	Potential for explosion if driver needs to jump field vehicle using jumper cables.	Use road side assistance as needed. If the use of jumber cables is necessary, connect positive terminal first and remove it last. Do not allow the negative and positive ends to touch if they are receiving electricity. No smoking. Wear safety glasses.		
	motion	Potential for vehicle accident if driver is distracted by looking at maps and/or directions while driving which can cause vehicle damage and/or personal injury and/or death to occupants or other parties.	Review JMP to familiarize yourself with the travel route. Get clarification on any questions before starting trip. If using GPS unit, attach GPS on windshield (not obstructing view) and have it set to your destination before traveling.		
	motion	Potential to run over objects that have moved into the path of the vehicle.	Perform GOAL - get out and look, a 360° view of the vehicle prior to moving forward.		
4. DURING TRIP -driving	motion	Potential for accident or collision causing vehicle damage and/or personal injury and/or death to occupants or other parties.	Always use Defensive Driving techniques including: maintain a safe following distance, avoid sudden acceleration or deceleration, check your mirrors and blind spots before lane changes and turns, yield the right-of-way, use brakes and turn signals early to signify your intentions, and maintain an "out" around your vehicle.		
	motion	Inclement weather, congested traffic, construction, driver fatigue can cause accident or collision resulting in vehicle damage and/or personal injury and/or death to occupants or other parties.	Recognize and defensively mitigate potential hazards including road conditions, weather, traffic, and personal factors (e.g. fatigue, distraction).		
	motion	Potential for vehicle damage and/or personal injury and/or death to occupants or other parties if the driver is distracted by using a cell phone or other electronic device.	NO CELL PHONE USE or any other electronic device while driving.		
	motion	There is a greater possibility of injury to vehicle occupants or they could be thrown from the vehicle in the event of a collision.	Wear seat belts at all times when vehicle is in motion.		

JOB STEP *activity/sequence of job tasks*	**HAZARDS** *list potential hazards*	**WHAT, HOW, WHERE, or WHEN** *explain the result from exposure to potential hazards*	**CRITICAL ACTIONS TO MITIGATE HAZARD** *list control measures to eliminate or protect against potential hazards*	**PERSON(S) RESPONSIBLE** (write in name(s))	**VERIFICATION** (sign prior to work)
5. DURING TRIP -backing up	motion	Vehicle or property damage from collision with obstacles when backing.	Make all backing maneuvers slowly and cautiously. When backing, check mirrors, turn and look over shoulder, and check blind spots. Use a spotter whenever possible. Use GOAL (Get Out And Look) if a spotter is not available. Use hand signals while spotting to communicate to driver.		
6. DURING TRIP -parking	motion	Vehicle contact with fixed objects or struck by other vehicles in motion when parking or while parked can cause vehicle damage or injury to personnel.	Unless in a designated parking space, park at least 3 feet away from fixed objects, other vehicles, and high traffic areas when possible. Use pull-through parking when possible. Back into parking location when pull-through is not possible.		
7. DURING TRIP -exiting vehicle	motion	Vehicle rolling away after exiting can strike personnel outside of the vehicle or cause vehicle/property damage.	Place transmission in park (or place in first gear or reverse for manual transmission). Set parking brake. Remove keys from ignition. If vehicle is on a decline/incline ensure wheels are turned. In remote areas it is a good practice to put the window down a few inches in case the keys are accidently locked inside. ****If a field vehicle must be left running, it must have the parking brake set and the rear wheels chocked.**		
	biological	Human behavior - Vehicle or equipment theft.	Lock all doors.		
8. POST-TRIP -documentation and reporting	mechanical	Vehicle malfunctions may worsen leading to accident, vehicle damage, injury, or death.	Report any vehicle problems immediately to company representative or rental car agency.		

JOB STEP *activity/sequence of job tasks*	HAZARDS *list potential hazards*	WHAT, HOW, WHERE, or WHEN *explain the result from exposure to potential hazards*	CRITICAL ACTIONS TO MITIGATE HAZARD *list control measures to eliminate or protect against potential hazards*	PERSON(S) RESPONSIBLE (write in name(s))	VERIFICATION (sign prior to work)

JSA REVIEW AND APPROVAL

Date	Review and Approved By	Summary of Modifications
2/25/2016	Julie Radloff	Updated Site Information

Post Job Review: Document changes and/or updates to JSA's that were needed due to hazards or changes in conditions. Be prepared to discuss in afternoon debriefing meeting.

JSA OWNER'S REVIEW AND APPROVAL

Signatures below indicate that the daily hazard assessment is complete and that persons responsible have reviewed and understand the hazards associated with the task.

JSA Owner's Signature	Date and Time

SITE SUPERVISOR'S REVIEW AND APPROVAL

Signatures below indicate that the daily hazard assessment is complete and that persons responsible have reviewed and understand the hazards associated with the task.

Site Supervisor's Signature	Date and Time

Monitoring Well Gauging and Sampling

Job Safety Analysis

Date(s) JSA Used:

Work Site: CVS Pharmacy Store #4878 (CVS Dothan)

PERSONAL PROTECTIVE EQUIPMENT (PPE)	OTHER EQUIPMENT NECESSARY FOR THE JOB
reflective safety vest steel toed boots long pants and long sleeve shirt hard hat full face respirator with combination organic vapor/P-100 cartridges ANSI approved safety glasses w/ side shields Appropriate gloves for the task: hi-vis leather/mechanic work gloves, Kevlar gloves, and hi-vis chemical nitrile gloves	Submersible pump/bailers, power cables/controller, power source, Photoionization detector (PID) water quality meter Decon wash bottles, paper towels, bucket w/lid, trash bag, drum label Socket set, screw driver, tubing, tubing cutters, string, scissors Cooler, ice, sampling sheets wheel chocks delineators, construction fencing and barricade tape Site Specific Health and Safety Plan First Aid Kit, Eyewash, Spill kit, 3-lb type ABC fire extinguisher

PERFORM HAZARD RECOGNITION AND CONTROL (HRAC)

PERFORM LAST-MINUTE RISK ASSESSMENT (LMRA)

Do not proceed until it is safe.

Stantec

1) Stop and think

2) Look around
- Is the work area safe?
- Will my work endanger others?
- Will other people pose risk?

3) Assess risk
- Do I clearly understand the task?
- Will lifting be required?
- Potential for slips, trips and falls?
- Are there driving or vehicle concerns?
- Have I considered all underground services?
- Moving or pressurized equipment?

4) Control risks
- What can I do to control hazards?
- Do I have the right tools?
- Is the SWP (safe work procedure) appropriate?
- Do I have the appropriate PPE?
- Are emergency plans in place?

5) Begin / resume work
- if unsure, talk to your supervisor

JOB STEP *activity/sequence of job tasks*	**HAZARDS** *list potential hazards*	**WHAT, HOW, WHERE, or WHEN** *explain the result from exposure to potential hazards*	**CRITICAL ACTIONS TO MITIGATE HAZARD** *list control measures to eliminate or protect against potential hazards*	**PERSON(S) RESPONSIBLE** (write in name(s))	**VERIFICATION** (sign prior to work)
1. Mobilize with proper equipment/supplies for activity	mechanical	Work could be delayed or the quality of work could suffer due to not having the appropriate equipment onsite.	Start project with Daily Tailgate Meeting. Ensure you have the appropriate equipment and PPE to conduct the task. Perform the necessary equipment maintenance checks and complete maintenance logs.		
	motion	Potential for accident or collision causing vehicle damage and/or personal injury and/or death to occupants or other parties will driving to fueling location.	Always use Defensive Driving techniques including: maintain a safe following distance, avoid sudden acceleration or deceleration, check your mirrors and blind spots before lane changes and turns, yield the right-of-way, use brakes and turn signals early to signify your intentions, and maintain an "out" around your vehicle. Make sure cell phone is turned off. Make sure no lightning/storm exists.		
	motion gravity	Person loading equipment could sustain injury to fingers/hands from doors, tailgates, tool boxes, etc. Back strain could result from improper lifting and twisting.	Wear leather work gloves and follow Stantec Manual Handling guidelines outlined in **Section 6.0** in the Site Specific Health and Safety plan when loading and securing any cargo. Use proper body mechanics while lifting; lift with legs, contract core, and keep load close to body. Utilize mechanical advantage to load equipment or tools, if possible, or use Buddy Lift as needed.		
	chemical	Splashing and spills can cause skin irritation if fuel comes in contact with project team member's skin. Spills outside of secondary containment are considered recordables.	Verify secondary containment is adequate and spill prevention kit is nearby. Make sure fire extinguisher and spill kit are available at fueling station. Nitriles need to be worn when refueling.		
	biological	Human behavior - not having a clear understanding of what other team members or other contractors on-site are doing could cause injury to personnel.	Be alert and aware of other tasks being performed on-site. Communicate your task if you move into another work area. Perform individual tasks from beginning to completion when possible.		

JOB STEP *activity/sequence of job tasks*	**HAZARDS** *list potential hazards*	**WHAT, HOW, WHERE, or WHEN** *explain the result from exposure to potential hazards*	**CRITICAL ACTIONS TO MITIGATE HAZARD** *list control measures to eliminate or protect against potential hazards*	**PERSON(S) RESPONSIBLE** (write in name(s))	**VERIFICATION** (sign prior to work)
2. Calibration of Groundwater Sampling Equipment	chemical	While calibrating equipment, employees could ingest or be splashed with buffer solution on skin or eyes which could cause injury to personnel.	Always wear nitrile gloves and safety glasses while calibrating YSI. Keep eyewash readily available. Store used calibration solution in labeled purge bucket and be sure to dispose of properly.		
3. Maneuver support truck and work vehicles into work zone	motion gravity	Possibility for motor vehicle collision or striking a stationary object while maneuvering vehicles and work trucks into position resulting in injury to personnel or damage to equipment or property	Coordinate with station manager (or designee) to identify traffic flow patterns and time periods of maximum traffic flow to minimize potential conflicts and reduce risk of vehicle collision. A spotter and appropriate hand signals and guidance will be used when maneuvering vehicles into position.		
	motion gravity	While maneuvering vehicles into position, the vehicles could encounter soft terrain resulting in a vehicle becoming stuck which could damage property or equipment.	Prior to mobilizing to the work location, verify the terrain can sustain the load. If necessary, recommend the use of wooden blocks under jacks to spread the load and park support or work vehicles on a solid surface and walk to work location.		
	chemical	Motor vehicles could fail and cause serious injury or death to personnel or a chemical release to the environment.	Inspect all vehicles and equipment (including: fire extinguisher, cabling, pressurized lines, etc.). Complete all necessary Equipment Inspection Checklists. Equipment should be switched out or substituted if it is found in poor or nonworking condition. Keep a spill kit and motor vehicle safety kit in vehicle.		
4. Open/close well box or stick-up vault.	chemical	Potential for workers to be exposed to impacted fluids or organic vapors when opening well box or vault.	Level D PPE and hi-vis nitrile gloves will be worn by all personal to reduce risk of dermal contact. At a minimum, personnel will wash any exposed skin before leaving a site using soap and water or pre-moistened cleansing towels and disposable PPE will be removed and containerized. Stand upwind to avoid inhalation hazards whenever possible and allow vapors from monitoring wells to vent to atmosphere.		

JOB STEP *activity/sequence of job tasks*	**HAZARDS** *list potential hazards*	**WHAT, HOW, WHERE, or WHEN** *explain the result from exposure to potential hazards*	**CRITICAL ACTIONS TO MITIGATE HAZARD** *list control measures to eliminate or protect against potential hazards*	**PERSON(S) RESPONSIBLE** (write in name(s))	**VERIFICATION** (sign prior to work)
	motion	Workers could sustain repetitive motion, muscle strain or lifting injuries while opening well box or stick-up vault.	Use proper body position and lifting techniques while opening well box or stick-up vault; avoid twisting and performing awkward lifts, contract core, lift with legs, and keep load close to body. Use proper tools to open the well boxes that are difficult to open; such as a breaker-bar to increase leverage or a ratchet extension.		
	motion	While opening a well box or stick-up vault, the well box or stick-up lid could fall or be dropped and result in hand injury to personnel. If opening a flush mount vault, an employees hand could scrape the ground surface and result in lacerations to the hands.	Use socket extensions to elevate hands away from the ground surface when opening flush mount well vaults. Workers will wear leather or mechanics work gloves when opening flush mount vaults or stick-up vault to protect hands. When opening stick-up vaults, ensure the lid is completely opened and the hinge fully extended to remove the potential stored energy and prevent the lid falling and causing a crushing injury to hands.		
	biological	Potential for employee to encounter stinging insects or poisonous spiders in well vault which could result in injury to personnel or an adverse allergic reaction.	Use bug spray as needed. Avoid placing hands or body parts in areas that are not well lit or visible. Discuss and identify personnel with known allergies in Tailgate Meetings. Use a screwdriver or equivalent tool to remove webs in well box.		
5. Gauge water levels and product thickness (where applicable) in wells.	motion	Workers could sustain repetitive motion, muscle strain or lifting injuries while gauging monitoring wells.	Use proper body positioning, ergonomic posture and lifting techniques; contract core, lift with legs, and keep load close to body. Alternate motions and take breaks as necessary.		
	chemical	Potential for workers to be exposed to impacted fluids or organic vapors when opening well or handling water level meter.	Level D PPE and hi-vis nitrile gloves will be worn by all personal to reduce risk of dermal contact. At a minimum, personnel will wash any exposed skin before leaving a site using soap and water or pre-moistened cleansing towels and disposable PPE will be removed and containerized. Stand upwind to avoid inhalation hazards whenever possible and allow vapors from monitoring wells to vent to atmosphere.		

JOB STEP *activity/sequence of job tasks*	**HAZARDS** *list potential hazards*	**WHAT, HOW, WHERE, or WHEN** *explain the result from exposure to potential hazards*	**CRITICAL ACTIONS TO MITIGATE HAZARD** *list control measures to eliminate or protect against potential hazards*	**PERSON(S) RESPONSIBLE** (write in name(s))	**VERIFICATION** (sign prior to work)
	chemical	Improper decontamination procedures of water level meter could result in cross-contamination from previous monitoring well.	Use Alconox and a distilled water rinse to decon water level meter in between each monitoring well.		
6. Purge well(s) and collect purge water in labeled containers. Purging of the wells can be done by using one of two methods, by hand bail or battery operated pump. Refer to SOP. Collected water will be transferred to a 55-gal drum. Decon buckets should be labeled.	chemical	Water impacted with contaminants present a dermal exposure and ingestion hazard which could have potential adverse health impacts. Purging of monitoring wells could result in volatilization of contaminants which present an inhalation hazard and could have potential adverse health impacts. Overfilling of purge containers could result in a release of chemically impacted fluids to the environment.	Level D PPE and hi-vis nitrile gloves will be worn by all personal to reduce risk of dermal contact. At a minimum, personnel will wash any exposed skin before leaving a site using soap and water or pre-moistened cleansing towels and disposable PPE will be removed and containerized. Stand upwind to avoid inhalation hazards whenever possible.		
	chemical	Improper decontamination procedures of sampling equipment could result in cross-contamination from previous borehole.	Workers will decontaminate all down-hole sampling equipment between each well using an Alconox and a distilled water rinse. Previously used tubing will be discarded and new tubing will be used at each well.		
	motion gravity	Improper handling of equipment of a slip, trip or fall could damage equipment, delay of work, and cause injuries to employees	Protect the pump control box by keeping it in the vehicle or inside a waterproof container or bag. Traverse the same path when walking back and forth between the monitoring well location and vehicle. Clear or remove slip, trip, and fall hazards, if possible, and make multiple trips to avoid overloading.		
	motion	Workers could sustain repetitive motion, muscle strain or lifting injuries while containerizing or moving buckets of purge water.	Keep work area clear of tripping or slipping hazards. To minimize heavy lifting, do not overfill buckets. Follow guidance in Stantec Manual Lifting Standard in **Section 6.0** of the Site Specific Health and Safety Plan. Use good ergonomic posture and proper lifting techniques; lift with legs, contract core, keep load close to body, and keep back straight. Alternate motions and use Buddy Lift as needed.		

JOB STEP *activity/sequence of job tasks*	**HAZARDS** *list potential hazards*	**WHAT, HOW, WHERE, or WHEN** *explain the result from exposure to potential hazards*	**CRITICAL ACTIONS TO MITIGATE HAZARD** *list control measures to eliminate or protect against potential hazards*	**PERSON(S) RESPONSIBLE** (write in name(s))	**VERIFICATION** (sign prior to work)
	mechanical	If using the vehicle battery as a power source, employees clothing could become tangles in the rotating belt or equipment and result in serious injury to personnel.	If possible use an external source of power to avoid connecting to a power supply under the hood. If the vehicle battery must be used, no hooded, loose fitting clothing or drawstrings can be worn. The vehicle should be turned off while connecting to the battery. If the vehicle must be used to power the pump and remaining running, the wheels must be chocked, the parking brake engaged, and if on a hill, the wheels should be turned towards the inside of the hill.		
7. Collect samples in accordance with sampling plan	chemical	Potential for public exposure to chemical hazards due to improper storage or disposal of soils or water which could result in potential adverse health impacts.	Have proper storage containment (removable top drums or other) and labeling available on site.		
	chemical	Improper decontamination procedures of sampling equipment could result in cross-contamination from previous monitoring well.	Use Alconox and a distilled water rinse to decon water level meter in between each monitoring well.		
	chemical	Improper labeling or storage of water samples could result in a release of chemicals to the environment or exposure to the public resulting in adverse health impacts.	Keep samples sealed in proper containers, at correct temperature and away from work area. Use bubble wrap or other insulating material to cushion glass sample containers. Don hi-vis nitrile gloves when handling cuttings, cores, or potentially contaminated equipment.		
	chemical	Potential for employees to overflow sample containers resulting in a chemical release to the environment or dermal exposure.	Fill sample containers slowly and over a bucket to eliminate potential spills. Level D PPE and hi-vis nitrile gloves will be worn by all personal to reduce risk of dermal contact. At a minimum, personnel will wash any exposed skin before leaving a site using soap and water or pre-moistened cleansing towels and disposable PPE will be removed and containerized		
	motion	When placing water into glass sample containers, containers could break and cause lacerations to hands.	When collecting samples in glass containers, don Kevlar gloves under high-vis nitrile gloves.		
	biological	Human Behavior- Potential for the need to resample if samples are void of labels or incorrectly labeled leading to more work and increased cost.	Do not over pack cooler. Use bubble wrap or other insulating material for cushioning sample containers in the cooler. Keep samples stored in proper containers, at correct temperature, and away from work area.		

JOB STEP *activity/sequence of job tasks*	**HAZARDS** *list potential hazards*	**WHAT, HOW, WHERE, or WHEN** *explain the result from exposure to potential hazards*	**CRITICAL ACTIONS TO MITIGATE HAZARD** *list control measures to eliminate or protect against potential hazards*	**PERSON(S) RESPONSIBLE** (write in name(s))	**VERIFICATION** (sign prior to work)
8. Store purge water and decontamination water onsite.	chemical	Water impacted with contaminants present a dermal exposure, inhalation and ingestion hazard which could have potential adverse health impacts.	Level D PPE and hi-vis nitrile gloves will be worn by all personal to reduce risk of dermal contact. At a minimum, personnel will wash any exposed skin before leaving a site using soap and water or pre-moistened cleansing towels and disposable PPE will be removed and containerized. Stand upwind to avoid inhalation hazards whenever possible.		
	chemical	Improper labeling or disposal of potentially impacted water could result in a release to the environment or exposure to the public resulting in adverse health impacts.	Ensure all waste containers are closed and labeled before moving them.		
	motion	Improper storage of materials could present an obstruction to traffic and result in a collision and a release of contaminants to the environment, property damage, or injury to personnel.	Label storage containers properly and locate sealed containers in an isolated area away from traffic and other site functions. Consult with site manager for an appropriate location.		
	motion	Workers could sustain repetitive motion, muscle strain or lifting injuries while transferring purge water into drums.	Use proper body positioning, ergonomic posture and lifting techniques; contract core, lift with legs, and keep load close to body. Alternate motions and take breaks as necessary.		

JOB STEP *activity/sequence of job tasks*	**HAZARDS** *list potential hazards*	**WHAT, HOW, WHERE, or WHEN** *explain the result from exposure to potential hazards*	**CRITICAL ACTIONS TO MITIGATE HAZARD** *list control measures to eliminate or protect against potential hazards*	**PERSON(S) RESPONSIBLE** (write in name(s))	**VERIFICATION** (sign prior to work)
	motion gravity	Potential for workers to slip, trip, or fall while maneuvering transferring purge water from tank or buckets to drums resulting in injury to personnel or a chemical release to the environment.	Traverse the same path when walking back and forth between the work location and vehicle. Clear or remove slip, trip, and fall hazards if possible. If hazards cannot be removed, use engineering controls such as Rock Salt to melt ice and increase traction. Take multiple trips to not overload. Ensure buckets are completely sealed when being moved and, if possible, position vehicle as close to transfer location as possible to minimize distance traveled. Take photos and notes while standing still, do not write notes while walking.		
	motion	While moving vehicles, a stationary object could be struck resulting in damage to property and injury to personnel.	Prior to moving, do a 360° walk around the vehicle to ensure no stationary objects are in the line of fire. Ensure a spotter is used to help move the vehicles into position.		
9. Clean site and demobilize.	biological	Human Behavior - Potential safety hazard, such as debris, tools or equipment, could be left on Site and cause an injury to a pedestrian, damage to property, or a chemical release to the environment.	Prior to demobilization, perform a site walk and verify the site is left clean of all refuse and debris. Verify monitoring well locations are capped and lids bolted and sealed. Notify site personnel and Stantec Project Manager of departure and any decon/waste water left on site.		
	motion	Person loading equipment could sustain injury to fingers/hands from doors, tailgates, tool boxes, etc. Back strain could result from improper lifting and twisting.	Wear leather work gloves and follow Stantec Manual Handling guidelines outlined in **Section 6.0** in the Site Specific Health and Safety plan when loading and securing any cargo. Use proper body mechanics while lifting; lift with legs, contract core, and keep load close to body. Utilize mechanical advantage to load equipment or tools, if possible, or use Buddy Lift as needed.		

JOB STEP *activity/sequence of job tasks*	**HAZARDS** *list potential hazards*	**WHAT, HOW, WHERE, or WHEN** *explain the result from exposure to potential hazards*	**CRITICAL ACTIONS TO MITIGATE HAZARD** *list control measures to eliminate or protect against potential hazards*	**PERSON(S) RESPONSIBLE** (write in name(s))	**VERIFICATION** (sign prior to work)

JSA REVIEW AND APPROVAL

Date	**Review and Approved By**	**Summary of Modifications**

Post Job Review: Document changes and/or updates to JSA's that were needed due to hazards or changes in conditions. Be prepared to discuss in afternoon debriefing meeting.

JSA OWNER'S REVIEW AND APPROVAL

Signatures below indicate that the daily hazard assessment is complete and that persons responsible have reviewed and understand the hazards associated with the task.

JSA Owner's Signature	**Date and Time**

SITE SUPERVISOR'S REVIEW AND APPROVAL

Signatures below indicate that the daily hazard assessment is complete and that persons responsible have reviewed and understand the hazards associated with the task.

Site Supervisor's Signature	**Date and Time**

Date(s) JSA Used:

Work Site: CVS Pharmacy Store #4878 (CVS Dothan)

PERSONAL PROTECTIVE EQUIPMENT (PPE)	OTHER EQUIPMENT NECESSARY FOR THE JOB
reflective safety vest steel toed boots long pants and long sleeve shirt hard hat full face respirator with combination organic vapor/P-100 cartridges ANSI approved safety glasses w/ side shields Appropriate gloves for the task: hi-vis leather/mechanic work gloves, Kevlar gloves, and hi-vis chemical nitrile gloves	Motor vehicle safety kit (first aid kit, fire extinguisher, etc.) spill kit ; eye wash ; clean water 1,000-gallon poly tank Submersible pump with valved distribution manifold line with an in-line flowmeter Epsom Salt 1-inch hose with camlock misc. hand/power tools (e.g. drill, screwdriver, etc.)

PERFORM HAZARD RECOGNITION AND CONTROL (HRAC)

PERFORM LAST-MINUTE RISK ASSESSMENT (LMRA)

Do not proceed until it is safe.

Stantec

1) Stop and think

2) Look around
- Is the work area safe?
- Will my work endanger others?
- Will other people pose risk?

3) Assess risk
- Do I clearly understand the task?
- Will lifting be required?
- Potential for slips, trips and falls?
- Are there driving or vehicle concerns?
- Have I considered all underground services?
- Moving or pressurized equipment?

4) Control risks
- What can I do to control hazards?
- Do I have the right tools?
- Is the SWP (safe work procedure) appropriate?
- Do I have the appropriate PPE?
- Are emergency plans in place?

5) Begin / resume work
- if unsure, talk to your supervisor

JOB STEP *activity/sequence of job tasks*	**HAZARDS** *list potential hazards*	**WHAT, HOW, WHERE, or WHEN** *explain the result from exposure to potential hazards*	**CRITICAL ACTIONS TO MITIGATE HAZARD** *list control measures to eliminate or protect against potential hazards*	**PERSON(S) RESPONSIBLE** (write in name(s))	**Verify** (Initial Here)
1. Mobilize with proper equipment/supplies for activity	mechanical	Work could be delayed or the quality of work could suffer due to not having the appropriate equipment onsite.	Start project with Daily Tailgate Meeting. Ensure you have the appropriate equipment and PPE to conduct the task.		
	motion	Potential for accident or collision causing vehicle damage and/or personal injury and/or death to occupants or other parties will driving to fueling location.	Always use Defensive Driving techniques including: maintain a safe following distance, avoid sudden acceleration or deceleration, check your mirrors and blind spots before lane changes and turns, yield the right-of-way, use brakes and turn signals early to signify your intentions, and maintain an "out" around your vehicle. Make sure cell phone is turned off. Make sure no lightning/storm exists.		
	motion gravity	Person loading equipment could sustain injury to fingers/hands from doors, tailgates, tool boxes, etc. Back strain could result from improper lifting and twisting.	Wear leather work gloves and follow Stantec Manual Handling guidelines outlined in **Section 6.0** in the Site Specific Health and Safety plan when loading and securing any cargo. Use proper body mechanics while lifting; lift with legs, contract core, and keep load close to body. Utilize mechanical advantage to load equipment or tools, if possible, or use Buddy Lift as needed.		
2. Hold pre-work safety meeting and assess general site conditions (temperature, traffic, visibility, etc.). Inspect work area for unanticipated hazards (sloped terrain, etc.)	temperature	Weather hazards, dehydration, and hot temperatures can result in heat stress if unaddressed.	Check weather reports daily. Stay hydrated and take breaks in the shade when needed. Use buddy system to watch for signs of heat stress.		
		What, how, where, and when questions must be asked and answered for each potential hazard identified in the LMRA.	Assess the potential hazards. Analyze how to reduce the risk. Update and dirty this JSA. Use Stop Work if necessary to mitigate risk. Call supervisor (Erin O'Malley) with any questions.		
	motion	Potential to strike or be struck by vehicles when working and/or moving around onsite which can result in damage to property and or minor to severe injury to workers.	Review JMP for ingress/egress and update as needed. Discuss the scope of work. Ensure all personnel know their role and have the proper equipment and supplies to work safely. Analyze how to reduce the risks. Coordinate with station manager (or designee) to minimize potential conflicts.		
3. Set up traffic control exclusion zone(s), and workstations.	motion	Potential to be struck by vehicles and/or onsite traffic causing damage to property and/or workers.	Traffic control and exclusion zone may include a combination of delineators, barrier tape, construction fence, parked vehicles, etc. Set up work stations with clear walking paths between. Don PPE, including Hi-Viz work gloves when loading or unloading materials.		

JOB STEP *activity/sequence of job tasks*	**HAZARDS** *list potential hazards*	**WHAT, HOW, WHERE, or WHEN** *explain the result from exposure to potential hazards*	**CRITICAL ACTIONS TO MITIGATE HAZARD** *list control measures to eliminate or protect against potential hazards*	**PERSON(S) RESPONSIBLE** (write in name(s))	**Verify** (Initial Here)
4. Access injection well	motion/biological	injury to body from bending over to access well; potential to damage hands when removing bolts; pinch points when lifting well lid; potential to be stung by spider/insect inside well box. Struck by vehicle.	kneel down to access well, do not bend. Use drill or appropriate hand tool (wrench, etc.) to open well and crow bar or magnet to remove well lid. Use team lifts if well lid is oversized. Inspect well box of insects before working inside. Second person should spot for vehicle traffic.		
5. Oversee Wellhead Modification	motion	Scrapes, cuts, pinch points from well head modifications can result in minor damage to worker.	Use PPE including medium grade gloves. Also use the right tool for the job.		
6. Prepare Magnesium sulfate heptahydrate solution	mechanical	Pinch point from lift gate.	Communicate with partner and visually inspect that lift gate is clear of obstructions, hands, feet, etc. before operating lift gate.		
	motion	injury while filling poly tank with epsom salt; muscle strain, tears, pulls from lifting bags of chemicals	Use proper lifting techniques; do not lift with lower back. No fast, jerky movements.		
	motion/gravity/ mechanical	Potential to fall out of the truck when pouring chemicals into tank. Potential to drop chemicals when pouring into tank.	Use the lift gate to get in and out of truck. An appropriate step stool may be used to get in and out of truck.		
7. Perform personal decontamination procedures.	chemical	PPE impacted with contaminants present a dermal exposure hazard which could have potential adverse health impacts. PPE potentially impacted with contaminants that is not properly disposed of could result in a release of contaminants to the environment.	Wash hands, face, arms, neck, and any exposed skin with clean water. Containerize PPE in heavy black trash bags.		
8. Clean site and demobilize.	motion/gravity/ mechanical	Potential safety hazard, such as debris, tools or equipment, could be left on Site and cause an injury to a pedestrian, damage to property, or a chemical release to the environment.	Prior to demobilization, perform a site walk and verify the site is left clean of all refuse and debris. Notify site personnel and Stantec Project Manager of departure, and any decon/waste water left on site.		
		Fall into or trip on open well vault.	Ensure that the well vault is closed and secure .		
		Person loading equipment could sustain injury to fingers/hands from doors, tailgates, tool boxes, etc. Back strain could result from improper lifting and twisting.	Wear leather work gloves when loading and securing any cargo. Use proper body mechanics while lifting; lift with legs, contract core, and keep load close to body. Utilize mechanical advantage to load equipment or tools, if possible, or use Buddy Lift as needed.		

JOB STEP *activity/sequence of job tasks*	**HAZARDS** *list potential hazards*	**WHAT, HOW, WHERE, or WHEN** *explain the result from exposure to potential hazards*	**CRITICAL ACTIONS TO MITIGATE HAZARD** *list control measures to eliminate or protect against potential hazards*	**PERSON(S) RESPONSIBLE** (write in name(s))	**Verify** (Initial Here)

JSA REVIEW AND APPROVAL		
Date	**Review and Approved By**	**Summary of Modifications**

Post Job Review: Document changes and/or updates to JSA's that were needed due to hazards or changes in conditions. Be prepared to discuss in afternoon debriefing meeting.

JSA OWNER'S REVIEW AND APPROVAL *Signatures below indicate that the daily hazard assessment is complete and that persons responsible have reviewed and understand the hazards associated with the task.*	
JSA Owner's Signature	**Date and Time**

SITE SUPERVISOR'S REVIEW AND APPROVAL *Signatures below indicate that the daily hazard assessment is complete and that persons responsible have reviewed and understand the hazards associated with the task.*	
Site Supervisor's Signature	**Date and Time**

Attachment 5

Personal Protective Equipment Assessment

Personal Protective Equipment (PPE) Assessment			
Site/Portfolio that this assessment applies to: Former Circle (Medical Center) CP			
Date: 3/11/19	Assessment Completed By: Rachel Norman		
Specific tasks evaluated in this assessment: Groundwater sampling, sulfate injection			
Are any of the following hazards present during the project/task?	**No**	**Yes**	If engineering and administrative controls do not eliminate the hazard, this PPE is needed.*
Overhead Hazards			
Suspended loads that may fall	X		Hard hat that complies with ANSI Z89.1[1], Class A, B
Overhead beams or load that could strike head	X		Hard hat that complies with ANSI Z89.1[1], Class A, B
Energized wires or equipment that could strike head	X		Hard hat that complies with ANSI Z89.1[1], Class B
Work being performed above where tools, debris, equipment could be dropped onto workers below	X		Hard hat that complies with ANSI Z89.1[1], Class A, B
Sharp objects or corners at head level		X	Hard hat that complies with ANSI Z89.1[1], Class A, B, or C
Eye Hazards			
Chemical splashes or irritating mists	X		Chemical protective goggles that comply with ANSI Z87.1[1] Non-vented goggles must be used where gases or vapors are the primary concern.
Excessive dust	X		Safety glasses or impact goggles that comply with ANSI Z87.1[1]
Using compressed air, connecting compressed gas cylinders, bleeding air from lines.	X		Flexible goggles that comply with ANSI Z87.1[1]
Welding/cutting/brazing operations	X		Welding goggles and welding helmet or face shield. Tinted lenses required. PPE must comply with that comply with ANSI Z87.1[1] Enter the type of eye protection required at this site here:
Laser/optical radiation	X		Laser safety glasses that comply with ANSI Z136.1[1] required. A Laser Safety Officer (LSO) to determine the type. The type of laser safety glasses required at this site to be entered here:
Drilling, sawing, cutting, chipping, grinding demolition work, wire brushing and other activities where flying particles present a hazard.	X		Minimum requirement – safety glasses with side shields. Goggles may be required dependent upon hazard. PPE must comply with ANSI Z87.1[1]. The type of eye protection required at this site to be entered here:

Face Hazards			
Chemical splashes or irritating mists		X	Chemical protective goggles. Goggles must comply with ANSI Z87.1[1]. Add face shield if chemical is irritating to the skin or is corrosive. If a face shield is required at this site, enter this requirement here:
Drilling, sawing, cutting, chipping, grinding demolition work, wire brushing and other activities where flying particles present a hazard.	X		Consider use of a face shield in addition to safety glasses or goggles. If a face shield is required at this site, enter this requirement here:
Hand Hazards – Always Use High-Visibility Gloves			
Chemical exposure		X	Use chemical resistant gloves as recommended by SDS; Site Health and Safety Officer to help the One Team identify proper hand protection
Handling glass vials or sample containers		X	Cut-resistant gloves or liners
Sharp edges, splinters, etc.		X	Leather/work gloves
Temperature extremes - heat	X		Leather gloves, Kevlar gloves, welder's gloves
Temperature extremes - cold	X		Leather gloves, insulated gloves
Blood	X		Nitrile gloves
Exposure to electrical current	X		Gloves that meet ASTM D120 (or equivalent in non-US jurisdictions) specifications.
Sharp tools, machine parts, etc.		X	Leather gloves, Kevlar gloves
Material handling		X	Leather gloves
Foot Hazards			
Handling heavy materials, construction, demolition, drilling		X	Safety shoes or boots that conform to ASTM F2413-05[2] (Standard Specification for Performance Requirements for Foot Protection) or equivalent in non-U.S. jurisdictions.
Potential to crush whole foot		X	Safety shoes or boots with metatarsal guards that conform to ASTM F2413-05[2] or equivalent in non-US jurisdictions.
Sharp edges or points – puncture risk		X	Safety shoes or boots with puncture resistant soles. Shoes must conform to ASTM F2413-05[2] or equivalent in non-US jurisdictions.
Exposure to electrical wires	X		Safety shoes or boots with electrical protection
Slippery conditions	X		Rubber-sole boots or grips
Chemical contamination	X		Rubber or nitrile boots or boot covers

Fall Hazards			
Fall hazards present. Working at a height of 6' or more above a lower surface or working above dangerous equipment	X		Personal Fall Arrest System designed or approved by a qualified person
Water Hazards			
Working on or above water where drowning hazards exist	x		U.S. Coast Guard approved personal flotation device - Type I, II, or III PFD
Heat, Flame, or Flash Fire or Arc Hazards			
Working in extreme heat	X		Consider use of a cooling vest
Welding activities, hot work	X		Welding leather clothing or Fire-Resistant Clothing (FRC)
Performing hot work (e.g., cutting, welding, brazing or grinding) on pipe and vessels (e.g., tanks, KO drums, separators) that contain or previously contained hydrocarbon fuels	X		FRC
Fueling/refueling equipment where engineering controls do not adequately prevent the risk of flash fires	X		FRC
Working at active pipeline sites	X		FRC; ensure compliance with FRC requirements
Working in a refinery	X		Adhere to the refinery's FRC requirements
FRC Hazard Analysis for Upstream Business Unit teams -- in determining the need for FRC, research the history of the well where work will be performed and consider the type of well (e.g., gas, oil, low pressure, high pressure) and the type of work operations or activities to be conducted:			
Working in an opco-operated oil field	X		Adhere to the opco's FRC requirements.
Hot work or use of an open flame in an oil field or in an area where flammable materials may be released or accumulate	X		FRC
Initial rig up and normal drilling or workover operations prior to reaching active hydrocarbon zones	X		FRC is not typically required unless other activities are being conducted in close proximity (e.g., fracing a previously drilled well while rigging a well in close proximity); workers must don FRC prior to reaching the hydrocarbon zone. "Gas or hydrocarbon zones" are areas/zones where prior history or current well conditions indicate that fluids or gas have been encountered (i.e., the drilling operation experiences a well kick or any other sign that the well will flow).
Drilling or workover activity in active gas or hydrocarbon zones	X		FRC until the final casing is cemented and the well is effectively closed
Drilling or workover activity being conduct in an area where there is a history or fluid or gas kicks from underground producing zones	X		FRC until the final casing is cemented and the well is effectively closed
Pulling wet string tubing	X		FRC

Snubbing tubing	X		FRC
Swabbing operations	X		FRC
Fracturing and perforating the well	X		FRC
Using bridge plugs or packers	X		FRC
Openhole work	X		FRC
Flow testing, blowing down, or venting the well	X		FRC
Plugging an abandoned well	X		FRC
Flowback operations	X		FRC
Cementing	X		FRC
Stimulation	X		FRC
Wireline operations	X		FRC
Operation working with wellhead or wellbore under pressure	X		FRC
Equipment openings (e.g., line breaking or valve changes)	X		FRC
Well gauging	X		FRC
Transfer of hydrocarbons	X		FRC
Maintenance operations on production equipment	X		FRC
Tank heating	X		FRC
Startup operations	X		FRC
Work in/near locations where flammable materials may be released or accumulate (e.g., the well bore, shale-shaker, cellar, near an offloading operation from a water/condensate tank to a vacuum truck, a small well-pad in a congested area, other areas where released flammable materials may not readily dissipate)	X		FRC
Body and Leg Protection			
Chemical exposure	X		Use chemical resistant clothing as recommended by SDS
Using a chain saw, cutting brush	X		Chain-saw chaps
Risk of being bitten by a venomous snake	X		Snake chaps
While working with rotating machinery: clothing that is hooded or drawstrings, or is frayed, torn or excessively baggy shall not be worn	X		Wear proper fitting (i.e. not loose or baggy) clothing. Wear a hiz-viz ANSI rated long sleeve shirt or a long sleeve shirt with a hi-viz break-away vest

Respiratory Hazards			
Respiratory/inhalation hazards present	X		Qualified individual to determine respiratory protection requirements – use of respiratory protection requires a Respiratory Protection Program be instituted and requires medical surveillance. Specify respiratory protection PPE requirements to be used at this site here:
Excessive Noise			
Hearing hazards present		X	Qualified individual to determine hearing protection PPE requirements. Specify hearing protection PPE requirements to be used at this site here:

I certify the above hazard analysis/PPE selection was performed to the best of my knowledge, based on the hazards present on ___3/20/19_____ (date).

___ _____ Signature

*Whether the listed PPE is needed is dependent upon the presence and severity of the hazard – a qualified individual should determine whether this is the correct PPE and whether additional PPE is needed to reduce risk of exposure.

[1]In jurisdictions outside of the United States, PPE must conform to the local regulatory requirements – ANSI may not be a recognized standard in non-U.S. jurisdictions.

[2]Although the ANSI Z41-99 standard has been withdrawn, the protection provided by footwear meeting this standard is comparable to the newer ASTM F2413-05. For this reason it is not necessary to replace footwear approved under ANSI Z41-99 if it is otherwise still serviceable.

Attachment 6

Permit to Work & Daily Tailgate Meeting

TAILGATE SAFETY MEETING

Project Name/Number: **Date:** / / **Time:**

Daily Safety Meeting Topics

Morning Meeting:

Afternoon Meeting:

List Job Safety Analysis Being Used Today

☐	_____	☐	_____
☐	_____	☐	_____
☐	_____	☐	_____
☐	_____	☐	_____
☐	_____	☐	_____
☐	_____	☐	_____

Document hazards discussed, changes in conditions or scope.

_____

_____

_____

_____

_____

☐ Perform LMRA
☐ Hand Safety and Pinch Points Discussed
☐ Equipment/Vehicle Inspection
☐ No Fixed Open Blade Knives allowed onsite
☐ Report damaged equipment/tools/gloves to SHSO

PPE:
☐ Level 'D'
☐ FRC
☐ Hi Visibility Vest
☐ Hearing Protection
☐ Other

GLOVES:
☐ Inspect gloves prior to starting task.
☐ Abrasion Resistant Gloves
☐ Cut/Puncture Resistant Gloves
☐ Chemical Resistant Gloves
☐ Specialty Gloves (Welding/extreme cold)

Inspect Tools prior to starting task:
☐ Hand tools in good condition
☐ Power tools in good condition
☐ Air monitors in good condition

List Tools to be Used:	Inspected By:
_____	_____
_____	_____
_____	_____
_____	_____

Debriefing: At end of shift to discuss hazards/changes and anticipated changes in conditions for the following day.

_____

_____

_____

_____

Stantec

TAILGATE SAFETY MEETING

Name	Signature	Company	Initial Below Afternoon Tailgate	Debrief

Permit To Work

PTW form & JSAs can be used for only one week (for continual tasks)

REMEMBER TO
1. Stop and Think
2. Look Around
3. Assess Risk
4. Control Risks
5. Begin/Resume Work

DO NOT PROCEED UNTIL IT IS SAFE TO DO SO!

Client:	Date:	Weather:	
Site Name:	Time:	Work Boundaries:	
Project #:	Job/Task:	Restrictions:	

SAFETY MEETING TOPICS

Document Safety/OE Meetings on Daily Tailgate Meeting Form

POTENTIAL HAZARDS & SAFETY MEETING TOPICS

1		Walking/Working Surfaces	13		Housekeeping	25		Fitness to Work (Training)	37		PPE Inadequate / Not Wearing
2		Slips, Trips, Falls	14		Motor Vehicle Damage	26		Temperature (Cold / Hot)	38		Open Pits
3		Electrical	15		Atmospheric	27		Chemical / Inhalation	39		Damaged Equipment
4		Vehicle Safety - Driving	16		Traffic	28		Lighting	40		Grinding
5		Biological (Plants/Animals/Bugs)	17		Roads / Congested Areas	29		Weather	41		Rigging
6		Container/Drum Labels	18		Waste	30		Heat/Cold Stress	42		Overhead Work
7		Hand & Power Tools	19		Lifting	31		Wind	43		Confined Space
8		Underground Utility	20		Repetitive Motion	32		Slopes & Terrain	44		Working at Heights
9		Ground Disturbance	21		Body Position	33		Security	45		Heavy equipment
10		Rotating Equipment	22		Static Posture	34		Spills	46		Boom Swing
11		Auger/Drill Stem	23		Vibration	35		Sharp Edges	47		Hot Work
12		Overhead Electrical	24		Noise	36		Pinch Points	48		Other:

DAILY SCOPE & CONDITIONS/ADDITIONAL JOB HAZARD ASSESSMENT

WORK ACTIVITIES	ADDITIONAL HAZARDS DISCUSSED	RISK CONTROL

HIGH HAZARD ACTIVITIES (requires CEMC PM Acceptance on PTW)		HIGH HAZARD PERMIT & REQUIRED PROCESSES	
	Hot Work – Any procedure that produces a spark or excessive heat.	**Hot Work Permit**	**Hot Work Process at CEMC Sites**
	Isolation of Hazardous Energy	**Lock, Tag, Try Permit**	**LTT Standards at CEMC Sites**
	Confined Space Entry	**Confined Space Entry**	**CSE Standards at CEMC Sites**
	Excavation/Trenching	**Excavation Permit if:**	**Excavation Standards at CEMC Sites**
	Deeper than 4 feet	Excavating using power tools.	
	Less than 5 ft & workers in the excavation/trench; or potential for haz. atmosphere	Excavating 5 feet (1.52 m) or deeper.	
	Within 5 ft of buried pressurized line (i.e., gas, steam, water)	When specialized work permits (e.g., Isolation of Hazardous Energy, Confined Space Entry) are required to manage the excavation risks.	
	Within 5 feet of a buried active product or electrical line		
	Drilling Activities within 5 feet of active product or electrical line, 5 feet of pressurized line, or drilling within 7 feet of UST pad.	No high hazard permit; however, other high hazard permits could apply. Stantec identifies this as a high risk task. Completion of CEMC Ground Disturbance & Stantec's Pre-Ground Disturbance & Ground Disturbance Forms are required.	
	Lifting/Rigging	**Crane Use/Rigging Permit**	**Lifting & Rigging Practice**
	Working At Heights - Any work performed 6 feet or more above a surface.	**Elevated Safe Work**	**Work at Heights Standard for CEMC Sites**
	Demolition Activities	No high hazard permit; however, other high hazard permits could apply.	
	Work involving Equipment (i.e. mast truck, backhoe, excavator) within 15 feet of an overhead electrical line or pole.	**Excavation Permit** Other high hazard permits could apply.	**Excavation Standards for CEMC Sites**
	Not Applicable (No High Hazard Work is being performed)		

Additional comments regarding High Hazard Work Activity or SIMOPS:

Have SIMOPs been communicated to all parties?

ACCEPTANCE OF HIGH HAZARD WORK

Client PM Name:	**Method of acceptance (phone, email, fax):**	**Date:**	**Time:**
Name of the person obtaining acceptance:		**Date:**	**Time:**

Stantec

Permit To Work

PTW form & ISAs can be used for only one week (for continual tasks)

REMEMBER TO
1. Stop and Think
2. Look Around
3. Assess Risk
4. Control Risks
5. Begin/Resume Work

DO NOT PROCEED UNTIL IT IS SAFE TO DO SO!

AUTHORIZATION

PTW Issuing Authority is satisfied that job planning and hazard analysis has been completed. The work detailed in this permit is authorized to commence. Several lines are provided below for authorizing the PTW for up to six days.

Name of Stantec PTW Approver (print)	Signature	Date/Time

PERMITTED TASK REVOCATION

Task Description & Reason for Task Revocation.

Areas/Tasks Affected.

Reason Task Can Be Restarted.

Supervisor(s). **PTW Issuing Authority.** **Time Reissued.**

By signing above, this confirms that the work area has been reviewed; JSAs are adequate, and work is approved to resume.

PERMIT CLOSE OUT BY PTW AUTHORITY

PTW Issuing Authority are satisfied that work has been completed to job specifications, safety requirements. This permit is closed out and is no longer effective as of the date and time noted below (verification and validation of permit completion).

Name (print)	Signature	Date/Time

TRANSFER OF AUTHORITY OR CHANGE IN CREW MEMBERS

Document (or attach documentation of) debrief between incoming & outgoing SHERQ or personnel:

Date transfer completed:

PTW NOTIFICATION TO CREW MEMBERS

By signing below I am stating that I understand my Stop Work responsibility, the scope of work, the hazards that may be present and appropriate mitigation activities to prevent incidents.
By signing here, you are stating the following:

1. I have been involved in the Job Safety Analysis and understand the hazards and risk control actions associated with each task I am about to perform.
2. I understand the permit to work requirements applicable to the work I am about to perform (if it includes permitted activities).
3. I am aware that no jobs or work (that is not risk-assessed) is to be performed.
4. I am aware of my obligation to "Stop Work" (See Stop Work Section).

I arrived and departed fit for duty:

5. I am physically and mentally fit for duty.
6. I am not under the influence of any type of medication, drugs or alcohol that could affect my ability to work safely.
7. I am aware of my responsibility to bring any illness, injury (regardless of where or when it occurred) or fatigue issue I may have to the attention of the Crew Lead.

Name	Signature	Company	Date

Attachment 7

Job Hazard Assessment

JOB HAZARD ASSESSMENT

Stantec

Date:	03/15/19
Project Number:	212201283
Project:	CVS-Dothan
Client:	Dth Es Tu Malade? #1, LLC
Location:	1098 Ross Clark Circle, Dothan, AL

- **JHAs will be completed for all field jobs and focused on the control, removal, or reduction of hazards potentially inherent in each job and in the context of the project scope; contractors selected, and anticipated work locations.**
- **JHA will be discussed and documented with all parties involved with the project, i.e. Stantec Project Manager, Stantec Field Staff, and Subcontractors during the Pre-field Kickoff Meeting.**
- **Hazards identified will be cross referenced with the Job Safety Analysis (JSA) to ensure the hazards have been eliminated or control actions have been developed to mitigate appropriately.**

1. PROJECT SUMMARY:

Description of the work: Sulfate injection and groundwater monitoring

General

Does a Prime Contractor (Constructor) or Client HSE Program apply? ☐ Yes ☒ No

If yes, please identify.

2. HAZARD RECOGNITION

Health Hazard (Check all appropriate categories)

Is this work where SDSs are required? ☒ Yes ☐ No

If yes, copies of SDSs must be available at project site and attached to this document.

Chemical

- ☒ Acids or Caustics
- ☐ Asbestos
- ☐ H_2S
- ☐ Halogenated Organic Compounds
- ☐ Heavy Metals
- ☐ Metals
- ☐ PCBs
- ☐ Pesticides / Herbicides
- ☒ Petroleum Hydrocarbons
- ☐ Poisonous Materials
- ☐ Solvents / Flammables
- ☐ Other – specify:

Physical

- ☐ Cold Stress/Frostbite
- ☐ Confined Space
- ☒ Driver Fatigue
- ☐ Dust / Dusty environments
- ☐ Flora or Fauna (type):
- ☒ Heat Stress / Sunburn
- ☒ Noise
- ☒ Radiation (type): Solar
- ☐ Remote Location
- ☐ Rough Terrain / Heavy Brush
- ☐ Road / Trail Conditions
- ☒ Slip / Trips & Uneven Surfaces
- ☐ Temperature (surfaces)
- ☐ Water
- ☒ Vehicle / Equipment Movement
- ☐ Vibration
- ☐ Wildlife
- ☐ Working at Heights
- ☐ Other – specify:

Ergonomic

- ☐ Force
- ☒ Posture
- ☐ Repetitive Motion
- ☒ Tools
- ☐ Workplace Design
- ☐ Other – specify:

Biological

- ☐ Bacterial Control Cultures
- ☐ Domestic Waste
- ☐ Medical Waste
- ☐ Sewage / Wastewater
- ☐ Bees / Wasps
- ☒ Spiders / Insects
- ☐ Other – specify:
- ☐ Not Applicable

Machine

- ☐ ATV
- ☒ Automobile
- ☐ Blades
- ☐ Chains / Cables / Ropes
- ☒ Crush Points
- ☒ Cutting Edges
- ☐ Free-Wheeling Point
- ☐ Heavy Equipment
- ☐ Helicopter
- ☐ Hydraulic Systems
- ☐ Levers
- ☒ Moving Parts
- ☒ Pinch Points
- ☐ Rotating Parts (i.e. auger)
- ☐ Shear Points
- ☐ Springs

Machine

- ☐ Wrap Points
- ☐ Other – specify:

Material Handling

- ☒ Bending / Lifting
- ☒ Falling/Flying Objects
- ☒ Fatigue
- ☒ Heavy Load (> 50 pounds)
- ☒ Load (< 50 pounds)
- ☐ Repetitive
- ☐ Sharp / Rough Surface
- ☒ Twisting
- ☐ Other – specify:

Energy

- ☒ Chemical
- ☒ Electrical
- ☐ Hydraulic
- ☒ Mechanical
- ☐ Pneumatic
- ☒ Potential
- ☒ Thermal
- ☐ Other – specify:

Work Practices

- ☐ Deviation of SWP

- ☐ **Not Applicable**

3. HAZARD ASSESSMENT

Check off all Safe Work Practices (SWPs) that apply to job

- **Unless required by the client, printing SWPs is not required. However, review of all applicable SWPs before commencing work is mandatory. The most current version of each below is hyperlinked to allow review, and printing where desired.**

100 Series – General HSE

- ☐ 103 – Workplace Hazardous Materials Information System (WHMIS)
- ☑ 104 - Hazard Communication
- ☑ 105 – Personal Protective Equipment (PPE)
- ☑ 107 – First Aid
- ☑ 108 – Bloodborne Pathogens
- ☑ 113 – Heat Stress
- ☐ 114 – Working in Cold Environments
- ☑ 115 – Material Handling and Safe Lifting
- ☐ 116 – Office Safety
- ☐ 118 – Working Alone in the Field
- ☑ 124 – Safe Driving
- ☐ 125 – Workstation Ergonomics
- ☐ 126 – Using a Chainsaw

200 Series – Construction HSE

- ☐ 201 – Fall Protection/Working from Heights
- ☐ 202 – Ladder Safety
- ☑ 206 – Hand and Portable Power Tools
- ☐ 214 – Entering Excavations and Trenches
- ☐ 215 – Supervision of Hydro-Excavation Activities

300 Series – Hazardous Materials

- ☐ 304 – Asbestos Safety
- ☐ 308 – Working in Geotechnical and Materials Laboratories
- ☐ 310 – Compressed Gas Cylinders
- ☐ 311 – Working in Environmental Laboratories
- ☑ 312 – Fueling Gasoline Engines
- ☐ 314 - Working Around Hazardous Waste and Wastewater

400 Series – Program Specific

- ☐ 406 – Electrical Safety Program
- ☑ 407 - Traffic Control and Protection Planning
- ☐ 411 – Confined Space Entry
- ☐ 414 – Hot Work
- ☐ 416 – Supervision of Contracted Drilling Activities

500 – PA/PC/Region Specific Programs

- ☐ 501 - Using the Spot Messenger System
- ☐ 502 - Use and Handling of Nuclear Density Gauges
- ☐ 504 - Backpack and Boat Mounted Electro-fishing
- ☐ 507 – Aircraft Safety
- ☐ 508 – Wildlife Encounters
- ☐ 509 - Guideline for 2-way Radio Use on Radio Controlled Roads in BC
- ☐ 510 – Working in Abandoned Buildings
- ☐ 513 – Boat and Water Safety

☐ 514 – Working On or Near Ice

Other SWPs not listed

- Select and list others here

must be performed, please speak with Regional Safety Environment Coordinator (RSEC) for assistance.

☐ SWP for this task being performed is not available – Quantified Hazard Assessment (RMS7)

4. PERSONAL PROTECTIVE EQUIPMENT (PPE)

Based on hazard recognition and assessment as identified in the documents above, identify required PPE.

☒ Head Protection (CSA or ANSI) – Type: ANSI Z89, type 1, Class E

☒ Work Boots (CSA or ANSI) – Type: ASTM F2413 Std

☒ Eye/Face Protection – Type: ANSI Z87.1 w/side shields

☒ High Visibility Vest – Type: ANSI Class II certified

☒ Hi-Viz Gloves – Type: leather/work/nitrile

☐ Hearing Protection – Type:

☐ Respiratory Protection – Type:

☐ Coveralls – Type:

☐ Fall Protection – Type:

☐ Other -

5. JOB ADMINISTRATION

Training

Is there any training required outside that identified in the applicable SWPs?
If yes, please identify:
Do workers require site-specific orientation? ☐ Yes ☒ No

Emergency Planning

It is the responsibility of the Project Manager to prepare and communicate an Emergency Preparedness and Response plan to all field staff.

Site Emergency No.	911	Fire Department	911
Ambulance	911	Police	911
OE Coordinator	Brent Lucyk, 517-749-9405	Environment Dept.	
		Regional HR	Trey Griffin

Stantec Corporate HSE Representative: Fred Miller (610-235-7315)

Project Contact Information:

Title	Name	Company	Phone Number
Stantec Office	Erin O'Malley	Stantec Okemos, MI	517-349-9499
Project Manager	Jim Burns	Stantec Okemos, MI	517-349-9499
Site Health & Safety Officer	Wes Cline	Stantec Nashville, TN	916-281-7459
Stantec After-Hours Number	Brent Lucyk	Stantec Okemos, MI	517-749-9405
Subcontractor:			
Other (specify):			

First Aid facilities are located:	FA kit in work vehicle
First Aiders on site are:	Wes Cline, Mark Buckreis
Fire extinguishers are located:	in work vehicle
Fire alarms are located:	in the pharmacy
SDSs are located:	in HASP with worker
Eyewash station is located:	in work vehicle
Spill response equipment is:	in work vehicle
The nearest phone is:	in the pharmacy
Medical Assistance:	WorkCare 888-449-7787

Record site-specific information below (evacuation signal, muster points, routes/map to clinic/hospital, etc.): See page 3

For any injury, the employee shall:

1. Initiate necessary first aid or medical treatment.
2. Immediately notify their supervisor.

6. REVIEW, APPROVAL AND DISTRIBUTION

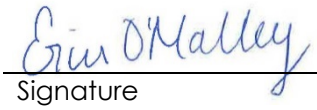
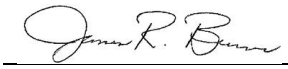
Employee Review

All employees required to perform work on this project will review the Risk Management Strategy and sign below acknowledging that they have been advised of the hazards, controls and PPE required, and have reviewed the applicable SWPs. Employees in field who identify additional hazards not listed above shall notify the project manager of the hazard and confirm the controls that will be used prior to proceeding. Document any on-site changes and communications in the task specific JSA or HASP modification log.

Please designate Team Lead for field activities below.

Reviewed by:			
	Print Name	Signature	Date
	Print Name	Signature	Date
	Print Name	Signature	Date
	Print Name	Signature	Date
	Print Name (Site Health & Safety Officer)	**Signature**	**Date**

Approvals

Prepared by:	Erin O'Malley		03/20/19
	Print Name	Signature	Date
Approved by:	Jim Burns		03/20/19
	Print Name (Project Manager)	Signature	Date

Distribution: **Original: Project File**
Copies: Field Staff

Attachment 8

Site Health and Safety Quiz

Health & Safety Quiz

Name: _____ **Company:** _____ **Date:** _____

1. **True or False: Stantec's policy is to complete our work on this site without any type of incident (injury, illness, impact to the environment, impact to property and equipment).**

2. **Who has Stop Work Authority?**

3. **At the site, where is the nearest telephone located?**

4. **In the event of site evacuation, where is the emergency meeting location?**

5. **In the event of an incident, who should be contacted after work has been stopped and the SHSO has been notified?**

6. **List a constituent of potential concern at the site.**

7. **If air monitoring is required, what chemical(s) are being monitored and what are the action levels?**

8. **How many times per day should safety meetings be conducted?**

9. **True or False: Eating, drinking, smoking, and use of PDAs, cell phones, pagers, and other electrical devices (with the exception of intrinsically safe devices) are prohibited within the exclusion zone.**

10. **What minimum PPE is required at the site?**

Score:

(If score is less than 100%, SHSO should discuss correct answer with quiz-taker.)

Attachment 9

Safety Data Sheets

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and GHS

Effective date: 11/20/2014 **Revision:** 05/12/2015

ALCONOX

1 Identification of the Substance/mixture and of the Company/Undertaking

1.1 Product identifier
Trade name: ALCONOX
Application of the substance / the preparation: Cleaning material/ Detergent

1.2 Relevant identified uses of the substance or mixture and uses advised against:
No additional information available.

1.3 Details of the supplier of the Safety Data Sheet
Manufacturer/Supplier:
Alconox, Inc.
30 Glenn St., Suite 309
White Plains, NY 10603
Phone: 914-948-4040

Further information obtainable from: Product Safety Department

1.4 Emergencytelephone number:
ChemTel Inc.: (800)255-3924, +1 (813)248-0585

2 Hazards Identification

2.1 Classification of the substance or mixture Classification according to Regulation (EC) No 1272/2008:

Eye Irrit. 2B; H320: Causes eye irritation.

Information concerning particular hazards for human and environment:
The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
Classificationsystem:
The classification is according to the latest editions of the EU-lists, and extended by company and literature data

2.2 Label elements
Labelling according to Regulation (EC) No 1272/2008:
The product is classified and labelled according to the CLP regulation.

Hazard pictograms:

Signal word: Warning

Hazard-determining components of labelling:
Sodium Alkylbenzene Sulfonate
Hazard statements:
H320: Causes eye irritation.

Precautionary statements:
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P264: Wash thoroughly after handling.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses,if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists: Get medical advice/attention.

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and GHS

Effective date: 11/20/2014 **Revision:** 05/12/2015

ALCONOX

Other Hazard description:
WHMIS-classification and symbols:
D2B - Toxic material causing other toxic effects

NFPA ratings (scale 0 - 4)

Health = 1
Fire = 0
Reactivity = 0

HMIS-ratings (scale 0 - 4)

HEALTH	1
FIRE	0
REACTIVITY	0

Health = 1
Fire = 0
Reactivity = 0

2.3 Other hazards
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

3 Composition/Information on Ingredients

3.2 Chemical characterization: Mixture
Description: Hazardous ingredients of mixture listed below.

Identifying Nos.	Description	Wt. %
CAS: 68081-81-2	Sodium Alkylbenzene Sulfonate	10 - 25%
CAS: 497-19-8	Sodium Carbonate	5-15%
CAS: 7722-88-5	Tetrasodium pyrophosphate	5-15%
CAS: N/A	Proprietary (non-classified)	40-60%

Additional information: For the wording of the listed risk phrases refer to section 16.

4 First Aid Measures

4.1 Description of first aid measures
General information:
Contaminated individuals of chemical exposure must be taken for medical attention if any adverse effect occurs. Rescuers should be taken for medical attention, if necessary. Take copy of label and SDS to health professional with contaminated individual.
After inhalation:
Supply fresh air; consult doctor in case of complaints.
After skin contact:
Immediately wash with water and soap and rinse thoroughly. If skin irritation continues, consult a doctor.

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and GHS

Effective date: 11/20/2014 **Revision:** 05/12/2015

ALCONOX

After eye contact:
Remove contact lenses if worn. Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

After swallowing:
Rinse out mouth and then drink plenty of water. Do not induce vomiting; call for medical help immediately.

4.2 Most important symptoms and effects, both acute and delayed:
No additional information available.

4.3 Indication of any immediate medical attention and special treatment needed:
No additional information available.

5 Firefighting Measures

5.1 Extinguishing media:
Suitable extinguishing agents:
CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

5.2 Special hazards arising from the substance or mixture:
No additional information available.

5.3 Advice for firefighters:
Protective equipment:
Wear self-contained respiratory protective device.
Wear fully protective suit.

6 Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures:
Product forms slippery surface when combined with water.

6.2 Environmental precautions:
Do not allow product to reach sewage system or any water course.

6.3 Methods and material for containment and cleaning up:
Pick up mechanically.
Clean the affected area carefully; suitable cleaners are: Warm water

6.4 Reference to other sections:
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information

7 Handling and Storage

7.1 Precautions for safe handling:
Ensure good ventilation/exhaustion at the workplace.
Keep receptacles tightly sealed.
Prevent formation of dust.
Information about fire - and explosion protection: No special measures required.

7.2 Conditions for safe storage, including any incompatibilities:
Storage:
Requirements to be met by storerooms and receptacles: No special requirements.
Information about storage in one common storage facility: None required.
Further information about storage conditions: Protect from humidity and water.

7.3 Specific end use(s): No additional information available.

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and GHS

Effective date: 11/20/2014 **Revision:** 05/12/2015

ALCONOX

8 Exposure Controls/Personal Protection

8.1 Control parameters

Ingredients with limit values that require monitoring at the workplace: Not required.

Additional information: The lists valid during the making were used as basis.

8.2 Exposure controls:

Personal protective equipment:

General protective and hygienic measures:

Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the skin.
Avoid contact with the eyes and skin.

Respiratory protection:

Not required under normal conditions of use.
In case of brief exposure or low pollution use respiratory filter device.
In case of intensive or longer exposure use self-contained respiratory protective device.

Protection of hands:

Protective gloves

The glove material has to be impermeable and resistant to the product. Selection of the glove material should be based on the penetration time, rates of diffusion and the degradation of the glove material.

Material of gloves:

The selection of a suitable gloves does not only depend on the material, but also on the quality, and varies from manufacturer to manufacturer.

Penetration time of glove material:

The exact break through time has to be determined by the manufacturer of the protective gloves. DO NOT exceed the breakthrough time set by the Manufacturer.

For long term contact, gloves made of the following materials are considered suitable:

Butyl rubber, BR
Nitrile rubber, NBR
Natural rubber (NR)
Neoprene gloves

Eye protection:

Safety glasses

Body protection: Protective work clothing

9 Physical and Chemical Properties

9.1 Information on basic physical and chemical properties:

General Information:

Appearance:

Form:	Powder
Color:	White
Odor:	Odorless
Odor threshold:	Not determined.
pH-value (10 g/l) at 20 °C:	9.5 (NA for Powder form)
Change in condition:	
Melting point/Melting range:	Not determined.
Boiling point/Boiling range:	Not determined.

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and GHS

Effective date: 11/20/2014 **Revision:** 05/12/2015

ALCONOX

Flash point:	Not applicable.
Flammability (solid, gaseous):	Not determined.
Ignition temperature:	Not determined.
Decomposition temperature:	Not determined.
Self-igniting:	Product is not selfigniting.
Danger of explosion:	Product does not present an explosion hazard.
Explosion limits:	
Lower:	Not determined.
Upper:	Not determined.
Vapor pressure:	Not applicable.
Density at 20°C:	1,1 g/cm³
Relative density:	Not determined.
Vapor density:	Not applicable.
Evaporation rate:	Not applicable.
Solubility in / Miscibility with water:	Soluble.
Segregation coefficient (n-octanol/water):	Not determined.
Viscosity:	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
Solvent content:	
Organic solvents:	0.0 %
Solids content:	100 %
9.2 Other information:	No additional information available.

10 Stability and Reactivity

10.1 Reactivity:
10.2 Chemical stability:
Thermal decomposition / conditions to be avoided:
No decomposition if used according to specifications.
10.3 Possibility of hazardous reactions:
Reacts with acids.
Reacts with strong alkali.
Reacts with strong oxidizing agents.
10.4 Conditions to avoid:
No additional information available.
10.5 Incompatible materials:
No additional information available.
10.6 Hazardous decomposition products:
Carbon monoxide and carbon dioxide
Phosphorus compounds
Sulphur oxides (SOx)

11 Toxicological Information

11.1 Information on toxicological effects:
Toxicity data: No additional information available.
Primary irritant effect:
On the skin: Irritating to skin and mucous membranes.
On the eye: Strong irritant with the danger of severe eye injury.
Sensitization: No sensitizing effects known.

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and GHS

Effective date: 11/20/2014 **Revision:** 05/12/2015

ALCONOX

Additional toxicological information:
The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version: Irritant.
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation ofesophagus and stomach.

12 Ecological Information

12.1 Toxicity:
Aquatic toxicity: No additional information available.
12.2 Persistence and degradability: No additional information available.
12.3 Bioaccumulative potential: Not worth-mentioning accumulating in organisms.
12.4 Mobility in soil: No additional information available.
Ecotoxical effects:
Remark: Harmful to fish
Additional ecological information:
General notes:
Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water.
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
12.5 Results of PBT and vPvB assessment:
PBT: Not applicable.
vPvB: Not applicable.
12.6 Other adverse effects: No additional information available.

13 Disposal Considerations

13.1 Waste treatment methods:
Recommendation:
Smaller quantities can be disposed of with household waste.
Small amounts may be diluted with plenty of water and washed away. Dispose of bigger amounts in accordance with Local Authority requirements.
The surfactant used in this product complies with the biodegradability criteria as laid down in Regulation (EC) No. 648/2004 on detergents. Data to support this assertion are held at the disposal of the competent authorities of the Member States and will be made available to them, at their direct request or at the request of a detergent manufacturer.
Uncleaned packaging:
Recommendation: Disposal must be made according to official regulations.
Recommended cleansing agents: Water, together with cleansing agents, if necessary.

14 Transport Information

14.1 UN-Number:
DOT, ADR, ADN, IMDG, IATA: Not Regulated

14.2 UN proper shipping name:
DOT, ADR, IMDG, IATA: Not Regulated

14.3 Transport hazard class(es):
DOT, ADR, IMDG, IATA:
Class: Not Regulated
Label: -

14.4 Packing group:
DOT, ADR, IMDG, IATA: Not Regulated

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14.5 Environmentalhazards:
Marine pollutant: No

14.6 Special precautions for user: Not applicable.

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.

UN "Model Regulation": Not Regulated

15 Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:
United States (USA):
SARA:
Section 355 (extremely hazardous substances): None of the ingredient is listed.
Section 313 (Specific toxic chemical listings): None of the ingredient is listed.
TSCA(Toxic Substances Control Act): All ingredients are listed.

Proposition 65 (California):
Chemicals known to cause cancer: None of the ingredient is listed.
Chemicals known to cause reproductive toxicity for females: None of the ingredient is listed.
Chemicals known to cause reproductive toxicity for males: None of the ingredient is listed.
Chemicals known to cause developmental toxicity: None of the ingredient is listed.

CarcinogenicCategories:
EPA (Environmental Protection Agency): None of the ingredient is listed.
TLV (Threshold Limit Value established by ACGIH): None of the ingredient is listed.
NIOSH-Ca (National Institute for Occupational Safety and Health): None of the ingredient is listed.
OSHA-Ca (Occupational Safety & Health Administration): None of the ingredient is listed.

Canadá:
Canadian Domestic Substances List (DSL): All ingredients are listed.
Canadian Ingredient Disclosure list (limit 0.1%): None of the ingredient is listed.
Canadian Ingredient Disclosure list (limit 1%):

497-19-8	Sodium Carbonate
7722-88-5	Tetrasodium pyrophosphate
151-21-3	Sodium dodecylsulphate

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other Information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevant phrases:

H320: Causes eye irritation.

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and GHS

Effective date: 11/20/2014 **Revision:** 05/12/2015

ALCONOX

Abbreviations and Acronyms:

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
IMDG: International Maritime Code for Dangerous Goods.
DOT: US Department of Transportation.
IATA: International Air Transport Association.
GHS: Globally Harmonized System of Classification and Labelling of Chemicals.
ACGIH: American Conference of Governmental Industrial Hygienists.
NFPA: National Fire Protection Association (USA).
HMIS: Hazardous Materials Identification System (USA).
WHMIS: Workplace Hazardous Materials Information System (Canada).
VOC: Volatile Organic Compounds (USA, EU).
LC50: Lethal concentration, 50 percent.
LD50: Lethal dose, 50 percent.

SDS Created by:
Global Safety Management, Inc.
10006 Cross Creek Blvd
Tampa, FL, 33647
Tel: 1-844-GSM-INFO (1-844-476-4636)
Website: www.GSMSDS.com

SAFETY DATA SHEET

Revision Date 18-Jan-2018 **Revision Number** 3

1. Identification

Product Name **Magnesium sulfate solution**

Cat No. : **SM109-1**

Synonyms Epsom Salt

Recommended Use Laboratory chemicals.
Uses advised against Not for food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification
Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Based on available data, the classification criteria are not met

Label Elements
None required

Hazards not otherwise classified (HNOC)
None identified

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Water	7732-18-5	97.75
Magnesium sulfate	7487-88-9	2.25

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Obtain medical attention.
Inhalation	Move to fresh air. If breathing is difficult, give oxygen. Obtain medical attention.
Ingestion	Do not induce vomiting. Obtain medical attention.
Most important symptoms and effects	No information available.
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Unsuitable Extinguishing Media	No information available
Flash Point	
Method -	No information available
Autoignition Temperature	No information available
Explosion Limits	
Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products
None under normal use conditions
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
1	0	0	N/A

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment.
Environmental Precautions	See Section 12 for additional ecological information.
Methods for Containment and Clean Up	Soak up with inert absorbent material. Provide adequate ventilation. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling	Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Wash hands before breaks and immediately after handling the product.
Storage	Keep containers tightly closed in a cool, well-ventilated place.

8. Exposure controls / personal protection

Exposure Guidelines	This product does not contain any hazardous materials with occupational exposure limitsestablished by the region specific regulatory bodies.
Engineering Measures	Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
Respiratory Protection	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Clear
Odor	Odorless
Odor Threshold	No information available
pH	
Melting Point/Range	0 °C
Boiling Point/Range	°C
Flash Point	
Evaporation Rate	> 1
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	14 mmHg
Vapor Density	No information available
Specific Gravity	1.0
Solubility	Soluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	No information available
Molecular Formula	MgSO4
Molecular Weight	120.3626

10. Stability and reactivity

Reactive Hazard	None known, based on information available
Stability	Stable under normal conditions.
Conditions to Avoid	Incompatible products.
Incompatible Materials	Strong oxidizing agents
Hazardous Decomposition Products	None under normal use conditions
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

11. Toxicological information

Acute Toxicity

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Water	-	Not listed	Not listed

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation May cause eye, skin, and respiratory tract irritation

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Water	7732-18-5	Not listed	Not listed	Not listed	Not listed	Not listed
Magnesium sulfate	7487-88-9	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed No information available

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity
Do not empty into drains.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Magnesium sulfate	EC50: = 2700 mg/L, 72h (Desmodesmus subspicatus)	LC50: 2610 - 3080 mg/L, 96h static (Pimephales promelas) LC50: = 19000 mg/L, 24h static (Lepomis macrochirus)	= 84000 mg/L EC50 Photobacterium phosphoreum 30 min	EC50: = 1700 mg/L, 24h (Daphnia magna) EC50: 266.4 - 417.3 mg/L, 48h Static (Daphnia magna)

Persistence and Degradability No information available

Bioaccumulation/ Accumulation No information available.

Mobility No information available.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT	Not regulated
TDG	Not regulated
IATA	Not regulated
IMDG/IMO	Not regulated

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Water	X	X	-	231-791-2	-		X	-	X	X	X
Magnesium sulfate	X	X	-	231-298-2	-		X	X	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313 Not applicable

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act) Not applicable

Clean Air Act Not applicable

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA Not applicable

California Proposition 65 This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations Not applicable

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Water	-	-	X	-	-

U.S. Department of Transportation

Reportable Quantity (RQ):	N
DOT Marine Pollutant	N
DOT Severe Marine Pollutant	N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade	No information available

16. Other information

Prepared By	Regulatory Affairs Thermo Fisher Scientific Email: EMSDS.RA@thermofisher.com
Revision Date	18-Jan-2018
Print Date	18-Jan-2018
Revision Summary	This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

Attachment 10

Equipment Calibration & Air Monitoring Logs

AIR MONITORING LOG

Instrument(s) Used: Make: _____ Model: _____

DATE	TIME	LOCATION/SOURCE (Personal/Area Sampling)	WORK ACTIVITY DURING SAMPLING (Be specific)	Measurement (Units)	WHAT DID YOU DO BECAUSE OF THE RESULT? (PPE Change/Activity Change/Nothing Needed)	SAMPLED BY

* Submit copies of logs to Health Safety and Environment (HSE) Manager, US, Carol Ferguson-Scott within 24 hours, if a PEL is exceeded, or personal protective equipment level is upgraded at (506) 333-2845 or via email at Carol.Ferguson-Scott@stantec.com.

EQUIPMENT CALIBRATION/CHECK LOG

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

Stantec

PID FIELD CALIBRATION LOG

PROJECT NAME:	EQUIPMENT OWNER:
PROJECT NO.:	MODEL:
SAMPLER NAME:	SERIAL NO.:
CALIBRATION MEDIA:	LAMP VOLTAGE:
MEDIA LOT NO.:	

PID CALIBRATION CHECK

	DATE: TIME: INITIALS:	DATE: TIME: INITIALS:	DATE: TIME: INITIALS:	DATE: TIME: INITIALS:	DATE: TIME: INITIALS:
BATTERY CHECK	☐	☐	☐	☐	☐
ZERO GAS	/	/	/	/	/
SPAN GAS	/	/	/	/	/
AUDIBLE FAN MOTOR CHECK	☐	☐	☐	☐	☐
RESPONSE CHECK	☐	☐	☐	☐	☐

PROBLEMS ENCOUNTERED

CORRECTIVE ACTION

SIGNED DATE

Stantec

YSI CALIBRATION LOG

PROJECT NAME:	EQUIPMENT OWNER:	
PROJECT NUMBER:	MODEL:	SERIAL NO.:
SAMPLER NAME:	DATE:	

PH CALIBRATION CHECK

PH 7	(LOT NUMBER):	PH 4 / 10	(LOT NUMBER):	TIME
	/		/	
	/		/	
	/		/	
	/		/	

CONDUCTIVITY CALIBRATION CHECK

READING	(LOT NUMBER):	TEMPERATURE	CORRECTED CONDUCTIVITY	TIME
	/			
	/			
	/			
	/			

DISSOLVED OXYGEN CALIBRATION CHECK

CALIBRATION READING	

TURBIDITY CALIBRATION CHECK

READING	(LOT NUMBER):	TIME
	/	
	/	
	/	
	/	

OXIDATION / REDUCTION POTENTIAL CALIBRATION CHECK

READING	(LOT NUMBER):	TEMPERATURE	CORRECTED ORP	TIME
	/			
	/			
	/			
	/			

PROBLEMS / CORRECTIVE ACTIONS

SIGNED DATE

Attachment 11

Journey Management Plan

Basic Journey Management Plan
Stantec Consulting Services Inc.
Field Operations

Creation Date: May 12, 2017 **Version 3**

Site Name: CVS-Dothan (Former Circle [Medical Center] BP)
Location: 1098 Ross Clark Circle, Dothan, AL 36301
Date: 03/15/19
Approved for use:

From: 03/15/19	To: 12/31/19		Time: 0800 - 1800

PURPOSE AND SCOPE OF JOURNEY

The purpose of this Journey Management Plan (JMP) is to prevent losses associated with motor vehicle related incidents including: injuries to drivers, passengers, supplier personnel, pedestrians, damage to motor vehicles, and damage to third party property. By communicating potential safety risks before mobilizing to a site, a motor vehicle operator will be able to prepare for and avoid potential hazards.

This JMP includes directions for the operation and use of the following vehicles and equipment: Stantec's field truck, and personal vehicles, and all other support equipment such as trailers. This JMP does not apply to vendors (such as UPS, FedEx, etc.), public utility locators, uninvited, and/or unanticipated entities not under the direct control of the supplier.

Any JMP changes will be communicated to the Site JMP Coordinator so that all parties' JMPs are coordinated as soon as practical and in advance of travel to or from the Site. The JMPs are living documents and will be coordinated between the suppliers so that vehicle and driving safety issues are addressed in a timely manner.

PERSONNEL

Project Manager Jim Burns	Office: (517) 349-9499 Cell: (517) 202-7168

The Project Manager will ensure there is an approved written JMP and that a JMP Coordinator is designated for each project requiring a JMP. When there is more than one supplier, the Project Manager will ensure the suppliers' JMPs are coordinated through the JMP Coordinator. If suppliers or subcontractors resist creating or coordinating JMPs, the Project Manager will exercise Stop Work Authority until the situation is corrected.

JMP Coordinator Erin O'Malley	Office: (517) 349-9499 Cell: (517) 515-8455

The JMP coordinator is designated by the Project Manager. The JMP Coordinator is responsible for facilitating the coordination and communication of changes to JMPs among all suppliers so that individual suppliers are informed and aware of journey management and traffic control risks and measures for the Site. The JMP Coordinator will manage a process to verify that all affected parties are knowledgeable of any changes to the project JMPs. The JMP Coordinator will have immediate access to all current JMPs and will maintain a record of all JMP changes. The JMP coordinator has no JMP approval authority. If suppliers or subcontractors resist creating or coordinating JMPs, the JMP Coordinator will exercise Stop Work Authority until the situation is corrected. The JMP Coordinator, based on the size and complexity of the project, may have more roles and responsibilities such as Site Health and Safety Coordinator, etc.

Basic Journey Management Plan
Stantec Consulting Services Inc.
Field Operations

Creation Date: May 12, 2017 **Version 3**

Site Name: CVS-Dothan (Former Circle [Medical Center] BP)
Location: 1098 Ross Clark Circle, Dothan, AL 36301
Date: 03/15/19
Approved for use:

From: 03/15/19	To: 12/31/19		Time: 0800 - 1800

Emergency Contact Information - Follow the notification instructions below; you must also follow your employer-specific incident reporting procedures.

In the event of a motor vehicle incident and for all emergencies, call 911 to notify the necessary authorities, then call:
Jim Burns, Project Manager at Office: (517) 349-9499 (office), (517) 202-7168 (cell)

ROUTE INFORMATION:

Ingress/Egress:

The driver shall approach the site from the north off of Ross Clark Circle, and leave the site to the west on to E. Main Street.

Route:

To the Site (From Nashville, TN office):

- Get on I-65S from Trousdale Dr. and Harding Pl
- Follow I-65S to AL-271S/Taylor Rd in Montgomery.
- Take Exit 9 from I-85N
- Take US-231S to Ross Clark Circle in Dothan.

HAZARD IDENTIFICATION AND MITIGATION:

General Hazards:

Much of the vehicle use hazard comes from travel to and from the Site. The driver should anticipate hazards, maintain a safety cushion around the vehicle, and adjust their driving speed. Weather conditions will be monitored throughout the day and prior to mobilization.

Weather: Rain or mist reduces visibility and wet pavement reduces traction. Turn headlights on to increase visibility regardless of weather conditions. Make sure windshield wipers are in proper working condition.

Reduce speed accordingly so that stopping can be made safely. Always obey posted speed limits.

Site-Specific Hazards

When entering the site, be aware of other drivers who may be exiting the site, and pedestrians who may be walking around the site.

The preferred parking area for passenger vehicles is in delineated parking spaces. There is typically much availability in the parking area, so preferred method of parking is pull through to ensure first move forward.

Basic Journey Management Plan
Stantec Consulting Services Inc.
Field Operations

Creation Date: May 12, 2017 **Version 3**

Site Name: CVS-Dothan (Former Circle [Medical Center] BP)
Location: 1098 Ross Clark Circle, Dothan, AL 36301
Date: 03/15/19
Approved for use:

From: 03/15/19	To: 12/31/19		Time: 0800 - 1800

SPECIAL NOTE

Because JMPs may need to change frequently due to site access, egress, weather, traffic conditions, etc., this JMP will be maintained and updated separately from the Site Health and Safety Plan.

Basic Journey Management Plan
Stantec Consulting Services Inc.
Field Operations

Creation Date: May 12, 2017 **Version 3**

Site Name: CVS-Dothan (Former Circle [Medical Center] BP)
Location: 1098 Ross Clark Circle, Dothan, AL 36301
Date: 03/15/19
Approved for use:

From: 03/15/19	To: 12/31/19		Time: 0800 - 1800

CHANGES TO THE JOURNEY MANAGEMENT PLAN:

The following table will be used to track all changes to the JMP

Date	Revision Number	Changed By	Changes Acknowledged by JMP Coordinator(s)	Change/Comment (be specific)

Attachment 12

Preventing Serious Injury & Fatalities Field Guide

Preventing Serious Injury and Fatalities

Field Guide

Applying the Hazard Identification Tool

Purpose

This field guide is a quick reference to help personnel involved in *high-risk activities*[1] to identify and control the significant potential hazards unique to each activity and job.

This field guide supplements but **does not replace existing permitting procedures and safe work practices**. To keep it brief, not every potential hazard or prevention is listed. Apply appropriate local hazard assessment procedures, along with this guide, to comprehensively assess each job.

Field Guide Applications

- Before beginning your high-risk activity, review significant potential hazards and associated preventions.
- Refer to the field guide in all phases of hazard assessment: during planning, permitting, implementing and closeout.
- Integrate this tool into local efforts on fatality and serious injury prevention.
- Build awareness among workers, supervisors and work leaders at meetings, field visits, shift turnovers and any other opportunity.
- Augment Managing Safe Work (MSW) field engagement and Contractor Health, Environment and Safety Management (CHESM) activities.
- Use during near-miss and incident investigations.
- Use as an Operational Excellence (OE) audit or self-audit tool for high-risk observations.

Preventing serious injuries and fatalities requires operational discipline. This means *performing every task the right way every time*, from initial hazard assessment through each step of the job, including post-activity review.

[1]Activities, tasks and exposures most frequently associated with serious injuries and fatalities in Chevron and industry.

Hazard Identification Tool Definitions

Gravity
The force caused by the attraction of all other masses to the mass of the earth.
Examples: falling object, collapsing roof and a body tripping or falling

Motion
The change in position of objects or substances.
Examples: vehicle, vessel or equipment movement; flowing water; wind and body positioning when lifting, straining or bending

Mechanical
The energy of the components of a mechanical system, i.e., rotation, vibration or motion within an otherwise stationary piece of equipment or machinery.
Examples: rotating equipment, compressed springs, drive belts, conveyors and motors

Electrical
The presence and flow of an electric charge.
Examples: power lines, transformers, static charges, lightning, energized equipment, wiring and batteries

Pressure
Energy applied by a liquid or gas that has been compressed or is under a vacuum.
Examples: pressure piping, compressed cylinders, control lines, vessels, tanks, hoses and pneumatic and hydraulic equipment

Temperature
The measurement of differences in the thermal energy of objects or the environment which the human body senses as either heat or cold.
Examples: open flame; ignition sources; hot or cold surfaces, liquids or gases; steam; friction; and general environmental and weather conditions

Chemical
The energy present in chemicals that inherently or through reaction has the potential to create a physical or health hazard to people.
Examples: flammable vapors, reactive hazards, carcinogens or other toxic compounds, corrosives, pyrophorics, combustibles, oxygen-deficient atmospheres, welding fumes and dusts

Biological
Living organisms that can present a hazard.
Examples: animals, bacteria, viruses, insects, blood-borne pathogens, improperly handled food and contaminated water

Radiation
The energy emitted from radioactive elements or sources and naturally occurring radioactive materials (NORM).
Examples: lighting issues, welding arcs, solar rays, microwaves, lasers, X-rays and NORM scale

Sound
Sound is produced when a force causes an object or substance to vibrate and the energy is transferred through the substance in waves.
Examples: equipment noise, impact noise, vibration, high-pressure release and the impact of noise to communication

Abbreviations and Chemical Names

CHESM	Contractor Health, Environment and Safety Management
CO	carbon monoxide
CO_2	carbon dioxide
CPR	cardiopulmonary resuscitation
GFCI	ground fault circuit interrupter
H_2S	hydrogen sulfide
JHA	Job Hazard Analysis
JLA	Job Loss Analysis
JSA	Job Safety Analysis
LPSA	Loss Prevention Self Assessment
MOC	Management of Change
MSW	Managing Safe Work
N_2	nitrogen gas
OE	Operational Excellence
OEMS	OE Management System
PFD	personal flotation device
PPE	personal protective equipment
PSP	Personal Safety Plan
PSV	pressure safety valve
RCD	residual current device
SWP	Safe Work Practices
TIF	Think Incident Free

Hazard Analysis, a Requirement for All High-Risk Tasks

We eliminate or mitigate risks by identifying hazards, taking actions to reduce them and sharing what we know. Hazard analyses must be conducted by qualified people for the type of work and its potential hazards. Analysis may include:

1. **Planning Phase Analysis** such as Job Hazard Analysis (JHA), Safety Plan, Safety Instructions, Operating Procedures (with a review equivalent to a Planning Hazard Analysis), refinery instructions, review of safety plans, operator checklists or equivalent.
2. **Job Safety Analysis** (JSA), Job Loss Analysis (JLA) and JHA or equivalent including onsite review.
3. **Personal hazard assessment** tools, including Think Incident Free (TIF), Personal Safety Plan and Loss Prevention Self Assessment (LPSA) or equivalent.

Identify the Hazards and Take Action

- The first safeguard is you. To reduce the odds for human error, you must address any factors that may interfere with your readiness to perform well and to react effectively to unexpected events or changes.
- Review and follow the procedure for the task.
- Question what you would do in an emergency and include that information in the JSA document.
- Discuss the JSA with your co-workers to ensure it addresses the hazards associated with the work, that you understand what you will be doing and that you know how to do it safely.
- If the job changes: Stop, evaluate and revise the JSA as needed. Don't make snap decisions.

Potential Significant Hazards

A *potential significant hazard* is any condition, action or object that has the potential for an unplanned release of, or unwanted contact with, an energy source that may result in a serious or fatal injury.

Energy Source Hierarchy of Controls

Follow a *hierarchy of controls* approach to reduce the risk of a serious or fatal injury. Where possible, it is always best to first eliminate the hazard and then apply lower-level controls as needed. Based on the energy source, the hierarchy of controls is:

1. Remove the energy source.
2. Prevent the release of energy.
3. Protect from the release.
4. Use Stop-Work Authority.

Stop-Work Authority

All employees and contractors have the authority and responsibility to stop work that does not comply with the Tenets of Operation[2] or that presents an imminent hazard – without the threat of reprisal. Perform these steps in sequence if you feel your own work or the work of others is not safe:

1. Decide to intervene (take ownership).
2. Stop the unsafe act.
3. Notify immediate supervisors.
4. Resolve the issue.
5. Resume work (or stay shut down until risk is mitigated).
6. Share what you learned.

Do it safely or not at all.
There is always time to do it right.

[2]Tenets of Operation printed on back cover.

Human Performance

Human error has been shown to be a factor in nearly every serious incident and fatality. Your focus on improving human performance is critical to achieving an incident-free operation.

Distractions Can Happen to Anyone

In fact, the more familiar we are with the task, the easier it is to lose focus. Loss of focus can lead to an error. Even with established worker qualifications and the best tools and experience to guide us, we must also be personally ready to perform each job at our highest capacity.

The risk for error and injury goes up at all experience levels when individual or organizational factors, task demands or the work environment interfere with our ability to focus on our tasks.

Assess the Situation and Take Action

If you can answer "yes" to any of the assessment questions on the facing page, it may affect incident-free job performance. Preventive actions you or your supervisor can take to reduce the risks to working safely include:

- Get help.
- Get clarification.
- Get focused.
- Defer the work.

Human Performance Assessment Questions

Individual Factors

1. Are you feeling stressed, distracted or worried due to work or personal issues?
2. Are you excessively fatigued or do you have many things distracting you from the task at hand?

Task Demands

1. Are the procedures and instructions for the task unclear?
2. Does the task require high concentration or multitasking?
3. Does the task require more time than allowed?
4. Are you capable of performing the task but feel that you require more guidance?

Organizational Factors

1. Do you feel insecure about your ability to use Stop-Work Authority?
2. Are you unclear about your roles and responsibilities?
3. Are you uncomfortable communicating with your peers and supervisors?
4. Do you feel pressured to take shortcuts?

Work Environment

1. Is the environment (temperature, ventilation, room for movement, egress, lighting or noise level) different from what was expected or planned for?
2. Are you in an environment prone to unanticipated distractions?
3. Are you working in unpredictable or constantly changing conditions?
4. Are labels, signs or displays inadequate?

Confined Space

Potential Significant Hazards

Emergency-related entry can be hazardous without proper planning, training and equipment.

Lack of oxygen due to N_2, CO_2 or other agents can incapacitate staff in a confined space.

Flammable vapors may be present or build up during the work and create an explosive atmosphere.

Pyrophoric material (ignites on exposure to oxygen) may exist in vessels or pipes.

Toxic gases such as CO or H_2S can be hazardous in high concentrations.

Material in the space could shift and trap workers.

Converging walls or sloping floors can cause a fall onto unguarded equipment below.

Unguarded or exposed electrical equipment in a confined space poses a risk for electrocution.

Inadequate entry/exit methods (ladders, stairs and scaffolding) can cause falls and hinder evacuation.

Extreme temperatures in a non-ventilated space can lead to heat stress, heat stroke and other hazards.

Prevention Means Always:

- ☐ *Ask:* Is there a safer way to complete the job without entering the confined space?
- ☐ *Comply with permitting requirements. Use of this field guide is not an equivalent.*
- ☐ Provide supervisory job-site walk-through prior to permit approval and periodically during work.
- ☐ Establish a job-specific rescue plan, including rescue personnel and equipment, before entering the confined space.
- ☐ Keep a trained, CPR-certified entry watch at the assigned post throughout entry and any emergencies.
- ☐ Maintain an entry log at all times.
- ☐ Ensure workers entering confined spaces are fit for duty and qualified to work in a confined space.
- ☐ Complete and verify the isolation checklist – following approved isolation procedures – before starting work.
- ☐ Assess and eliminate pyrophoric materials prior to opening equipment (using temperature monitoring and air samples to confirm elimination as the material dries).
- ☐ Use adequate ventilation equipment, and follow all gas testing and monitoring requirements and procedures.
- ☐ Provide two-way communication (radios, *not* cell phones) for operations group and rescuers.

Electrical

Potential Significant Hazards

Lapses in focus while working on live electrical systems can present an electrocution hazard.

Electrically energized equipment and live electrical systems can expose workers to electrocution or arc-flash burns.

Overhead power lines can cause electrocution, especially near drilling rigs, ladders, lifting and other tall equipment.

Underground electrical cables can present hazards during any excavation, large or small.

Flammable vapor or material may ignite from sparks generated during electrical work.

Static electricity can ignite flammables during transfer operations.

Lightning is a potential hazard to anyone working outdoors, especially when working at height or in an open area.

Electrically powered equipment (power tools, extension cords, etc.) presents an electrocution hazard if it is improperly wired or if a short occurs.

Prevention Means Always:

- ☐ *Minimize work on live electrical systems. The first choice is to de-energize.*
- ☐ *Comply with permitting requirements and standards for Electrical Safe Work Practices[3] (SWP). Use of this field guide is not an equivalent.*
- ☐ Provide supervisory job-site walk-through prior to permit approval and periodically during work.
- ☐ Require that only qualified electrical persons work on systems rated 50 volts and above.
- ☐ Require a qualified electrical standby person and use of applicable arc-flash and shock PPE by everyone involved in interactions with exposed energized parts.
- ☐ De-energize/isolate, lock and tag, test, and ground (if applicable) electrical equipment. Address all points of isolation documented in the isolation checklist.
- ☐ Assume equipment is live – *Test Before Touch* every time!
- ☐ Ensure required clearance when working near overhead power lines. (Consider a crane's full extension radius.) Use *Look up and Live* flagging, warning cones and a spotter for work near overhead power lines.
- ☐ Contact utility providers to locate underground lines.
- ☐ Inspect equipment and power cords before each use. Require ground fault circuit interrupter (GFCI) or residual current device (RCD) outlets for outdoor work with portable electrical tools and lighting.
- ☐ Adhere to grounding, bonding and transfer rates to prevent static accumulation and discharge during flammable material transfer operations.
- ☐ Suspend work and seek safe refuge during threat of lightning.

[3]See Chevron Corporate Required Standard for Electrical Safe Work Practice at http://techstds.chevron.com/oe-corporate.asp.

Excavation

Potential Significant Hazards

Lack of situational awareness while working in the trench can expose workers to significant hazards.

Underground electrical lines can present a hazard during excavations, large or small.

Underground pipelines may contain pressurized, flammable or toxic materials, creating a hazard if released during excavation.

Cave-ins can crush or suffocate workers if proper preventive measures aren't taken.

Lack of oxygen can incapacitate workers.

Flammable gases can be present or build up during the work and create an explosive atmosphere.

Some toxic gases, such as H_2S, are heavier than air and can collect in low spots, resulting in dangerously high concentrations.

Drowning is possible if there is a leak or if rain runoff fills the excavation.

Excavation equipment can become a hazard when it is moved or if it tips over during the excavation work.

Prevention Means Always:

- ☐ *Ask:* Is there a safer way to complete the job without working in the excavation or near heavy equipment?
- ☐ *Comply with permitting requirements. Use of this field guide is not an equivalent.*
- ☐ Provide supervisory job-site walk-through prior to permit approval and periodically during work.
- ☐ Provide a competent person to assess the soil, plan and permit, to inspect the excavation and to engage engineering professionals as needed.
- ☐ Use only qualified and authorized personnel to operate your excavation equipment.
- ☐ Contact utility providers to identify, locate and understand routing of underground utilities.
- ☐ Establish a job-specific rescue plan, including rescue personnel and equipment, before entering the excavation.
- ☐ Select and use appropriate shoring or benching methods as defined in the *Safety in Designs* manual.
- ☐ Provide appropriate means for entering and exiting excavations, such as ramps, ladders, etc.
- ☐ Store removed soil away from the edge (at least 2 ft/0.6 m) to avoid cave-ins or soil falling on workers.
- ☐ Secure and barricade the work site to prevent unauthorized access by vehicles and personnel.
- ☐ Prohibit standing or working under loads.
- ☐ Follow all gas testing and monitoring requirements and procedures, especially near running engines.
- ☐ Inspect the site at shift start and after any change or event (such as rain, new equipment or an earthquake).

Hot Work

Potential Significant Hazards

Inadequate surveillance of job site conditions (for example, not monitoring for combustible gas) may put personnel at risk.

Flammable gases can be present or build up during the work and create an explosive atmosphere.

Flammable and combustible materials in the work area can ignite from transfer of heat, sparks or slag.

Uncontrolled entry into a restricted work site by motor vehicles or other engine-driven equipment (such as generators and welding machines) can ignite a fire or cause an explosion.

Explosive pockets of gas can build up while performing underwater cutting or welding.

Compressed gas cylinders may explode if hoses catch fire or may become missiles if pressure is suddenly released.

Prevention Means Always:

- ☐ *Ask:* Is there a safer way to complete the job with cold work?
- ☐ *Comply with permitting requirements. Use of this field guide is not an equivalent.*
- ☐ Provide supervisory job-site walk-through prior to permit approval and periodically during work.
- ☐ Complete and verify the isolation checklist and follow approved isolation procedures before starting work.
- ☐ *Make sure flammables can't be introduced during hot-work operations.* Seal drain openings, tank vents and pressure safety valve (PSV) discharges.
- ☐ Clear hot-work area of combustibles and flammables.
- ☐ Cut vents in underwater equipment where necessary to allow flammable gases to escape.
- ☐ Adhere to all gas testing requirements. Test properly to be sure there are no pockets of flammable vapors.
- ☐ Have a dedicated fire watch onsite during the work and for at least 30 minutes after hot work.
- ☐ Inspect all equipment, and follow safe handling procedures for compressed gas cylinders and hoses.
- ☐ Secure and barricade the work site to prevent unauthorized access of vehicles and personnel.
- ☐ Enforce permits for motorized vehicles operating in classified hazardous areas.

Lifting and Rigging

Potential Significant Hazards

Unclear communication between crane operator and other personnel – including standing out of operator's line of sight – may increase the risk for incidents.

Complex lifts (dynamic, blind or on unstable seas) increase the potential for all lift hazards.

Unchocked pipes may become falling objects.

Improper rigging, misidentifying the load or equipment failure may cause dropped loads.

Loads striking personnel, vehicles or equipment can result in serious loss.

Equipment overloading, overextension and overturning can result from crane malfunction, outrigger setup, heavy winds or the load exceeding capacity due to extended use or miscalculations.

Shifting loads may cause overloading or falling objects.

High-voltage power lines in a crane's working area can pose a potential electrocution hazard.

Congested work area can limit rigger escape.

Prevention Means Always:

- ☐ *Ask:* Is there a safer way to complete the job without lifting and rigging?
- ☐ *Comply with permitting requirements. Use of this field guide is not an equivalent.*
- ☐ Provide supervisory job-site walk-through prior to permit approval and periodically during work.
- ☐ Use qualified or certified crane operators, riggers and signalmen with the required experience for the lift.
- ☐ Evaluate any potential to strike process equipment or to drop a load on it.
- ☐ Avoid blind lifts. If required, take extra precautions.
- ☐ Eliminate uncertified homemade lifting devices.
- ☐ Use approved binding and chocking equipment for loads and pipe racks.
- ☐ Keep signalmen in view of the crane operator, and make sure they *Look up and Live* to spot electrical lines and safely guide their operators.
- ☐ Use tag lines (non-conductive) to guide loads.
- ☐ Maintain required clearance when working near overhead power lines. Provide a separate spotter and warning cones to mark power lines. *Allow for a crane's full extension radius in the clearance.*
- ☐ Barricade and secure clear pick-up, lay-down and crane operating areas at all deck levels, and establish clear escape routes for riggers.
- ☐ Make sure to have enough space, proper ground conditions and proper outrigger deployment for mobile crane operations.
- ☐ Prohibit climbing on or walking under loads.
- ☐ Cease operations during offshore helicopter takeoff and landing.

Marine Work

Potential Significant Hazards

- **Entering offshore installation safety zones** without notice or permission creates a hazard.
- **Improper use or failure to use personal flotation devices (PFDs)** dramatically increases the risk of drowning in the event of going overboard.
- **Unapproved or poorly maintained equipment** (such as for lifting and rigging, life safety or personnel transfer) increases the risk of accidents.
- **Diving activities** have their own inherent hazards.
- **Personnel transfer** using crane lifting, swing ropes, transfer bridges and other means can be hazardous.
- **Environmental conditions** such as fog, darkness, wind and storms increase risk during routine lifts, personnel transfer and boat or helicopter operations.
- **Static accumulation** can ignite flammables during transfer operations.
- **Anchoring near pipelines** increases the risk to equipment and staff.
- **Taut deck lines, ropes and chains** carry potential energy that can release with strong force if broken.
- **Wildlife** such as jelly fish, sharks, sea snakes and crocodiles can endanger staff working in the water.

Prevention Means Always:

- ☐ *Comply with permitting requirements. Use of this field guide is not an equivalent.*
- ☐ Provide supervisory job-site walk-through prior to permit approval and periodically during work.
- ☐ Prepare detailed dive plans that include rescue, Permit to Work and Simultaneous Operations plans as appropriate.
- ☐ Complete and verify the isolation checklist and follow approved procedures before starting work, for example, ensure water pumps are locked out/tagged out before divers enter the water.
- ☐ Use only certified and inspected lifting, rigging, diving and personnel transfer equipment.
- ☐ Establish clear communications and gain permission before entering any 500 meter Safety Zone.
- ☐ Anchor in areas away from pipelines or obstructions.
- ☐ Stay aware of taut lines, and stay out of the line of fire for deck lines, ropes and chains.
- ☐ Avoid contact with marine wildlife by minimizing work in the water, conducting work when wildlife is less active, using barriers (cages, dive bell, shark guards), and using spotters, alarms and procedures, or PPE (protective suits, mesh gloves).
- ☐ Adhere to grounding, bonding and transfer rates and related procedures to prevent static accumulation and discharge during flammable materials transfer.
- ☐ Wear PFDs at all times when they are required.
- ☐ Adhere to seating assignments on crew boats.
- ☐ Adhere to a transfer plan for on- and off-boarding.
- ☐ Use Stop-Work Authority if you feel environmental conditions make the risk of continuing work too high.

Motor Vehicle
and Motorized Equipment

Potential Significant Hazards

- **Distracted driving** due to reaching for something, eating, or phone/radio/computer use is hazardous.
- **Recklessness** (speeding, unplanned routes, seatbelts off, ignoring conditions) increases risk of crashes.
- **Impaired driving** (fatigue, medications, substance abuse) slows reaction time and hinders judgment.
- **Poor visibility** from weather or poor lighting, mirrors or obstructed view (dirty windows, load or vehicle structure) increase driver risk.
- **Road conditions** (slick, potholes, loose gravel, soft shoulders) may cause loss of control or rollovers.
- **Oncoming traffic and speeds over 25 mph (40 kph)** raise impact severity in collisions.
- **Unsecured cargo** can strike occupants and cause loss of driver control.
- **Large loads in congested work sites** may strike equipment and personnel.
- **Uncontrolled vehicle entry** may cause ignition in classified areas and higher risk of struck-by injuries.
- **Pedestrian traffic and large-animal crossings** can be unpredictable and present extra hazards.
- **Equipment failure** (brakes, tires, lights) can lead to crashes.

Prevention Means Always:

- ☐ *Question the need for all trips* and for moving equipment in congested construction or work sites.
- ☐ *Comply with permitting requirements. Use of this field guide is not an equivalent.*
- ☐ Prepare and follow a journey management plan. Address congested work zones, heavy traffic, night driving and weather and road conditions.
- ☐ Perform a walk-around inspection of your vehicle before use. Perform recommended maintenance.
- ☐ Secure all inside cargo and any cargo to be hauled.
- ☐ Wear your seatbelt, and make sure passenger seatbelts are fastened before the car is started.
- ☐ Make driving your sole task while operating a vehicle: *Don't use a cell phone*, and avoid other distractions.
- ☐ Drive drug- and alcohol-free.
- ☐ Pull off the road in a safe place at signs of fatigue. Rest before proceeding, or have someone else drive.
- ☐ Use Smith System (or similar) defensive driving principles.
- ☐ Maintain the recommended speed and following distance. Adjust for traffic, road and weather.
- ☐ Pay attention to road conditions, pedestrians, animals and other vehicles.
- ☐ Use caution lights, traffic cones, barricades or flaggers to control vehicular traffic in work areas.
- ☐ Use flaggers or trained spotters, and maintain two-way communication with equipment operators, especially when backing heavy motorized equipment.
- ☐ Make eye contact with equipment operators when you are on foot to be sure the operator sees you.

Work at Heights

Potential Significant Hazards

Inadequate equipment, improper use or non-use of fall protection, barricades, ladders and scaffolding increases the risk of serious harm.

Falling to a lower level without protection can lead to death or serious injury.

Falling objects (tools, equipment, etc.) can create serious hazards.

Environmental conditions (wind, rain, etc.) can present hazards when working at height.

Live electrical lines can pose an electrocution hazard to staff working at heights or positioning ladders.

Inadequately supported surfaces such as building or tank roofs, interior ceilings, decking and grating can lead to a fall.

Lightning is a potential hazard when working at height in an open area.

Suspension trauma is a hazard for any worker suspended too long in a fall-protection harness.

Prevention Means Always:

- ☐ *Ask:* Is there a safer way to complete the job without working at heights?
- ☐ *Comply with permitting requirements. Use of this field guide is not an equivalent.*
- ☐ Provide supervisory job-site walk-through prior to permit approval and periodically during work.
- ☐ Use trained qualified personnel for working at heights.
- ☐ Inspect fall prevention (harnesses, ropes, anchor points, arrest systems) for wear and tear before use.
- ☐ Equip scaffolding and elevated platforms with appropriate guardrails, toe-boards and netting, and have a qualified person inspect daily.
- ☐ Barricade, cover or guard surface openings. Caution tape is not a substitute for barricades. Maintain an exclusion zone beneath the work area.
- ☐ Set ladders on a firm base, correctly angled and tied off. Avoid overhead lines – *Look up and Live* when moving ladders and scaffolding.
- ☐ Avoid storing tools in high places when not in use. If using elevated storage, tie off tools to prevent falling.
- ☐ Use mechanical assist devices like ropes and pulleys to securely transport tools from grade to work level.
- ☐ Use full-body harness protection with 100% tie-off. Never rely on just a fall-protection belt.
- ☐ Use anchor points that are strong enough and high enough so that a fall will clear any obstructions.
- ☐ Have a plan to quickly rescue fallen or suspended staff.
- ☐ Be aware of electrical lines and weather conditions; use Stop-Work Authority if necessary.

Process Safety

We **always** assure safeguards are in place and functioning

We process, handle and transport hazardous materials every day. To do this safely, we must always maintain containment and control of these materials. Maintaining effective barriers, systems and safeguards is critical to preventing loss of process containment.

Significant Loss of Containment Events

- **Fires and vapor cloud explosions** can be fatal to workers in the immediate vicinity or surrounding area.
- **Toxic and hazardous releases** in sufficient quantities can be fatal to anyone who is exposed.
- **Release of hazardous energy or material** can cause significant equipment damage and endanger nearby workers.

Key Preventive Activities

- Maintain operation within safe limits.
- Follow operating procedures.
- Follow Management of Change procedures.
- Follow isolation procedures.
- Perform inspections and preventive maintenance.
- Follow maintenance procedures.
- Maintain process safety information.

25 Assess **all** of your job's specific hazards

Safeguards[4]

- ☐ Operate in accordance with procedures, and maintain the primary layers of protection.
- ☐ Identify critical process parameters, and stay within defined safe operating limits.
- ☐ Maintain the integrity of protective systems such as detectors, alarms, shut-ins, interlocks, over-speed trips, relief devices and fire protection systems.
- ☐ Assure proper isolation when opening process equipment or piping.
- ☐ Follow documented maintenance procedures.
- ☐ Provide onsite supervisory control, including pre-job walk-through and during work activities.
- ☐ Communicate effectively when issuing or receiving permits so that everybody understands the process hazards and how to safely transfer equipment custody between work crews and operations.
- ☐ Address condition changes that may affect process operations and equipment.
- ☐ Recognize process changes and follow Management of Change (MOC) procedures when appropriate.
- ☐ Conduct pre-startup safety reviews before introducing hazardous material or energy to verify equipment is safe to start up.
- ☐ Identify abnormal conditions and report them to supervision.
- ☐ Make certain that emergency procedures are well-understood and rescue drills conducted regularly.
- ☐ Report all loss of containment events; investigate to determine root causes and prevent recurrence.

[4]The "Swiss Cheese Model" describes how accidents may be caused. It proposes that incidents are the result of a series of failures or flaws in existing safeguards (procedures, training, inspection, alarms, etc.). The slices of Swiss cheese represent the safeguards, and the holes are the failures or flaws in each safeguard. Having multiple safeguards in place is analogous to a stack of different slices of Swiss cheese. It's when the holes line up and allow successive failures to go unchecked that a serious incident occurs.

James Reason (1990-10-26). Human Error. Cambridge University Press. ISBN 0521314194

Did you assess for human performance? 26

Notes

Preventing Serious Injury and Fatalities

Field Guide

Tenets of Operation

Do it safely or not at all.
There is always time to do it right.

1. Always operate within design and environmental limits.
2. Always operate in a safe and controlled condition.
3. Always ensure safety devices are in place and functioning.
4. Always follow safe work practices and procedures.
5. Always meet or exceed customers' requirements.
6. Always maintain integrity of dedicated systems.
7. Always comply with all applicable rules and regulations.
8. Always address abnormal conditions.
9. Always follow written procedures for high-risk or unusual situations.
10. Always involve the right people in decisions that affect procedures and equipment.

http://go.chevron.com/fatalityprevention

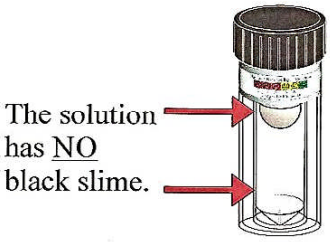
GO-1965 (2-12)
0212-090747

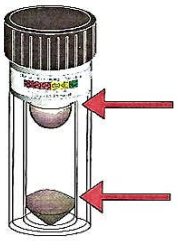
APPENDIX H
SRB BART™ BIODETECTOR TECHNICAL SPECIFICATION SHEET

BART™ TEST FOR SRB
SULFATE REDUCING BACTERIA

Present/Absent - observe daily for 8 days.

ABSENT (Negative - Non-aggressive)	PRESENT (Positive - Aggressive)
The solution has NO black slime.	A **Black** slime ring beneath the ball, and/or A **Black** slime growth at the base of tube.





1. View test each day for up to 15 days.

2. Observe any growths/color changes.

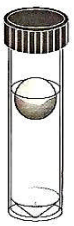
3. Compare with description(s).

*Note: Refer to page bottom for approximate population

Advanced test information.

Determination of Dominant Bacteria

BLACK only in BASE(**BB**) - Dense anaerobic SRB consortium.



BLACK only around BALL/TOP(**BT**) - Aerobic SRB consortium.

BLACK in BASE and around BALL - Combination of aerobic(**BT**) and anaerobic(**BB**) SRB.

Solution CLOUDY - Anaerobic bacteria present.

Determination of Potential SRB Population - observe daily for reaction.

Days to reaction - Approximate SRB Population (cfu/mL)

Aggressive	Moderate	Not Aggressive
1 - 2,200,000	6 - 1400	9 - 20
2 - 500,000	7 - 325	10 - 5
3 - 115,000	8 - 75	11 - <1
4 - 27,000		
5 - 6000		

SRB-BART™ Technical Advisory

This advisory notifies users of the SRB-BART system for the detection of sulphate reducing bacteria that the standard maximum length for the monitoring of the reaction patterns is commonly ten (10) days. Operators using the SRB-BART tester for the detection of deep-seated SRB infestations in water systems associated with wells and distribution system may find it advantageous to continue observations until the fifteenth (15th) day. This is because some SRB do not exhibit reaction patterns (i.e. BT, or BB) until after other bacterial consortia have already grown within the tester (e.g. anaerobic bacteria). This delays the observation of a positive detection for the SRB. In water pipelines and biofouling water wells the time lags can be delayed until days 11 to 15. It is not possible to project the size of the SRB population but this extension of the testing period can be used to determine the presence / absence of the SRB when they are present in environments either in very low numbers or in a consortial association with other microbial species. It can be expected that where routine monitoring is being undertaken, sudden decreases in the time lags to 10 days or less can be taken to indicate that the SRB are becoming significantly more aggressive and may require corrective action (e.g. disinfection, pigging the lines etc).

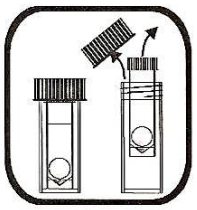
Please submit any comments and concerns to: sales@dbi.ca

SRB-BART™

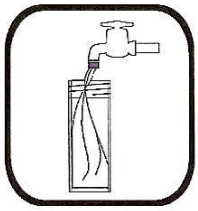
For water and wastewater

Sulfate-Reducing bacteria are a group of anaerobic bacteria that generate hydrogen sulfide (H_2S). This product can cause a number of significant problems in water. Problems range from "rotten egg" odors to the blackening of equipment, slime formations, and the initiation of corrosive processes. SRB microorganisms are difficult to detect because they are anaerobic and tend to grow deep down within biofilms (slimes) as a part of a microbial community. SRB may not be present in the free-flowing water over the site of the fouling.

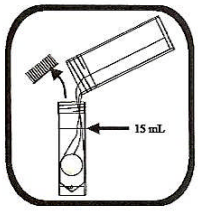
If SRB activity is present in the BART, sulfate is reduced to H_2S, which reacts with the diffusing ferrous iron to form black iron sulfide. This sulfide commonly forms either in the base (as black precipitates) and/or around the ball (as an irregular black ring).



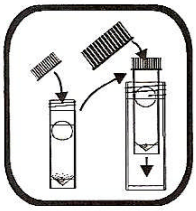
1. Remove the inner tube from the outer tube.



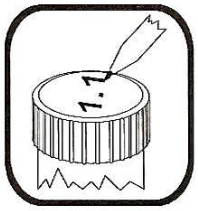
2. Using the outer tube from the BART, or a different sterile container, collect at least 20 mL of sample.
Note: *Do not touch or contaminate the inside of the tube or lid. Use aseptic technique.*



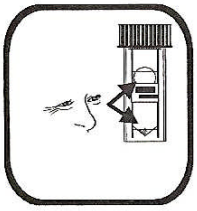
3. Fill the inner tube with sample until the level reaches the fill line.
Note: *After removing the cap from the inner tube, set it down directly on a* ***clean surface****. To avoid contamination, do not invert the cap.*



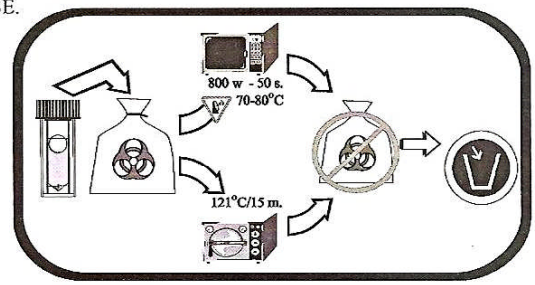
4. Tightly screw the cap back on the inner tube. Return the inner tube to the outer tube and screw the outer cap on tightly. Allow the ball to rise at its own speed.
DO NOT SHAKE OR SWIRL THE TUBE.



5. Label the outer tube with the date and sample origin.



6. Place the BART tube away from direct sunlight and allow to incubate at room temperature. Check the BART visually for reaction daily.



7. Safely dispose using a dedicated microwave oven or by autoclave.

HACH Company
P.O. Box 389
Loveland, CO 80539-0389
Telephone: (970) 669-3050
Fax: (970) 669-2932

For Technical Assistance,
Price Information and Ordering:
In the U.S.A.
Call toll-free **800-227-4224**

In Europe, the Middle East, and Mediterranean Africa:
HACH Company, c/o Dr. Bruno Lange GmbH • Willstätterstr. 11 • D-40549 Düsseldorf, Germany
Telephone: +49/[0]211.52.88.0 • Fax: +49/[0]211.52.88.231

Certificate of Analysis

This certificate confirms that the BART™ product listed by name, lot number, and batch number has been subjected to the full range of Quality Control procedures as outlined in "User Quality Control Manual in support of the BART Biodetection Technologies" published in 2004 by Droycon Bioconcepts Inc.

BART™ Type: SRB-BART — Batch #: 0813-B,D

Release date*: June 2, 2017 — Lot#: 0813-D

Shipment date: July 3, 2017 — Expiry date: June 2021

* Approval for release includes the following criteria: 1. confirmation of sterility for the vials and caps, 2. approval of the medium as being appropriately formed and acceptable, 3. is sterile, and 4. responds in a typical way to inoculation and incubation using selected defined microbial cultures. Details of these criteria are included in our Web Site.

This certificate confirms that the batch of the BART™ biodetectors listed have satisfactorily passed the QC screening procedures and were approved for release on the date given above

Certificate Number: 170703A

This certificate was issued by Droycon Bioconcepts Inc., 315 Dewdney Ave., Regina, SK., Canada, S4N 0E7 as an assurance that the product listed above has passed through the quality control procedures considered essential to the successful use of the testing device.

DBI ISO 9001:2000 Compliant

For more information, visit our web-site at:
http://www.DBI.ca

APPENDIX I
SULFATE INJECTION EVENT CONTRACTOR QUOTES

Stantec Total Field Labor and Equipment $17,556.04

Stantec Injection Equipment Cost Estimate

SYSTEM CONSTRUCTION				$2,556.04	
Equipment & Materials					
0.5-HP, 115V Submersible Pump	1	Each	$552.80	$552.80	Grainger Item #4HU80
3/4" Dwyer Instrument Water Meter	3	Each	$75.50	$226.50	Dwyer Instrument Model #WM2-A-C-03
1" Male NPT x Male Camlock Fitting	11	Each	$3.78	$41.58	Banjo Fitting, Grainger Item #1DPK4
1" Male NPT x Female Camlock Fitting	10	Each	$8.05	$80.50	Banjo Fitting, Grainger Item #1DPJ9
1" Hose Barb x Female Camlock Fitting	1	Each	$7.72	$7.72	Banjo Fitting, Grainger Item #1DPK1
1" Gasket for Female Camlock Fittings	12	Each	$0.71	$8.52	Banjo Fitting, Grainger Item #1DPK5
1" Vacuum-Rated Hose	6	100 feet	$230.25	$1,381.50	Goodyear Products, Grainger Item #4XR62
1" Female NPT PVC Ball Valve	13	Each	$7.06	$91.78	Grainger Item #4YLJ5
1" PVC Tee Slip x Slip x Female NPT	3	Each	$1.09	$3.27	Grainger Item #5WNY0
1" x 1/4" PVC Threaded Reducing Bushing	3	Each	$7.04	$21.12	Grainger Item #6MV66
1" PVC Female Adapter	1	Each	$0.42	$0.42	Grainger Item #5WPJ5
1" PVC Cross	1	Each	$2.02	$2.02	Grainger Item #5WPG2
1" PVC 90	2	Each	$0.71	$1.42	Grainger Item #22FJ86
1" PVC true-union ball valve	3	Each	$22.67	$68.01	Grainger Item #4PGA7
1" Slip x 3/4" Female NPT Reducing Bushing	3	Each	$0.69	$2.07	Grainger Item #5WPP9
1" x 3/4" Threaded Reducing Bushing	3	Each	$0.97	$2.91	Grainger Item #5WPV0
1" Female NPT x Female NPT PVC Union	3	Each	$8.60	$25.80	Grainger Item #22FM81
0-30 PSI Pressure Gauge x 1/4" Male NPT	3	Each	$12.70	$38.10	Grainger Item #4FMC2

Stantec Injection Field Labor Cost Estimate

SULFATE INJECTION FIELD LABOR (minus travel)				$15,000.00	
Stantec staff engineer	100	Hours	$87.00	$8,700.00	10 hrs per day for 10 days
Stantec technician	100	Hours	$63.00	$6,300.00	10 hrs per day for 10 days

5628 Clifford Circle
Trussville, AL 35210

Date: 3/27/2019

ENVIRONMENTAL PRODUCTS & SERVICES OF VERMONT, INC.

Phone: 205-467-0319
Fax: 205-467-0987

WORK QUOTATION / AUTHORIZATION

Customer:	Stantec Consulting	Contact:	Erin O'Malley
Address:	2321 Club Meridian Drive	Telephone:	517-349-9499
	Suite E	Fax:	517-349-6863
City:	Okemos	Email:	erin.omalley@stantec.com
State / Zip	Michigan 48864	Site:	CVS Dothan

Environmental Products & Services of Vermont, Inc. will furnish all labor, equipment, supervision and materials, unless otherwise specified, to perform the following scope of work.

SCOPE OF WORK

Sulfate Solution Injection

Inject a total of 10,000 gallons of sulfate solution into six injection wells (1,900 gallons per well at five wells and 500 gallons at one well) located at the above referenced site over a 10-day injection event (assuming 8-hrs per. The target sulfate concentration of the injection solution will be 990 mg/L. Separate batches of sulfate solution will be mixed for each injection well and injected one well at a time. Stantec will provide EPSVT with specifications for mixing the sulfate solution and will provide a knowledgeable field representative to supervise/direct the injection event.

EPSVT will provide a mobile liquid injection system and personnel (foreman and field technician) to operate the system. EPSVT will mix the sulfate solution per Stantec specifications and under their supervision. EPSVT will make all system connections to the injection wells. The volume injected, injection pressure and flow rate will be recorded at least hourly or as directed by Stantec.

Item	Unit	Quantity	Rate	Cost
Mobilization/Demobilization	Each	2	$1,000.00	$2,000.00
Labor (10-hr days)	Per Day	10	$1,740.00	$17,400.00
Equipment (Injection System, Pickup Truck)	Per Day	10	$490.00	$4,900.00
Materials (PPE, Tools, Fuel, etc)	Per Day	10	$165.00	$1,650.00
Total Estimated Cost				**$25,950.00**

Injection System consists of air compressor, generator, chemical injection pump, secondary mixing tank, flow meter, hoses and well headers.

Stantec will provide Epsom salts for injection.

Any work completed outside of the above estimated timeframes will be charged at the above specified unit rates.

JOB COST: ☐ TIME & MATERIAL ☒ QUOTED

All work will conform to all local, state and federal regulations. If this job is quoted, any disposal or other work beyond the scope of work described above, unless agreed in writing, will be billed at the current Time and Material Rates. All customer containerized waste must meet US DOT "UN" packaging standards if it is a hazardous DOT material. If the packaging does not meet these standards, Environmental Products & Services of Vermont, Inc. will over pack the containers and all associated costs incurred will be charged to the customer at standard Time and Material Rates.

This quotation is valid for 30 days from the above date and subject to verification thereafter. Sales tax, if applicable, is a separate item. Standard payment terms are cash in advance, Visa/MasterCard, or net 10 days with credit approval.

Payment terms should be cash, check or credit card in advance, or net 10 days after completion of a credit application and credit approval. Environmental Products & Services of Vermont, Inc. does not agree to "pay when get paid" clauses. Finance charges of one and one-half percent (1.5%) per month will be due on payments past due after sixty days from date of invoice. Payment by MasterCard/Visa, American Express, or Comcheck is available. The Company reserves the right to restrict the use of credit cards on selected products and services.

Customer consents to personal jurisdiction in the courts of the State of New York County of Onondaga; Customer agrees that Venue of any legal action shall be in Onondaga County, New York. Any dispute arising from this agreement will be governed by the laws of the State of New York. If action or suit by an attorney is necessary, Customer will pay all reasonable attorney's fees, court costs, and costs of collection incurred with or without suit and including appeals, in an amount not less than 25% of the principal amount.

A fuel surcharge will be applied to all invoices for fuel consuming equipment only. An Insurance, Security and Training fee (IST) of 5 % will be added to the total invoice, not to exceed $750.00.

Customer agrees to indemnify, exonerate, and hold Environmental Products & Services of Vermont, Inc. harmless against loss, damage, or expense, by reasons of suits, claims, demands, judgments, and causes of action for personal injury, death or property damage rising out of or in any way in consequence of the performance of all work undertaken by Environmental Products & Services of Vermont, Inc. except that in no instance shall the customer be held responsible for any liability claim demand or cause of action attributable solely to the gross negligence of Environmental Products & Services of Vermont, Inc.

I agree to accept the labor, materials, and equipment utilization as reported on the Environmental Products & Services of Vermont, Inc. Daily Job Reports. **If I wish to have them reviewed, I will have a representative on site at the completion of work each day to review and sign the Daily Job Reports.** The Daily Job Report is not applicable for product only sales.

_____

Keith Harmon

Environmental Products & Services of Vermont, Inc. Representative

IF YOU ACCEPT THIS PROPOSAL AND TERMS SET FORTH, PLEASE SIGN BELOW AND RETURN THIS ORIGINAL COPY FOR OUR FILES.

By: _____ Title: _____ Date: _____

Job Number: _____ Customer Purchase Order Number:_____