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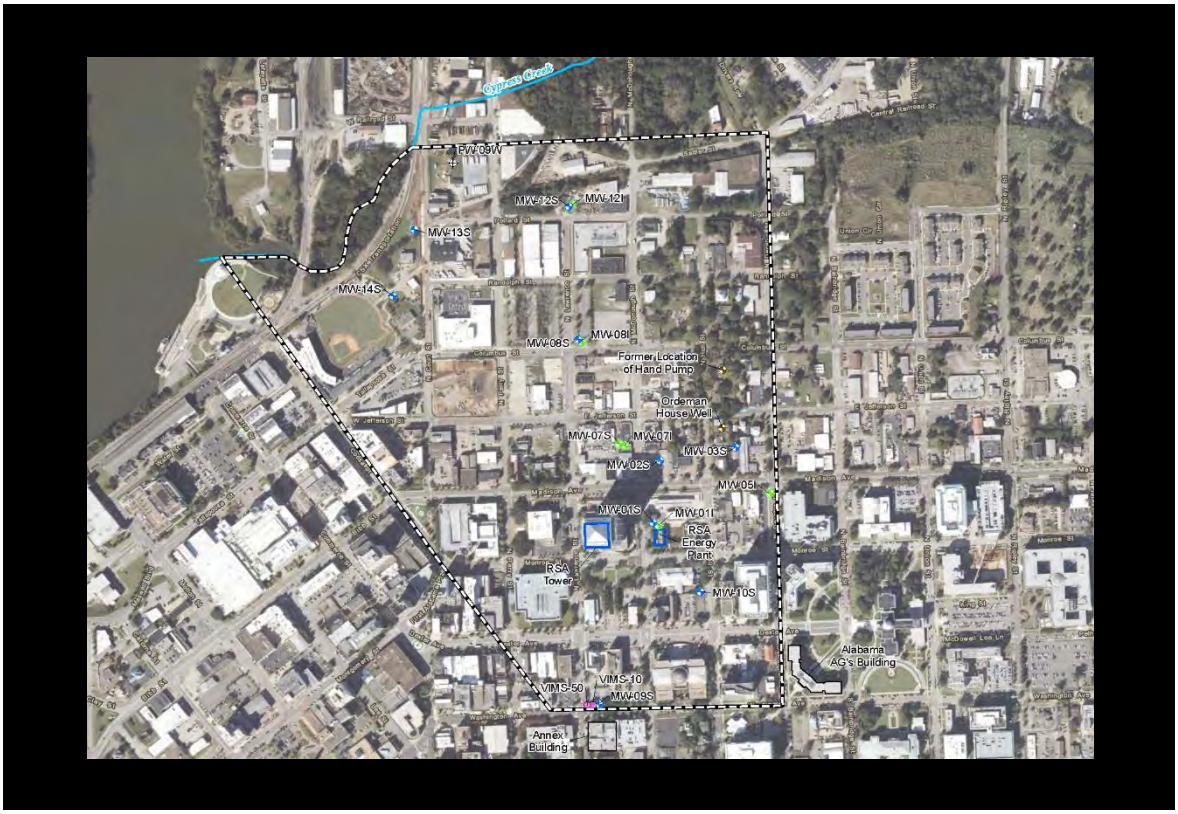
2022 Remedial Action Progress Report

Alabama Department of Environmental Management
by the Downtown Environmental Alliance

Downtown Environmental Assessment Project
May 2023



PE Certification

This 2022 Remedial Action Progress Report was prepared under the supervision of a Professional Engineer licensed by the Alabama Board of Licensure for Professional Engineers and Land Surveyors.

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Alabama PE No. 26705

May 24, 2023
Date

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Acronyms and Abbreviations

µg/L	microgram(s) per liter
ADEM	Alabama Department of Environmental Management
bgs	below ground surface
COG	Community Outreach Group
COPC	chemical of potential concern
DAF	dilution attenuation factor
DCE	dichloroethene
DEA	Downtown Environmental Alliance
DEAP	Downtown Environmental Assessment Project
EC	environmental covenant
EI	environmental investigation
EJI	Equal Justice Initiative
EPA	U.S. Environmental Protection Agency
GWPS	Groundwater Protection Standard
IC	institutional control
ICP	Institutional Controls Plan
MCL	maximum contaminant level
NPL	National Priorities List
PCE	tetrachloroethene
RAPR	Remedial Action Progress Report
RAR	Remedial Action Report
RSL	regional screening level
TCE	trichloroethene
USGS	U.S. Geological Survey
VI	vapor intrusion
VIMS	vapor intrusion monitoring system
VISL	vapor intrusion screening level

1. Executive Summary

This Remedial Action Progress Report (RAPR) is being submitted to the Alabama Department of Environmental Management (ADEM) by the Downtown Environmental Alliance (DEA) to summarize activities related to the remedial actions conducted in 2022 for the Downtown Environmental Assessment Project (DEAP), in accordance with the Institutional Controls Plan (ICP) (CH2M[1], 2019a) and the Remedial Action Report (RAR) (CH2M, 2019b). The remedial actions selected for the DEAP include institutional controls (ICs), Five-Year Reviews, and monitoring of groundwater and ICs, in accordance with the ADEM-approved ICP.

The DEAP site (formerly known as the Capitol City Plume site) has been the subject of numerous investigations conducted by ADEM, the U.S. Environmental Protection Agency (EPA), U.S. Geological Survey (USGS), and the DEA and their respective contractors for sampling of soil, groundwater, sewer water, soil vapor, and tree cores. Details of the historical investigations conducted at the DEAP are provided in the Recommendation to De-propose from the National Priorities List (NPL) – Downtown Environmental Assessment Project (formerly the Capital City Plume) (CH2M, 2020). The text of this document is included as Appendix A to this report. Figure 1 presents the DEAP investigation area boundary.

Based on historical investigations, two tetrachloroethene (PCE) plumes in groundwater, one emanating from the area of the RSA Energy Plant and one originating in the area of MW-12S, were identified at the DEAP. No residual PCE contamination was identified in unsaturated soil. Chemicals of potential concern (COPCs) for the DEAP were identified as PCE in groundwater and associated degradation products, namely trichloroethene (TCE), cis-1,2-dichloroethene (DCE), trans-1,2-DCE, and vinyl chloride. PCE and TCE were the only chemicals in groundwater that exceeded the lower of the maximum contaminant levels (MCLs) and EPA Regional Screening Level (RSLs). The lateral extent of PCE exceeding the MCL in groundwater terminated near Cypress Creek, where the influence of the Alabama River acts as a hydraulic barrier to impede further lateral migration. TCE did not exceed the MCL but was present in concentrations exceeding the RSL in isolated areas within the site.

PCE and TCE were also identified as exceeding vapor intrusion screening levels (VISLs). However, only PCE in soil vapor was identified as being related to the DEAP groundwater plume. Based on the previous investigation results, TCE in soil vapor is attributed to historical releases from other sources.

The results of the May 2022 annual groundwater sampling at the DEA site indicate that the groundwater PCE plume remains stable, the western boundary of the downgradient portion of the plume has been delineated at MW-14S, and concentrations at the downgradient edge of the plume are currently an order of magnitude below levels that would indicate the plume discharge could potentially result in an exceedance of surface water quality criteria in Cypress Creek. Therefore, the conceptual site model developed for the DEAP during the environmental investigation (EI) and the selected remedy documented in the ICP remains valid and is appropriate for use in evaluating conditions at this site.

This RAPR is the third of three annual progress reports that have been prepared for the DEAP. Based on activities during the last 3 years, including subsequent discussions and meetings with ADEM on April 21, 2023, the DEA recommends the following groundwater monitoring, site inspection, and progress report activities for the next 3 years:

[1] CH2M HILL Engineers, Inc. (CH2M) is now part of Jacobs Engineering Group Inc.

- Continue to collect groundwater depth-to-water measurements at the nine shallow and six intermediate zone wells on an annual basis.
- Collect groundwater samples from six site monitoring wells (MW-02S, MW-03S, MW-08S, MW-12S, MW-13S, and MW-14S) on an annual basis.
  - Should any of these wells exhibit PCE concentrations below the site Groundwater Protection Standard (GWPS) of 5 micrograms per liter (µg/L) for three consecutive annual sampling events, these wells will be removed from the groundwater sampling requirements[2] and used for water level measurements only.
  - Based on the 2022 groundwater sampling results, monitoring well MW-01S has exhibited three consecutive non-detectable PCE concentrations, which is below the GWPS (5.0 µg/L) and, therefore, will be removed from the sampling requirements.
- Conduct windshield driving inspection of the DEAP area annually to review the site for major construction efforts and changes to the property use in the downtown area.
- Conduct random property inspections and interviews on a triannual basis, with the next set of inspections/interviews to be conducted in 2025.
- Continue management of environmental covenants on the project website.
- Continue mailing IC notification letters annually to ensure that existing and new downtown property owners will be informed of the ICs and City Ordinance for the DEAP.
- Continue communications with the Community Outreach Group (COG) to keep them informed of project progress and understand perspectives of people who live, work, or own property in the DEAP project area.
- Maintain the project website as a source of information for the community about the project.
- Submit RAPRs on a triannual basis, beginning at the conclusion of the 2025 monitoring activities, and submit annual technical memorandums to inform ADEM of the annual activities conducted at the DEAP.

Any revised monitoring frequency will be reviewed and approved by ADEM.

[2] In accordance with Alabama Admin Code R 335-14-5-.06(7)(c) and 335-14-5-.06(11)(f)

2. 2022 Groundwater Monitoring

2.1 Site Hydrogeology and Groundwater Gauging

The geology beneath the DEAP site consists of a thin soil layer on top of quaternary terrace deposits comprised of medium to coarse-grained sand, with interbedded clay and gravel lenses. Underlying these recent terrace deposits are Cretaceous sediments of the Eutaw, Gordo, and Coker formations. The Eutaw formation is an aquifer unit characterized by two thick layers of marine sands separated by a thin layer of marine clay (USGS, 1987). The terrace deposits and Eutaw formation comprise the shallow aquifer. The Gordo and Coker aquifers consist of an estimated 500 feet of interbedded clay, sand, and gravel above crystalline bedrock. The shallow aquifer is unconfined and 120 to 150 feet thick underneath the DEAP site, but a localized low-permeability zone may exist from approximately 35 to 50 feet below ground surface (bgs) (ADEM, 1995). Beneath the shallow aquifer, a low-permeability sandy clay unit effectively separates it from the underlying Gordo and Coker formations.

Water levels measured in the shallow and intermediate aquifer monitoring wells at the DEAP site in May 2022 range from approximately 24 to 54 feet bgs (Table 1). Groundwater generally flows west-northwest toward Cypress Creek and the Alabama River (Figure 2). These results are consistent with historical data.

2.2 Groundwater Sampling

Between May 25 and 27, 2022, groundwater samples were collected from seven shallow aquifer monitoring wells (MW-01S, MW-02S, MW-03S, MW-08S, MW-12S, MW-13S, and MW-14S). These samples were analyzed for PCE to assess the stability of the PCE groundwater plume. Groundwater sampling was conducted using the EPA Region 4 low-flow purge method. Specific conductance, pH, and turbidity measurements were allowed to stabilize for three consecutive readings while a steady water level was maintained prior to collecting the sample. The results of the May 2022 groundwater sampling are summarized in Table 2; the July 2016, April 2020, and June 2021 PCE concentrations for wells sampled in May 2022 are provided for comparison. Final water quality parameters for each well sampled are provided in Table 3. The extent of PCE greater than the MCL in groundwater at the DEAP site is presented on Figure 3. Time series trend charts of PCE concentrations for monitoring wells with more than two data points available are provided on Figures 4 through 10. The data quality evaluation and analytical laboratory report are included in Appendix B. Field records are provided in Appendix C.

Consistent with the conceptual site model detailed in the EI Report (CH2M, 2017) and historical results, two primary PCE plumes are present at the DEAP site (Figure 3). One plume originates near MW-01S and the RSA Energy Plant. Another plume originates near MW-12S; this plume is not directly downgradient of the RSA Energy Plant and likely had other sources contributed from various industries in the area.

Except for MW-13S, PCE concentrations in groundwater at the site in May 2022 are similar to those reported in July 2016 and April 2020 (Table 2). MW-13S is the most downgradient well installed at the site and is adjacent to Cypress Creek. Results of hydraulic studies conducted in 2016 indicate that influence on groundwater from the Alabama River occurs as porewater exchange, the cycling of water between the river's surface and sediments below the river. Due to the large volume of flow in the Alabama River near Montgomery, porewater from the Alabama River acts as a hydraulic barrier that both limits the migration of the PCE plume into the creek and dilutes concentrations of PCE at the downgradient edge.

The 2016 analytical data from MW-13S were used to evaluate potential exposure to surface water in Cypress Creek as part of the *Risk Assessment/Alternatives Analysis Report Downtown Environmental*

Assessment Project, Montgomery, Alabama (CH2M, 2019c), with modeled results indicating that surface water concentrations that may result from the discharge of PCE in groundwater to Cypress Creek (based on concentrations at MW-13S and a site-specific dilution attenuation factor [DAF] of 103) were 1.69 µg/L, which is well below the surface water criteria for the consumption of fish and water of 11 µg/L. The DEAP updated the DAF calculations in 2022 to account for a more conservative (wider) plume transect parallel to Cypress Creek after MW-14S was installed. Using an updated plume width of 560 feet, measured along a transect line running from MW-14S and through MW-13S (i.e., across the leading edge of the plume), the revised site-specific DAF is 73.

Although concentrations of PCE have increased at MW-13S since 2016 (Table 2, Figure 9), the estimates of surface water concentrations in Cypress Creek that may result from the discharge of PCE in groundwater based on the May 2022 concentrations in MW-13S and the revised DAF of 73 indicate the estimated Cypress Creek concentrations (4.0 µg/L) remain well below the surface water criteria of 11 µg/L for the consumption of fish and water, and approximately an order of magnitude below the surface water quality criteria for fish and wildlife surface water (36 ppb), which is the most likely water use for Cypress Creek. Using the DAF of 73, PCE concentrations in MW-13S would need to increase to approximately 2,600 ppb before the surface water quality criteria for fish and wildlife surface water in Cypress Creek would be exceeded. Based on the existing 2016 through 2022 data, where maximum PCE concentrations detected in any of the wells are at least an order of magnitude below 2,600 µg/L, it is highly unlikely that concentrations in MW-13S would reach 2,600 µg/L.

In the well closest to the RSA Energy Plant, MW-01S, PCE concentrations have declined overall since monitoring began at this well in May 2000, and PCE was not detected in the last three monitoring events (Figure 4). At MW-02S (Figure 5) and MW-12S (Figure 8), concentrations have been generally stable and declining over the past several sampling events, respectively. Concentrations at MW-08S have fluctuated since monitoring began in 2000 (Figure 7). Concentrations at MW-03S have also fluctuated but remain well below historical maximums (Figure 6). At MW-14S, installed in October 2019 to better refine the lateral extent of the downgradient portion of the PCE plume, concentrations have not changed significantly and are just slightly greater than the GWPS of 5 µg/L (Figure 10), indicating that MW-14S closely defines the western boundary of the downgradient portion of the plume.

Overall, the results of the May 2022 groundwater sampling indicate the PCE groundwater plume is generally stable, the western boundary of the downgradient extent has been defined, and concentrations at the downgradient edge of the plume are currently an order of magnitude below levels that would indicate the plume discharge could potentially result in an exceedance of surface water quality criteria in Cypress Creek. Based on these data, the conceptual site model developed for the DEAP during the EI and the selected remedy documented in the ICP (CH2M, 2019a) remain valid and appropriate for use in evaluating conditions at this site.

3. Site Inspections and Interviews

3.1 Inspections and Interviews

In August and September 2022, onsite inspections and interviews were conducted at 10 selected parcels in the DEAP area (Figure 11). Some properties were selected based on historical knowledge of the site, while others were selected at random. The onsite inspections focused on the following:

- Overall use of the property
- Presence/absence of private groundwater wells on the property
- Use of subsurface structures (i.e., basements)

Figure 11 shows the properties that were selected for inspection (highlighted in blue) and properties that were inspected based on ICs that have been recently placed on them (highlighted in purple). Properties that have been inspected during the 2020 and 2021 random inspections are also shown on Figure 11 (highlighted in green). The property owners are summarized in the table inset on Figure 11. Photographs of property and structures were taken where access was granted and are included in Appendix D. Owner interviews were conducted, when possible. Records of interviews and onsite inspections are included in Appendix E. The results of the interviews and inspections are summarized in the following subsections.

3.1.1 210 East Jefferson Street – Jones Brothers Towing

An onsite inspection and interview were conducted at 210 East Jefferson Street (Figure 11, MAP ID #52, owned by Mr. Robert Barry Leavell) on September 14, 2022. The interview was conducted with Mr. Leavell, the owner. According to Mr. Leavell and observations during the site inspection, the property is rented to the Jones Brothers Towing company and no private water wells are onsite. Photographs taken at the site show the building and parking area.

3.1.2 318 Madison Avenue – Circle K

An onsite inspection was conducted on August 24, 2022 at the Circle K gas station on 318 Madison Avenue (Figure 11, MAP ID #46, owned by Circle K). The owner was not available for interview. No private water wells were noted onsite during the inspection, and no evidence of intrusive work was noted. Photographs taken at the site show the gas station and associated parking area.

3.1.3 321 North Hull Street – Massage and Body Works Studio

An onsite inspection and interview were conducted at 321 North Hull Street (Figure 11, MAP ID #24, owned by the City of Montgomery) on August 24, 2022. The interview was conducted with Mr. Collier Neely, the executive director for the Landmarks Foundation, which manages the property. According to Mr. Neely, the property is used as a massage and body works studio. No evidence of intrusive work or water wells was identified during the inspection. The building appears to have a crawl space. Photographs taken at the site show the building and surrounding grassy area.

3.1.4 336 North Court Street – Open-Air Park

An onsite inspection and interview were conducted at the open-air park at 336 North Court Street (Figure 11, MAP ID #78, owned by Equal Justice Initiative, Inc.) on August 24, 2022. The owner was not available

for interview. No private water wells and no evidence of previous intrusive work was noted during the inspection. Photographs taken at the site show the park grounds.

3.1.5 350 North McDonough Street – Tucker Pecan Company

An onsite inspection and owner interview were conducted at the Tucker Pecan Company at 350 North McDonough Street (Figure 10, MAP ID #27, owned by Tucker Properties, LLC) on September 14, 2022. According to the owner, Ms. Leslie Little, no private water wells are located on the property. No evidence of previous intrusive work was observed during the inspection, and the building does not appear to have a basement. Photographs taken at the site show the exterior of the building and the parking lot.

3.1.6 423 East Jefferson Street – Yancy Dog Trot House

An onsite inspection and interview were conducted at the Yancy Dog Trot House at 423 East Jefferson Street (Figure 11, MAP ID #22, owned by the City of Montgomery) on August 24, 2022. The interview was conducted with Mr. Collier Neely, the executive director for the Landmarks Foundation, which manages the property. According to Mr. Neely and observations during the site inspection, there are no private water wells located on the property. The building appears to have a crawl space. No evidence of previous intrusive work in this lot was noted. Photographs taken at the site show the exterior of the building.

3.1.7 501 North Lawrence Street – Warehouse

An onsite inspection was conducted on September 14, 2022 at a warehouse at 501 North Lawrence Street (Figure 11, MAP ID #8, owned by 110 Pollard, LLC). The interview was conducted with Mr. Mike Presskit, the former owner who was on-site during the inspection. According to Mr. Presskit, a former well that potentially was part of phytoremediation monitoring efforts was located at the back of the property; Mr. Presskit noted that this well was abandoned in 2014 to 2015 by EPA. No evidence of other previous intrusive work was noted during the inspection. Photographs taken at the site show the parking area, alleyway, and the building.

3.1.8 507 North Perry Street – Cylinder Head Exchange

An onsite inspection and interview were conducted at the Cylinder Head Exchange at 507 North Perry Street (Figure 11, MAP ID #10, owned by Gerry and Rhonda McGough) on September 14, 2022. The interview was conducted with Mr. John McGough (one of the owners of the facility). The property consists of a warehouse and parking area. According to Mr. McGough and observations during the site inspection, there are no private water wells located on the property. Photographs taken during the site inspection show the building and the associated parking area.

3.1.9 619 North McDonough Street – Dennis Welding Supply Company

An onsite inspection was conducted on September 14, 2022 at the Dennis Welding Supply Company at 619 North McDonough Street (Figure 11, MAP ID #6, owned by Billy and Mable Dennis). The interview was conducted with Mr. Rick Dennis, the manager of the property. The property consists of a welding supply and a compressed gas facility. According to Mr. Dennis and observations during the site inspection, there are no private water wells located on the property. No evidence of intrusive work was identified during the inspection. Photographs taken during the site inspection show the exterior of the building and the compressed gas facility.

3.1.10 416 North McDonough Street – Dorsey House

An onsite inspection and interview were conducted at the historical Dorsey House at 416 North McDonough Street (Figure 11, MAP ID #95, owned by the City of Montgomery) on August 24, 2022. The interview was conducted with Mr. Collier Neely, the executive director for the Landmarks Foundation, which manages the property. According to Mr. Neely, the property is used as offices, and, while there is housing for a hand-drawn well onsite, the well housing is for aesthetic purposes only and no subsurface well is associated with it. The building has a crawl space. No evidence of intrusive work was identified during the inspection. Photographs taken at the site show the exterior of the building and the grassy area outside the building.

3.2 Additional Inspections and Interviews

3.2.1 DEAP Historical Wells

During the interviews and inspections conducted in 2020, a historical bucket well onsite at the Ordeman House (220 North Hull Street) and a surface hand pump (which was a well head only – no subsurface well was attached to the pump) and abandoned irrigation well on nearby property (360 North Hull Street) were identified (Figure 12). The wells and hand pump were located on Old Alabama Town property, which is managed by the Landmarks Foundation and owned by the City of Montgomery. The hand pump well head was removed in spring 2021. In late 2020/early 2021, the wooden cover of the historical bucket well at Ordeman House was closed with wood screws, inhibiting access to the well water.

The Ordeman House historical bucket well is on property managed by the Landmarks Foundation and owned by the City of Montgomery. Because of the historical significance of this well and its presence in a historic district, the DEA elected to preserve the well and added it to the IC inspections for the DEAP. The DEA will check to confirm that the protective measures preventing use of the bucket well at the Ordeman House (including chains, covers, screens, locks, etc.) remain in place during the inspections, thereby ensuring the potential exposure pathway for groundwater remains incomplete for current and future receptors. Photographs taken at the Ordeman House historical bucket well in August 2022 show the closed well cover (Appendix D).

3.2.2 608 North Court Street – Former Water Works Building

In fall 2021, the DEA was notified of the presence of a pit at the former water works building, located at 608 North Court Street and owned by the Equal Justice Initiative (EJI) (Figure 11, MAP ID #1). The DEA prepared a notification letter for the EJI and their construction contractor (Bailey Harris Construction) to notify them about the DEAP and the ICs that would apply to these properties (i.e., no use of groundwater and the use of vapor barriers for any new construction). The DEA was subsequently contacted by Bailey Harris regarding a pit structure located in the former water works building.

During a site visit to view the pit structure in September 2021, it was observed that the pit was located just east of the building in a walled depression, approximately 9 feet below land surface. The pit structure was approximately 4 feet wide, 6 feet long, and 15 feet deep (approximately 24 feet below land surface) and constructed of brick with five pipes coming into the pit (some with trickling water). A small amount of water was observed to flow horizontally in the bottom of the pit.

While the pit was not intended to function as a groundwater well, there was potential for groundwater to infiltrate the pit when the groundwater table is shallow enough to intersect the bottom of the pit (about 24 feet below land surface. Because groundwater infiltration into the pit could be considered a potential exposure point for contaminated groundwater, the DEA worked with Bailey Harris to identify ways to

eliminate the potential for groundwater exposure in the pit. In June 2022, Bailey Harris closed the pit structure with a locking aluminum lid set in a concrete pad around the pit. A photograph of the capped pit is included in Appendix D.

3.3 Inspection of City Ordinance Properties

A drive-by inspection of properties on the 300 block of Madison Avenue was conducted on August 24, 2022 to verify that properties in that area do not have residential use on the first floor, in accordance with City Ordinance 36-2019, enacted September 3, 2019. As documented in the photographs in Appendix D, the properties on the 300 block of Madison Avenue are commercial businesses. Two properties were noted as having "For Sale" signs: the Silver Spoon Caterers at 222 North McDonough Street, and the vacant lot adjacent to Gipson Tire Pros at 313 Madison Avenue.

3.4 Inspection of Environmental Covenant Properties

3.4.1 North Lawrence Street

A drive-by inspection was completed on August 24, 2022 to verify that the property at North Lawrence Street (Figure 11, MAP ID #15) continues to be used as a parking lot in accordance with the environmental covenant (EC) placed on the property on September 11, 2019. As documented in the photographs in Appendix D, the area remains a parking lot.

3.4.2 Washington Avenue Right-of-Way

A drive-by inspection was completed on August 24, 2022 to verify that the Washington Avenue right-of-way located approximately 154 feet from the northeast intersection of South Lawrence Street and Washington Avenue, near the vapor intrusion monitoring system (VIMS), remains a sidewalk and public right-of-way in accordance with the EC placed on the property on September 11, 2019. As documented in the photographs in Appendix D, the area remains a public right-of-way.

3.4.3 317 North Decatur Street – McClendon Service Center

An EC was filed in 2020 by Mr. Joe McClendon for the McClendon Auto Repair property at 317 North Decatur Street. The covenant documents the potential presence of PCE in groundwater/soil vapor and TCE in soil vapor in the DEAP site, and permanently prohibits the use of, access of, interference with, and/or consumption of groundwater beneath the property without prior written approval from ADEM. A drive-by inspection of the property was completed on August 24, 2022. The property is still owned and operated by Mr. Joe McClendon, and is still operated as a vehicle repair and maintenance shop.

4. Environmental Covenant Management

Each year, the DEA sends out letters to the downtown property owners to notify them of the ICs placed on downtown properties and to promote the use of ECs. The notification letters are discussed in more detail in Section 6 of this report. No new ECs were filed in 2022.

5. IC Notification Letters

The 2022 annual IC notification letters (approximately 50 letters) were mailed out to owners of properties within the DEA site boundary the week of October 24, 2022. An example of the notification letters is included in Appendix F (note that the bullet regarding the 300 block of Madison is included only in letters to the property owners on that block). The property owners were identified using the updated property database provided by Montgomery County on October 20, 2022.

No feedback on the 2022 annual IC notification letters was received.

6. Community Involvement and Outreach

6.1 Community Outreach Group

The DEA facilitates a Community Outreach Group (COG) of interested citizens who live, work, or own property in downtown Montgomery. The COG provides a link between the DEA and the community, and helps to keep the downtown community informed about project activities. One COG meeting was held on September 19, 2022, where an update about project status was provided to COG members and stakeholders in attendance. During this update meeting, the project team addressed the group's questions and proposed modifications to the monitoring and inspections. No concerns were raised by the COG members. Future conference calls and/or meetings will be conducted as needed.

6.2 Project Website

The website for the DEAP can be accessed at: www.capitalcityplume.org. The website is a source of project-related information available to the public, including but not limited to DEAP site background, remedial actions conducted and in place, environmental covenant information, links to project reports, and project contact information. The website is updated periodically as new information of potential interest to the community becomes available. In 2022, a total of 1,709 website visits occurred (an increase from 1,014 website visits in 2021) and no requests for information were received. The website will continue to be updated as new information becomes available.

7. Conclusion and Recommendations

The results of the May 2022 annual groundwater sampling at the DEA site indicate that the groundwater PCE plume remains stable, the western boundary of the downgradient portion of the plume has been delineated at MW-14S, and concentrations at the downgradient edge of the plume are currently an order of magnitude below levels that would indicate the plume discharge could potentially result in an exceedance of surface water quality criteria in Cypress Creek. Therefore, the conceptual site model developed for the DEAP during the EI and the selected remedy documented in the ICP remain valid and appropriate for use in evaluating conditions at this site.

Random inspections and interviews conducted at 10 properties in August and September 2022 did not identify any properties with first floor residential use within 100 feet of the plume. Downtown property owners were generally aware of the ICs implemented for the DEAP site. In addition, the historical bucket well that is connected to groundwater remains behind a locked gate and has a screwed-down cover preventing access to groundwater in the well. Due to its presence in a historic district, the well is preserved and will continue to be included in the inspections to ensure the protective measures barring its use (gates, locks, screens, etc.) remain in place.

Drive-by inspections of City Ordinance and EC properties on the 300 block of Madison Avenue, North Lawrence Street, and the Washington Avenue right-of-way near the VIMS indicated the use of these properties is in accordance with the relevant ordinance and ECs. There have been no changes in land use within the DEAP site boundary, and no new ECs were filed in 2022.

Based on stable to declining concentrations noted in most monitoring wells, the low likelihood of PCE concentrations in MW-13S increasing an order of magnitude to levels that would indicate plume discharge could potentially result in an exceedance of surface water quality criteria in Cypress Creek, and the awareness of the ICs that downtown property owners indicated during site inspections and interviews over the past 3 years, the DEA recommends the following changes to the groundwater monitoring, site inspection, and progress report activities:

- Continue to collect groundwater depth-to-water measurements at the nine shallow and six intermediate zone wells on an annual basis.
- Collect groundwater samples from six site monitoring wells (MW-02S, MW-03S, MW-08S, MW-12S, MW-13S, and MW-14S) on an annual basis.
  - Should any of these wells exhibit PCE concentrations below the site GWPS of 5 µg/L for three consecutive annual sampling events, these wells will be removed from the groundwater sampling requirements and used for water level measurements only.
  - Based on the 2022 groundwater sampling results, monitoring well MW-01S has exhibited three consecutive non detectable PCE concentrations, which is below its GWPS (5.0 µg/L) and, therefore, will be removed from the groundwater sampling requirements.
- Conduct windshield driving inspection of the DEAP area annually to review the site for major construction efforts and changes to the property use in the downtown area.
- Conduct random property inspections and interviews on a triannual basis, with the next set of inspections/interviews to be conducted in 2025.
- Continue management of ECs on the project website.

- Continue mailing IC notification letters annually to ensure that existing and new downtown property owners will be informed of the ICs and City Ordinance for the DEAP.
- Continue communications with the COG to keep them informed of project progress and understand perspectives of people who live, work, or own property in the DEAP project area.
- Maintain the project website as a source of information for the community about the project.
- Submit RAPRs on a triannual basis, beginning at the conclusion of the 2025 monitoring activities, and submit annual technical memorandums to inform ADEM of the annual activities conducted at the DEAP. The annual technical memorandums will be submitted by March 31, 2024, and March 31, 2025, following the conclusion of the 2023 and 2024 monitoring activities. The next RAPR will be submitted by March 31, 2026, following the conclusion of the 2025 monitoring activities.

These recommendations were reviewed and approved by ADEM based on their approval of the ICP Addendum (See Appendix G). Any further revisions to the monitoring frequency will be reviewed and approved by ADEM.

8. References

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Tables

Table 1. Groundwater Elevations - May 25, 2022

2022 Progress Report, DEAP, Montgomery, Alabama

Well	TOC Elevation	DTW	Groundwater Elevation
Shallow Interval Wells			
MW-01S	189.37	35.19	154.18
MW-02S	188.59	36.70	151.89
MW-03S	206.18	52.79	153.39
MW-08S	173.46	34.32	139.14
MW-09S	213.41	51.51	161.90
MW-10S	212.67	53.51	159.16
MW-12S	157.58	24.34	133.24
MW-13S	158.90	28.90	130.00
MW-14S	158.38	28.48	129.90
Intermediate Interval Wells			
MW-01I	190.00	36.45	153.55
MW-05I	210.98	54.44	156.54
MW-07I	179.76	31.95	147.81
MW-07S	179.65	NM	NM
MW-08I	173.42	34.22	139.20
MW-12I	157.82	24.45	133.37

Notes:

Elevation reported in feet above mean sea level.

DEAP = Downtown Environmental Assessment Project

DTW = depth to water in feet below TOC

TOC = top of casing in feet above mean sea level

NM = Not Measured; MW-7S was located under a disabled vehicle.

Table 2. Groundwater Sampling Results

2022 Progress Report, DEAP, Montgomery, Alabama

Station ID	Date Sampled	May 2022 PCE Concentrations	June 2021 PCE Concentrations	April 2020 PCE Concentration	July 2016 PCE Concentration
Shallow Interval Wells					
MW-01S	5/25/2022	1 U	1 U	1 U	1.56
MW-02S	5/27/2022	**31.2**	**41.4**	**45.6 J**	**34.1**
MW-03S	5/27/2022	**15.5**	**21.6**	**33.1 J**	**6.27**
MW-08S	5/26/2022	**30.5**	**45.2**	**80.7 J**	**78.4**
MW-12S	5/26/2022	**36.4**	**20.3**	**30.7 J**	**58.9**
MW-13S	5/26/2022	**264**	**292**	**209**	**174**
MW-14S	5/26/2022	**5.68**	**5.05**	**5.78 J**	N/A

Notes:

Concentrations presented in micrograms per liter (µg/L).

The highest of the native and field duplicate concentration is presented for MW-02S.

Bold text indicates concentration exceeds the GWPS (5 µg/L).

DEAP = Downtown Environmental Assessment Project

GWPS = Groundwater Protection Standard. GWPS for the site is equal to the U.S. Environmental Protection Agency Maximum Contaminant Level

J = estimated concentration due to laboratory control sample recovery slightly above control limits; the result may be biased high.

PCE = tetrachloroethene

U = analyte was not detected

Table 3. Field Parameter Data

2022 Progress Report, DEAP, Montgomery, Alabama

Station	Date Collected	pH (standard unit)	Conductivity (µS/cm)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
MW-01S	5/25/2022	5.04	179	22.99	7.02	248.4	0.72
MW-02S	5/27/2022	4.99	218	22.62	7.38	252.3	1.93
MW-03S	5/27/2022	5.23	200	22.18	5.31	232.1	2.16
MW-08S	5/26/2022	4.9	211	22.47	7.49	241.4	0.77
MW-12S	5/26/2022	5.34	181	20.9	6.02	224.3	9.2
MW-13S	5/26/2022	5.36	184	21.66	6.02	221.3	50.4
MW-14S	5/26/2022	5.2	190	21.77	5.9	208.7	1.13

Notes:

µS/cm = microsiemen(s) per centimeter

°C = degree(s) Celsius

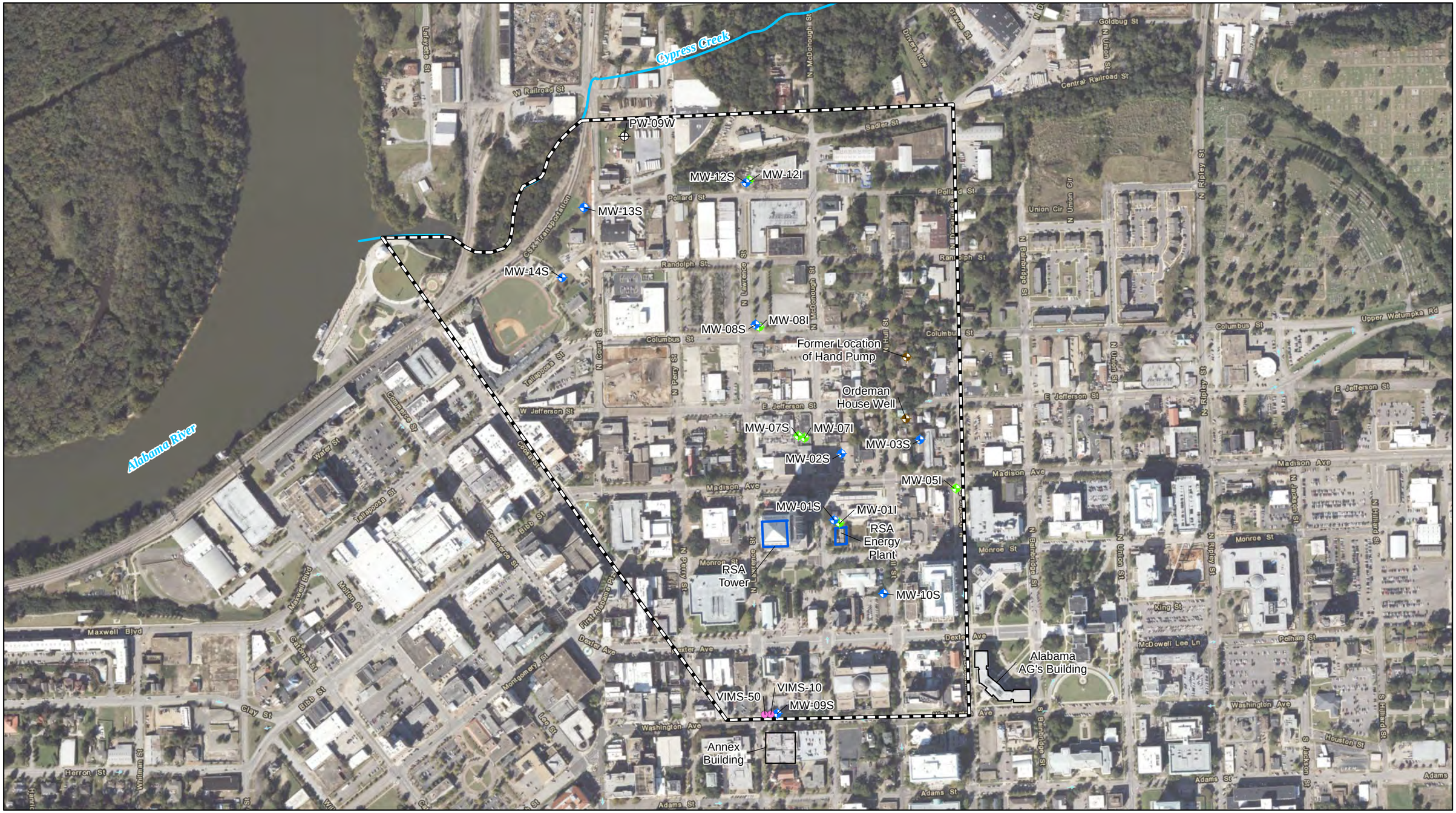
DEAP = Downtown Environmental Assessment Project

mg/L = milligram(s) per liter

mV = millivolt(s)

NTU = nephelometric turbidity unit(s)

Figures



LEGEND

- Shallow Monitoring Well
- Intermediate Monitoring Well
- Historical Well
- Former City Water Supply Well
- VIMS
- RSA Building
- Site Boundary

Notes:
1. AG - Attorney General
2. RSA - Retirement Systems of Alabama
3. VIMS - Vapor Intrusion Monitoring System

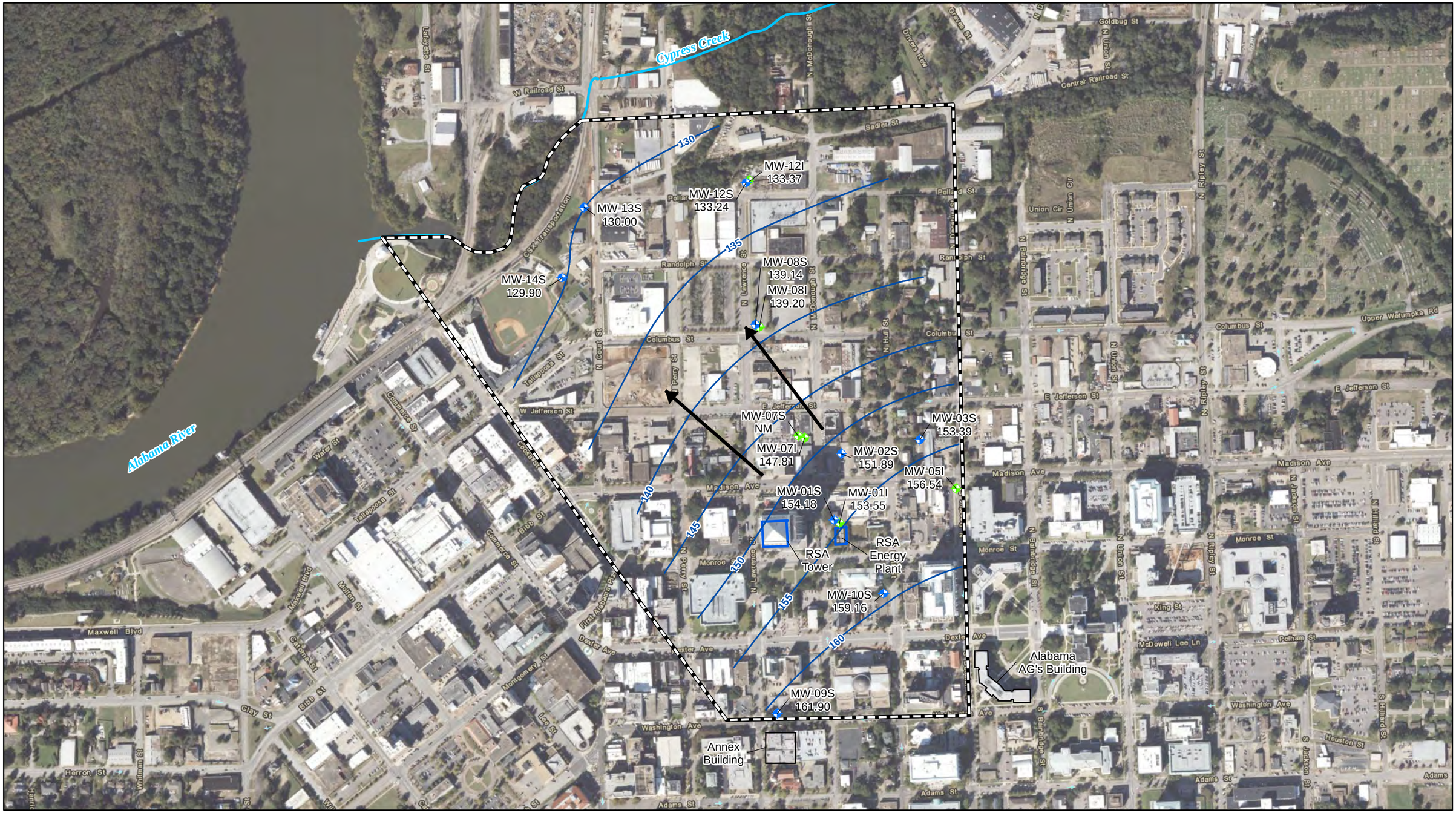
N

0 250 500
Feet

FIGURE 1
Site Map
2022 Remedial Action Progress Report
Downtown Environmental Assessment Project
Montgomery, AL

Jacobs

\\dc1vs01\GISProj\M\MontgomeryDEAP\MapFiles\2022_RAP\Fig1_SiteBoundary.mxd AESPEJO 5/16/2023



LEGEND

- Shallow Monitoring Well
- Intermediate Monitoring Well
- Shallow Potentiometric Contour
- Generalized Groundwater Flow Direction
- RSA Building
- Site Boundary

Notes:

1. AG - Attorney General
2. RSA - Retirement Systems of Alabama
3. Intermediate wells not used in contouring. MW-7S is considered an intermediate monitoring well due to depth of screen similar to other intermediate monitoring wells.
4. Groundwater elevations presented in feet above mean sea level.
5. Reach of Cypress Creek is presented as Reach 4, as defined in Baseline Biological Monitoring Results for the Cypress Creek Aquatic Ecosystem Restoration Feasibility Study (CH2M, 2012).

N

0 250 500

Feet

FIGURE 2
May 2022 Shallow Potentiometric Surface
2022 Remedial Action Progress Report
Downtown Environmental Assessment Project
Montgomery, AL

Jacobs

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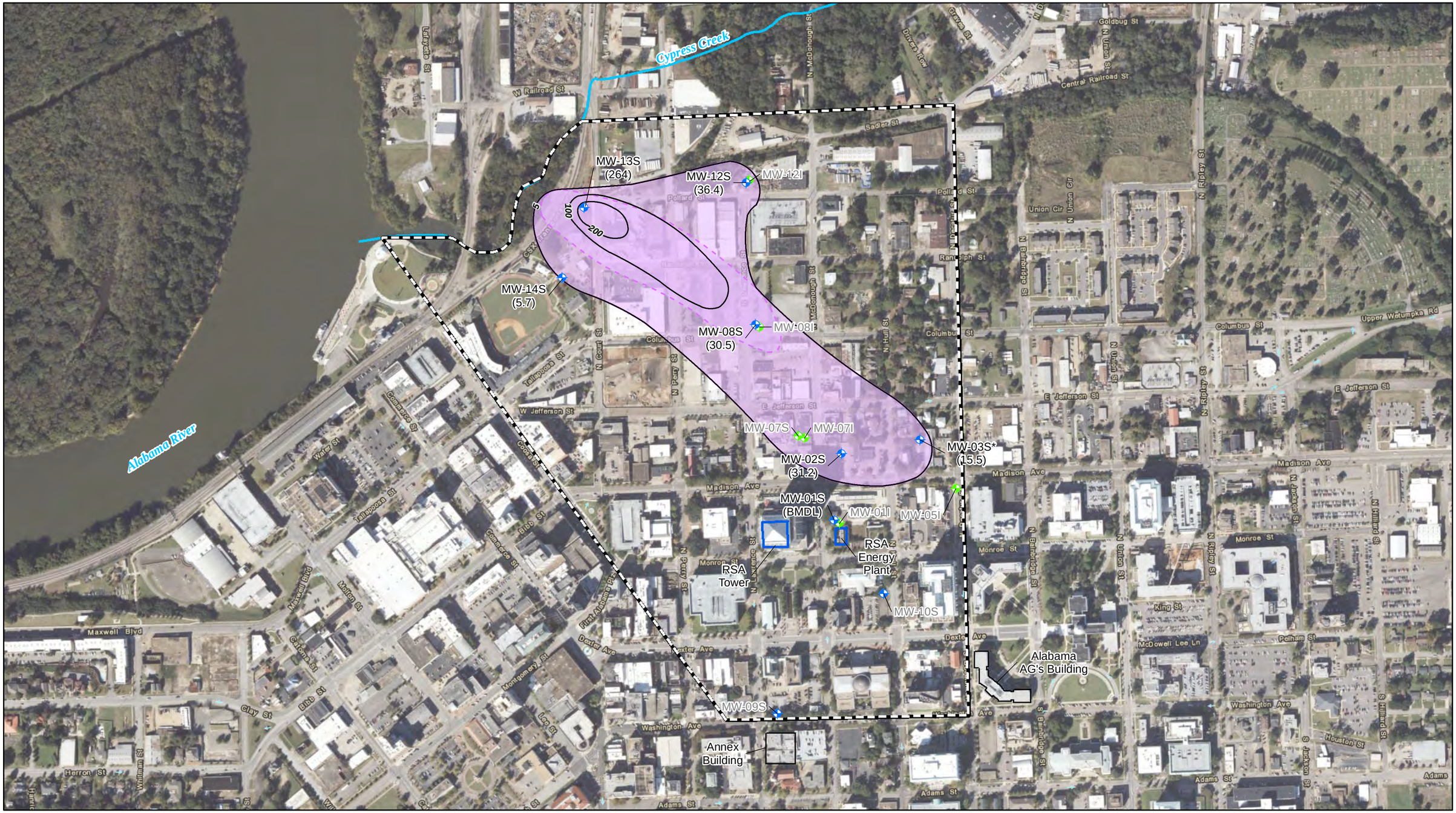


LEGEND

- Shallow Monitoring Well
- Intermediate Monitoring Well
- Isoconcentration Contour for PCE in µg/L
- Approximate Extent of PCE > 5 µg/L
- RSA Building
- Site Boundary

Notes:
1. AG = Attorney General
2. BMDL = below method detection limit
3. J = concentration is estimated
4. PCE = tetrachloroethene
5. RSA = Retirement Systems of Alabama
6. µg/L = micrograms per liter
7. * = field duplicate sample location, highest result presented
8. (34.1) = PCE concentration in groundwater in µg/L
9. Well IDs in gray were not sampled.

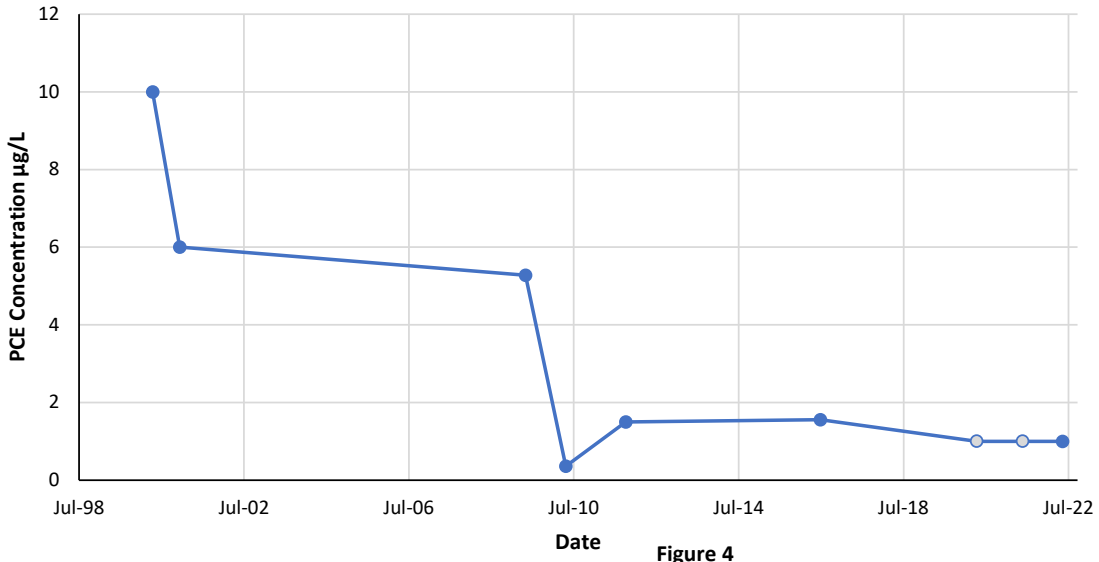
N

0 250 500
Feet

FIGURE 3
PCE Groundwater Results - May 2022
2022 Remedial Action Progress Report
Downtown Environmental Assessment Project
Montgomery, AL

Jacobs

\\dc1vs01\GISProj\M\MontgomeryDEAP\MapFiles\2022_RAP\Fig3_May_2022_PCE_GW_Results.mxd AESPEJO 5/16/2023



Note: Gray points indicate PCE was not detected.
Detection limit is shown.

Figure 4
PCE Concentrations in MW-01S
2022 Remedial Action Progress Report
Downtown Environmental Assessment Project

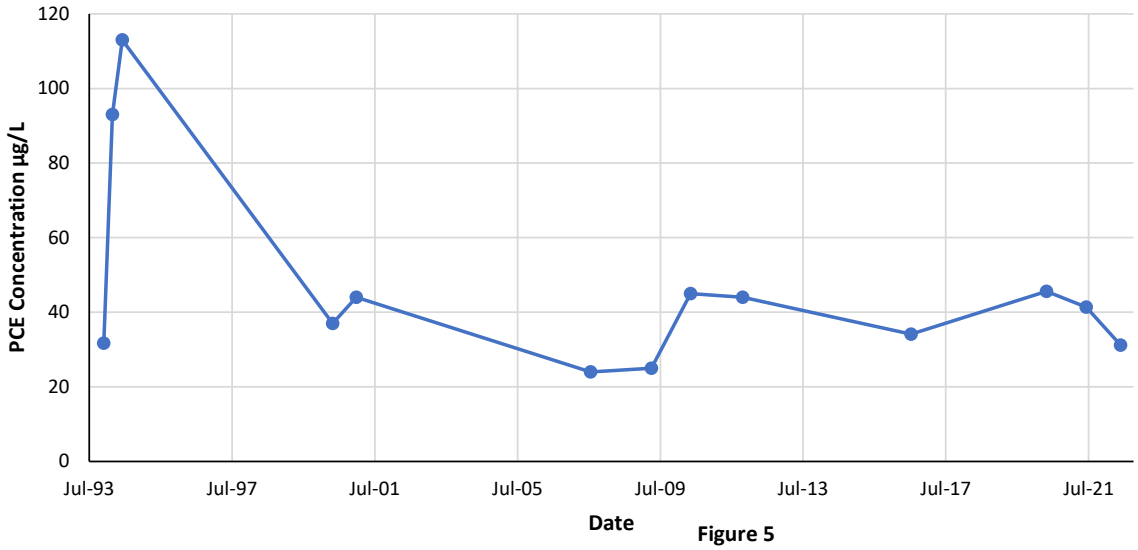


Figure 5
PCE Concentrations in MW-02S
2022 Remedial Action Progress Report
Downtown Environmental Assessment Project

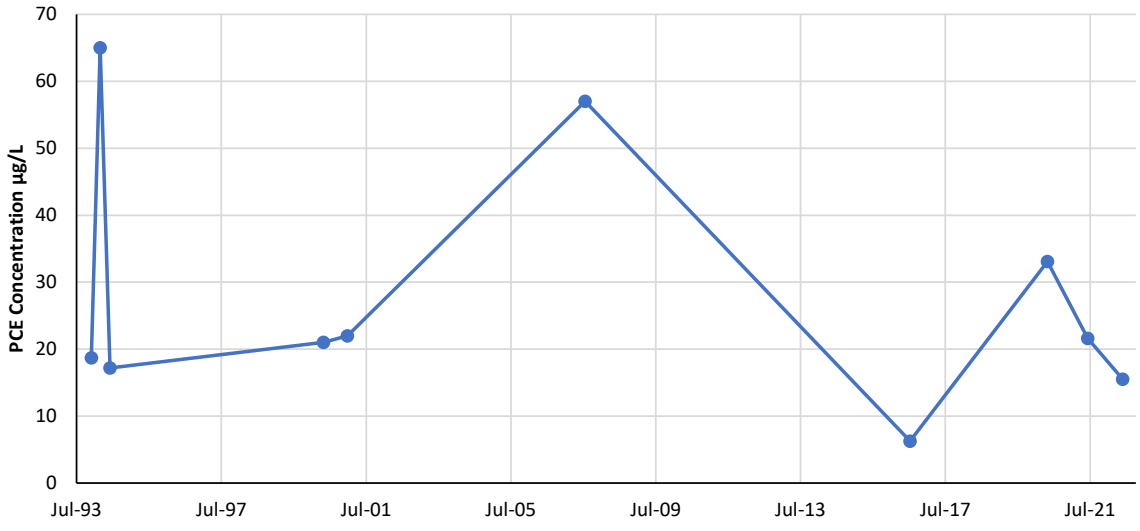


Figure 6
PCE Concentrations in MW-03S
2022 Remedial Action Progress Report
Downtown Environmental Assessment Project

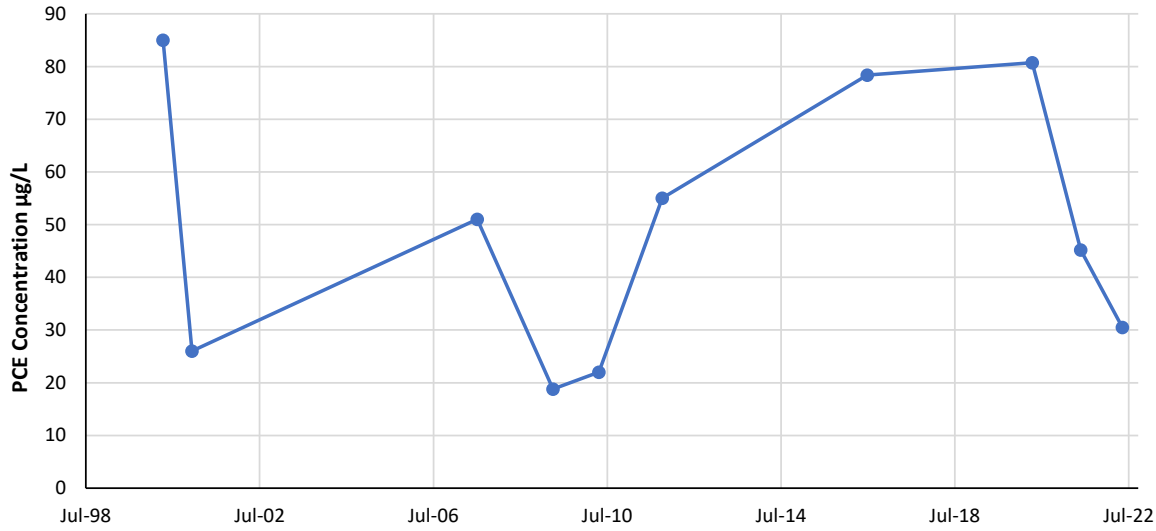


Figure 7
PCE Concentrations in MW-08S
2022 Remedial Action Progress Report
Downtown Environmental Assessment Project

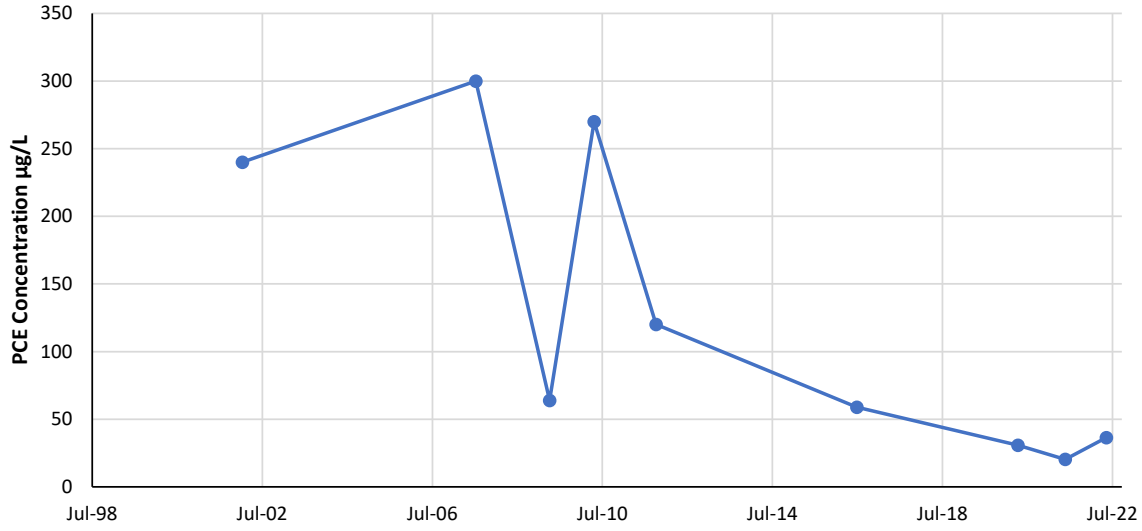


Figure 8
PCE Concentrations in MW-12S
2022 Remedial Action Progress Report
Downtown Environmental Assessment Project

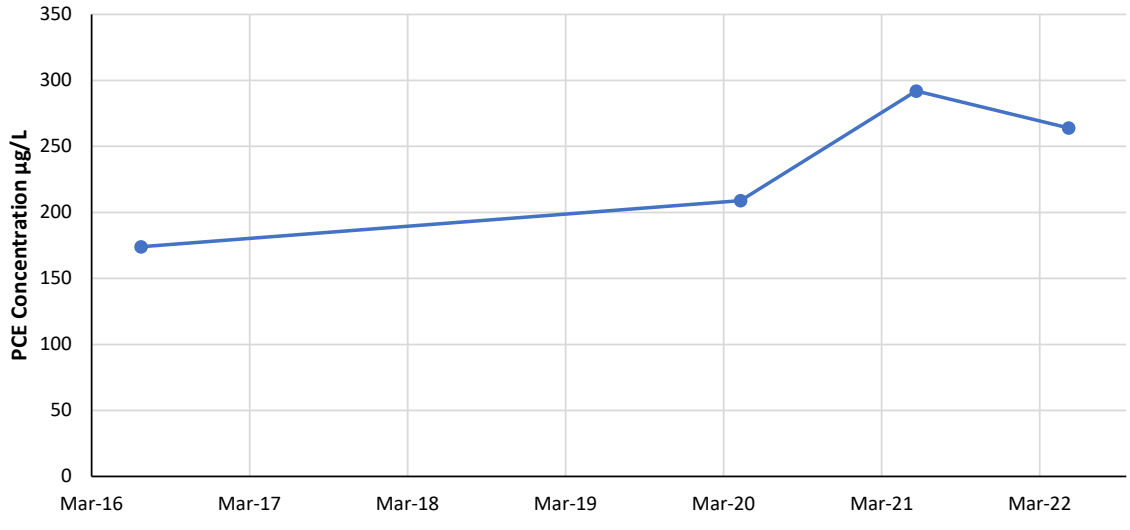


Figure 9
PCE Concentrations in MW-13S
2022 Remedial Action Progress Report
Downtown Environmental Assessment Project

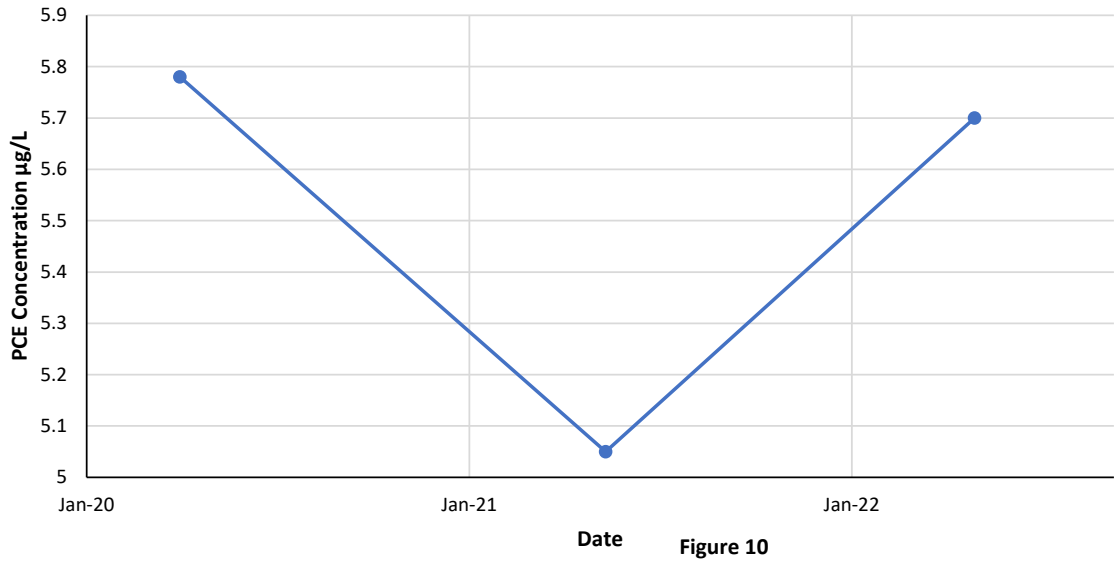
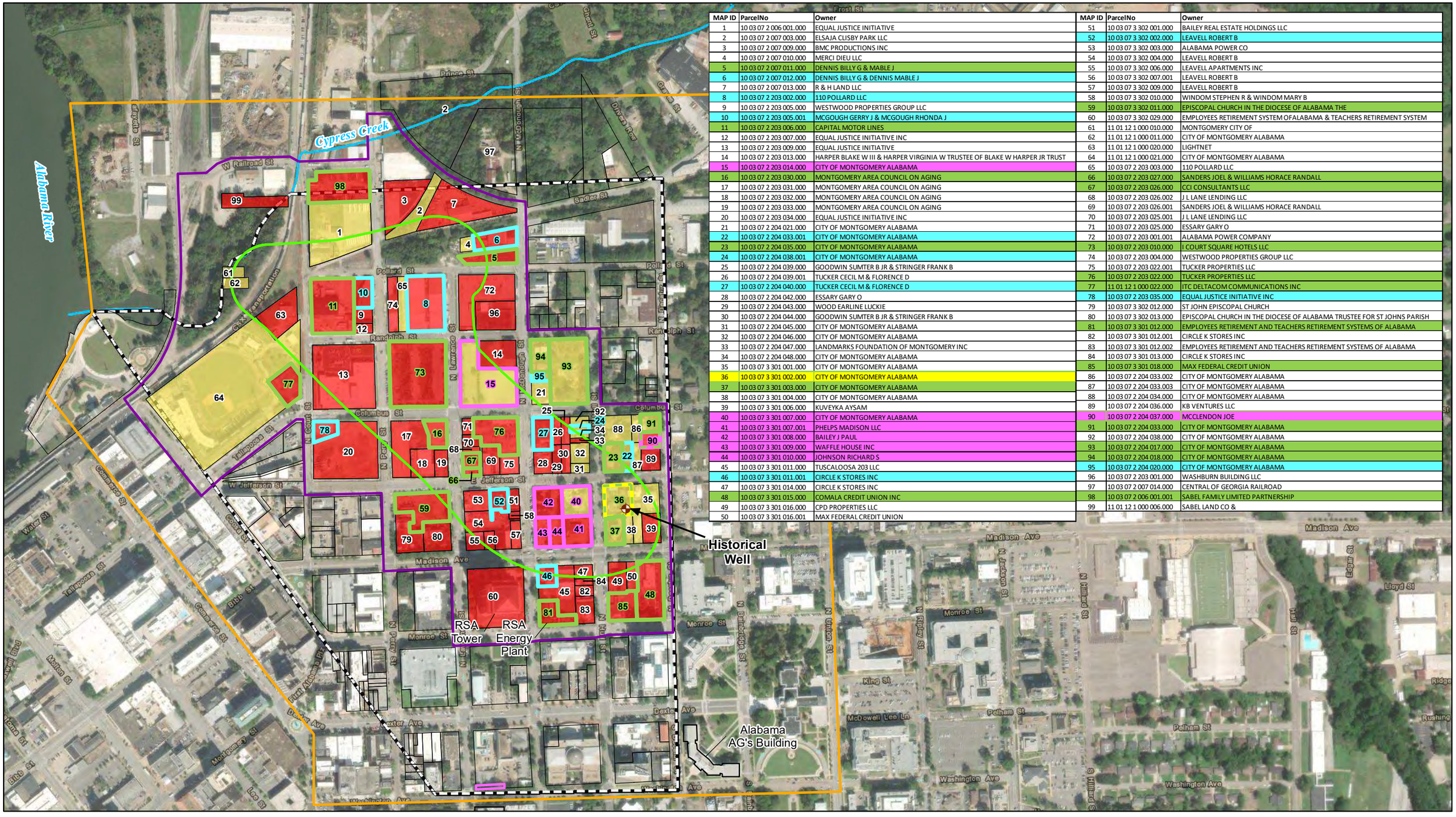


Figure 10
PCE Concentrations in MW-14S
2022 Remedial Action Progress Report
Downtown Environmental Assessment Project



MAP ID	ParcelNo	Owner
1	10 03 07 2 006 001.000	EQUAL JUSTICE INITIATIVE
2	10 03 07 2 007 003.000	ELSAJA CLISBY PARK LLC
3	10 03 07 2 007 009.000	BMC PRODUCTIONS INC
4	10 03 07 2 007 010.000	MERCI DIEU LLC
5	10 03 07 2 007 011.000	DENNIS BILLY G & MABLE J
6	10 03 07 2 007 012.000	DENNIS BILLY G & DENNIS MABLE J
7	10 03 07 2 007 013.000	R & H LAND LLC
8	10 03 07 2 203 002.000	110 POLLARD LLC
9	10 03 07 2 203 005.000	WESTWOOD PROPERTIES GROUP LLC
10	10 03 07 2 203 005.001	MCGOUGH GERRY J & MCGOUGH RHONDA J
11	10 03 07 2 203 006.000	CAPITAL MOTOR LINES
12	10 03 07 2 203 007.000	EQUAL JUSTICE INITIATIVE INC
13	10 03 07 2 203 009.000	EQUAL JUSTICE INITIATIVE
14	10 03 07 2 203 013.000	HARPER BLAKE W III & HARPER VIRGINIA W TRUSTEE OF BLAKE W HARPER JR TRUST
15	10 03 07 2 203 014.000	CITY OF MONTGOMERY ALABAMA
16	10 03 07 2 203 030.000	MONTGOMERY AREA COUNCIL ON AGING
17	10 03 07 2 203 031.000	MONTGOMERY AREA COUNCIL ON AGING
18	10 03 07 2 203 032.000	MONTGOMERY AREA COUNCIL ON AGING
19	10 03 07 2 203 033.000	MONTGOMERY AREA COUNCIL ON AGING
20	10 03 07 2 203 034.000	EQUAL JUSTICE INITIATIVE INC
21	10 03 07 2 204 021.000	CITY OF MONTGOMERY ALABAMA
22	10 03 07 2 204 033.001	CITY OF MONTGOMERY ALABAMA
23	10 03 07 2 204 035.000	CITY OF MONTGOMERY ALABAMA
24	10 03 07 2 204 038.001	CITY OF MONTGOMERY ALABAMA
25	10 03 07 2 204 039.000	GOODWIN SUMTER B JR & STRINGER FRANK B
26	10 03 07 2 204 039.001	TUCKER CECIL M & FLORENCE D
27	10 03 07 2 204 040.000	TUCKER CECIL M & FLORENCE D
28	10 03 07 2 204 042.000	ESSARY GARY O
29	10 03 07 2 204 043.000	WOOD EARLINE LUCKIE
30	10 03 07 2 204 044.000	GOODWIN SUMTER B JR & STRINGER FRANK B
31	10 03 07 2 204 045.000	CITY OF MONTGOMERY ALABAMA
32	10 03 07 2 204 046.000	CITY OF MONTGOMERY ALABAMA
33	10 03 07 2 204 047.000	LANDMARKS FOUNDATION OF MONTGOMERY INC
34	10 03 07 2 204 048.000	CITY OF MONTGOMERY ALABAMA
35	10 03 07 3 301 001.000	CITY OF MONTGOMERY ALABAMA
36	10 03 07 3 301 002.000	CITY OF MONTGOMERY ALABAMA
37	10 03 07 3 301 003.000	CITY OF MONTGOMERY ALABAMA
38	10 03 07 3 301 004.000	CITY OF MONTGOMERY ALABAMA
39	10 03 07 3 301 006.000	KUVEYKA AYSAM
40	10 03 07 3 301 007.000	CITY OF MONTGOMERY ALABAMA
41	10 03 07 3 301 007.001	PHELPS MADISON LLC
42	10 03 07 3 301 008.000	BAILEY J PAUL
43	10 03 07 3 301 009.000	WAFFLE HOUSE INC
44	10 03 07 3 301 010.000	JOHNSON RICHARD S
45	10 03 07 3 301 011.000	TUSCALOOSA 203 LLC
46	10 03 07 3 301 011.001	CIRCLE K STORES INC
47	10 03 07 3 301 014.000	CIRCLE K STORES INC
48	10 03 07 3 301 015.000	COMALA CREDIT UNION INC
49	10 03 07 3 301 016.000	CPD PROPERTIES LLC
50	10 03 07 3 301 016.001	MAX FEDERAL CREDIT UNION
51	10 03 07 3 302 001.000	BAILEY REAL ESTATE HOLDINGS LLC
52	10 03 07 3 302 002.000	LEAVELL ROBERT B
53	10 03 07 3 302 003.000	ALABAMA POWER CO
54	10 03 07 3 302 004.000	LEAVELL ROBERT B
55	10 03 07 3 302 006.000	LEAVELL APARTMENTS INC
56	10 03 07 3 302 007.001	LEAVELL ROBERT B
57	10 03 07 3 302 009.000	LEAVELL ROBERT B
58	10 03 07 3 302 010.000	WINDOM STEPHEN R & WINDOM MARY B
59	10 03 07 3 302 011.000	EPISCOPAL CHURCH IN THE DIOCESE OF ALABAMA THE
60	10 03 07 3 302 029.000	EMPLOYEES RETIREMENT SYSTEM OFALABAMA & TEACHERS RETIREMENT SYSTEM
61	11 01 12 1 000 010.000	MONTGOMERY CITY OF
62	11 01 12 1 000 011.000	CITY OF MONTGOMERY ALABAMA
63	11 01 12 1 000 020.000	LIGHTNET
64	11 01 12 1 000 021.000	CITY OF MONTGOMERY ALABAMA
65	10 03 07 2 203 003.000	110 POLLARD LLC
66	10 03 07 2 203 027.000	SANDERS JOEL & WILLIAMS HORACE RANDALL
67	10 03 07 2 203 026.000	CCI CONSULTANTS LLC
68	10 03 07 2 203 026.002	J L LANE LENDING LLC
69	10 03 07 2 203 026.001	SANDERS JOEL & WILLIAMS HORACE RANDALL
70	10 03 07 2 203 025.001	J L LANE LENDING LLC
71	10 03 07 2 203 025.000	ESSARY GARY O
72	10 03 07 2 203 001.001	ALABAMA POWER COMPANY
73	10 03 07 2 203 010.000	I COURT SQUARE HOTELS LLC
74	10 03 07 2 203 004.000	WESTWOOD PROPERTIES GROUP LLC
75	10 03 07 2 203 022.001	TUCKER PROPERTIES LLC
76	10 03 07 2 203 022.000	TUCKER PROPERTIES LLC
77	11 01 12 1 000 022.000	ITC DELTACOM COMMUNICATIONS INC
78	10 03 07 2 203 035.000	EQUAL JUSTICE INITIATIVE INC
79	10 03 07 3 302 012.000	ST JOHN EPISCOPAL CHURCH
80	10 03 07 3 302 013.000	EPISCOPAL CHURCH IN THE DIOCESE OF ALABAMA TRUSTEE FOR ST JOHNS PARISH
81	10 03 07 3 301 012.000	EMPLOYEES RETIREMENT AND TEACHERS RETIREMENT SYSTEMS OF ALABAMA
82	10 03 07 3 301 012.001	CIRCLE K STORES INC
83	10 03 07 3 301 012.002	EMPLOYEES RETIREMENT AND TEACHERS RETIREMENT SYSTEMS OF ALABAMA
84	10 03 07 3 301 013.000	CIRCLE K STORES INC
85	10 03 07 3 301 018.000	MAX FEDERAL CREDIT UNION
86	10 03 07 2 204 033.002	CITY OF MONTGOMERY ALABAMA
87	10 03 07 2 204 033.003	CITY OF MONTGOMERY ALABAMA
88	10 03 07 2 204 034.000	CITY OF MONTGOMERY ALABAMA
89	10 03 07 2 204 036.000	KB VENTURES LLC
90	10 03 07 2 204 037.000	MCCLENDON JOE
91	10 03 07 2 204 033.000	CITY OF MONTGOMERY ALABAMA
92	10 03 07 2 204 038.000	CITY OF MONTGOMERY ALABAMA
93	10 03 07 2 204 017.000	CITY OF MONTGOMERY ALABAMA
94	10 03 07 2 204 018.000	CITY OF MONTGOMERY ALABAMA
95	10 03 07 2 204 020.000	CITY OF MONTGOMERY ALABAMA
96	10 03 07 2 203 001.000	WASHBURN BUILDING LLC
97	10 03 07 2 007 014.000	CENTRAL OF GEORGIA RAILROAD
98	10 03 07 2 006 001.001	SABEL FAMILY LIMITED PARTNERSHIP
99	11 01 12 1 000 006.000	SABEL LAND CO &

LEGEND

- Historical Well
- Site Boundary
- PCE Plume 100-foot Buffer
- Parcel Boundary
- Parcel Intersecting Plume and 100-ft Buffer
- DEA Owned Parcel Intersecting Plume and 100-ft Buffer
- Downtown Environmental Overlay (Dashed Options)
- Current Groundwater Well Drilling Ban Ordinance
- Randomly Selected Properties for Inspection in 2022
- IC/EC Areas for Inspection
- Properties with Historical Wells
- Properties Inspected in 2020-2021

Notes:
1. AG = Attorney General
2. RSA = Retirement Systems of Alabama

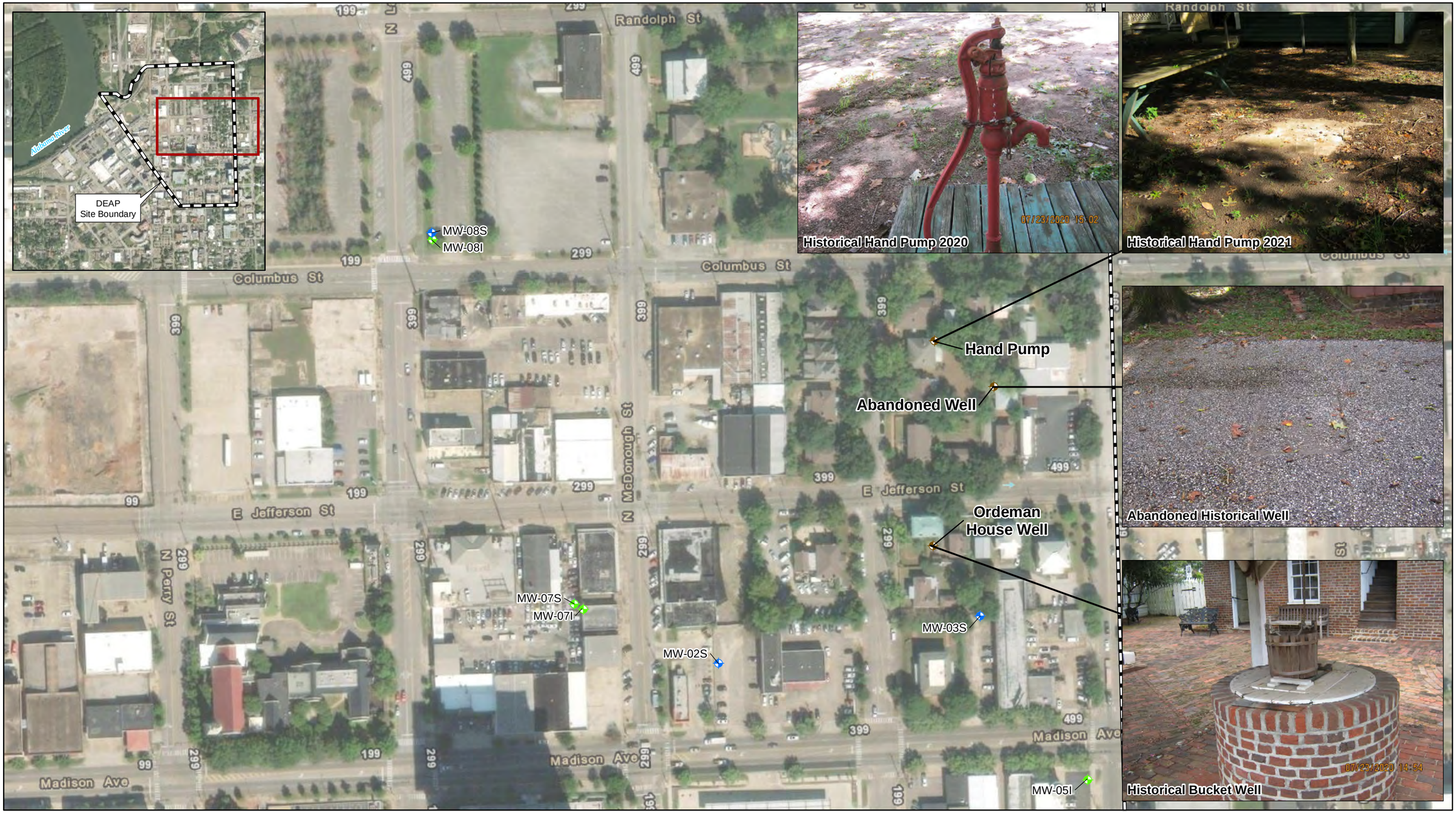
N

0 250 500
Feet

FIGURE 11
Parcels Inspected in 2022
2022 Remedial Action Progress Report
Downtown Environmental Assessment Project
Montgomery, AL

Jacobs

\\dc1vs01\GISProj\M\MontgomeryDEAP\MapFiles\2022_RAP\Fig11_Parcels_Inspected_in_2022.mxd AESPEJO 5/16/2023



LEGEND

- Shallow Monitoring Well
- Intermediate Monitoring Well
- Historical Well
- Site Boundary

N

0 75 150

Feet

FIGURE 12
Historical Well Locations
2022 Remedial Action Progress Report
Downtown Environmental Assessment Project
Montgomery, AL

Jacobs

\\dc1vs01\GISProj\M\MontgomeryDEAP\MapFiles\2022_RAP\Fig12_Historical_Well_Locations.mxd AESPEJO 5/16/2023

Appendix A
De-Proposal Technical Memorandum (Text Only)

TECHNICAL MEMORANDUM

Recommendation to De-propose from the National Priorities List (NPL) – Downtown Environmental Assessment Project (formerly the Capital City Plume)

May 13, 2020

Introduction

With this Technical Memorandum (TM), the Downtown Environmental Alliance (DEA) is providing documentation to support the de-proposal of the Downtown Environmental Assessment Project (DEAP; formerly the Capital City Plume) from the NPL. The original proposal was published in the Federal Register on May 11, 2000 (30489-30495 Federal Register, Vol. 65, No. 92). This request is supported by the Alabama Department of Environmental Management (ADEM), which is overseeing the site cleanup pursuant to the final Settlement Agreement for Site Response, which was revised and signed in October 2019 (originally signed on September 30, 2015) by ADEM and the DEA. This settlement agreement, along with other past documents referenced in this letter, are included on CD as an attachment. The purpose of this TM is to provide the reader with a complete overview of the project and describe the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)-equivalent process that was followed to support de-proposal of the DEAP.

Site History and Previous Remedial Action (Prior to DEA involvement; 1991-2011)

This section provides a brief description of the site history and remedial actions taken prior to the formation of the DEA. A more complete historical summary can be found in Section 2.1 of the final Technical Work Plan, which is included in Appendix A at the end of this TM.

- In 1991, tetrachloroethylene (PCE) was detected in former public water supply well PW-9W. The Montgomery Water Works and Sanitary Sewer Board of the City of Montgomery, Alabama (MWWSSB) closed the North Well Field (located north of the current plume footprint) wells in the early 1990s, eliminating the potential for consumption of potentially contaminated groundwater. The source of drinking water for the City of Montgomery (City) has since been supplied by surface water intakes from the Tallapoosa River (located several miles upstream of downtown Montgomery) or well fields southwest of Montgomery (located approximately 8 miles south of downtown Montgomery), and the western well field, which has been in existence for approximately 80 years. Based on groundwater flow and distance, these water sources are not within the plume nor threatened by the plume.

- PCE was also encountered during the construction of the Retirement Systems of Alabama (RSA) Energy Plant in 1993. An emergency removal action was conducted in 1993 by the contractors excavating at the RSA Energy Plant. The remedial action included the removal of contaminated soil and groundwater, and non-aqueous phase liquid. This action effectively eliminated the PCE source area at the RSA Energy Plant construction area (located one block east of the RSA Tower in downtown Montgomery) as supported by the significant decrease in PCE concentrations in Monitoring Well MW-1S (located adjacent to and downgradient of the RSA energy plant excavation) from greater than 607 ppb in 1993 to less than the MCL since 2010.

- In 1995, ADEM conducted a Preliminary Assessment of the soil and groundwater around the RSA Energy Plant. No specific sources of the PCE were identified; however, the report identified numerous historical drycleaners in the downtown area.

- In May 2000, the site was proposed by EPA for inclusion on the NPL because of the potential threat to the public water supply. This potential threat was based on the population potentially exposed to contaminated groundwater, based on EPA's Hazard Ranking System scoring of the site.

- Between 1999 and 2001, EPA contracted Black & Veatch to conduct a Remedial Investigation (RI) to evaluate the nature and extent of groundwater contamination because of the PCE discovered in downtown Montgomery groundwater. During this investigation, 16 permanent and 16 temporary wells were installed to monitor the vadose zone and the top and bottom of the uppermost aquifer, estimate hydraulic conductivity, and to evaluate the nature and extent of groundwater contamination. Sixty-six subsurface soil samples also were collected to characterize potential site source areas. The RI concluded that contaminants likely originated from multiple sources within the downtown Montgomery area and the groundwater exposure pathway to residents is incomplete.

- In October 2002, the City and EPA entered into an Administrative Order by Consent that called for the completion of the CERCLA activities associated with the project, including the completion of a Feasibility Study (FS), and selection of a final remedy for the project. In 2003, the City contracted Malcolm Pirnie to develop a FS for the project area. The FS evaluated potential remedial options. Institutional controls and groundwater monitoring were retained as remedial options for implementation.

- The City passed a groundwater ordinance on September 16, 2003 to prohibit well drilling in the downtown area. This action significantly reduces the potential for ingestion or dermal exposure pathways to groundwater for downtown employees and residents.

- In 2004, the Agency for Toxic Substances and Disease Registry (ATSDR) issued a Public Health Assessment Report for the site. ATSDR noted that because of the quick response by MWWSSB in removing the contaminated well from service and the dilution of any contaminants that may have been present due to blending in the Montgomery water supply system, the site represented "no apparent public health hazard."

- In September 2004, EPA drafted a Record of Decision (ROD) document for the Capital City Plume site. This draft ROD concluded that no CERCLA remedial action was necessary for the site and that monitoring would be conducted to verify that no unacceptable exposures to risks posed by the site would occur in the future. Also, a determination was made that no remedial action was necessary at the site due to previous actions conducted by the City and MWWSSB. The ROD was never finalized by EPA.

- In 2005 and 2006, the City developed a groundwater monitoring plan under EPA review. Using the available groundwater monitoring network (up to 14 wells), groundwater sampling was conducted in 2007, 2009, 2010, and 2011 by the City, U.S. Geological Survey (USGS), and EPA (2010 and 2011), in accordance with the conditions outlined in the draft ROD.

- In 2005 and 2011, the MWWSSB contracted a licensed well driller to decommission and abandon (i.e., permanently grout) the wells formerly associated with the North Well Field, thus completely eliminating the wells from future use. The MWWSSB retained Well PW-9W for future environmental monitoring purposes, until it was permanently abandoned in 2019.

- From 2008 to 2010, USGS and EPA conducted tree tissue, pore water, and groundwater surveys in the downtown Montgomery area as part of a technology assessment for the use of tree core data to assess groundwater quality. Chlorinated volatile organic compounds (VOCs) were detected in tree core samples collected from across the site, including four trees in the downgradient portion of the plume (three trees from near the Cypress Creek area and one tree near MW-12S). Detection of the chlorinated VOCs suggests phyto-uptake is occurring in the downgradient portion of the plume.
- In 2010, EPA and USGS sampled indoor air and collected soil vapor samples near the County Annex III and Attorney General (AG) buildings based on complaints of indoor air quality. Corrective measures were taken at both buildings to address the indoor air quality, including installation of a filtration system in the County Annex building and replacement of carpet in the subbasement of the AG building, which resolved the odor issues in these buildings. Neither of the indoor air issues at these two buildings were found to be related to the groundwater plume.
- In 2010, the City, in collaboration with EPA constructed a demonstration phytoremediation plot consisting of clonal cottonwood trees in the central area of the plume. This location was located within the footprint of the Capital City Plume and was intended to provide remediation of the PCE contaminated groundwater.

Proposed NPL Listing and Formation of the Downtown Environmental Alliance

In June 2012, the City developed a working group to complete the investigations needed to avoid final inclusion on the NPL. In November 2012, EPA sent a letter to the City of Montgomery requesting an Environmental Action Plan (EAP) to present the technical strategy for addressing the remaining environmental concerns related to potential contamination in the downtown portion of the City. The November 2012 letter also noted three main items of concern that should be addressed in such an EAP:

- Develop a strategy to evaluate the potential for soil vapor contamination within a 47-block area of downtown Montgomery.
- Further evaluate the presence of the soil vapor contamination previously identified in the vicinity of the County Annex III Building, at 101 South Lawrence Street.
- Further evaluate the need for additional environmental sampling in the vicinity of the current Alabama AG Building at 501 Dexter Avenue.

An EAP to address the issues identified in EPA's November 12, 2012 letter was submitted to EPA in February 2013. Following review, EPA identified additional technical issues in a response letter dated September 19, 2013. The three additional technical issues identified by the EPA were as follows:

1. Identify and delineate any contaminant source areas in order to evaluate the feasibility of eliminating or controlling ongoing impacts by soil vapor and groundwater at the site.
2. Evaluate the nature and extent of contaminated groundwater and surface water in Cypress Creek in support of the objectives to restore groundwater to beneficial use within a reasonable timeframe at the site.
3. Provide an assessment of the pathways and quantitative risks posed by the site, including potential exposure to contaminated groundwater and soil vapor linked to previously identified source areas.

The EAP was developed to address these concerns using both scientifically defensible methodologies and industry-accepted practices and testing methods. The City resubmitted a draft EAP to EPA in December 2013. The document was subsequently finalized in March 2014, and EPA concurred with it in May 2014.

Following acceptance of the EAP, the City facilitated the formation of a group of voluntary participants to respond to the environmental issues and concerns described in the November 2012 letter from EPA to the City. This group is known as the Downtown Environmental Alliance. The DEA consists of the following members:

- City of Montgomery–Facilitator
- Alabama Department of Education
- Alabama Department of Transportation
- Alabama Department of Public Safety
- The Advertiser Company
- County of Montgomery
- MWWSSB

On September 30, 2015, the DEA was formalized by the signing of the Site Participation Agreement by its members. Also, the regulatory management of the DEAP was formally deferred from EPA to ADEM oversight through the execution of a Memorandum of Understanding signed by EPA and ADEM. Also, on September 30, 2015, the DEA and ADEM signed the original version of the Settlement Agreement for Site Response, which established the regulatory steps and documents to complete the CERCLA-equivalent remedial process for de-proposal to be achieved.

Community Involvement and Outreach Plan

In November 2015, the DEA submitted its Capital City Plume Community Involvement and Outreach Plan (CIOP) to ADEM for review. The purpose of this CIOP was to serve as a guide for providing meaningful community involvement for efforts related to the Capital City Plume project. The CIOP also provided guidance for the formation of the Community Outreach Group (COG), which is a group of concerned citizens who live or work in the downtown area that provides external review and insight into the DEAP activities and documents. The DEA routinely provides the COG with updates on major milestones with the project. The CIOP also provided guidance for the DEAP's website, which contains updates on the status of the DEAP and final documents for the public to review. ADEM submitted its concurrence letter for the plan in February 2016.

Technical Work Plan

In May 2016, The DEA finalized the Technical Work Plan (TWP), which included a summary and evaluation of all known historical environmental sampling data (groundwater, surface water, soil, soil vapor, and indoor air) in the downtown area to identify the additional field work recommended to evaluate the DEAP. Additional proposed work included installation of an additional monitoring well, collection of groundwater samples, collection of soil vapor samples, a hydraulic study of Cypress Creek and evaluation of a private commercial well, all following typical CERCLA investigation approaches.

The TWP also included a site-wide Sampling and Analysis Plan (SAP) that established the sampling methodology, laboratory methods, and field documentation requirements for the above-mentioned field work. The work elements described in the TWP were later reported in the Supplemental Environmental Investigation Report.

Supplemental Environmental Investigation Report

From summer 2016 to winter 2017, the DEA conducted the field activities associated with the Supplemental Environmental Investigation (EI), which were prescribed in the TWP and SAP. The final Supplemental EI Report was submitted to ADEM in October 2017 and concurrence was received in March 2018. The objectives of the EI (which is equivalent to a CERCLA Remedial Investigation Report)

were to collect sufficient data to support the refinement of the conceptual site model (CSM), including the following:

- Assess the nature and extent of PCE in groundwater.
- Evaluate the potential for groundwater to impact surface water in Cypress Creek.
- Evaluate the vapor intrusion potential at the County Annex III and Attorney General buildings.
- Identify concentrations of soil vapor at locations where shallow groundwater concentrations exceeded EPA residential vapor intrusion screening levels (VISLs).
- Provide sufficient data to evaluate potential exposure risk.

Based on the results of the EI phase of the project, PCE and trichloroethylene (TCE) were the only chemicals in groundwater that exceeded the lower of the maximum contaminant levels (MCLs) and EPA Regional Screening Levels (RSLs). The extent of the PCE in groundwater was delineated (horizontally and vertically) based on PCE concentrations exceeding the MCL of 5 micrograms per liter. TCE did not exceed the MCL, but was present in concentrations exceeding the RSL in isolated areas within the site. The lateral extent of PCE in groundwater ends near Cypress Creek, where the influence of the Alabama River acts as a hydraulic barrier to impede further lateral migration.

The preliminary screening evaluation resulted in the need to perform a risk assessment and alternatives analysis for the shallow groundwater and shallow soil vapor in accordance with ADEM and EPA guidance.

Risk Assessment/Alternatives Analysis Report

Based on the recommendations of the preliminary risk evaluation in the final Supplemental EI Report, the DEA prepared a combined risk assessment and alternatives analysis (i.e., equivalent of a Risk Assessment and Feasibility Study) document. The final Risk Assessment/Alternatives Analysis (RA/AA) Report was submitted to ADEM in February 2019, and ADEM concurrence was received in March 2019. The Human Health Risk Assessment (HHRA) was performed using Alabama Risk-Based Corrective Action (ARBCA) Guidance (which provides an approach and risk estimates similar to a Superfund HHRA under CERCLA) and consisted of the 4-step process identified for a Superfund HHRA.

- Step 1 - Screened maximum detected site concentrations in groundwater and soil vapor with conservative screening levels (RSLs and VISLs based on a target risk of 1 × 10-6 and target hazard quotient of 0.1) to identify chemicals of concern (COCs)[1].
- Step 2 - Developed a site-specific conceptual exposure model, identifying potential current/future receptors and potential exposure scenarios, and estimated intakes for potentially complete exposure pathways using EPA's standard exposure equations and exposure factor values.
- Step 3 - Identified toxicity values from EPA's hierarchy of toxicity value sources.
- Step 4 - Calculated risk estimates for COCs and compared risk estimates to acceptable risk levels (for ADEM, an excess lifetime cancer risk of 1 × 10-5 and hazard index of 1).

In addition, a Screening Level Ecological Risk Assessment was prepared.

The HHRA indicates that soil vapor concentrations exceed EPA's residential and/or commercial VISLs at only three locations, and that soil vapor at two of the locations was not related to the groundwater plume. Currently, there are no residences in the areas of the exceedances. The only area of a

[1] The term "chemical of concern" (COC) is used in this step in ARBCA, rather than the Superfund HHRA term "chemical of potential concern" (COPC).

commercial exceedance (unrelated to the groundwater plume) is an existing parking lot/city right-of-way; thus, there are no current receptors. Soil vapor samples collected at the building nearest the area of commercial exceedance were within acceptable limits.

The Alternatives Analysis followed the CERCLA-like decision-making process, where potential remedial alternatives were screened against the two CERCLA threshold criteria and the five balancing criteria. While several active remedial alternatives were considered (i.e., pump-and-treat, in situ chemical reduction, in situ chemical oxidation, air sparge/soil vapor extraction, and/or enhanced bioremediation), these alternatives were deemed not feasible based on their ability to be implemented, technical effectiveness, and safety considerations. Also, based on the fact that considerable active remediation has already occurred at the site (i.e., North Well Field Abandonment, 1993 Soil source Removal during RSA construction, phytoremediation project, and abandonment of privately-owned bus washing well), the Alternatives Analysis concluded that further active remediation was not warranted for the DEAP.

Four potential remedial alternatives were carried forward to the final evaluation:

- Alternative 1 - No Action
- Alternative 2 - Institutional Controls (ICs) with Five-Year Reviews (FYRs)
- Alternative 3 - ICs with FYRs and Monitoring
- Alternative 4 - ICs with FYRs and Monitored Natural Attenuation (MNA)

Based on the review of this evaluation, it was determined that Alternative 1 (No Action) would not meet the threshold criteria of being protective of human health and the environment or compliant with applicable, relevant, and appropriate requirements (ARARs). Of the three remaining alternatives, it was concluded that no additional protectiveness is gained from the increased costs associated with Alternative 4 (which includes MNA; also, the aerobic state of the aquifer will not support MNA), and although Alternative 2 (ICs with FYRs) is less expensive, it does not provide the monitoring data required to support the FYR evaluation and address when the remedy can be terminated. Areas of remaining potential risk can be managed using ICs with monitoring. Therefore, Alternative 3 (ICs with FYRs and Monitoring) was the recommended alternative.

Institutional Controls Plan

After ADEM concurrence was received for the RA/AA Report on March 8, 2019, the DEA prepared an Institutional Controls Plan (ICP), which is equivalent to a Proposed Plan/Record of Decision. The Final ICP was submitted to ADEM in July 2019. ADEM concurrence with the ICP was received in August 2019 and a final Determination Letter was received in September 2019, once the 45-day public comment period was completed with no public comments received. The purpose of the ICP was to provide the planning-level details of the ICs that would be required for the DEAP. The ICP describes the following activities to be completed for the remedy to be considered completely implemented:

- Install one additional monitoring well located along the western edge of the plume footprint.
- Amend the City's well drilling ordinance to (1) prohibit groundwater use within the downtown area, (2) prohibit first-floor residential use for one block where soil vapor is a potential future concern, and (3) require property owners to follow the International Building Code regarding the use of vapor barriers for new construction.
- Implement environmental covenants on the City-owned property in areas where soil vapor is a potential future concern.
- Provide and encourage the use of environmental covenants to downtown property owners.

- Send IC Notification Letters to downtown property owners on an annual basis to describe the restrictions for groundwater use, the use of vapor barriers, the availability of environmental covenants, and the restriction of first-floor residential use (where applicable).
- Conduct random, annual inspections of downtown properties and interviews with property owners to ensure the ICs are being implemented and maintained in accordance with the ICP.
- Conduct annual groundwater monitoring at seven effectiveness monitoring wells.
- Provide annual Remedial Action Progress Reports to ADEM.

Remedial Action Report

The Remedial Action Report (RAR), the final document required by the Settlement Agreement for Site Response for de-proposal of the DEAP, was submitted by the DEA to ADEM in November 2019 and concurrence was received by ADEM in November 2019. The purpose of the RAR was to document that the items described in the ICP were completed or ready to implement. The RAR was developed in general accordance with the Remedial Action Report: Documentation for Operable Unit Completion (OSWER 9355.0-39FS; EPA, June 1992). The RAR was submitted to EPA Region 4 in November 2019 as part of ADEM's original de-proposal package for the DEAP.

Remedial Actions at the DEA Site

Several remedial actions have been performed over the history of the Capital City Plume site:

- Soil excavation of the source area at the RSA Energy Plant in 1993
- Permanent abandonment of all public supply wells associated with the North Well Field, including the final public water supply well 9W, which was the driver for the initial listing of the site
- Installation of the phytoremediation plot in 2010 and ongoing maintenance of other trees in the downtown area
- Permanent closure of the last remaining private well (the Capital Trailways bus washing well) in 2019

Based on discussions during the March 10, 2020 site visit with EPA and ADEM, the DEA has reconsidered the active remedial alternatives that were considered in the AA portion of the RA/AA Report (i.e., pump-and-treat, in situ chemical reduction, in situ chemical oxidation, air sparge/soil vapor extraction, and/or enhanced bioremediation). The in situ chemical reduction, was not considered because the ability to sustain a reductive zone in the highly aerobic aquifer is unlikely. The use of air sparge was not considered further as the physical act of stripping PCE from the aquifer would increase the likelihood of PCE vapor migration (and potentially increase the likelihood of a complete vapor intrusion pathway) for the downtown area. Two remaining active remedial alternatives (pump- and-treat and expanded phytoremediation) were evaluated after discussions with EPA and ADEM for further consideration. In order to evaluate these two remedial options, the DEA reviewed applicable information for the two alternatives, and it was determined that the cost associated with a potential pump-and-treat option would be significantly greater than the cost associated with an expanded phytoremediation option. It was also considered that the pump-and-treat option would involve pumping contaminated groundwater to the surface, thus creating a potential pathway for exposure that does not currently exist. Furthermore, based on general knowledge of the hydrology of the area and these remediation alternatives, it is believed that neither pump-and-treat nor expanded phytoremediation technology are expected to speed up the remediation to less than MCLs within a substantially shorter timeframe.

Conclusion

The final selected remedy for the DEAP is ICs with groundwater monitoring (which is consistent with the original 2004 draft ROD prepared by EPA). Given the restrictions on groundwater use and that downtown groundwater is not needed for potable use, the DEA and ADEM understand the length of time it will take for restoration of the aquifer for drinking water standards. Additionally, there are no other foreseeable beneficial uses for this aquifer at this time. The DEAP will continue to be managed by the DEA under the regulatory authority of the Alabama Department of Environmental Management. ADEM will continue to be the lead agency responsible for regulatory oversight of the site. ADEM believes that Superfund involvement at this site is not warranted and in a letter to EPA dated November 13, 2019, requested that the site be de-proposed from the proposed NPL.

Appendix B
Data Quality Evaluation and Analytical Laboratory Report

APPENDIX B

Data Quality Evaluation

Quality Assurance/Quality Control and Data Validation

The purpose of the data quality evaluation (DQE) process is to assess the effect of the overall analytical process on the usability of the data. The two major categories of data evaluation are laboratory performance and matrix interferences. The evaluation of laboratory performance is a check for compliance with the method requirements; either the laboratory did, or did not, analyze the samples within the limits of the analytical method. The evaluation of matrix interferences is more subtle and involves the analysis of several areas of results including surrogate spike recoveries, matrix spike recoveries, and duplicate sample results.

Introduction

Groundwater samples were collected for the Downtown Environmental Assessment Project in Montgomery, Alabama on May 25 through May 27, 2022, and submitted to Pace Analytical in Mount Juliet, Tennessee for volatile organic compounds (VOC) analysis by SW-846 Method 8260B. One VOC, tetrachloroethene (PCE) was requested and reported for these samples.

The numbers and types of samples collected are listed in Table B-1. Field quality control (QC) samples collected included a field duplicate (FD), a matrix spike/matrix spike duplicate (MS/MSD), an ambient/ field blank (AB), two equipment rinsate blanks (EB), and two trip blanks (TB).

TABLE B-1 Analyses Totals by Method
DEAP Montgomery, Alabama

Analytical Method	Matrix	N	MS/ MSD	FD	EB	AB	TB	Total
VOC/SW8260B	Groundwater	7	1	1	2	1	2	15

Notes:
VOC = Volatile Organic Compounds
SW = SW-846 Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, February 2007
N = native sample
MS/MSD = matrix spike/matrix spike duplicate
FD = field duplicate
EB = equipment blank
AB = ambient/field blank
TB = Trip blank (VOC only)

Before the analytical results were released by the laboratory, both the sample and QC data were carefully reviewed to verify sample identity, instrument calibration, detection limits, dilution factors, numerical computations, accuracy of transcriptions, and chemical interpretations. Additionally, the QC data were reduced and the resulting data were reviewed to ascertain whether they were within the laboratory-defined limits for accuracy and precision.

The hardcopy data packages were reviewed by the project chemist using the process outlined in the U.S. Environmental Protection Agency (EPA) guidance document, National Functional Guidelines for Organic Data Review (EPA, 2017). EPA Level III deliverables were provided by the laboratory for this project. The areas of review included (when applicable to the method) holding time compliance, blank results, precision and accuracy, surrogate recoveries, initial and continuing calibrations, internal standards. Data

review was completed for each of the laboratory reports and any non-conformance was documented. This data review and validation process is independent of the laboratory's checks and focuses on the usability of the data to support the project data interpretation and decision-making processes.

Data that were not within the acceptance limits were appended with a qualifying flag, which consists of a single or double-letter abbreviation that reflects a problem with the data. The following validation flags were applied as necessary:

- **U –** Undetected. The analyte/compound was analyzed for, but not detected above the method detection limit (MDL).
- **UJ –** Undetected, detection limit estimated. The analyte/compound was analyzed for and qualified as not detected. The detection limit is estimated due to a quality assurance (QA)/QC exceedance.
- **J –** Estimated. The analyte was positively identified above the MDL and below the reporting limit (RL) or qualified due to a QA/QC exceedance; the associated numerical value is considered an estimated concentration of the analyte in the sample.
- **R –** Rejected. The data are unusable, the analyte/compound may or may not be present.
- **B** – Estimated. The result was qualified to indicate possible contamination due to the presence of the analyte/compound in an associated laboratory and/or AB or EB.

Once the data review and validation process was completed, the entire data set was reviewed for chemical compound frequencies of detection, dilution factors that might affect data usability, and patterns of target compound distribution. The data set also was evaluated to identify potential data limitations, uncertainties, or both, in the analytical results.

Holding Times

The VOC holding times for all samples were met in accordance with SW-846 requirements.

Potential Field Sampling and Laboratory Contamination

During the May 2022 sampling event, four types of blank samples were used to monitor potential contamination introduced during field sampling, sample handling, and shipping activities, as well as sample preparation and analysis in the laboratory.

- **Trip Blank (TB):** A sample of ASTM Type II water that is prepared in the laboratory before the sampling event. The water is stored in VOC sample containers and is not opened in the field, and travels back to the laboratory with the other samples for VOC analysis. This blank is used to monitor the potential for sample contamination during the sample container trip. One trip blank should be included in each sample cooler that contains samples for VOC analysis. Two trip blank sample sets were submitted to Pace Analytical for tetrachloroethene analysis by SW-846 Method 8260B.
- **Equipment Rinsate Blank (EB)**: A sample of the target-free water used for the final rinse during the equipment decontamination process. This blank sample is collected by rinsing the sampling equipment after decontamination and is analyzed for the same analytical parameters as the corresponding samples. This blank is used to monitor potential contamination caused by incomplete equipment decontamination. One equipment rinsate blank should be collected per sampling event, per type of sampling equipment. Two equipment rinsate blank were submitted to Pace Analytical for tetrachloroethene analysis by SW-846 Method 8260B.
- **Ambient/Field Blank (AB)**: The AB is an aliquot of the source water used for equipment decontamination. This blank monitors contamination that may be introduced from the water used for decontamination. One FB/AB should be collected from each source of decontamination water and be

analyzed for the same parameters as the associated samples. One AB was submitted to Pace Analytical for tetrachloroethene analysis by SW-846 Method 8260B.

- **Laboratory Method Blank or Method Blank (MB):** A MB is ASTM Type II water that is treated as a sample in that it undergoes the same analytical process as the corresponding field samples. The MBs are used to monitor laboratory performance and contamination introduced during the analytical procedure. One MB was prepared and analyzed for every twenty samples, or per analytical batch, whichever was more frequent.

Ambient, trip, and laboratory blanks for the May 2022 groundwater sampling event were reported as not detected for tetrachloroethene. For both equipment blanks collected, tetrachloroethene was reported above the MDL. Tetrachloroethene was reported at 0.649 ug/L in EB-01-0522 and at 1.36 ug/L for EB-02-0522. The monitoring well samples associated with each of these EB were reported as not detected or greater than both the RL and blank concentration indicating no effect on the reported sample concentrations; therefore, data qualification was not required.

General Data Qualifiers

As required by the EPA protocols, all compounds that were qualitatively identified at concentrations below their respective RLs but above the MDLs are appended with "J" qualifiers on the data summary tables to indicate that they are quantitative estimates. For this sample set, the tetrachloroethene detect for EB-01-0522 was below the RL and "J" qualified as an estimated concentration. All monitoring well results were either non detects or above the RL, therefore general data qualification was not required.

Instrument Calibration

All initial and continuing calibration results were reported within the method criteria for all target compounds.

Matrix Effects

Surrogate Spike Recovery and Internal Standard Response

Surrogate spike compounds were added to every sample, including field and laboratory blanks as well as field environmental samples and analyzed for VOCs. Surrogate spikes consist of organic compounds that are similar to the method targets in chemical composition and behavior in the analytical process, but that are not normally found in environmental samples.

Surrogate spike recoveries were used to monitor both laboratory performance and matrix interferences. Surrogate spike recoveries from field and laboratory blanks were used to evaluate laboratory performance because the blanks should represent an "ideal" sample matrix. Surrogate spike recoveries for the field samples were used to evaluate the potential for matrix interferences. According to the Functional Guidelines, data are qualified as estimated values when one or more VOC surrogate recoveries are outside of method acceptance limits.

Internal standard calibration involves the comparison of the instrument responses from the target compounds in the sample to the responses of specific standards added to the sample or sample extract prior to injection.

All surrogate recoveries and internal standards associated with the target compound for this project were within acceptance criteria.

Matrix Spike/Matrix Spike Duplicate Precision and Accuracy

The MS and MSD samples are aliquots of a native sample spiked with a known concentration of target compound(s) before sample preparation and analysis. MS/MSDs are used to document the bias and precision of a method in a given sample matrix. For the MS/MSD measurement, three aliquots of a single sample are analyzed; one native sample and two samples spiked with target compound(s). Matrix accuracy is evaluated from the spike recoveries, while precision is evaluated from a comparison of the concentrations of the MS and MSD.

MS/MSD evaluation is in conjunction with surrogate, internal standard, and laboratory control sample/laboratory control sample duplicate (LCS/LCSD) results.

Groundwater monitoring well MW-08S was submitted to the laboratory for MS/MSD analysis during the May 2022 sampling event. MS/MSD and LCS recoveries were within criteria, therefore no data qualification was required.

One FD sample was collected and analyzed for tetrachloroethene to evaluate the precision of field sampling and the variability of the sample data. Groundwater monitoring well MW-2S was selected for FD analysis during the May 2022 sampling event. The native sample and FD sample results were compared and relative percent difference (RPD) precision criteria were met.

Precision, Accuracy, Representativeness, Completeness, and Comparability (PARCCs)

Precision–is defined as the agreement between duplicate results, and was estimated by comparing MS/MSD and native/FD sample results. MS/MSD, LCS/LCSD, and FD precision was reviewed and precision was met for all samples.

Accuracy– is a measure of the agreement between an experimental determination and the true value of the parameter measured. Accuracy of the data was verified through the review of surrogate, LCS/LCSD and MS/MSD results. Surrogate and MS/MSD recoveries provide a measure of the matrix effects on the analytical accuracy. The LCS/LCSD results demonstrate accuracy and precision of the method and the laboratory's ability to meet the method criteria. Surrogate, LCS/LCSD, and MS/MSD accuracy criteria were met for all samples.

Representativeness–This criterion is a qualitative measure of the degree to which sample data accurately and precisely represent a characteristic environmental condition. Representativeness is a subjective parameter and is used to evaluate the effectiveness of the sampling plan design. Representativeness was demonstrated by providing full descriptions in the project scoping documents of the sampling techniques and the rationale used for selecting sampling locations.

Completeness–is defined as the percentage of measurements that are judged to be valid compared to the total number of measurements made. All analyses were performed within holding time requirements and within the QA/QC criteria, resulting in 100% usable data for this sampling event.

Comparability–is another qualitative measure designed to express the confidence with which one data set may be compared to another. Factors that affect comparability are sample collection and handling techniques, sample matrix type, and analytical method. Comparability is limited by the other precision, accuracy, representativeness, completeness, and comparability (PARCC) parameters because data sets can be compared with confidence only when precision and accuracy are known. Data from this investigation are comparable with other data collected at the site because only EPA methods were used to analyze the samples and EPA Level III QC data are available to support the quality of the data.

Summary and Conclusions

The conclusions of the DQE process include the following:

- The laboratory analyzed the samples for tetrachloroethene according to the EPA methods as requested by the project and demonstrated by the data deliverables provided.
- AB, EB, and laboratory blanks were analyzed for this sampling event, with detects of tetrachloroethene in both EBs. All monitoring well samples were reported as not detected or greater than the RL and were not affected by the blank concentrations.
- Groundwater monitoring well MW-08S was submitted to the laboratory for MS/MSD analysis with all accuracy and precision criteria met.
- Groundwater monitoring well MW-2S was selected for FD analysis with precision criteria met for tetrachloroethene.
- The overall project objectives or PARCCs were met, and the data can be used in the project decision-making process as qualified by the DQE process.

Laboratory Reports

ANALYTICAL REPORT

June 07, 2022

Jacobs - Montgomery, AL

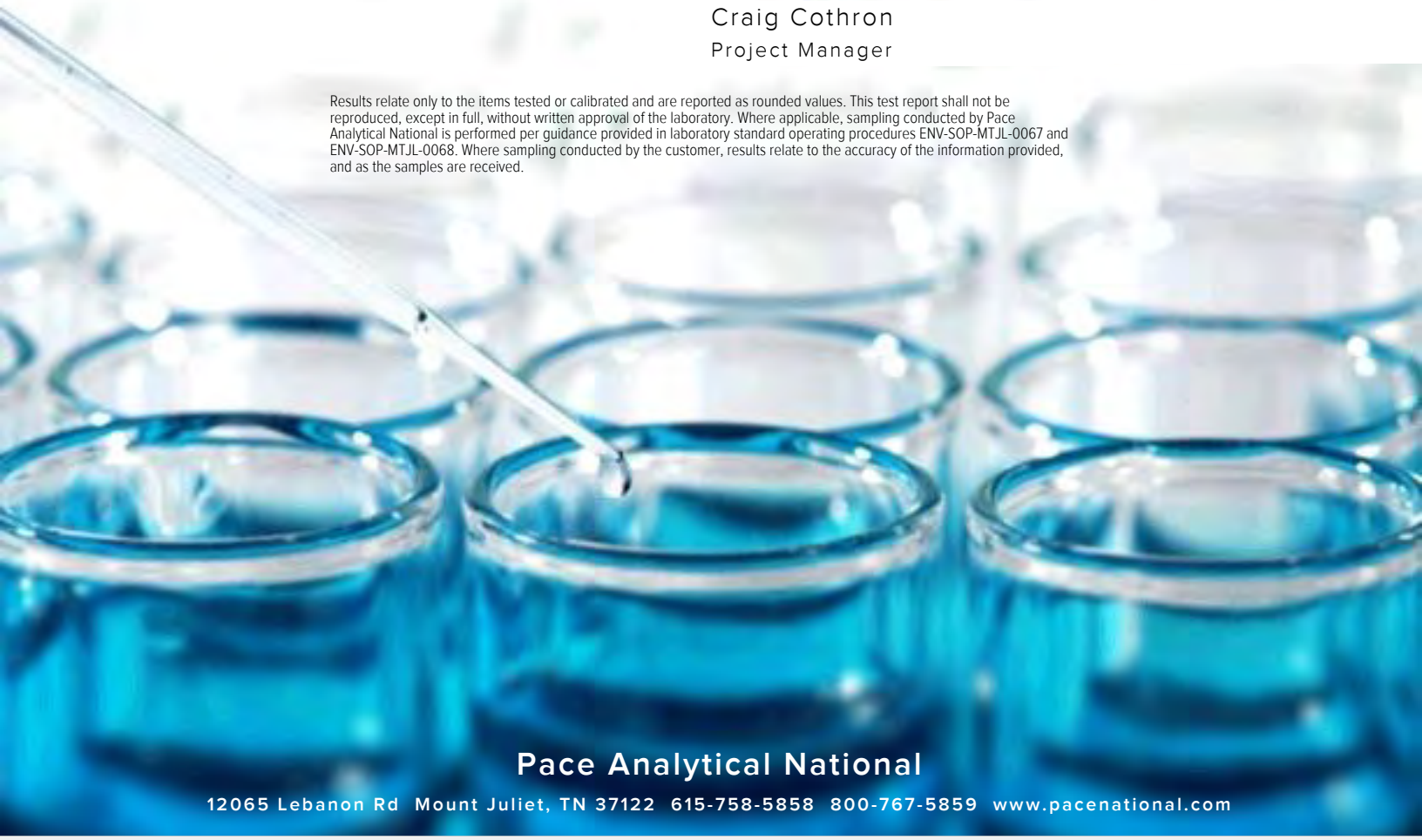
Sample Delivery Group:	L1499362
Samples Received:	05/27/2022
Project Number:	
Description:	Montgomery DEAP

Report To: Ms. Kaye Walker
4121 Carmichael Rd, Suite 400
Montgomery, AL 36106

Entire Report Reviewed By:

Craig Cothron
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

SAMPLE SUMMARY

MW-1S-0522 L1499362-01 GW

			Collected by	Collected date/time	Received date/time
				05/25/22 16:20	05/27/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1874409	1	06/04/22 19:35	06/04/22 19:35	DWR	Mt. Juliet, TN

MW-8S-0522 L1499362-02 GW

			Collected by	Collected date/time	Received date/time
				05/26/22 08:45	05/27/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1874409	1	06/04/22 19:56	06/04/22 19:56	DWR	Mt. Juliet, TN

MW-12S-0522 L1499362-03 GW

			Collected by	Collected date/time	Received date/time
				05/26/22 10:40	05/27/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1874409	1	06/04/22 20:17	06/04/22 20:17	DWR	Mt. Juliet, TN

MW-13S-0522 L1499362-04 GW

			Collected by	Collected date/time	Received date/time
				05/26/22 16:20	05/27/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1874931	5	06/06/22 19:05	06/06/22 19:05	BMB	Mt. Juliet, TN

MW-14S-0522 L1499362-05 GW

			Collected by	Collected date/time	Received date/time
				05/26/22 14:00	05/27/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1874409	1	06/04/22 20:38	06/04/22 20:38	DWR	Mt. Juliet, TN

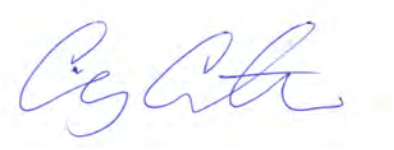
TB-01-0522 L1499362-06 GW

			Collected by	Collected date/time	Received date/time
				05/26/22 17:00	05/27/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1874409	1	06/04/22 17:48	06/04/22 17:48	DWR	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Craig Cothron
Project Manager

Report Revision History

Level II Report - Version 1: 06/07/22 12:47

8260B Volatile Organic Compounds (GC/MS)

SURROGATE RECOVERY

Analytical Method: 8260B **SDG:** L1499362
Matrix: GW

Sample ID	Lab Sample ID	Instrument	File ID	DMC-1 % Rec.	DMC-2 % Rec.	DMC-3 % Rec.	TOT Out
MW-1S-0522	L1499362-01	VOCMS21	0604_36	104	108	106	0
MW-8S-0522	L1499362-02	VOCMS21	0604_37	104	110	110	0
MW-12S-0522	L1499362-03	VOCMS21	0604_38	104	111	108	0
MW-13S-0522	L1499362-04	VOCMS21	0606_35	99.7	99.7	102	0
MW-14S-0522	L1499362-05	VOCMS21	0604_39	106	111	108	0
TB-01-0522	L1499362-06	VOCMS21	0604_31	105	110	107	0
MS	R3799782-4	VOCMS21	0604_51	102	110	109	0
MSD	R3799782-5	VOCMS21	0604_52	100	108	108	0
MS	R3799782-6	VOCMS21	0604_53	101	109	110	0
MSD	R3799782-7	VOCMS21	0604_54	102	108	105	0
BLANK	R3799782-3	VOCMS21	0604_30	104	111	107	0
BLANK	R3800081-3	VOCMS21	0606_30C	105	110	104	0
LCS	R3799782-1	VOCMS21	0604_27LCS	102	109	107	0
LCS	R3800081-1	VOCMS21	0606_27LCSC	101	106	106	0
LCSD	R3799782-2	VOCMS21	0604_28	102	111	109	0
LCSD	R3800081-2	VOCMS21	0606_28C	103	107	105	0

Parm Abbreviation	Parameter	QC LIMITS
DMC-1	Toluene-d8	80.0 - 120
DMC-2	4-Bromofluorobenzene	77.0 - 126
DMC-3	1,2-Dichloroethane-d4	70.0 - 130

*: Value outside the established quality control limits.
D: Surrogate recovery cannot be used for control limit evaluation due to dilution.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

L1499362-01,02,03,05,06

SAMPLE NO.:
R3799782-4
R3799782-5

MS Sample / File ID:	R3799782-4 / 0604_51	**SDG:**	L1499362
MSD Sample / File ID:	R3799782-5 / 0604_52	**Analytical Batch:**	WG1874409
OS Sample / File ID:	L1499362-02 / 0604_37	**Matrix:**	GW
Instrument ID:	VOCMS21		
Analytical Method:	8260B		

Analyte	Spike Amount	OS Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	RPD	RPD Limit
	ug/l	*ug/l*	*ug/l*	*ug/l*	*%*	*%*		*%*	*%*	*%*
Tetrachloroethene	5.00	30.5	35.3	35.8	96.0	106	1	10.0 - 160	1.41	27

*: Value outside the established quality control limits.

D: Surrogate recovery cannot be used for control limit evaluation due to dilution.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

L1499362-01,02,03,05,06

SAMPLE NO.:
R3799782-6
R3799782-7

MS Sample / File ID:	R3799782-6 / 0604_53	**SDG:**	L1499362
MSD Sample / File ID:	R3799782-7 / 0604_54	**Analytical Batch:**	WG1874409
OS Sample / File ID:	L1499658-08 / 0604_46	**Matrix:**	GW
Instrument ID:	VOCMS21		
Analytical Method:	8260B		

Analyte	Spike Amount	OS Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	RPD	RPD Limit
	ug/l	*ug/l*	*ug/l*	*ug/l*	*%*	*%*		*%*	*%*	*%*
Tetrachloroethene	5.00	U	4.81	4.91	96.2	98.2	1	10.0 - 160	2.06	27

*: Value outside the established quality control limits.

D: Surrogate recovery cannot be used for control limit evaluation due to dilution.

3B-OR

LABORATORY CONTROL SAMPLE
LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

L1499362-01,02,03,05,06

SAMPLE NO.:
R3799782-1
R3799782-2

LCS Sample / File ID:	R3799782-1 / 0604_27LCS	**SDG:**	L1499362
LCSD Sample / File ID:	R3799782-2 / 0604_28	**Analytical Batch:**	WG1874409
Instrument ID:	VOCMS21	**Dilution Factor:**	1
Analytical Method:	8260B	**Matrix:**	GW

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	RPD	RPD Limit
	ug/l	*ug/l*	*ug/l*	*%*	*%*	*%*	*%*	*%*
Tetrachloroethene	5.00	5.30	5.21	106	104	72.0 - 132	1.71	20

*: Value outside the established quality control limits.

D: Surrogate recovery cannot be used for control limit evaluation due to dilution.

LABORATORY CONTROL SAMPLE
LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY
L1499362-04

SAMPLE NO.:
R3800081-1
R3800081-2

LCS Sample / File ID:	R3800081-1 / 0606_27LCSC	**SDG:**	L1499362
LCSD Sample / File ID:	R3800081-2 / 0606_28C	**Analytical Batch:**	WG1874931
Instrument ID:	VOCMS21	**Dilution Factor:**	1
Analytical Method:	8260B	**Matrix:**	GW

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	RPD	RPD Limit
	ug/l	*ug/l*	*ug/l*	*%*	*%*	*%*	*%*	*%*
Tetrachloroethene	5.00	5.52	5.52	110	110	72.0 - 132	0.000	20

*: Value outside the established quality control limits.
D: Surrogate recovery cannot be used for control limit evaluation due to dilution.

Lab Sample ID:	R3799782-3	**SDG:**	L1499362
Lab File ID:	0604_30	**Preparation Date/Time:**	06/04/22 16:17
Instrument ID:	VOCMS21	**Analysis Date/Time:**	06/04/22 16:17
Analytical Batch:	WG1874409	**Dilution Factor:**	1
Analytical Method:	8260B	**Matrix:**	GW

Sample ID	Lab Sample ID	Instrument	File ID	Analysis *date/time*
LCS	R3799782-1	VOCMS21	0604_27LCS	06/04/22 15:13
LCSD	R3799782-2	VOCMS21	0604_28	06/04/22 15:34
TB-01-0522	L1499362-06	VOCMS21	0604_31	06/04/22 17:48
MW-1S-0522	L1499362-01	VOCMS21	0604_36	06/04/22 19:35
MW-8S-0522	L1499362-02	VOCMS21	0604_37	06/04/22 19:56
MW-12S-0522	L1499362-03	VOCMS21	0604_38	06/04/22 20:17
MW-14S-0522	L1499362-05	VOCMS21	0604_39	06/04/22 20:38
OS	L1499658-08	VOCMS21	0604_46	06/04/22 23:08
MS	R3799782-4	VOCMS21	0604_51	06/05/22 00:54
MSD	R3799782-5	VOCMS21	0604_52	06/05/22 01:16
MS	R3799782-6	VOCMS21	0604_53	06/05/22 01:37
MSD	R3799782-7	VOCMS21	0604_54	06/05/22 01:58

Lab Sample ID:	R3800081-3	**SDG:**	L1499362
Lab File ID:	0606_30C	**Preparation Date/Time:**	06/06/22 17:16
Instrument ID:	VOCMS21	**Analysis Date/Time:**	06/06/22 17:16
Analytical Batch:	WG1874931	**Dilution Factor:**	1
Analytical Method:	8260B	**Matrix:**	GW

Sample ID	Lab Sample ID	Instrument	File ID	Analysis *date/time*
LCS	R3800081-1	VOCMS21	0606_27LCSC	06/06/22 16:12
LCSD	R3800081-2	VOCMS21	0606_28C	06/06/22 16:33
MW-13S-0522	L1499362-04	VOCMS21	0606_35	06/06/22 19:05

5A-OR

GC/MS INSTRUMENT PERFORMANCE CHECK

Lab File ID:	0421_07	**SDG:**	L1499362
Instrument ID:	VOCMS21	**Analytical Method:**	8260B
Analysis Date/Time:	04/21/22 11:26		

Target Mass (m/e)	Relative Mass	Low Limit	High Limit	% Relative Abundance
95	174	50	200	114
96	95	5	9	8
173	174	0	2	1
174	95	50	200	88
175	174	5	9	8
176	174	95	105	99
177	176	5	10	7

Sample ID	Lab Sample ID	File ID	Analysis date/time
STD-5A	5A	0421_07	04/21/22 11:26
STD-15A	15A	0421_07	04/21/22 11:26
STD-20A	20A	0421_07	04/21/22 11:26
STD-1A	1A	0421_07	04/21/22 11:26
STD-10A	10A	0421_07	04/21/22 11:26
STD-0.5	0.5	0421_12	04/21/22 13:14
STD-1	1	0421_13	04/21/22 13:36
STD-2	2	0421_14	04/21/22 13:57
STD-5.0	5.0	0421_15	04/21/22 14:19
STD-25	25	0421_16	04/21/22 14:41
STD-75	75	0421_17	04/21/22 15:02
STD-100	100	0421_18	04/21/22 15:24
STD-200	200	0421_19	04/21/22 15:46
SSCV	VOCMS210421220421_24575816	0421_24	04/21/22 17:34
SSCV	VOCMS210421220421_25575816	0421_25	04/21/22 17:55

5A-OR

GC/MS INSTRUMENT PERFORMANCE CHECK

Lab File ID:	0604_26T	**SDG:**	L1499362
Instrument ID:	VOCMS21	**Analytical Method:**	8260B
Analysis Date/Time:	06/04/22 14:51		

Target Mass (m/e)	Relative Mass	Low Limit	High Limit	% Relative Abundance
95	174	50	200	108
96	95	5	9	7
173	174	0	2	1
174	95	50	200	92
175	174	5	9	7
176	174	95	105	98
177	176	5	10	6

Sample ID	Lab Sample ID	File ID	Analysis date/time
LCS	R3799782-1	0604_27LCS	06/04/22 15:13
ICV	VOCMS210604220604_27575816	0604_27	06/04/22 15:13
LCSD	R3799782-2	0604_28	06/04/22 15:34
BLANK	R3799782-3	0604_30	06/04/22 16:17
TB-01-0522	L1499362-06	0604_31	06/04/22 17:48
MW-1S-0522	L1499362-01	0604_36	06/04/22 19:35
MW-8S-0522	L1499362-02	0604_37	06/04/22 19:56
OS	L1499362-02	0604_37	06/04/22 19:56
MW-12S-0522	L1499362-03	0604_38	06/04/22 20:17
MW-14S-0522	L1499362-05	0604_39	06/04/22 20:38
OS	L1499658-08	0604_46	06/04/22 23:08
MS	R3799782-4	0604_51	06/05/22 00:54
MSD	R3799782-5	0604_52	06/05/22 01:16
MS	R3799782-6	0604_53	06/05/22 01:37
MSD	R3799782-7	0604_54	06/05/22 01:58

5A-OR

GC/MS INSTRUMENT PERFORMANCE CHECK

Lab File ID:	0606_26T	**SDG:**	L1499362
Instrument ID:	VOCMS21	**Analytical Method:**	8260B
Analysis Date/Time:	06/06/22 15:50		

Target Mass (m/e)	Relative Mass	Low Limit	High Limit	% Relative Abundance
95	174	50	200	107
96	95	5	9	6
173	174	0	2	1
174	95	50	200	94
175	174	5	9	8
176	174	95	105	99
177	176	5	10	6

Sample ID	Lab Sample ID	File ID	Analysis date/time
LCS	R3800081-1	0606_27LCSC	06/06/22 16:12
ICV	VOCMS210606220606_27575816	0606_27	06/06/22 16:12
LCSD	R3800081-2	0606_28C	06/06/22 16:33
BLANK	R3800081-3	0606_30C	06/06/22 17:16
MW-13S-0522	L1499362-04	0606_35	06/06/22 19:05

INTERNAL STANDARD AND RETENTION TIME

SDG:	L1499362	**Analytical Method:**	8260B
Instrument ID:	VOCMS21	**Calibration Start Date:**	04/21/22 11:26
Std File:	0604_27	**Calibration End Date:**	04/21/22 15:46
		Std Analysis Date:	06/04/22 15:13

Sample ID	File ID	1,4-DCB		8260-CB		8260-FB	
		Response	*RT*	*Response*	*RT*	*Response*	*RT*
STANDARD		135437	7.59	124274	5.92	273530	4.03
UPPER LIMIT		270874		248548		547060	
LOWER LIMIT		67719		62137		136765	
LCS R3799782-1 WG1874409 1x	0604_27LCS	135437	7.59	124274	5.92	273530	4.03
LCSD R3799782-2 WG1874409 1x	0604_28	137486	7.59	122529	5.92	264712	4.03
BLANK R3799782-3 WG1874409 1x	0604_30	134998	7.59	117111	5.92	263637	4.03
L1499362-06 WG1874409 1x	0604_31	127486	7.59	120603	5.92	270147	4.03
L1499362-01 WG1874409 1x	0604_36	127479	7.59	117784	5.92	260349	4.03
L1499362-02 WG1874409 1x	0604_37	126336	7.59	115156	5.92	256449	4.03
OS L1499362-02 WG1874409 1x	0604_37	126336	7.59	115156	5.92	256449	4.03
L1499362-03 WG1874409 1x	0604_38	133998	7.59	121462	5.92	271131	4.03
L1499362-05 WG1874409 1x	0604_39	127419	7.59	113614	5.92	259614	4.03
OS L1499658-08 WG1874409 1x	0604_46	128773	7.59	119233	5.92	266772	4.03
MS R3799782-4 WG1874409 1x	0604_51	139427	7.59	119097	5.92	258806	4.03
MSD R3799782-5 WG1874409 1x	0604_52	128879	7.59	121682	5.92	265658	4.03
MS R3799782-6 WG1874409 1x	0604_53	134826	7.59	120303	5.92	260793	4.03
MSD R3799782-7 WG1874409 1x	0604_54	134195	7.59	123637	5.92	269707	4.03

1,4-DCB - 8260-1,4-DICHLOROBENZENE-D4 8260-CB - 8260-CHLOROBENZENE-D5
8260-FB - 8260-FLUOROBENZENE

*: Value outside the established quality control limits.

D: Surrogate recovery cannot be used for control limit evaluation due to dilution.

8A-OR

INTERNAL STANDARD AND RETENTION TIME

SDG:	L1499362	**Analytical Method:**	8260B
Instrument ID:	VOCMS21	**Calibration Start Date:**	04/21/22 11:26
Std File:	0606_27	**Calibration End Date:**	04/21/22 15:46
		Std Analysis Date:	06/06/22 16:12

Sample ID	File ID	1,4-DCB		8260-CB		8260-FB	
		Response	*RT*	*Response*	*RT*	*Response*	*RT*
STANDARD		140727	7.59	133811	5.92	287063	4.03
UPPER LIMIT		281454		267622		574126	
LOWER LIMIT		70364		66906		143532	
LCS R3800081-1 WG1874931 1x	0606_27LCSC	140727	7.59	133811	5.92	287063	4.03
LCSD R3800081-2 WG1874931 1x	0606_28C	139489	7.59	129930	5.92	291952	4.03
BLANK R3800081-3 WG1874931 1x	0606_30C	134596	7.59	123966	5.92	280985	4.03
L1499362-04 WG1874931 5x	0606_35	147722	7.59	148239	5.92	293702	4.03

1,4-DCB - 8260-1,4-DICHLOROBENZENE-D4 8260-CB - 8260-CHLOROBENZENE-D5
8260-FB - 8260-FLUOROBENZENE

*: Value outside the established quality control limits.

D: Surrogate recovery cannot be used for control limit evaluation due to dilution.

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	L1499362-01	**SDG:**	L1499362
Client Sample ID:	MW-1S-0522	**Collected Date/Time:**	05/25/22 16:20
Lab File ID:	0604_36	**Received Date/Time:**	05/27/22 08:45
Instrument ID:	VOCMS21	**Preparation Date/Time:**	06/04/22 19:35
Analytical Batch:	WG1874409	**Analysis Date/Time:**	06/04/22 19:35
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	_____
Total Solids (%):	_____	**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	0	U		0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	L1499362-02	**SDG:**	L1499362
Client Sample ID:	MW-8S-0522	**Collected Date/Time:**	05/26/22 08:45
Lab File ID:	0604_37	**Received Date/Time:**	05/27/22 08:45
Instrument ID:	VOCMS21	**Preparation Date/Time:**	06/04/22 19:56
Analytical Batch:	WG1874409	**Analysis Date/Time:**	06/04/22 19:56
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	
Total Solids (%):		**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	5.20	30.5		0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	L1499362-03	**SDG:**	L1499362
Client Sample ID:	MW-12S-0522	**Collected Date/Time:**	05/26/22 10:40
Lab File ID:	0604_38	**Received Date/Time:**	05/27/22 08:45
Instrument ID:	VOCMS21	**Preparation Date/Time:**	06/04/22 20:17
Analytical Batch:	WG1874409	**Analysis Date/Time:**	06/04/22 20:17
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	
Total Solids (%):		**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	5.20	36.4		0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	L1499362-04	**SDG:**	L1499362
Client Sample ID:	MW-13S-0522	**Collected Date/Time:**	05/26/22 16:20
Lab File ID:	0606_35	**Received Date/Time:**	05/27/22 08:45
Instrument ID:	VOCMS21	**Preparation Date/Time:**	06/06/22 19:05
Analytical Batch:	WG1874931	**Analysis Date/Time:**	06/06/22 19:05
Dilution Factor:	5	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	
Total Solids (%):		**Final Wt/Vol:**	1 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	5.20	264		1.50	5.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	L1499362-05	**SDG:**	L1499362
Client Sample ID:	MW-14S-0522	**Collected Date/Time:**	05/26/22 14:00
Lab File ID:	0604_39	**Received Date/Time:**	05/27/22 08:45
Instrument ID:	VOCMS21	**Preparation Date/Time:**	06/04/22 20:38
Analytical Batch:	WG1874409	**Analysis Date/Time:**	06/04/22 20:38
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	_____
Total Solids (%):	_____	**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	5.20	5.68		0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	L1499362-06	**SDG:**	L1499362
Client Sample ID:	TB-01-0522	**Collected Date/Time:**	05/26/22 17:00
Lab File ID:	0604_31	**Received Date/Time:**	05/27/22 08:45
Instrument ID:	VOCMS21	**Preparation Date/Time:**	06/04/22 17:48
Analytical Batch:	WG1874409	**Analysis Date/Time:**	06/04/22 17:48
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	
Total Solids (%):		**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	0	U		0.300	1.00

GC/MS INITIAL CALIBRATION DATA

SDG: L1499362 **Analytical Method:** 8260B

Instrument ID: VOCMS21

Analyte	**RRF: 0.5**	**RRF: 1**	**RRF: 2**	**RRF: 5.0**	**RRF: 25**	**RRF: 75**	**RRF: 100**	**RRF: 200**
Analysis date/time	04/21/22 13:14	04/21/22 13:36	04/21/22 13:57	04/21/22 14:19	04/21/22 14:41	04/21/22 15:02	04/21/22 15:24	04/21/22 15:46
TETRACHLOROETHENE	0.4120	0.3570	0.37	0.40	0.3620	0.3920	0.3930	0.4140
1,2-DICHLOROETHANE-D4	0.3270	0.3190	0.3160	0.3110	0.32	0.34	0.2830	0.2680
TOLUENE-D8	2.4130	2.3560	2.2940	2.2430	2.1140	2.1460	2.1660	2.0950
4-BROMOFLUOROBENZENE	0.9380	0.9020	0.8720	0.8560	0.8240	0.8560	0.8570	0.8540
File ID:	0421_12	0421_13	0421_14	0421_15	0421_16	0421_17	0421_18	0421_19

GC/MS INITIAL CALIBRATION DATA

SDG: L1499362 **Analytical Method:** 8260B

Instrument ID: VOCMS21

Analyte Analysis date/time	RRF. Avg	%RSD	COD
TETRACHLOROETHENE	0.3874	5.68	
1,2-DICHLOROETHANE-D4	0.310508	7.6	
TOLUENE-D8	2.228237	5.27	
4-BROMOFLUOROBENZENE	0.869819	4.02	

7A-OR

GC/MS CONTINUING CALIBRATION VERIFICATION

SDG:	L1499362	**Calibration (begin) date/time:**	04/21/22 11:26
Instrument ID:	VOCMS21	**Calibration (end) date/time:**	04/21/22 15:46
Lab File ID:	0421_24	**Analysis date/time:**	04/21/22 17:34
Analytical Method:	8260B	**Sample ID:**	SSCV

Analyte	Avg. RRF	RRF	Min. RRF	Diff.	Max Diff.	True Value	Result	Result	Limits
				%	*%*	*mg/l*	*mg/l*	*% Rec.*	*%*
TETRACHLOROETHENE	0.3874	0.39865030		2.90	40	0.0050	0.005145	103	70 - 130
1,2-DICHLOROETHANE-D4	0.310508	0.33790320		8.82	40	0.0160	0.01741	109	70 - 130
4-BROMOFLUOROBENZENE	0.869819	0.91841470		5.59	40	0.0160	0.01689	106	67 - 138
TOLUENE-D8	2.228237	2.405499		7.96	40	0.0160	0.01727	108	75 - 131

D: Surrogate recovery cannot be used for control limit evaluation due to dilution.

7A-OR

GC/MS CONTINUING CALIBRATION VERIFICATION

SDG:	L1499362	**Calibration (begin) date/time:**	04/21/22 11:26
Instrument ID:	VOCMS21	**Calibration (end) date/time:**	04/21/22 15:46
Lab File ID:	0604_27	**Analysis date/time:**	06/04/22 15:13
Analytical Method:	8260B	**Sample ID:**	ICV

Analyte	Avg. RRF	RRF	Min. RRF	Diff.	Max Diff.	True Value	Result	Result	Limits
				%	*%*	*mg/l*	*mg/l*	*% Rec.*	*%*
TETRACHLOROETHENE	0.3874	0.41029340		5.91		0.0050	0.005295	106	
1,2-DICHLOROETHANE-D4	0.310508	0.33311160		7.28		0.0160	0.01716	107	70 - 130
4-BROMOFLUOROBENZENE	0.869819	0.94962750		9.18		0.0160	0.01747	109	70 - 130
TOLUENE-D8	2.228237	2.279962		2.32		0.0160	0.01637	102	70 - 130

D: Surrogate recovery cannot be used for control limit evaluation due to dilution.

7A-OR

GC/MS CONTINUING CALIBRATION VERIFICATION

SDG:	L1499362	**Calibration (begin) date/time:**	04/21/22 11:26
Instrument ID:	VOCMS21	**Calibration (end) date/time:**	04/21/22 15:46
Lab File ID:	0606_27	**Analysis date/time:**	06/06/22 16:12
Analytical Method:	8260B	**Sample ID:**	ICV

Analyte	Avg. RRF	RRF	Min. RRF	Diff.	Max Diff.	True Value	Result	Result	Limits
				%	*%*	*mg/l*	*mg/l*	*% Rec.*	*%*
TETRACHLOROETHENE	0.3874	0.427373		10.30		0.0050	0.005516	110	
1,2-DICHLOROETHANE-D4	0.310508	0.32968020		6.17		0.0160	0.01699	106	70 - 130
4-BROMOFLUOROBENZENE	0.869819	0.92402710		6.23		0.0160	0.01700	106	70 - 130
TOLUENE-D8	2.228237	2.239181		0.4910		0.0160	0.01608	100	70 - 130

D: Surrogate recovery cannot be used for control limit evaluation due to dilution.

ANALYTICAL SEQUENCE

SDG:	L1499362	**Analytical Method:**	8260B
Instrument ID:	VOCMS21	**Calibration Start Date:**	04/21/22 11:26
		Calibration End Date:	04/21/22 15:46

Client Sample ID	Lab Sample ID	File ID	Analysis Date Time	Dilution	Batch
CAL	1A	0421_07	04/21/22 11:26		
CAL	5A	0421_07	04/21/22 11:26		
CAL	10A	0421_07	04/21/22 11:26		
CAL	15A	0421_07	04/21/22 11:26		
CAL	20A	0421_07	04/21/22 11:26		
TUNE	VOCMS210421220421_07575816	0421_07	04/21/22 11:26		
CAL	0.5	0421_12	04/21/22 13:14		
CAL	1	0421_13	04/21/22 13:36		
CAL	2	0421_14	04/21/22 13:57		
CAL	5.0	0421_15	04/21/22 14:19		
CAL	25	0421_16	04/21/22 14:41		
CAL	75	0421_17	04/21/22 15:02		
CAL	100	0421_18	04/21/22 15:24		
CAL	200	0421_19	04/21/22 15:46		
SSCV	VOCMS210421220421_24575816	0421_24	04/21/22 17:34		
SSCV	VOCMS210421220421_25575816	0421_25	04/21/22 17:55		
TUNE	VOCMS210604220604_01T575816	0604_01T	06/04/22 05:59		
TUNE	VOCMS210604220604_26T575816	0604_26T	06/04/22 14:51		
ICV	VOCMS210604220604_27575816	0604_27	06/04/22 15:13		
LCS	R3799782-1	0604_27LCS	06/04/22 15:13	1	WG1874409
LCSD	R3799782-2	0604_28	06/04/22 15:34	1	WG1874409
BLANK	R3799782-3	0604_30	06/04/22 16:17	1	WG1874409
TB-01-0522	L1499362-06	0604_31	06/04/22 17:48	1	WG1874409
MW-1S-0522	L1499362-01	0604_36	06/04/22 19:35	1	WG1874409
MW-8S-0522	L1499362-02	0604_37	06/04/22 19:56	1	WG1874409
MW-12S-0522	L1499362-03	0604_38	06/04/22 20:17	1	WG1874409
MW-14S-0522	L1499362-05	0604_39	06/04/22 20:38	1	WG1874409
OS	L1499658-08	0604_46	06/04/22 23:08		
L1499658-08	L1499658-08	0604_46	06/04/22 23:08	1	WG1874409
MS	R3799782-4	0604_51	06/05/22 00:54	1	WG1874409
MSD	R3799782-5	0604_52	06/05/22 01:16	1	WG1874409
MS	R3799782-6	0604_53	06/05/22 01:37	1	WG1874409
MSD	R3799782-7	0604_54	06/05/22 01:58	1	WG1874409
TUNE	VOCMS210606220606_26T575816	0606_26T	06/06/22 15:50		
ICV	VOCMS210606220606_27575816	0606_27	06/06/22 16:12		
LCS	R3800080-1	0606_27LCSB	06/06/22 16:12	1	WG1874845
LCS	R3800081-1	0606_27LCSC	06/06/22 16:12	1	WG1874931
LCSD	R3800080-2	0606_28B	06/06/22 16:33	1	WG1874845
LCSD	R3800081-2	0606_28C	06/06/22 16:33	1	WG1874931
BLANK	R3800080-3	0606_30B	06/06/22 17:16	1	WG1874845
BLANK	R3800081-3	0606_30C	06/06/22 17:16	1	WG1874931
MW-13S-0522	L1499362-04	0606_35	06/06/22 19:05	5	WG1874931

DETECTION LIMIT SUMMARY

Lab Sample IDs: L1499362-01,02,03,04,05,06 **Analytical Method:** 8260B

Matrix: GW **Prep Method:** 8260B

Analyte	CAS	MDL	RDL
		mg/l	*mg/l*
Tetrachloroethene	127-18-4	0.0003	0.0010

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	R3799782-3	**SDG:**	L1499362
Client Sample ID:	BLANK	**Collected Date/Time:**	
Lab File ID:	0604_30	**Received Date/Time:**	
Instrument ID:	VOCMS21	**Preparation Date/Time:**	06/04/22 16:17
Analytical Batch:	WG1874409	**Analysis Date/Time:**	06/04/22 16:17
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	
Total Solids (%):		**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	0	U		0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	R3800081-3	**SDG:**	L1499362
Client Sample ID:	BLANK	**Collected Date/Time:**	
Lab File ID:	0606_30C	**Received Date/Time:**	
Instrument ID:	VOCMS21	**Preparation Date/Time:**	06/06/22 17:16
Analytical Batch:	WG1874931	**Analysis Date/Time:**	06/06/22 17:16
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	
Total Solids (%):		**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	0	U		0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	R3799782-1	**SDG:**	L1499362
Client Sample ID:	LCS	**Collected Date/Time:**	_____
Lab File ID:	0604_27LCS	**Received Date/Time:**	_____
Instrument ID:	VOCMS21	**Preparation Date/Time:**	06/04/22 15:13
Analytical Batch:	WG1874409	**Analysis Date/Time:**	06/04/22 15:13
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	_____
Total Solids (%):	_____	**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	5.20	5.30		0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	R3800081-1	**SDG:**	L1499362
Client Sample ID:	LCS	**Collected Date/Time:**	_____
Lab File ID:	0606_27LCSC	**Received Date/Time:**	_____
Instrument ID:	VOCMS21	**Preparation Date/Time:**	06/06/22 16:12
Analytical Batch:	WG1874931	**Analysis Date/Time:**	06/06/22 16:12
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	_____
Total Solids (%):	_____	**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	5.20	5.52		0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	R3799782-2	**SDG:**	L1499362
Client Sample ID:	LCSD	**Collected Date/Time:**	
Lab File ID:	0604_28	**Received Date/Time:**	
Instrument ID:	VOCMS21	**Preparation Date/Time:**	06/04/22 15:34
Analytical Batch:	WG1874409	**Analysis Date/Time:**	06/04/22 15:34
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	
Total Solids (%):		**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	5.20	5.21		0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	R3800081-2	**SDG:**	L1499362
Client Sample ID:	LCSD	**Collected Date/Time:**	
Lab File ID:	0606_28C	**Received Date/Time:**	
Instrument ID:	VOCMS21	**Preparation Date/Time:**	06/06/22 16:33
Analytical Batch:	WG1874931	**Analysis Date/Time:**	06/06/22 16:33
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	
Total Solids (%):		**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	5.20	5.52		0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	R3799782-4	**SDG:**	L1499362
Client Sample ID:	MS	**Collected Date/Time:**	05/26/22 08:45
Lab File ID:	0604_51	**Received Date/Time:**	05/27/22 08:45
Instrument ID:	VOCMS21	**Preparation Date/Time:**	06/05/22 00:54
Analytical Batch:	WG1874409	**Analysis Date/Time:**	06/05/22 00:54
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	
Total Solids (%):		**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	5.20	35.3		0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	R3799782-6	**SDG:**	L1499362
Client Sample ID:	MS	**Collected Date/Time:**	05/25/22 15:59
Lab File ID:	0604_53	**Received Date/Time:**	05/27/22 09:00
Instrument ID:	VOCMS21	**Preparation Date/Time:**	06/05/22 01:37
Analytical Batch:	WG1874409	**Analysis Date/Time:**	06/05/22 01:37
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	_____
Total Solids (%):	_____	**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	5.20	4.81		0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	R3799782-5	**SDG:**	L1499362
Client Sample ID:	MSD	**Collected Date/Time:**	05/26/22 08:45
Lab File ID:	0604_52	**Received Date/Time:**	05/27/22 08:45
Instrument ID:	VOCMS21	**Preparation Date/Time:**	06/05/22 01:16
Analytical Batch:	WG1874409	**Analysis Date/Time:**	06/05/22 01:16
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	
Total Solids (%):		**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	5.20	35.8		0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	R3799782-7	**SDG:**	L1499362
Client Sample ID:	MSD	**Collected Date/Time:**	05/25/22 15:59
Lab File ID:	0604_54	**Received Date/Time:**	05/27/22 09:00
Instrument ID:	VOCMS21	**Preparation Date/Time:**	06/05/22 01:58
Analytical Batch:	WG1874409	**Analysis Date/Time:**	06/05/22 01:58
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	_____
Total Solids (%):	_____	**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	5.20	4.91		0.300	1.00

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

COD	Coefficient of Determination.
Mass	Mass of parameter.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
RRF	Relative Response Factor.
RT	Retention Time.
SDG	Sample Delivery Group.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

G052

Pace Analytical
12065 Lebanon Rd.
Mount Juliet, TN 37122
615-758-5858

CHAIN OF CUSTODY RECORD

L1499382

Jacobs
4121 Carmichael Dr., Suite 400
Montgomery, AL 36106
(334) 215-9058
FAX (334) 273-7532

Project/Contact Information	
PO #	148035661
Project Name	Montgomery DEAP
Project Chemist/ Report Copy to	Kaye Walker/MGM
Company Name/Contact	Jacobs/Glen Davis/MGM

Sampling Date	Sampling Time	Type Comp	Type Grab	Matrix Water	Matrix Soil	Matrix Air	Client Sample ID (9 Characters Max)	LAB QC	Total Number of Containers	Requested Analysis: VOCs - PCE only SW8260B	Preservative	Alternate Description	Lab ID
5-25-22	1620		X	X			MW-1S-0522		3	X			-01
							MW-2S-0522			X			
							MW-3S-0522			X			
5-26-22	0845		X	X			MW-8S-0522	MS/MSD	9	X		MS/MSD	-02
5-26-22	1040		X	X			MW-12S-0522		3	X			-03
5-26-22	1620		X	X			MW-13S-0522		3	X			-04
5-26-22	1400		X	X			MW-14S-0522		3	X			-05
							MW-FD01-0522			X			
							AB-01-0522			X			
							EB-01-0522			X			
							EB-02-0522			X			
5-26-22	1700		X	X			TB-01-0522		1	X			-06
							TB-02-0522			X			

THIS AREA FOR LAB USE ONLY		
Lab #	Pg	of
Lab PM	Custody Review	
Log In	LIMS Verification	
pH	Cust Seals Y N / Ice Y N	
QC Level 1 2 3		
Cooler Temperature		

Sampled By: Ethan Davies Jacobs 5/26 1700	Relinquished By: 5/26/22 1700
Received By: N. Scott N. SCOTT DOOR 5/27/22 0845	Relinquished By:
Received By:	Date/Time:

Special Instructions

Contact Project Chemist with ANY QC exceedance
el III data package and 21 day TAT are required.

Sample Receipt Checklist

		If Applicable	
COC Seal Present/Intact:	✓ Y N	VOA Zero Headspace:	✓ Y N
COC Signed/Accurate:	✓ Y N	Pres.Correct/Check:	Y N
Bottles arrive intact:	✓ Y N		
Correct bottles used:	✓ Y N		
Sufficient volume sent:	✓ Y N		
RAD Screen <0.5 mR/hr:	✓ Y N		

1.8+0=1.8 DRM

TRK# 5719 6185 2035

ANALYTICAL REPORT

June 09, 2022

Jacobs - Montgomery, AL

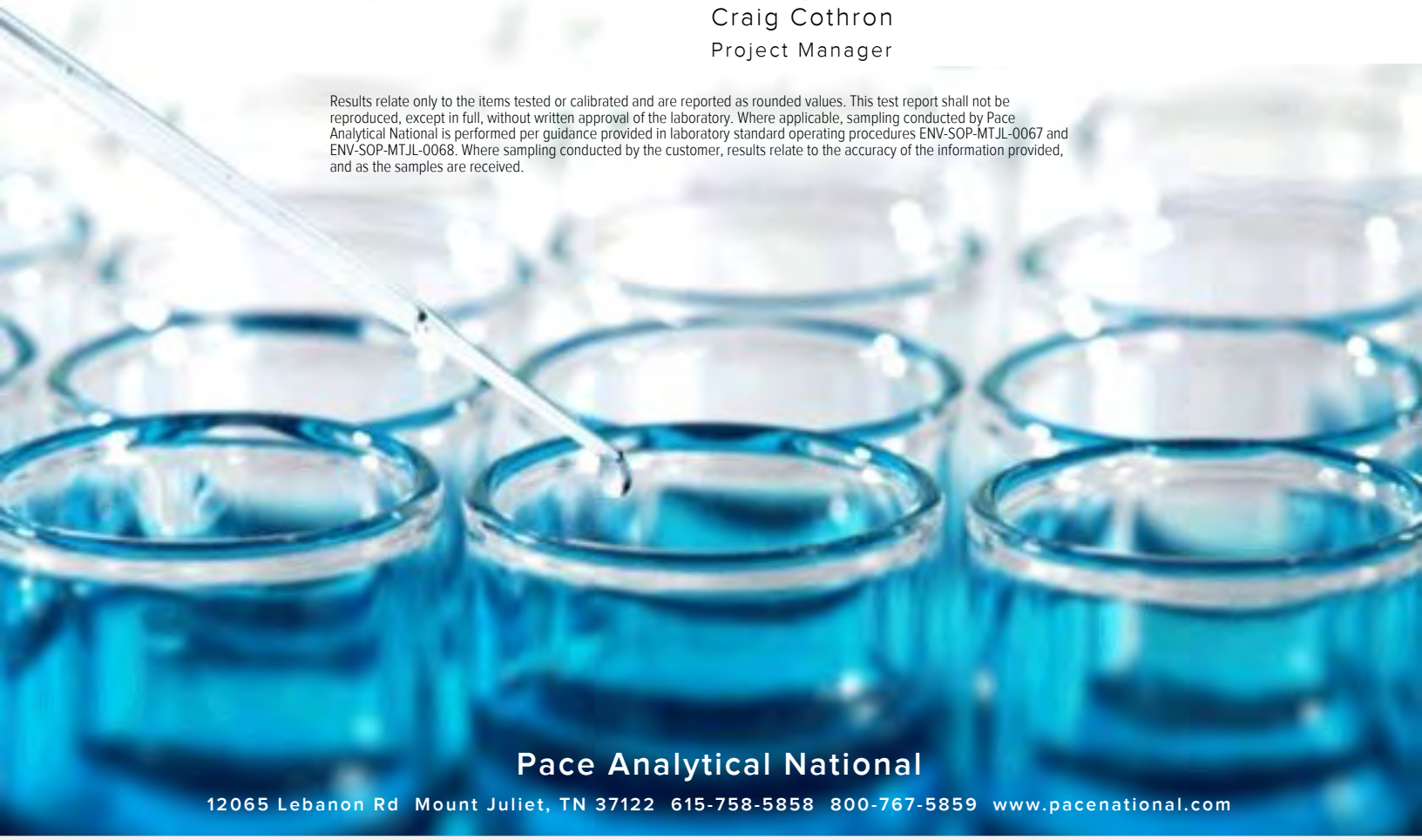
Sample Delivery Group:	L1499442
Samples Received:	05/28/2022
Project Number:	
Description:	Montgomery DEAP

Report To: Ms. Kaye Walker
4121 Carmichael Rd, Suite 400
Montgomery, AL 36106

Entire Report Reviewed By:

Craig Cothron
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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MW-2S-0522 L1499442-01 GW

			Collected by	Collected date/time	Received date/time	
				05/27/22 09:15	05/28/22 10:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1874649	1	06/06/22 14:27	06/06/22 14:27	BMB	Mt. Juliet, TN

MW-3S-0522 L1499442-02 GW

			Collected by	Collected date/time	Received date/time	
				05/27/22 10:50	05/28/22 10:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1874649	1	06/06/22 14:48	06/06/22 14:48	BMB	Mt. Juliet, TN

MW-FD01-0522 L1499442-03 GW

			Collected by	Collected date/time	Received date/time	
				05/27/22 09:20	05/28/22 10:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1874649	1	06/06/22 15:09	06/06/22 15:09	BMB	Mt. Juliet, TN

AB-01-0522 L1499442-04 GW

			Collected by	Collected date/time	Received date/time	
				05/27/22 11:05	05/28/22 10:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1874649	1	06/06/22 15:29	06/06/22 15:29	BMB	Mt. Juliet, TN

EB-01-0522 L1499442-05 GW

			Collected by	Collected date/time	Received date/time	
				05/27/22 11:20	05/28/22 10:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1874649	1	06/06/22 15:50	06/06/22 15:50	BMB	Mt. Juliet, TN

EB-02-0522 L1499442-06 GW

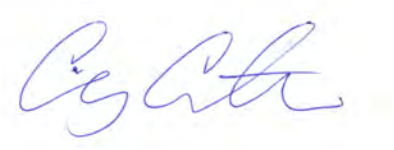
			Collected by	Collected date/time	Received date/time	
				05/27/22 11:40	05/28/22 10:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1874649	1	06/06/22 16:10	06/06/22 16:10	BMB	Mt. Juliet, TN

TB-02-0522 L1499442-07 GW

			Collected by	Collected date/time	Received date/time	
				05/27/22 14:00	05/28/22 10:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1874649	1	06/06/22 10:55	06/06/22 10:55	BMB	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Craig Cothron
Project Manager

Report Revision History

Level II Report - Version 1: 06/09/22 08:30

8260B Volatile Organic Compounds (GC/MS)

Analytical Method: 8260B **SDG:** L1499442
Matrix: GW

Sample ID	Lab Sample ID	Instrument	File ID	DMC-1 % Rec.	DMC-2 % Rec.	DMC-3 % Rec.	TOT Out
MW-2S-0522	L1499442-01	VOCMS23	0606_18	107	95.3	123	0
MW-3S-0522	L1499442-02	VOCMS23	0606_19	109	98.3	125	0
MW-FD01-0522	L1499442-03	VOCMS23	0606_20	112	94.7	123	0
AB-01-0522	L1499442-04	VOCMS23	0606_21	110	98.9	127	0
EB-01-0522	L1499442-05	VOCMS23	0606_22	110	95.7	128	0
EB-02-0522	L1499442-06	VOCMS23	0606_23	110	97.4	126	0
TB-02-0522	L1499442-07	VOCMS23	0606_09	111	99.5	123	0
MS	R3801012-4	VOCMS23	0606_27	106	99.7	129	0
MSD	R3801012-5	VOCMS23	0606_28	104	100	126	0
BLANK	R3801012-3	VOCMS23	0606_06	111	98.0	118	0
LCS	R3801012-1	VOCMS23	0606_02LCS	108	99.6	120	0
LCSD	R3801012-2	VOCMS23	0606_03	108	98.0	120	0

Parm Abbreviation	Parameter	QC LIMITS
DMC-1	Toluene-d8	80.0 - 120
DMC-2	4-Bromofluorobenzene	77.0 - 126
DMC-3	1,2-Dichloroethane-d4	70.0 - 130

*: Value outside the established quality control limits.
D: Surrogate recovery cannot be used for control limit evaluation due to dilution.

3A-OR

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

L1499442-01,02,03,04,05,06,07

SAMPLE NO.:
R3801012-4
R3801012-5

MS Sample / File ID:	R3801012-4 / 0606_27	**SDG:**	L1499442
MSD Sample / File ID:	R3801012-5 / 0606_28	**Analytical Batch:**	WG1874649
OS Sample / File ID:	L1499439-10 / 0606_16	**Matrix:**	GW
Instrument ID:	VOCMS23		
Analytical Method:	8260B		

Analyte	Spike Amount	OS Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	RPD	RPD Limit
	ug/l	*ug/l*	*ug/l*	*ug/l*	*%*	*%*		*%*	*%*	*%*
Tetrachloroethene	5.00	U	6.19	4.17	124	83.4	1	10.0 - 160	39.0*	27

*: Value outside the established quality control limits.

D: Surrogate recovery cannot be used for control limit evaluation due to dilution.

LABORATORY CONTROL SAMPLE
LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

L1499442-01,02,03,04,05,06,07

SAMPLE NO.:
R3801012-1
R3801012-2

LCS Sample / File ID:	R3801012-1 / 0606_02LCS	**SDG:**	L1499442
LCSD Sample / File ID:	R3801012-2 / 0606_03	**Analytical Batch:**	WG1874649
Instrument ID:	VOCMS23	**Dilution Factor:**	1
Analytical Method:	8260B	**Matrix:**	GW

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	RPD	RPD Limit
	ug/l	*ug/l*	*ug/l*	*%*	*%*	*%*	*%*	*%*
Tetrachloroethene	5.00	4.98	5.06	99.6	101	72.0 - 132	1.59	20

*: Value outside the established quality control limits.

D: Surrogate recovery cannot be used for control limit evaluation due to dilution.

Lab Sample ID:	R3801012-3	**SDG:**	L1499442
Lab File ID:	0606_06	**Preparation Date/Time:**	06/06/22 09:28
Instrument ID:	VOCMS23	**Analysis Date/Time:**	06/06/22 09:28
Analytical Batch:	WG1874649	**Dilution Factor:**	1
Analytical Method:	8260B	**Matrix:**	GW

Sample ID	Lab Sample ID	Instrument	File ID	Analysis *date/time*
LCS	R3801012-1	VOCMS23	0606_02LCS	06/06/22 08:05
LCSD	R3801012-2	VOCMS23	0606_03	06/06/22 08:26
TB-02-0522	L1499442-07	VOCMS23	0606_09	06/06/22 10:55
OS	L1499439-10	VOCMS23	0606_16	06/06/22 13:46
MW-2S-0522	L1499442-01	VOCMS23	0606_18	06/06/22 14:27
MW-3S-0522	L1499442-02	VOCMS23	0606_19	06/06/22 14:48
MW-FD01-0522	L1499442-03	VOCMS23	0606_20	06/06/22 15:09
AB-01-0522	L1499442-04	VOCMS23	0606_21	06/06/22 15:29
EB-01-0522	L1499442-05	VOCMS23	0606_22	06/06/22 15:50
EB-02-0522	L1499442-06	VOCMS23	0606_23	06/06/22 16:10
MS	R3801012-4	VOCMS23	0606_27	06/06/22 17:33
MSD	R3801012-5	VOCMS23	0606_28	06/06/22 17:54

5A-OR

GC/MS INSTRUMENT PERFORMANCE CHECK

Lab File ID:	0419A_01	**SDG:**	L1499442
Instrument ID:	VOCMS23	**Analytical Method:**	8260B
Analysis Date/Time:	04/19/22 16:56		

Target Mass (m/e)	Relative Mass	Low Limit	High Limit	% Relative Abundance
95	174	50	200	120
96	95	5	9	7
173	174	0	2	0
174	95	50	200	83
175	174	5	9	8
176	174	95	105	100
177	176	5	10	7

Sample ID	Lab Sample ID	File ID	Analysis date/time
STD-0.04	0.04	0419A_06	04/19/22 18:40
STD-0.1	0.1	0419A_07	04/19/22 19:01
STD-0.2	0.2	0419A_08	04/19/22 19:22
STD-0.5	0.5	0419A_09	04/19/22 19:43
STD-1	1	0419A_10	04/19/22 20:05
STD-2	2	0419A_11	04/19/22 20:26
STD-5.0	5.0	0419A_12	04/19/22 20:46
STD-25	25	0419A_13	04/19/22 21:07
STD-75	75	0419A_14	04/19/22 21:28
STD-100	100	0419A_15	04/19/22 21:49
STD-200	200	0419A_16	04/19/22 22:10
SSCV	VOCMS23041922A0419A_20575423	0419A_20	04/19/22 23:34
SSCV	VOCMS23041922A0419A_22575423	0419A_22	04/20/22 00:16
STD-1A	1A	0419A_27	04/20/22 02:02
STD-5A	5A	0419A_28	04/20/22 02:23
STD-10A	10A	0419A_29	04/20/22 02:44
STD-15A	15A	0419A_30	04/20/22 03:05
STD-20A	20A	0419A_31	04/20/22 03:26

5A-OR

GC/MS INSTRUMENT PERFORMANCE CHECK

Lab File ID:	0606_01T	**SDG:**	L1499442
Instrument ID:	VOCMS23	**Analytical Method:**	8260B
Analysis Date/Time:	06/06/22 07:44		

Target Mass (m/e)	Relative Mass	Low Limit	High Limit	% Relative Abundance
95	174	50	200	111
96	95	5	9	6
173	174	0	2	0
174	95	50	200	90
175	174	5	9	8
176	174	95	105	99
177	176	5	10	6

Sample ID	Lab Sample ID	File ID	Analysis date/time
ICV	VOCMS230606220606_02575423	0606_02	06/06/22 08:05
LCS	R3801012-1	0606_02LCS	06/06/22 08:05
LCSD	R3801012-2	0606_03	06/06/22 08:26
BLANK	R3801012-3	0606_06	06/06/22 09:28
TB-02-0522	L1499442-07	0606_09	06/06/22 10:55
OS	L1499439-10	0606_16	06/06/22 13:46
MW-2S-0522	L1499442-01	0606_18	06/06/22 14:27
MW-3S-0522	L1499442-02	0606_19	06/06/22 14:48
MW-FD01-0522	L1499442-03	0606_20	06/06/22 15:09
AB-01-0522	L1499442-04	0606_21	06/06/22 15:29
EB-01-0522	L1499442-05	0606_22	06/06/22 15:50
EB-02-0522	L1499442-06	0606_23	06/06/22 16:10
MS	R3801012-4	0606_27	06/06/22 17:33
MSD	R3801012-5	0606_28	06/06/22 17:54

INTERNAL STANDARD AND RETENTION TIME

SDG:	L1499442	**Analytical Method:**	8260B
Instrument ID:	VOCMS23	**Calibration Start Date:**	04/19/22 18:40
Std File:	0606_02	**Calibration End Date:**	04/20/22 03:26
		Std Analysis Date:	06/06/22 08:05

Sample ID	File ID	1,4-DCB		8260-CB		8260-FB	
		Response	*RT*	*Response*	*RT*	*Response*	*RT*
STANDARD		160127	8.27	186577	6.57	434204	4.63
UPPER LIMIT		320254		373154		868408	
LOWER LIMIT		80064		93289		217102	
LCS R3801012-1 WG1874649 1x	0606_02LCS	160127	8.27	186577	6.57	434204	4.63
LCSD R3801012-2 WG1874649 1x	0606_03	160210	8.27	181726	6.57	417454	4.63
BLANK R3801012-3 WG1874649 1x	0606_06	147666	8.27	172385	6.58	419591	4.63
L1499442-07 WG1874649 1x	0606_09	143651	8.27	166359	6.58	406655	4.63
OS L1499439-10 WG1874649 1x	0606_16	124661	8.27	151782	6.58	365996	4.63
L1499442-01 WG1874649 1x	0606_18	130739	8.27	158759	6.58	372745	4.63
L1499442-02 WG1874649 1x	0606_19	133026	8.27	161166	6.57	385756	4.63
L1499442-03 WG1874649 1x	0606_20	132734	8.27	158017	6.58	371927	4.63
L1499442-04 WG1874649 1x	0606_21	125903	8.27	149761	6.58	362940	4.63
L1499442-05 WG1874649 1x	0606_22	135190	8.27	156028	6.58	372368	4.63
L1499442-06 WG1874649 1x	0606_23	126749	8.27	148903	6.58	358933	4.63
MS R3801012-4 WG1874649 1x	0606_27	149490	8.27	160399	6.57	368793	4.63
MSD R3801012-5 WG1874649 1x	0606_28	145081	8.27	167179	6.57	378715	4.63

1,4-DCB - 8260-1,4-DICHLOROBENZENE-D4 8260-CB - 8260-CHLOROBENZENE-D5
8260-FB - 8260-FLUOROBENZENE

*: Value outside the established quality control limits.

D: Surrogate recovery cannot be used for control limit evaluation due to dilution.

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	L1499442-01	**SDG:**	L1499442
Client Sample ID:	MW-2S-0522	**Collected Date/Time:**	05/27/22 09:15
Lab File ID:	0606_18	**Received Date/Time:**	05/28/22 10:00
Instrument ID:	VOCMS23	**Preparation Date/Time:**	06/06/22 14:27
Analytical Batch:	WG1874649	**Analysis Date/Time:**	06/06/22 14:27
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	
Total Solids (%):		**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	5.84	29.4		0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	L1499442-02	**SDG:**	L1499442
Client Sample ID:	MW-3S-0522	**Collected Date/Time:**	05/27/22 10:50
Lab File ID:	0606_19	**Received Date/Time:**	05/28/22 10:00
Instrument ID:	VOCMS23	**Preparation Date/Time:**	06/06/22 14:48
Analytical Batch:	WG1874649	**Analysis Date/Time:**	06/06/22 14:48
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	_____
Total Solids (%):	_____	**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	5.84	15.5		0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	L1499442-03	**SDG:**	L1499442
Client Sample ID:	MW-FD01-0522	**Collected Date/Time:**	05/27/22 09:20
Lab File ID:	0606_20	**Received Date/Time:**	05/28/22 10:00
Instrument ID:	VOCMS23	**Preparation Date/Time:**	06/06/22 15:09
Analytical Batch:	WG1874649	**Analysis Date/Time:**	06/06/22 15:09
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	_____
Total Solids (%):	_____	**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	5.84	31.2		0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	L1499442-04	**SDG:**	L1499442
Client Sample ID:	AB-01-0522	**Collected Date/Time:**	05/27/22 11:05
Lab File ID:	0606_21	**Received Date/Time:**	05/28/22 10:00
Instrument ID:	VOCMS23	**Preparation Date/Time:**	06/06/22 15:29
Analytical Batch:	WG1874649	**Analysis Date/Time:**	06/06/22 15:29
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	_____
Total Solids (%):	_____	**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	5.85	U		0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	L1499442-05	**SDG:**	L1499442
Client Sample ID:	EB-01-0522	**Collected Date/Time:**	05/27/22 11:20
Lab File ID:	0606_22	**Received Date/Time:**	05/28/22 10:00
Instrument ID:	VOCMS23	**Preparation Date/Time:**	06/06/22 15:50
Analytical Batch:	WG1874649	**Analysis Date/Time:**	06/06/22 15:50
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	_____
Total Solids (%):	_____	**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	5.84	0.649	J	0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	L1499442-06	**SDG:**	L1499442
Client Sample ID:	EB-02-0522	**Collected Date/Time:**	05/27/22 11:40
Lab File ID:	0606_23	**Received Date/Time:**	05/28/22 10:00
Instrument ID:	VOCMS23	**Preparation Date/Time:**	06/06/22 16:10
Analytical Batch:	WG1874649	**Analysis Date/Time:**	06/06/22 16:10
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	_____
Total Solids (%):	_____	**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	5.84	1.36		0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	L1499442-07	**SDG:**	L1499442
Client Sample ID:	TB-02-0522	**Collected Date/Time:**	05/27/22 14:00
Lab File ID:	0606_09	**Received Date/Time:**	05/28/22 10:00
Instrument ID:	VOCMS23	**Preparation Date/Time:**	06/06/22 10:55
Analytical Batch:	WG1874649	**Analysis Date/Time:**	06/06/22 10:55
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	
Total Solids (%):		**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	0	U		0.300	1.00

6A-OR

GC/MS INITIAL CALIBRATION DATA

SDG: L1499442 **Analytical Method:** 8260B

Instrument ID: VOCMS23

Analyte	**RRF: 0.5**	**RRF: 1**	**RRF: 2**	**RRF: 5.0**	**RRF: 25**	**RRF: 75**	**RRF: 100**	**RRF: 200**	**RRF: 0.04**	**RRF: 0.1**
Analysis date/time	04/19/22 19:43	04/19/22 20:05	04/19/22 20:26	04/19/22 20:46	04/19/22 21:07	04/19/22 21:28	04/19/22 21:49	04/19/22 22:10	04/19/22 18:40	04/19/22 19:01
TETRACHLOROETHENE	0.2990	0.3390	0.3960	0.4010	0.3750	0.3810	0.3780	0.41		
1,2-DICHLOROETHANE-D4	0.31	0.3060	0.30	0.2870	0.2960	0.2670	0.2640	0.2540	0.2960	0.3070
TOLUENE-D8	2.3040	2.2530	2.2130	2.1420	2.0610	2.0540	2.0650	1.9880	2.3410	2.39
4-BROMOFLUOROBENZENE	0.9120	0.8720	0.8630	0.8480	0.8050	0.8380	0.8370	0.80	0.91	0.95
File ID:	0419A_09	0419A_10	0419A_11	0419A_12	0419A_13	0419A_14	0419A_15	0419A_16	0419A_06	0419A_07

GC/MS INITIAL CALIBRATION DATA

SDG: L1499442 **Analytical Method:** 8260B

Instrument ID: VOCMS23

Analyte	RRF: 0.2	RRF. Avg	%RSD	COD
Analysis date/time	04/19/22 19:22			
TETRACHLOROETHENE		0.372552	9.83	
1,2-DICHLOROETHANE-D4	0.31	0.290763	6.84	
TOLUENE-D8	2.33	2.194674	6.34	
4-BROMOFLUOROBENZENE	0.9240	0.869045	5.68	
File ID:	0419A_08			

7A-OR

GC/MS CONTINUING CALIBRATION VERIFICATION

SDG:	L1499442	**Calibration (begin) date/time:**	04/19/22 18:40
Instrument ID:	VOCMS23	**Calibration (end) date/time:**	04/20/22 03:26
Lab File ID:	0419A_20	**Analysis date/time:**	04/19/22 23:34
Analytical Method:	8260B	**Sample ID:**	SSCV

Analyte	Avg. RRF	RRF	Min. RRF	Diff.	Max Diff.	True Value	Result	Result	Limits
				%	*%*	*mg/l*	*mg/l*	*% Rec.*	*%*
TETRACHLOROETHENE	0.372552	0.37794050		1.45	40	0.0050	0.005072	101	70 - 130
1,2-DICHLOROETHANE-D4	0.290763	0.30617790		5.30	40	0.0160	0.01685	105	70 - 130
4-BROMOFLUOROBENZENE	0.869045	0.92622130		6.58	40	0.0160	0.01705	107	67 - 138
TOLUENE-D8	2.194674	2.339332		6.59	40	0.0160	0.01705	107	75 - 131

D: Surrogate recovery cannot be used for control limit evaluation due to dilution.

7A-OR

GC/MS CONTINUING CALIBRATION VERIFICATION

SDG:	L1499442	**Calibration (begin) date/time:**	04/19/22 18:40
Instrument ID:	VOCMS23	**Calibration (end) date/time:**	04/20/22 03:26
Lab File ID:	0606_02	**Analysis date/time:**	06/06/22 08:05
Analytical Method:	8260B	**Sample ID:**	ICV

Analyte	Avg. RRF	RRF	Min. RRF	Diff.	Max Diff.	True Value	Result	Result	Limits
				%	*%*	*mg/l*	*mg/l*	*% Rec.*	*%*
TETRACHLOROETHENE	0.372552	0.37097820		0.4220		0.0050	0.004979	99.60	
1,2-DICHLOROETHANE-D4	0.290763	0.34796550		19.70		0.0160	0.01915	120	70 - 130
4-BROMOFLUOROBENZENE	0.869045	0.86527280		0.4340		0.0160	0.01593	99.60	70 - 130
TOLUENE-D8	2.194674	2.365785		7.80		0.0160	0.01725	108	70 - 130

D: Surrogate recovery cannot be used for control limit evaluation due to dilution.

ANALYTICAL SEQUENCE

SDG:	L1499442	**Analytical Method:**	8260B
Instrument ID:	VOCMS23	**Calibration Start Date:**	04/19/22 18:40
		Calibration End Date:	04/20/22 03:26

Client Sample ID	Lab Sample ID	File ID	Analysis Date Time	Dilution	Batch
TUNE	VOCMS23041922A0419A_01575423	0419A_01	04/19/22 16:56		
CAL	0.04	0419A_06	04/19/22 18:40		
CAL	0.1	0419A_07	04/19/22 19:01		
CAL	0.2	0419A_08	04/19/22 19:22		
CAL	0.5	0419A_09	04/19/22 19:43		
CAL	1	0419A_10	04/19/22 20:05		
CAL	2	0419A_11	04/19/22 20:26		
CAL	5.0	0419A_12	04/19/22 20:46		
CAL	25	0419A_13	04/19/22 21:07		
CAL	75	0419A_14	04/19/22 21:28		
CAL	100	0419A_15	04/19/22 21:49		
CAL	200	0419A_16	04/19/22 22:10		
SSCV	VOCMS23041922A0419A_20575423	0419A_20	04/19/22 23:34		
SSCV	VOCMS23041922A0419A_22575423	0419A_22	04/20/22 00:16		
CAL	1A	0419A_27	04/20/22 02:02		
CAL	5A	0419A_28	04/20/22 02:23		
CAL	10A	0419A_29	04/20/22 02:44		
CAL	15A	0419A_30	04/20/22 03:05		
CAL	20A	0419A_31	04/20/22 03:26		
TUNE	VOCMS230606220606_01T575423	0606_01T	06/06/22 07:44		
ICV	VOCMS230606220606_02575423	0606_02	06/06/22 08:05		
LCS	R3801012-1	0606_02LCS	06/06/22 08:05	1	WG1874649
LCSD	R3801012-2	0606_03	06/06/22 08:26	1	WG1874649
BLANK	R3801012-3	0606_06	06/06/22 09:28	1	WG1874649
TB-02-0522	L1499442-07	0606_09	06/06/22 10:55	1	WG1874649
OS	L1499439-10	0606_16	06/06/22 13:46		
L1499439-10	L1499439-10	0606_16	06/06/22 13:46	1	WG1874649
MW-2S-0522	L1499442-01	0606_18	06/06/22 14:27	1	WG1874649
MW-3S-0522	L1499442-02	0606_19	06/06/22 14:48	1	WG1874649
MW-FD01-0522	L1499442-03	0606_20	06/06/22 15:09	1	WG1874649
AB-01-0522	L1499442-04	0606_21	06/06/22 15:29	1	WG1874649
EB-01-0522	L1499442-05	0606_22	06/06/22 15:50	1	WG1874649
EB-02-0522	L1499442-06	0606_23	06/06/22 16:10	1	WG1874649
MS	R3801012-4	0606_27	06/06/22 17:33	1	WG1874649
MSD	R3801012-5	0606_28	06/06/22 17:54	1	WG1874649
TUNE	VOCMS230606220606_29T575423	0606_29T	06/06/22 18:14		
TUNE	VOCMS230606220606_30T575423	0606_30T	06/06/22 18:35		

DETECTION LIMIT SUMMARY

Lab Sample IDs: L1499442-01,02,03,04,05,06,07 **Analytical Method:** 8260B

Matrix: GW **Prep Method:** 8260B

Analyte	CAS	MDL	RDL
		mg/l	*mg/l*
Tetrachloroethene	127-18-4	0.0003	0.0010

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	R3801012-3	**SDG:**	L1499442
Client Sample ID:	BLANK	**Collected Date/Time:**	
Lab File ID:	0606_06	**Received Date/Time:**	
Instrument ID:	VOCMS23	**Preparation Date/Time:**	06/06/22 09:28
Analytical Batch:	WG1874649	**Analysis Date/Time:**	06/06/22 09:28
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	
Total Solids (%):		**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	0	U		0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	R3801012-1	**SDG:**	L1499442
Client Sample ID:	LCS	**Collected Date/Time:**	
Lab File ID:	0606_02LCS	**Received Date/Time:**	
Instrument ID:	VOCMS23	**Preparation Date/Time:**	06/06/22 08:05
Analytical Batch:	WG1874649	**Analysis Date/Time:**	06/06/22 08:05
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	
Total Solids (%):		**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	5.84	4.98		0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	R3801012-2	**SDG:**	L1499442
Client Sample ID:	LCSD	**Collected Date/Time:**	
Lab File ID:	0606_03	**Received Date/Time:**	
Instrument ID:	VOCMS23	**Preparation Date/Time:**	06/06/22 08:26
Analytical Batch:	WG1874649	**Analysis Date/Time:**	06/06/22 08:26
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	
Total Solids (%):		**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	5.84	5.06		0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	R3801012-4	**SDG:**	L1499442
Client Sample ID:	MS	**Collected Date/Time:**	05/27/22 12:25
Lab File ID:	0606_27	**Received Date/Time:**	05/28/22 10:00
Instrument ID:	VOCMS23	**Preparation Date/Time:**	06/06/22 17:33
Analytical Batch:	WG1874649	**Analysis Date/Time:**	06/06/22 17:33
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	
Total Solids (%):		**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	5.84	6.19		0.300	1.00

SAMPLE RESULT SUMMARY
ORGANIC ANALYSIS DATA SHEET

Lab Sample ID:	R3801012-5	**SDG:**	L1499442
Client Sample ID:	MSD	**Collected Date/Time:**	05/27/22 12:25
Lab File ID:	0606_28	**Received Date/Time:**	05/28/22 10:00
Instrument ID:	VOCMS23	**Preparation Date/Time:**	06/06/22 17:54
Analytical Batch:	WG1874649	**Analysis Date/Time:**	06/06/22 17:54
Dilution Factor:	1	**Prep Method:**	8260B
Analytical Method:	8260B	**Sample Vol Used:**	5 mL
Matrix:	GW	**Initial Wt/Vol:**	
Total Solids (%):		**Final Wt/Vol:**	5 mL

Analyte	CAS	RT	Result	Qualifier	MDL	RDL
			ug/l		*ug/l*	*ug/l*
Tetrachloroethene	127-18-4	5.84	4.17	J3	0.300	1.00

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

COD	Coefficient of Determination.
Mass	Mass of parameter.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
RRF	Relative Response Factor.
RT	Retention Time.
SDG	Sample Delivery Group.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Pace Analytical
12065 Lebanon Rd.
Mount Juliet, TN 37122
615-758-5858

CHAIN OF CUSTODY RECORD

F040

Jacobs
4121 Carmichael Dr., Suite 400
Montgomery, AL 36106
(334) 215-9058
FAX (334) 273-7532

Project/Contact Information	
PO #	148035661
Project Name	Montgomery DEAP
Project Chemist/ Report Copy to	Kaye Walker/MGM
Company Name/Contact	Jacobs/Glen Davis/MGM

Sampling Date	Sampling Time	Type Comp	Type Grab	Matrix Water	Matrix Soil	Matrix Air	Client Sample ID (9 Characters Max)	LAB QC	Total Number of Containers	Requested Analysis: VOCs - PCE only SW8260B	Preservative	Alternate Description / Lab ID
							MW-1S-0522			X		
5-27-22	0915		X	X			MW-2S-0522		3	X		-01
5-27-22	1050		X	X			MW-3S-0522		3	X		-02
							MW-8S-0522			X		MS/MSD
							MW-12S-0522			X		
							MW-13S-0522			X		
							MW-14S-0522			X		
5-27-22	0920		X	X			MW-FD01-0522		3	X		-03
5-27-22	1105		X	X			AB-01-0522		3	X		-04
5-27-22	1120		X	X			EB-01-0522		3	X		-05
5-27-22	1140		X	X			EB-02-0522		3	X		-06
							TB-01-0522			X		
5-27-22	1400		X	X			TB-02-0522		1	X		-07

THIS AREA FOR LAB USE ONLY		
Lab #	Pg	of
Lab PM	Custody Review	
Log In	LIMS Verification	
pH	Cust Seals Y N / Ice Y N	
QC Level 1 2 3		
Cooler Temperature 0.4°C		
L1499442 Alternate Description	Lab ID	

Sampled By: Ethan Davies / Jacobs 5/27/22 1400
Relinquished By: Ethan Davies 5/27/22
Received By:
Relinquished By:
Received By:
Date/Time: 5/28/22/1000
container Count=18
1 TB HCL
Special Instructions:

Contact Project Chemist with ANY QC exceedance
EPA DQO Level III data package and 21 day TAT are required.

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	✓ Y N	VOA Zero Headspace:	✓ Y N
Bottles arrive intact:	✓ Y N	Pres.Correct/Check:	Y N
Correct bottles used:	✓ Y N		
Sufficient volume sent:	✓ Y N		
RAD Screen <0.5 mR/hr:	Y N		

File: MGM_DEAP_COC_May_2022

Appendix C
Field Records

Montgomery Downtown Environmental Assessment Project
GROUNDWATER SAMPLING LOG

SITE NAME: Montgomery DEAP	SITE LOCATION: Downtown Montgomery, AL	PROJECT NUMBER: 666378.01.GW
WELL NO: MW-01S	SAMPLE ID: MW-1S-0522	DATE: 5/25/22

PURGING DATA

WELL DIAMETER (in): 2"	TOTAL WELL DEPTH (ft): 51.60	STATIC DEPTH TO WATER (ft): 35.19	WELL CAPACITY (gal/ft): 0.16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH – DEPTH TO WATER) X WELL CAPACITY =

= (51.60 – 35.19) X 0.16 = 2.67 gal

PURGE METHOD: Bladder pump	PURGE INITIATED AT: 1540	PURGE ENDED AT: 1625	TOTAL VOL. PURGED (gal): 2.5

TIME	VOLUME PURGED (gal)	CUMUL. VOLUME PURGED (gal)	PURGE RATE (gpm)	DEPTH TO WATER (ft)	pH	TEMP. (°C)	SPECIFIC CONDUCTANCE (µmhos)	TURBIDITY (NTUs)	Dissolved Oxygen (mg/L)	Oxygen-Reduction Potential (mV)
1550	0.5			35.20	5.00	22.54	0.179	1.30	6.93	230.9
1555		0.8		35.20	4.98	22.47	0.179	1.25	6.95	237.8
1600		0.9		35.20	5.04	22.83	0.178	0.97	6.94	240.6
1605		1.1		35.19	5.06	23.09	0.178	0.81	6.96	241.6
1610		1.3		35.20	5.06	23.06	0.179	0.93	7.00	244.9
1615		1.5		35.17	5.04	23.01	0.179	0.76	7.01	247.3
1620		1.7		35.19	5.04	22.99	0.179	0.72	7.02	248.4

WELL CAPACITY (Gallons per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; (2" = 0.16); 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Ethan Davies / Jacobs	SAMPLER(S) SIGNATURE(S):
SAMPLING METHOD(S):	SAMPLING INITIATED AT: 1623
	SAMPLING ENDED AT: 1625

FIELD DECONTAMINATION: (Y) N	FIELD-FILTERED: Y (N)	DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (mL)	FINAL pH	
3	AG	40 mL	HCl	35 mL	5.04	VOCs (PCE Only)

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; PE = POLYETHYLENE; O = OTHER (SPECIFY)

Based on FL DEP-SOP-001/01: Form FD 2000-24

Montgomery Downtown Environmental Assessment Project
GROUNDWATER SAMPLING LOG

SITE NAME: Montgomery DEAP	SITE LOCATION: Downtown Montgomery, AL	PROJECT NUMBER: 666378.01.GW
WELL NO: MW-85	SAMPLE ID: MW-85-0522	DATE: 5/26/22

PURGING DATA

WELL DIAMETER (in): 2	TOTAL WELL DEPTH (ft): 51.54	STATIC DEPTH TO WATER (ft): 34.32	WELL CAPACITY (gal/ft): 0.16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH – DEPTH TO WATER) X WELL CAPACITY =

= (51.5 - 34.32) X 0.16 = 2.75

PURGE METHOD: Bladder Pump - low flow	PURGE INITIATED AT: 7:55	PURGE ENDED AT: 0855	TOTAL VOL. PURGED (gal): 2.5

TIME	VOLUME PURGED (gal)	CUMUL. VOLUME PURGED (gal)	PURGE RATE (gpm)	DEPTH TO WATER (ft)	pH	TEMP. (°C)	SPECIFIC CONDUCTANCE (µmhos)	TURBIDITY (NTUs)	Dissolved Oxygen (mg/L)	Oxygen-Reduction Potential (mV)
0810		0.2		34.33	5.06	22.60	0.310	32.8	9.42	210.9
0815		0.4		34.33	5.00	22.60	0.241	13.5	8.52	199.1
0820		0.6		34.33	4.94	22.65	0.225	7.13	8.01	207.2
0825		0.7		34.34	4.92	22.66	0.222	4.09	7.82	214.8
0830		0.9		34.34	4.90	22.57	0.219	1.20	7.67	216.9
0835		1.0		34.34	4.89	22.53	0.216	0.88	7.55	227.6
0840		1.2		34.34	4.90	22.50	0.215	0.53	7.50	233.2
0845		1.4		34.34	4.90	22.47	0.211	0.77	7.49	241.4

WELL CAPACITY (Gallons per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Ethan Davies / Jacobs	SAMPLER(S) SIGNATURE(S):	
SAMPLING METHOD(S):	SAMPLING INITIATED AT: 0845	SAMPLING ENDED AT: 0855
FIELD DECONTAMINATION: (Y) N	FIELD-FILTERED: Y (N)	DUPLICATE: (Y) N MS/MSD

SAMPLE CONTAINER SPECIFICATION			SAMPLE PRESERVATION			
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD
9	AG	40 mL	HCl	35 mL	4.90	VOCs (PCE only)

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; PE = POLYETHYLENE; O = OTHER (SPECIFY)

Based on FL DEP-SOP-001/01: Form FD 2000-24

Montgomery Downtown Environmental Assessment Project
GROUNDWATER SAMPLING LOG

SITE NAME: Montgomery DEAP	SITE LOCATION: Downtown Montgomery, AL	PROJECT NUMBER: 666378.01.GW
WELL NO: MW-12S	SAMPLE ID: MW-12S-0522	DATE: 5/26/22

PURGING DATA

WELL DIAMETER (in): 2	TOTAL WELL DEPTH (ft): 41.95	STATIC DEPTH TO WATER (ft): 24.18	WELL CAPACITY (gal/ft): 0.16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH – DEPTH TO WATER) X WELL CAPACITY =

=(–)X = 2.84

PURGE METHOD: Bladder Pump 1½"	PURGE INITIATED AT: 0955	PURGE ENDED AT: 1045	TOTAL VOL. PURGED (gal): 6.1

TIME	VOLUME PURGED (gal)	CUMUL. VOLUME PURGED (gal)	PURGE RATE (gpm)	DEPTH TO WATER (ft)	pH	TEMP. (°C)	SPECIFIC CONDUCTANCE (µmhos)	TURBIDITY (NTUs)	Dissolved Oxygen (mg/L)	Oxygen-Reduction Potential (mV)
1000		0.3		24.18	5.48	21.13	0.186	176	6.63	170.3
1005		1.0		22.99	5.27	20.98	0.182	62.9	5.67	186.7
1010		1.6		22.30	5.29	20.96	0.182	38.4	5.82	194.1
1015		2.1			5.31	20.97	0.182	28.6	5.88	196.8
1020		2.8		24.13	5.31	20.99	0.182	22.0	5.94	202.2
1025		3.4		24.14	5.32	20.98	0.181	16.7	5.88	208.6
1030		4.1		24.17	5.32	20.95	0.181	12.1	6.01	216.2
1035		4.6		24.15	5.33	20.93	0.181	10.4	6.04	221.4
1040		5.0		24.18	5.34	20.90	0.181	9.2	6.02	224.3

WELL CAPACITY (Gallons per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Ethan Davies / Jacobs	SAMPLER(S) SIGNATURE(S):
SAMPLING METHOD(S):	SAMPLING INITIATED AT: 1040

SAMPLING ENDED AT: 1045

FIELD DECONTAMINATION: (Y) N | FIELD-FILTERED: Y (N) | DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (mL)	FINAL pH	
3	AG	40mL	HCl	35mL	5.34	VOCs (PCE Only)

REMARKS: Surface water from rain flowed into well at first but was pumped out

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; PE = POLYETHYLENE; O = OTHER (SPECIFY)

Based on FL DEP-SOP-001/01: Form FD 2000-24

Montgomery Downtown Environmental Assessment Project
GROUNDWATER SAMPLING LOG

SITE NAME: Montgomery DEAP	SITE LOCATION: Downtown Montgomery, AL	PROJECT NUMBER: 666378.01.GW
WELL NO: MW-145	SAMPLE ID: MW-145-0522	DATE: 5/26/22

PURGING DATA

WELL DIAMETER (in): 2	TOTAL WELL DEPTH (ft): 49.35	STATIC DEPTH TO WATER (ft): 27.97	WELL CAPACITY (gal/ft): 0.16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH – DEPTH TO WATER) X WELL CAPACITY =

= (49.35 - 27.97) X 0.16 = 3.42

PURGE METHOD: Bladder pump	PURGE INITIATED AT: 1320	PURGE ENDED AT: 1407	TOTAL VOL. PURGED (gal): 1.6

TIME	VOLUME PURGED (gal)	CUMUL. VOLUME PURGED (gal)	PURGE RATE (gpm)	DEPTH TO WATER (ft)	pH	TEMP. (°C)	SPECIFIC CONDUCTANCE (µmhos)	TURBIDITY (NTUs)	Dissolved Oxygen (mg/L)	Oxygen-Reduction Potential (mV)
1320		0.2		27.92	5.42	21.48	0.202	305	7.18	132.9
1335		0.3		27.92	5.30	21.51	0.196	96.9	6.57	144.4
1340		0.5		27.91	5.25	21.55	0.194	25.2	6.15	162.4
1345		0.9		27.92	5.21	21.60	0.192	9.24	5.99	182.6
1350		1.0		27.92	5.20	21.68	0.191	4.06	5.96	196.0
1355		1.1		27.92	5.20	21.74	0.190	2.45	5.94	203.2
1400		1.2		27.91	5.20	21.77	0.190	1.13	5.90	208.7

WELL CAPACITY (Gallons per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Ethan Davies / Jacobs	SAMPLER(S) SIGNATURE(S):	
SAMPLING METHOD(S): Bladder	SAMPLING INITIATED AT: 1400	SAMPLING ENDED AT: 1407
FIELD DECONTAMINATION: (Y) N	FIELD-FILTERED: Y (N)	DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (mL)	FINAL pH	
3	AG	40mL	HCl	35 mL	5.20	VOCs (PCE Only)

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; PE = POLYETHYLENE; O = OTHER (SPECIFY)

Based on FL DEP-SOP-001/01: Form FD 2000-24

Montgomery Downtown Environmental Assessment Project

GROUNDWATER SAMPLING LOG

SITE NAME: Montgomery DEAP	SITE LOCATION: Downtown Montgomery, AL	PROJECT NUMBER: 666378.01.GW
WELL NO: MW-13S	SAMPLE ID: MW-13S-0522	DATE: 5/26/22

PURGING DATA

WELL DIAMETER (in):	TOTAL WELL DEPTH (ft): 47.50	STATIC DEPTH TO WATER (ft): 28.22	WELL CAPACITY (gal/ft): 0.16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH – DEPTH TO WATER) X WELL CAPACITY =

= (–) X =

PURGE METHOD: Bladder Pump	PURGE INITIATED AT: 1447	PURGE ENDED AT: 1625	TOTAL VOL. PURGED (gal): 6.8

TIME	VOLUME PURGED (gal)	CUMUL. VOLUME PURGED (gal)	PURGE RATE (gpm)	DEPTH TO WATER (ft)	pH	TEMP. (°C)	SPECIFIC CONDUCTANCE (µmhos)	TURBIDITY (NTUs)	Dissolved Oxygen (mg/L)	Oxygen-Reduction Potential (mV)
1450		0.2		28.10	5.55	21.91	0.218	938	6.67	181.9
1455		0.7		28.22	5.19	21.54	0.191	554	6.21	196.1
1500		1.1		28.22	5.24	21.49	0.189	310	6.16	202.7
1505		1.6		28.22	5.27	21.50	0.187	194	6.09	206.8
1510		2.1		28.22	5.29	21.47	0.185	140	6.05	211.0
1515		2.6		28.22	5.34	21.59	0.184	96.4	6.00	212.8
1520		3.1		28.22	5.35	21.65	0.184	80.1	5.94	215.2
1525		3.5		28.21	5.36	21.67	0.184	68.0	6.01	216.8
1530		4.0		28.21	5.35	21.64	0.184	51.6	6.01	219.1
1535		4.4		28.20	5.36	21.66	0.184	50.4	6.02	221.3

WELL CAPACITY (Gallons per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Ethan Davies / Jacobs	SAMPLER(S) SIGNATURE(S):	
SAMPLING METHOD(S):	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
FIELD DECONTAMINATION: (Y) N	FIELD-FILTERED: Y (N)	DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (mL)	FINAL pH	
3	AG	40mL	HCl	0	5.36	VOCs (PCE)

REMARKS: Turb: @1540: 45.5 @1545: 45.1 @1550: 38.4 @1555: 32.6 @1600: 29.7 @1605: 29.2 @1610: 26.5 @1615: 22.0 @1620: 16.8

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; PE = POLYETHYLENE; O = OTHER (SPECIFY)

Montgomery Downtown Environmental Assessment Project
GROUNDWATER SAMPLING LOG

SITE NAME: Montgomery DEAP	SITE LOCATION: Downtown Montgomery, AL	PROJECT NUMBER: 666378.01.GW
WELL NO: MW-02S-	SAMPLE ID: MW-25-0522	DATE: 5/27/22

PURGING DATA

WELL DIAMETER (in): 2	TOTAL WELL DEPTH (ft): 58.40	STATIC DEPTH TO WATER (ft): 36.75	WELL CAPACITY (gal/ft): 0.16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH – DEPTH TO WATER) X WELL CAPACITY =

= (58.40 – 46.75) X 0.16 = 3.46

PURGE METHOD: Bladder Pump	PURGE INITIATED AT: 0840	PURGE ENDED AT: 0922	TOTAL VOL. PURGED (gal): 6.8

TIME	VOLUME PURGED (gal)	CUMUL. VOLUME PURGED (gal)	PURGE RATE (gpm)	DEPTH TO WATER (ft)	pH	TEMP. (°C)	SPECIFIC CONDUCTANCE (µmhos)	TURBIDITY (NTUs)	Dissolved Oxygen (mg/L)	Oxygen-Reduction Potential (mV)
0845		0.3		36.78	4.86	23.65	0.224	4.96	6.93	229.6
0850		0.8		36.76	4.82	22.76	0.221	62.8	6.98	244.0
0855		1.4		36.76	4.84	22.73	0.220	9.14	7.11	243.5
0900		2.0		36.76	4.94	22.69	0.219	5.45	7.23	245.5
0905		2.6		36.76	4.97	22.71	0.219	5.48	7.28	247.3
0910		3.3		36.76	4.97	22.64	0.218	3.11	7.38	250.4
0915		4.0		36.76	4.99	22.62	0.218	1.93	7.38	252.3

WELL CAPACITY (Gallons per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Ethan Davies	SAMPLER(S) SIGNATURE(S): [signature]	
SAMPLING METHOD(S): Bladder	SAMPLING INITIATED AT: 0915	SAMPLING ENDED AT: 0922
FIELD DECONTAMINATION: (Y) N	FIELD-FILTERED: Y (N)	DUPLICATE: (Y) N FD

SAMPLE CONTAINER SPECIFICATION			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (mL)	FINAL pH	
6	AG	40mL	HCl	~~35mL~~	4.99	VOCs (PCE)

REMARKS: MW-FD01-0522 @ 0910

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; PE = POLYETHYLENE; O = OTHER (SPECIFY)

Montgomery Downtown Environmental Assessment Project
GROUNDWATER SAMPLING LOG

SITE NAME: Montgomery DEAP	SITE LOCATION: Downtown Montgomery, AL	PROJECT NUMBER: 666378.01.GW
WELL NO: MW-03S	SAMPLE ID: MW-3S-0522	DATE: 5/27/22

PURGING DATA

WELL DIAMETER (in): 2	TOTAL WELL DEPTH (ft): 59.45	STATIC DEPTH TO WATER (ft): 52.80	WELL CAPACITY (gal/ft): 0.16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH – DEPTH TO WATER) X WELL CAPACITY =

= (–) X = 1.06

PURGE METHOD: Bladder Pump	PURGE INITIATED AT: 1007	PURGE ENDED AT: 1055	TOTAL VOL. PURGED (gal): 1.4

TIME	VOLUME PURGED (gal)	CUMUL. VOLUME PURGED (gal)	PURGE RATE (gpm)	DEPTH TO WATER (ft)	pH	TEMP. (°C)	SPECIFIC CONDUCTANCE (µmhos)	TURBIDITY (NTUs)	Dissolved Oxygen (mg/L)	Oxygen-Reduction Potential (mV)
1020		0.2		52.82	5.01	22.40	0.197	20.8	5.73	241.1
1025		0.4		52.82	5.03	22.21	0.194	10.0	5.49	240.6
1030		0.5		52.82	5.09	22.18	0.196	6.50	5.42	235.3
1035		0.7		52.82	5.14	22.11	0.197	5.31	5.33	233.7
1040		0.8		52.82	5.18	22.16	0.199	3.84	5.31	232.9
1045		1.0		52.82	5.22	22.20	0.200	2.87	5.30	231.2
1050		1.1		52.82	5.23	22.18	0.200	1.16	5.31	232.1

WELL CAPACITY (Gallons per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Ethan Davies / Jacobs	SAMPLER(S) SIGNATURE(S):	
SAMPLING METHOD(S): Bladder	SAMPLING INITIATED AT: 1050	SAMPLING ENDED AT: 1055
FIELD DECONTAMINATION: (Y) N	FIELD-FILTERED: Y (N)	DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (mL)	FINAL pH	
3	AG	40	HCl	0	5.23	VOCs (PCE)

REMARKS: AB @ 1105

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; PE = POLYETHYLENE; O = OTHER (SPECIFY)

Montgomery DEAP

Montgomery, AL

May 2022
2
Event: ~~June 2021~~ Groundwater Sampling Event

Personnel: E. Davies & S. Porter

Well	Date	Time	Depth to Product, ft	Depth to Water, ft	Product Thickness, ft	Total Well Depth, ft	Comments
MW-1S	5/25/22	1455	-	35.19	-	51.60	Buried, 0.0 ppm
MW-1I	"	1500		36.45		141.40	0.0 ppm
MW-2S		1338	-	36.70	✓	58.40	0.2 ppm
MW-3S		1345	-	52.79	-	59.45	0.0 ppm
MW-4S		1435	✓	28.16	✓	38.50	0.0 ppm
MW-4I		1430		29.82		125.00	0.0 ppm
MW-5I		1355	✓	54.44	-	158.45	0.1 ppm
MW-7S							Blocked by car
MW-7I		1325	-	31.95	-	128.45	0.0 ppm
MW-8S		1240	✓	34.32	✓	51.54	0.0 ppm
MW-8I		1235	-	34.22	-	118.72	0.0 ppm
MW-9S		1420	-	51.51	✓	72.07	very poorly grouted, 0.0
MW-10S		1405	-	53.51	✓	71.73	0.0 ppm
MW-12S		1254	-	24.34	-	41.95	0.0 ppm well cap not fit, replace J-plug
MW-12I		1250	-	24.45	✓	104.50	0.0 ppm well cap not fit
TMPZ-1/MW-13S		13:04	-	18.90	-	47.50	0.0 ppm, cap locked too tight
MW-14S	↓	1312	-	28.48	-	49.35	0.0 ppm

29.82 125.00

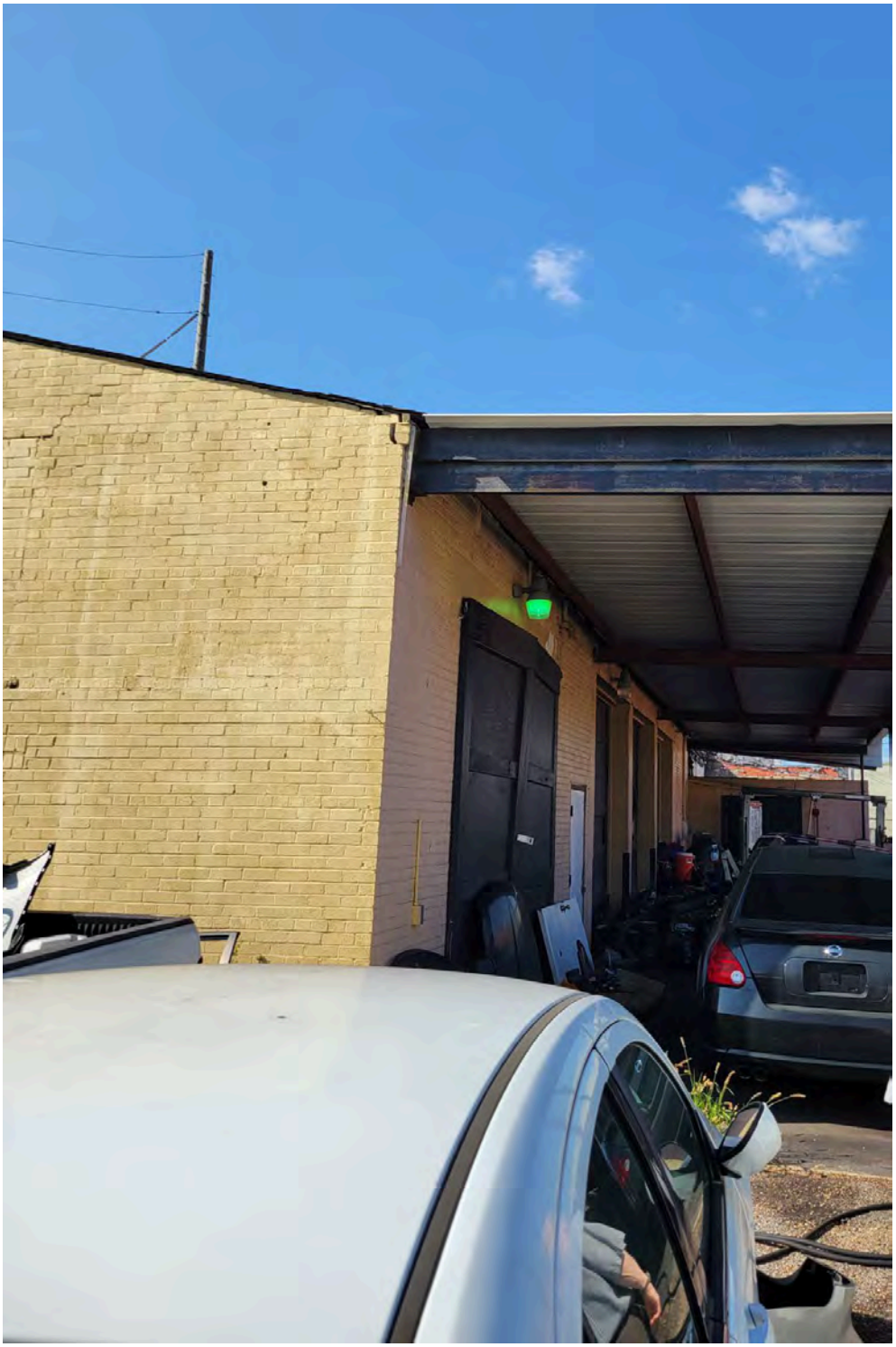
Appendix D
Site Photographs

APPENDIX D

Site Photographs

210 East Jefferson Street

210 East Jefferson Street



210 East Jefferson Street

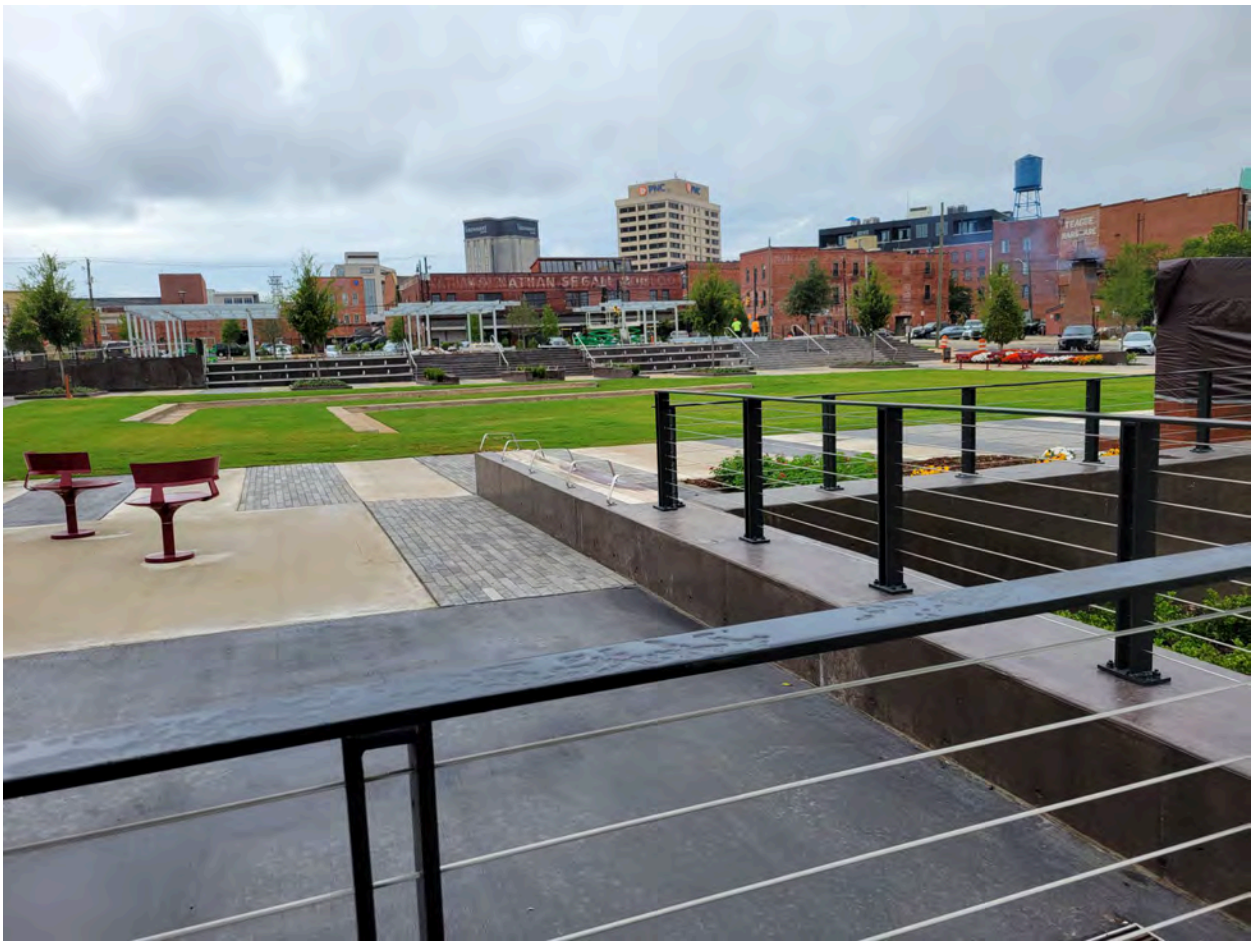
318 Madison Avenue

318 Madison Avenue

321 North Hull Street

321 North Hull Street

336 North Court Street



336 North Court Street

350 North McDonough Street

350 North McDonough Street

423 East Jefferson Street

423 East Jefferson Street

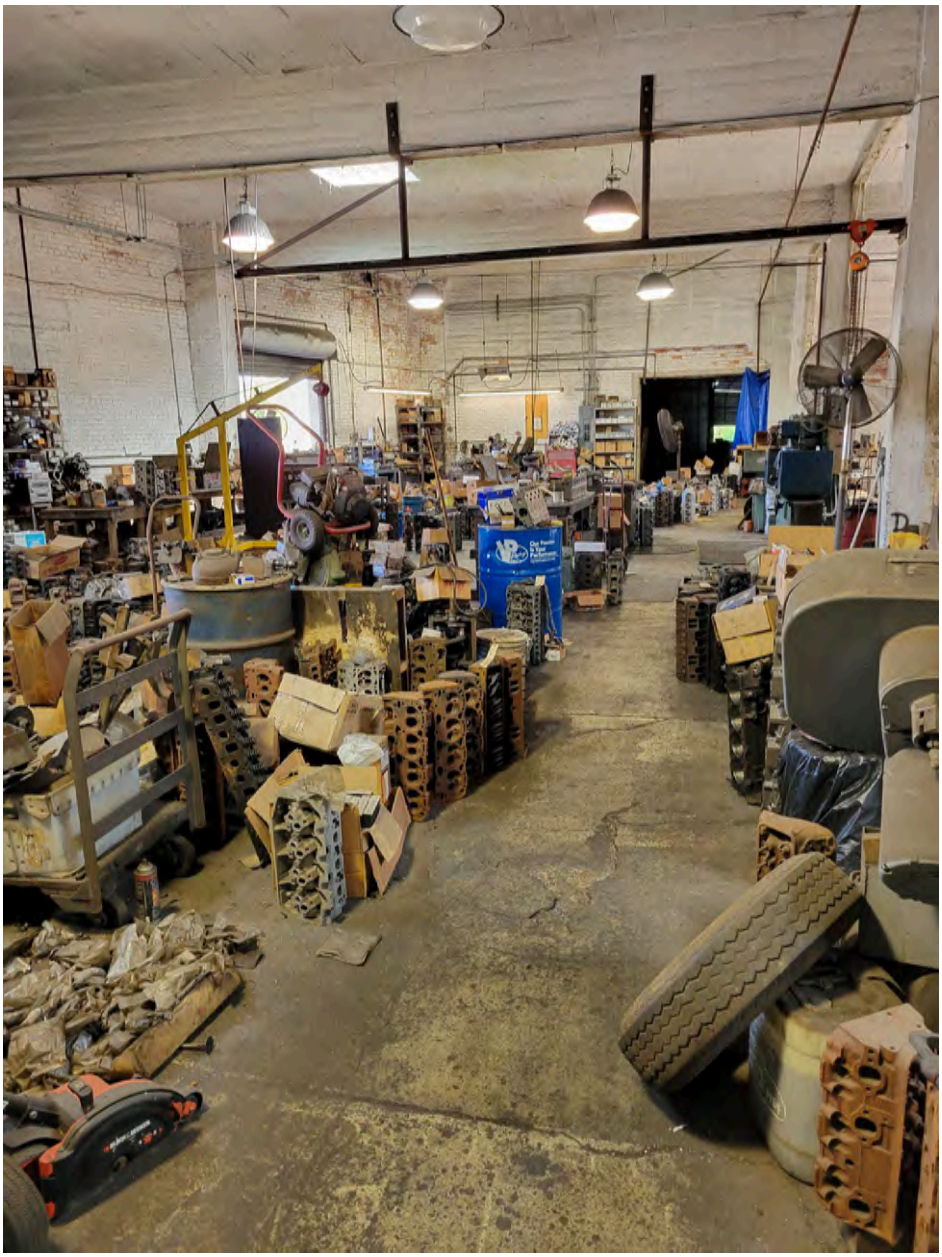
423 East Jefferson Street

501 North Lawrence Street

501 North Lawrence Street

501 North Lawrence Street

507 North Perry Street



507 North Perry Street

619 North McDonough Street

619 North McDonough Street

619 North McDonough Street

416 North McDonough Street

416 North McDonough Street

416 North McDonough Street

416 North McDonough Street – Decorative Well Housing

416 North McDonough Street – Decorative Well Housing

608 North Court Street – Capped Pit

230 North Hull Street – Historical Bucket Well, Secured Lid

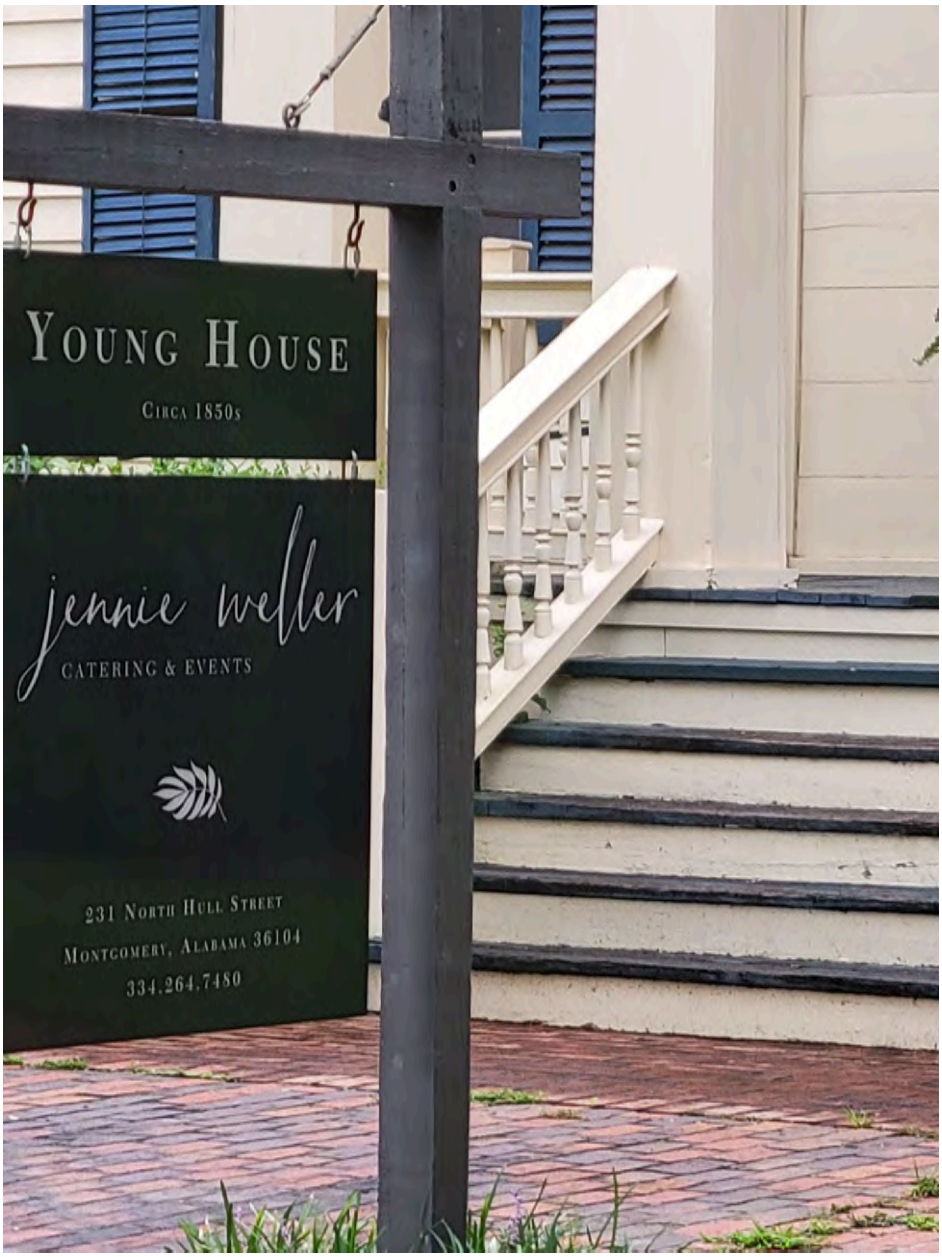
300 Block Madison

300 Block Madison

300 Block Madison

300 Block Madison

300 Block Madison



300 Block Madison

North Lawrence Street (Parcel Number 10 03 07 2 203 014.000)

North Lawrence Street (Parcel Number 10 03 07 2 203 014.000)

Washington Avenue Right of Way

Washington Avenue Right of Way

317 North Decatur Street – McClendon Service Center

Appendix E
Site Inspection and Interview Records

Institutional Controls Annual Inspection Checklist

INSPECTION DATE:

INSPECTOR NAME:

INSPECTION ADDRESS: 210 E. Jefferson St Montgomery AL

INSPECTOR CERTIFICATION

This is to certify that the 2022 annual institutional controls inspections on 9/14, 2022 was conducted by GD

Date:

If the answer to any of the following questions deviates from the prescribed land use restriction, please describe and explain on the attached comment sheet.

Land Use Restriction	Inspection
Site-wide Groundwater Use Restriction: Based on the Institutional Control Plan (ICP), there is a restriction on the use of shallow groundwater within the Downtown Environmental Assessment Project (DEAP) Land Use Restriction Areas. There is also a 2002 City ordinance that prohibits the installation of groundwater wells within a similar boundary and a 2019 amendment to the Ordinance prohibits the use of any existing well. Figure 3-1 of the ICP depicts the DEAP Land Use Restriction Areas.	1. Has intrusive work been completed on the subject property that would potentially encounter groundwater? Yes (No) Unknown 2. If yes, is there an operable groundwater well located on the subject property? Yes No Unknown 3. If yes, was the well installed prior to the 2002 City Ordinance banning well installations, and is documentation of installation available? Yes No Unknown 4. Provide the date that the property owner plans to decommission and abandon the well (See Interview Documentation). _____ 5. If new construction has been or is planned for the property, has or will a vapor barrier be/been used during the contruction of the first floor slab? Yes (No) Unknown

Institutional Controls Annual Inspection Checklist

INSPECTION DATE:

INSPECTOR NAME:

INSPECTION ADDRESS: 318 Madison Ave Montgomery AL

INSPECTOR CERTIFICATION

This is to certify that the 2021 annual institutional controls inspections on 8/24, 2021 was conducted by GD

Date:

If the answer to any of the following questions deviates from the prescribed land use restriction, please describe and explain on the attached comment sheet.

Land Use Restriction	Inspection
Site-wide Groundwater Use Restriction: Based on the Institutional Control Plan (ICP), there is a restriction on the use of shallow groundwater within the Downtown Environmental Assessment Project (DEAP) Land Use Restriction Areas. There is also a 2002 City ordinance that prohibits the installation of groundwater wells within a similar boundary and a 2019 amendment to the Ordinance prohibits the use of any existing well. Figure 3-1 of the ICP depicts the DEAP Land Use Restriction Areas.	1. Has intrusive work been completed on the subject property that would potentially encounter groundwater? Yes (No) Unknown 2. If yes, is there an operable groundwater well located on the subject property? Yes No Unknown 3. If yes, was the well installed prior to the 2002 City Ordinance banning well installations, and is documentation of installation available? Yes No Unknown 4. Provide the date that the property owner plans to decommission and abandon the well (See Interview Documentation). _____ 5. If new construction has been or is planned for the property, has or will a vapor barrier be/been used during the contruction of the first floor slab? Yes No (Unknown)

Property was Recently built + were notified of Vapor Barrier Requirement

Institutional Controls Annual Inspection Checklist

INSPECTION DATE:

INSPECTOR NAME:

INSPECTION ADDRESS: 321 N. Hull St
Montgomery AL

INSPECTOR CERTIFICATION

This is to certify that the 2021 annual institutional controls inspections on 8/24, 2021 was conducted by GD

Date:

If the answer to any of the following questions deviates from the prescribed land use restriction, please describe and explain on the attached comment sheet.

Land Use Restriction	Inspection
Site-wide Groundwater Use Restriction: Based on the Institutional Control Plan (ICP), there is a restriction on the use of shallow groundwater within the Downtown Environmental Assessment Project (DEAP) Land Use Restriction Areas. There is also a 2002 City ordinance that prohibits the installation of groundwater wells within a similar boundary and a 2019 amendment to the Ordinance prohibits the use of any existing well. Figure 3-1 of the ICP depicts the DEAP Land Use Restriction Areas.	1. Has intrusive work been completed on the subject property that would potentially encounter groundwater? Yes (No) Unknown 2. If yes, is there an operable groundwater well located on the subject property? Yes No Unknown 3. If yes, was the well installed prior to the 2002 City Ordinance banning well installations, and is documentation of installation available? Yes No Unknown 4. Provide the date that the property owner plans to decommission and abandon the well (See Interview Documentation). _____ 5. If new construction has been or is planned for the property, has or will a vapor barrier be/been used during the contruction of the first floor slab? Yes (No) Unknown

Comment Sheet
- Historical House used as a Massage + Bodyworks Studio.

Institutional Controls Annual Inspection Checklist

INSPECTION DATE:

INSPECTOR NAME:

INSPECTION ADDRESS: 336 N. Court St. Montgomery AL

INSPECTOR CERTIFICATION

This is to certify that the 2021 annual institutional controls inspections on 8/24, 2021 was conducted by GD

Date:

If the answer to any of the following questions deviates from the prescribed land use restriction, please describe and explain on the attached comment sheet.

Land Use Restriction	Inspection
Site-wide Groundwater Use Restriction: Based on the Institutional Control Plan (ICP), there is a restriction on the use of shallow groundwater within the Downtown Environmental Assessment Project (DEAP) Land Use Restriction Areas. There is also a 2002 City ordinance that prohibits the installation of groundwater wells within a similar boundary and a 2019 amendment to the Ordinance prohibits the use of any existing well. Figure 3-1 of the ICP depicts the DEAP Land Use Restriction Areas.	1. Has intrusive work been completed on the subject property that would potentially encounter groundwater? Yes (No) Unknown 2. If yes, is there an operable groundwater well located on the subject property? Yes No Unknown 3. If yes, was the well installed prior to the 2002 City Ordinance banning well installations, and is documentation of installation available? Yes No Unknown 4. Provide the date that the property owner plans to decommission and abandon the well (See Interview Documentation). _____ 5. If new construction has been or is planned for the property, has or will a vapor barrier be/been used during the contruction of the first floor slab? Yes (No) Unknown

Comment Sheet
Site is used as an open air park

Institutional Controls Annual Inspection Checklist

INSPECTION DATE:

INSPECTOR NAME:

INSPECTION ADDRESS: 350 N. McDonough St Montgomery AL

INSPECTOR CERTIFICATION

This is to certify that the 2021 2 annual institutional controls inspections on 9/14/2021 2 was conducted by GD

Date:

If the answer to any of the following questions deviates from the prescribed land use restriction, please describe and explain on the attached comment sheet.

Land Use Restriction	Inspection
Site-wide Groundwater Use Restriction: Based on the Institutional Control Plan (ICP), there is a restriction on the use of shallow groundwater within the Downtown Environmental Assessment Project (DEAP) Land Use Restriction Areas. There is also a 2002 City ordinance that prohibits the installation of groundwater wells within a similar boundary and a 2019 amendment to the Ordinance prohibits the use of any existing well. Figure 3-1 of the ICP depicts the DEAP Land Use Restriction Areas.	1. Has intrusive work been completed on the subject property that would potentially encounter groundwater? Yes (No) Unknown 2. If yes, is there an operable groundwater well located on the subject property? Yes No Unknown 3. If yes, was the well installed prior to the 2002 City Ordinance banning well installations, and is documentation of installation available? Yes No Unknown 4. Provide the date that the property owner plans to decommission and abandon the well (See Interview Documentation). _____ 5. If new construction has been or is planned for the property, has or will a vapor barrier be/been used during the contruction of the first floor slab? Yes (No) Unknown

Institutional Controls Annual Inspection Checklist

INSPECTION DATE:

INSPECTION ADDRESS: 423 E. Jefferson St

INSPECTOR NAME:

INSPECTOR CERTIFICATION

This is to certify that the 2021 annual institutional controls inspections on 8/24, 2021 was conducted by GD

Date:

If the answer to any of the following questions deviates from the prescribed land use restriction, please describe and explain on the attached comment sheet.

Land Use Restriction	Inspection
Site-wide Groundwater Use Restriction: Based on the Institutional Control Plan (ICP), there is a restriction on the use of shallow groundwater within the Downtown Environmental Assessment Project (DEAP) Land Use Restriction Areas. There is also a 2002 City ordinance that prohibits the installation of groundwater wells within a similar boundary and a 2019 amendment to the Ordinance prohibits the use of any existing well. Figure 3-1 of the ICP depicts the DEAP Land Use Restriction Areas.	1. Has intrusive work been completed on the subject property that would potentially encounter groundwater? Yes (No) Unknown 2. If yes, is there an operable groundwater well located on the subject property? Yes No Unknown 3. If yes, was the well installed prior to the 2002 City Ordinance banning well installations, and is documentation of installation available? Yes No Unknown 4. Provide the date that the property owner plans to decommission and abandon the well (See Interview Documentation). _____ 5. If new construction has been or is planned for the property, has or will a vapor barrier be/been used during the contruction of the first floor slab? Yes (No) Unknown

Comment Sheet
- Yancey Dogtrot House - No IC issues noted

Institutional Controls Annual Inspection Checklist

INSPECTION DATE:

INSPECTOR NAME:

INSPECTION ADDRESS: 501 N. Lawrence Str
Montgomery AL

INSPECTOR CERTIFICATION

This is to certify that the 2022 annual institutional controls inspections on 9/14, 2022 was conducted by GD

Date:

If the answer to any of the following questions deviates from the prescribed land use restriction, please describe and explain on the attached comment sheet.

Land Use Restriction	Inspection
Site-wide Groundwater Use Restriction: Based on the Institutional Control Plan (ICP), there is a restriction on the use of shallow groundwater within the Downtown Environmental Assessment Project (DEAP) Land Use Restriction Areas. There is also a 2002 City ordinance that prohibits the installation of groundwater wells within a similar boundary and a 2019 amendment to the Ordinance prohibits the use of any existing well. Figure 3-1 of the ICP depicts the DEAP Land Use Restriction Areas.	1. Has intrusive work been completed on the subject property that would potentially encounter groundwater? Yes (No) Unknown 2. If yes, is there an operable groundwater well located on the subject property? Yes No Unknown 3. If yes, was the well installed prior to the 2002 City Ordinance banning well installations, and is documentation of installation available? Yes No Unknown 4. Provide the date that the property owner plans to decommission and abandon the well (See Interview Documentation). _____ 5. If new construction has been or is planned for the property, has or will a vapor barrier be/been used during the contruction of the first floor slab? Yes (No) Unknown

Institutional Controls Annual Inspection Checklist

INSPECTION DATE:

INSPECTOR NAME:

INSPECTION ADDRESS: 507 N. Perry St Montgomery AL

INSPECTOR CERTIFICATION

This is to certify that the 2021 annual institutional controls inspections on 9/14/22 2021 was conducted by GD

Date:

If the answer to any of the following questions deviates from the prescribed land use restriction, please describe and explain on the attached comment sheet.

Land Use Restriction	Inspection
Site-wide Groundwater Use Restriction: Based on the Institutional Control Plan (ICP), there is a restriction on the use of shallow groundwater within the Downtown Environmental Assessment Project (DEAP) Land Use Restriction Areas. There is also a 2002 City ordinance that prohibits the installation of groundwater wells within a similar boundary and a 2019 amendment to the Ordinance prohibits the use of any existing well. Figure 3-1 of the ICP depicts the DEAP Land Use Restriction Areas.	1. Has intrusive work been completed on the subject property that would potentially encounter groundwater? Yes (No) Unknown 2. If yes, is there an operable groundwater well located on the subject property? Yes No Unknown 3. If yes, was the well installed prior to the 2002 City Ordinance banning well installations, and is documentation of installation available? Yes No Unknown 4. Provide the date that the property owner plans to decommission and abandon the well (See Interview Documentation). _____ 5. If new construction has been or is planned for the property, has or will a vapor barrier be/been used during the contruction of the first floor slab? Yes (No) Unknown

Institutional Controls Annual Inspection Checklist

INSPECTION DATE:

INSPECTION ADDRESS: 619 N. McDonough St Montgomery AL

INSPECTOR NAME:

INSPECTOR CERTIFICATION

This is to certify that the 2021 annual institutional controls inspections on 9/14/22 2021 was conducted by GA

Date:

If the answer to any of the following questions deviates from the prescribed land use restriction, please describe and explain on the attached comment sheet.

Land Use Restriction	Inspection
Site-wide Groundwater Use Restriction: Based on the Institutional Control Plan (ICP), there is a restriction on the use of shallow groundwater within the Downtown Environmental Assessment Project (DEAP) Land Use Restriction Areas. There is also a 2002 City ordinance that prohibits the installation of groundwater wells within a similar boundary and a 2019 amendment to the Ordinance prohibits the use of any existing well. Figure 3-1 of the ICP depicts the DEAP Land Use Restriction Areas.	1. Has intrusive work been completed on the subject property that would potentially encounter groundwater? Yes (No) Unknown 2. If yes, is there an operable groundwater well located on the subject property? Yes No Unknown 3. If yes, was the well installed prior to the 2002 City Ordinance banning well installations, and is documentation of installation available? Yes No Unknown 4. Provide the date that the property owner plans to decommission and abandon the well (See Interview Documentation). _____ 5. If new construction has been or is planned for the property, has or will a vapor barrier be/been used during the contruction of the first floor slab? Yes (No) Unknown

Institutional Controls Annual Inspection Checklist

INSPECTION DATE:

INSPECTOR NAME:

INSPECTION ADDRESS: North McDonough St Montgomery AL

INSPECTOR CERTIFICATION

This is to certify that the 2021 annual institutional controls inspections on 8/24, 2022 was conducted by GD

Date: 8/24/22

If the answer to any of the following questions deviates from the prescribed land use restriction, please describe and explain on the attached comment sheet.

Land Use Restriction	Inspection
Site-wide Groundwater Use Restriction: Based on the Institutional Control Plan (ICP), there is a restriction on the use of shallow groundwater within the Downtown Environmental Assessment Project (DEAP) Land Use Restriction Areas. There is also a 2002 City ordinance that prohibits the installation of groundwater wells within a similar boundary and a 2019 amendment to the Ordinance prohibits the use of any existing well. Figure 3-1 of the ICP depicts the DEAP Land Use Restriction Areas.	1. Has intrusive work been completed on the subject property that would potentially encounter groundwater? Yes (No) Unknown 2. If yes, is there an operable groundwater well located on the subject property? Yes (No) Unknown 3. If yes, was the well installed prior to the 2002 City Ordinance banning well installations, and is documentation of installation available? Yes No Unknown 4. Provide the date that the property owner plans to decommission and abandon the well (See Interview Documentation). _____ 5. If new construction has been or is planned for the property, has or will a vapor barrier be/been used during the contruction of the first floor slab? Yes (No) Unknown

Comment Sheet
- A hand-drawn well housing was observed but upon inspection there is no well within the housing. Site Operator stated that a well was never located here (just for astetics)

Land Use Restriction	Inspection
First-Floor Residential Restriction (North 300 Block of Madison Ave.): Based on the ICP, the City has passed an ordinance that restricts this block from first-floor residential use (including schools and daycare facilities). Figure 3-1 of the ICP depicts the DEAP Land Use Restriction Areas.	1. Is the subject property located in the North 300 Block of Madison Avenue? (Yes) No 2. If yes, are there any structures on the subject property that would be considered a first-floor residence, school, or daycare: Yes (No) Unknown 3. If, yes, is the property owner aware that there is a City Ordinance prohibiting first-floor residential, school, or day-care land use on this block (See Interview Documentation)? Yes No Unknown
Environmental Covenant (EC) at North Lawrence Street: Based on the ICP, the City has placed an EC on their property that states that it will remain a parking only.	1. Is the subject property still used for parking only? (Yes) No 2. If No, has the City sold the property or has the EC been modified to allow property use other than parking? Yes No
Environmental Covenant (EC) at Washington Street Right-of-Way (ROW): Based on the ICP, the City has placed an EC on the northern ROW that states that this property will remain public ROW.	1. Is the subject property still a public ROW? (Yes) No 2. If No, has the City sold the property or has the EC been modified to allow alternative property use? Yes No
Environmental Covenant (EC) Review at 317 N. Decatur Street: Owner filed an Environmental Covenant in October 2020.	1. Is the Property still owned and perated by the owner that filed the EC? (Yes) No 2. Is the property still operated as a vehicle repair and maintenace shop? (Yes) No

Land Use Restriction	Inspection
Historical Wells Located within the Old Alabama Town Historical Distrct: Two historical wells were observed during the 2020 site inspections.	1. Are the wells still located on their repective properties? (Yes) No 2. Are proper controls in place to prevent use of the wells (locks, gates, screens, etc.)? (Yes) No Screwed Closed

INTERVIEW DOCUMENTATION FORM

The following is a list of individuals interviewed for this Downtown Environmental Assessment Project Institutional Controls Inspection Period. See the attached contact records for a detailed summary of the interviews.

Name	Title/Position	Organization	Date
Collier Neeley	Ex. Director	Landmarks For	8/24/22
Barry Leavell	Site Owner	210 E Jeff.	9/14/22
Rick Dennis	Site Owner	Dennis Welding	9/14/22
David Little	Manager	Tucker Pecan Co	9/14/22
Johnny McGough	Owner	Cylinder Head Ex	9/14/22
Mike Presskit	Former Owner	501 Lawrence	9/14/22
Leslie Little	Property Owner	Tucker Pecan Co	9/28/22

INTERVIEW RECORD

Site Name: Montgomery Downtown Environmental Assessment Project		
Subject: Old Alabama Town Properties	**Time:** 9:00	**Date:** 8/24/20
Type: _ Telephone ~~✓ Visit~~ _ Other **Location of Visit:**	_ Incoming _ Outgoing	

Contact Made By:

Name: Glen Davis	**Title:** Proj Manager	**Organization:** Jacobs

Individual Contacted:

Name: Collier Neely	**Title:** Ex. Director	**Organization:** Landmark
Telephone No: **Fax No:** **E-Mail Address:**	**Street Address:** N. McDonough St **City, State, Zip:** Montgomery AL 36104	

Summary of Conversation (Refer to Questions in Annual Inspection Checklist)

Property #95 (N. McDonough St) = Dorsey House
- Property used as offices for Synergy & Alabama Diversified Automotive Manufacturers (ADAM)
- Shaffer Gardens is also on site. A hand-drawn well housing is on site but there was never an actual well there (Just for asthetics)

Property #24 (321 North Hull St)
→ Used as a Massage + Body works Studio
→ No Wells were observed on site

Property #22 (423 E. Jefferson St)
→ Historical Foxtrot Home
→ No wells were observed.

INTERVIEW RECORD

Site Name: Montgomery Downtown Environmental Assessment Project			
Subject: Site Visit - Dennis Welding		Time: 9:30	Date: 9/14/22
Type: _ Telephone ✓ Visit _ Other Location of Visit:		_ Incoming _ Outgoing	
Contact Made By:			
Name: Glen Davis	Title: Proj. Manager	Organization: Jacobs	
Individual Contacted:			
Name: Rick Dennis	Title: Owner/Manger	Organization: Dennis Welding	
Telephone No: 264-6444 Fax No: E-Mail Address: rickydennis57@icloud.com		Street Address: 619 N. McDonough St. City, State, Zip: Montgomery AL	

Summary of Conversation (Refer to Questions in Annual Inspection Checklist)

- No Private Wells on Site
- Here since 1964 - At cwent locator since 1980s
- Compressed Gas Facility
- Not Sure if Vapor Barrier is inplace
- Possibly interested in EC Program. We will send him some information

INTERVIEW RECORD

Site Name: Montgomery Downtown Environmental Assessment Project		
Subject: Site Interview	Time: 945	Date: 9/14/22
Type: _ Telephone ✓ Visit _ Other Location of Visit:	_ Incoming _ Outgoing	

Contact Made By:

Name: Glen Davis	Title: Proj Manager	Organization: Jacobs

Individual Contacted:

Name: David Little	Title: Manager	Organization: Tucker Pecan
Telephone No: Fax No: E-Mail Address:	Street Address: 350 McDonough St City, State, Zip: Montgomery	

Summary of Conversation (Refer to Questions in Annual Inspection Checklist)

- No Groundwater Wells on site
- Not sure if there is a vapor barrier
- Tuckers has been around since 1952
- Possibly interested in EC (must discuss with owner)

INTERVIEW RECORD

Site Name: Montgomery Downtown Environmental Assessment Project		
Subject: Site Interview	Time: 1015	Date: 9/14/22
Type: _ Telephone ✓ Visit _ Other Location of Visit:	_ Incoming _ Outgoing	

Contact Made By:

Name: Glen Davis	Title: Proj Manager	Organization: Jacobs

Individual Contacted:

Name: Johnny McGough	Title: Owner	Organization: Cylinder Head Ex.
Telephone No: 334-263-9928 Fax No: E-Mail Address:	Street Address: 507 N. Perry St City, State, Zip: Montgomery AL	

Summary of Conversation (Refer to Questions in Annual Inspection Checklist)

- No Ground water wells on site
- Not Sure is Building has a vapor barrier (constructed in 1920s or 1930s
- He receives our letters and is aware of EC Program.

INTERVIEW RECORD

Site Name: Montgomery Downtown Environmental Assessment Project		
Subject: Site Interview	**Time:** 2:45	**Date:** 9/14/22
Type: _ Telephone ✓ Visit _ Other **Location of Visit:**	_ Incoming _ Outgoing	

Contact Made By:

Name: Glen Davis	**Title:** Proj Manager	**Organization:** Jacobs

Individual Contacted:

Name: Mike Preskit	**Title:** Former Owner	**Organization:**

Telephone No: **Fax No:** **E-Mail Address:**	**Street Address:** 501 N. Lawrence St **City, State, Zip:** Montgomery, AL

Summary of Conversation (Refer to Questions in Annual Inspection Checklist)

- One well located on Back of property.
  EPA Closed well in 2014-15. He Thinks it was part of Phyloremediation monitoring
- No Vapor Barrier on Warehousing
- Sold property to 110 Pollard LLC about 1 year ago
- Block used for Warehouse Storage

INTERVIEW RECORD

Site Name: Montgomery Downtown Environmental Assessment Project		
Subject: Site Interview	**Time:** 3:30 pm	**Date:** 9/14/22
Type: _ Telephone ✓ Visit _ Other **Location of Visit:**	_ Incoming _ Outgoing	

Contact Made By:

Name: Glen Davis	**Title:** Proj. Manager	**Organization:** Jacobs

Individual Contacted:

Name: Barry Leavell	**Title:** Owner	**Organization:** —
Telephone No: 334-834-8663 **Fax No:** **E-Mail Address:** bal@barry.leavell.com	**Street Address:** 210 E. Jefferson St **City, State, Zip:** Montgomery, AL	

Summary of Conversation (Refer to Questions in Annual Inspection Checklist)

- No Groundwater wells associated with the Building
- Not Sure if Building has Vapor Barriers
- Related to Jones Brothers towing. They tow abandoned cars for the City & do some maintenance work a site
- Not Sure if he would be interested in an EC but will review any information we send

INTERVIEW RECORD

Site Name: Montgomery Downtown Environmental Assessment Project			
Subject: Site Interview		**Time:** 915	**Date:** 9/28/22
Type: ✓ Telephone _ Visit _ Other **Location of Visit:**		_ Incoming ✓ Outgoing	
Contact Made By:			
Name: Glen Davis	**Title:** Proj. Manager	**Organization:** Jacobs	
Individual Contacted:			
Name: Leslie Little	**Title:** Site Owner	**Organization:** Tucker Pecan	
Telephone No: 334-301-2962 **Fax No:** **E-Mail Address:** lctlittle3224@gmail.com		**Street Address:** 350 N. McDonough St **City, State, Zip:** Montgomery, AL	

Summary of Conversation (Refer to Questions in Annual Inspection Checklist)

- Sold Business to David Little in Sept 2020. Stillman Property.
- No GW wells on site
- No knowledge of if the Building has a vapor barrier. Existing building was built in 1950s
- She is interested in learning more about the E.C. program.

Appendix F
Example Notification Letter

November XX, 2020

[[PARCEL OWNER NAME]]
[[MAILING ADDRESS]]
Montgomery, AL 36XXX

Subject: Institutional Controls Notification for [[PROPERTY ADDRESS or PARCEL ID?]]
– Downtown Environmental Assessment Project (DEAP)

Dear Property Owner:

On behalf of the Downtown Environmental Alliance[1], this notification letter is being sent to inform you of new City Ordinance 36-2019, Chapter 5, Article III, Section 5-483 of the Code of Ordinances for the City of Montgomery (hereafter referred to as the "Ordinance") that affects the aforementioned property. The new ordinance was prepared by the City of Montgomery in conjunction with the Alabama Department of Environmental Management (ADEM) in compliance with an *Institutional Controls Plan*, which is available for your review at www.capitalcityplume.org.

The new Ordinance was developed based on the results of the Capital City Plume investigation and evaluation. More information related to this project is located at www.capitalcityplume.org**.** Please note that although the Ordinance addresses groundwater use restrictions, it does not affect the City of Montgomery's drinking water**.** Montgomery drinking water comes from other water sources (i.e., the Tallapoosa River and/or well fields in West and South Montgomery) and is safe for you to drink.

The following information outlines how the Ordinance relates to your property:

- **Groundwater Use Restrictions:** Per Section 2 of the Ordinance, it is unlawful to dig any wells *or use any existing wells* on your property. If there is an existing well on your property, you are required to decommission and close it, in accordance with ADEM guidelines. (Guidelines for decommissioning a well are found in Appendix B at http://www.adem.state.al.us/programs/land/landforms/AEIRGInvestigation.pdf.)
- **Construction Requirements:** Per Section 3 of the Ordinance, any new foundations being installed on the property will require installation of a vapor barrier in accordance with the International Building Code and applicable Environmental Protection Agency vapor intrusion guidelines.
- **First Floor Residential Use Restriction (North 300 Block of Madison Avenue):** Section 4 of the Ordinance applies to a single city block bounded by Madison Avenue on the south, East Jefferson Street on the north, North Hull Street on the east and North McDonough Street on the west. Parcels within this block are prohibited from constructing or maintaining first-floor residences, schools, or daycare facilities.

[1] The Downtown Environmental Alliance consists of the City of Montgomery, Montgomery County Commission, Montgomery Advertiser, The Montgomery Water Works and Sanitary Sewer Board, the Alabama Law Enforcement Agency, the Alabama Department of Education, the Alabama Community College System, and the Alabama Department of Transportation.

We encourage you to review the information at www.capitalcityplume.org.

By receipt of this notification letter, your property is eligible for a voluntary environmental covenant. You are encouraged to place a voluntary environmental covenant on your property to provide notice of the Ordinance to subsequent property owners. By using this voluntary covenant, the normal ADEM administration fee will be waived. If you, as an eligible property owner, would like to explore this option, please review the information located at www.capitalcityplume.org.

To provide continuous notifications to current and new property owners, a similar letter will be mailed in the fourth quarter of each year. Any changes to these restrictions will be updated in these annual letters. Should you have any questions regarding this notification letter, please contact Glen S. Davis at 334-215-9016 or glendon.davis@jacobs.com.

Sincerely,

Glen S. Davis
Jacobs Engineering Group, Inc.
Consultant to the Downtown Environmental Alliance

c: Project File

Appendix G
Institutional Control Plan Addendum

Institutional Controls Plan Addendum; Montgomery Downtown Environmental Assessment Project; Montgomery, Alabama

Date: May 3, 2023
Attention: Alabama Department of Environmental Management
Client: Downtown Environmental Alliance
Prepared by: Jacobs

CH2M HILL Engineers, Inc.
4121 Carmichael Road
Suite 400
Montgomery, AL 36106
United States
T +1.334.271.1444
www.jacobs.com

On behalf of the Downtown Environmental Alliance (DEA), Jacobs has prepared this addendum to the Institutional Controls Plan (ICP) (CH2M 2019a) for the Downtown Environmental Assessment Project (DEAP). The purpose of this addendum is to present recommendations to modify the monitoring frequency based on the past 3 years of annual monitoring and reporting as described in the ICP. The initial 3-year annual monitoring was agreed upon as part of the site's ICP, and the DEA and Alabama Department of Environmental Management (ADEM) agreed to re-evaluate an appropriate monitoring frequency at the conclusion of 2022.

Summary of Annual Monitoring (2020–2022)

As specified in the ICP, the annual monitoring for the initial 3 years consisted of the following action items:

- Groundwater sampling and analysis of seven existing monitoring wells within the site monitoring network
- Property inspections and interviews with randomly selected properties within the Institutional Control (IC) notification boundary
- Environmental Covenant Management for eligible downtown properties
- IC notification letters sent to all property owners within the IC notification boundary
- Meeting and Community Outreach Group (COG) coordination
- Remedial Action Progress Report (RAPR) documentation

Over the past 3 years of groundwater sampling, groundwater concentrations of tetrachloroethene (PCE) have remained stable or declined across the site and have remained below historical concentrations (Table 1). Fluctuations in PCE concentrations were observed in downgradient wells MW-12S and MW-13S, which was expected based on the groundwater flow direction and the Conceptual Site Model (CSM).

Based on the CSM, the migration of PCE impacted groundwater to the Alabama River and Cypress Creek in the vicinity of MW-13S is impeded. Cypress Creek is connected to the Alabama River through a culvert. Based on the elevation of the culvert and the close correlation in water levels between the creek, MW-13S, and the river identified during the hydraulic study, backwater from the Alabama River ponds in Cypress Creek, and Alabama River water interacts with groundwater near MW-13S through pore water exchange. The influence of the Alabama River, and to a lesser degree Cypress Creek, likely reduces the concentration of PCE in groundwater located in the vicinity of MW-13S that ultimately interacts with both water bodies due to dilution by pore water exchange and dispersion.

A Dilution Attenuation Factor (DAF) of 103 was developed in the Alternatives Analysis/Risk Assessment report (CH2M 2019b) to estimate PCE concentrations in Cypress Creek based on the PCE concentrations observed at MW-13S (i.e., the area of highest downgradient concentrations approximately 300 feet from

Cypress Creek). Although concentrations of downgradient well MW-12S fluctuate, groundwater flows toward the most downgradient well with the highest concentrations, MW-13S, and the DAF calculations are based on the transect closest to Cypress Creek. Using an updated plume width of 560 feet, measured along a transect line running from MW-14S and through MW-13S (i.e., across the leading edge of the plume), Jacobs recalculated a DAF of 73 in 2022 to re-evaluate the conditions near Cypress Creek with updated site data since 2019 (see calculations in Table 2). Using the updated DAF of 73 (Table 2) and the maximum PCE concentration measured at MW-13S in June 2021 (292 parts per billion [ppb]), the estimated PCE concentration in Cypress Creek resulting from the DEAP plume discharge is 4.0 ppb. This estimated PCE concentration is well below the most conservative surface water quality criteria for potable water and surface water recreational use (11 ppb), and approximately an order of magnitude below the surface water quality criteria for fish and wildlife surface water (36 ppb), which is the most likely water use. Therefore, the current PCE concentration at MW-13S does not pose an unacceptable risk to surface water receptors at Cypress Creek.

Over the past 2 years (2020 and 2021), site inspections and interviews have been conducted at 28 of the 99 properties within the IC notification boundary (20 randomly selected properties, 5 within the 300 Madison Avenue block, and 3 existing environmental covenant properties). Ten additional random inspections were conducted in 2022. Based on the findings of these inspections, the DEA has not encountered any properties using groundwater for any purpose. One historical well (not used for potable water) was observed in the Old Alabama Town Historical District. The well has since been permanently closed. Also, a pit structure was encountered at the old Montgomery Water Works Building on North Court Street. This pit has since been closed and locks placed on the cover. The DEA has worked closely with large developments in the downtown area (such as the Equal Justice Initiative) to make them aware of the ICs and City Ordinance in-place for their development work.

IC notification letters have been sent annually to all downtown property owners for the past 3 years (2019 through 2021). The DEA sent out another set of notice letters in the fourth quarter of 2022.

Over the past 2 years (2020 and 2021), the DEA has submitted annual RAPRs to ADEM to document the annual activities for the DEAP. A report for 2022 will be submitted by March 1, 2023.

Conclusions and Recommendations

Based on the results of the actions taken during the past 3 years, the DEA is recommending that the ICP be amended to modify the frequency of the aforementioned activities as follows:

- Continue to collect groundwater samples from the six site monitoring wells (MW-02S, MW-03S, MW-08S, MW-12S, MW-13S, and MW-14S) on an annual basis. However, should any of these wells exhibit concentrations below the Groundwater Protection Standard (GWPS) for three consecutive annual sampling events, these wells will be placed on "standby" status and groundwater sampling will not be conducted at these wells going forward. Based on the 2022 groundwater sampling results, Monitoring Well MW-01S has exhibited three consecutive PCE concentrations below its GWPS (5.0 ppb) and, therefore, will be placed on standby status.
- To maintain monitoring of groundwater flow and direction at the site, we propose continuing to collect groundwater depth-to-water measurements at the nine shallow and six intermediate zone wells on an annual basis. While collecting depth-to-water measurements, wells will be inspected for functionality and maintenance will be recommended, if needed.
- Recent inspections and interviews suggest that downtown property owners are aware of the ICs and restrictions, and no groundwater wells are in use. In addition, a city ordinance prohibits installation and use of wells in this area. However, out of an abundance of caution, we recommend that a windshield driving inspection of the DEAP area continue to be performed annually to review the site for major construction efforts and changes to the property use in the downtown area. The City Engineering Department also will continue to review plans for major developments that might encounter groundwater. In addition, we recommend that random property inspections and interviews should be conducted on a triannual basis, with the next set of inspections/interviews to be conducted in 2025.

- We recommend that environmental covenant management continue to be managed on the project website; assistance with these covenants will be available through the DEA or their consultant.
- We recommend that IC notification letters continue to be mailed annually to ensure existing and new downtown property owners will be informed of the ICs and City Ordinance for the DEAP.
- We recommend that COG communications continue to maintain a relationship with downtown business owners and residents and keep them informed of project progress.
- We recommend that RAPRs be submitted on a triannual basis at the conclusion of the 2025 monitoring activities. We further recommend that annual technical memoranda be submitted to inform ADEM of the annual activities conducted at the DEAP. The annual technical memoranda will be submitted by March 31, 2024, and March 31, 2025, following the conclusion of the 2023 and 2024 monitoring activities. The next RAPR will be submitted by March 31, 2026, following the conclusion of the 2025 monitoring activities.

Please let us know if you have any questions or comments on this plan.

References

CH2M HILL Engineers, Inc. (CH2M). 2019a. *Institutional Controls Plan, Downtown Environmental Assessment Project, Montgomery, Alabama*. Prepared for Alabama Department of Environmental Management by the Downtown Environmental Alliance. July.

CH2M HILL Engineers, Inc. (CH2M). 2019b *Risk Assessment/Alternatives Analysis Report Downtown Environmental Assessment Project, Montgomery, Alabama*. Prepared for Alabama Department of Environmental Management by the Downtown Environmental Alliance. February.

Tables

Table 1. Groundwater Sampling Results

ICP Addendum, Montgomery Downtown Environmental Assessment Project, Montgomery, Alabama

Station ID	Date Sampled	May 2022 PCE Concentrations	June 2021 PCE Concentrations	April 2020 PCE Concentration	July 2016 PCE Concentration
Shallow Interval Wells					
MW-01S	5/25/2022	1 U	1 U	1 U	1.56
MW-02S	5/27/2022	**31.2**	**41.4**	**45.6 J**	**34.1**
MW-03S	5/27/2022	**15.5**	**21.6**	**33.1 J**	**6.27**
MW-08S	5/26/2022	**30.5**	**45.2**	**80.7 J**	**78.4**
MW-12S	5/26/2022	**36.4**	**20.3**	**30.7 J**	**58.9**
MW-13S	5/26/2022	**264**	**292**	**209**	**174**
MW-14S	5/26/2022	**5.68**	**5.05**	**5.78 J**	N/A

Notes:

Concentrations presented in micrograms per liter (µg/L).

The higher of the native and field duplicate concentration is presented for MW-02S.

Bold text indicates concentration exceeds the MCL (5 µg/L).

DEAP = Downtown Environmental Assessment Project

J = estimated concentration due to laboratory control sample recovery slightly above control limits; the result may be biased high.

MCL = U.S. Environmental Protection Agency Maximum Contaminant Level

PCE = tetrachloroethene

U = analyte was not detected

Table 2. Updated Calculation of Cypress Creek Attenuation Factor

ICP Addendum, Montgomery Downtown Environmental Assessment Project, Montgomery, Alabama

Date	Plume Thickness [1] (ft)	Discharge Length [2] (ft)	Discharge Area [3] (ft^2)	Hydraulic Gradient [4] (unitless)	Hydraulic Conductivity [5] (cm/s)	Aquifer Discharge Rate [6] (cm^3/s)	Aquifer Discharge Rate (L/day)	Discharge from Coliseum Blvd. Plume to Cypress Creek[7] (L/day)	DAF for MW-13S to Cypress Creek	Calculated PCE Concentration in Cypress Creek (ppb) [8]	Surface Water Quality Criteria for Fish and Wildlife (ppb)
Original DAF in Alternatives Analysis/Risk Assessment Report											
2019	35	400	14,000	0.008	0.0036	375	32,363	3,324,940	103	1.69	36
Updated DAF											
2022	35	560	19600	0.008	0.0036	524.40192	45308.32589	3324940	73.38474629	4	36

Notes:

[1] Plume thickness based on distance between the water table (~40 ft bgs at MW-02S) and the point halfway between the bottom screen depth of the deepest well with detected PCE above MCL (MW- 02S at 60 ft bgs) and the top of screen for shallowest well where PCE was not detected (MW-07S, at 85 ft bgs), conservatively rounded up to the nearest 5 ft. For example, the plume thickness = (60 ft+((85 ft - 60 ft)/2)) - 40 ft = 32.5 ft, rounded to 35 ft.

[2] Discharge length estimated as the general width of the distal end of the plume measured parallel to the creek. The 2022 length accounts for MW-14S, which was installed after the original evaluation.

[3] Discharge area calculated as rectangular area using the plume thickness and discharge length.

[4] Hydraulic gradient defined as change in head from TMPZ-1 to the closest upgradient well (MW-08S) (9.27 ft) over measured distance between TMPZ-1 and MW-08S (1,161 ft).

[5] Hydraulic conductivity based on geometric mean of hydraulic conductivities determined by slug tests (Data Evaluation Report, Black & Veatch, 2000).

[6] Aquifer Discharge Rate = hydraulic conductivity * hydraulic gradient* discharge area (does not assume retardation of flow from Alabama River porewater exchange).

[7] Assumes the Coliseum Boulevard Plume contribution accounts for all flow in Cypress Creek (data obtained from the Coliseum Boulevard Plume Southwest Treatment Area under NPDES permit AL0081167. The total estimated annual flow, based on the monthly averages, in 2017 for the Discharge Pond was 320.6 million gallons. Mean discharge obtained from U.S. Geological Survey station 02420000 based on 79 years of record.

[8] PCE concentrations obtained from MW-13S during the 2016 Environmental Investigation sampling event (174 ppb) and the highest recorded concentration during the June 2021 groundwater sampling event (292 ppb).

DAF - dilution attenuation factor calculated as the ratio between the discharge of the porewater exchange (from surface water discharge) and groundwater inflow (aquifer discharge).
bgs = below ground surface
cm^2 = square centimeter
cm/s = centimeters per second
cm^3/s = centimeters cubed per second
ft = feet
ft^2 = square feet
L/day = liters per day
NPDES = National Pollutant Discharge Elimination System
PCE = tetrachloroethene
ppb = parts per billion