Rohm and Haas Chemicals, LLC

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May 29, 2025

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Mr. Aaron Correll, P.G.

Project Manager
Voluntary Cleanup Section
Remediation Division
Texas Commission on Environmental Quality
12100 Park 35 Circle, MC 127
Austin, TX 78753

Subject: 2024 Annual Groundwater Monitoring Report
Charlie Burch Site, Spring, Texas
Voluntary Cleanup Program No. 421
CN600131395/RN102970738

Dear Mr. Correll:

Rohm and Haas Texas Incorporated (Rohm and Haas), a Wholly Owned Subsidiary of The Dow Chemical Company, is submitting the 2024 Annual Groundwater Monitoring Report for the Charlie Burch site (Site) to the Texas Commission on Environmental Quality. This report presents groundwater data collected throughout the 2024 reporting period.

The Site is currently operating under a semiannual groundwater sampling schedule, with Sentinel well and Sitewide sampling events performed each year. Rohm and Haas is requesting:

- Elimination of the Sentinel well event and request that the Site move to an annual groundwater sampling frequency.
- Permanent shutdown of the 13-Acre Tract system.
- The plugging and abandonment of monitoring well MW-CB-5A.
- Discontinuation of monitoring on the Southern Tract, as follows:
  - Propose the plugging and abandonment of the following wells in the routine compliance list:
    - MW-CB-37S
    - MW-CB-39
    - MW-CB-40
    - MW-CB-41S
    - MW-CB-44
    - MW-CB-46
    - MW-CB-47S
  - Monitoring wells MW-CB-45 and MW-CB-48 will be retained.
- TCEQ to resend historical correspondence from 2023 and forward.

If you have questions regarding this report, please contact me at 979.238.5568 or DBelote@dow.com.

Sincerely,

Donnie Belote
Remediation Leader
2301 N. Brazosport Blvd, Bldg. B122
Freeport, TX 77541

cc: Josh McFarlain/Jacobs
Karina Rocha/TCEQ Fed Ex #8815 6853 4236

Jacobs

2024 Annual Groundwater Monitoring Report

Rohm and Haas Texas Incorporated,
A Wholly Owned Subsidiary of
The Dow Chemical Company

Charlie Burch Site, Spring, Texas
Voluntary Cleanup Program No. 421
May 29, 2025

2024 Annual Groundwater Monitoring Report

Client Name:	Rohm and Haas Texas Incorporated, A Wholly Owned Subsidiary of The Dow Chemical Company		
Project Name:	Charlie Burch Site, Spring, Texas Voluntary Cleanup Program No. 421		
Client Reference:	TBPG Firm Registration No. 50613		
Project Manager:	Josh McFarlain,	**Date:**	May 29, 2025
Version:	Final	**Prepared By:**	Bret Rahe, P.G. and Tania Babu

Certification Statement
Professional Signature and Seal

I certify that the geologic work produced in this report has been performed in accordance with accepted industry standards and practices.

Charlie Burch Site, Spring, Texas
Voluntary Cleanup Program No. 421
2024 Annual Groundwater Monitoring Report

Report Title

Bret R. Rahe	2798	November 30, 2025
Professional Geoscientist	**License Number**	**Expiration Date**

May 29, 2025

Signature **Date**

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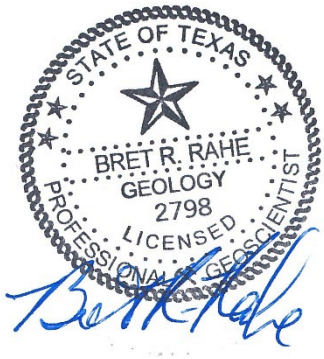
Seals, as applicable:



TBPG Firm Registration No. 50712

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Acronyms and Abbreviations

1,2-DCA	1,2-dichloroethane
30 TAC 335	Title 30, Texas Administrative Code, Chapter 335
bgs	below ground surface
EAB	enhanced anaerobic bioremediation
GAC	granular activated carbon
GWBU	groundwater-bearing unit
GWMR	Groundwater Monitoring Report
mg/L	milligram(s) per liter
O&M	operations and maintenance
PCL	protective concentration level
RAP	Response Action Plan
RAWP	Remedial Action Work Plan
Rohm and Haas	Rohm and Haas Incorporated
Site	Charlie Burch Site in Spring, Texas
TCEQ	Texas Commission on Environmental Quality
TNRCC	Texas Natural Resource Conservation Commission
TRRP	Texas Risk Reduction Program
VCP	Voluntary Cleanup Program

1. Introduction

This *Annual Groundwater Monitoring Report* (GWMR) presents groundwater data collected from January 1 through December 31, 2024, for the Charlie Burch Site (Site), located in Spring, Texas. As required by the approved *2005 Response Action Plan* (RAP) (GSI 2005) and 2011 RAP (Parsons 2011), this GWMR summarizes the total volume of groundwater recovered and analytical results for the Source Area and 13-Acre Tract groundwater extraction and treatment systems. Figure 1-1 provides the Site location map. Both the Source Area and 13-Acre Tract groundwater recovery systems remained offline during the 2024 reporting period (Section 2).

This GWMR provides data to satisfy the requirement of the annual monitoring term from January to December 2024 and includes a summary of the groundwater analytical results, potentiometric surface maps, and plume maps for 1,2-dichloroethane (1,2-DCA) in Zones A and B.

1.1 The Basis for the 2024 Annual Submittal

This GWMR is being submitted to fulfill the requirements of the approved 2005 RAP and 2011 RAP and provides an update with respect to the following:

- Source Area Capture Zone: Eliminate further offsite migration of affected near-surface groundwater.
- Offsite: Reduce concentrations of 1,2-DCA in offsite groundwater to the respective Texas Risk Reduction Program (TRRP) protective concentration level (PCL) (0.005 milligram per liter [mg/L]).
- Treatment of recovered groundwater: Treat recovered groundwater to meet discharge requirements.

This GWMR provides the following information:

- *Corrective Action Systems:* Summary of corrective action systems at the Source Area and 13-Acre Tract groundwater extraction and treatment systems (Section 2). Both onsite remediation systems continued to remain offline in 2024 (Section 2).
- *Groundwater Monitoring and Results:* Overview of the monitoring program, potentiometric surfaces, groundwater quality and analytical results, and interpretations of the extent of affected groundwater during 2024 (Section 3).
- *Summary and Recommendations:* Summary of groundwater analytical results, planned activities for 2025, and recommendations (Section 4).

1.2 The Site Overview

The Site is approximately 25 miles north of Houston, Texas, in south-central Montgomery County (Figure 1-1). Figure 1-2 shows the Site and vicinity where groundwater monitoring wells have been installed. Table 1-1 lists well and piezometer construction specifications for the groundwater monitoring network.

The Source Area is mostly open, undeveloped land with grass and small trees. An oil production tank battery and saltwater injection well were on the southern portion of the Site but were decommissioned and removed by the operator in November 2020; Rohm and Haas Texas Incorporated (Rohm and Haas) does not own or operate the oil production facility. Environmental issues associated with oil and gas operations at the Site, if any, are regulated by the Texas Railroad Commission and are not included in the scope of Voluntary Cleanup Program (VCP) response actions.

The Site history dates to the 1950s. Rohm and Haas does not own and historically did not own or operate the Site. In the 1960s, an independent hauler used the Site to bury wastes collected from several manufacturers. In 1967, a Montgomery County judge ordered the waste site closed. In the early 1980s, the State of Texas approached several parties, including Rohm and Haas, to further investigate the Site and develop a plan to close the Site. In

1983, after several years of work, the Texas Department of Water Resources (predecessor to Texas Commission on Environmental Quality [TCEQ]) issued a letter stating that the disposal area had been closed in conformance with the approved closure plan (TDWR 1983).

1.3 The Site History and Groundwater Response Actions

Rohm and Haas, a Wholly Owned Subsidiary of The Dow Chemical Company, has performed response actions and associated monitoring at the Site in accordance with the VCP. Since 1998, sampling has been conducted at the Site to monitor affected groundwater within the two uppermost groundwater-bearing units (GWBUs), designated as Zone A and Zone B, and evaluated the effectiveness of ongoing groundwater remedies. The principal constituent of concern identified in affected groundwater beneath and hydraulically downgradient of the Site is 1,2-DCA.

Remediation of the Site began in 1999 with the completion of the soil remedy under the Texas Risk Reduction Rules (Title 30, Texas Administrative Code, Chapter 335 [30 TAC 335]). In mid-1999, with TCEQ (TCEQ 1999) approval, buried waste and affected soil was delineated, excavated, and disposed of offsite by Rohm and Haas; clean backfill was placed in the excavated areas; the Site was graded and seeded in mid-1999. A *Response Action Completion Report* documenting the soil remediation was submitted to TCEQ on March 24, 2000, and subsequently approved by TCEQ (TCEQ 2000); therefore, the response action for Site soil is complete, while the groundwater response is ongoing.

The groundwater investigation and response action, which began in 2001 by installing and operating a Source Area groundwater extraction and treatment system, transitioned from the former Risk Reduction Rules to TRRP in 2003. The groundwater remedy proposed in 2005 under TRRP consisted of a Source Area groundwater extraction and treatment system combined with using monitored natural attenuation with a plume management zone (GSI 2018).

Point of compliance wells installed in 2005 suggested that the dissolved 1,2-DCA plume was not fully delineated. Accordingly, additional investigations were conducted to delineate the PCL exceedance zone. A second groundwater extraction and treatment system was installed in 2006, approximately 2,000 feet downgradient of the Source Area on a property owned by Rohm and Haas and referred to as the 13-Acre Tract.

In July 2010, Rohm and Haas submitted a RAP proposing response actions (enhanced bioremediation, upgraded Source Area groundwater extraction and treatment system, and continued annual groundwater monitoring), with the intent of achieving remedial objectives within a shorter time frame (Parsons 2010). The 2010 RAP was subsequently amended on May 6, 2011 (Parsons 2011) and approved by TCEQ on September 2, 2011 (TCEQ 2011). In accordance with *Worksheets 3.1 and 4.0* of the 2011 RAP, Rohm and Haas will perform a Sitewide Annual groundwater sampling event each year.

As proposed in a data transmittal to TCEQ on February 1, 2012, Rohm and Haas collected quarterly potentiometric water elevations and semiannual groundwater samples from sentinel wells to confirm groundwater flow and delineation of the 1,2-DCA plume (GSI 2012). In a letter dated February 4, 2015, Rohm and Haas proposed discontinuing quarterly water level gauging and semiannual sampling of the sentinel wells (Parsons 2015). On March 6, 2015, TCEQ approved the request to discontinue quarterly potentiometric water elevations; however, TCEQ requested Rohm and Haas to continue collecting groundwater samples from a subset of monitoring wells (MW-CB 40, MW-CB-44, and MW-CB-48) on a semiannual basis (TCEQ 2015). Rohm and Haas also elected to include MW-CB-45 in the Sentinel Event. The Sentinel Event has occurred during the second quarter of each year. Sentinel wells are also included in the monitoring network for the Sitewide event that typically occurs in the latter half of each calendar year.

Implementation of the amended RAP commenced in October 2011 with the installation of the upgraded Source Area groundwater extraction and treatment system. The original Source Area system, installed in 2001, remained operational while the upgraded system was installed. The original system was taken offline in January 2012 as the upgraded system began operation.

In 2017, the Source Area system underwent an additional upgrade that included replacing the old air stripper with a new and more efficient unit. This upgrade was completed as part of Phase 4 enhanced anaerobic bioremediation (EAB) remedy. Injection activities associated with implementing the EAB remedy have been completed in a phased approach. Phase 5 was expanded in 2018 to increase coverage of bioremediation capabilities in the isolated portions of the plume located downgradient of the 13-Acre Tract system and to reduce the predicted cleanup time for the downgradient portions of the plume. No injection-related activities were performed during the 2024 reporting period (Jacobs 2024, 2025).

In accordance with the revised RAP, Rohm and Haas continued the operation of the 13-Acre Tract System from 2006 through 2020. Based on data collected from years of operation, the recovery system created and expanded a gap of remediated groundwater separating portions of the groundwater plume and reduced concentrations in monitoring wells within and immediately downgradient of the system's zone of influence. Based on 1,2-DCA concentrations remaining consistent and less than the PCL, coupled with decreasing historical trends in downgradient monitoring wells, Rohm and Haas determined that continued operation of the granular activated carbon (GAC) system was not necessary.

As a result, on December 19, 2019, Rohm and Haas requested shut down of the 13-Acre Tract recovery system to evaluate potential rebound of the 1,2-DCA plume for a period of one year (Jacobs 2019). On March 2, 2020 (TCEQ 2020), TCEQ responded and had no objection to the shutdown of the 13-Acre Tract treatment system; therefore, the system was conditionally shut down, with the implementation of quarterly gauging and monitoring of select wells. In 2020, the quarterly performance monitoring showed concentrations of 1,2-DCA consistent with previous years.

In a letter dated August 17, 2021 (TCEQ, 2021), TCEQ agreed that additional data must be gathered to determine the potential effects of back-diffusion and requested the inclusion of monitoring well MW-CB-15AS in the quarterly monitoring program. The Source Area pump-and-treat system was shut off on October 27, 2021 and, except for intermittent operation to treat accumulated purge water from groundwater sampling activities, has remained offline. Results from the plume stability and back-diffusion assessment were presented in the *2022 Annual Groundwater Monitoring and Response Action Effectiveness Report*, dated June 1, 2023 (Jacobs 2023). The evaluation noted that although some back-diffusion could be occurring, the overall plume was stable. As a result, no additional response actions beyond monitoring were proposed.

Monitor wells EAB-PMW-17 (PMW-17), EAB-PMW-18 (PMW-18), EAB-PMW-19 (PMW-19), EAB-PMW-19B (PMW-19B), MW-CB-26A, MW-CB-27A were plugged and abandoned on the Offsite Northern Tract of the Site (Figure 1-2) as part of the December 2023 groundwater investigation. Furthermore, one new groundwater monitoring well (MW-CB-50A) was installed in December 2023 in response to a request from TCEQ to confirm the lateral extent of 1,2-DCA east of monitoring well MW-CB-26A. Groundwater results from this investigation satisfied TCEQ requirements (TCEQ 2021).

2. Corrective Action Systems

This section summarizes the operations and maintenance (O&M) at the Source Area and 13-Acre Tract corrective action systems.

2.1 Source Area System Operations and Maintenance

A groundwater extraction and treatment system is located on the eastern boundary of the Source Area property (Figure 2-1) and was operational until it was taken offline in October 2021. It includes four recovery wells (RW-CB-2R through 5R) screened in Zone A, which is encountered at approximately 20 to 65 feet below ground surface (bgs), and one recovery well (RW-CB-3D) in Zone B, which is encountered at approximately 70 to 102 feet bgs. The system has electrical pumps and a remote telemetry communications system.

The system also incorporates a EZ-6.4SS Air Stripper, which became operational on November 28, 2017. The air stripper system consists of the following equipment:

- Three baffled aeration trays
- Downcomers
- A sump
- A blower
- A discharge pump operated using a variable frequency drive to pump treated groundwater to the constructed northern and southern infiltration galleries on the adjacent property east of the Source Area

The TCEQ authorized injection into the infiltration galleries on January 31, 2018; however, the infiltration galleries have not been used to this point. Rohm and Haas informed TCEQ in a letter dated November 9, 2021, that the Source Area system was shut down on October 27, 2021, to accommodate the back-diffusion and plume stability evaluation completed during the 2022 reporting period. The system has remained offline since this time.

The Montgomery County Drainage District manages the flood control channel adjacent to the Site. Rohm and Haas received permission from the Montgomery County Drainage District to discharge treated water in a letter dated January 20, 1999, from Herman I. Little, Jr., to Rohm and Haas (Appendix D of the *Remedial Action Work Plan* [RAWP]) (TCEQ 1999). Authorization to discharge treated water to state waterways, with associated discharge criteria, was received from TCEQ in a letter dated March 23, 1999.

In an interoffice memorandum attached to a TCEQ letter dated March 18, 2002 (TCEQ 2002), the TCEQ Industrial Permits Team recommended changes to several of the effluent limits for the discharge, including:

- Reductions for the following analytes:
  - 2-Butanone
  - Ethyl methacrylate
  - Methyl methacrylate
- Increases for the following analytes:
  - Acetone
  - 2,4-Dimethylphenol
- A tighter range for pH

The resulting effluent limitations, and requirements for discharge to the flood control channel, are summarized in the following paragraph.

The daily average effluent flow will not exceed 170,000 gallons per day (118 gallons per minute), and the specified effluent limitations (Table 2-1) will not be exceeded. Current effluent limitations reflect the recommendations of the TCEQ interoffice memorandum dated March 18, 2002 (TCEQ 2002), including a pH between 6 and 9. Water

discharge from the Site will be monitored (sampled) at least once every 2 weeks (biweekly) for listed parameters, including pH, in accordance with the TCEQ interoffice memorandum dated October 9, 2018. Water discharge from the Site will not contain floating solids, visible oils, or visible foam other than trace amounts. No groundwater was treated through the system during the 2024 reporting period, and as a result discharge samples were not collected.

2.1.1 Operations and Maintenance

O&M of the Source Area system includes both inspections and maintenance. Inspections were conducted monthly from January through December 2024. Maintenance and repair of the air stripper were conducted November 2024; however, the air stripper was nonoperational during the 2024 reporting period, and no groundwater was treated.

2.1.2 Effluent and Influent Sampling Results and Groundwater Recovery Volume

Influent and effluent samples are not included, as no groundwater was treated through the Source Area and 13-Acre Tract systems during the 2024 reporting period.

2.1.3 Air Discharge

Rohm and Haas submitted *Documentation of Claim for Standard Exemptions* in accordance with Title 30, Texas Administrative Code, Chapters 106.533 and 106.262 to the Texas Natural Resource Conservation Commission (TNRCC, the predecessor to TCEQ) on February 15, 1999 (Rohm and Haas 1999), for discharge to the air from the operation of the system. TNRCC authorized the exemptions in a letter dated March 23, 1999. The criteria related to air emission discharge are not reiterated in this report since the air stripper remained offline during the 2024 reporting period.

2.2 The 13-Acre Tract Area System Operations and Maintenance

The 13-Acre Tract groundwater extraction and treatment system was installed in early 2006 on property owned by Rohm and Haas (Figure 1-2) to minimize further plume migration. The system includes four recovery wells (TRW-CB-1 through TRW-CB-4) screened in Zone A (Figure 2-2).

Recovery wells TRW-CB-1 and TRW-CB-2 and the infiltration trench located to the west (CB-IT-1; Figure 2-2) have been offline since 2014. Recovery wells TRW-CB-3 and TRW-CB-4 were used to extract groundwater that was subsequently treated by carbon adsorption in vessels containing GAC. Treated groundwater was reinjected onsite through an infiltration trench at the downgradient end of the 13-Acre Tract (CB-IT-2; Figure 2-2). The system continued to operate until it was taken offline on November 25, 2019.

Based on an evaluation of the system in 2019, a request to shut down the system for a period of one year was subsequently submitted to TCEQ on December 19, 2019 (Appendix A) to evaluate potential rebound of 1,2-DCA. Post-shutdown voluntary monitoring, including quarterly water level gauging and sampling from a subset of monitoring wells, was performed to evaluate plume stability. TCEQ approved the request in a letter dated March 2, 2020 (TCEQ 2020).

Results from the quarterly sampling were summarized in the 2020 Annual GWMR (Jacobs 2021). No groundwater was extracted by the system in 2024. While the system was not in operation, system elements were still inspected.

3. Groundwater Monitoring Program and Results

This section provides an overview of the groundwater monitoring program and results from the Sentinel and Sitewide groundwater monitoring events.

3.1 Overview of Monitoring Program

The Sentinel groundwater monitoring event was conducted in the second quarter of 2024, which included the following activities:

- Water level gauging of select wells and sentinel wells (Table 3-1)
- Collecting groundwater samples and water quality parameters for analysis of 1,2-DCA from the select wells and sentinel wells located at the following areas (Table 3-2):
  - Source Area
  - Offsite Northern Tract
  - Offsite Middle West Tract
  - 13-Acre Tract
  - Offsite Southern Tract

A Sitewide groundwater monitoring event was conducted in the third quarter of 2024 and included the following activities:

- Water level gauging of the monitoring network wells to assess groundwater flow (Table 3-3)
- Collecting groundwater samples and water quality parameters for analysis of 1,2-DCA from the Monitoring network wells in Zone A and B GWBUs at the following areas (Table 3-4):
  - Source Area
  - Offsite Northern Tract
  - Offsite Middle West Tract
  - 13-Acre Tract
  - Offsite Southern Tract

Groundwater samples were collected in lab-provided containers and submitted to ALS Environmental Laboratories in Houston under chain-of-custody control. Samples submitted to the laboratory included field duplicates (1 per 10 samples collected), matrix spike and matrix spike duplicate samples (1 per 20 samples collected), and trip blanks (1 per cooler containing samples). Appendix B provides the associated laboratory reports. Results were validated in accordance with TRRP-13 guidance and documented in the data usability summary provided in Appendix C.

The following sections discuss the results of the 2024 Sentinel and Sitewide groundwater monitoring events. Historical summaries of analytical results for indicator parameter 1,2-DCA from select wells in Zone A, Zone B, and water supply wells are provided in Tables 3-5, and Table 3-6 provides the analytical results for 1,2-DCA from the Source Area.

Groundwater samples were collected from previously identified GWBUs, including:

- Zone A or AS: Approximately 0 to 40 feet bgs (upper Zone A)
- Zone AD: Approximately 40 to 70 feet bgs (lower Zone A)
- Zone B or BS: Approximately greater than 70 to 100 feet bgs (Zone B)

Approximately 90 to 100 feet of less-permeable, fine-grained material separates the deeper Zone C drinking water aquifer from Zones A and B.

3.2 Groundwater Measurement Sampling Results

This section summarizes the groundwater flow and the distribution of 1,2 DCA in Zone A and Zone B GWBUs. Interpretations are based on data collected during 2024. Historical results in wells installed in Zone C show no evidence of impacts to groundwater in Zone C (Parsons 2020); as a result, a summary of potentiometric conditions is not provided in this GWMR.

3.2.1 Zone A Groundwater

Table 3-1 summarizes depth-to-water measurements collected during the 2024 Sentinel groundwater monitoring sampling event, and Table 3-3 provides the same information for the Sitewide event. Water level measurements were documented to the nearest 0.01 foot using an interface meter to calculate potentiometric elevations. The second quarter static water levels were collected on April 23, 2024; water levels were collected during the Sitewide event on September 10 through 11, September 17, and November 19, 2024. Groundwater elevations from the Sitewide event were used to interpret the potentiometric surface for Zone A. A separate map for the second quarter (Sentinel) event was not prepared for this GWMR given the limited data set.

Figure 3-1 shows the potentiometric surface for Zone A interpreted from water level measurements collected during the Sitewide sampling event. The interpretation of the potentiometric surface suggests groundwater flow within Zone A is generally toward the southeast under hydraulic gradients that vary from the Source Area to the Offsite Southern Tract Area portion of the plume. Lateral changes in lithology likely impart the variability. Recovery systems being offline may also influence groundwater flow throughout the Site.

Groundwater flow velocities vary across the Site based on lateral changes in lithology and localized variations of the hydraulic gradients. Estimates for the groundwater flow velocity presented in Table 3-7 for Zone A are based on a hydraulic conductivity of 21 feet per day calculated for the shallow portion of Zone A (GSI 1999) and an assumed effective porosity of 0.30. Table 3-7 summarizes groundwater flow velocities estimated for the following areas:

- Source Area
- Offsite Northern Tract
- Offsite Middle West Tract
- 13-Acre Tract
- Offsite Southern Tract

Note that 13-Acre Tract trench recovery wells TRW-CB-1 and TRW-CB-2 have been offline since 2014. Trench recovery wells TRW-CB-3 and TRW-CB-4, also located in the 13-Acre Tract, have been conditionally shut down based on TCEQ approval received in March 2020 (TCEQ 2020). Recovery wells at the Source Area system have been shut down since October 2021. As a result, the cone of depression created by the groundwater pump-and-treat system and noted in historical annual reports is absent.

3.2.2 Zone B Groundwater

Figure 3-2 illustrates the potentiometric surface of Zone B wells in the Source Area based on water level measurements collected during the Sitewide 2024 sampling event. The Zone B GWBU is generally encountered between 70 and 100 feet bgs. Figure 3-2 shows the interpreted potentiometric conditions in Zone B at the Source Area. Note recovery well RW-CB-3D has remained offline since 2019, and as a result, a cone of depression is not shown.

Aquifer testing within and adjacent to the Source Area resulted in an estimated hydraulic conductivity of 6 feet per day for the Zone B GWBU (GSI 1999). The hydraulic gradient in this zone is approximately 0.028 ft/ft. Based on the hydraulic gradient measured during the 2024 annual event, an average hydraulic conductivity of 6 feet per day,

and an assumed effective porosity of 0.30, the calculated groundwater velocity in Zone B was approximately 204 feet per year (Table 3-7).

3.3 Groundwater Quality

The following subsections summarizes the distribution of 1,2-DCA in Zone A and Zone B in the Source Area and Offsite Tracts. Interpretations are based on data collected during the September 2024 Sitewide annual event. Historical results in wells installed in Zone C show no evidence of impacts on the groundwater in Zone C (Parson 2020); as a result, an evaluation of Zone C is not included in this GWMR. Except for the AZG wells, groundwater samples were collected using HydraSleeves. AZG wells in Zone A at the Source Area were sampled using low-flow sampling methods. The small diameter (0.75 inch) of these wells precludes the use of HydraSleeves.

Field measurement readings were documented for each groundwater sample at collection using properly calibrated instruments for the following:

- Temperature
- Specific conductance
- pH
- Dissolved oxygen
- Oxidation-reduction potential
- Nephelometric turbidity units

Field parameters for groundwater samples collected using HydraSleeves were captured from residual groundwater left in the sleeve after filling the required laboratory vials. Those groundwater samples collected from AZG wells reflect values after reaching the stabilization criteria.

Results from the 2024 groundwater monitoring event confirms the presence of 1,2-DCA in Zone A GWBUs. 1,2-DCA was detected in four Zone B wells (Table 3-4), but all concentrations were less than the cPCL. Table 3-2 shows the analytical results for the second quarter event, while Table 3-4 presents analytical results for the Sitewide groundwater sampling event. The following subsections provide more detail with respect to results within each zone.

Figure 3-3 shows the distribution of 1,2-DCA detected at concentrations greater than the cPCL in the Zone A monitoring network; Figure 3-4 shows the distribution of 1,2-DCA detected in the Zone B monitoring network. Separate maps for the second quarter event were not provided for this GWMR. The following subsections focus on results from the annual Sitewide event.

3.3.1 Zone A

During the annual Sitewide event, groundwater samples were collected from 54 Zone A monitoring wells and analyzed for 1,2-DCA (Table 3-4). Among these wells, 1,2-DCA was present at detectable concentrations in 28 locations, with concentrations ranging from an estimated 0.00059 mg/L (RW-CB-4) to 0.97 mg/L (AZG6-67-72).

Overall conditions at the source property are generally consistent with prior reporting periods. 1,2-DCA continues to be detected in Source Area wells at concentrations exceeding the PCL. However, concentrations at the downgradient property boundary appear to be declining based on conditions in wells MW-CB-1A and RW-CB-5R. Time series graphs for these wells (Appendix D) suggest concentrations of 1,2-DCA are overall decreasing1,2-DCA in well RW-CB-2R increased slightly from 2023 to 2024, but remained below the cPCL (Appendix D). A similar fluctuation was noted in monitoring well EAB-PMW-08, but the concentration was slightly greater than the cPCL; the concentration is still an order-of-magnitude less than the historical high detected in 2018 (Appendix D). However, Source Area conditions continue to be stable, and attenuation is likely occurring.

The extent of 1,2-DCA on the property immediately east-southeast of the Source Area is generally consistent with 2023 and remains separated an isolated area of affected groundwater south of Richards Rd. (Figure 3-3). The

extent of affected groundwater remains delineated to the east based on results from well MW-CB-50A installed in December 2023 (Figure 3-3).

Two isolated monitoring wells south of Richards Road (MW-CB-8AD and MW-12AD) contained 1,2-DCA at concentrations greater than the PCL in 2024. While 1,2-DCA remained stable from 2023 to 2024 in well MW-12AD, overall concentrations have declined since 2019. Concentrations of 1,2-DCA in MW-CB-8AD have fluctuated, and while it was not detected in 2023, was detected greater than the cPCL in 2024. 1,2-DCA in recovery wells TRW-CB-3 and TRW-CB-4 at the downgradient margin of the 13-Acre Tract have fluctuated since the system was placed offline in November 2019 but remain less than the PCL at TRW-CB-3 since 2019 and at TRW-CB-4 since 2021.

Affected groundwater at the 13-Acre Tract appears to be stable, declining, and/or have remained below the cPCL based on results from the recovery system wells. 1,2-DCA detected in well TRW-CB-1 located in the north-central portion of the 13-Acre Tract has consistently declined since 2016 (Appendix D) and has remained less than the cPCL two of the last three years. Despite minor fluctuations, 1,2-DCA has remained less than the cPCL in well TRW-CB-2 and continued to decline from October 2022 through 2024 (Appendix D). Wells TRW-CB-3 and TRW-CB-4 are located at the downgradient margin of the 13-Acre Tract. 1,2-DCA has not been detected greater than the cPCL in well TRW-CB-3. Slight rebound was noted in well TRW-CB-4 following shutdown of the 13-Acre Tract recovery system in November 2019 (Appendix D), but concentrations have also consistently declined and remained less than the cPCL since 2021.

1,2-DCA in the monitoring network downgradient of the 13-Acre Tract have also remained less than the cPCL since 2021. Data plots for these nine wells are provided in Appendix D. Note that although not collected during the reporting period for this report, 1,2-DCA was not detected in samples collected from the four Sentinel monitoring wells (MW-CB-40, MW-CB-44, MW-CB-45, and MW-CB-48) during April 2025. These results appear in the plots of concentrations over time for these wells provided in Appendix D. Laboratory packages for these wells will be provided in the next annual report. These conditions, in combination with those described at the 13-Acre Tract, warrant optimization of the monitoring program in both areas. Recommendations are provided in Section 4.3.

3.3.2 Zone B

Samples were collected from seven Zone B monitoring wells (Table 3-4). 1,2-DCA was not detected greater than the PCL in groundwater samples collected from the monitoring wells (Figure 3-4). 2024 marks the first year that 1,2-DCA in Zone B groundwater at the source area property was not detected greater than the cPCL. The decline of 1,2-DCA in the Zone B monitoring network during 2024 appear consistent with the general declines noted in these wells since 2022.

4. Summary of 2024 Results and Planned 2025 Activities

This section summarizes Site activities completed in 2024, recommendations, and planned activities for 2025.

4.1 2024 Sitewide Monitoring Event Summary

Groundwater potentiometric surface contours in Zone A and Zone B GWBUs are generally consistent with historical interpretations, with an overall groundwater flow toward the southeast. In 2024, 1,2-DCA concentrations in monitoring wells are generally consistent with historical results. Time series graphs were reviewed on monitoring wells near the 1,2-DCA plume boundary and areas where concentrations of 1,2-DCA historically have exceeded the PCL. Most of the wells continue to display decreasing or generally stable conditions (Appendix D).

Based on results from the 2024 Sitewide sampling event, the extent of 1,2-DCA continues to be defined by results from the monitoring network in the Source Area and immediate adjacent property (offsite northern tract). Concentrations of 1,2-DCA in monitoring wells within and south of the 13-Acre Tract have continued to decrease and were less than the cPCL in 2024. Results from monitoring well sampling suggest the extent of 1,2-DCA-affected groundwater has decreased, especially within the 13-Acre Tract and downgradient property.

During the 2024 sampling event, the two offsite private water wells reportedly were not in use.

4.2 Site Activities

Upcoming activities planned for calendar year 2025 include:

- **System O&M**:
  - The Source Area extraction and treatment system will remain offline. Since the shutdown, Rohm and Haas has periodically collected samples from the Zone B recovery well (RW-CB-3D), and Table 3-6 summarizes the results. While 1,2-DCA has fluctuated in this well, detected concentrations have overall decreased and were below the cPCL in 2024.
  - 1,2-DCA was not detected greater than the cPCL at the 13-Acre Tract during 2024. Further, 1,2-DCA was collected as part of the semiannual Sentinel event in 2025 and has remained less than the cPCL for the fifth consecutive year (2021 through 2025; Appendix D) in the distal plume south of the 13-Acre Tract following shutdown of the groundwater containment and treatment system in November 2019. Collectively these conditions demonstrate that additional operation of the 13-Acre Tract extraction and treatment system is no longer necessary. Further, conditions downgradient of the 13-Acre Tract have remained stable and additional monitoring is not warranted. Recommendations associated with decommissioning of the 13-Acre Tract system, reduced monitoring, and plugging and abandonment of monitoring wells in the distal plume are provided in Section 4.3.
- **Groundwater Monitoring:** Groundwater monitoring will continue to evaluate 1-2 DCA concentrations in the proposed Zone A and B GWBUs shown on Figure 5-1 based on TCEQ approval of the recommendations in Section 4.3.

4.3 Recommendations

Based on a review of the 2024 data, the following recommendations were identified:

- An extensive amount of groundwater data was collected in the distal plume as part of the semiannual (Sentinel) groundwater monitoring program, and results from the 2022 plume stability assessment suggest the groundwater plume, in general, appears stable (Jacobs, 2023). Additionally, concentrations of 1,2-DCA in samples collected from nine monitoring wells in 2024 and four monitoring wells in 2025 on the Offsite Southern Tract have remained less than the cPCL for the 5 year timeframe (2021 through 2025) subsequent to

shutdown of the 13-Acre Tract groundwater containment and treatment system (Appendix D). Consistent with the recommendation provided in the 2023 annual report (Jacobs 2024), Rohm and Haas proposes to discontinue the sentinel well sampling event and collect samples on an annual basis going forward. Additionally, Rohm and Haas proposes to discontinue future groundwater monitoring for all monitoring wells located on the Offsite Southern Tract (Figure 3-3).

- In combination with the previous recommendation, Rohm and Haas is also requesting TCEQ approval to plug and abandon monitoring and wells previously used for substrate injections shown on Figure 4-1 located on the Southern Tract downgradient of the 13 Acre Tract. Two of the existing monitoring wells (CB-MW-45 and CB-MW-48) will be retained but will only be sampled in the future if warranted by changes in upgradient areas (e.g. 13 Acre Tract). This recommendation is supported by results from the plume stability evaluation (Jacobs 2023) that indicated the overall plume is stable and relatively dilute. Further, subsequent monitoring in 2023 and 2024 are consistent with those interpretations and continue to suggest the plume is stable and has decreased in extent, especially in the distal portion of the monitoring network downgradient of the 13 Acre Tract where 1,2-DCA has remained less than the cPCL for the previous 4 years.
- Rohm and Haas completed voluntary quarterly monitoring for one year following shutdown of the 13 Acre Tract groundwater containment and treatment system in November 2019. Results from the quarterly and subsequent annual monitoring continue to support that continued operation of the 13-Acre Tract Treatment System is not necessary. As documented previously to TCEQ (Appendix A), historic concentrations of 1,2-DCA from influent samples at the system were also consistently below the PCL and the Zone A plume appears stable. Coupled with 1,2-DCA remaining less than the cPCL in the downgradient monitoring network since 2021, Rohm and Haas is requesting TCEQ approval for permanent shut down and decommissioning of the 13 Acre Tract groundwater containment and treatment system
- Lastly, Rohm and Haas is requesting TCEQ approval to plug and abandon monitoring well MW-CB-5A located at the source area property. The current property owner has requested that it be removed given the location relative to planned construction at the site. Well MW-CB-5A has been monitored on a voluntary basis in the past, and 1,2-DCA has not been detected in groundwater samples from this well dating back to 2001. Thus, continued monitoring of this well is not necessary given the long history of 1,2-DCE remaining less that the cPCL at this location.

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Tables

Table 1-1. Well and Piezometer Construction Specifications
Charlie Burch Site, Spring, Texas
2024 Annual Groundwater Monitoring Report

Well Identifications	Date Installed	Constructed Wells TD (feet bgs)	Screened Depth (feet bgs)	Screen Lengths (feet)	TOC Elevations (feet MSL)	Measured TD (feet TOC)
Zone A Monitoring Wells - Source Area						
AZG1-16-21[a]	--	--	16.0-21.0	5	117.50	20.83
AZG1-39-44[a]	--	--	39.0-44.0	5	117.42	43.65
AZG1-63-68[a]	--	--	63.0-68.0	5	117.33	66.32
AZG2-18-23[a]	--	--	18.0-23.0	5	117.67	22.77
AZG2-40-45[a]	--	--	40.0-45.0	5	117.68	44.68
AZG2-59-64[a]	--	--	59.0-64.0	5	117.61	63.88
AZG3 20-25[a]	--	--	20.0-25.0	5	116.13	24.75
AZG3 47-52[a]	--	--	47.0-52.0	5	116.26	52.33
AZG4-20-25[a]	--	--	20.0-25.0	5	114.94	24.53
AZG4-39-44[a]	--	--	39.0-44.0	5	115.12	43.45
AZG4-59-64[a,b]	--	--	59.0-64.0	5	115.10	--
AZG5-20-25[a]	--	--	20.0-25.0	5	114.96	24.60
AZG5-40-45[a]	--	--	40.0-45.0	5	115.10	44.60
AZG5-58-63[a]	--	--	58.0-63.0	5	115.21	61.98
AZG6-35-40[a]	--	--	35.0-40.0	5	117.53	39.55
AZG6-45-50[a]	--	--	45.0-50.0	5	117.41	49.48
AZG6-67-72[a]	--	--	67.0-72.0	5	117.22	71.20
MW-CB-1A	9/3-4/1997	62.00	51.5-61.0	10	117.33	62.68
MW-CB-4	8/25-27/1997	68.60	58.5-68.0	10	116.01	70.22
MW-CB-5A	5/4-5/1998	69.00	58.2-68.3	10	119.56	68.57
OW-2	2/22/2000	37.00	21.9-36.5	15	117.83	34.57
PZ-2	2/18/2009	45.00	35.0-45.0	10	119.06	47.95
PZ-3	2/18/2009	44.00	34.0-44.0	10	119.52	47.00
PZ-4	9/29/2011	46.00	25.0-45.0	20	118.67	48.22
RW-CB-2	2/29/2000	68.00	36.6-66.6	30	117.71	61.94
RW-CB-4	3/4/2000	68.00	37.5-67.5	30	117.49	57.50
Zone A Recovery Wells - Source Area						
RW-CB-2R	2/29/2000	66.90	44.9-64.9	20	116.22	64.52
RW-CB-3R	3/2/2000	67.00	45.0-65.0	20	115.46	60.31
RW-CB-4R	3/2/2000	66.00	44.0-64.0	20	116.38	57.50
RW-CB-5R	3/1/2000	67.00	45.0-65.0	20	115.99	62.79
Zone A Monitoring Wells - Offsite Northern Tract						
MW-CB-2A	8/28/1997	63.50	52.5-62.6	10	118.19	59.01
MW-CB-25A	10/28/2003	42.00	20.0-40.0	20	115.74	40.29
MW-CB-26A[c]	10/30/2003	42.00	20.0-40.0	20	114.65	--
MW-CB-27A[b,c]	10/29/2003	42.00	20.0-40.0	20	116.36	--
MW-CB-28A	10/31/2003	42.00	20.0-40.0	20	118.36	40.42
MW-CB-50A	12/20/2023	30.00	20.0-30.0	10	114.13	29.59
PMW-08B[d]	9/14/2016	62.00	52.0-62.0	10	--	61.85
PMW-09A[d]	9/15/2016	35.00	20.9-30.9	10	--	30.27
PMW-09B[d]	9/15/2016	65.00	52.0-62.0	10	--	62.56
PMW-17[c,d]	6/5/2018	30.50	20.0-30.0	10	--	--
PMW-18[c,d]	6/5/2018	31.50	21.0-31.0	10	--	--
PMW-19[c,d]	6/6/2018	31.00	20.0-30.0	10	--	--
PMW-19B[c,d]	7/16/2018	50.50	40.5-50.5	10	--	--
RDP-3	4/27/2012	35.00	25.0-35.0	10	115.97	34.50
RDP-5	4/27/2012	29.00	19.0-29.0	10	116.80	30.46

Table 1-1. Well and Piezometer Construction Specifications
Charlie Burch Site, Spring, Texas
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Well Identifications	Date Installed	Constructed Wells TD (feet bgs)	Screened Depth (feet bgs)	Screen Lengths (feet)	TOC Elevations (feet MSL)	Measured TD (feet TOC)
Zone A Monitoring Wells - Offsite Middle West Tract						
MW-CB-8AD	11/18/1998	50.00	40.0-50.0	10	118.28	49.68
MW-CB-9AD	11/12/1998	60.00	40.0-60.0	20	117.05	57.72
MW-CB-11AS	11/10/1998	45.00	25.0-45.0	20	117.15	40.21
MW-CB-12AD	11/17/1998	60.00	38.0-58.0	20	116.64	58.10
MW-CB-12AS	12/16/1998	40.00	19.5-39.5	20	116.55	37.41
MW-CB-16AS	12/17/1998	40.00	19.3-39.3	20	117.95	38.30
MW-CB-17AS	2/9/1999	40.00	15.0-35.0	20	116.30	34.51
MW-CB-24AS	3/5/1999	32.00	19.5-29.5	10	116.16	29.33
Zone A Monitoring Wells - 13-Acre Tract						
EAB-MW-01[b]	4/7/2008	40.98	30.9-40.9	10	125.09	--
EAB-MW-02	4/9/2008	40.70	30.7-40.7	10	124.66	43.74
EAB-MW-03	4/8/2008	40.00	30.0-40.0	10	124.66	42.81
MW-CB-13AS	12/23/1998	40.00	17.7-37.8	20	118.63	37.47
MW-CB-14AS	12/28/1998	40.00	19.0-38.9	20	118.93	37.78
MW-CB-15AS	12/28/1998	40.00	19.8-39.7	20	117.04	37.36
MW-CB-29A	10/22/2003	40.00	18.0-38.0	20	122.39	41.19
MW-CB-30A	10/21/2003	40.00	18.0-38.0	20	122.13	40.62
MW-CB-31A	10/21/2003	40.00	18.5-38.5	20	120.91	41.65
MW-CB-33A	4/7/2005	40.00	18.0-38.0	20	122.80	41.00
MW-CB-34A	4/7/2005	40.00	19.0-39.0	20	122.09	41.81
MW-CB-35A	4/8/2005	40.00	19.0-39.0	20	117.34	39.47
PMW-14	2/9/2018	39.00	29.0-39.0	10	118.3	41.78
PZ-1	5/21/2008	40.00	30.0-40.0	10	125.49	42.37
Zone A Recovery Wells - 13-Acre Tract						
TRW-CB-1	4/18/2006	45.00	25.0-45.0	20	118.00	43.46
TRW-CB-2	4/18/2006	45.00	25.0-45.0	20	121.37	45.73
TRW-CB-3	4/17/2006	55.00	25.0-55.0	30	118.51	54.55
TRW-CB-4	4/17/2006	55.00	25.0-55.0	30	119.34	54.35
Zone A Monitoring Wells - Offsite Southern Tract						
MW-CB-19AS	2/22/1999	39.00	18.5-38.5	20	120.04	38.54
MW-CB-22AS	2/19/1999	40.00	19.5-39.5	20	119.01	--
MW-CB-36	10/2/2006	51.00	40.0-50.0	10	121.67	52.73
MW-CB-37D	10/12/2006	70.00	58.0-68.0	10	121.55	71.48
MW-CB-37S	9/28/2006	51.00	40.0-50.0	10	121.44	52.95
MW-CB-38	9/29/2006	51.00	40.0-50.0	10	121.29	52.89
MW-CB-39	10/5/2006	51.00	40.0-50.0	10	119.01	52.99
MW-CB-40	10/3/2006	51.00	40.0-50.0	10	122.54	52.83
MW-CB-41D	10/9/2006	71.00	59.0-69.0	10	122.43	71.95
MW-CB-41S	10/4/2006	51.00	40.0-50.0	10	121.70	53.05
MW-CB-42	10/3/2006	51.00	40.0-50.0	10	120.15	52.92
MW-CB-43	5/11/2007	50.00	40.0-50.0	10	120.86	52.70
MW-CB-44	5/12/2007	50.00	40.0-50.0	10	120.96	52.45
MW-CB-45	5/12/2007	50.00	40.0-50.0	10	120.89	52.98
MW-CB-46S	5/11/2007	50.00	40.0-50.0	10	120.50	52.52
MW-CB-47S	2/21/2008	50.00	40.0-50.0	10	119.06	50.39
MW-CB-48	2/19/2008	50.00	40.0-50.0	10	118.31	49.69
OBS-1	6/20/2008	50.00	25.0-50.0	25	120.71	52.58

Table 1-1. Well and Piezometer Construction Specifications
Charlie Burch Site, Spring, Texas
2024 Annual Groundwater Monitoring Report

Well Identifications	Date Installed	Constructed Wells TD (feet bgs)	Screened Depth (feet bgs)	Screen Lengths (feet)	TOC Elevations (feet MSL)	Measured TD (feet TOC)
OBS-2	6/19/2008	50.00	40.0-50.0	10	120.12	52.31
Zone B Monitoring Wells - Source Area						
MW-CB-1B	9/2-3/1997	104.00	90.5-100.6	10	117.64	102.78
MW-CB-1BS	11/24/2003	85.00	70.0-85.0	15	118.85	89.05
MW-CB-7B	11/18/2003	101.50	85.0-100.0	15	120.05	101.20
Zone B Recovery Wells - Source Area						
RW-CB-3D	3/3/2000	101.40	71.4-101.4	30	116.25	95.80
Zone B Monitoring Wells - Offsite Northern Tract						
MW-CB-2B	8/29/1997	102.00	89.5-99.0	10	118.87	96.21
MW-CB-6B	5/11-12/1998	102.00	89.5-99.0	10	115.81	100.16
MW-CB-6BS	11/11/2003	85.00	70.0-85.0	15	116.22	85.96

Notes:

[a] A date of installation and constructed total depth was not available for this well.

[b] Well total depth could not be measured due to obstructions inside the well casing.

[c] Well was plugged and abandoned in December 2023.

[d] TOC elevation was not available for this well.

1. Well number subscripts generally refer to screen depths as follows:
   A or AS = Zone A Shallow approximately 0 - 40 foot depth
   AD = Zone A Deep approximately 40 to 70 foot depth
   B or BS = Zone B approximately greater than 70 foot depth

Acronyms:

-- = Not available/not applicable
AZG = A zone grab
bgs = below ground surface
EAB = Enhanced Anaerobic Bioremediation Wells
MSL = mean sea level
MW = Monitoring Well
PMW = Performance Monitoring Wells
PZ = Piezometer
RW = Recovery Well
TD = total depth
TRW = Trench Recovery Well
TOC = top of casing

Table 2-1. Effluent Limitations for Discharge of Treated Water to the Montgomery District Flood Control Channel

Charlie Burch Site, Spring, Texas

2024 Annual Groundwater Monitoring Report

Constituents of Concern	Daily Average (mg/L)	Daily Maximum (mg/L)
1,2-Dichloroethane	1.1	2.4
2-Butanone	214	453
Acetone	512	711
Benzene	NA	0.05
Benzene, Toluene, Ethylbenzene, and Xylene	NA	0.5
Ethyl Methacrylate	58.7	124
Methyl Methacrylate	58.7	124
Isobutanol	297	629
2,4-Dimethylphenol	1.7	3.6
Cresols, Total	944	1,998
pH	Maintain between 6 and 9 standard units	

Acronyms:

mg/L = milligram(s) per liter

NA = not applicable

pH = potential Hydrogen

Table 3-1. 2024 Second Quarter Event Water Level Measurements
Charlie Burch Site, Spring, Texas
2024 Annual Groundwater Monitoring Report

Well Identification	TOC Elevation (feet MSL)	Screen Depth (feet bgs)	Depth to Water (feet from TOC)	Groundwater Elevation (feet MSL)
Zone A Monitoring Wells - Offsite Northern Tract				
MW-CB-50A[a]	114.13	20.0-30.0	17.07	97.06
Zone A Monitoring Wells - 13-Acre Tract				
MW-CB-29A	122.39	18.0-38.0	27.58	94.81
Zone A Monitoring Wells - Offsite Southern Tract				
MW-CB-39	119.01	40.0-50.0	25.69	93.32
MW-CB-40	122.54	40.0-50.0	25.69	96.85
MW-CB-41D	122.43	59.0-69.0	29.54	92.89
MW-CB-41S	121.70	40.0-50.0	29.05	92.65
MW-CB-43	120.86	40.0-50.0	28.10	92.76
MW-CB-44	120.96	40.0-50.0	28.04	92.92
MW-CB-45	120.89	40.0-50.0	28.05	92.84
MW-CB-46S	120.5	40.0-50.0	28.02	92.48
MW-CB-47S	119.06	40.0-50.0	26.45	92.61
MW-CB-48	118.31	40.0-50.0	25.55	92.76
OBS-1	120.71	25.0-50.0	27.50	93.21
OBS-2	120.12	40.0-50.0	27.11	93.01

Notes:
1. Water levels were measured on April 23, 2024.
[a] TOC elevations at wells were surveyed in December 2023.

Acronyms:
bgs = below ground surface
MSL = mean sea level
MW = monitoring well
RW= recovery well
TRW = trench recovery well

Table 3-2. 2024 Second Quarter Well Event: Summary of 1,2-DCA Analytical Results
Charlie Burch Site, Spring, Texas
2024 Annual Groundwater Monitoring Report

			Analyte Volatile Organic Compounds
Well Identifications	**Date Sampled**	**Screen Depths (feet bgs)**	**1,2-DCA (mg/L)**
Zone A Monitoring Wells - Offsite Northern Tract			
MW-CB-50A	4/24/2024	20.0-30.0	< 0.0002
Zone A Monitoring Wells - 13-Acre Tract			
MW-CB-29A	4/24/2024	18.0-38.0	< 0.0002
Zone A Monitoring Wells - Offsite Southern Tract			
MW-CB-39	4/24/2024	40.00-50.00	**0.0005 J**
MW-CB-40	4/24/2024	40.00-50.00	< 0.0002
MW-CB-41D	4/24/2024	40.00-50.00	< 0.0002
MW-CB-41S	4/24/2024	40.00-50.00	**0.00088 J**
MW-CB-44	4/24/2024	40.00-50.00	< 0.0002
MW-CB-45	4/24/2024	40.00-50.00	**0.0034**
MW-CB-46S	4/24/2024	40.00-50.00	< 0.0002
MW-CB-47S	4/24/2024	40.00-50.00	< 0.0002
MW-CB-48	4/24/2024	40.00-50.00	< 0.0002

Notes:
1. Samples analyzed in accordance with United States Environmental Protection Agency Method 8260 (volatile organic compounds) by ALS Environmental, Houston, Texas.

Bold type indicates a measurement exceeding the sample quantitation limit.

Bold and highlighted concentrations are greater than TRRP Tier 1 protective concentration limit (0.005 mg/L).

TRRP Tier 1 PCL for 1,2-DCA = 0.005 mg/L. **Example: 0.005**

Acronyms:

1,2-DCA = 1,2-dicholorethane
< = not detected at the quantitation limit indicated
bgs = below ground surface
J = estimated result
mg/L = milligram(s) per liter
MW = monitoring well
PCL = Protective Concentration Level
TRRP = Texas Risk Reduction Program
TRW = trench recovery well

Table 3-3. 2024 Sitewide Static Water Level Measurements
Charlie Burch Site, Spring, Texas
2024 Annual Groundwater Monitoring Report

Well Identification	TOC Elevation (feet MSL)	Screen Depth (feet bgs)	Depth to Water (feet from TOC)	Groundwater Elevation (feet MSL)
Zone A Monitoring Wells - Source Area				
AZG1-16-21[a]	117.50	16.0-21.0	18.45	99.05
AZG1-39-44[a]	117.42	39.0-44.0	19.06	98.36
AZG1-63-68[a]	117.33	63.0-68.0	19.56	97.77
AZG2-18-23[a]	117.67	18.0-23.0	18.10	99.57
AZG2-40-45[a]	117.68	40.0-45.0	19.90	97.78
AZG2-59-64[a]	117.61	59.0-64.0	19.00	98.61
AZG3 20-25[a]	116.13	20.0-25.0	17.10	99.03
AZG3 47-52[a]	116.26	47.0-52.0	17.87	98.39
AZG4-20-25[a]	114.94	20.0-25.0	16.23	98.71
AZG4-39-44[a]	115.12	39.0-44.0	17.00	98.12
AZG4-59-64[a]	115.10	59.0-64.0	17.22	97.88
AZG5-20-25[a]	114.96	20.0-25.0	16.40	98.56
AZG5-40-45[a]	115.10	40.0-45.0	18.37	96.73
AZG5 58-63[a]	115.21	58.0-63.0	18.76	96.45
AZG6-35-40[a,b]	117.53	35.0-40.0	18.79	98.74
AZG6-45-50[a]	117.41	45.0-50.0	18.93	98.48
AZG6-67-72[a]	117.22	67.0-72.0	18.89	98.33
MW-CB-1A[a]	117.33	51.5-61.0	18.35	98.98
MW-CB-4[a]	116.01	58.5-68.0	18.05	97.96
MW-CB-5A[a]	119.56	58.2-68.3	20.75	98.81
OW-2[a]	117.83	21.9-36.5	18.31	99.52
PZ-2	119.06	35.0-45.0	19.04	100.02
PZ-3	119.52	34.0-44.0	20.00	99.52
PZ-4	118.67	25.0-45.0	18.60	100.07
RW-CB-2	117.71	36.6-66.6	18.52	99.19
RW-CB-4	117.49	37.5-67.1	17.98	99.51
Zone A Recovery Wells - Source Area				
RW-CB-2R	118.66	44.9-64.9	17.17	101.49
RW-CB-3R	118.14	45.0-65.0	16.36	101.78
RW-CB-4R	118.30	44.0-64.0	16.88	101.42
RW-CB-5R	118.58	45.0-65.0	16.10	102.48
Zone A Monitoring Wells - Offsite Northern Tract				
MW-CB-2A	118.19	52.5-62.0	15.53	102.66
MW-CB-25A	115.74	20.0-40.0	16.97	98.77
MW-CB-26A[d]	114.65	20.0-40.0	--	--
MW-CB-27A[c,d]	116.36	20.0-40.0	--	--
MW-CB-28A	118.36	20.0-40.0	20.91	97.45
MW-CB-50A[e]	114.13	20.0-30.0	16.58	97.55
PMW-08B[f]	--	52.0-62.0	13.14	--
PMW-09A[f]	--	20.9-30.9	15.69	--
PMW-09B[f]	--	52.0-62.0	16.51	--
PMW-17[d,f]	--	20.0-30.0	--	--
PMW-18[f]	--	21.0-31.0	--	--
PMW-19[d,f]	--	20.0-30.0	--	--
PMW-19B[d,f]	--	40.5-50.5	--	--
RDP-3	115.97	25.0-35.0	16.54	99.43
RDP-5	116.80	19.0-29.0	19.51	97.29

Table 3-3. 2024 Sitewide Static Water Level Measurements
Charlie Burch Site, Spring, Texas
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Well Identification	TOC Elevation (feet MSL)	Screen Depth (feet bgs)	Depth to Water (feet from TOC)	Groundwater Elevation (feet MSL)
Zone A Monitoring Wells - Offsite Middle West Tract				
MW-CB-8AD	118.28	40.0-50.0	21.36	96.92
MW-CB-9AD	117.05	40.0-60.0	19.91	97.14
MW-CB-11AS	117.15	25.0-45.0	20.25	96.90
MW-CB-12AD	116.64	38.0-58.0	20.03	96.61
MW-CB-12AS	116.55	19.5-39.5	20.24	96.31
MW-CB-16AS	117.95	19.3-39.3	21.21	96.74
MW-CB-17AS	116.30	15.0-35.0	20.08	96.22
MW-CB-24AS	116.16	19.5-29.5	19.87	96.29
Zone A Recovery Wells - 13-Acre Tract				
EAB-MW-01[c]	125.09	30.9-40.9	--	--
EAB-MW-02	124.66	30.7-40.7	25.91	98.75
EAB-MW-03	124.66	30.0-40.0	25.91	98.75
MW-CB-13AS	118.63	17.7-37.8	22.32	96.31
MW-CB-14AS	118.93	19.0-38.9	23.34	95.59
MW-CB-15AS	117.04	19.8-39.7	22.10	94.94
MW-CB-29A	122.39	18.0-38.0	26.92	95.47
MW-CB-30A	122.13	18.0-38.0	26.88	95.25
MW-CB-31A	120.91	18.5-38.5	25.81	95.10
MW-CB-33A	122.80	18.0-38.0	27.59	95.21
MW-CB-34A	122.09	19.0-39.0	26.81	95.28
MW-CB-35A	117.34	19.0-39.0	23.51	93.83
PMW-14	118.30	29.0-39.0	25.44	92.86
PZ-1	125.49	30.0-40.0	27.04	98.45
Zone A Recovery Wells - 13-Acre Tract				
TRW-CB-1	118.00	25.0-45.0	22.39	95.61
TRW-CB-2	121.37	25.0-45.0	25.98	95.39
TRW-CB-3	118.51	25.0-55.0	23.53	94.98
TRW-CB-4	119.34	25.0-55.0	24.27	95.07
Zone A Monitoring Wells - Offsite Southern Tract				
MW-CB-19AS	120.04	18.5-38.5	25.09	94.95
MW-CB-22AS	119.01	19.5-39.5	--	--
MW-CB-36	121.67	40.0-50.0	27.05	94.62
MW-CB-37D	121.55	58.0-68.0	26.80	94.75
MW-CB-37S	121.44	40.0-50.0	26.73	94.71
MW-CB-38	121.29	40.0-50.0	26.59	94.70
MW-CB-39	119.01	40.0-50.0	24.91	94.10
MW-CB-40	122.54	40.0-50.0	28.50	94.04
MW-CB-41D	122.43	59.0-69.0	28.75	93.68
MW-CB-41S	121.70	40.0-50.0	27.68	94.02
MW-CB-42	120.15	40.0-50.0	26.49	93.66
MW-CB-43	120.86	40.0-50.0	27.33	93.53
MW-CB-44	120.96	40.0-50.0	27.26	93.70
MW-CB-45	120.89	40.0-50.0	27.28	93.61
MW-CB-46S	120.50	40.0-50.0	27.20	93.30
MW-CB-47S	119.06	40.0-50.0	25.68	93.38
Zone A Monitoring Wells - Offsite Southern Tract				
MW-CB-48	118.31	40.0-50.0	27.78	90.53
OBS-1	120.71	25.0-50.0	26.80	93.91
OBS-2	120.12	40.0-50.0	26.33	93.79

Table 3-3. 2024 Sitewide Static Water Level Measurements
Charlie Burch Site, Spring, Texas
2024 Annual Groundwater Monitoring Report

Well Identification	TOC Elevation (feet MSL)	Screen Depth (feet bgs)	Depth to Water (feet from TOC)	Groundwater Elevation (feet MSL)
Zone B Monitoring Wells - Source Area				
MW-CB-1B	117.64	90.5-100.0	19.17	98.47
MW-CB-1BS	118.85	70.0-85.0	20.37	98.48
MW-CB-7B	120.05	85.0-100.0	21.79	98.26
Zone B Recovery Wells - Source Area				
RW-CB-3D	116.25	71.4-101.0	17.60	98.65
Zone B Monitoring Wells - Offsite Northern Tract				
MW-CB-2B	118.87	89.5-99.0	14.58	104.29
MW-CB-6B	115.81	89.5-99.0	17.44	98.37
MW-CB-6BS	116.22	70.0-85.0	18.10	98.12

Notes:
1. Water levels measured on September 10 to 11, 2024, September 17, 2024; and November 19, 2024
2. Water levels for wells MW-CB-13AS and MW-CB15AS measured on November 19, 2024.

[a] TOC elevation at wells were surveyed in December 2023.

[b] Well was dry

[c] Water levels could not be measured due to obstructions inside the well casing.

[d] Well was plugged and abandoned on December 2023.

[e] Well was installed on December 20, 2023.

[f] TOC elevation was not available for this well. As a result, a potentiometric elevation was not calculated.

Acronyms:

-- = not available/not applicable
AZG = A zone grab
bgs = below ground surface
EAB = Enhanced Anaerobic Bioremediation
MSL = mean sea level
MW = monitoring well
PMW = performance monitoring well
PZ = piezometer
RW= recovery well
TOC = top of casing
TRW = trench recovery well

Table 3-4. 2024 Sitewide Groundwater Sampling Event: Summary of 1,2-DCA Analytical Results
Charlie Burch Site, Spring, Texas
2024 Annual Groundwater Monitoring Report

Well Identifications	Date Sampled	Screen Depths (feet bgs)	1,2-DCA (mg/L)
Zone A Monitoring Wells - Source Area			
AZG1-16-21	9/19/2024	16.0-21.0	**0.00079 J**
AZG1-39-44	9/18/2024	39.0-44.0	**0.028 JL**
AZG1-63-68[a]	--	63.0-68.0	--
AZG2-18-23[a]	--	18.0-23.0	--
AZG2-40-45	9/19/2024	40.0-45.0	**0.0032**
AZG2-59-64	9/19/2024	59.0-64.0	**0.85**
AZG3 20-25	9/18/2024	20.0-25.0	**0.0015**
AZG3 47-52	9/18/2024	47.0-52.0	**0.2**
AZG4-20-25	9/20/2024	20.0-25.0	**0.013**
AZG4-39-44	9/20/2024	39.0-44.0	**0.013**
AZG4-59-64[b]	--	59.0-64.0	--
AZG5-20-25	9/20/2024	20.0-25.0	**0.0084**
AZG5-40-45	9/20/2024	40.0-45.0	**0.0028**
AZG5 58-63	9/20/2024	58.0-63.0	**0.0031**
AZG6-35-40	9/19/2024	35.0-40.0	< 0.0002
AZG6-45-50	9/19/2024	45.0-50.0	**0.053**
AZG6-67-72	9/19/2024	67.0-72.0	**0.97**
MW-CB-1A	9/17/2024	51.5-61.0	**0.0015 J**
MW-CB-4	9/17/2024	58.5-68.0	< 0.0002
MW-CB-5A	9/17/2024	58.2-68.3	< 0.0002
OW-2	9/17/2024	21.9-36.5	< 0.0002
RW-CB-2	9/17/2024	36.6-66.6	< 0.0002
RW-CB-4	9/17/2024	37.5-67.5	**0.00059 J**
Zone A Recovery Wells - Source Area			
RW-CB-2R	9/17/2024	44.9-64.9	**0.002**
RW-CB-3R	9/17/2024	45.0-65.0	**0.0071**
RW-CB-4R	9/17/2024	44.0-64.0	< 0.0002
RW-CB-5R	9/17/2024	45.0-65.0	< 0.0002
Zone A Monitoring Wells - Offsite Northern Tract			
MW-CB-2A	9/17/2024	52.5-62.6	< 0.0002
MW-CB-25A	9/17/2024	20.0-40.0	**0.0012**
MW-CB-26A [c]	--	20.0-40.0	--
MW-CB-27A [c]	--	20.0-40.0	--
MW-CB-28A	9/17/2024	20.0-40.0	< 0.0002
MW-CB-50A	9/17/2024	20.0-30.0	< 0.0002
EAB-PMW-08B	9/17/2024	52.0-62.0	**0.0064**
EAB- PMW-09B	9/17/2024	52.0-62.0	< 0.0002
PMW-17 [c]	--	20.0-30.0	--
RDP-3	9/17/2024	25.0-35.0	**0.0014**
RDP-5	9/17/2024	19.0-29.0	**0.0038**
Zone A Monitoring Wells - Offsite Middle West Tract			
MW-CB-8AD	9/18/2024	40.0-50.0	**0.013**
MW-CB-12AD	9/16/2024	38.0-58.0	**0.012**
MW-CB-12AS	9/16/2024	19.5-39.5	< 0.0002
MW-CB-16AS	9/18/2024	19.3-39.3	< 0.0002

Table 3-4. 2024 Sitewide Groundwater Sampling Event: Summary of 1,2-DCA Analytical Results
Charlie Burch Site, Spring, Texas
2024 Annual Groundwater Monitoring Report

Well Identifications	Date Sampled	Screen Depths (feet bgs)	1,2-DCA (mg/L)
Zone A Monitoring Wells - 13-Acre Tract			
EAB-MW-03 [d]	--	40.0-50.0	--
MW-CB-13AS	11/20/2024	17.7-37.8	< 0.0002
MW-CB-14AS	9/16/2024	19.0-38.9	< 0.0002
MW-CB-15AS	11/20/2024	19.8-39.7	**0.0044 J**
MW-CB-33A	9/16/2024	18.0-38.0	**0.0031**
MW-CB-29A	9/16/2024	18.0-38.0	< 0.0002
Zone A Recovery Wells: 13-Acre Tract			
TRW-CB-1	9/16/2024	25.0-45.0	**0.0033**
TRW-CB-2	9/16/2024	25.0-45.0	**0.00082 J**
TRW-CB-3	9/16/2024	25.0-55.0	**0.0016**
TRW-CB-4	9/16/2024	25.0-55.0	< 0.0002
Zone A Monitoring Wells - Offsite Southern Tract			
MW-CB-37S	9/16/2024	40.0-50.0	< 0.0002
MW-CB-39	9/16/2024	40.0-50.0	< 0.0002
MW-CB-40	9/16/2024	40.0-50.0	< 0.0002
MW-CB-41S	9/16/2024	40.0-50.0	< 0.0002
MW-CB-44	9/16/2024	40.0-50.0	< 0.0002
MW-CB-45	9/16/2024	40.0-50.0	**0.0016**
MW-CB-46S	9/16/2024	40.0-50.0	< 0.0002
MW-CB-47S	9/16/2024	40.0-50.0	< 0.0002
MW-CB-48	9/16/2024	40.0-50.0	< 0.0002
Zone B Monitoring Wells - Source Area			
MW-CB-1B	9/17/2024	90.5-100.6	**0.00086 J**
MW-CB-1BS	9/17/2024	70.0-85.0	**0.0031**
MW-CB-7B	9/17/2024	85.0-100.0	< 0.0002
Zone B Recovery Well - Source Area			
RW-CB-3D	9/17/2024	71.4-101.0	**0.0015**
Zone B Monitoring Wells - Offsite Northern Tract			
MW-CB-2B	9/17/2024	89.5-99.0	< 0.0002
MW-CB-6B	9/17/2024	89.5-99.0	< 0.0002
MW-CB-6BS	9/17/2024	70.0-85.0	**0.0038**

Notes:
1. Samples analyzed in accordance with United States Environmental Protection Agency Method 8260 by ALS Environmental Laboratories, Houston, Texas.

Bold type indicates a detection greater than the sample quantitation limit.

Bold and highlighted concentrations are greater than TRRP Tier 1 protective concentration limit (0.005 mg/L).

TRRP Tier 1 PCL for 1,2-DCA = 0.005 mg/L. **Example: 0.005**

[a] Groundwater sample unable to be collected due to limited volume of groundwater present in the well.

[b] Well could not be sampled due to obstructions inside the well casing.

[c] Well was plugged December 2023.

[d] Groundwater sample unable to be collected due to permanganate in well.

Acronyms:

1,2-DCA = 1,2-dichloroethane
< = not detected at the quantitation limit indicated
-- = not available/not applicable
AZG = A zone grab
bgs = below ground surface
EAB = Enhanced Anaerobic Bioremediation
J = estimated result
JL = estimated bias low
mg/L = milligram(s) per liter
MW = monitoring well
PCL = protective concentration levels
PMW = performance monitoring well
RW = recovery well
TRRP = Texas Risk Reduction Program
TRW = trench recovery well

Table 3-5. Historical 1,2-DCA Analytical Results from Select Wells
Charlie Burch Site, Spring, Texas
2024 Annual Groundwater Monitoring Report

Sampling Date / Well Identification	04/2014	10/2014	04/2015	10/2015	04/2016	10/2016	04/2017	05/2017	10/2017	11/2017	04/2018	05/2018	10/2018	11/2018	05/2019	10/2019	11/2019	04/2020	10/2020	01/2021	04/2021	10/2021	01/2022	04/2022	05/2022	08/2022	10/2022	05/2023	10/2023	01/2024	04/2024	09/2024	11/2024
Zone A Monitoring Wells																																	
MW-CB-8AD	--	**0.0115**	--	**0.0111**	--	**0.0052**	--	--	**0.0222**	--	--	--	**0.003**	--	--	**0.0026**	--	--	--	--	--	**0.013**	**0.0171**	**0.0142**	--	**0.0102**	**0.0014**	< 0.0002	< 0.0002	--	--	**0.013**	--
MW-CB-11AS[a]	--	**0.0088**	--	**0.0103**	--	**0.0015**	--	--	**0.0034**	--	--	--	**0.0019**	--	--	**0.0011**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-CB-12AS	--	**0.036**	--	**0.0209**	--	**0.0254**	--	**0.025**	**0.0257**	**0.0235**	--	**0.0143**	**0.0101**	**0.007**	**0.0037**	**0.0029**	**0.0033**	--	--	--	--	**0.00096 J**	--	--	--	--	**0.00064 J**	--	< 0.0002	--	--	< 0.0002	--
MW-CB-12AD	--	**0.0177**	--	**0.0214**	--	**0.02195**	--	--	**0.0207**	--	--	--	**0.0221**	--	--	**0.0201**	--	--	--	--	--	**0.0108**	**0.0112**	**0.0043**	--	**0.0168**	**0.0081**	**0.0037**	**0.012**	--	--	**0.012**	--
MW-CB-13AS	--	**0.0033**	--	**0.005**	--	**0.0051**	--	--	**0.0045**	--	--	--	**0.0015**	--	--	**0.00072 J**	--	--	< 0.00037	--	--	< 0.00037	--	--	--	--	< 0.00041	--	< 0.0002	--	--	--	< 0.0002
MW-CB-14AS	--	**0.0058**	--	**0.0078**	--	**0.006**	--	--	**0.0077**	--	--	--	**0.0039**	--	--	**0.0028**	--	--	**0.0025**	--	--	**0.0024**	--	--	--	--	**0.0022**	**0.0013**	**0.0011**	--	--	< 0.0002	--
MW-CB-15AS	--	< 0.00035	--	< 0.00061	--	< 0.00061	--	--	< 0.0003	--	--	--	--	< 0.0004	--	< 0.0004	--	--	--	--	--	**0.0039**	--	**0.0125**	--	**0.0129**	**0.0042 J**	< 0.0002	< 0.0002	--	--	--	**0.0044 J**
MW-CB-16AS	--	**0.0007 J**	--	**0.0011**	--	**0.00089 J**	--	**0.00076 J**	**0.0018**	**0.00066 J**	--	--	< 0.0004	--	--	**0.00098 J**	--	--	--	--	--	**0.00071 J**	--	--	--	--	**0.00062 J**	--	< 0.0002	--	--	< 0.0002	--
MW-CB-24AS[a]	--	< 0.00035	--	< 0.00061	--	< 0.00061	--	--	< 0.0003	--	--	--	< 0.0004	--	--	< 0.0004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-CB-25A[b]	--	**0.0118**	--	**0.0097**	--	**0.0025**	--	--	**0.0072**	**0.0072**	--	--	**0.0051**	--	--	--	--	--	--	--	--	**0.0012**	--	--	--	--	**0.003**	--	< 0.0002	--	--	**0.0012**	--
MW-CB-26A[b]	--	**0.00075 J**	--	**0.00085 J**	--	< 0.00061	--	--	**0.00084 J**	**0.00084 J**	--	--	**0.0009 J**	--	--	--	--	--	--	--	--	**0.0095**	**0.0098**	**0.0103**	--	**0.0097**	**0.0132**	**0.0041**	**0.0086**	--	--	--	--
MW-CB-27A[b,f]	--	**0.0269**	--	**0.0268**	--	**0.0299**	--	--	**0.0112**	**0.0112**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-CB-28A[b]	--	**0.0034**	--	**0.0044**	--	**0.003**	--	--	**0.0012**	**0.0012**	--	--	< 0.0004	--	--	--	--	--	--	--	--	--	< 0.00041	--	--	< 0.00041	< 0.00041	--	< 0.0002	--	--	< 0.0002	--
MW-CB-50A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.0002	< 0.0002	< 0.0002	--
PMW-08B	--	--	--	--	--	**0.0216**	--	**0.0343**	--	**0.0133**	--	**0.0458**	--	**0.0486**	**0.0031**	--	**0.0053**	--	--	--	--	**0.0029**	**0.0021**	**0.0066**	--	**0.006**	**0.0078**	**0.0023**	< 0.0002	--	--	**0.0064**	--
PMW-09B	--	--	--	--	--	**0.0078**	--	**0.014**	--	**0.0135**	--	**0.0098**	--	**0.0073**	**0.0053**	--	**0.0064**	--	--	--	--	--	--	--	--	--	**0.0086**	--	**0.0096**	--	--	< 0.0002	--
MW-CB-29A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.00037	--	< 0.00041	--	< 0.0002	< 0.0002	--	< 0.0002	< 0.0002	--
MW-CB-33A	--	< 0.00035	--	< 0.00061	--	< 0.00061	--	--	< 0.0003	--	--	--	< 0.0004	--	--	< 0.0004	--	< 0.00037	< 0.00037	< 0.00037	--	**0.00064 J**	--	--	--	--	**0.0088**	**0.0009 J**	**0.0017**	--	--	**0.0031**	--
MW-CB-36[a]	--	< 0.00035	--	< 0.00061	--	< 0.00061	--	--	**0.000585 J**	--	--	--	< 0.0004	--	--	**0.00045 J**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-CB-37S	--	< 0.00035	--	< 0.00061	--	< 0.00061	--	--	< 0.0003	< 0.0003	--	--	< 0.0004	--	--	< 0.0004	--	< 0.00037	< 0.00037	< 0.00037	--	< 0.00037	--	--	--	--	< 0.00041	< 0.0002	< 0.0002	--	--	< 0.0002	--
MW-CB-38	--	< 0.00035	--	< 0.00061	--	< 0.00061	--	--	**0.00057 J**	--	--	--	< 0.0004	--	--	< 0.0004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-CB-39	--	**0.0093**	--	**0.0077**	--	**0.0046**	--	--	**0.002**	--	--	--	**0.00085 J**	--	--	**0.00055 J**	--	< 0.00037	**0.00069 J**	**0.00051 J**	--	**0.00056 J**	--	--	--	--	< 0.00041	--	< 0.0002	--	**0.0005 J**	< 0.0002	--
MW-CB-40	**0.0423**	**0.0236**	**0.0182**	**0.0125**	**0.0109**	**0.0039**	**0.0218**	--	**0.0323**	**0.0323**	**0.0237**	--	**0.0292 J**	--	--	**0.0203**	--	**0.01**	**0.0065**	--	**0.0034**	**0.0015**	**0.0016**	**0.0013**	--	**0.0011**	**0.0011**	< 0.0002	< 0.0002	--	< 0.0002	< 0.0002	--
MW-CB-41S	**0.0017**	**0.0014**	--	**0.00083 J**	--	< 0.00061	--	--	**0.00048 J**	**0.00048 J**	--	--	**0.00066 J**	--	--	**0.00043 J**	--	**0.0015**	**0.00088 J**	**0.00056 J**	--	**0.00072 J**	--	--	--	--	**0.0012**	--	< 0.0002	--	**0.00088 J**	< 0.0002	--
MW-CB-41D[a]	< 0.00035	< 0.00035	--	< 0.00061	--	< 0.00061	--	--	**0.00056 J**	**0.00056 J**	--	--	< 0.0004	--	--	< 0.0004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.0002	--	--
MW-CB-42[a]	< 0.00035	< 0.00035	--	< 0.00061	--	< 0.00061	--	--	< 0.0003	< 0.0003	--	--	< 0.0004	--	--	< 0.0004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-CB-43[a]	< 0.00035	< 0.00035	--	< 0.00061	--	< 0.00061	--	--	< 0.0003	< 0.0003	--	--	< 0.0004	--	--	< 0.0004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-CB-44	< 0.00035	< 0.00035	< 0.00035	< 0.00061	< 0.00061	< 0.00061	< 0.0003	--	< 0.0003	< 0.0003	< 0.0003	--	< 0.0004	--	--	< 0.0004	--	< 0.00037	< 0.00037	--	< 0.00037	< 0.00037	--	--	< 0.00041	--	< 0.00041	< 0.0002	< 0.0002	--	< 0.0002	< 0.0002	--
MW-CB-45	**0.04805**	**0.0292**	**0.0186**	**0.00655**	**0.0132**	**0.0086**	**0.0113**	--	**0.0065**	**0.0063**	**0.005**	--	**0.00051 J**	--	--	**0.0011**	--	**0.0029**	**0.0011**	--	**0.0045 J**	**0.0027**	--	--	**0.0027**	--	**0.0047**	**0.0017**	< 0.0002	--	**0.0034**	**0.0016**	--
MW-CB-46S	< 0.00035	< 0.00035	--	< 0.00061	--	< 0.00061	--	--	< 0.0003	< 0.0003	--	--	< 0.0004	--	--	< 0.0004	--	--	< 0.00037	--	--	< 0.00037	--	--	--	--	< 0.00041	--	< 0.0002	--	< 0.0002	< 0.0002	--
MW-CB-47S	**0.0024**	**0.0017**	--	**0.00091 J**	--	< 0.00061	--	--	**0.00047 J**	**0.00047 J**	--	--	< 0.0004	--	--	< 0.0004	--	--	< 0.00037	--	--	< 0.00037	--	--	--	--	< 0.00041	--	< 0.0002	--	< 0.0002	< 0.0002	--
MW-CB-48	**0.00068 J**	**0.0012**	**0.0022**	**0.0018**	**0.0013**	**0.0015**	**0.0014**	--	**0.0014**	**0.0014**	0.00092 J	--	< 0.0004	--	--	< 0.0004	--	< 0.00037	< 0.00037	--	< 0.00037	< 0.00037	--	--	< 0.00041	--	< 0.00041	< 0.0002	< 0.0002	--	< 0.0002	< 0.0002	--
RDP-3	--	**0.0126**	--	**0.0282**	--	**0.0205**	--	--	**0.0296**	0.0308	--	0.0331	0.0261	**0.0291**	**0.0275**	**0.0268**	--	--	**0.0154**	--	--	**0.0063**	**0.0222**	**0.0145**	--	**0.02**	**0.0088 J**	**0.0045**	< 0.0002	--	--	**0.0014**	--
RDP-5	--	**0.0292**	--	**0.0189**	--	**0.0011**	--	--	**0.0066**	0.0045	--	0.0065	0.0093	**0.0088**	**0.00096 J**	**0.0039**	--	--	--	--	--	**0.0052**	**0.0081**	**0.0066**	--	**0.003**	**0.0063**	**0.0047**	**0.0046**	--	--	**0.0038**	--
OBS-1[a]	**0.00038 J**	< 0.00035	--	< 0.00061	--	< 0.00061	--	--	< 0.0003	< 0.0003	--	--	< 0.0004	--	--	< 0.0004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
OBS-2[a]	**0.0013**	**0.001**	--	**0.001**	--	**0.00074 J**	--	--	**0.00095 J**	**0.00095 J**	--	--	< 0.0004	--	--	**0.00047 J**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EAB-MW-02[a]	--	**0.0344**	--	**0.0158**	--	--	--	--	--	--	--	--	**0.0056**	--	--	**0.0189**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EAB-MW-03 [g]	--	**0.0516**	--	**0.04105**	--	**0.0264**	--	--	**0.0396**	--	--	--	**0.0326**	--	--	**0.0266**	--	--	--	--	--	--	**0.0107**	**0.00045 J**	--	**0.0016 J**	**0.0044**	**0.0032**	< 0.0002	--	--	--	--
Zone A 13-Acre Tract Recovery Wells																																	
TRW-CB-1	--	**0.0021**	--	< 0.00061	--	**0.0248**	--	--	**0.0205**	**0.0205**	--	--	**0.0175**	--	--	**0.0155**	--	--	**0.0139**	--	--	**0.011**	**0.0083**	**0.0075**	--	**0.0071**	**0.0066**	**0.0028**	**0.0055**	--	--	**0.0033**	--
TRW-CB-2	--	**0.00075 J**	--	< 0.00061	--	**0.00098 J**	--	--	**0.00051 J**	**0.00051 J**	--	--	--	**0.0013**	--	< 0.0004	--	< 0.00037	**0.00048 J**	**0.00098 J**	--	**0.0028**	--	--	--	--	**0.0035**	**0.0018**	**0.00096 J**	--	--	**0.00082 J**	--
TRW-CB-3	--	< 0.00035	--	**0.00078**	--	< 0.00061	--	--	**0.00044 J**	**0.00044 J**	--	--	--	< 0.0004	--	< 0.0004	--	< 0.00037	< 0.00037	< 0.00037	--	< 0.00037	--	--	--	--	**0.0033**	**0.0025**	**0.0041**	--	--	**0.0016**	--
TRW-CB-4	--	**0.0019**	--	< 0.00061	--	**0.0015**	--	--	**0.0021**	**0.0021**	--	--	< 0.0004	--	--	**0.00075 J**	--	**0.0058**	**0.005**	**0.0051**	--	**0.0033**	--	--	--	--	**0.0028**	--	**0.0027**	--	--	< 0.0002	--
Zone B Monitoring Wells																																	
MW-CB-6B[c]	--	< 0.00035	--	< 0.00061	--	< 0.00061	--	--	< 0.0003	--	--	--	< 0.0004	--	--	< 0.0004	--	--	< 0.00037	--	--	< 0.00037	< 0.00041	< 0.00037	--	< 0.00041	**0.00045 J**	< 0.0002	< 0.0002	--	--	< 0.0002	--
MW-CB-6BS[b]	--	< 0.00035	--	< 0.00061	--	< 0.00061	--	--	< 0.0003	< 0.0003	--	--	< 0.0004	--	--	--	--	--	--	--	--	< 0.00037	**0.0015**	**0.0019**	--	**0.0028**	**0.0037**	**0.005**	< 0.0002	--	--	**0.0038**	--
Water Supply Wells																																	
Rummell Water Well [e][d]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wert Water Well [e]	--	< 0.00035	--	< 0.00061	--	< 0.00061	--	--	< 0.0003	< 0.0003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

1.Samples analyzed in accordance with United States Environmental Protection Agency Methods 8260 (volatile organic compounds).
Samples collected since 2013 were analyzed by SGS Accutest Laboratories, Houston, Texas.
Bold type indicates a detection greater than the sample quantitation limit.
Bold and highlighted concentrations are greater than TRRP Tier 1 protective concentration limit (0.005 mg/L).
TRRP Tier 1 PCL for 1,2-DCA = 0.005 mg/L. **Example: 0.005**
2. Well number subscripts generally refer to screen depths as follows:
A and AS: Zone A wells with screen < 40 feet depth
AD: Zone A wells with screen > 40 feet depth
BS: Zone B wells with screen < 85 feet depth

[a] Wells approved to be removed from the site-wide sampling event by the Texas Commission on Environmental Quality (TCEQ) in 2019.
[b] Wells not sampled due to access restrictions.
[c] Wells were not sampled between 2000 and 2007 due to lack of permission by property owner.
[d] The Rummell water well is no longer used and has not been sampled since 2012.
[e] The Wert water well is no longer used and has not been sampled since 2018.
[f] Well was unable to be sampled due to obstruction in well.
[g] Well was unable to be sampled due to water exhibiting permanganate during September 2024 sampling event

Acronyms:

1,2-DCA = 1,2-dichloroethane
< = not detected at the quantitation limit indicated.
-- = data is not available for this well during the respective date
EAB = Enhanced Anaerobic Bioremediation
J = Estimated result
mg/L = milligram(s) per liter
MW = monitoring well
PCL = protective concentration levels
TRRP = Texas Risk Reduction Program
TRW = trench recovery well

Table 3-6. Summary of Historical Source Area Analytical Results
Charlie Burch Site, Spring, Texas
2024 Annual Groundwater Monitoring Report

Zone A Monitoring Wells - Source Area																								
Sample Dates																								
Well Identification	10/2014	10/2015 - 11/2015	10/2016	10/2017 - 12/2017	6/2018[a]	07/2018	10/2018	2/2019	07/2019	8/2019	9/2019	10/2019	12/2019	04/2020	10/2020	10/2021	11/2021	01/2022-02/2022	04/2022-03/2022	08/2022	10/2022	04/2023-05/2023	10/2023	09/2024
AZG1-16-21	--	--	--	--	--	--	--	--	**0.011**	--	--	--	--	--	--	--	**0.0032**	**0.0036 JL**	--	--	--	--	--	**0.00079 J**
AZG1-39-44	--	--	--	--	--	--	--	--	**0.0524**	--	--	--	--	--	--	--	**0.0272**	**0.0401**	--	**0.0297**	**0.0344**	--	**0.033**	**0.028 JL**
AZG2-40-45	--	--	--	--	--	--	--	--	**0.0075**	--	--	--	--	--	--	--	**0.0044**	**0.0055**	--	--	**0.0039**	--	**0.0035**	**0.0032**
AZG2-59-64	--	--	--	--	--	--	--	--	**0.758**	--	--	--	--	--	--	--	**0.769**	**0.776 JL**	--	**0.168 JL**	**0.727**	--	**0.65**	**0.85**
AZG3-20-25	--	--	--	--	--	--	--	--	**0.0034**	--	--	--	--	--	--	--	**0.00051 J**	--	--	--	--	--	< 0.0002	**0.0015**
AZG3-47-52	--	--	--	--	--	--	--	--	**0.262**	--	--	--	--	--	--	--	**0.401**	--	--	--	--	--	**0.33**	**0.2**
AZG4-20-25	--	--	--	--	--	--	--	--	**0.0026**	--	--	--	--	--	--	**0.0019**	--	**0.003 JL**	--	**0.003**	**0.0016**	--	**0.0053**	**0.013**
AZG4-39-44	--	--	--	--	--	--	--	--	**0.0288**	--	--	--	--	--	--	**0.0111**	--	**0.0158 JL**	--	**0.0141**	**0.0142**	--	**0.014**	**0.013**
AZG5-20-25	--	--	--	--	--	--	--	--	**0.0026**	--	--	--	--	--	--	**0.00078 J**	--	--	--	--	**0.0032**	--	**0.0014**	**0.0084**
AZG5-40-45	--	--	--	--	--	--	--	--	**0.0054**	--	--	--	--	--	--	**0.003**	--	--	--	--	< 0.00041	--	**0.0036**	**0.0028**
AZG5-58-63	--	--	--	--	--	--	--	--	**0.0217**	--	--	--	--	--	--	--	--	--	--	--	--	--	**0.0028**	**0.0031**
AZG6-35-40	--	--	--	--	--	--	--	--	< 0.001	--	--	--	--	--	--	< 0.00037	--	< 0.00041	--	< 0.00041	**0.0021**	--	--	< 0.0002
AZG6-45-50	--	--	--	--	--	--	--	--	**0.0415**	--	--	--	--	--	--	**0.0376**	--	**0.0524 JL**	--	**0.0515**	**0.0747**	--	**0.046**	**0.053**
AZG6-67-72	--	--	--	--	--	--	--	--	**0.799**	--	--	--	--	--	--	--	**0.689**	**0.84 JL**	--	**0.805**	**0.821**	--	**0.7**	**0.97**
MW-CB-1A	**0.0116**	**0.0118**	**0.0047**	**0.006**	--	--	**0.00880**	--	**0.0071**	--	--	**0.00410**	--	--	**0.0054**	**0.0064**	--	**0.0066**	**0.0127**	**0.0072**	**0.0062**	**0.0039**	**0.0046**	**0.0015 J**
MW-CB-2A	**0.0207**	**0.0183**	**0.0154**	**0.0154**	--	--	< 0.00040	--	< 0.001	--	--	**0.0078**	--	--	**0.0075**	**0.0047**	--	< 0.00041	**0.0045**	**0.0042**	**0.0033**	< 0.00020	< 0.00020	< 0.0002
MW-CB-4	**0.00051 J**	< 0.00061	< 0.00061	**0.00033 J**	--	--	< 0.00040	--	--	--	--	< 0.00040	--	--	< 0.00037	< 0.00037	--	< 0.00041	**0.0065**	< 0.00041	< 0.00041	< 0.00020	< 0.00020	< 0.0002
MW-CB-5A	--	--	--	--	--	< 0.001	--	--	--	--	--	--	--	--	--	< 0.00037	--	--	< 0.00037	< 0.00041	< 0.00041	< 0.0002	< 0.0002	< 0.0002
OW-2	**0.0015**	**0.0027**	**0.0013**	**0.0017**	--	--	**0.0015**	--	--	--	--	**0.0012**	--	--	**0.0010**	**0.0011**	--	--	--	--	**0.0015**	**0.00083 J**	**0.0030**	< 0.0002
RW-CB-2	< 0.00035	<0.00061	**0.00071 J**	**0.00036 J**	--	--	< 0.00040	--	--	--	--	< 0.00040	--	--	< 0.00037	< 0.00037	--	< 0.00041	< 0.00037	< 0.00041	< 0.00041	< 0.00020	< 0.00020	< 0.0002
RW-CB-4	**0.00096**	**0.00110**	**0.00093 J**	**0.0016**	--	--	**0.0013**	--	--	--	--	**0.0010**	--	--	< 0.00037	< 0.00037	--	< 0.00041	**0.00056 J**	< 0.00041	< 0.00041	< 0.00020	**0.00060 J**	**0.00059 J**
RW-CB-2R	**0.0137**	**0.0122**	**0.0100**	**0.0098**	--	--	**0.0142**	--	--	--	--	--	--	--	**0.0064**	**0.0058**	--	**0.002**	**0.00089 J**	**0.0012**	**0.0013**	--	**0.00057 J**	**0.002**
RW-CB-3R	**0.0594**	**0.0570**	**0.0481**	**0.0552**	--	--	**0.0473**	--	**0.043**	--	--	--	--	--	**0.0306**	**0.0324**	--	--	--	--	**0.0089**	--	< 0.00020	**0.0071**
RW-CB-4R	**0.0858**	**0.0725**	**0.0584**	**0.0554**	--	--	**0.0587**	--	--	--	--	--	--	--	**0.0504**	**0.0511**	--	--	--	--	**0.0015**	--	< 0.00020	< 0.0002
RW-CB-5R	**0.0254**	**0.0256**	**0.0242**	**0.0211**	--	--	**0.025**	--	--	--	--	--	--	--	**0.021**	**0.0189**	--	--	--	--	**0.0050**	--	**0.0016**	< 0.0002
MW-CB-1B	**0.0219**	**0.0163**	**0.0107**	**0.0119**	--	--	**0.0015 J**	--	**0.0026**	--	--	**0.0066**	--	--	**0.0036**	**0.0027**	--	**0.0202**	< 0.00037	**0.0128**	**0.0079 J**	**0.0060**	**0.0033**	**0.00086 J**
MW-CB-1BS	**0.0011**	**0.0022**	**0.00135**	**0.0012**	--	--	**0.0022**	--	**0.0112**	--	--	**0.00940**	--	--	**0.0127**	**0.0133 J**	--	**0.0092**	**0.012**	**0.0094**	**0.0095**	**0.0044**	**0.0076**	**0.0031**
MW-CB-2B	< 0.00035	< 0.00061	< 0.00061	< 0.00030	--	--	**0.013**	< 0.00040	**0.0108**	--	--	< 0.00040	--	--	< 0.00037	< 0.00037	--	< 0.00041	< 0.00037	< 0.00041	< 0.00041	< 0.00020	< 0.00020	< 0.0002
MW-CB-7B	< 0.00035	< 0.00061	< 0.00061	< 0.00030	--	--	< 0.00040	--	--	--	--	< 0.00040	--	--	< 0.00037	< 0.00037	--	< 0.00041 J	< 0.00037	< 0.00041	< 0.00041	< 0.00020	< 0.00020	< 0.0002
RW-CB-3D	**0.0106**	**0.0122**	**0.0105**	**0.0122**	**0.0113**	--	**0.0133**	--	--	--	--	**0.00670**	**0.00560**	**0.0058**	**0.0013**	**0.00045 J**	--	--	--	--	**0.0077**	--	**0.0053**	**0.0015**

Notes:
1.Samples analyzed in accordance with United States Environmental Protection Agency Methods 8260 (volatile organic compounds).
Samples collected since 2013 were analyzed by SGS Accutest Laboratories, Houston, Texas.
Bold type indicates a detection greater than the sample quantitation limit.
Bold and highlighted concentrations are greater than TRRP Tier 1 protective concentration limit (0.005 mg/L).
TRRP Tier 1 PCL for 1,2-DCA = 0.005 mg/L. **Example: 0.005**
2. Well number subscripts generally refer to screen depths as follows:
A and AS: Zone A wells with screen < 40 feet depth
AD: Zone A wells with screen > 40 feet depth
BS: Zone B wells with screen < 85 foot depth
[a] Only active recovery wells were sampled in June 2018.

Acronyms:
1,2-DCA = 1,2-dichloroethane
< = not detected at the quantitation limit indicated.
-- = data is not available for this well during the respective date
J = estimated result
JL = estimated result biased low
mg/L = milligram(s) per liter
MW = monitoring well
PCL = protective concentration levels
TRRP = Texas Risk Reduction Program
RW = recovery well

Table 3-7. 2023 Sitewide Groundwater Flow Velocities

Charlie Burch Site, Spring, Texas

2024 Annual Groundwater Monitoring & Response Action Effectiveness Report

Zone	Hydraulic Conductivity (feet per day)	Effective Porosity	Location	Hydraulic Gradient (unitless)	Velocity (feet per day)	Velocity (feet per year)
Zone A	21	0.30	Source Area, Offsite Northern Tract	0.0041	0.29	104
	21	0.30	Offsite Middle West, 13-Acre, and Offsite Southern Tracts	0.0031	0.22	79
Zone B	6	0.30	Source Area, Offsite Northern Tract	0.028	0.56	204

Notes:

Hydraulic conductivity was calculated and obtained from aquifer tests preformed by GSI in 1999.

Hydraulic gradients taken from potentiometric surface contour maps (**Figures 3-1 and 3-2**).

Below is an example:

Groundwater velocities (V) were calculated using the formula,V = K/n(dh/dl) , where:

V = groundwater velocity

K = hydraulic conductivity

n = average effective porosity

dh = change in groundwater elevation along flow path

dl = length of flow path

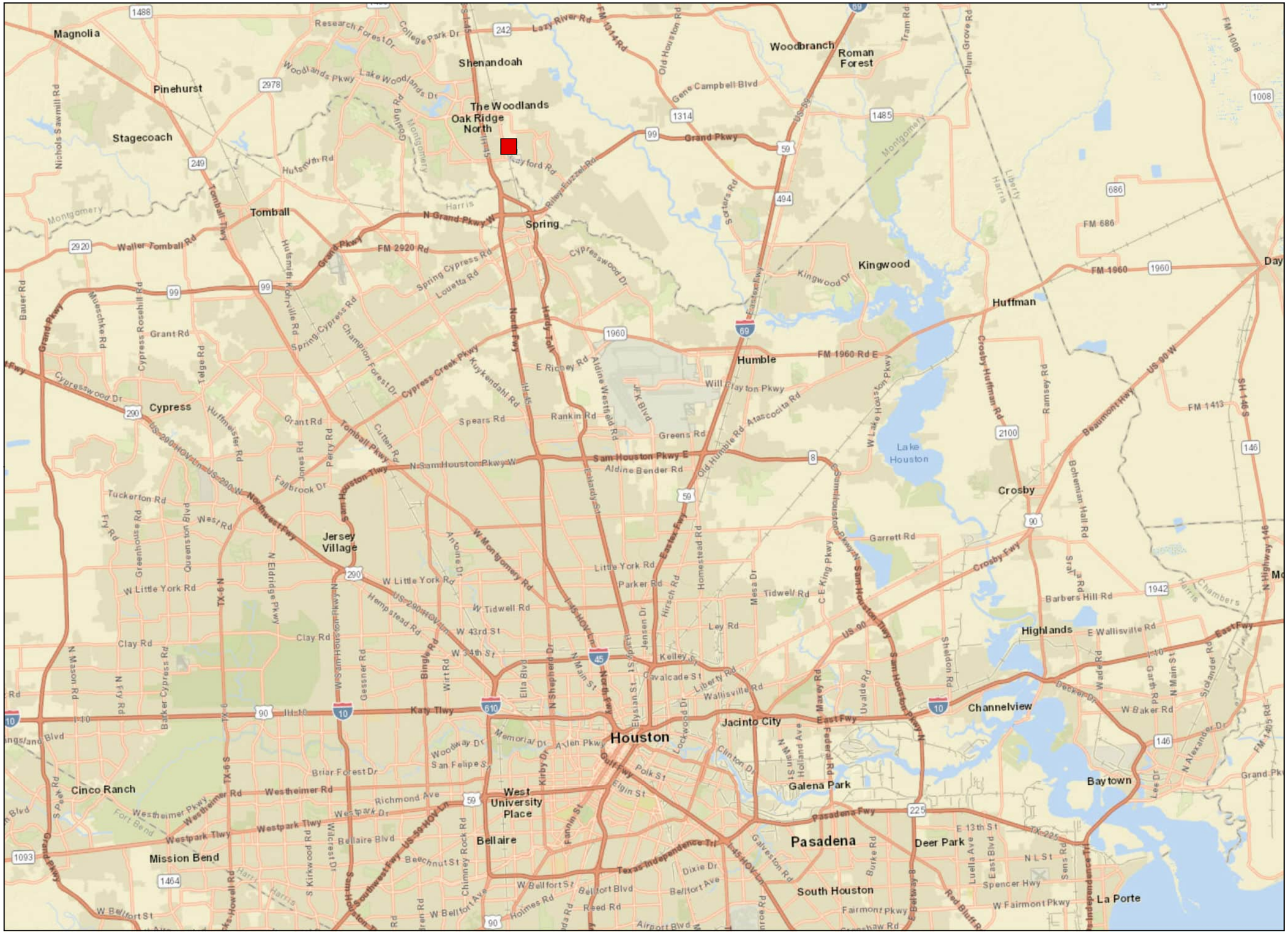
Acronym:

GSI = GSI Environmental, Incorporated

May 29, 2025

TBPG Firm No. 50712

Figures



Legend

Site Location

0 2 4

Miles

BASE MAP SOURCE: ESRI

Figure 1-1
Site Location Map
Charlie Burch Site
Spring, Texas

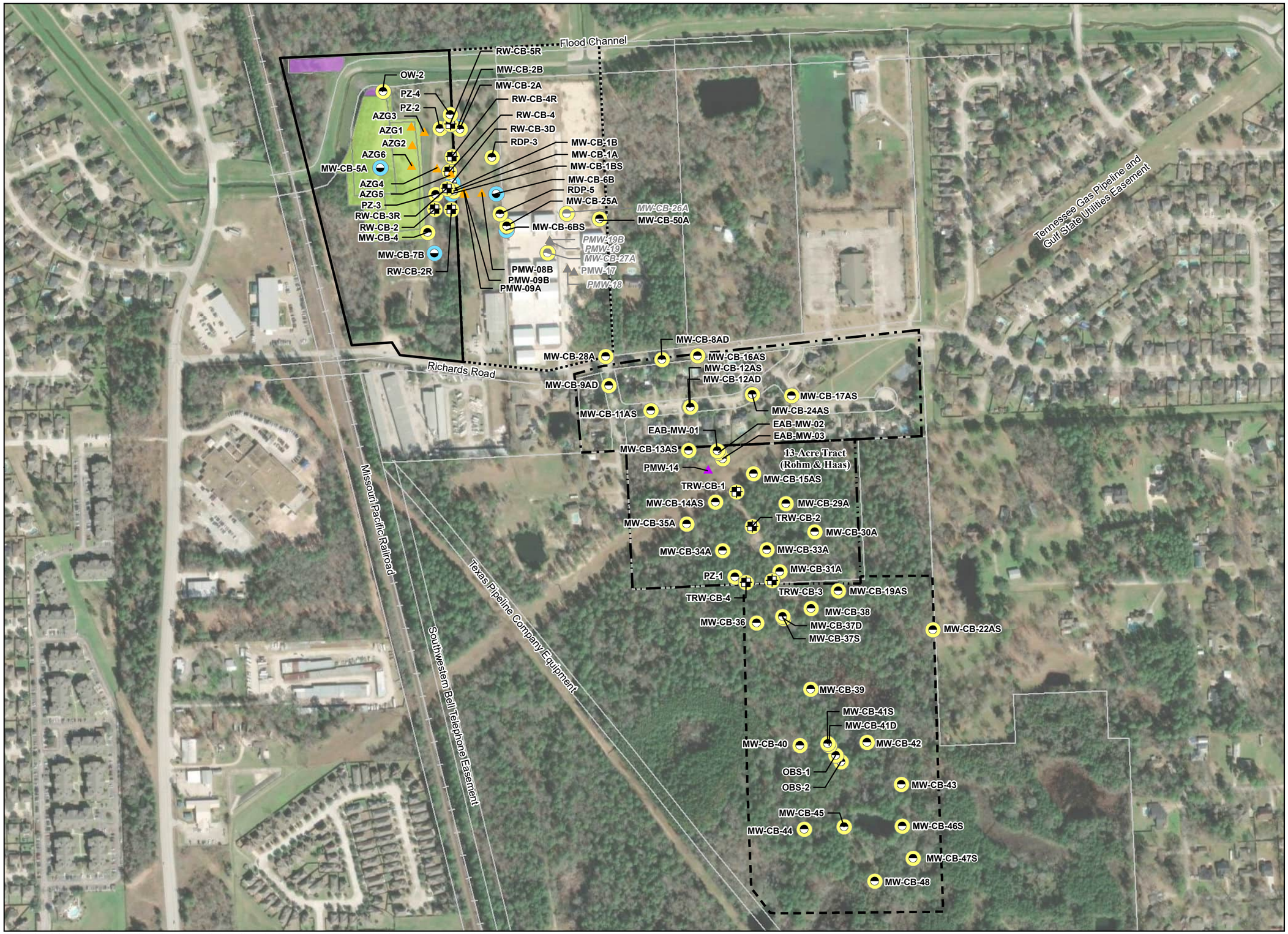
Rohm and Haas
A Wholly Owned Subsidiary of
The Dow Chemical Company
VCP No. 421

N

Drawing Date: 3/11/2025

Drawn By: BD

\\DC1VS01\GISPROJ\D\DOWCHEMICALS\CHARLIEBURCH\MAPS\REPORT\2024\FIG01-01_CB24_SITELOC.MXD MCOTTERB 3/11/2025



Legend

- Monitoring Well (Zone A)
- Recovery Well (Zone A)
- Monitoring Well (Zone B)
- Performance Monitoring Well
- Voluntary Monitoring Wells
- Former Landfill Area
- Waste Material Removed Summer 1999, Replaced with Clean Backfill
- Source Area Site Boundary
- Offsite Northern Tract
- Offsite Middle West Tract
- 13-Acre Tract Site
- Offsite Southern Tract

Note:
Greyed-out items plugged and abandoned in 2023.

Acronyms:
AZG = A Zone Grab
EAB = Enhanced Anaerobic Bioremediation
ft = feet
MW = Monitoring Well
OW = Observation Well
PMW = Performance Monitoring Well
PZ = Piezometer
RW = Recovery Well
TRW = Trench Recovery Well

0 200 400
Feet
1 inch = 400 feet

BASE MAP SOURCE:
ESRI Aerial Imagery

Figure 1-2
Well Location Map
Charlie Burch Site
Spring, Texas

Rohm and Haas
A Wholly Owned Subsidiary of
The Dow Chemical Company
VCP No. 421

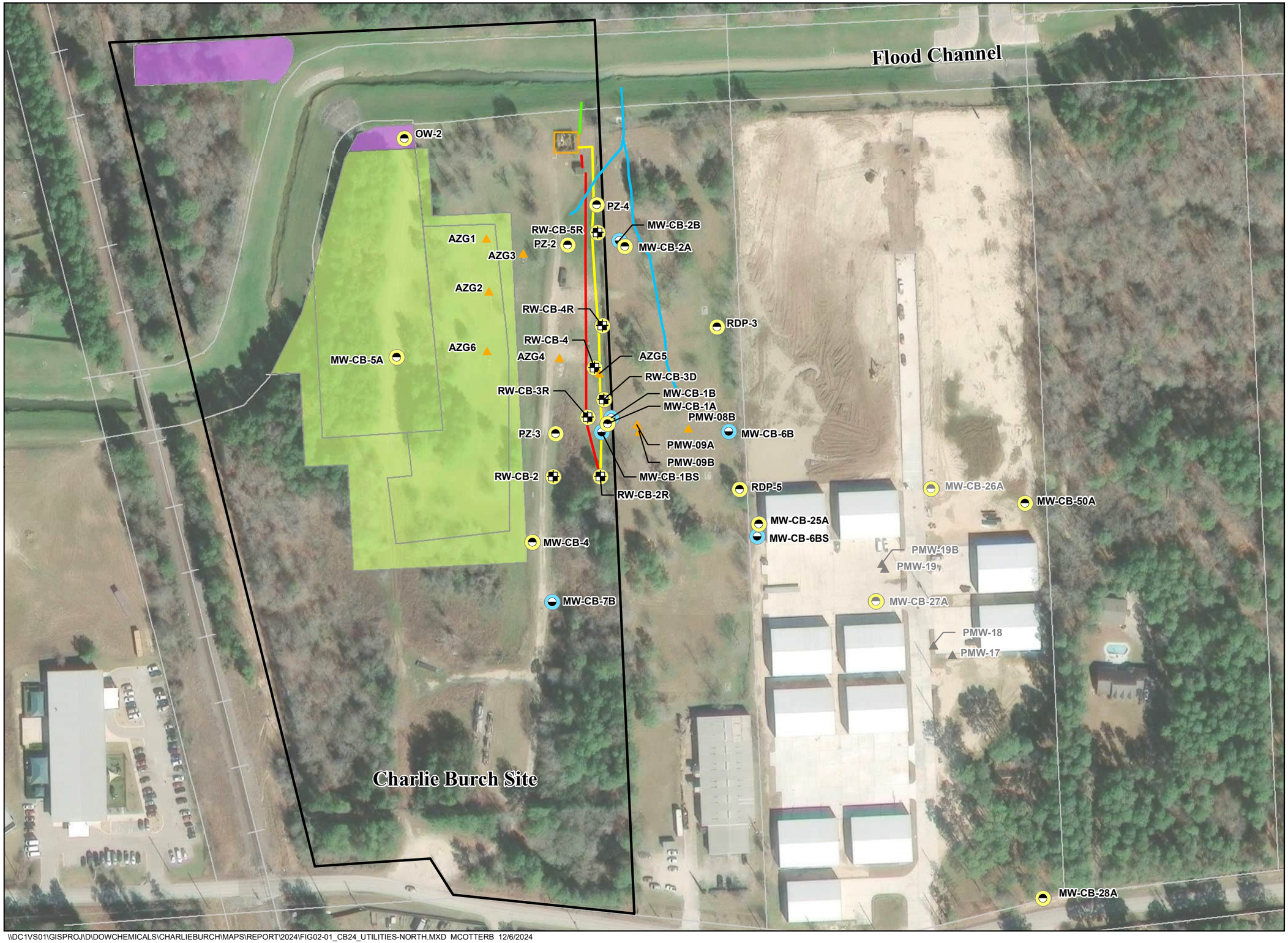
N

Drawing Date: 12/6/2024

Drawn By: BD

Jacobs

\\DC1VS01\GISPROJ\D\DOWCHEMICALS\CHARLIEBURCH\MAPS\REPORT\2024\FIG01-02_CBB24_WELLS.MXD MCOTTERB 12/6/2024



Legend

- Recovery Well (Zone A)
- Monitoring Well Location (Zone A)
- Monitoring Well Location (Zone B)
- Voluntary Monitoring Wells
- Former Landfill Area
- Waste Material Removed Summer 1999, Replaced with Clean Backfill
- Site Boundary
- Airstripper Enclosure
- Electrical Line
- HDPE Pipe
- Outfall Discharge
- Stormwater Ditch

Note:
Greyed-out items plugged and abandoned in 2023.

Acronyms:
RW = Recovery Well
MW = Monitoring Well
A or AS = Screen approximately 0 - 40 ft Depth
AD = Screen approximately 40 - 70 ft Depth
AZG = A Zone Grab
B or BS = Zone B approximately greater than 70 ft depth
ft = feet
HDPE = High density polyethylene
MW = Monitoring Well
OW = Observation Well
PMW = Performance Monitoring Well
PZ = Piezometer

0 70 140
Feet
1 inch = 140 feet

BASE MAP SOURCE:
ESRI Aerial Imagery

Figure 2-1
Site Location and Site Plan
Source Area
Charlie Burch Site
Spring, Texas

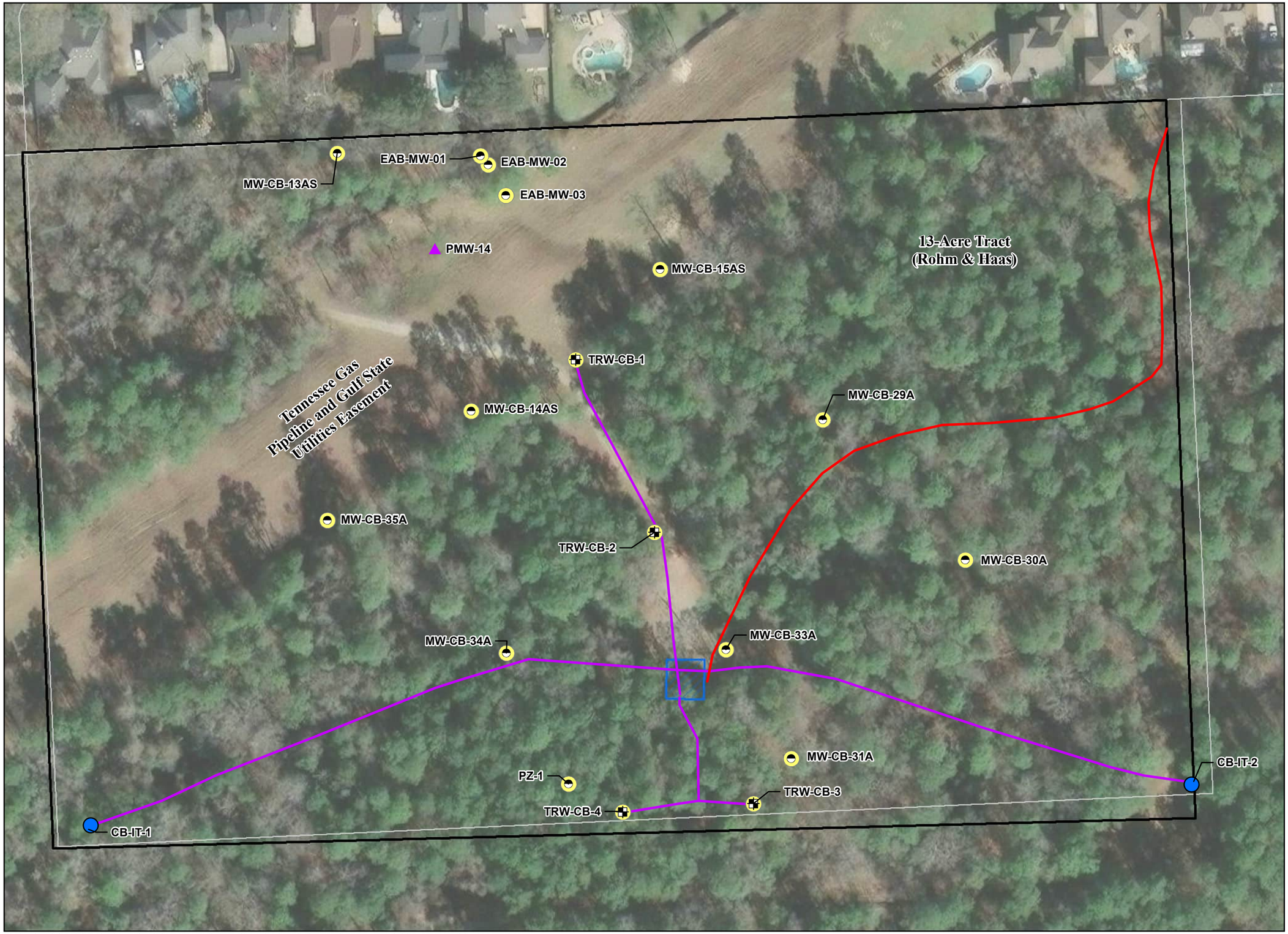
Rohm and Haas
A Wholly Owned Subsidiary of
The Dow Chemical Company
VCP No. 421

N

Drawing Date: 12/6/2024

Drawn By: LM

\\DC1VS01\GISPROJ\D\DOWCHEMICALS\CHARLIEBURCH\MAPS\REPORT\2024\FIG02-01_CB24_UTILITIES-NORTH.MXD MCOTTERB 12/6/2024



Legend

- Recovery Well (Zone A)
- Monitoring Well Location (Zone A)
- Infiltration Trench
- Performance Monitoring Well
- GAC System Enclosure
- Site Boundary
- Recovery System Piping
- Electrical Line

Acronyms:
A or AS = Screen approximately 0 - 40 ft Depth
AD = Screen approximately 40 - 70 ft Depth
EAB = Enhanced Anaerobic Bioremediation
GAC = Granular Activated Carbon
MW = Monitoring Well
PMW = Performance Monitoring Well
PZ = Piezometer
RW = Recovery Well
TRW = Trench Recovery Well

0 40 80
Feet
1 inch = 80 feet

BASE MAP SOURCE:
ESRI Aerial Imagery

Figure 2-2
Site Location and Site Plan
13-Acre Tract
Charlie Burch Site
Spring, Texas

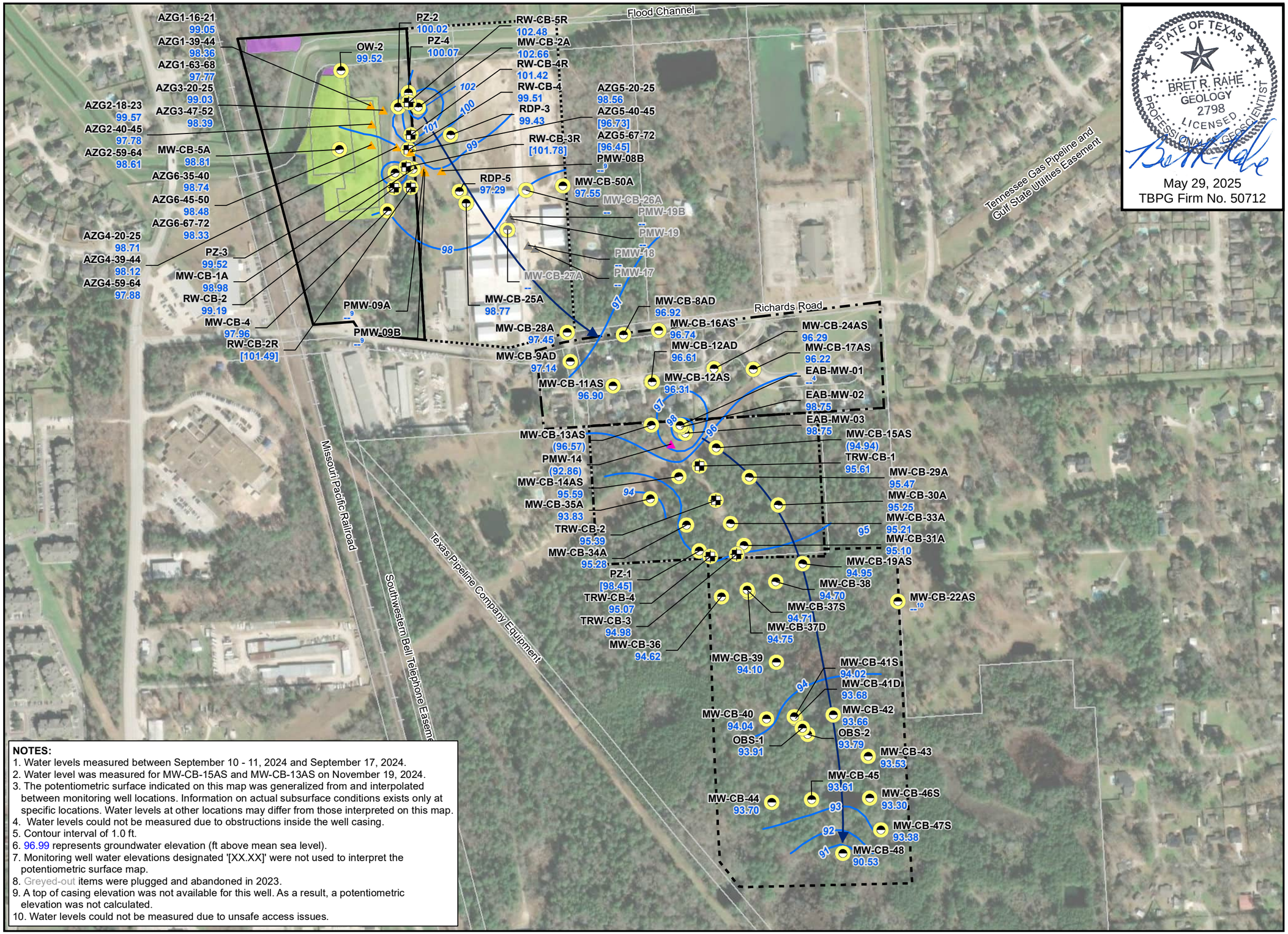
Rohm and Haas
A Wholly Owned Subsidiary of
The Dow Chemical Company
VCP No. 421

N

Drawing Date: 12/6/2024

Drawn By: LM

\\DC1VS01\GISPROJ\D\DOWCHEMICALS\CHARLIEBURCH\MAPS\REPORT\2024\FIG02-02_CB24_UTILITIES-SOUTH.MXD MCOTTERB 12/6/2024



NOTES:
1. Water levels measured between September 10 - 11, 2024 and September 17, 2024.
2. Water level was measured for MW-CB-15AS and MW-CB-13AS on November 19, 2024.
3. The potentiometric surface indicated on this map was generalized from and interpolated between monitoring well locations. Information on actual subsurface conditions exists only at specific locations. Water levels at other locations may differ from those interpreted on this map.
4. Water levels could not be measured due to obstructions inside the well casing.
5. Contour interval of 1.0 ft.
6. 96.99 represents groundwater elevation (ft above mean sea level).
7. Monitoring well water elevations designated '[XX.XX]' were not used to interpret the potentiometric surface map.
8. Greyed-out items were plugged and abandoned in 2023.
9. A top of casing elevation was not available for this well. As a result, a potentiometric elevation was not calculated.
10. Water levels could not be measured due to unsafe access issues.

STATE OF TEXAS
BRET R. RAHE
GEOLOGY
2798
LICENSED
PROFESSIONAL GEOSCIENTIST

May 29, 2025
TBPG Firm No. 50712

Legend
- Monitoring Well (Zone A)
- Recovery Well (Zone A)
- Voluntary Monitoring Well
- Performance Monitoring Well
- Potentiometric Contour
- Inferred Potentiometric Contour
- Depression
- Direction Along Which Hydraulic Gradient was Calculated
- Source Area Site Boundary
- Offsite Northern Tract
- Offsite Middle West Tract
- 13-Acre Tract Site
- Offsite Southern Tract
- Former Landfill Area
- Waste Material Removed Summer 1999, Replaced with Clean Backfill

MW-CB-29A Well Name
95.47 Groundwater Elevation (ft msl)

Acronyms:
AZG = A Zone Grab
EAB = Enhanced Anaerobic Bioremediation
ft = feet
MW = Monitoring Well
-- = Not available/not applicable
OW = Observation Well
PMW = Performance Monitoring Well
PZ = Piezometer
RW = Recovery Well
TRW = Trench Recovery Well

0 200 400
Feet
1 inch = 400 feet

BASE MAP SOURCE: ESRI Aerial Imagery

Figure 3-1
Zone A Potentiometric Surface Contours September 2024
Charlie Burch Site
Spring, Texas

Rohm and Haas
A Wholly Owned Subsidiary of
The Dow Chemical Company
VCP No. 421

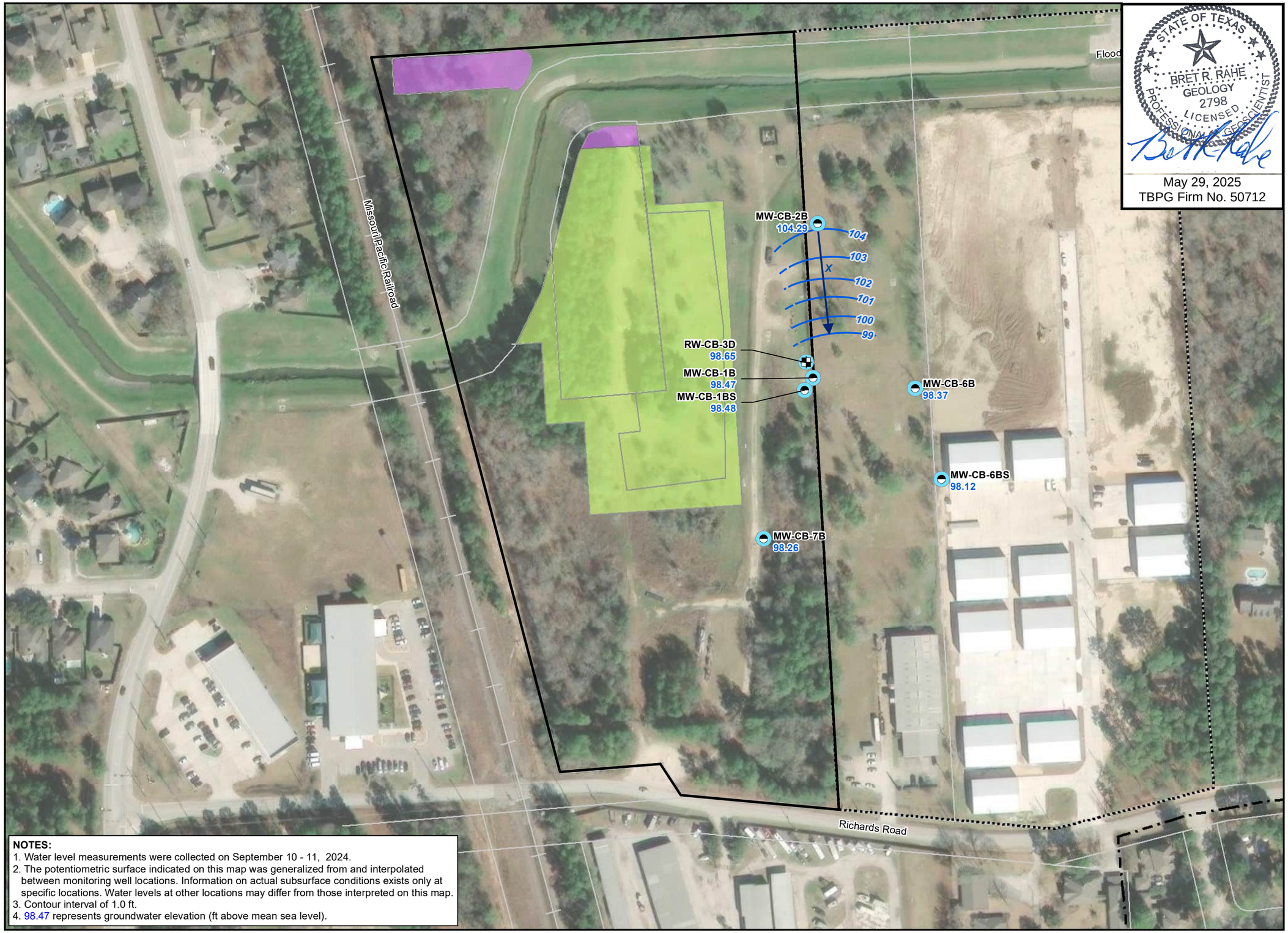
N

Drawing Date: 3/11/2025

Drawn By: BD

Jacobs

\\DC1VS01\GISPROJ\D\DOWCHEMICALS\CHARLIEBURCH\MAPS\REPORT\2024\FIG03-01_CB24_GWZONEA.MXD MCOTTERB 3/11/2025



STATE OF TEXAS
BRET R. RAHE
GEOLOGY
2798
LICENSED
PROFESSIONAL GEOSCIENTIST

May 29, 2025
TBPG Firm No. 50712

Legend

- Monitoring Well
- Recovery Well
- Former Landfill Area
- Waste Material Removed Summer 1999, Replaced with Clean Backfill
- Source Area Site
- Groundwater Flow Direction Along Which Hydraulic Gradient was Calculated
- Potentiometric Contour
- Inferred Potentiometric Contour
- Offsite Northern Tract
- Offsite Middle West Tract

MW-CB-6B Well Name
98.37 Groundwater Elevation (ft msl)

Acronyms:
ft = feet
MW = Monitoring Well
RW = Recovery Well

0 80 160
Feet
1 inch = 160 feet

BASE MAP SOURCE:
ESRI Aerial Imagery

NOTES:
1. Water level measurements were collected on September 10 - 11, 2024.
2. The potentiometric surface indicated on this map was generalized from and interpolated between monitoring well locations. Information on actual subsurface conditions exists only at specific locations. Water levels at other locations may differ from those interpreted on this map.
3. Contour interval of 1.0 ft.
4. 98.47 represents groundwater elevation (ft above mean sea level).

Figure 3-2
Zone B Potentiometric Surface Contours September 2024
Charlie Burch Site
Spring, Texas

Rohm and Haas
A Wholly Owned Subsidiary of
The Dow Chemical Company
VCP No. 421

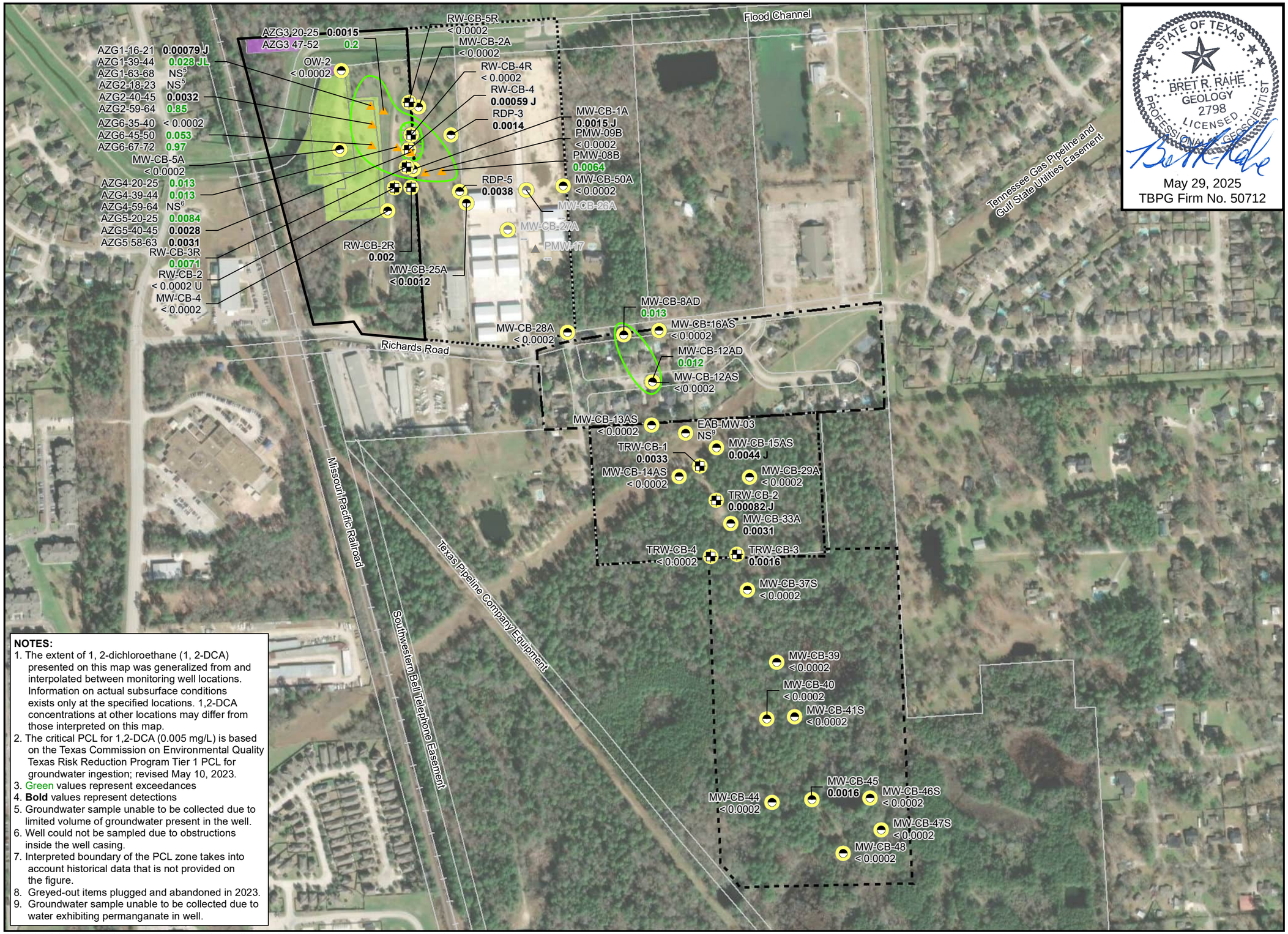
N

Drawing Date: 3/11/2025

Drawn By: BD

Jacobs

\\DC1VS01\GISPROJ\D\DOWCHEMICALS\CHARLIEBURCH\MAPS\REPORT\2024\FIG03-02_CB24_GWZONEB.MXD MCOTTERB 3/11/2025



NOTES:

1. The extent of 1, 2-dichloroethane (1, 2-DCA) presented on this map was generalized from and interpolated between monitoring well locations. Information on actual subsurface conditions exists only at the specified locations. 1,2-DCA concentrations at other locations may differ from those interpreted on this map.
2. The critical PCL for 1,2-DCA (0.005 mg/L) is based on the Texas Commission on Environmental Quality Texas Risk Reduction Program Tier 1 PCL for groundwater ingestion; revised May 10, 2023.
3. Green values represent exceedances
4. **Bold** values represent detections
5. Groundwater sample unable to be collected due to limited volume of groundwater present in the well.
6. Well could not be sampled due to obstructions inside the well casing.
7. Interpreted boundary of the PCL zone takes into account historical data that is not provided on the figure.
8. Greyed-out items plugged and abandoned in 2023.
9. Groundwater sample unable to be collected due to water exhibiting permanganate in well.

STATE OF TEXAS
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May 29, 2025
TBPG Firm No. 50712

Legend

- Voluntary Monitoring Well
- Recovery Well (Zone
- Monitoring Well (Zone
- Former Landfill Area
- Waste Material Removed Summer 1999, Replaced with Clean Backfill
- Source Area Site
- Offsite Northern Tract
- Offsite Middle West Tract
- 13-Acre Tract Site
- Offsite Southern Tract

Acronyms:
< = Not detected at the quantitation limit indicated
AZG = A Zone Grab
EAB = Enhanced Anaerobic Bioremediation
J = Estimated result
JL = Estimated result, biased low
mg/L = Milligrams per Liter
MW = Monitoring Well
NS = Not sampled
PCL = Protective Concentration Level
PMW = Performance Monitoring Well
OW = Observation Well
RW = Recovery Well
TRW = Trench Recovery Well

0 200 400
Feet
1 inch = 400 feet

BASE MAP SOURCE:
ESRI Aerial Imagery

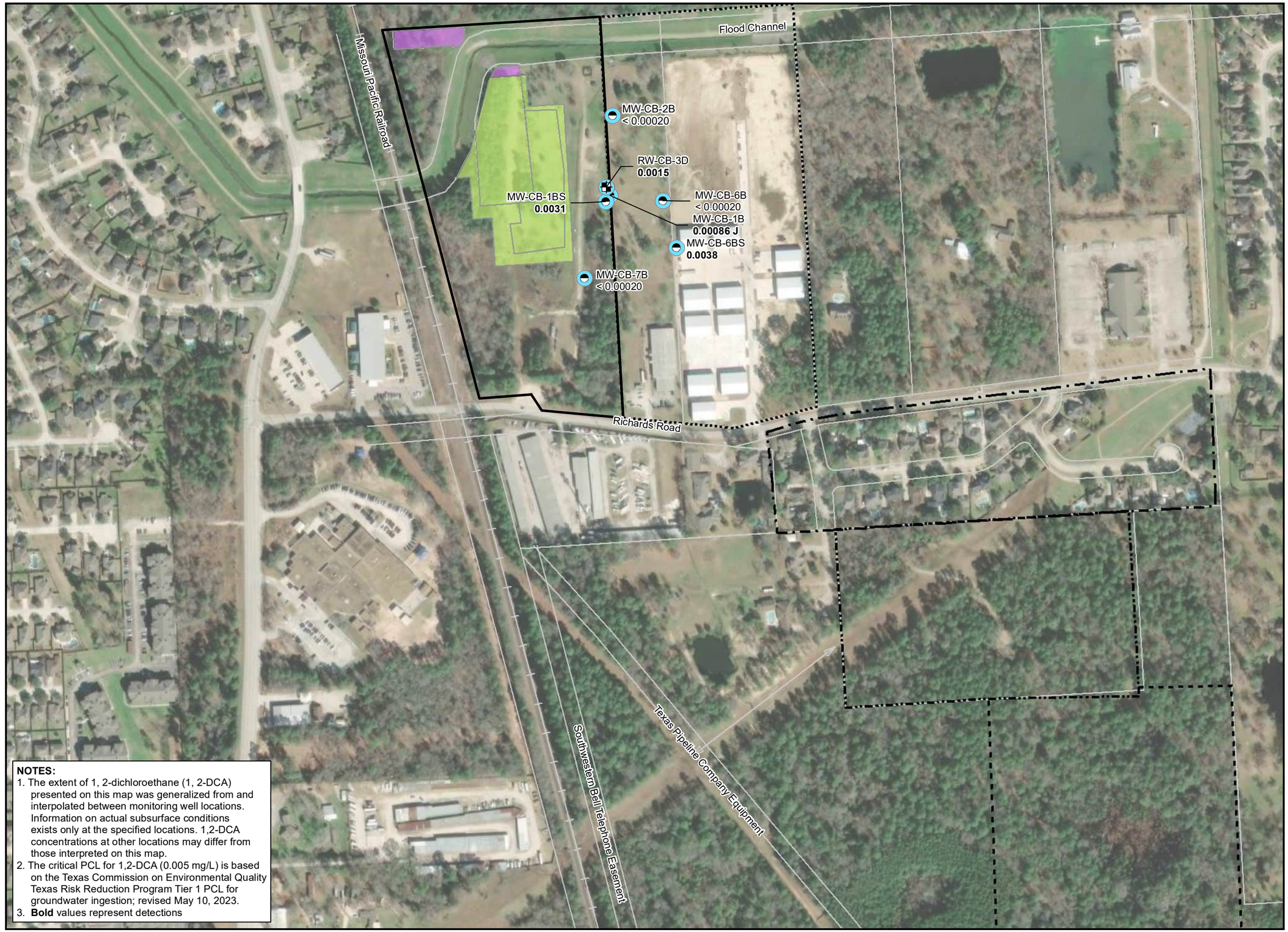
Figure 3-3
Zone A 1,2-DCA Plume
September 2024
Charlie Burch Site
Spring, Texas
Rohm and Haas
A Wholly Owned Subsidiary of
The Dow Chemical Company
VCP No. 421

N

Drawing Date: 3/11/2025

Drawn By: BD

\\DC1VS01\GISPROJ\D\DOWCHEMICALS\CHARLIEBURCH\MAPS\REPORT\2024\FIG03-03_CB24_DCA-ZONEA.MXD MCOTTERB 3/11/2025



Legend

- Monitoring Well
- Recovery Well
- Former Landfill Area
- Waste Material Removed Summer 1999, Replaced with Clean Backfill
- Source Area Site
- Offsite Northern Tract
- Offsite Middle West Tract
- 13-Acre Tract Site
- Offsite Southern Tract

Acronyms:
< = Not detected at the quantitation limit indicated
B or BS = Zone B approximately greater than 70 ft Depth
J = Estimated concentration
mg/L = Milligrams per Liter
MW = Monitoring Well
PCL = Protective Concentration Level
RW = Recovery Well

0 155 310
Feet
1 inch = 310 feet

BASE MAP SOURCE:
ESRI Aerial Imagery

NOTES:
1. The extent of 1, 2-dichloroethane (1, 2-DCA) presented on this map was generalized from and interpolated between monitoring well locations. Information on actual subsurface conditions exists only at the specified locations. 1,2-DCA concentrations at other locations may differ from those interpreted on this map.
2. The critical PCL for 1,2-DCA (0.005 mg/L) is based on the Texas Commission on Environmental Quality Texas Risk Reduction Program Tier 1 PCL for groundwater ingestion; revised May 10, 2023.
3. **Bold** values represent detections

Figure 3-4
Zone B 1,2-DCA Plume
September 2024
Charlie Burch Site
Spring, Texas

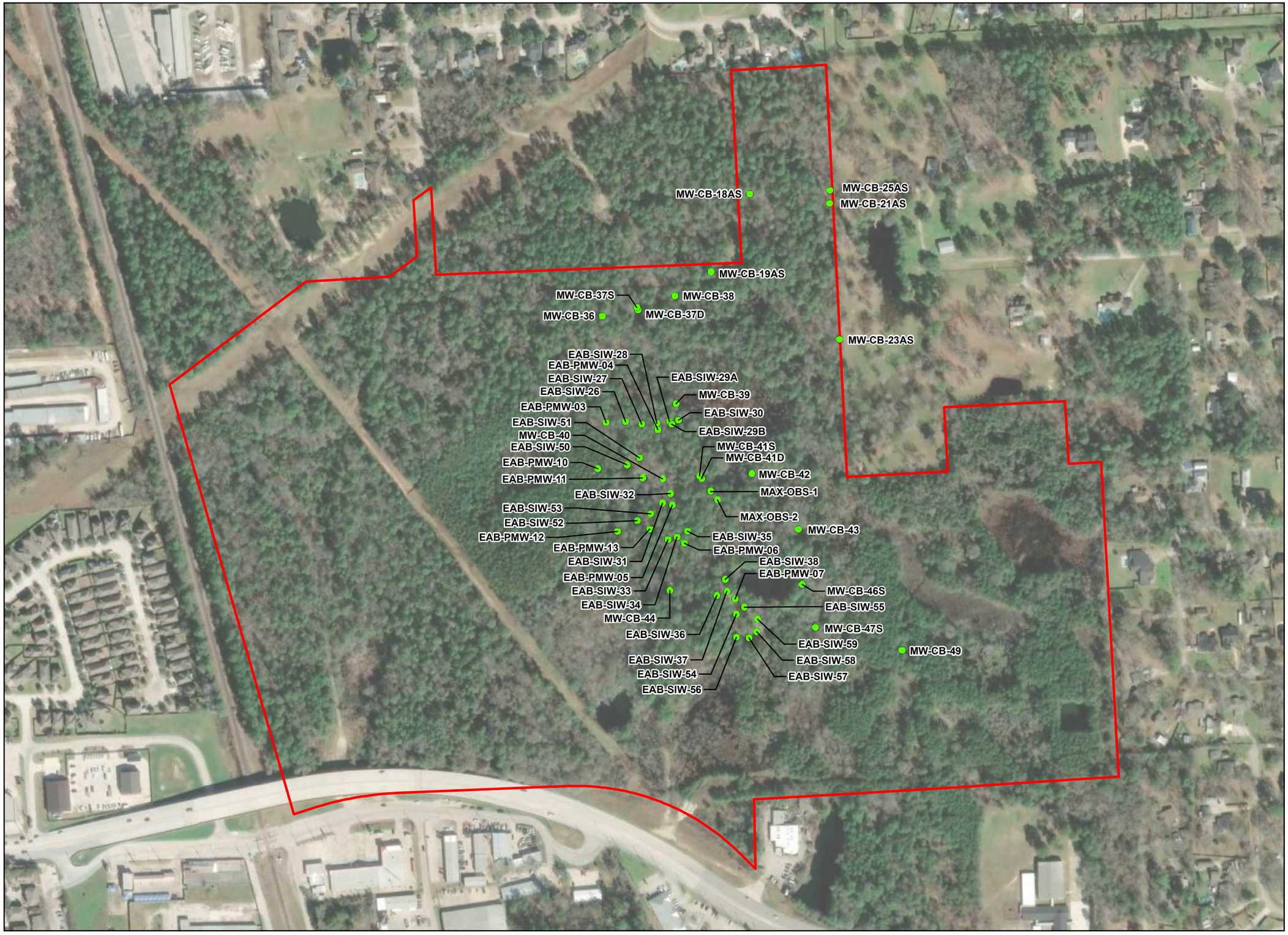
Rohm and Haas
A Wholly Owned Subsidiary of
The Dow Chemical Company
VCP No. 421

N

Drawing Date: 12/18/2024

Drawn By: BD

\\DC1VS01\GISPROJ\D\DOWCHEMICALS\CHARLIEBURCH\MAPS\REPORT\2024\FIG03-04_CB24_DCAZONEB.MXD MCOTTERB 12/18/2024



Legend

- Approximate Well Location
- Approximate Boundary of Rayford Tract

Notes:

1. Approximate Area of Interest derived from non-georeferenced CAD file.

MW - Monitoring Wells
EAB - Enhanced Anaerobic Bioremediation

0 150 300
Feet

BASE MAP SOURCE: ESRI Aerial Imagery

Figure 4-1
Proposed Wells for Plugging and Abandonment
Charlie Burch Site
Spring, Texas

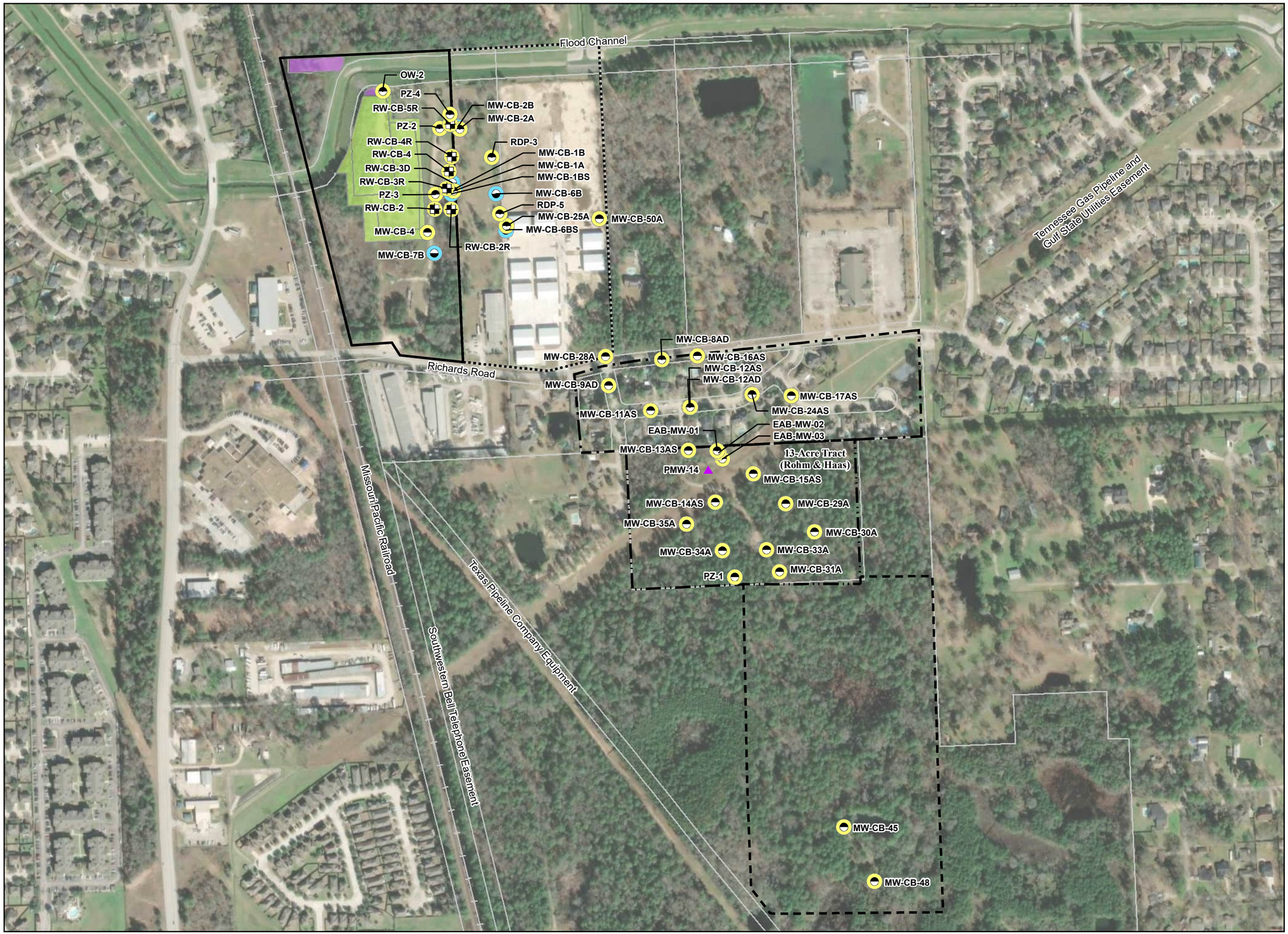
Rohm and Haas
A Wholly Owned Subsidiary of
The Dow Chemical Company
VCP No. 421

N

Drawing Date: 4/15/2025

Drawn By: BD

Jacobs



Legend

- Monitoring Well (Zone A)
- Recovery Well (Zone A)
- Monitoring Well (Zone B)
- Performance Monitoring Well
- Former Landfill Area
- Waste Material Removed Summer 1999, Replaced with Clean Backfill
- Source Area Site Boundary
- Offsite Northern Tract
- Offsite Middle West Tract
- 13-Acre Tract Site
- Offsite Southern Tract

Acronyms:
EAB = Enhanced Anaerobic Bioremediation
ft = feet
MW = Monitoring Well
OW = Observation Well
PMW = Performance Monitoring Well
PZ = Piezometer
RW = Recovery Well
TRW = Trench Recovery Well

0 200 400
Feet
1 inch = 400 feet
BASE MAP SOURCE:
ESRI Aerial Imagery

Figure 5-1
2025 Proposed
Annual Monitoring Wells
Charlie Burch Site
Spring, Texas

Rohm and Haas
A Wholly Owned Subsidiary of
The Dow Chemical Company
VCP No. 421

N

Drawing Date: 4/16/2025

Drawn By: BD

Jacobs

\\DC1VS01\GISPROJ\D\DOWCHEMICALS\CHARLIEBURCH\MAPS\REPORT\2024\FIG05-01_CBB24_PROPOSEDWELLS.MXD MCOTTERB 4/16/2025

Appendix A
13 Acre Tract Technical Memorandum

Union Carbide Corporation
A Subsidiary of The Dow Chemical Company
3301 5th Ave. N.
Bldg. 88
Texas City, TX 77590

December 19, 2019

Mr. Joseph Bell, Voluntary Cleanup Section
Texas Commission on Environmental Quality
12100 Park 35 Circle
MC-221, Remediation Division
Austin, Texas 78753

FedEx: 7773 0380 4556

Subject: Request to Shut Down the 13 Acre Tract Treatment System
Charlie Burch Site, Spring, Texas
Voluntary Cleanup Program No. 421
Regulated Entity No. RN102970738/Customer Reference No. CN600356976

Dear Mr. Bell:

Rhom and Haas Texas, Inc., has been operating a groundwater containment and treatment system at the 13 Acre Tract as part of the Texas Commission on Environmental Quality (TCEQ) Voluntary Cleanup Program No. 421 since May of 2006. The primary objective of the 13 Acre Tract system was to capture 1,2-dichloroethane (1,2-DCA) and maintain hydraulic control and inhibit further migration of the plume. The current configuration utilizes recovery wells TRW-CB-3 and TRW-CB-4 to maintain groundwater hydraulic containment. Two infiltration trenches (CB-IT-1 and CB-IT-2) were constructed; however, only CB-IT-2 is in service (**Figure 1**). Recovered groundwater is processed through two granular activated carbon vessels and water is subsequently reinjected into the A-zone aquifer via infiltration trench CB-IT-2, located at the southeast corner of the 13 Acre Tract property boundary. Information that follows below provides rationale supporting our request to shut down the 13 Acre Tract recovery and treatment system.

Concentrations of 1,2-DCA within and near recovery wells at the 13 Acre Tract have remained below the protective concentration level (PCL) of 0.005 milligram per liter (mg/L) while the system has continued to operate to maintain hydraulic conditions. Concentrations of 1,2-DCA in surrounding wells and wells downgradient of the system have shown a net reduction since operations were initiated in 2006. Concentrations of 1,2-DCA from recovery wells TRW-CB-3 and TRW-CB-4 (**Table 1**) have been below the PCL since at least 2009. Analytical data collected from pre-treatment and post-treatment samples collected from the on-site granular activated carbon system (**Table 2**) are also consistent with these results. Mann-Kendall statistical analyses (**Table 1**) were prepared for the two active recovery wells and selected monitoring wells downgradient of the system that will be proposed for additional sampling following shutdown of the system. Note that while historical data is provided for well MW-CB-33A in **Table 1**, it was excluded from the Mann-Kendall statistical analyses since 1,2-DCA has not historically been detected at this location. Statistical trends using the Mann-Kendall analyses show all monitoring wells exhibit decreasing concentration trends for 1,2-DCA (**Table 1**).

Based on concentrations of 1,2-DCA remaining below the PCL in the recovery wells for at least the past 10 years, coupled with decreasing trends in downgradient monitoring wells, Rhom and Haas has determined that continued operation of the GAC system is not necessary. As a result, Rhom and Haas is requesting to shut down the 13 Acre Tract GAC recovery system to evaluate potential rebound of the 1,2-DCA plume for a period of one year. During evaluation, components of the system will be maintained should it need to be restarted.

Following shutdown of the system, groundwater levels will be collected on a quarterly basis for one year from all 13 Acre Tract wells shown on **Figure 2**. This groundwater gauging data will be used to evaluate possible potentiometric changes of groundwater. To evaluate potential rebound, quarterly groundwater samples from a subset of seven wells shown on **Figure 2** will also be collected for a period of one year and analyzed for 1,2-DCA. Historical plume interpretations suggest a slight westerly shift following the initial system startup. Taking this into consideration, the proposed wells selected for sampling account for a potential easterly plume shift. Findings from the post shut-down evaluation will be included in the annual report. Based on these findings, permanent shutdown and decommissioning of the 13 Acre Tract system may be recommended. Underground injection control (UIC) reporting will also continue to be submitted to TCEQ until permanent shutdown is approved.

If you have any questions regarding the request, please contact me at (979) 238-2516 or email at BWilkinson@Dow.com.

Sincerely,

Brad Wilkinson, P.G.
Remediation Leader
The Dow Chemical Company

Enclosures:

Table 1: Mann-Kendall Analyses
Table 2: 1,2 -Dichloroethane Analytical Results from the 13 Acre Tract System
Figure 1: 13 Acre Tract Groundwater Recovery System Layout
Figure 2: 13 Acre Tract Shutdown: Quarterly Gauging and Sampling Well Locations

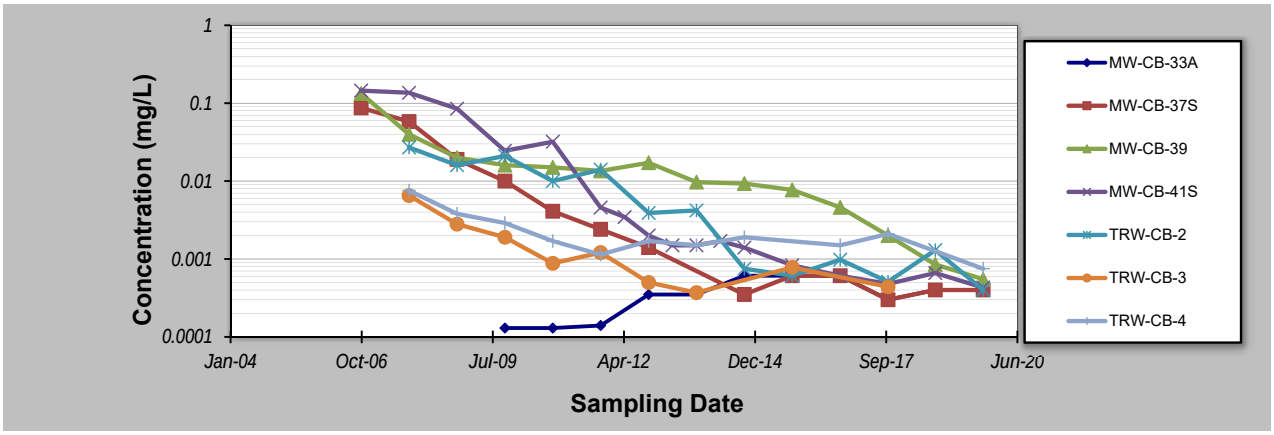
Cc: Josh Mcfarlain/Jacobs

Table 1: Mann-Kendall Analysis

Table 1 - Mann-Kendall Toolkit

Evaluation Date:	9-Dec-19	Job ID:	DWACHB19
Facility Name:	Charlie Burch 13-AT	Constituent:	1,2- DCA
Conducted By:	Jacobs	Concentration Units:	mg/L

Sampling Point ID:	MW-CB-33A	MW-CB-37S	MW-CB-39	MW-CB-41S	TRW-CB-2	TRW-CB-3	TRW-CB-4
Sampling Event	Sampling Date	1,2- DCA CONCENTRATION (mg/L)					
1	Oct-06		**0.08710**	**0.13300**	**0.14500**			
2	Oct-07		**0.05810**	**0.03980**	**0.13600**	**0.02700**	**0.00652**	**0.00755**
3	Oct-08		**0.01900**	**0.02000**	**0.08500**	**0.01600**	**0.00280**	**0.00380**
4	Oct-09	<0.00013	**0.01000**	**0.01600**	**0.02450**	**0.02100**	**0.00190**	**0.00290**
5	Oct-10	<0.00013	**0.00410**	**0.01500**	**0.03200**	**0.01000**	**0.00088 J**	**0.00170**
6	Oct-11	<0.00014	**0.0024**	**0.01350**	**0.00457**	**0.01400**	**0.00121**	**0.00114**
7	Apr-12				**0.00346**			
8	Oct-12	<0.00035	**0.0014**	**0.01720**	**0.00200**	**0.00390**	**0.0005 J**	**0.00170**
9	Apr-13				**0.00150**			
10	Oct-13	<0.00035	**0.00074 J**	**0.00970**	**0.00150**	**0.00420**	**0.00037 J**	**0.00150**
11	Apr-14				**0.00170**			
12	Oct-14	<0.00061	<0.00035	**0.00930**	**0.00140**	**0.00075 J**	<0.00035	**0.00190**
13	Apr-15							
14	Oct-15	<0.00061	<0.00061	**0.00770**	**0.00083 J**	<0.00061	**0.00078**	<0.00061
15	May-16							
16	Oct-16	<0.00061	<0.00061	**0.00460**	<0.00061	**0.00098 J**	<0.00061	**0.00150**
17	Apr-17							
18	Oct-17	<0.0003	<0.0003	**0.00200**	**0.00048 J**	**0.00051 J**	**0.00044 J**	**0.00210**
19	Apr-18							
20	Oct-18	<0.0004	<0.0004	**0.00085**	**0.00066**	**0.00130**	<0.0004	<0.0004
21	Apr-19							
22	Oct-19	<0.0004	<0.0004	**0.00055 J**	**0.00043 J**	<0.0004	<0.0004	**0.00075 J**
23								
24								
25								
Coefficient of Variation:	Not applicable. 1,2-DCA has not been detected in this well.	1.63	1.64	1.85	1.31	1.15	0.79
Mann-Kendall Statistic (S):		-41	-85	-125	-39	-28	-27
Confidence Factor:		100.0%	>99.9%	>99.9%	99.9%	99.9%	98.0%
Concentration Trend:		Decreasing	Decreasing	Decreasing	Decreasing	Decreasing	Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

Legend:

1. Bold and highlighted analytical concentrations: Exceedance of the Protective Concentration Level (PCL) of 1,2-dichloroethane, which is 0.005 mg/L.
2. Bold analytical concentrations: detection of 1,2-dichloroethane.
3. <: below sample detection limits.
4. J: estimated result.

Table 2: 1,2-Dichloroethane Analytical Results from the 13 Acre Tract System

Table 2

1,2 -Dichloroethane Analytical Results from the 13 Acre Tract System

Charlie Burch Site, Spring, Texas

Date Collected	Influent (Pre-GAC) Treatment	Effluent (Post-GAC) Treatment
3/29/2016	0.00076 J	<0.00061
7/15/2016	0.00078 J	0.00075
9/30/2016	0.00065 J	0.00067
12/26/2016	0.00065 J	0.00067 J
3/20/2017	0.00065 J	0.00067 J
6/30/2017	0.00032 J	0.00039 J
10/18/2017	0.00082 J	0.00087 J
12/19/2017	0.00058 J	0.00045 J
3/30/2018	0.00050 J	<0.00030
6/14/2018	0.00075 J	<0.00030
8/22/2018	0.00085 J	<0.00040
10/17/2018	0.00079 J	0.00043 J
1/31/2019	0.00096 J	<0.0004
4/15/2019	0.00077 J	0.00067 J
7/16/2019	0.00046 J	0.00075 J
10/15/2019	0.00046 J	0.00081 J

Notes

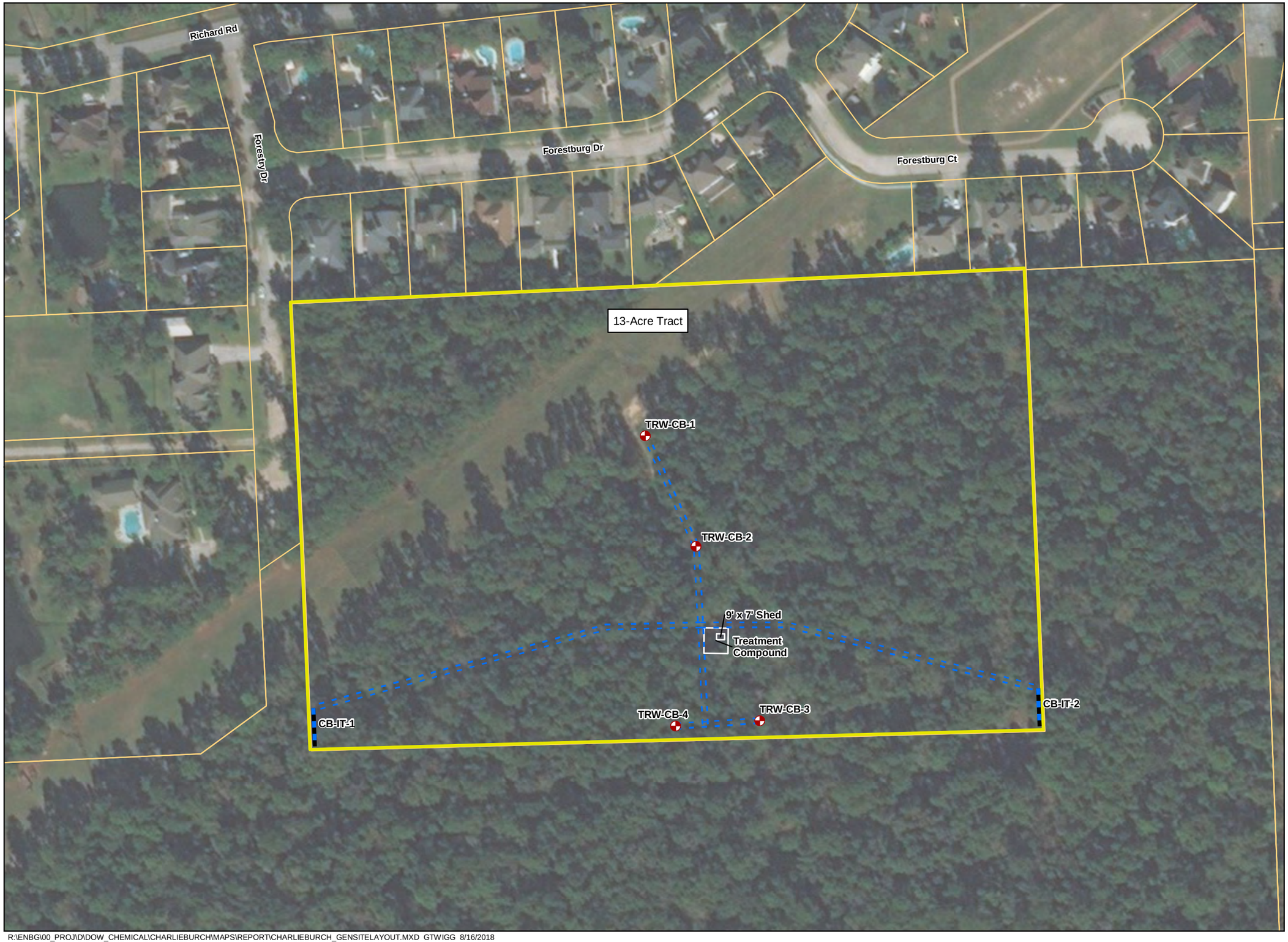
1. All concentrations reported in milligrams per liter (mg/L)
2. Protective concentration level (PCL) for 1,2-dichloroethane is 0.005 mg/L.

GAC = granular activated carbon

J = estimated result

< = below sample detection limit

Figure 1: 13 Acre Tract Groundwater Recovery System Layout



Legend

- Recovery Well
- Recovery System Piping
- Infiltration Trench
- 13-Acre Tract
- Approximate Property Boundary (Source: Montgomery County Appraisal District Records)

NOTE: This figure reflects approximate location and/or dimensions; actual size and locations may be somewhat different, depending oncircumstances as they develop.

0 75 150
Feet

Figure 1
13 Acre Tract Groundwater Recovery System Layout

Charlie Burch Pits Site
Spring, Texas

VCP No. 421

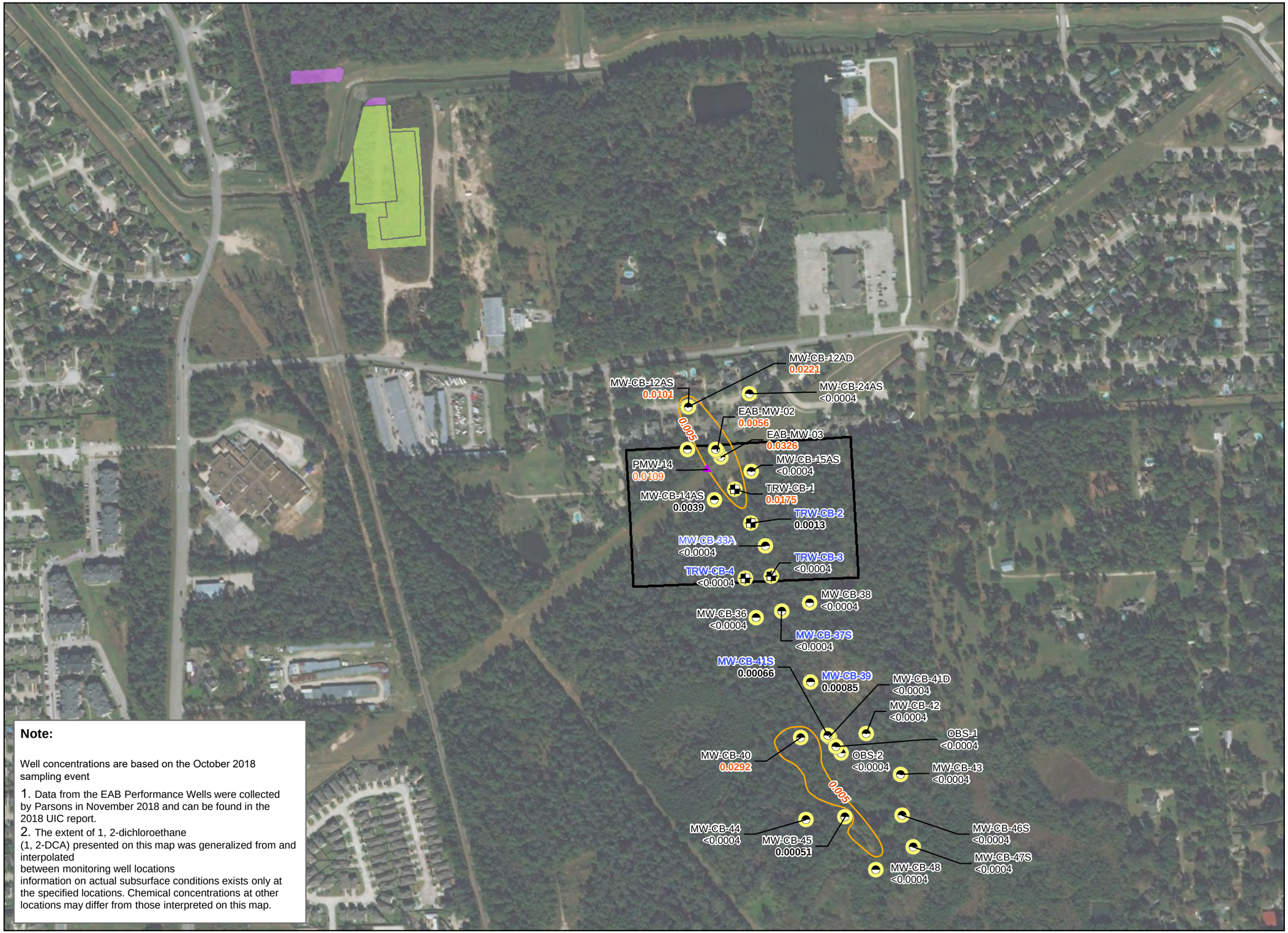
N

Drawing Date: August 2018

Drawn By: JACOBS

R:\ENBG\00_PROJ\D\DOW_CHEMICAL\CHARLIEBURCH\MAPS\REPORT\CHARLIEBURCH_GENSITELAYOUT.MXD GTWIGG 8/16/2018

Figure 2: 13 Acre Tract Shutdown: Quarterly Gauging and Sampling Well Locations



Note:

Well concentrations are based on the October 2018 sampling event

1. Data from the EAB Performance Wells were collected by Parsons in November 2018 and can be found in the 2018 UIC report.
2. The extent of 1, 2-dichloroethane (1, 2-DCA) presented on this map was generalized from and interpolated between monitoring well locations information on actual subsurface conditions exists only at the specified locations. Chemical concentrations at other locations may differ from those interpreted on this map.

Legend

Monitoring Well Location (Zone A)

AS = Screen less than 40 ft depth
AD = Screen greater than 40 ft depth
MW = Monitoring well
OW = Flood channel observation well
RW = Recovery well

Recovery Well (Zone A)

1,2-DCA Contour (0.005 mg/L)

1,2-DCA TRRP Tier 1 PCL = 0.005 mg/L
mg/L = milligrams per liter
Red values represent exceedances

Former Landfill Area

Waste Material Removed Summer 1999, Replaced with Clean Backfill

Performance Monitoring Well

Site Boundary

Note:
Wells in blue will be sampled quarterly

0 200 400
Feet

Figure 2
13 Acre Tract Shutdown: Quarterly Gauging and Sampling Well Locations
Charlie Burch Site
Spring, Texas

Union Carbide Corporation
A Subsidiary of The Dow Chemical Company Rohm and Haas Texas Inc., VCP No. 421

N

Drawing Date: February 2019

Drawn By:

JACOBS

R:\ENBG\00_PROJ\D\DOW_CHEMICAL\CHARLIEBURCH\MAPS\REPORT\FIG05A_CHARLIEBURCH_DCAZONEB_201902.MXD GTWIGG 3/6/2019

Appendix B
Laboratory Analytical Reports

(provided on USB)

Appendix C
Data Usability Summary

APPENDIX C

Data Usability Summary
Dow Charlie Burch, Houston, Texas
Groundwater Monitoring 2024

A Jacobs project chemist reviewed 13 data packages from ALS Environmental of Houston, Texas for the analysis of groundwater samples collected between January 31 and November 20, 2024, at the Dow Charlie Burch facility (site) in Houston, Texas.

Data were reviewed for conformance to the requirements of the Texas Commission on Environmental Quality (TCEQ) guidance document, *Review and Reporting of COC Concentration Data Under TRRP* (RG-366/Texas Risk Reduction Program (TRRP)-13) and adherence to project objectives.

Jacobs asserts that at the time the laboratory data were generated for the project, the laboratory was accredited by the National Environmental Laboratory Accreditation Conference under the Texas Laboratory Accreditation Program for the matrix, analyte, and method of analysis requested on the chain-of-custody documentation. Copies of the National Environmental Laboratory Accreditation Program certificates applicable to the period during which the laboratory generated the data in this report are included with this data usability summary (DUS) as an attachment.

Intended Use of Data: The laboratory data included in this report provide information on concentrations of the chemicals of concern (COCs) in the groundwater at the site to support the preparation of the annual groundwater monitoring report for 2024.

The following analysis was performed:

- SW-846 5030/8260C & 5030/8260D – 1,2-Dichloroethane by Gas Chromatography/Mass Spectrometry (GC/MS)

Data were reviewed and validated as described in *Review and Reporting of COC Concentration Data Under TRRP,* (RG-366/TRRP-13). The results of the review and validation are discussed in this DUS. The following laboratory submittals were examined:

- Reportable data
- Laboratory review checklists (LRCs) and associated exception reports (ERs)
- Observations regarding sampling procedures, and preservation procedures before shipping or delivering the samples to the laboratory

The results of supporting quality control (QC) analyses were summarized in the LRCs, ERs, and case narratives. The LRCs, associated ERs, and reportable data included in this review are attached to this DUS.

Introduction

A total of 73 groundwater samples were collected and analyzed for VOCs. Additionally, field QC samples analyzed included 11 field duplicates, 12 trip blanks, 2 equipment blanks, and 6 project-specific MS/MSDs. Table 1 lists the sample identifications cross-referenced to laboratory identifications.

Table 1. Cross-referenced Field Sample Identifications and Laboratory Identifications
Data Usability Summary
Dow Charlie Burch facility, Houston, Texas

Field Identification	Laboratory Identification	Matrix	Date Collected
TB-01-20240131	HS24020156-01	Water	1/31/2024

Table 1. Cross-referenced Field Sample Identifications and Laboratory Identifications
Data Usability Summary
Dow Charlie Burch facility, Houston, Texas

Field Identification	Laboratory Identification	Matrix	Date Collected
MW-CB-50A-20240131-WG	HS24020156-02	Groundwater	1/31/2024
DUP-01-20240131-WG	HS24020156-03	Groundwater	1/31/2024
TB-02-20240424	HS24041699-01	Water	4/24/2024
MW-CB-46S-20240424-N-WG	HS24041699-02	Groundwater	4/24/2024
MW-CB-47S-20240424-N-WG	HS24041699-03	Groundwater	4/24/2024
MW-CB-48-20240424-N-WG	HS24041699-04	Groundwater	4/24/2024
MW-CB-45-20240424-N-WG	HS24041699-05	Groundwater	4/24/2024
MW-CB-44-20240424-N-WG	HS24041699-06	Groundwater	4/24/2024
MW-CB-41D-20240424-N-WG	HS24041699-07	Groundwater	4/24/2024
MW-CB-41S-20240424-N-WG	HS24041699-08	Groundwater	4/24/2024
MW-CB-40-20240424-N-WG	HS24041699-09	Groundwater	4/24/2024
MW-CB-39-20240424-N-WG	HS24041699-10	Groundwater	4/24/2024
DUP-01-20240424-FD-WG	HS24041699-11	Groundwater	4/24/2024
TB-03-20240424	HS24041706-01	Water	4/24/2024
MW-CB-29A-20240424-N-WG	HS24041706-02	Groundwater	4/24/2024
DUP-02-20240424-FD-WG	HS24041706-03	Groundwater	4/24/2024
TB-01-20240424	HS24041707-01	Water	4/24/2024
EB-01-20240424	HS24041707-02	Water	4/24/2024
MW-CB-50A-20240424	HS24041707-03	Groundwater	4/24/2024
TB-01_20240916_N_WG	HS24090767-01	Water	9/16/2024
MW-CB-48_20240916_N_WG	HS24090767-02	Groundwater	9/16/2024
MW-CB-46S_20240916_N_WG	HS24090767-03	Groundwater	9/16/2024
MW-CB-47S_20240916_N_WG	HS24090767-04	Groundwater	9/16/2024
MW-CB-45_20240916_N_WG	HS24090767-05	Groundwater	9/16/2024
MW-CB-44_20240916_N_WG	HS24090767-06	Groundwater	9/16/2024
MW-CB-41S_20240916_N_WG	HS24090767-07	Groundwater	9/16/2024
MW-CB-40_20240916_N_WG	HS24090767-08	Groundwater	9/16/2024
MW-CB-39_20240916_N_WG	HS24090767-09	Groundwater	9/16/2024

Table 1. Cross-referenced Field Sample Identifications and Laboratory Identifications
Data Usability Summary
Dow Charlie Burch facility, Houston, Texas

Field Identification	Laboratory Identification	Matrix	Date Collected
MW-CB-37S_20240916_N_WG	HS24090767-10	Groundwater	9/16/2024
DUP-01-20240916-FD-WG	HS24090767-11	Groundwater	9/16/2024
TB-02_20240916_N_WG	HS24090768-01	Water	9/16/2024
TRW-CB-4_20240916_N_WG	HS24090768-02	Groundwater	9/16/2024
TRW-CB-3_20240916_N_WG	HS24090768-03	Groundwater	9/16/2024
MW-CB-29A_20240916_N_WG	HS24090768-04	Groundwater	9/16/2024
MW-CB-33A_20240916_N_WG	HS24090768-05	Groundwater	9/16/2024
TRW-CB-2_20240916_N_WG	HS24090768-06	Groundwater	9/16/2024
MW-CB-14AS_20240916_N_WG	HS24090768-07	Groundwater	9/16/2024
TRW-CB-1_20240916_N_WG	HS24090768-08	Groundwater	9/16/2024
MW-CB-12AS_20240916_N_WG	HS24090768-09	Groundwater	9/16/2024
MW-CB-12AD_20240916_N_WG	HS24090768-10	Groundwater	9/16/2024
TB-01_20240917_N_WG	HS24090951-01	Water	9/17/2024
MW-CB-28A_20240917_N_WG	HS24090951-02	Groundwater	9/17/2024
MW-CB-50A_20240917_N_WG	HS24090951-03	Groundwater	9/17/2024
MW-CB-6BS_20240917_N_WG	HS24090951-04	Groundwater	9/17/2024
MW-CB-25A_20240917_N_WG	HS24090951-05	Groundwater	9/17/2024
DUP-02_20240917_FD_WG	HS24090951-06	Groundwater	9/17/2024
TB-02_20240917_N_WG	HS24090960-01	Water	9/17/2024
MW-CB-2B_20240917_N_WG	HS24090960-02	Groundwater	9/17/2024
MW-CB-2A_20240917_N_WG	HS24090960-03	Groundwater	9/17/2024
RDP-3_20240917_N_WG	HS24090960-04	Groundwater	9/17/2024
EAB-PMW-08B_20240917_N_WG	HS24090960-05	Groundwater	9/17/2024
EAB-PMW-09B_20240917_N_WG	HS24090960-06	Groundwater	9/17/2024
MW-CB-6B_20240917_N_WG	HS24090960-07	Groundwater	9/17/2024
RDP-5_20240917_N_WG	HS24090960-08	Groundwater	9/17/2024
DUP-03_20240917_FD_WG	HS24090960-09	Groundwater	9/17/2024
TB-01_20240918_N_WG	HS24090967-01	Water	9/18/2024

Table 1. Cross-referenced Field Sample Identifications and Laboratory Identifications
Data Usability Summary
Dow Charlie Burch facility, Houston, Texas

Field Identification	Laboratory Identification	Matrix	Date Collected
MW-CB-8AD_20240918_N_WG	HS24090967-02	Groundwater	9/18/2024
MW-CB-16AS_20240918_N_WG	HS24090967-03	Groundwater	9/18/2024
DUP-06_20240918_FD_WG	HS24090967-04	Groundwater	9/18/2024
TB-03_20240917_N_WG	HS24090968-01	Water	9/17/2024
OW-2_20240917_N _WG	HS24090968-02	Groundwater	9/17/2024
MW-CB-5A_20240917_N_WG	HS24090968-03	Groundwater	9/17/2024
MW-CB-7B_20240917_N_WG	HS24090968-04	Groundwater	9/17/2024
MW-CB-4_20240917_N_WG	HS24090968-05	Groundwater	9/17/2024
RW-CB-2_20240917_N_WG	HS24090968-06	Groundwater	9/17/2024
RW-CB-2R_20240917_N_WG	HS24090968-07	Groundwater	9/17/2024
MW-CB-1BS_20240917_N_WG	HS24090968-08	Groundwater	9/17/2024
MW-CB-1A_20240917_N_WG	HS24090968-09	Groundwater	9/17/2024
MW-CB-1B_20240917_N_WG	HS24090968-10	Groundwater	9/17/2024
RW-CB-3R_20240917_N_WG	HS24090968-11	Groundwater	9/17/2024
RW-CB-3D_20240917_N_WG	HS24090968-12	Groundwater	9/17/2024
RW-CB-5R_20240917_N_WG	HS24090968-13	Groundwater	9/17/2024
RW-CB-4R_20240917_N_WG	HS24090968-14	Groundwater	9/17/2024
RW-CB-4_20240917_N_WG	HS24090968-15	Groundwater	9/17/2024
DUP-04_20240917_FD_WG	HS24090968-16	Groundwater	9/17/2024
DUP-05_20240917_FD_WG	HS24090968-17	Groundwater	9/17/2024
AZG3-20-25_20240918_N_WG	HS24090971-01	Groundwater	9/18/2024
AZG3-47-52_20240918_N_WG	HS24090971-02	Groundwater	9/18/2024
AZG1-39-44_20240918_N_WG	HS24090971-03	Groundwater	9/18/2024
TB-01_20240919_N_WG	HS24091089-01	Water	9/19/2024
EB-01_20240920_N_WG	HS24091089-02	Water	9/20/2024
AZG1-16-21_20240919_W_WG	HS24091089-03	Groundwater	9/19/2024
AZG2-40-45_20240919_N_WG	HS24091089-04	Groundwater	9/19/2024
AZG2-59-64_20240919_N_WG	HS24091089-05	Groundwater	9/19/2024

Table 1. Cross-referenced Field Sample Identifications and Laboratory Identifications
Data Usability Summary
Dow Charlie Burch facility, Houston, Texas

Field Identification	Laboratory Identification	Matrix	Date Collected
AZG6-35-40_20240919_N_WG	HS24091089-06	Groundwater	9/19/2024
AZG6-45-50_20240919_N_WG	HS24091089-07	Groundwater	9/19/2024
AZG6-67-72_20240919_N_WG	HS24091089-08	Groundwater	9/19/2024
AZG4-20-25_20240920_N_WG	HS24091089-09	Groundwater	9/20/2024
AZG4-39-44_20240920_N_WG	HS24091089-10	Groundwater	9/20/2024
AZG5-20-25_20240920_N_WG	HS24091089-11	Groundwater	9/20/2024
AZG5-40-45_20240920_N_WG	HS24091089-12	Groundwater	9/20/2024
AZG5-58-63_20240920_N_WG	HS24091089-13	Groundwater	9/20/2024
DUP-07_20240920_N_WG	HS24091089-14	Groundwater	9/20/2024
TB-01_20241120_N_WG	HS24111269-01	Water	11/20/2024
MW-CB-15AS_20241120_N_WG	HS24111269-02	Groundwater	11/20/2024
DUP-01_20241120_FD_WG	HS24111269-03	Groundwater	11/20/2024
MW-CB-13AS_20241120_N_WG	HS24111269-04	Groundwater	11/20/2024

Project Measurement Quality Objectives

Organic Analytes:

- Laboratory control sample (LCS) / laboratory control sample duplicate (LCSD) recoveries and matrix spike (MS) / matrix spike duplicate (MSD) recoveries within 70 to 130 percent
- LCS/LCSD and MS/MSD relative percent difference (RPD) values less than or equal to 20 percent
- Sample and field duplicate RPD values less than or equal to 30 percent or plus or minus 2 times the method quantitation limit (MQL) if concentrations are less than 5 times MQL
- Completeness greater than or equal to 95 percent

Data Review and Validation Results

Analytical Results

Non-detect results are reported as less than the sample detection limit (SDL) as defined by the Texas Risk Reduction Program rule.

Data qualified during the data validation process are listed in Table 2.

Table 2. Qualified Analytical Data
Data Usability Summary
Dow Charlie Burch facility, Houston, Texas

Field Identification	Analytical Method	Analyte	Result	Units	Qualification	Reason for Qualification
AZG1-39-44_20240918_N_WG	SW8260D	1,2-Dichloroethane	28	µg/L	JL	Analyte recovered low in MS/MSD.
MW-CB-14AS_20240916_N_WG	SW8260D	1,2-Dichloroethane	0.2 U	µg/L	UJ	Analyte recovered low in MS/MSD.
MW-CB-15AS_20241120_N_WG	SW8260D	1,2-Dichloroethane	4.4	µg/L	J	Field duplicate precision outside criteria.
DUP-01_20241120_FD_WG	SW8260D	1,2-Dichloroethane	0.2 U	µg/L	UJ	Field duplicate precision outside criteria.
MW-CB-1A_20240917_N_WG	SW8260D	1,2-Dichloroethane	1.5	µg/L	J	Field duplicate precision outside criteria.
DUP-05_20240917_FD_WG	SW8260D	1,2-Dichloroethane	4.7	µg/L	J	Field duplicate precision outside criteria.

µg/L = microgram per liter
U (in Result column) = The analyte was analyzed for but was not detected above the sample detection limit.
UJ = The analyte was analyzed for but was not detected above the reported SDL; SDL is an estimate and may be inaccurate or imprecise.
J (in Qualification column) = Estimated data; the reported sample concentration is approximated due to exceedance of one or more QC requirements.
JL = Estimated data; the reported sample concentration is approximated due to exceedance of one or more QC requirements; bias in result likely to be low.

Sample Receipt Conditions, Chain of Custody, and Preservation

Samples were evaluated for agreement with the chain-of-custody documentation. Samples were received in the appropriate containers and in good condition with proper completion of the chain-of-custody documentation.

Sample receipt temperatures were less than or equal to 6 degrees Celsius (°C) as listed in the Code of Federal Regulations (CFR). Samples were preserved as specified in SW-846 Tables 2-40(A) and 2-40(B).

Holding Time

Samples were prepared and analyzed within holding times specified in SW-846 Tables 2-40(A) and 2-40(B).

Calibrations and Tunes

According to the LRCs and case narratives, initial calibration and continuing calibration data met SW-846 method requirements. The LRCs also document satisfactory instrument performance calibrations (GC/MS tunes) for the GC/MS analysis (VOCs).

Blanks

No target analytes were detected in any laboratory blank, equipment blank, or trip blank.

Surrogate Recoveries and Internal Standard Recoveries

Surrogate recoveries for VOCs analyses were within acceptance criteria. According to the LRCs and case narratives, internal standard areas were within SW-846 method acceptance criteria.

Laboratory Control Samples

LCSs and LCSDs were spiked with the target analyte of interest for the analytical method. LCS/LCSD recoveries and RPDs were within acceptance criteria.

Matrix Spike and Matrix Spike Duplicates

MS/MSDs were spiked with the target analyte of interest for the analytical method.

1,2-dichloroethane was recovered at less than the lower control limit in the MS/MSDs performed on samples AZG1-39-44_20240918_N_WG and MW-CB-14AS_20240916_N_WG; therefore the detection of 1,2-dichloroethane in AZG1-39-44_20240918_N_WG was qualified as JL, estimated and potentially biased low, and the non-detect result in MW-CB-14AS_20240916_N_WG was qualified as UJ, not detected at an estimated detection limit.

Other MS/MSD recoveries and all MS/MSD RPDs were within acceptance criteria.

Field Precision

Table 2 summarizes field duplicate precision calculations. The precision between samples MW-CB-15AS_20241120_N_WG and MW-CB-1A_20240917_N_WG and their associated field duplicates was outside acceptance criteria; therefore, detections of 1,2-dichloroethane in these samples were qualified as J, estimated and the non-detect result was qualified as UJ, not detected at an estimated detection limit. Based on the RPD between the concentrations detected and the proximity of the concentrations to the MQL, overall field duplicate precision was within the project acceptance criteria.

Field Procedures

Samples were collected following standard operating procedures detailed in the project sampling instructions. No anomalies were observed during sampling.

Table 3. Field Precision
Data Usability Summary
Dow Charlie Burch facility, Houston, Texas

Field Identification	Analyte	Sample Result	Duplicate Result	MQL	RPD[a]	Qualified
MW-CB-15AS_20241120_N_WG / DUP-01_20241120_FD_WG	1,2-Dichloroethane	4.4	0.2 U	1	183%	J
AZG4-20-25_20240920_N_WG / DUP-07_20240920_N_WG	1,2-Dichloroethane	13	12	1	8.0%	A
MW-CB-1A_20240917_N_WG / DUP-05_20240917_FD_WG	1,2-Dichloroethane	1.5	4.7	1	103%	J
MW-CB-1BS_20240917_N_WG / DUP-04_20240917_FD_WG	1,2-Dichloroethane	3.1	3.3	1	6.2%	A

Table 3. Field Precision
Data Usability Summary
Dow Charlie Burch facility, Houston, Texas

Field Identification	Analyte	Sample Result	Duplicate Result	MQL	RPD[a]	Qualified
RDP-3_20240917_N_WG / DUP-03_20240917_FD_WG	1,2-Dichloroethane	1.4	2.3	1	49%*	A
MW-CB-41S-20240424-N-WG / DUP-01-20240424-FD-WG	1,2-Dichloroethane	0.88 J	0.91 J	1	3.4%	A

[a] RPD = ((SR - DR)*200)/(SR + DR)
* RPD exceeds 30 percent, but results are less than 5 times MQL and are within 2 times the MQL so they are acceptable
A = Acceptable Data.
J (in Sample Result or Duplicate Result column) = Result > SDL < MQL
J (in Qualified column) = Estimated concentration due to field duplicate precision outside of acceptance criteria
SR = Sample result
DR = Duplicate result
MQL = method quantitation limit
RPD = relative percent difference
SDL = sample detection limit

Summary

Overall, the quality of the analytical data was found to be within the QC limits established by the project data quality objectives, the analytical methods, and the review criteria presented in *Review and Reporting of COC Concentration Data Under TRRP* (RG-366/TRRP-13).

The following data quality indicators were found to be within project acceptance criteria and did not require data qualification:

- Sample receipt conditions
- Sample preservation
- Holding times
- Initial calibrations
- Continuing calibration verification
- Instrument performance calibration (GC/MS tunes)
- Blanks
- Internal standard recoveries
- Surrogate recoveries
- LCS/LCSD recoveries and RPDs
- MS/MSD RPDs

QC issues encountered included two instances of low MS/MSD recovery and two instances of field duplicate imprecision. Results qualified based on these issues are described herein and listed in Table 2.

No results were rejected, giving the data set a 100 percent completeness. The analytical results may be used to support project decisions.

Attachment

National Environmental Laboratory Accreditation Program Certificates

Texas Commission on Environmental Quality

Certificate of Accreditation

Accreditation is hereby granted to

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

State Lab ID: T104704231
Effective Date: 05/01/2024
Expiration Date: 04/30/2025
Document ID: TX-C24-00130

Conditions of Accreditation

This laboratory has been found to conform with TCEQ rules and applicable standards for laboratory accreditation. The scope of accreditation is limited to the Fields of Accreditation specifically listed on the subsequent page(s) of this certificate. Accreditation is for all version of a method approved per 40 CFR 136, 40 CFR 141, and/ or 40 CFR 143. Continued accreditation requires ongoing compliance with all applicable standards and requirements.

Issued By: Kelly Keel, Executive Director Texas Commission on Environmental Quality
Date Issued: 05/01/2024

Texas Commission on Environmental Quality

NELAP-Recognized Laboratory Accreditation is hereby awarded to

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

10450 Stancliff Road, Suite 115
Houston, TX 77099-4338

in accordance with Texas Water Code Chapter 5, Subchapter R, Title 30 Texas Administrative Code Chapter 25, and the National Environmental Laboratory Accreditation Program.

The laboratory's scope of accreditation includes the fields of accreditation that accompany this certificate. Continued accreditation depends upon successful ongoing participation in the program. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current location(s) and accreditation status for particular methods and analyses (www.tceq.texas.gov/goto/lab). Accreditation does not imply that a product, process, system or person is approved by the Texas Commission on Environmental Quality.

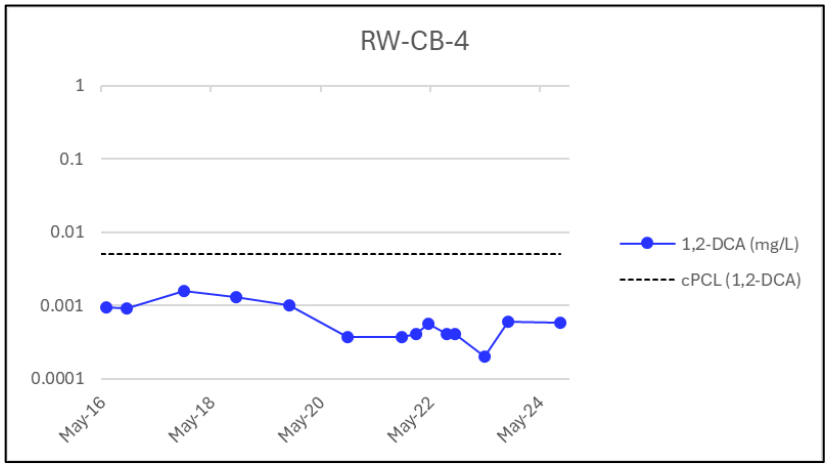
Erin E. Chancellor

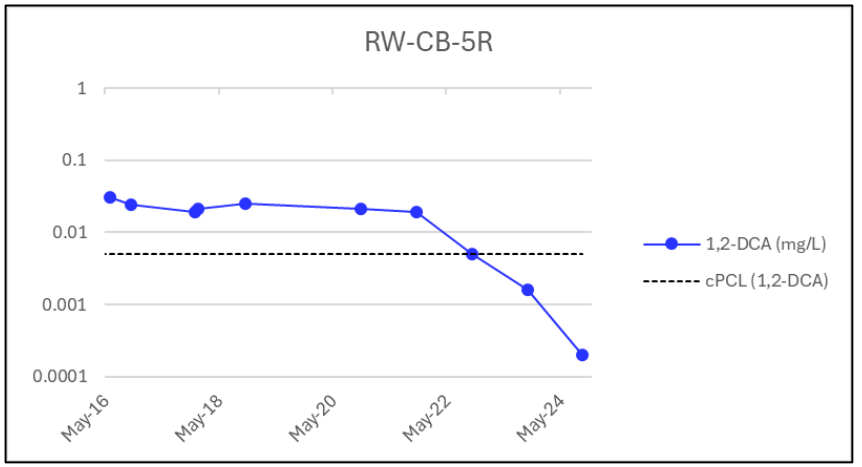
Executive Director Texas Commission on Environmental Quality

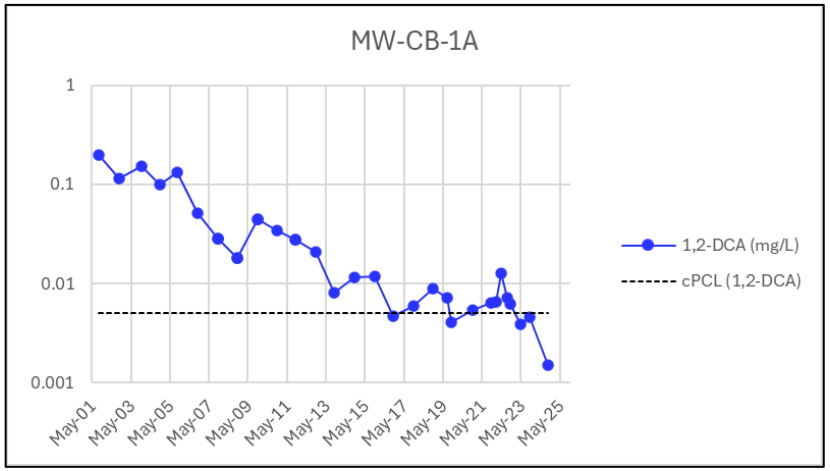
Certificate Number: T104704231-23-32
Effective Date: 7/19/2023
Expiration Date: 4/30/2024

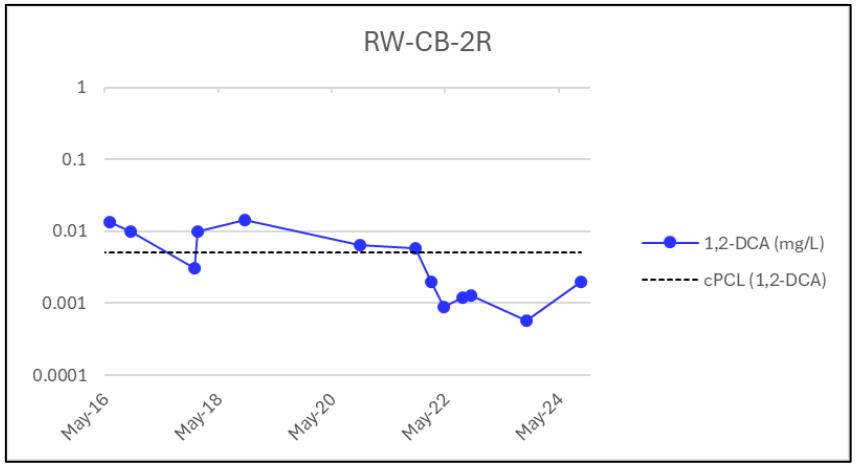
Appendix D
Time Series Graphs

Concentration Vs Time Plots
(Source Area and Northern Area – Zone A)



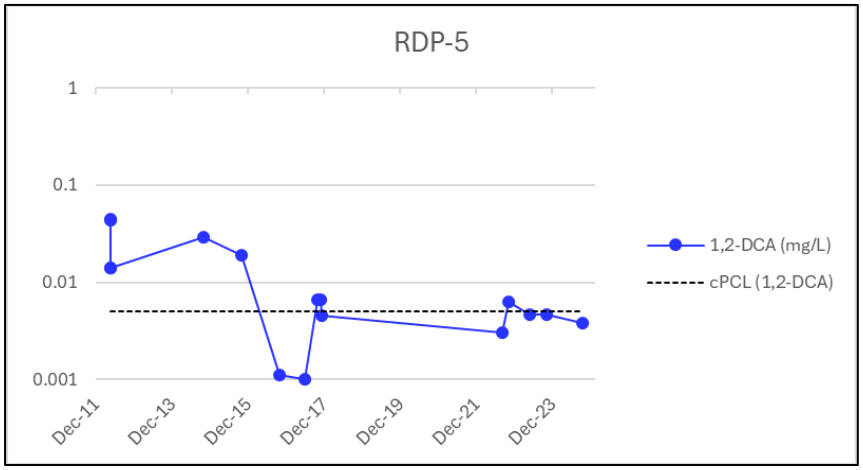


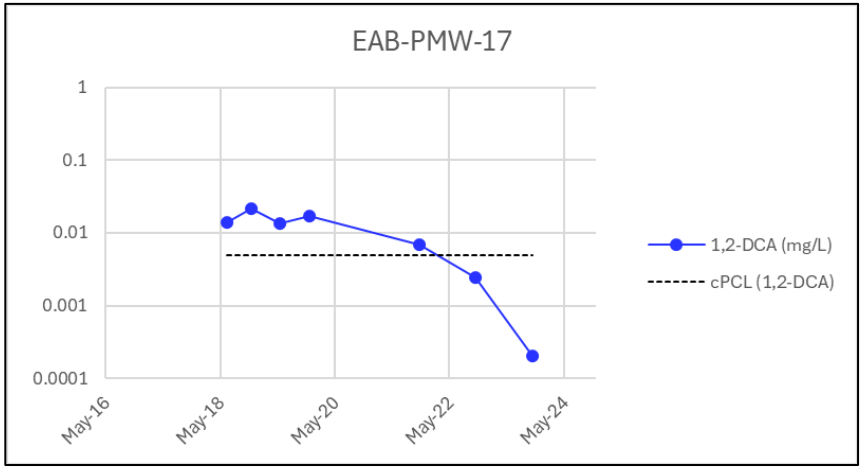


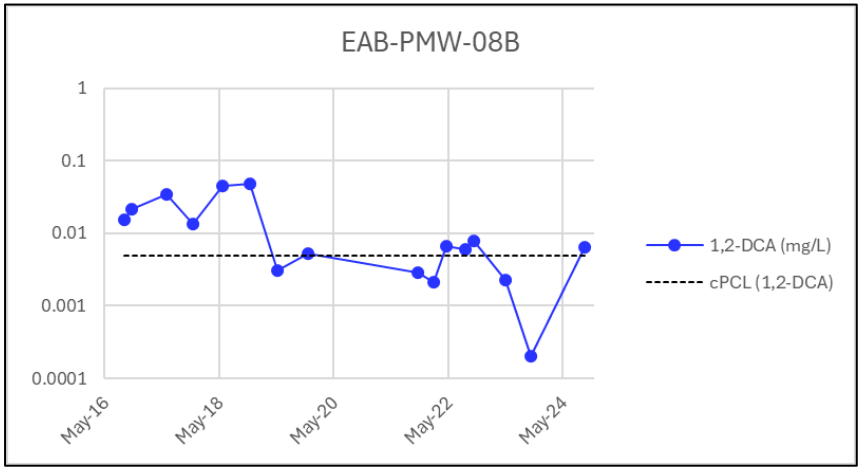


Note:
Dashed line indicates 1,2-Dichloroethane Protective Concentration Limit of 0.005 milligrams per liter

Concentration Vs Time Plots
(Source Area and Northern Area – Zone A)

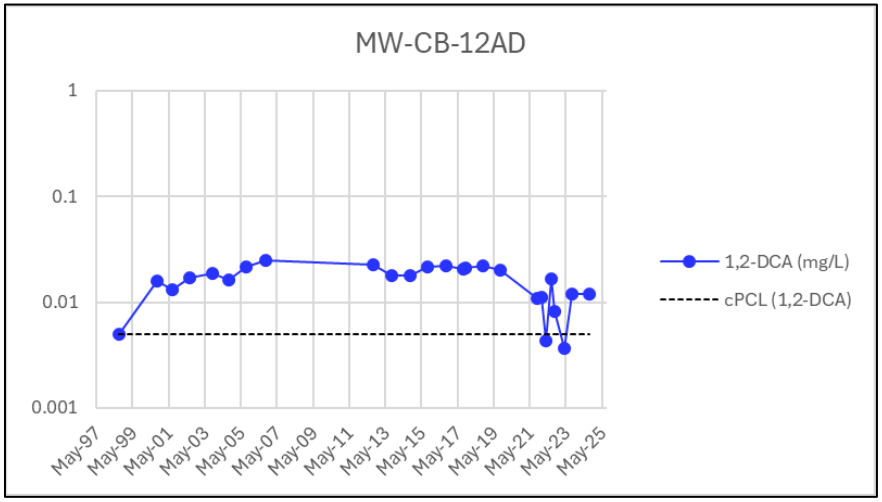






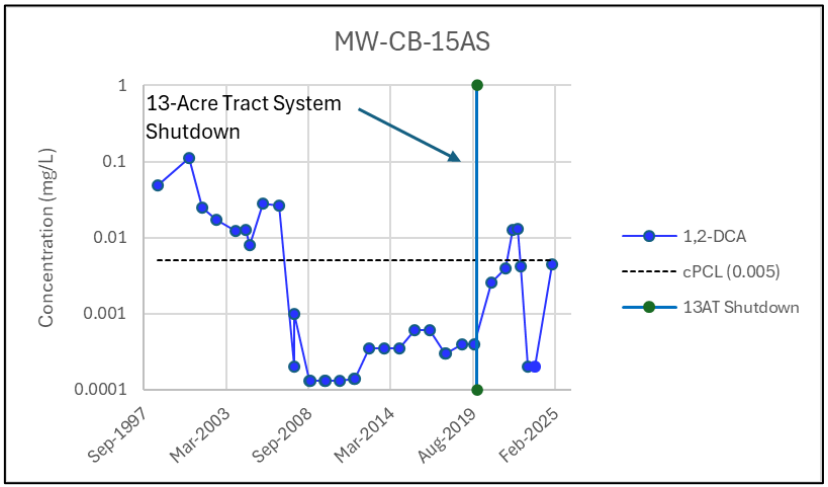
Note:
Dashed line indicates 1,2-Dichloroethane Protective Concentration Limit of 0.005 milligrams per liter

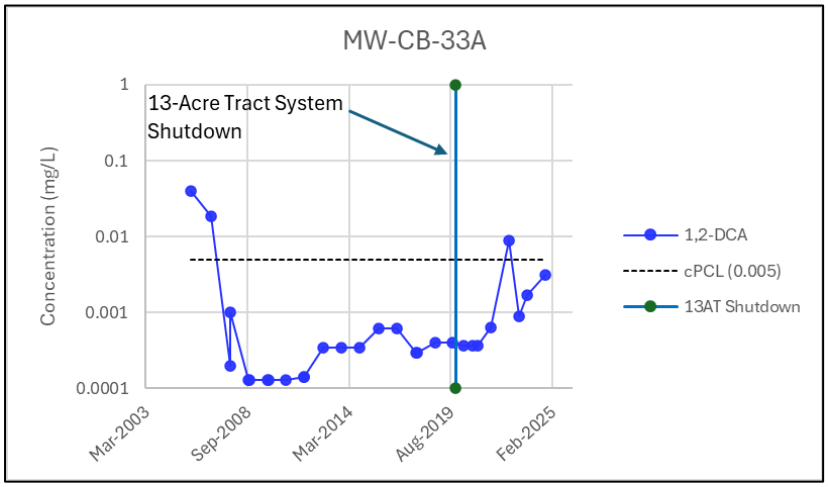
Concentration Vs Time Plots
(Southern Area – Zone A)

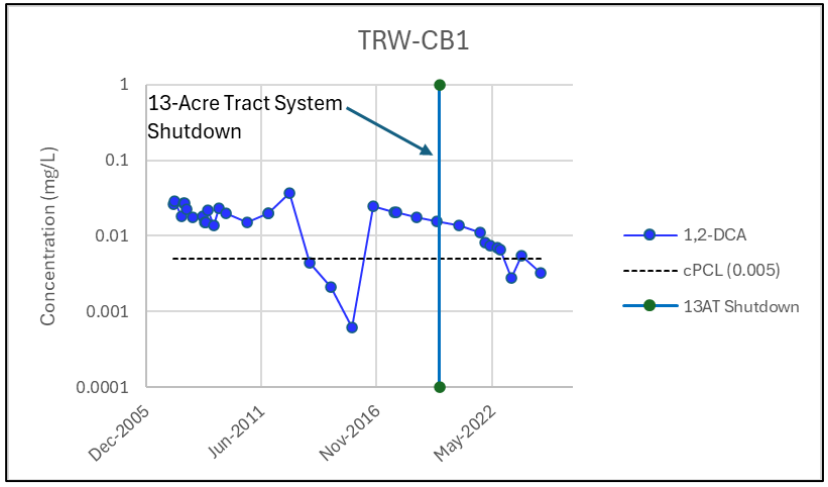


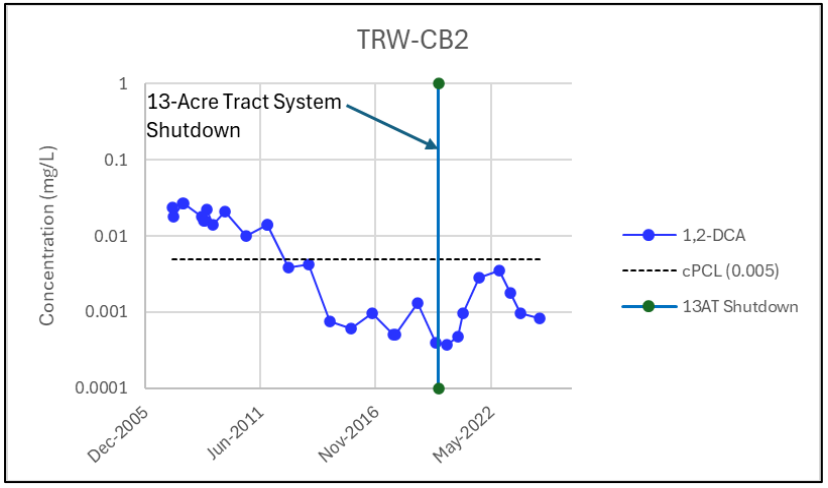
Note:
Dashed line indicates 1,2-Dichloroethane Protective Concentration Limit of 0.005 milligrams per liter

Concentration Vs Time Plots
(13-Acre Tract)



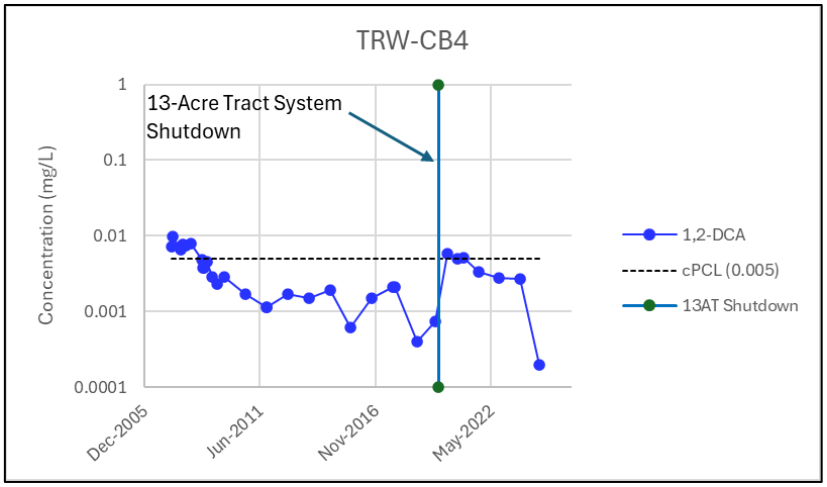






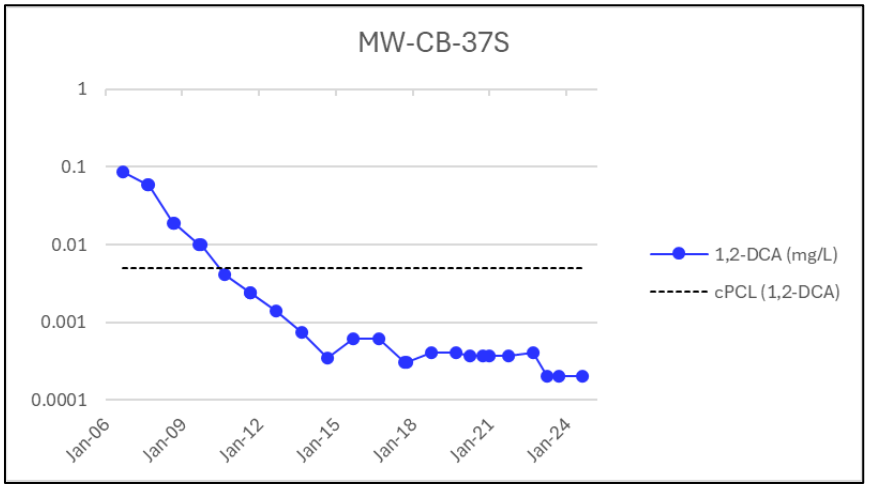
Note:
Dashed line indicates 1,2-Dichloroethane Protective Concentration Limit of 0.005 milligrams per liter

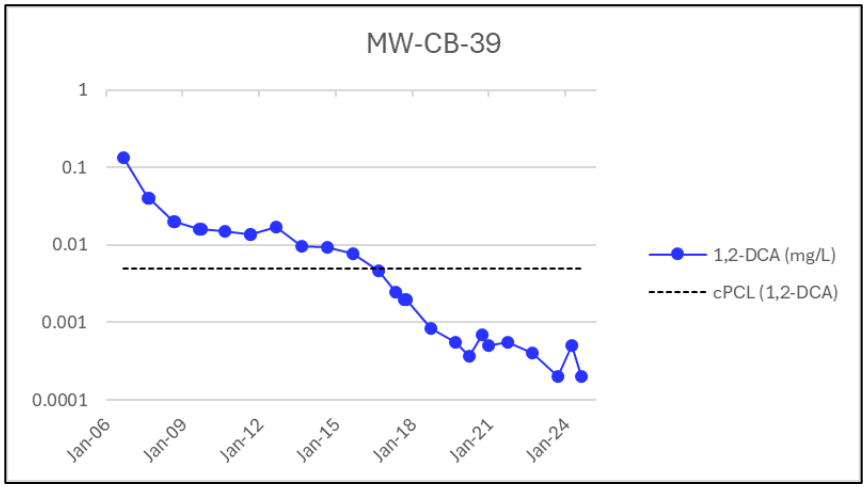
Concentration Vs Time Plots
(13-Acre Tract)

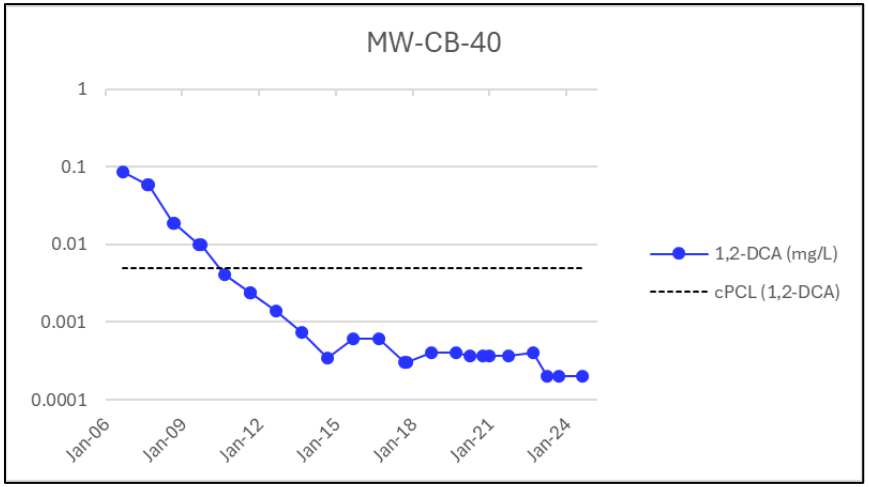


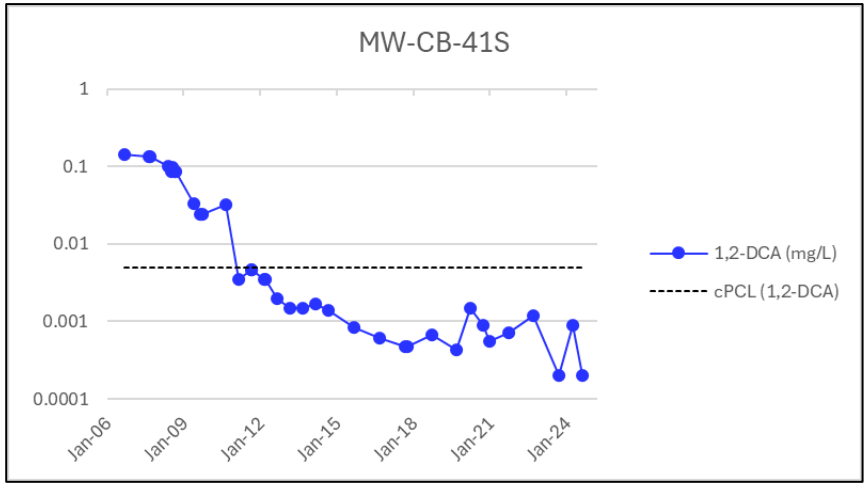
Note:
Dashed line indicates 1,2-Dichloroethane Protective Concentration Limit of 0.005 milligrams per liter

Concentration Vs Time Plots
(Offsite Southern Tract– Zone A)



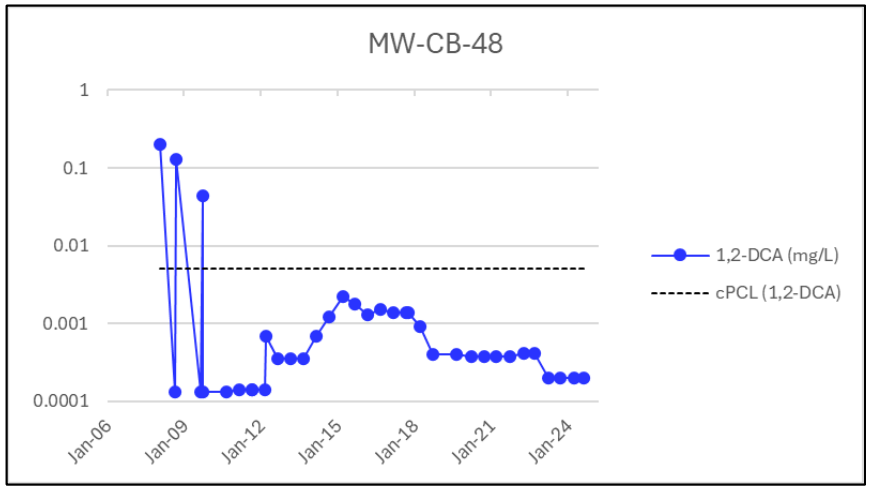


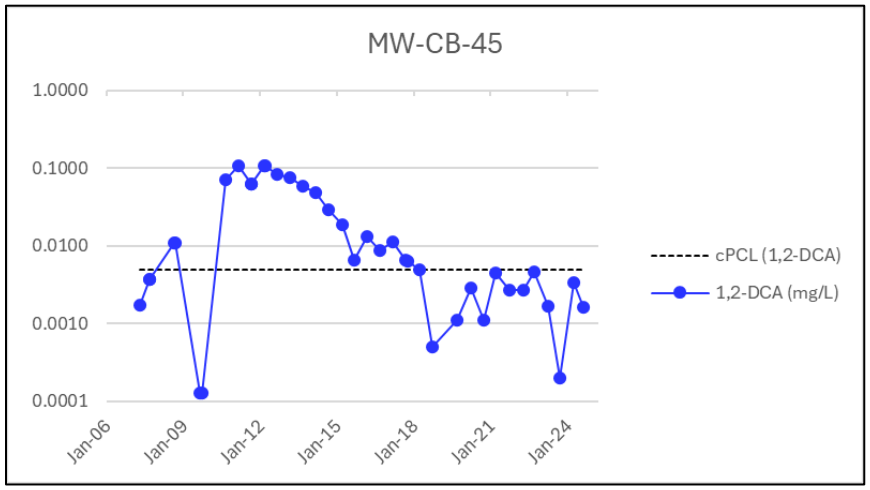


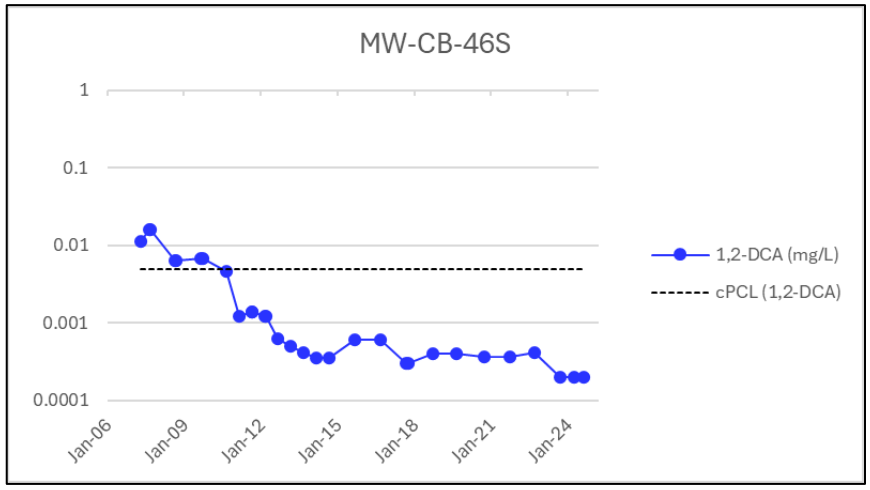


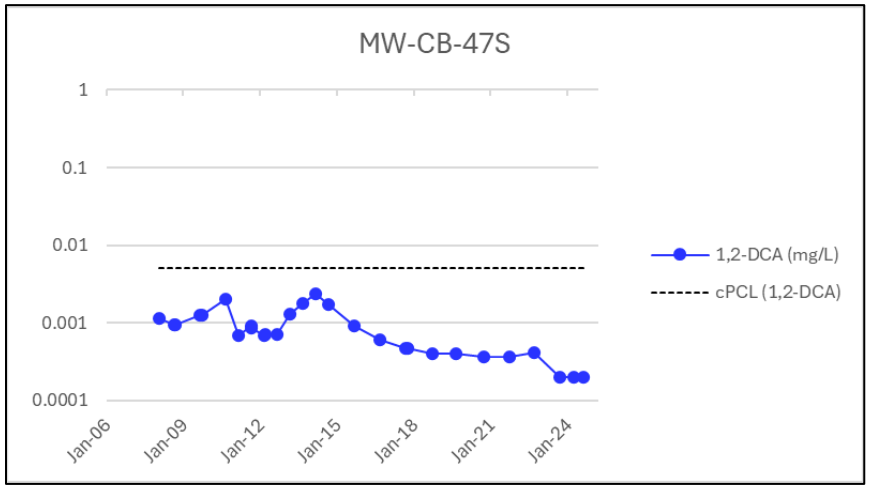
Note:
Dashed line indicates 1,2-Dichloroethane Protective Concentration Limit of 0.005 milligrams per liter

Concentration Vs Time Plots
(Offsite Southern Tract– Zone A)



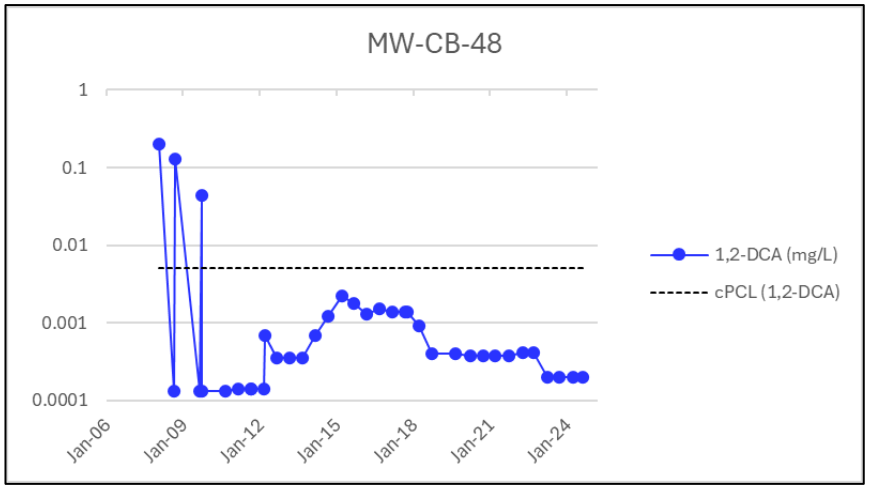






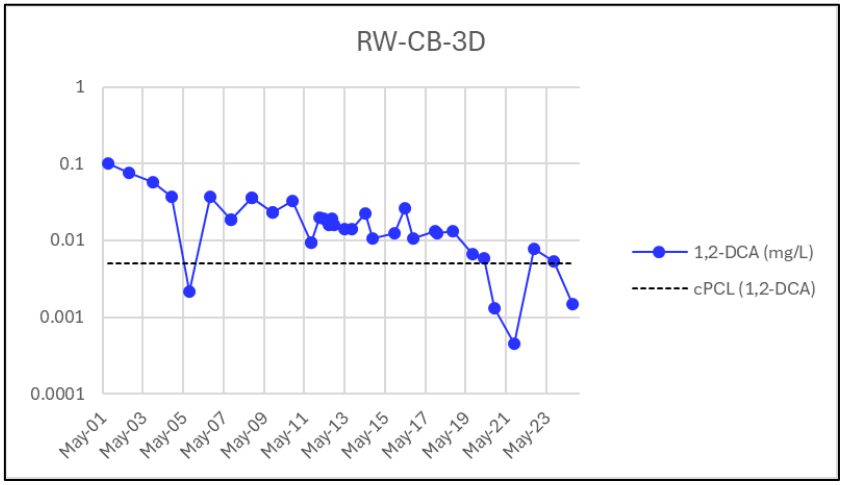
Note:
Dashed line indicates 1,2-Dichloroethane Protective Concentration Limit of 0.005 milligrams per liter

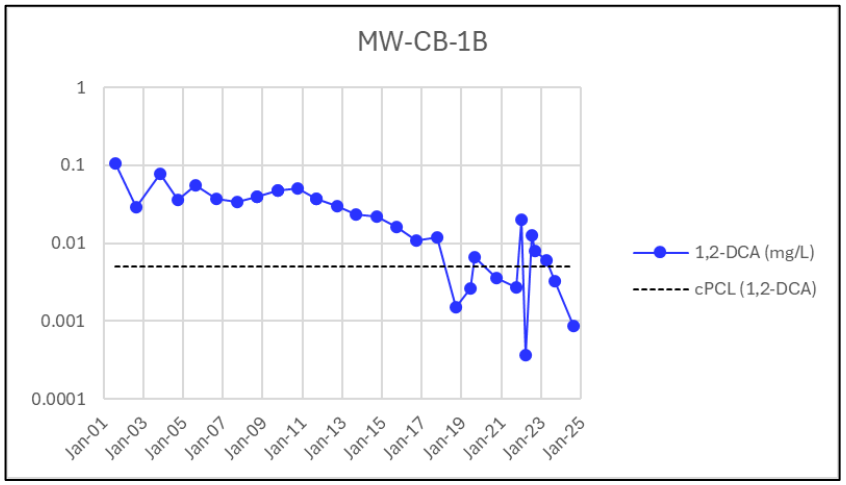
Concentration Vs Time Plots
(Offsite Southern Tract– Zone A)

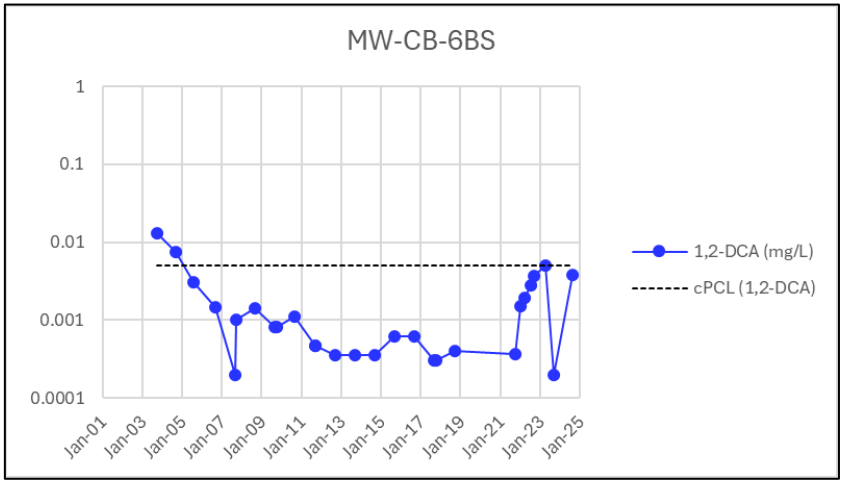


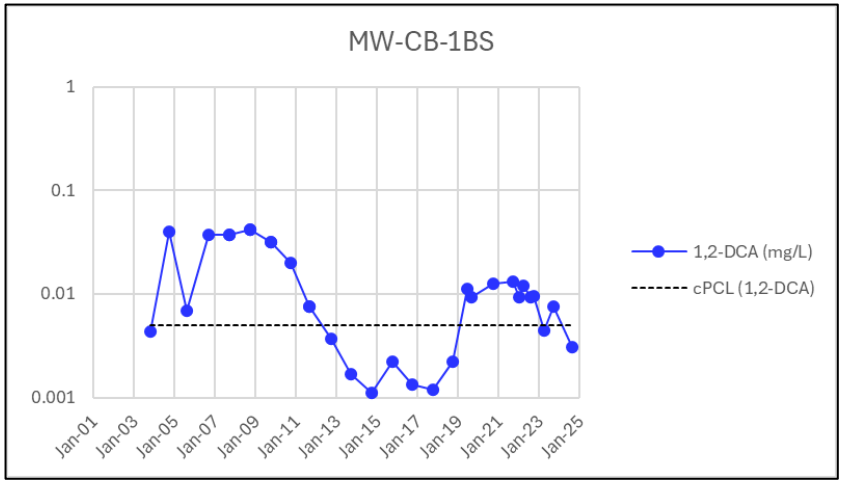
Note:
Dashed line indicates 1,2-Dichloroethane Protective Concentration Limit of 0.005 milligrams per liter

Concentration Vs Time Plots
(Source Area - Zone B)









Note:
Dashed line indicates 1,2-Dichloroethane Protective Concentration Limit of 0.005 milligrams per liter