

Cytec Solvay Group

Final 2022 Annual Groundwater Performance Monitoring Report

**1300 Revolution Street
Havre de Grace, Maryland
USEPA ID No. MDD 003 075 942**

January 27, 2023

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Prepared By:

Arcadis U.S., Inc.
7550 Teague Road, Suite 210
Hanover
Maryland 21076
Phone: 410 987 0032
Fax: 410 799 2533

Prepared For:

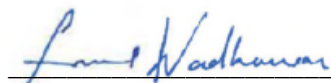
Cytec Solvay Group

Our Ref:

30114618



Shwetha Sridharan
Staff Engineer



Amar Wadhawan
Principal Environmental Engineer



Joshua Wilson
Project Manager

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Acronyms and Abbreviations

µg/L	microgram per liter
1,1,2-TCA	1,1,2-trichloroethane
1,2-DCA	1,2-dichloroethane
2022 Annual PMR	2022 Annual Groundwater Performance Monitoring Report
Arcadis	Arcadis U.S., Inc.
BBL	Blasland, Bouck & Lee, Inc.
CAO	corrective action objective
CMS Report	Corrective Measures Study Report
CMS Work Plan	Corrective Measures Study Work Plan
COC	constituent of concern
Cytec	Cytec Solvay Group
D	quantified in a secondary dilution (lab qualifier); compound was detected after dilution
DDC	density-driven convection
ft	feet
gpm	gallon per minute
J	estimated concentration (lab qualifier)
MCL	maximum contaminant level
MNA	monitored natural attenuation
msl	mean sea level
NFPA	National Fire Protection Association
O&M	operation and maintenance
PCE	tetrachloroethene
PMP	Performance Monitoring Plan
PMR	Performance Monitoring Report
POC	point of compliance
POTW	publicly owned treatment works
RCRA	Resource Conservation and Recovery Act
Rd	retardation factor

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redox	oxidation-reduction
RFI Report	Resource Conservation and Recovery Act Facility Investigation Report
site	Cytec facility, located at 1300 Revolution Street in Havre de Grace, Maryland
TCE	trichloroethene
THM	trihalomethane
TOC	total organic carbon
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VC	vinyl chloride
VOC	volatile organic compound

Executive Summary

On behalf of Cytec Solvay Group (Cytec), Arcadis U.S., Inc. (Arcadis) prepared this 2022 Annual Groundwater Performance Monitoring Report (2022 Annual PMR) for the Cytec facility located at 1300 Revolution Street in Havre de Grace, Maryland (site). Environmental activities at the site are conducted in accordance with the requirements of Resource Conservation and Recovery Act (RCRA) Permit ID No. MDD 003 075 942, with oversight by the United States Environmental Protection Agency (USEPA) Region 3. The site’s RCRA permit became effective on December 6, 2012.

This 2022 Annual PMR presents the 2022 groundwater analytical results, following implementation of the final remedy (a combination of groundwater use restrictions, enhancement of the existing groundwater stabilization system, and long-term monitoring) in January 2015. Annual performance monitoring was conducted in September 2022, in accordance with the monitoring program established in the Performance Monitoring Plan (PMP; Arcadis 2012b) and subsequent monitoring report recommendations.

Concentration trends for site constituents of concern (COCs) have demonstrated significant groundwater quality improvements (i.e., concentrations have decreased by orders of magnitude at many on- and off-site monitoring wells) since implementation of the interim remedial measures at the site, which were initiated in 1996. The groundwater quality improvements are the result of a combination of on-site mass removal, off-site mass flux reductions, and natural attenuation processes. Prior to operation of the expanded groundwater stabilization system in January 2015, elevated concentrations of 1,2-dichloroethane (1,2-DCA) remained at several locations, including intermediate monitoring well MW-6I and deep monitoring wells MW-3, MW-27, and MW-28D. Based on the 2022 performance monitoring results, nine of 19 monitoring wells are in compliance with corrective action objective (CAO) goals (i.e., no COCs exceeded their respective numerical CAO goals), as summarized in **Exhibit 1**, below.

Exhibit 1. 2022 Performance Monitoring Results Summary

Performance Monitoring Wells in Compliance with CAO Goals for Site COCs		Performance Monitoring Wells Not in Compliance with CAO Goals		
Monitoring Well ID	Location/ Designation	Monitoring Well ID	Location/ Designation	COCs Exceeding CAO Goals
MW-4	On site	MW-3	On site	1,2-DCA, methylene chloride, VC
MW-8D	On site	MW-6I	On site	1,2-DCA, TCE
MW-8S	On site	MW-13D	On site	1,2-DCA
MW-12D	On site	MW-14I	Off site	1,2-DCA
MW-12S	On site	MW-16	Off site	VC
MW-14	Off site	MW-19D1	Off site	1,2-DCA
MW-18	Off site	MW-23	Off site	1,2-DCA
MW-20D1	Off site	MW-25I	On site	Chloroform, TCE
MW-22D	Off site	MW-27	Off site	TCE, VC
		MW-28D	On site	1,2-DCA

Notes:

1,2-DCA = 1,2-dichloroethane

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VC = vinyl chloride
TCE = trichloroethene

Six monitoring wells (MW-3, MW-12S, MW-12D, MW-13D, MW-19D1, and MW-20D1) are used for point of compliance (POC) monitoring during active operation of the groundwater stabilization system. At three POC wells (MW-12S, MW-12D, and MW-20D1), concentrations were less than the respective CAO goals for each COC. At downgradient POC well MW-19D1, the concentration of 1,2-DCA (52 micrograms per liter [$\mu\text{g/L}$]) exceeded the CAO goal of 5 $\mu\text{g/L}$ in 2022, slightly higher than the 2021 result (30 $\mu\text{g/L}$). 1,2-DCA concentrations at this location were less than the CAO goal of 5 $\mu\text{g/L}$ between 2014 and 2017: November 2014 (3.0 $\mu\text{g/L}$), June 2015 (1.6 $\mu\text{g/L}$), November 2015 (1.9 $\mu\text{g/L}$), and October 2017 (2.8 $\mu\text{g/L}$). As such, it is believed that the 2018 to 2022 detections of 1,2-DCA in downgradient POC well MW-19D1 are representative of a slug of mass located beyond the capture zone of the expanded groundwater stabilization system that is now passing through the downgradient portion of the site as monitored by well MW-19D1. It is expected that concentrations of 1,2-DCA will attenuate (reduce) through time at this location. This is further supported by the significant reduction in COC concentrations at off-site monitoring well MW-27 since expansion of the groundwater stabilization system in 2015.

At on-site POC monitoring well MW-3, 1,2-DCA, methylene chloride, and vinyl chloride (VC) were detected at concentrations exceeding their CAO goals. MW-3 is located at the former underground storage tank farm in the southern corner of the site. At MW-3, the methylene chloride concentration (27 $\mu\text{g/L}$) was greater than its CAO goal of 5 $\mu\text{g/L}$ and less than its historical peak concentration of 15,000 $\mu\text{g/L}$ in October 1997. Methylene chloride was previously detected in 2020 (53 $\mu\text{g/L}$) and 2021 (35 J [estimated concentration] $\mu\text{g/L}$).

In 2022, the maximum detected concentration of methylene chloride in downgradient extraction well EW-02 was 140,000 $\mu\text{g/L}$. With the exception of EW-02 and MW-3, methylene chloride was not detected in 2022 in any of the other monitoring wells included in the PMP (Arcadis 2012b). Groundwater samples will continue to be collected from performance monitoring wells listed in Exhibit 1 including MW-3 and analyzed for methylene chloride to further evaluate the isolated detections observed to date. In general, concentrations of COCs have remained stable or decreased following implementation of the expanded groundwater stabilization system in January 2015. Exceptions include the presence of VC at MW-3 due to natural attenuation processes, and the recent presence of 1,2-DCA concentrations in downgradient well MW-19D1.

Furthermore, concentrations of the primary site COC, 1,2-DCA, have varied without clear trends since the last reporting period. The concentration of 1,2-DCA in EW-01 ranged from 350 $\mu\text{g/L}$ to 790 $\mu\text{g/L}$ in 2022, compared to 83 $\mu\text{g/L}$ to 1,100 $\mu\text{g/L}$ in 2021. In EW-02, the concentration of 1,2-DCA was 47,000 $\mu\text{g/L}$ in 2022, compared to a range of 1,800 D $\mu\text{g/L}$ (detected after dilution) to 17,000 $\mu\text{g/L}$ in 2021. EW-02 was only sampled once in 2022 due to a pump motor malfunction and groundwater extraction is expected to resume in January 2023.

Groundwater samples were collected from select monitoring wells and analyzed for biogeochemical parameters and degradation products to assess the biodegradation potential of the groundwater COCs and current groundwater oxidation-reduction (redox) conditions. The biogeochemical data collected to date indicate that the redox conditions range from mildly to strongly reducing. A degradation product, methane, was detected in one on-site well (MW-3), several off-site wells (MW-14I, MW-16, MW-18, MW-23, and MW-27), and downgradient POC wells MW-19D1 and MW-20D1. An advanced degradation product, ethene, was detected at significant concentrations (greater than 100 $\mu\text{g/L}$) in MW-27 from 2014 to 2022. The presence of these compounds indicates that 1,2-DCA, TCE, and their degradation products are readily attenuating, resulting in mass destruction within the off-site contaminant plume. Conservative fate and transport calculations were completed for 1,2-DCA to estimate the distance downgradient at which 1,2-DCA concentrations in groundwater become less than the CAO (5 $\mu\text{g/L}$).

The results indicate that 1,2-DCA concentrations in well MW-19D1 attenuate to levels below the CAO before reaching the Chesapeake Bay at its closest point, approximately 632 feet downgradient of MW-19D1.

In 2022, 2,838,180 gallons of COC-impacted groundwater were extracted by the system and discharged to the local publicly owned treatment works, an approximate decrease of 11 percent compared to the extracted volume reported for 2021. The average monthly uptime for the system in 2022 was 74 percent, 2 percent lower than 2021. The three extraction wells were not operated as consistently in 2022 compared to 2021 due to prolonged EW-02 pump shutdown and unforeseen equipment failures that caused protracted system shutdowns. While biofouling of the well screens, pump motors, and subsurface piping network continues to hinder system performance, routine and proactive operation and maintenance activities conducted in 2022 optimized overall system performance, similar to 2021.

The observed water-level measurements indicate that under pumping conditions, the deep overburden zone is hydraulically captured across the entire width of the on-site impacted area. Moreover, the observation that COC concentrations in wells downgradient of the northeastern site boundary continue to demonstrate decreasing or stable trends provides further evidence of adequate hydraulic capture when the extraction wells are operating.

A combination of hydraulic capture, mass removal, mass flux reductions, and natural attenuation processes is continuing to improve groundwater quality at the site and inhibiting contaminant mass flux migration downgradient of the site boundary.

Continued operation of the groundwater stabilization system is recommended to maintain groundwater capture. Operation of the groundwater stabilization system is planned for at least 15 years (2015 through 2030). The eighth year of operation was performed in 2022. Continued annual groundwater monitoring is planned, with the next performance monitoring event tentatively scheduled for August 2023 followed by the 2023 annual PMR submittal by January 31, 2024. To maintain the operational capture zone of the groundwater stabilization system in 2023, an annual well rehabilitation and hydro-jetting event will be conducted, the pump at EW-02 will be replaced in January 2023, and pumps will be routinely cleaned throughout the year. Routine pipe cleaning will be conducted quarterly, or as needed based on well performance. Additionally, routine system inspections and timely leak repairs will facilitate continued system operation. Effluent samples collected during routine system inspections will be used to optimize the flow rate at each extraction well.

1 Introduction

On behalf of Cytec Solvay Group (Cytec), Arcadis U.S., Inc. (Arcadis) prepared this 2022 Annual Groundwater Performance Monitoring Report (2022 Annual PMR) for the Cytec facility located at 1300 Revolution Street in Havre de Grace, Maryland (site). Environmental activities at the site are conducted in accordance with the requirements of Resource Conservation and Recovery Act (RCRA) Permit ID No. MDD 003 075 942, with oversight by United States Environmental Protection Agency (USEPA) Region 3. The site RCRA permit became effective on December 6, 2012.

The final remedy for groundwater is a combination of groundwater use restrictions, enhancement of the interim groundwater stabilization system, and long-term monitoring in accordance with the Final Decision and Response to Comments (USEPA 2012). A Performance Monitoring Plan (PMP; Arcadis 2012b) was subsequently prepared in 2012. This 2022 Annual PMR presents the eighth year (2022) of groundwater analytical results following implementation of the final remedy in 2015. Specifically, this 2022 Annual PMR describes the operational status of the groundwater stabilization system and current groundwater results and evaluates the extent of on-site capture and downgradient natural attenuation of the constituents of concern (COCs).

Pre-implementation groundwater sampling (performed prior to the 2015 modification of the groundwater stabilization system) was conducted in October and November 2014, as summarized in the Groundwater Monitoring Results Technical Memorandum (Arcadis 2015a). Construction and pre-implementation activities related to the expanded groundwater stabilization system are documented in the Corrective Measures Implementation Construction Completion Report (Arcadis 2015b).

Performance monitoring has continued annually in accordance with the PMP (Arcadis 2012b) and was modified pursuant to the recommendations outlined in subsequent Annual Performance Monitoring Reports (PMRs), as described below:

- **2016.** Tetrachloroethene (PCE) and carbon disulfide were removed from the COC list based on analytical results, and total organic carbon (TOC) was added to the monitored natural attenuation (MNA) parameter list. The groundwater sampling method was modified to a passive sampler (HydraSleeve™) for use with both volatile organic compounds (VOCs) and MNA parameters. These modifications were presented in Section 7 of the 2015 Annual PMR (Arcadis 2016). Approval of these modifications was documented in comments on the 2015 Annual PMR, received from the USEPA via an electronic mail on August 2, 2016 (USEPA 2016).
- **2018.** Monitoring wells MW-11D, MW-16, and MW-27 were reclassified as deep overburden wells in 2018. This proposed change was documented in the 2017 Annual PMR (Arcadis 2018). Approval of this change was documented in an electronic mail received from the USEPA on February 28, 2018 (USEPA 2018).
- **2020.** Monitoring wells MW-6 and MW-15 were removed from the monitoring program in 2020 because no site COCs were detected at concentrations greater than laboratory reporting limits during the previous 5 years of monitoring. This proposed change was documented in the 2019 Annual PMR (Arcadis 2020). Approval of this change was documented in an electronic email from the USEPA on February 10, 2020 (USEPA 2020).

In September 2022, 19 wells were sampled for VOCs and eight wells were sampled for MNA parameters.

2 Site Background

Site background information including the site location, hydrogeologic setting, and groundwater characterization are presented below to assist in evaluating the performance assessment of the groundwater stabilization system and COC trends.

2.1 Site Location

The site occupies an approximately 27-acre parcel, located at 1300 Revolution Street in Havre de Grace, Maryland (**Figure 1**). The facility began operations on site in 1962, manufacturing structural adhesives for the aerospace industry. A portion of the facility was used to manufacture honeycomb core material used in conjunction with adhesives to form fuselage and wing components of aircrafts between 1981 and 1992. Currently, Cytec produces specialty bonding adhesives at this facility, including modified epoxy adhesives, adhesive primers, high-temperature resin systems, and thermoplastic materials (e.g., graphite, DECLAR®) for the aerospace industry.

As shown on **Figure 2**, the site is bisected by the Norfolk Southern Railroad and an intermittent stream (a branch of Lilley Run). The adhesives building is located on the western portion of the site. The facility warehouse occupies the eastern half of the site. **Figure 2** also shows the areas surrounding the site, which include a mixture of light industrial and high-density residential properties. No structures are currently present beyond the warehouse on the eastern portion of the site. The Havre de Grace wastewater treatment plant, a local publicly owned treatment works (POTW), is located immediately southeast of the site boundary.

2.2 Hydrogeologic Setting

Historically, overburden groundwater flow was interpreted by dividing the overburden into two separate water-bearing units, corresponding to the Upper and Lower Talbot formation. However, this interpretation was not able to accurately describe COC migration in groundwater at locations where multiple sand and gravel layers are present at different elevations within the Lower Talbot. Based on discussions with the USEPA during development of the Phase IV RCRA Facility Investigation Report (RFI Report; Arcadis 2008a, 2008b), a decision was made to subdivide the overburden into the following three water-bearing units:

- *Shallow overburden zone.* Consists of the silts and similar fine-grained materials present in the upper 10 to 20 feet of the overburden (on site).
- *Intermediate overburden zone.* Consists of the uppermost sand and/or sand and gravel layers that underlie the fine-grained materials of the shallow overburden zone in the upper 20 to 30 feet of the overburden (on site and at deeper depths off site).
- *Deep overburden zone.* Consists of a second zone of permeable sand and/or sand and gravel layers that occur below the intermediate zone at locations where a layer of lower permeability silty clay separates the intermediate and deep overburden into two separate flow zones in the upper 30 to 45 feet of the overburden (on site and at deeper depths off site).

As a result of these changes to the hydrostratigraphic conceptual site model, many of the existing monitoring wells were reclassified as either intermediate or deep overburden wells in the RFI Report (Arcadis 2008a, 2008b). The well specifications and water-bearing unit designations are presented in **Table 1**.

Groundwater flows generally from west to east across the site and surrounding area in each zone. The similarity in groundwater flow patterns is most apparent in the intermediate and deep overburden zones. This observation, supported by the detection of groundwater impacts in the intermediate and deep overburden zones, indicates that the sand and gravel layers within these two water-bearing units are hydraulically connected; however, geologic cross sections provided in the PMP (Arcadis 2012b) show that there are discontinuous silt and clay lenses in the intermediate and deep overburden zones.

The hydrogeologic setting is further discussed in Section 5 (Updated Site Conceptual Model) of the RFI Report (Arcadis 2008b) and Section 2.5 (Site Conceptual Model) of the Corrective Measures Study Report (CMS Report; Arcadis 2012a).

2.3 Monitoring Well Network

A monitoring well network was installed during previous site investigations and consisted of 33 on-site and 16 off-site monitoring wells (**Figure 2**). The current groundwater sampling program includes 19 monitoring wells as presented in **Table 2**. In 2022, one site-wide gauging event was conducted on September 13. An additional 15 on-site and five off-site monitoring wells were gauged but were not sampled as a component of the PMP (Arcadis 2012b). The groundwater stabilization system was operational and pumping during the gauging event, with the exception of extraction well EW-02 (further described in Section 4.1). The 2022 gauging activities are summarized on the well inspection checklists included in **Appendix A**.

2.4 Constituents of Concern and Groundwater Impacts

Historical site investigations have identified the following COCs for groundwater:

- 1,1,2-Trichloroethane (1,1,2-TCA)
- 1,2-Dichloroethane (1,2-DCA)
- Chloroform
- Methylene chloride (also commonly known as dichloromethane)
- PCE
- Trichloroethene (TCE)
- Vinyl chloride (VC)
- Carbon disulfide

In 2016, PCE and carbon disulfide were removed from the COC list due to limited detections. In 2022, the COCs present at elevated concentrations are 1,2-DCA, chloroform, VC, TCE, and methylene chloride as further described in Section 5.2. The predominant COC in groundwater is 1,2-DCA.

According to facility personnel, 1,2-DCA was used as a raw material and cleaning solvent at the site from approximately 1967 through July 1990. A 6,000-gallon underground storage tank (UST), located at the UST farm

at the southern corner of the site boundary near the adhesives building (**Figure 2**), was used to store bulk 1,2-DCA. The UST was removed in December 1991.

Methylene chloride, another COC in groundwater, was also used as a raw material and cleaning solvent at the site from approximately 1967 through April 2003. Methylene chloride was stored in a 6,000-gallon UST at the UST farm (removed in December 1991), in a 3,000-gallon aboveground storage tank from September 1992 through December 1993, and in 55-gallon drums until use was discontinued in 2003. Methylene chloride groundwater impacts are present in extraction well EW-02, which is downgradient of the drum storage area, as shown on **Figure 2**. There are no known historical or current uses of 1,1,2-TCA, chloroform, PCE, TCE, VC, or carbon disulfide at the site.

The results of previous site investigations suggest that groundwater impacted with 1,2-DCA in the vicinity of the adhesives building migrated downward and into the sand and gravel layers of the intermediate and deep overburden zones beneath portions of the site (Arcadis 2008b). Impacted groundwater then migrated downgradient through these two zones and off site to the northeast, where these zones are connected near monitoring well MW-27 (located off site, approximately 146 feet east of EW-01). From this point, the impacted groundwater continued to migrate through the intermediate overburden zone farther off site to the northeast, spreading into the deep overburden zone near monitoring wells MW-14 (located approximately 520 feet downgradient of MW-10D) and MW-18 (located off site, approximately 270 feet northeast of MW-10D), where the two flow zones separate again.

2.5 Interim Remedial Measures for Groundwater

Several interim remedial measures have been implemented to address impacted groundwater at the site, including a density-driven convection (DDC) groundwater treatment system (1996 to 1999), a NOVOCS™ groundwater treatment system (1998 to 1999), and a groundwater stabilization system (2002 to 2014). Details pertaining to the implementation and effectiveness of the DDC and the NOVOCS™ treatment systems are provided in the Phase II RFI Report (Blasland, Bouck & Lee, Inc. [BBL] 1998) and the CMS Report (Arcadis 2012a).

The interim groundwater stabilization system was originally installed in 2001 to control off-site migration of the dissolved-phase chlorinated VOC impacts in the intermediate and deep overburden groundwater at the northeastern site boundary. The interim groundwater stabilization system included one extraction well (former monitoring well MW-10D) and conveyed extracted groundwater to the City of Havre de Grace POTW. Operation of the interim system began in April 2002 and continued through mid-November 2014.

2.6 Final Remedy for Groundwater

As described in the Final Decision and Response to Comments for the site (USEPA 2012), the final remedy for groundwater is a combination of groundwater use restrictions, enhancement of the interim system, and long-term monitoring until corrective action objective (CAO) goals are met. Groundwater stabilization was implemented to reduce the migration of impacted groundwater across the site boundary. As part of the final remedy, the system was expanded to include the installation of two additional extraction wells (EW-01 and EW-02) to increase hydraulic control and further reduce the migration of impacted groundwater beyond the designated points of compliance (POCs) at the site boundary (refer to Section 3.1).

The groundwater stabilization system expansion was conducted between October and December 2014, and system shakedown and startup testing were conducted in January 2015. Construction and startup of the expanded stabilization system are documented in the Corrective Measures Implementation Construction Completion Report (Arcadis 2015b).

The extracted groundwater continues to be discharged directly to the POTW in accordance with permit number CYT-2013-101. Currently, groundwater is pumped from three extraction wells (EW-01, EW-02, and MW-10D) at specific rates based on mass loading estimations (Arcadis 2015b). Flow rates can be adjusted, as necessary, to optimize the hydraulic control of COC-impacted groundwater while adhering to the discharge limit requirements established by the POTW. The 2022 daily pumping volumes and average cumulative pumping rates per month are shown on **Figure 3**. These daily pumping volumes are presented to show system uptime (i.e., when the system was running). Extraction well EW-02 has not been pumping since March 2022 due to a failed motor, groundwater extraction is expected to resume in January 2023 (refer to Section 4.1).

3 Corrective Action Objectives

As stated in the PMP (Arcadis 2012b), the CAOs address COCs present in groundwater at the site and provide the basis for the formulation and development of the corrective measure selected in the CMS Report (Arcadis 2012a): On-Site Expansion of the Existing Groundwater Stabilization System. The CAOs for the final remedy at the site are as follows:

- Manage future site use such that residential land use within the site boundary is restricted.
- Minimize and/or manage exposure to groundwater containing COCs at concentrations greater than established performance goals at an appropriate point of exposure.
- Maintain no unacceptable population-level ecological risks.
- Restore groundwater to established performance goals to return groundwater to maximum beneficial use at an appropriate POC.

These goals are met through operation of the system as well as implementation of institutional controls and long-term monitoring of COCs and MNA parameters. The system is operated at the site to increase hydraulic control of COC-impacted groundwater and further reduce migration of COCs beyond the site POCs, thus reducing the potential risk associated with impacted groundwater.

3.1 Points of Compliance

POCs were selected throughout the area of COC-impacted groundwater based on the CAO to return groundwater to its maximum beneficial use. The POCs were selected using a throughout-the-plume/unit boundary approach. The POCs include two locations intended to provide information regarding the downgradient extent of COCs (MW-19D1 and MW-20D1, located approximately 1,325 feet downgradient from the northeast corner of the site) and four locations intended to provide information regarding migration of impacted groundwater across the site boundary (MW-12S, MW-12D, and MW-13D located along the northeast site boundary, and MW-3 located in the southeast corner of the site), as indicated in the PMP (Arcadis 2012b). The POC monitoring wells are presented in **Table 2**.

3.2 Numerical Performance Goals

In support of the CAOs, numerical performance goals were established based on USEPA maximum contaminant levels (MCLs) for groundwater. For COCs with no MCLs, USEPA Region 3 screening levels for tapwater were used, as described in the USEPA-approved Corrective Measures Study Work Plan (CMS Work Plan; Arcadis 2008c). **Table 3** identifies the COCs for groundwater at the site and their numerical CAO performance goals, as defined in the CMS Work Plan (Arcadis 2008c).

The approved numerical CAO for chloroform is the USEPA regional screening level of 0.19 micrograms per liter ($\mu\text{g/L}$), which is lower than the typical laboratory reporting limit. Chloroform is regulated as a trihalomethane (THM) by the USEPA, which stipulates a cumulative THM MCL of 80 $\mu\text{g/L}$. Chloroform results are compared to both screening levels in Section 5.2.

4 Site Activities

Site activities conducted in 2022 consisted of the following:

- Routine and non-routine operation and maintenance (O&M) of the groundwater stabilization system, including completion of a pipe jetting event, routine pump cleaning, and leak repairs.
- Annual groundwater sampling using passive samplers at the 19 performance monitoring wells for COCs and field parameters.
- Annual groundwater sampling at a subset of the 19 monitoring wells for MNA parameters (TOC, sulfate, iron [total and dissolved], and dissolved gases [ethene, ethane, and methane]).
- Completion of a site-wide synoptic groundwater elevation survey during a period of consistent groundwater stabilization system operation to enhance the ability to interpret groundwater flow direction at the site.

Site activities were conducted in accordance with the site-specific Health and Safety Plan (Arcadis 2022), standard operating procedures, the monitoring program requirements established in the PMP (Arcadis 2012b), and as modified in the subsequent annual reports (Arcadis 2016, 2018, 2020, 2021a, 2021b). The current performance monitoring program summary is presented in **Table 2**. **Figure 2** shows the groundwater monitoring well network.

4.1 System Operation

Two of the three extraction wells (EW-01 and MW-10D) in the groundwater stabilization system operated continuously except for short-duration shutdowns (**Figure 3**) in January, February, June, July, and August 2022. On January 20, 2022, POTW facility personnel notified Arcadis of a pipe leak at the POTW property, prior to the Cytec system water entering the digester, and the system was shut down. The pipe at the POTW was replaced on February 1, 2022, and the system was restarted. The system was shut down again due to another leak at the POTW on February 10, 2022, which was repaired on February 23, 2022 and the system restarted. On March 15, 2022, a P-300 overload fault alarm shut down the EW-02 pump. A new motor was ordered, repairs are anticipated to be completed and groundwater extraction is expected to resume in January 2023. On June 27, 2022, leaks within the system enclosure at MW-10D were identified and the system shut down. Leaked water was captured in the floor drain of the system enclosure and conveyed to the MW-10D well vault. Repairs were completed on July 15, 2022, and the system was returned to operational status. On July 7, 2022, the EW-01 transducer failed, but EW-01 remained operational. A replacement was ordered and installation was completed in December 2022.

Monthly uptimes were generally greater than 70 percent as summarized in Exhibit 2, below. The average monthly uptime for the system from December 2021 to December 2022 was 74 percent. Average monthly pumping rates in gallons per minute (gpm) accounting for downtime are also summarized in Exhibit 2, below, and shown on **Figure 3**.

Exhibit 2. 2022 Summary of Average Daily Flow Rates and Monthly System Uptime

Month	Average Daily Flow Rate (gpm)	Monthly Uptime (Percent)
December 2021	1.9	26
January 2022	1.2	16
February 2022	3.5	54
March 2022	6.4	94
April 2022	5.7	83
May 2022	6.2	97
June 2022	6.5	90
July 2022	3.3	48
August 2022	6.0	81
September 2022	7.4	100
October 2022	7.2	100
November 2022	6.4	90
December 2022	4.9	87
Average:	5.1	74

4.2 System Sampling

Extraction well effluent and combined system discharge are analyzed for VOCs via USEPA Method 624 and for metals via USEPA Method 200.7 (Revision 4.4) as needed to assess system performance. Specifically, samples were collected on January 12, May 10, July 15, and October 11, 2022. Extraction well analytical results for 1,2-DCA and methylene chloride are presented in **Table 4**. The remaining constituent results are presented in the O&M laboratory reports (**Appendix B**). Extraction well effluent samples are collected while the system is running. Because EW-02 was not pumping after March 2022, samples were not able to be collected from this extraction well for the May, July, and October 2022 sampling events.

The semiannual combined system effluent samples were collected in May and October 2022 and analyzed for semivolatile organic compounds via USEPA Method 625, VOCs via USEPA Method 624, metals via USEPA Method 200.7 (Revision 4.4), mercury via USEPA Method 245.1, and cyanide via USEPA Method SM 4500 to comply with the permit requirements established by the POTW. Samples were collected from the terminal point of discharge at the POTW (May 10 and October 12, 2022). The POTW’s effluent limitations are presented in permit number CYT-2013-101. Analytical results were in compliance with the POTW’s effluent limitations (**Appendix B**).

4.3 System Operation and Maintenance Activities

Quarterly system inspections and maintenance were conducted in 2022. Inspections include calibration of the pH probes, inspection and cleaning of flow meters and piping in the system enclosure, collection of groundwater elevations at the extraction wells, and collection of influent and effluent system samples as discussed in

Section 4.2. In 2022, routine O&M activities also included completion of a well rehabilitation (i.e., purging, surging, and brushing of the three extraction wells) and hydro-jetting events to proactively control biofouling within the system and minimize the impact of biofouling on overall system performance. These events were conducted from April 12 through 15, 2022. Consistent with the 2021 events, hydro-jetting was conducted using a trailer-mounted pressure washer. Water, obtained from an on-site hydrant, was jetted through the subsurface piping network from the extraction well vaults toward the system enclosure and vice versa. The collected water was containerized and transported to the POTW for disposal. Jetting of the discharge lines from the system enclosure to the POTW was conducted for the first 300 feet. Jetted water was collected at the terminal point of each jetted segment. Following jetting activities, each pump was removed from its extraction well, disassembled, cleaned, and inspected.

The well rehabilitation and hydro-jetting event positively affected the monthly average flow rates at MW-10D (the average flow rate increased from 4.8 gpm in April 2022 to 5.2 gpm in May 2022) and EW-01 (the average flow rate increased from 0.91 gpm in April 2022 to 0.99 gpm in May 2022). The pump at EW-02 is typically removed for cleaning/maintenance and replaced every quarter, or more frequently as necessary. Quarterly pump cleaning/maintenance will resume in 2023 following the new motor installation and the pump resumes operation. Flow from the extraction wells is also optimized during quarterly site visits to maintain a pH greater than 5.0 standard units in accordance with CYT-2013-101 permit requirements.

Routine and non-routine O&M activities, including system alarms, are summarized in **Table 5**, and details of all routine and non-routine O&M activities are included in **Appendix A**. Non-routine O&M activities including pipe and system monitoring equipment (pH and transducer probes uninterruptible power supply [UPS]) diagnosis and repairs were more frequently required in 2022 to maintain system operation. Equipment repairs including replacements of the motor at EW-02, transducer at EW-01 and UPS at the system panel were completed in December 2022. False alarms and additional system inspections remained consistent between 2021 and 2022, and facility representatives continued to assist with inspections and resetting the system as needed. False alarms included consistent P-100 and P-200 drive fault alarms, which have historically been associated with fluctuations in the power supply to the system enclosure; roughly the same number of false alarms were received in 2021 and 2022.

O&M activities were reported in greater detail in monthly status reports in accordance with the discharge permit requirements established by the POTW. Monthly compliance reports submitted from December 2021 through December 2022 are included in **Appendix C**.

4.4 Groundwater Elevation Measurements

Water-level measurements were collected from the monitoring well network in September 2022. The system was operational during the collection of these data, except for EW-02. Water-level measurements are presented in **Table 1**, along with well construction details.

4.5 Performance Monitoring

Groundwater samples were collected using HydraSleeves™ on September 14 and 15, 2022 and submitted to Eurofins TestAmerica Laboratories, located in Pittsburgh, Pennsylvania, for analysis of site-specific VOCs via USEPA Method 8260C. HydraSleeves™ were retrieved no less than 24 hours after deployment pursuant to the manufacturer's specifications. Select samples were also analyzed for MNA parameters, including sulfate via

USEPA Method 300.0, total and dissolved iron via USEPA Method 6020, TOC via USEPA Method 9060A, and dissolved gases (methane, ethane, and ethene) via Method AM20GAX. Dissolved gas samples were analyzed by Pace Analytical Energy Services LLC in Baton Rouge, Louisiana. The HydraSleeves™ were installed at the depths presented in **Table 1** and in accordance with manufacturer's specifications.

Samplers were deployed at two separate depth intervals in deep overburden zone monitoring wells MW-18 and MW-23. These two wells are screened across a layer of lower permeability silt, or silt and clay. By deploying the samplers at two intervals, the difference in dissolved-phase COC concentrations above and below the silt and clay layer can be assessed.

Water quality parameters (i.e., dissolved oxygen, oxidation-reduction potential, specific conductivity, temperature, and pH) were measured downhole following retrieval of each passive sampling device. Field documentation, including equipment calibration forms, sampling forms, and chain-of-custody documents, is included in **Appendix A**.

4.6 Data Validation and Usability

Arcadis personnel validated the analytical data collected during the groundwater monitoring events in accordance with USEPA Region 3 procedures (USEPA 1994, 1995) and professional judgment. Data validation included review of the laboratory report narrative for noted deficiencies and the potential impact to data usability; review of chain-of-custody documents, sample preservation, and sample receipt logs; and electronic data validation of selected quality control parameters. No major deficiencies were identified during the data validation process. Laboratory results and data validation reports are included in **Appendices D** and **E**, respectively.

5 Performance Monitoring Results

This section presents the 2022 performance monitoring results. Groundwater sampling and gauging logs are included in **Appendix A**. Laboratory analytical reports are included in **Appendix D**.

5.1 Groundwater Elevations

Depth to groundwater measurements were collected from the monitoring well network on September 13, 2022. The September gauging event was conducted during a period of consistent system operation and included the collection of water-level measurements at each monitoring well at the site. Results of the gauging event are presented in **Table 1**.

The groundwater monitoring network consists of wells screened in the shallow, intermediate, and deep water-bearing overburden zones. In addition to the 19 monitoring wells included in the performance monitoring program, depth to water measurements were collected at an additional 25 monitoring wells and three extraction wells in 2022 to better assess groundwater flow at the site. During this event, groundwater elevations in the shallow, intermediate, and deep monitoring wells ranged from 31.73 feet above mean sea level (msl) at MW-9S to 42.44 feet above msl at MW-4; 20.68 feet above msl at MW-15I to 43.97 feet above msl at MW-2; and -2.82 feet above msl at MW-19D2 to 34.74 feet above msl at MW-26, respectively. Groundwater elevations in 2022 were generally consistent with those in 2021.

Groundwater generally flows from west to east toward the Chesapeake Bay, and this year's field measurements are generally consistent with historical interpretations of site flow regimes. Evaluation of the groundwater measurements with respect to inferred capture and horizontal hydraulic gradient influenced by the groundwater stabilization system and flow conditions are discussed in Section 6.1.2. Groundwater elevation contours are shown on **Figures 4, 5, and 6**.

5.2 Groundwater Analytical Results

Analytical results, including water quality parameters, are presented in **Table 6**. COC trends are discussed in Section 6.1.3. The 2022 groundwater analytical results for the COCs identified at the site are summarized below:

- 1,1,2-TCA was not detected at concentrations exceeding its numerical CAO performance goal of 5 µg/L during the 2022 sampling event. Detections were observed at two monitoring wells, with the highest concentration of 1,1,2-TCA detected at MW-27 (2.2 µg/L).
- 1,2-DCA was detected at concentrations exceeding its numerical CAO performance goal of 5 µg/L at seven of the 19 monitoring wells during the 2022 sampling event. The highest concentration of 1,2-DCA was detected at MW-28D (1,600 µg/L).
- Chloroform was detected at a concentration exceeding its numerical CAO performance goal of 0.19 µg/L at one monitoring well during the 2022 sampling event (at a concentration of 0.76 J [estimated] µg/L at MW-25I). As previously noted, the numerical CAO performance goal for chloroform is less than the typical laboratory reporting limit (less than 1 µg/L). There were no detections greater than the THM MCL of 80 µg/L.
- Methylene chloride was detected at concentrations exceeding its numerical CAO performance goal of 5 µg/L at one monitoring well during the 2022 sampling event (at a concentration of 27 µg/L at MW-3, and a

duplicate concentration of 31 µg/L). It should be noted that methylene chloride is generally present in the extracted groundwater effluent (see **Table 4**), based primarily on elevated detections in extraction well EW-02 (maximum 2022 detection of 140,000 µg/L); however, these elevated detections appear to be localized to the EW-02 area.

- TCE was detected at concentrations exceeding its numerical CAO performance goal of 5 µg/L at three of the 19 monitoring wells during the 2022 sampling event. The highest concentration of TCE was detected at MW-6I (9.7 µg/L).
- VC was detected at concentrations exceeding its CAO performance goal of 2 µg/L at three of the 19 monitoring wells sampled during the 2022 sampling event. The highest concentration of VC was detected at MW-3 (with a concentration of 91 µg/L and an estimated duplicate concentration of 100 µg/L).

Based on a comparison to CAO goals, the primary COC in site groundwater is 1,2-DCA. During the 2022 monitoring event, 1,2-DCA results exceeded the CAO goal in 42 percent of the samples. 1,2-DCA concentrations at the extraction wells have varied without clear trends since the last reporting period. The concentration of 1,2-DCA at EW-01 ranged from 350 µg/L to 790 D µg/L (detected after dilution), compared to 83 µg/L to 1,100 µg/L in 2021. At EW-02, the concentration of 1,2-DCA in January 2022 was 47,000 D µg/L, compared to a range from 1,800 D µg/L to 17,000 µg/L in 2021. 1,2-DCA time-series results for the last five monitoring well sampling events and select extraction well sampling events are shown on **Figures 7 and 8**. Other COCs in samples with CAO goal exceedances include chloroform (5 percent), TCE (16 percent), VC (16 percent), and methylene chloride (5 percent). No detections of 1,1,2-TCA exceeded the CAO goal at the performance monitoring well locations.

6 Performance Evaluation

The interim groundwater stabilization system operated from 2002 through 2014 and consisted of groundwater extraction at MW-10D and the discharge of extracted groundwater to the City of Havre de Grace POTW. In January 2015, the system was expanded to recover groundwater from two additional extraction wells, EW-01 and EW-02. The primary purpose of the groundwater stabilization system is to reduce the migration of impacted groundwater across the site property boundary in accordance with the CAOs. The system design was based on analytical modeling used to predict the hydraulic influence of the two additional extraction wells (EW-01 and EW-02) near existing extraction well MW-10D. The results of the model predicted that the target pumping rates (MW-10D pumped at 6 gpm, EW-01 pumped at 3 gpm, and EW-02 pumped at 0.64 gpm) would be sufficient to control further off-site migration of impacted groundwater.

Conceptually, implementation of the expanded groundwater stabilization system is expected to remove contaminant mass and provide hydraulic control for on-site higher COC concentration areas. In turn, maintaining hydraulic control of the higher on-site COC concentration areas is expected to simultaneously reduce the mass flux migrating off site and enhance the migration of clean water (i.e., pore flushing) toward downgradient impacted areas. Performance of the expanded groundwater stabilization system is discussed in Section 6.1, including mass removal trends (Section 6.1.1), hydraulic capture analysis (Section 6.1.2), and COC trends (Section 6.1.3).

Other processes contributing to groundwater quality improvements include the biodegradation of site COCs. Consequently, supplemental MNA parameters have been collected to better understand the site geochemistry and the potential of biodegradation to contribute to water quality improvements. These data are discussed in Section 6.2.

6.1 Groundwater Stabilization System Performance

6.1.1 Mass Removal

In 2022, 2,920,663 gallons of COC-impacted groundwater (**Appendix F**) were extracted by the system and discharged to the local POTW, a decrease of approximately 11 percent compared to the extracted volume reported for 2021. The three extraction wells did not operate as consistently in 2022 when compared to 2021, due to the EW-02 motor failure and unforeseen equipment failures that caused protracted system shutdowns. However, system operation was maximized during 2022 through routine and proactive O&M activities, including completion of a combined mechanical well rehabilitation and hydro-jetting event to clear biofouling and scaling from well screens, routine pump and piping network cleaning, and leak repairs.

As presented in **Table 4**, 1,2-DCA and methylene chloride concentrations in the combined effluent decreased from 16,000 and 53,000 µg/L, respectively, in December 2014 (prior to operation of the expanded system) to 60 D µg/L and nondetect, respectively, in October 2022. 1,2-DCA and methylene chloride concentrations in the extraction wells were generally consistent during the sampling events conducted in 2022, except for the January 2022 sample from EW-02, which had 1,2-DCA and methylene chloride concentrations at the highest levels since 2018. The transient increases in concentrations at the extraction wells may represent plume equilibrium or back diffusion processes occurring during shutdown periods and appear limited in extent.

The estimated mass removed by the system in 2022 was approximately 30 pounds of 1,2-DCA and 83 pounds of methylene chloride, resulting in a cumulative total of approximately 582 pounds of 1,2-DCA and 1,053 pounds of methylene chloride removed since expansion of the groundwater stabilization system (**Appendix F; Figure 9**). The effluent data demonstrate that the system is continuing to remove contaminant mass, thus eliminating the mass flux downgradient of the site boundary.

6.1.2 Hydraulic Capture Analysis

The target hydraulic capture zone (**Figure 6**) for this analysis is based on the 2014 distribution of COC-impacted groundwater (primarily groundwater impacted with 1,2-DCA) (**Figure 10**). This width perpendicular to groundwater flow is approximately 575 feet (ft). To account for some uncertainty in the delineation, an additional 50 ft was added (i.e., 25 ft on each side), resulting in a total width of 625 ft.

Because COCs have not been detected above CAO goals to any significant extent in the shallow overburden zone within the site property boundary, the target hydraulic capture zone is restricted vertically to the intermediate and deep overburden zones with a focus primarily on the deep overburden zone.

The following sections present an evaluation of hydraulic capture at the site.

6.1.2.1 Groundwater Elevation Contours

In general, under pumping conditions, the deep overburden zone contours in the vicinity of all pumping wells show moderate cones of depression, indicating inward flow with a larger area of depression in the EW-01 and MW-10D area due to proximity to one another and higher flow rates (superposition). Under non-pumping conditions, the contours showed no inflection with groundwater flow generally to the east toward the Chesapeake Bay. The intermediate potentiometric surface maps developed under both pumping and non-pumping conditions have not demonstrated any discernible variation in the contours.

The deep overburden groundwater elevation contour map (**Figure 6**) is used to estimate the interpretive capture zone. Note, according to USEPA guidance (2008), hydraulic heads measured at extraction wells should not be used to interpret hydraulic capture and groundwater flow patterns. However, the hydraulic head local to the extraction well can be estimated by correcting the measured water level at the extraction well for well losses based on the flow rate resulting in a higher groundwater elevation in the extraction well. As such, the groundwater elevation measured at EW-01 (25.68 ft above msl) was corrected utilizing the Bierschenk and Hantush graphical method from historical step testing data according to USEPA guidance (2008). The resulting corrected water level is 27.90 ft above msl at EW-01. Since EW-02 was not operating during the site-wide gauging event in September 2022, the groundwater elevation of 30.37 ft above msl was not corrected. Step testing data were unavailable for MW-10D; therefore, this correction method was not used. However, the corrected groundwater elevation in the vicinity of pumping well MW-10D (26.76 ft above msl) was estimated based on a drawdown of 4.15 ft and a well efficiency operation of 75 percent. The well efficiency of 75 percent was estimated based on application of the Theis equation using the theoretical drawdown compared to the actual drawdown from hydraulic testing completed in 1999 (BBL 2000). These corrected levels were used when developing the deep overburden groundwater elevation contour map for fall 2022 (**Figure 6**). The interpretative capture zone based on the pumping influence was inferred by drawing perpendicular flow lines to the fall 2022 potentiometric surface in the vicinity of the extraction wells. As shown on **Figure 6**, the interpretative capture zone for the groundwater

stabilization system extends approximately 605 ft in width across the site and extends both north and east across the site property boundary.

Overall, deep overburden zone water-level contours show inflection due to pumping (inward flow toward the pumping wells with exception of inactive EW-02), while intermediate overburden water-level contours indicate little horizontal hydraulic influence based on a review of the groundwater elevation contour maps. The interpreted capture zone for the deep overburden zone fully encompasses the target capture zone of the site.

6.1.2.2 Profile Flow Nets

Groundwater flow for fall 2022 (pumping conditions) was also contoured in vertical section as profile flow nets (**Figures 11 through 14**). The profile flow nets are generalized contours overlain on each geologic cross section (A-A' through C-C') developed by using groundwater elevations posted at the midpoint of the respective well screen. Hydrogeologic characteristics of the lithology and pumping influence were taken into consideration where possible when drawing the contours. The interpreted groundwater flow is also presented as arrows drawn perpendicular to the potentiometric contour lines. The approximate extent of current 1,2-DCA concentrations exceeding 5 µg/L, the CAO goal, are also included on each cross section.

The dominant flow pattern observed in the profile flow nets is downward near the extraction wells that were active (MW-10D and EW-01) where the potentiometric surface is greatest in the shallow and intermediate zones. The concentric patterns centered on active extraction wells (e.g., EW-01 on cross section B-B; **Figure 13**) indicate the influence that extraction wells have on surrounding groundwater. The central portion of cross section A-A' indicates a change from downward flow near the extraction wells on site to upward flow at MW-14I/MW-14 (**Figure 12**), which is consistent with the conceptual site model.

The 1,2-DCA plume extent is primarily located around the extraction wells and within the capture zone, although, as discussed in Section 6.1.5.1.2, a slug of mass is migrating downgradient beyond the capture zone of the expanded stabilization system; this slug is expected to attenuate over time.

6.1.3 Constituent of Concern Trends

Historical groundwater analytical results for site monitoring wells are included in **Appendix G**. COC trend plots for select monitoring wells are included in **Appendix H**. These appendices include historical groundwater sampling results since 1990. During development of the historical trend plots included in **Appendix H**, it was noted that high historical 1,2-DCA detections in some samples resulted in elevated nondetect reporting limits for other COCs. To observe clear trends on the trend plots, nondetect results are plotted at the same value (1 µg/L).

6.1.4 Fate and Transport Estimate

Concentrations of 1,2-DCA in groundwater exceed the CAO (5 µg/L) at downgradient monitoring well MW-19D1. Fate and transport calculations were performed using deep zone hydraulic parameters (hydraulic conductivity, hydraulic gradient), 1,2-DCA concentrations, attenuation factors (degradation rate, organic carbon content), and zone characteristics (grain size, density, and porosity) to estimate the distance beyond MW-19D1 at which 1,2-DCA concentrations in groundwater become less than the CAO. Calculations were performed using recently observed 1,2-DCA concentrations (September 2022) from MW-19D1. The average horizontal hydraulic gradient was calculated from four monitoring wells (MW-15, MW-23, MW-20, and MW-19D1) and was approximately

0.009 ft/ft. Note that the horizontal hydraulic gradient calculation (and the resulting groundwater flow velocity) is conservative as the calculation assumes a constant gradient and does not take into account variation from Chesapeake Bay tidal influence. The site hydraulic conductivity (K of 30 ft per day) used in the calculations was taken from the groundwater analytical model presented in the 2019 Annual PMR (Arcadis 2020). Assuming an effective porosity of 15 percent, the groundwater flow velocity was estimated to be approximately 1.8 ft per day or 657 ft per year. The actual transport rate of 1,2-DCA would be less than groundwater due to retardation (Rd) factors. Based on published values for similar soil types for organic carbon and bulk density (Fetter 2001; USEPA 1996, 2021), the Rd for 1,2-DCA was calculated to be 1.39.

Time and distance calculations were completed based on conservative values from site-specific information, published values described above, and the current concentration of 52 µg/L at MW-19D1. The calculation result is presented below in Exhibit 3 and indicates that 1,2-DCA concentrations are calculated to attenuate to less than the CAO of 5 µg/L at an estimated distance of 501 feet downgradient of MW-19D1. Thus, 1,2-DCA concentrations in well MW-19D1 will attenuate to concentrations less than the CAO before reaching the Chesapeake Bay at its closest point located approximately 632 feet downgradient of MW-19D1.

Exhibit 3. Time and Distance Calculation Results

COC	Site-Specific CAO (µg/L)	Attenuation Rate (half-life in days)	Estimated Distance for 1,2-DCA to Attenuate below CAO (ft)
			K 30 ft/day
1,2-DCA	5	114	501

6.1.5 Discussion of Final Remedy Performance

The observed water-level data indicate that under pumping conditions, the deep overburden zone is hydraulically captured across the entire width of the on-site impacted area. The observation that COCs in wells downgradient of the northeastern site boundary continue to demonstrate decreasing or stable trends (i.e., MW-27, MW-18, MW-16, and MW-14, **Appendix H**) is further evidence that adequate hydraulic capture is occurring.

To maintain and enhance the operational capture zone of the groundwater stabilization system in 2023, an annual well rehabilitation and hydro-jetting event will be conducted in addition to routine pump cleaning throughout the year. Routine pipe cleaning will be conducted quarterly, or as needed based on well performance. Additionally, routine system inspections and timely leak repairs will facilitate continued system operation. Effluent samples collected during routine system inspections will be used to optimize flow rate at each extraction well. The effective hydraulic capture is continuing to improve groundwater quality at the site and eliminate contaminant mass flux downgradient of the site boundary.

It is expected that the expanded groundwater stabilization system will continue to operate until the magnitude and extent of groundwater impacts have been reduced to a point that natural attenuation processes will be sufficient to continue groundwater quality improvements to meet CAO goals. Annual performance monitoring of system operations is conducted to assess the long-term trends in response to implementation of the expanded system. Part of these evaluations include monitoring COC trends at six POC monitoring wells (MW-3, MW-12S, MW-12D,

MW-13D, MW-19D1, and MW-20D1) within and at the leading edge of the COC-impacted groundwater, as established in the PMP (Arcadis 2012b).

Eight monitoring events have been conducted since November 2014, with seven events occurring after implementation of the expanded groundwater stabilization system in January 2015. Groundwater analytical results for 1,2-DCA for the last seven monitoring events and concentrations first measured at each location following well installation are shown on **Figures 7 and 8**.

6.1.5.1 1,2-Dichloroethane

Prior to operation of the expanded system in January 2015, concentrations of 1,2-DCA greater than 100 µg/L remained at several locations, including intermediate monitoring wells MW-6I and MW-13D and deep monitoring wells MW-3, MW-16, MW-18, MW-27, and MW-28D. As shown in **Appendix H**, 1,2-DCA concentrations exhibit a stable to decreasing trend at these monitoring wells following implementation of the expanded system in January 2015.

Table 7 presents the percent change in 1,2-DCA concentrations at intermediate and deep monitoring wells, calculated using historical maximum concentrations and baseline concentrations (prior to operation of the expanded system).

6.1.5.1.1 Intermediate Wells

As presented in **Table 7**, 1,2-DCA has exhibited a reduction of 94 percent or greater at each of the five intermediate wells when comparing 2022 concentrations to historical maximums, including on-site POC well MW-13D (greater than 99 percent reduction). Concentrations of 1,2-DCA were less than laboratory reporting limits at on-site POC well MW-12D and have exhibited a decreasing trend at off-site intermediate well MW-14I, with concentrations less than the CAO goal of 5 µg/L from 2018 through 2021 and slightly above the CAO goal in 2022 (5.3 µg/L). Concentrations of 1,2-DCA in intermediate wells overall have declined in 2021 and 2022 compared to concentrations observed from 2015 to 2020.

6.1.5.1.2 Deep Wells

1,2-DCA has exhibited a reduction of 55 percent or greater at seven of the 11 deep wells since operation of the expanded system began in January 2015: MW-3, MW-14, MW-16, MW-18, MW-20D1, MW-23, and MW-27. Concentrations of 1,2-DCA observed prior to operation of the expanded system and in September 2022 were less than laboratory reporting limits in MW-8D and less than 1.1 µg/L in downgradient monitoring wells MW-20D1 and MW-22D.

Results from 2022 indicate:

- 1,2-DCA concentrations similar to 2021 results were observed at off-site deep monitoring wells MW-19D1 and MW-23, and were greater than the CAO goal of 5 µg/L. Prior to 2018, these wells generally demonstrated a decreasing or stable trend. At MW-19D1, concentrations of 1,2-DCA were less than the CAO goal of 5 µg/L in November 2014 (3.0 µg/L), June 2015 (1.6 µg/L), November 2015 (1.9 µg/L), and October 2017 (2.8 µg/L). Concentrations of 1,2-DCA at MW-19D1 have been stable since 2018, with a slight increase in 2022.
- At the lower sample interval of MW-23, concentrations of 1,2-DCA were also generally stable or declining from November 2014 (56 µg/L) to November 2018 (15 µg/L), with small increases in September 2019

(19 µg/L) and October 2020 (27 µg/L). The concentration detected in September 2022 (9.5 µg/L) was lower than the concentration in September 2021 (14 µg/L).

- Analytical results observed in 2022 were generally consistent with 2021 results. It is believed that a slug of mass is migrating downgradient beyond the capture zone of the expanded stabilization system and concentrations of 1,2-DCA at these locations will attenuate (reduce) through time. Although 1,2-DCA concentrations remain greater than the CAO goal of 5 µg/L at seven of the 11 deep wells, generally decreasing trends are evident at most of these locations.

6.1.5.1.3 Point of Compliance Wells

At three POC locations (MW-12S, MW-12D, and MW-20D1), COC concentrations remained less than their respective CAO goals. 1,2-DCA was detected at concentrations exceeding the CAO goal of 5 µg/L at MW-13D in 2019, 2021, and 2022, but concentrations had declined in 2020. At on-site POC monitoring well MW-3, 1,2-DCA was detected at a concentration exceeding the CAO goal of 5 µg/L in 2022 (34 µg/L). MW-3 is located at the former UST farm in the southern corner of the site. At downgradient POC well MW-19D1, the concentration of 1,2-DCA also exceeded the CAO goal of 5 µg/L in 2022 (52 µg/L), slightly higher than the 2021 result (30 µg/L). Concentrations of 1,2-DCA at MW-19D1 have been generally stable since 2018.

6.1.5.2 Methylene Chloride

At MW-3, the concentration of methylene chloride (27 µg/L) was greater than its CAO goal of 5 µg/L and less than its historical peak concentration in October 1997 (15,000 µg/L). Methylene chloride was also detected in 2020 (53 µg/L) and 2021 (35 µg/L). In 2022, the maximum concentration of methylene chloride (140,000 µg/L) was detected at downgradient extraction well EW-02. The groundwater extraction system was shut down for three weeks prior to the sampling event, likely resulting in a concentration that was biased high. Methylene chloride was not detected in the other monitoring wells identified in the PMP (Arcadis 2012b) in 2022. Groundwater samples will continue to be collected from performance monitoring wells, including MW-3, and analyzed for methylene chloride to further evaluate the isolated detections observed to date.

6.1.5.3 Other Constituents of Concern

In general, concentrations of other COCs have remained stable or decreased following implementation of the expanded groundwater stabilization system in January 2015; exceptions include general increases in VC concentrations at MW-3 (concentration increased from 17 to 190 µg/L between 2017 and 2020, decreased to 59 µg/L in 2021 and 91 µg/L in 2022). VC is a daughter product of TCE and 1,2-DCA, and increased concentrations of VC at this well is indicative of parent COC degradation, which is also supported by decreases in TCE and 1,2-DCA concentrations since 2017.

6.2 Monitored Natural Attenuation Assessment

This section discusses off-site and downgradient MNA conditions, with a focus on the biodegradation potential of groundwater COCs and current groundwater oxidation-reduction (redox) conditions. In addition, this section discusses the extent to which biodegradation is occurring based on the established redox conditions, COC trends, and/or presence of degradation products.

To support this evaluation, current biogeochemical data are presented in **Table 6**. In addition, a bar chart figure showing the ratios of COC compounds, advanced degradation products (ethene and ethane), and redox indicators (iron, sulfate, methane) is shown on **Figure 15**. The current COC detections were reviewed as a screening step to determine the dominant COCs in downgradient areas. The only COC widely detected in the off-site monitoring well network was 1,2-DCA. Since implementation of the PMP (Arcadis 2012b), the highest off-site concentration of 1,2-DCA has been observed at monitoring well MW-27 (12,000 µg/L), located approximately 100 ft beyond the northeast site boundary. As presented in **Appendix H**, Figure H-16, 1,2-DCA concentrations at MW-27 have decreased from 12,000 µg/L (December 2006) to 3 µg/L (September 2022) and represent a downward trend. In 2022, 1,2-DCA exceeded its CAO goal of 5 µg/L at the upper and lower intervals of monitoring well MW-23 (11/9.5 µg/L), downgradient POC well MW-19D1 (52 µg/L), and off-site monitoring well MW-14I (5.3 µg/L). No other COCs were detected at concentrations greater than their respective CAO goals at the off-site monitoring wells.

Several known biological and abiotic processes can potentially contribute to the natural attenuation of 1,2-DCA. Aerobic oxidation is a microbial process where 1,2-DCA is used as a carbon source either solely or through co-metabolic reactions. When used as a sole carbon source, chloroethanol is formed as an intermediate metabolite and is then mineralized to carbon dioxide and water. With biological reductive dechlorination, 1,2-DCA is sequentially degraded to chloroethane and ethane under anaerobic and reducing conditions. Hydrolysis of 1,2-DCA is slow and not a significant abiotic attenuation process. However, the reported half-life for chloroethane (a 1,2-DCA degradation product) via hydrolysis is faster, ranging from days to months. Biogeochemical reductive dechlorination is also a potential abiotic degradation process. Under iron- and sulfate-reducing conditions, surface reactions with the iron sulfide precipitates can degrade 1,2-DCA.

As presented in **Table 6**, select wells including on-site monitoring well MW-3 and off-site monitoring wells MW-14I, MW-16, MW-18, MW-19D1, MW-20D1, MW-23, and MW-27 were analyzed for natural attenuation parameters, including sulfate, total and dissolved iron, TOC, and dissolved gases (methane, ethane, and ethene). The biogeochemical data collected indicate that redox conditions ranged from mildly to strongly reducing. Three of the monitoring wells sampled for natural attenuation parameters exhibited elevated dissolved iron concentrations. One on-site well (MW-3), several wells immediately downgradient of the site boundary (MW-14I, MW-16, and MW-27), and downgradient POC well MW-19D1 exhibited low, but elevated, methane detections typically greater than background levels. Methane was also detected in downgradient monitoring well MW-20D1 at a concentration of 180 µg/L. The advanced degradation product, ethene, has been detected at significant concentrations (greater than 100 µg/L) at monitoring well MW-27 since 2014 (730 µg/L in 2022). The biogeochemical conditions along with the presence of these compounds suggests that 1,2-DCA and TCE are attenuating at wells MW-3, MW-14I, MW-16, MW-19D1, MW-20D1, and MW-27, and the natural attenuation processes are contributing to mass destruction.

7 Summary and Conclusion

Overall, a combination of on-site mass removal, mass flux reductions, and natural attenuation processes continue to improve groundwater quality on site and off site, and COC trends continue to demonstrate significant groundwater quality improvements since expansion of the groundwater stabilization system in 2015. A comparison of 1,2-DCA isoconcentration plume contours between 2014 and 2022 (as depicted on **Figure 10**), shows that the plume footprint is shrinking, with a portion of the off-site plume moving toward the northeast since expansion of the groundwater stabilization system in 2015. There are no known locations with sensitive receptors downgradient of the plume (e.g., schools, hospitals), and the Chesapeake Bay at its closest point is approximately 632 feet from the northern edge of the plume. The groundwater use restriction area encompasses the portion of the plume moving to the northeast, as shown on **Figure 2**, which will be transmitted to the Harford County Health Department, City of Havre de Grace Planning and Zoning Department, and the POTW in early 2023 in accordance with the site's Institutional and Engineering Control Plan.

Six monitoring wells were identified for POC monitoring (MW-3, MW-12S, MW-12D, MW-13D, MW-19D1, and MW-20D1) during active operation of the groundwater stabilization system. Annual COC sampling results from 2022 are summarized below:

- At three POC locations (MW-12S, MW-12D, and MW-20D1), COC concentrations are less than their respective CAO goals.
- At on-site POC monitoring well MW-3, 1,2-DCA, methylene chloride, and VC were detected at concentrations exceeding their CAO goal of 5 µg/L (1,2-DCA and methylene chloride) and 2 µg/L (VC).
- At downgradient POC well MW-19D1, the concentration of 1,2-DCA exceeded the CAO goal of 5 µg/L in 2022 (52 µg/L), slightly higher than the 2021 result. 1,2-DCA concentrations at this location remained less than the CAO goal of 5 µg/L between 2014 and 2017. The current concentration of 1,2-DCA (52 µg/L) at MW-19D1 is less than the historical maximum value (390 µg/L in 2000), and concentrations generally have been stable since 2018, ranging from 26 to 52 µg/L. It is expected that concentrations of 1,2-DCA will attenuate (reduce) through time at this location. This is further supported by the significant reduction in COC concentrations at off-site monitoring well MW-27 (only TCE and VC were detected at concentrations greater than their respective CAO goals in 2022) since expansion of the groundwater stabilization system in 2015.
- At MW-3, methylene chloride (27 µg/L, duplicate concentration of 31 µg/L) was greater than its CAO goal of 5 µg/L. Historically, MW-3 was one of the more impacted wells on site and concentrations have decreased several orders of magnitude through the last 17 years.
- In general, concentrations of the other COCs have remained stable or decreased following implementation of the expanded groundwater stabilization system in January 2015. Exceptions include the periodic increases of VC concentrations at monitoring well MW-3 due to natural attenuation processes.
- The only COC widely detected in the off-site monitoring well network was 1,2-DCA. Since implementation of the PMP (Arcadis 2012b), the highest off-site concentration of 1,2-DCA has been observed at monitoring well MW-27 (12,000 µg/L). As presented in **Appendix H**, Figure H-16, 1,2-DCA concentrations at monitoring well MW-27 have decreased from 12,000 µg/L (December 2006) to 3 µg/L (September 2022).
- Concentrations of 1,2-DCA greater than 100 µg/L were observed at two monitoring wells (MW-6I and MW-28D). 1,2-DCA concentrations exhibit an overall declining trend at MW-28D even with a recent increase from

450 D µg/L in 2020 to 1,600 µg/L in 2022. 1,2-DCA concentrations exhibit an overall stable trend at MW-61, with recent detections being lower than detections from 2016 through 2020.

Groundwater samples from select monitoring wells are analyzed for biogeochemical parameters and degradation products to assess the biodegradation potential of groundwater COCs and current groundwater redox conditions. Biogeochemical sample results from 2022 are summarized below:

- The biogeochemical data collected to date indicate that redox conditions range from mildly to strongly reducing.
- Wells MW-3, MW-14I, MW-16, MW-19D1, and MW-27 exhibited methane detections that were higher than background levels and ranged from 14 to 150 µg/L. Methane was also detected at downgradient monitoring well MW-20D1 (180 µg/L).
- Advanced degradation product, ethene, has been detected at significant concentrations (greater than 100 µg/L) in MW-27 from 2014 to 2022.

The presence of these compounds suggests that COCs are attenuating at wells MW-3, MW-14I, MW-16, MW-19D1, MW-20D1, and MW-27, and the natural attenuation processes are contributing to mass destruction.

Conservative fate and transport calculations were completed to estimate the distance downgradient that 1,2-DCA concentrations in groundwater reach levels less than the CAO (5 µg/L). The results indicate that 1,2-DCA in well MW-19D1 will attenuate to concentrations less than the CAO before reaching the Chesapeake Bay at its closest point located approximately 632 feet downgradient of MW-19D1.

The groundwater stabilization system operated continuously, except for extraction well EW-02, with an overall uptime of 74 percent in 2022. A P-300 overload fault alarm shut down the EW-02 pump in March 2022. A new motor was ordered, and groundwater extraction should resume in January 2023. The most significant downtime occurred in December 2021 through February 2022 due to a pipe leak at the POTW facility. Repairs were completed on February 10, 2022, when corroded pipes were replaced and the system was returned to operational status. While biofouling of the well screens, pump motors, and subsurface piping network continue to hinder system performance, routine and proactive O&M activities conducted in 2022 optimized overall system performance, similar to 2021.

The observed water-level data indicate that under pumping conditions, the deep overburden zone is hydraulically captured across the entire width of the on-site impacted area. Moreover, the observation that COCs in wells downgradient of the northeastern site boundary continue to demonstrate decreasing or stable trends (i.e., MW-27, MW-18, MW-16, and MW-14) is further evidence that adequate hydraulic capture is occurring.

To maintain the operational capture zone of the groundwater stabilization system in 2023, an annual well rehabilitation and hydro-jetting event will be conducted in addition to routine pump cleaning throughout the year. Routine pipe cleaning will be conducted quarterly, or as needed based on well performance. Additionally, routine system inspections and timely leak repairs will allow for continued system operation. Effluent samples collected during routine system inspections will be used to optimize flow rate at the three extraction wells.

8 Path Forward

The following activities are planned for 2023:

- Continue operation of the groundwater stabilization system to maintain groundwater capture. The PMP (Arcadis 2012b) states that the groundwater stabilization system will operate for at least 15 years (2015 through 2030). The eighth year of operation was performed in 2022.
- Perform annual extraction well rehabilitation to maintain well and pump performance.
- Resume groundwater extraction at EW-02.
- Collect samples for analysis of biogeochemical parameters (ethane, ethene, methane, sulfate, total and dissolved iron, and TOC) at MW-28D, the well with the highest COC concentrations currently.
- Utilize the software program KT3D_H2O Version 3.0 (Karanovic et al. 2009) to interpret groundwater elevation contours and estimate capture zones for the site extraction wells. KT3D_H2O Version 3.0 is a graphical user interface that combines various programs to generate gridded maps of groundwater-level elevations with corresponding estimated capture zones. The tools used in KT3D_H2O Version 3.0 combine geostatistical (kriging) and hydrological sciences to allow the user to support map-based hydrogeologic analyses without the use of numerical groundwater flow models. This software is cited in USEPA guidance (2008) and will provide for analysis of the extraction system operation using current data, rather than relying on historical step testing data or approximated well efficiencies to estimate groundwater elevations and influence near the extraction wells.

Following the collection of 10 years of performance monitoring data, an additional statistical trend analysis will be conducted in 2024. Results of the statistical analysis will be used to modify the monitoring program and assess long-term trends in response to continued implementation of the expanded system.

9 References

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Tables

Table 1
Well Details and Groundwater Elevations
2022 Annual Groundwater Performance Monitoring Report
1300 Revolution Street
Havre de Grace, Maryland



Well ID ¹	On Site/ Off Site	Top of Casing Elevation (feet amsl)	Ground Elevation (feet amsl)	Screened Interval		Screened Interval		Passive Sampler ²		September 13, 2022 ³	
				Top (feet bgs)	Bottom (feet bgs)	Top (feet amsl)	Bottom (feet amsl)	Sampler Depth (feet bgs)	Sampler Elevation (feet amsl)	Depth to Groundwater (feet btic)	Groundwater Elevation (feet amsl)
Shallow Overburden											
MW-4	On Site	46.4	46.95	5	15	41.95	31.95	12.0	35.0	3.96	42.44
MW-5	On Site	49.7	50.33	4.4	14.4	45.33	35.33	NS	NS	10.02	39.68
MW-6	On Site	50.93	51.33	3	16	48.33	35.33	NS	NS	11.71	39.22
MW-7	On Site	44.67	44.78	2.9	17.9	41.78	26.78	NS	NS	6.71	37.96
MW-8S	On Site	41.02	41.6	9	19	32.6	22.6	16.0	25.6	4.91	36.11
MW-9S	On Site	42.02	42.08	9.9	19.9	32.08	22.08	17.5	24.6	10.29	31.73
MW-10S	On Site	44.79	45.04	10	20	35.04	25.04	11.0	34.0	5.65	39.14
MW-11S	On Site	44.28	44.51	9.8	19.8	34.51	24.51	NS	NS	6.06	38.22
MW-12S	On Site	49.62	49.71	8	18	41.71	31.71	15.0	34.7	7.90	41.72
Shallow and Intermediate Overburden											
MW-1A	On Site	46.8	45.2	3.6	21.6	43.2	25.2	NS	NS	8.53	38.26
MW-2	On Site	47.4	44.8	4.6	23.1	42.8	24.3	NS	NS	3.44	43.97
Intermediate Overburden											
MW-5D	On Site	48.55	48.93	14.2	24.2	34.33	24.33	NS	NS	9.20	39.35
MW-6I	On Site	50.2	50.55	21.65	27.65	28.55	22.55	26.5	24.1	12.81	37.39
MW-12D	On Site	49.41	49.7	18	28	31.7	21.7	26.5	23.2	14.81	34.60
MW-13S	On Site	50.81	NA	10	20	41.01	31.01	NS	NS	11.19	39.62
MW-13D	On Site	50.79	51	22	32	29	19	29.5	21.5	12.26	38.53
MW-14I	Off Site	35.8	35.98	16	26	19.98	9.98	23.0	13.0	14.10	21.70
MW-15I	Off Site	34.99	35.36	12.6	22.6	22.36	12.36	NS	NS	14.31	20.68
MW-22S	On Site	44.13	44.43	7	17	37.43	27.43	NS	NS	Dry	N/A
MW-24	On Site	48.71	49.14	19.75	27.75	29.39	21.39	NS	NS	10.48	38.23
MW-25I	On Site	49.54	49.94	20	30	29.94	19.94	28.5	21.4	14.94	34.60
Intermediate and Deep Overburden											
MW-28D	On Site	49.14	49.41	27.5	42.5	21.91	6.91	30.0	19.4	16.33	32.81
Deep Overburden											
EW-01 ⁴	On Site	46.14	49.29	40	45	9.29	4.29	NS	NS	20.46	25.68
EW-02 ⁴	On Site	41.9	44.9	24	32	20.9	12.9	NS	NS	11.53	30.37
MW-10D ⁴	On Site	45.16	45.82	29.2	39.2	16.9	6.9	NS	NS	15.94	29.22
MW-3	On Site	45.39	44.99	34.5	40	10.49	4.99	37.0	8.0	13.13	32.26
MW-6D	On Site	50.34	50.65	31.3	41.3	19.35	9.35	NS	NS	17.61	32.73
MW-8D	On Site	41.19	41.36	30	40	11.36	1.36	35.0	6.4	9.56	31.63
MW-9D	On Site	41.9	42.07	22.8	33.5	19.07	8.36	NS	NS	11.01	30.89
MW-11D ⁵	On Site	44.53	44.71	29.8	39.8	14.71	4.71	NS	NS	14.84	29.69
MW-14	Off Site	36.43	36.83	26	36	10.83	0.83	35.0	1.8	11.40	25.03
MW-15	Off Site	35.32	35.67	22	32	13.67	3.67	NS	NS	13.38	21.94
MW-16 ⁵	Off Site	38.17	38.19	27	37	11.19	1.19	30.0	8.2	12.52	25.65
MW-17	Off Site	39.83	40.12	5.3	10.3	34.52	29.52	NS	NS	6.30	33.53
MW-18	Off Site	38.37	38.67	22.5	32.5	16.17	6.17	24	14.67	9.50	28.87
	31							7.67			
MW-19D1	Off Site	29.26	29.53	34	44	-4.47	-14.47	39.0	-9.5	24.26	5.00
MW-19D2 ⁶	Off Site	29.21	25.94	64	74	-38.06	-48.06	NS	NS	32.03	-2.82
MW-20D1 ^{6,7}	Off Site	25.66	25.87	37	47	-11.13	-21.13	40.0	-14.1	21.21	4.45
MW-20D2	Off Site	25.64	25.94	85	95	-59.06	-69.06	NS	NS	21.89	3.75
MW-21	Off Site	33.84	34.13	36	46	-1.87	-11.87	NS	NS	30.20	3.64
MW-22D	Off Site	44.32	44.51	27.5	37.5	17.01	7.01	32.0	12.5	11.77	32.55
MW-23	Off Site	45.96	46.3	39.4	49.4	6.9	-3.1	40	6.3	35.66	10.30
	47							-0.7			
MW-25	On Site	49.42	49.9	30	40	19.9	9.9	NS	NS	15.49	33.93
MW-26	On Site	47.24	47.56	29.3	39.3	18.26	8.26	NS	NS	12.50	34.74
MW-27 ⁵	Off Site	43.07	43.27	23.95	33.95	19.12	9.12	41.5	1.8	11.42	31.65
Bedrock											
MWBR-1	On Site	45.68	45.93	43.8	53.8	1.93	-8.07	NS	NS	13.49	32.19
MWBR-2	On Site	45.27	45.51	57.8	77.8	-12.49	-32.49	NS	NS	15.63	29.64
MWBR-3	On Site	42.39	42.64	79.8	99.8	-37.36	-57.36	NS	NS	10.78	31.61
MWBR-4	On Site	46.01	46.28	92.7	116.7	-46.72	-70.72	NS	NS	14.41	31.60

Notes:

- ¹ Rows highlighted yellow indicate a monitoring location that is sampled annually as part of the Performance Monitoring Plan (Arcadis 2012). MW-6 and MW-15 were removed from the sampling program in 2020.
- ² Groundwater samples were collected using in-situ HydraSleeve™ samplers. Deployment depths are measured from the ground surface to the midpoint of the samplers.
- ³ Gauging was conducted during a period of consistent system operation between September 13 and 15, 2022.
- ⁴ Active extraction wells include EW-01 and MW-10D. EW-02 was inactive during this gauging event. Extraction well groundwater elevations were corrected for well losses and reflected results are described in Appendix F and shown on supporting figures.
- ⁵ Based on the refinement of the conceptual site model presented in the 2017 Annual Groundwater Performance Monitoring Report (Arcadis 2018) and following regulatory concurrence, MW-11D, MW-16, and MW-27 were reclassified from intermediate overburden wells to deep overburden wells in 2018.
- ⁶ Depth to groundwater is considered anomalous and not used in groundwater contouring.
- ⁷ Value changed from 31.21 to 21.21, likely error in field measurement.

Acronyms and Abbreviations:

- amsl = above mean sea level
- bgs = below ground surface
- btic = below top of inner casing
- N/A = not applicable/no information
- NS = not sampled

References:

- Arcadis. 2012. Performance Monitoring Plan. Cytec Engineered Materials Facility. Havre de Grace, Maryland (USEPA ID #MDD003075942). March.
- Arcadis. 2018. 2017 Annual Groundwater Performance Monitoring Report. Cytec Solvay Group. Havre de Grace, Maryland (USEPA ID #MDD003075942). February.

Table 2
2022 Monitoring Program Summary
2022 Annual Groundwater Performance Monitoring Report
1300 Revolution Street
Havre de Grace, Maryland



Well ID	Purpose	Monitoring Parameters ^{1,2,3}
Shallow Overburden Zone		
MW-4	Plume Evaluation	COCs
MW-8S	Plume Evaluation	COCs
MW-12S	Point of Compliance - Site Boundary	COCs
Intermediate Overburden Zone		
MW-6I	Plume Evaluation	COCs
MW-12D	Point of Compliance - Site Boundary	COCs
MW-13D	Point of Compliance - Site Boundary	COCs
MW-14I	Plume Evaluation	COCs, MNA
MW-25I	Plume Evaluation	COCs
Intermediate and Deep Overburden Zone		
MW-28D	Plume Evaluation	COCs
Deep Overburden Zone		
MW-3	Point of Compliance - Site Boundary	COCs, MNA
MW-8D	Plume Evaluation	COCs
MW-14	Plume Evaluation	COCs
MW-16 ⁴	Plume Evaluation	COCs, MNA
MW-18	Plume Evaluation	COCs, MNA
MW-19D1	Point of Compliance - Downgradient Edge	COCs, MNA
MW-20D1	Point of Compliance - Downgradient Edge	COCs, MNA
MW-22D	Plume Evaluation	COCs
MW-23	Plume Evaluation	COCs, MNA
MW-27 ⁴	Plume Evaluation	COCs, MNA

Notes:

¹ In addition to the parameters identified in the table, groundwater elevation measurements and field parameters (i.e., pH, specific conductivity, oxidation-reduction potential, temperature, and dissolved oxygen) are also collected during each performance monitoring event.

² Constituents of concern (COCs) consist of the following volatile organic compounds: chloroform, 1,2-dichloroethane, methylene chloride, trichloroethene, 1,1,2-trichloroethane, and vinyl chloride. In addition to the COCs, groundwater samples are also analyzed for the degradation products: chloroethane and cis-1,2-dichloroethene.

³ Monitored natural attenuation (MNA) parameters consist of total organic carbon, sulfate, total/dissolved iron, and dissolved gases (methane, ethane, and ethene).

⁴ Based on the refinement of the conceptual site model presented in the 2017 Annual Groundwater Performance Monitoring Report (Arcadis 2018) and following regulatory concurrence, MW-11D, MW-16, and MW-27 were reclassified from intermediate overburden wells to deep overburden wells in 2018. It should be noted that MW-11D is not sampled as part of the Performance Monitoring Plan (Arcadis 2012) monitoring well

References:

Arcadis. 2012. Performance Monitoring Plan. Cytec Engineered Materials Facility. Havre de Grace, Maryland (USEPA ID #MDD003075942). March.

Arcadis. 2018. 2017 Annual Groundwater Performance Monitoring Report. Cytec Solvay Group. Havre de Grace, Maryland (USEPA ID #MDD003075942). February.

Table 3
Numerical Corrective Action Objective Goals
2022 Annual Groundwater Performance Monitoring Report
1300 Revolution Street
Havre de Grace, Maryland

Constituent of Concern	Numerical CAO Goal ¹ (µg/L)
1,1,2-Trichloroethane	5
1,2-Dichloroethane	5
Chloroform	0.19 ^{2,3}
Methylene Chloride	5
Tetrachloroethene ⁴	5
Trichloroethene	5
Vinyl Chloride	2
Carbon Disulfide ⁴	1,000

Notes:

¹ Numerical corrective action objective (CAO) goals are equivalent to maximum contaminant levels (MCLs) set by the United States Environmental Protection Agency (USEPA).

² The established numerical CAO goal is equivalent to USEPA risk-based screening levels for tapwater.

³ Chloroform is classified as a trihalomethane; the MCL for trihalomethane is 80 micrograms per liter (µg/L).

⁴ PCE and carbon disulfide were removed from the monitoring program in 2016.

Table 4
Extraction Well and Effluent Monitoring
2022 Annual Groundwater Performance Monitoring Report
1300 Revolution Street
Havre de Grace, Maryland



Sample Date	1,2 Dichloroethane (µg/L)	Methylene Chloride (µg/L)
Extraction Well EW-01		
1/9/2014	3,700	ND
12/30/2014	1,900	33
3/12/2018	1,600	78
10/11/2018	580	ND
1/31/2019	940	ND
4/15/2019	900	ND
9/5/2019	910	ND
12/6/2019	540 E	ND
1/21/2020	790	ND
5/18/2020	270	ND
7/28/2020	550	ND F2
10/29/2020	240	ND
3/9/2021	820	ND
8/26/2021	1,100 D	500 D
9/15/2021	83 HD	ND
11/2/2021	380 D	10
1/12/2022	350 D	56 D
5/10/2022	670 D	ND
7/15/2022	790 D	ND
10/11/2022	400 D	ND
Extraction Well EW-02		
1/9/2014	250,000	450,000
12/30/2014	79,000	260,000
5/15/2015	51,000	110,000
7/13/2015	150,000	370,000
10/7/2015	43,000	82,000
1/19/2016	29,000	59,000
4/5/2016	21,000	39,000
6/30/2016	19,000	25,000
10/4/2016	33,000	76,000
2/10/2017	29,000	55,000
5/5/2017	13,000	22,000
8/4/2017	NS	NS
10/6/2017	43,000	110,000
3/12/2018	15,000	23,000
10/11/2018	18,000	49,000
1/31/2019	12,000	22,000
4/15/2019	13,000	12,000
9/5/2019	21,000	38,000
1/21/2020	19,000	34,000
5/18/2020	4,900	3,000
7/28/2020	NS	NS
10/29/2020	2,900	710
3/9/2021	9,000	13,000
8/26/2021	17,000 D	10,000 HD
9/15/2021	1,800 HD	3,200 HD
11/2/2021	4,700 D	17,000 D
1/12/2022 ¹	47,000 D	140,000 D
Extraction Well MW-10D		
1/9/2014	NA	N/A
12/30/2014	2	ND
5/15/2015	160	14
7/13/2015	110	ND
10/7/2015	38	ND
1/19/2016	58	1.1 J
4/5/2016	19	ND
6/30/2016	12	ND
10/4/2016	62	ND
2/10/2017	23	ND
5/5/2017	8.9	ND
8/4/2017	43	ND
10/6/2017	3.6	ND
3/12/2018	11	ND
10/11/2018	5.7	ND
1/31/2019	1.5	ND

Sample Date	1,2 Dichloroethane (µg/L)	Methylene Chloride (µg/L)
4/15/2019	6.6	ND
9/5/2019	1.2	ND
12/6/2019	1.9	ND
1/21/2020	6.6	ND
5/18/2020	3.7	ND
7/28/2020	4.6	ND
10/29/2020	3.5	ND
3/9/2021	2.4	ND
8/26/2021	83	110
9/15/2021	1 HD	ND
11/2/2021	290 D	59 D
1/12/2022	2.1	ND
5/10/2022	ND	ND
7/15/2022	0.73 J	ND
10/11/2022	1.8	ND
Effluent		
12/30/2014	16,000	53,000
5/15/2015	3,700	6,200
7/13/2015	5,500	10,000
10/7/2015	2,800	4,600
1/19/2016	4,200	7,400
4/5/2016	1,300	1,200
6/30/2016	1,100	910
10/4/2016	1,100	1,800
2/10/2017	7,500	14,000
5/5/2017	1,500	2,100
8/4/2017	330	ND
10/6/2017	15,000	34,000
3/12/2018	3,600	5,200
10/11/2018	2,700	960
1/31/2019	1,200	1,400
4/15/2019	710	500
9/5/2019	7,600	13,000
10/10/2019	240	ND
12/6/2019	57	ND
1/21/2020	4,600	9,000
5/18/2020	ND	ND
7/28/2020	37	ND
10/12/2020	370 D	230 D
3/9/2021	1,700	2,700
8/26/2021	4,000 D	15,000 D
9/15/2021	600 HD	ND
11/2/2021	5,800 F	19,000 D
1/12/2022	13,000 D	37,000 D
5/10/2022	140 D	ND
7/15/2022	160 D	ND
10/11/2022	60 D	ND

Notes:

System samples are collected while the system is running.

¹ System was shut down for 3 weeks prior to January sampling, may lead to lack of dilution due to non-pumping.

Acronyms and Abbreviations:

µg/L = microgram per liter
 N/A = not applicable/no information
 ND = nondetect
 NS = not sampled

Qualifiers:

D = quantified in a secondary dilution (lab qualifier)
 E = result exceeds calibration range
 F/F2 = matrix spike/matrix spike duplicate relative percent difference exceeds control limits
 H = sample was prepped or analyzed beyond the specified holding time
 J = estimated value

Table 5
Summary of Routine and Non-Routine Operation and Maintenance Activities
2022 Annual Groundwater Performance Monitoring Report
1300 Revolution Street
Havre de Grace, Maryland

Date	Daily Total Flow (Gallons)	Operational Days	Summary of System Maintenance
December 2021	82,766	8	On 12/9/21, Arcadis was on site to conduct routine operation and maintenance (O&M), including replacing a faulty pH probe and water-level transducer at EW-02. High differential flow alarms caused the system to remain shutdown from 12/21/21 to 1/11/22.
January 2022	55,402	5	On 1/11/22, Arcadis was on site for quarterly system sampling and to troubleshoot system alarms. On 1/20/22, the Publicly Owned Treatment Works (POTW) staff notified Cytec of a potential leak at the POTW pipe, prior to the system water entering the POTW digester. The system remained shut down until 2/1/22, when Arcadis replaced the corroded pipe at the POTW.
February 2022	142,433	15	On 2/10/22, an additional leak was noted at the POTW, and the system was shut down until Arcadis could replace the leaking parts. On 2/23/22, Arcadis was on site to conduct O&M, including replacing a faulty pH probe and cleaning the EW-02 flow meter. Arcadis also replaced the C-more remote access panel with an upgraded model.
March 2022	285,664	29	On 3/15/22, a P-300 overload fault alarm was received. This alarm was triggered as a result of a failing motor on the EW-02 pump. Since this alarm was received, pumping at EW-02 remains shutdown until a new motor can be installed by staff with proper electrical training.
April 2022	247,191	25	On 4/12/22, Arcadis was on site to conduct routine annual O&M, including pipe jetting and well rehabilitation.
May 2022	277,962	30	Multiple E-stop alarms and one erroneous leak alarm were received in May.
June 2022	280,172	27	On 6/27/22, a pipe leak alarm was received. Arcadis staff responded to the alarm on 7/15/22 to repair the leak at MW-10D.
July 2022	146,055	15	On 7/7/22, an EW-01 transducer failure alarm was received. The alarm was disabled until Arcadis could inspect the transducer.
August 2022	265,693	25	On 8/25/22, Arcadis responded to the EW-01 transducer failure alarm received on 7/7/22. The transducer needs to be replaced by staff with proper electrical training.
September 2022	319,666	30	One E-stop alarm was received in September.
October 2022	319,207	31	Multiple E-stop alarms were received in October.
November 2022	277,821	27	One E-stop alarm was received in November.

Table 6
 Groundwater Analytical Results
 2022 Annual Groundwater Performance Monitoring Report
 1300 Revolution Street
 Havre de Grace, Maryland



		Location ID:	MW-3	MW-4	MW-6I	MW-8D	MW-8S	MW-12D	MW-12S	MW-13D	MW-14	MW-14I
		Sample Date:	09/15/22	09/14/22	09/14/22	09/14/22	09/14/22	09/14/22	09/14/22	09/14/22	09/14/22	09/15/22
		Screened Interval (feet amsl):	10.49 to 4.99	41.95 to 31.95	28.55 to 22.55	11.36 to 1.36	31.7 to 21.7	31.7 to 21.7	41.71 to 31.71	29 to 19	10.83 to 0.83	19.98 to 9.98
		Passive Sampler Elevation (feet amsl):	7.99	34.95	24.05	25.6	23.2	23.2	34.71	21.5	1.83	12.98
COCs	Unit	CAO Goal ¹										
1,1,2-Trichloroethane	µg/L	5	10 U [5.0 U]	1.0 U	5.0 U	1.0 U	1.0 U [1.0 U]	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	µg/L	5	34 [38]	1.0 U	510 D	1.0 U	1.0 U [1.0 U]	1.0 U	1.0 U	22	3.0	5.3
Chloroform	µg/L	0.19	10 U [5.0 U]	1.0 U	5.0 U	1.0 U	1.0 U [1.0 U]	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride	µg/L	5	27 [31]	1.0 U	5.0 U	1.0 U	1.0 U [1.0 U]	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	µg/L	5	10 U [5.0 U]	1.0 U	9.7	1.0 U	1.0 U [1.0 U]	1.0 U	1.0 U	3.0	1.0 U	1.0 U
Vinyl Chloride	µg/L	2	91 [100]	1.0 U	5.0 U	1.0 U	1.0 U [1.0 U]	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Water Quality Parameters ²												
Dissolved Oxygen	mg/L	---	8.90	6.16	6.40	3.13	4.95	7.26	6.58	3.13	2.80	5.39
Oxidation-Reduction Potential	mV	---	61.9	327.09	75.80	11.10	12.1	69.1	35.0	11.1	138.6	159.7
Specific Conductivity	µS/cm	---	0.228	0.943	0.535	0.008	0.651	0.732	1.165	0.008	0.128	0.277
Temperature	°C	---	18.34	20.99	20.20	24.72	21.19	18.03	20.61	24.72	18.41	19.50
pH	S.U.	---	9.21	5.90	5.33	5.75	5.91	6.09	6.11	5.75	5.90	5.59
Monitored Natural Attenuation Parameters												
Chloroethane	µg/L	---	10 U [5.0 U]	1.0 U	5.0 U	1.0 U	1.0 U [1.0 U]	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	µg/L	---	10 U [5.0 U]	1.0 U	3.7 J	1.0 U	1.0 U [1.0 U]	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethane	µg/L	---	0.93 J [1.0]	NA	NA	NA	NA	NA	NA	NA	NA	0.68 J
Ethene	µg/L	---	10 [11]	NA	NA	NA	NA	NA	NA	NA	NA	0.42 J
Methane	µg/L	---	14 [18]	NA	NA	NA	NA	NA	NA	NA	NA	100
Sulfate	mg/L	---	2.1 [2.1]	NA	NA	NA	NA	NA	NA	NA	NA	54
Iron, Total	µg/L	---	1,900 J [4,800 J]	NA	NA	NA	NA	NA	NA	NA	NA	20,000
Iron, Dissolved	µg/L	---	50 U [50 U]	NA	NA	NA	NA	NA	NA	NA	NA	50 U
Total Organic Carbon	mg/L	---	0.94 J [0.91 J]	NA	NA	NA	NA	NA	NA	NA	NA	1.9

Table 6
 Groundwater Analytical Results
 2022 Annual Groundwater Performance Monitoring Report
 1300 Revolution Street
 Havre de Grace, Maryland



			Location ID:	MW-16	MW-18 (24)	MW-18 (31)	MW-19D1	MW-20D1	MW-22D	MW-23 (40)	MW-23 (47)	MW-25I	MW-27	MW-28D	
			Sample Date:	09/15/22	09/14/22	09/15/22	09/15/22	09/15/22	09/14/22	09/15/22	09/15/22	09/14/22	09/15/22	09/14/22	
			Screened Interval (feet amsl):	11.19 to 1.19	16.17 to 6.17	16.17 to 6.17	-4.47 to -14.47	-11.13 to -21.13	17.01 to 7.01	6.9 to -3.1	6.9 to -3.1	29.94 to 19.94	19.12 to 9.12	21.91 to 6.91	
			Passive Sampler Elevation (feet amsl):	8.19	7.67	14.67	-9.47	-14.13	12.51	6.3	-0.7	21.44	1.77	19.41	
COCs	Unit	CAO Goal ¹													
1,1,2-Trichloroethane	µg/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.61 J	2.2	50 U
1,2-Dichloroethane	µg/L	5	1.0 U	1.0 U	1.0	52 D	1.0 U	0.65 J	11	9.5	2.0	3.0	1,600		
Chloroform	µg/L	0.19	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.76 J	1.0 U	50 U	
Methylene Chloride	µg/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	50 U	
Trichloroethene	µg/L	5	3.7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	6.1	5.9	50 U	
Vinyl Chloride	µg/L	2	4.6	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.7	50 U	
Water Quality Parameters ²															
Dissolved Oxygen	mg/L	---	2.10	5.75	5.75	6.47	5.78	9.44	2.50	2.50	6.66	5.73	6.32		
Oxidation-Reduction Potential	mV	---	-91.1	120.2	120.2	93.4	102.3	129.8	100.2	100.2	143.0	142.0	65.6		
Specific Conductivity	µS/cm	---	0.222	0.336	0.336	0.179	0.133	0.21	0.233	0.233	0.553	0.167	0.484		
Temperature	°C	---	15.54	19.87	19.87	15.42	15.13	17.64	15.23	15.23	17.99	21.03	17.84		
pH	S.U.	---	7.76	6.96	6.96	5.83	5.79	5.64	5.21	5.21	5.07	6.54	5.79		
Monitored Natural Attenuation Parameters															
Chloroethane	µg/L	---	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0	3.0	1.0 U	5.4	50 U		
cis-1,2-Dichloroethene	µg/L	---	6.7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.86 J	0.89 J	1.0 U	4.5	50 U		
Ethane	µg/L	---	8.1	1.0 U	1.0 U	3.8	1.0 U	NA	0.59 J	1.0	NA	0.85 J	NA		
Ethene	µg/L	---	0.60 J	1.0 U	1.0 U	1.0 U	1.0 U	NA	0.30 J	1.0 U	NA	730	NA		
Methane	µg/L	---	57	5.0 U	4.9 J	150	180	NA	11	15	NA	78	NA		
Sulfate	mg/L	---	6.8	14 J	14	29	17	NA	57	59	NA	2.3	NA		
Iron, Total	µg/L	---	9,900	35,000	16,000	22,000	36,000	NA	10,000	12,000	NA	22,000	NA		
Iron, Dissolved	µg/L	---	50 U	33 J	63	50 U	50 U	NA	50 U	47 J	NA	530	NA		
Total Organic Carbon	mg/L	---	1.3	4.9	4.3	1.0	0.99 J	NA	0.96 J	0.92 J	NA	0.68 J	NA		

Notes:

¹ Values exceeding laboratory reporting limits are bolded. Values exceeding the numerical CAO goals are highlighted in gray.

² Water quality parameters are measured in the field during retrieval of each sampling device.

Acronyms and Abbreviations:

°C = degree Celsius

--- = not applicable

[] = duplicate sample result

µg/L = microgram per liter

µS/cm = microSiemen per centimeter

amsl = above mean sea level

CAO = corrective action objective

COC = constituent of concern

mg/L = milligram per liter

mV = millivolt

NA = not analyzed or measured

S.U. = standard unit

Qualifiers:

D = quantified in a secondary dilution (lab qualifier)

J = indicates an estimated concentration

U = indicates the analyte was analyzed but not detected greater than the detection limit; the associated value is the compound quantitation limit

Table 7
Summary of Percent Change from Historical
Maximum Concentrations – Intermediate and Deep Monitoring Wells
2022 Annual Groundwater Performance Monitoring Report
1300 Revolution Street
Havre de Grace, Maryland



Monitoring Well	Location/ Designation	1,2-DCA Concentration (µg/L)			Percent Change from Historical Maximum Concentration to 2022	Percent Change Since Operation of the Expanded System to 2022
		Historical Maximum ²	Prior to Operation of the Expanded System ² (11/20/14)	Annual PMP Monitoring 2022 Results ² (09/14/22)		
Intermediate Overburden						
MW-12D ¹	On site, POC	8,400 (12/15/98)	< 1 U	< 1 U	-100%	0%
MW-13D	On site, POC	12,000 (4/13/99)	130	22	-100%	-83%
MW-6I	On site	9,000 (12/7/06)	1,700	510 D	-94%	-70%
MW-25I	On site	170 (1/3/08)	56	2	-99%	-96%
MW-14I	Off site	220 (1/3/08)	23	5.3	-98%	-77%
Deep Overburden						
MW-28D	On site	5,700 (5/2/11)	3,500	1,600	-72%	-54%
MW-3	On site, POC	43,000 (5/28/96)	660	34	-100%	-95%
MW-22D ¹	Off site	82 (9/17/02)	< 1 U	0.65 J	-99%	30%
MW-8D ¹	Off site	2,800 (5/28/96)	< 1 U	< 1 U	-100%	0%
MW-18 ³	Off site	4,800 (6/8/06)	100	< 1 U	-100%	-99%
			270	1		
MW-14	Off site	4,000 (10/22/97)	24	3	-100%	-88%
MW-16	Off site	11,000 (4/13/99)	160	< 1 U	-100%	-100%
MW-27	Off site	12,000 (12/7/06)	6,600	3	-100%	-100%
MW-23 ³	Off site	920 (11/20/01)	94	11	-99%	-88%
			56	9.5		
MW-19D1	Off site, POC	390 (12/19/01)	3	52 D	-87%	1633%
MW-20D1 ¹	Off site, POC	5.4 (3/23/05)	1.1	< 1 U	-91%	-55%

Notes:

¹Monitoring well locations highlighted in green exhibited concentrations of 1,2-DCA less than the numerical corrective action objective (CAO) goal of 5 µg/L prior to operation of the expanded system in November 2014 as well as in September 2022.

²For evaluation purposes, values detected less than laboratory reporting limits were assumed to be equal to half the reporting limit.

³Sampling at two discrete depths within the screened interval at MW-18 and MW-23 began in 2008. The maximum result collected from the center of the screened interval is used for evaluation purposes.

Acronyms and Abbreviations:

- µg/L = microgram per liter
- < = less than
- % = percent
- 1,2-DCA = 1,2-dichloroethane
- POC = point of compliance
- PMP = Performance Monitoring Plan

Qualifiers:

- D = quantified in a secondary dilution (lab qualifier)
- J = indicates an estimated concentration
- U = indicates the analyte was analyzed but not detected greater than the detection limit; the associated value is the compound quantitation limit

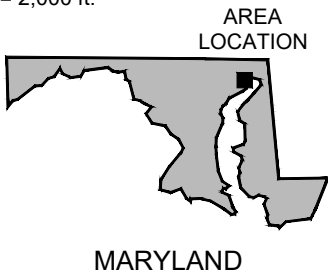
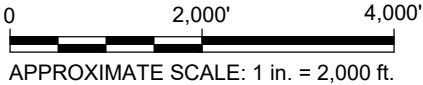
Figures

CITY: (SYRACUSE, NY) DIV/GROUP: ENV/IM/DV DBI (P. LISTER, J. MEYER PM/TM; T. ARMSTRONG TR; P. SHAH L'YR; ON+ OFF-REF
 C:\user\m\g\9593\ARCADIS\ARCHIVED-ANA - CYTEC INDUSTRIES INC\Project Files\Cytec HDG OMMI 2017\2020\3004552801-DWG\GWMON-4020-FIG01-SLM.dwg LAYOUT: 1 SAVED: 12/11/2020 3:37 AM ACADVER: 24.2S (LMS TECH) PAGES: 1 PLOTSTYLE: TABLE.
 PLOT: FULL CTB PLOTTED: 12/8/2022 10:53 AM BY: MURUGESAN, GOKULAKANNAN XREFS: IMAGES: PROJECTNAME: ---



SITE LOCATION

REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., HAVRE DE GRACE, MD, 2014



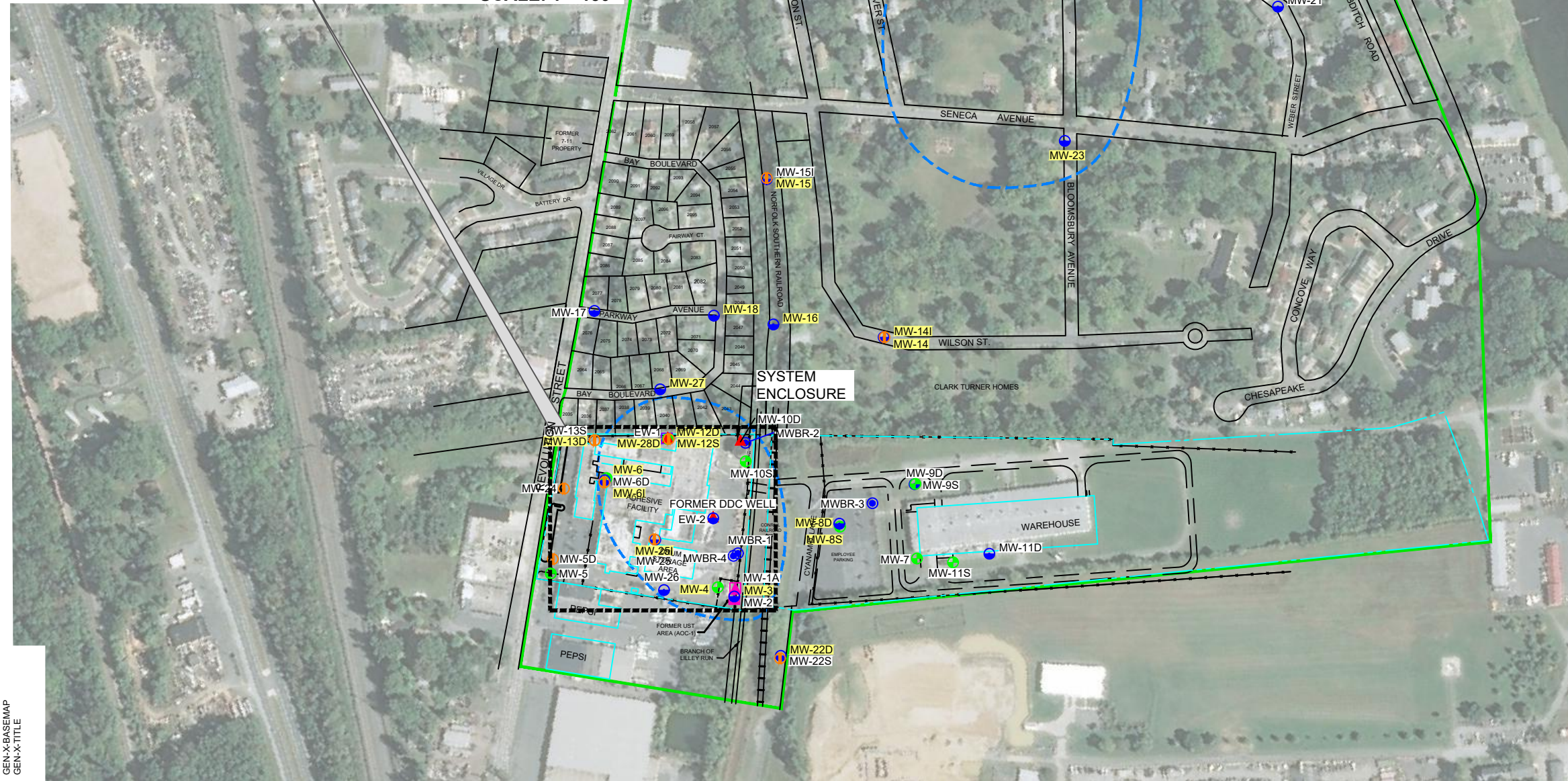
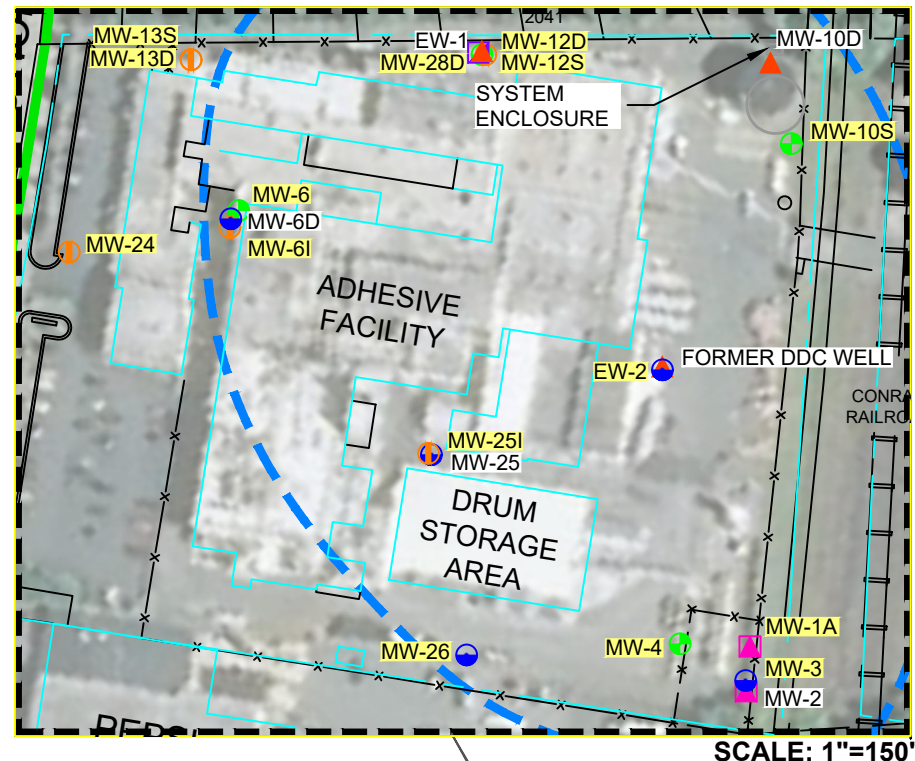
CYTEC SOLVAY GROUP
 HAVRE DE GRACE, MARYLAND
**2022 ANNUAL GROUNDWATER PERFORMANCE
 MONITORING REPORT**

SITE LOCATION MAP



FIGURE
1

CITY: (SYRACUSE) NY DIV: (P) LISTER, LIMEYER, LD. PIC: PM: T. ARMSTRONG, TM: LYRON, OFF: REF
 C:\Users\lmeyer\OneDrive\Documents\Projects\2022\01-11 Progress\01-DWG\GEN-H-02-SITE PLAN.DWG ACADVER: 24.2S (LMS TECH) PAGES: 2
 PLOTTED: 12/21/2022 1:52 PM BY: MURUGESAN, GOKULAKANNAN
 XREFS: IMAGES: PROJECTNAME: GEN-X-BASEMAP GEN-X-TITLE



LEGEND:

- CYTEC PROPERTY BOUNDARY
- SHALLOW OVERBURDEN ZONE MONITORING WELL
- INTERMEDIATE OVERBURDEN ZONE MONITORING WELL
- DEEP OVERBURDEN ZONE MONITORING WELL
- BEDROCK ZONE MONITORING WELL
- ▲ EXTRACTION WELL
- WELL SCREENED IN BOTH INTERMEDIATE AND DEEP OVERBURDEN ZONES
- WELL SCREENED IN BOTH SHALLOW AND INTERMEDIATE OVERBURDEN ZONES
- GROUNDWATER USE RESTRICTION AREA
- APPROXIMATE EXTENT OF IMPACTED GROUNDWATER

- NOTES:**
- BASEMAP INFORMATION OBTAINED FROM MAP TITLED GROUND-WATER SURFACE ELEVATION [FEET], AUGUST 12, 1992, PREPARED BY GROUNDWATER TECHNOLOGY, 10610 IRON BRIDGE RD., JESSUP, MD. 20794, PROJECT No. 01322-5479 FOR AMERICAN CYANAMID COMPANY, DATED OCT. 5, 1992.
 - BASED ON THE REFINEMENT OF THE CONCEPTUAL SITE MODEL PRESENTED IN THE 2017 ANNUAL MONITORING REPORT AND FOLLOWING REGULATORY CONCURRENCE, MW-11D, MW-16, AND MW-27 WERE RECLASSIFIED FROM INTERMEDIATE OVERBURDEN WELLS TO DEEP OVERBURDEN WELLS IN 2018.
 - MONITORING WELLS SAMPLED IN SEPTEMBER 2022 AND IN ACCORDANCE WITH THE PERFORMANCE MONITORING PLAN ARE HIGHLIGHTED IN YELLOW. ALL MONITORING WELLS SHOWN WERE GAUGED IN SEPTEMBER 2022.
 - DDC - DENSITY DRIVEN CONVECTION.

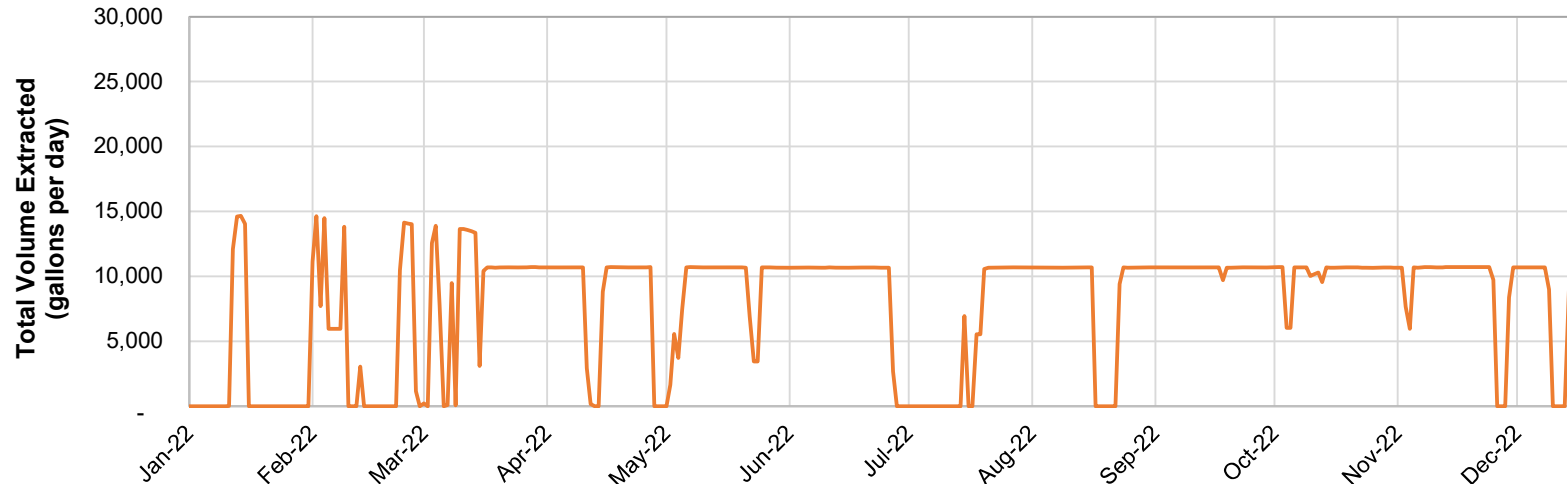


CYTEC SOLVAY GROUP
 HAVRE DE GRACE, MARYLAND
2022 ANNUAL GROUNDWATER PERFORMANCE MONITORING REPORT

SITE PLAN

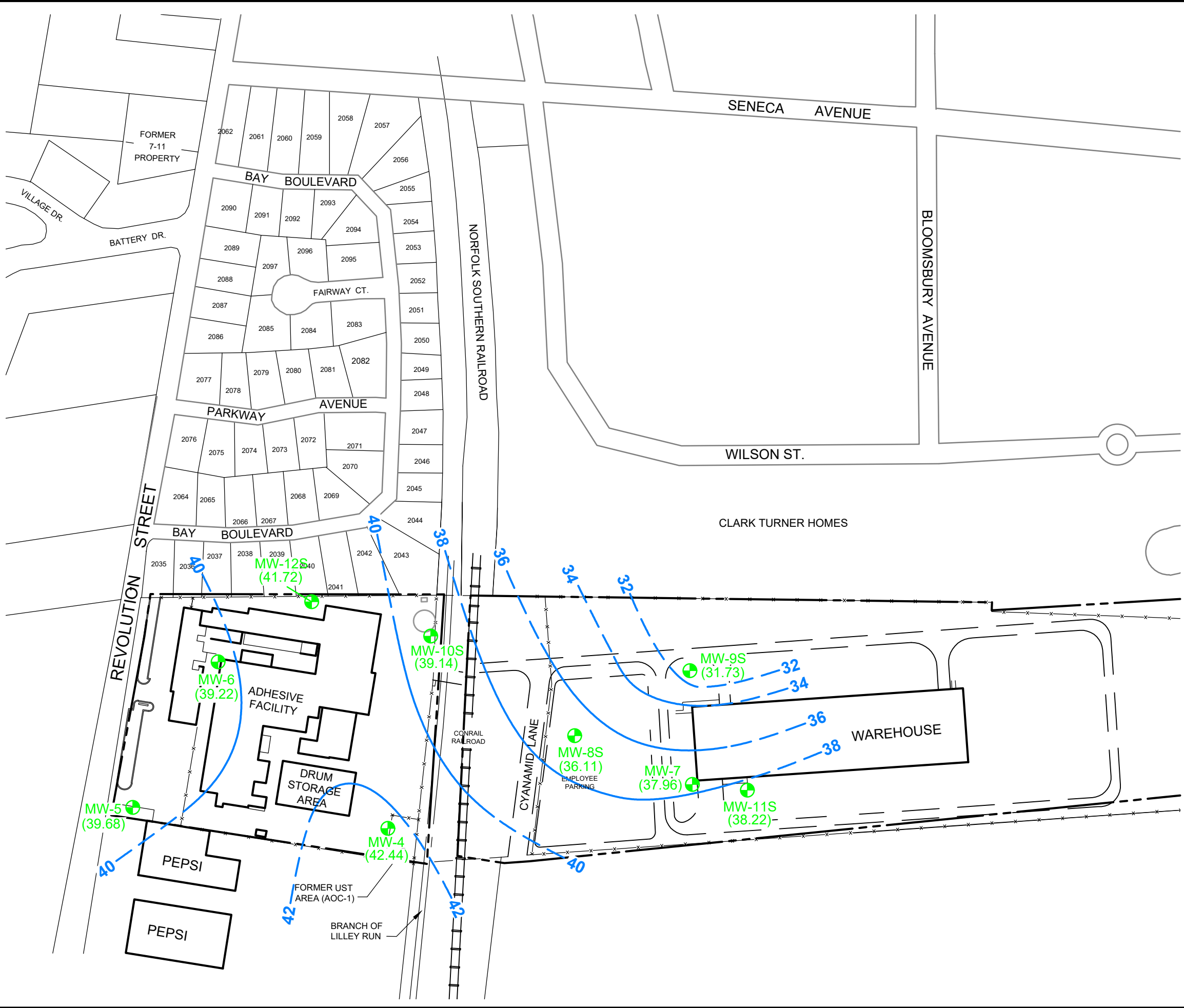


Figure 3
Summary of 2022 Pumping Volumes and Rates
Cytec Solvay Group
Havre de Grace, Maryland
2022 Annual Groundwater Performance Monitoring Report



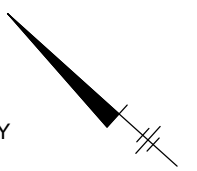
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XREFS: IMAGES: PROJECTNAME: ---
 GEN-X-BASEMAP
 GEN-X-TITLE



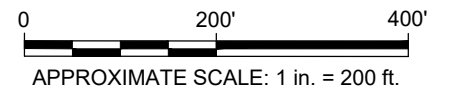
LEGEND:

- CYTEC PROPERTY BOUNDARY
- ⊕ SHALLOW OVERBURDEN ZONE MONITORING WELL
- (42.44) SEPTEMBER 2022 SHALLOW OVERBURDEN GROUNDWATER ELEVATION (FEET AMSL)
- GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)



NOTES:

1. BASEMAP INFORMATION OBTAINED FROM MAP TITLED GROUND-WATER SURFACE ELEVATION [FEET], AUGUST 12, 1992, PREPARED BY GROUNDWATER TECHNOLOGY, 10610 IRON BRIDGE RD., JESSUP, MD. 20794, PROJECT No. 01322-5479 FOR AMERICAN CYANAMID COMPANY, DATED OCT. 5, 1992.
2. AMSL = ABOVE MEAN SEA LEVEL
3. THE GROUNDWATER STABILIZATION SYSTEM WAS OPERATIONAL DURING THE SYNOPTIC GROUNDWATER ELEVATION SURVEY.
4. AOC = AREA OF CONCERN
5. UST = UNDERGROUND STORAGE TANK

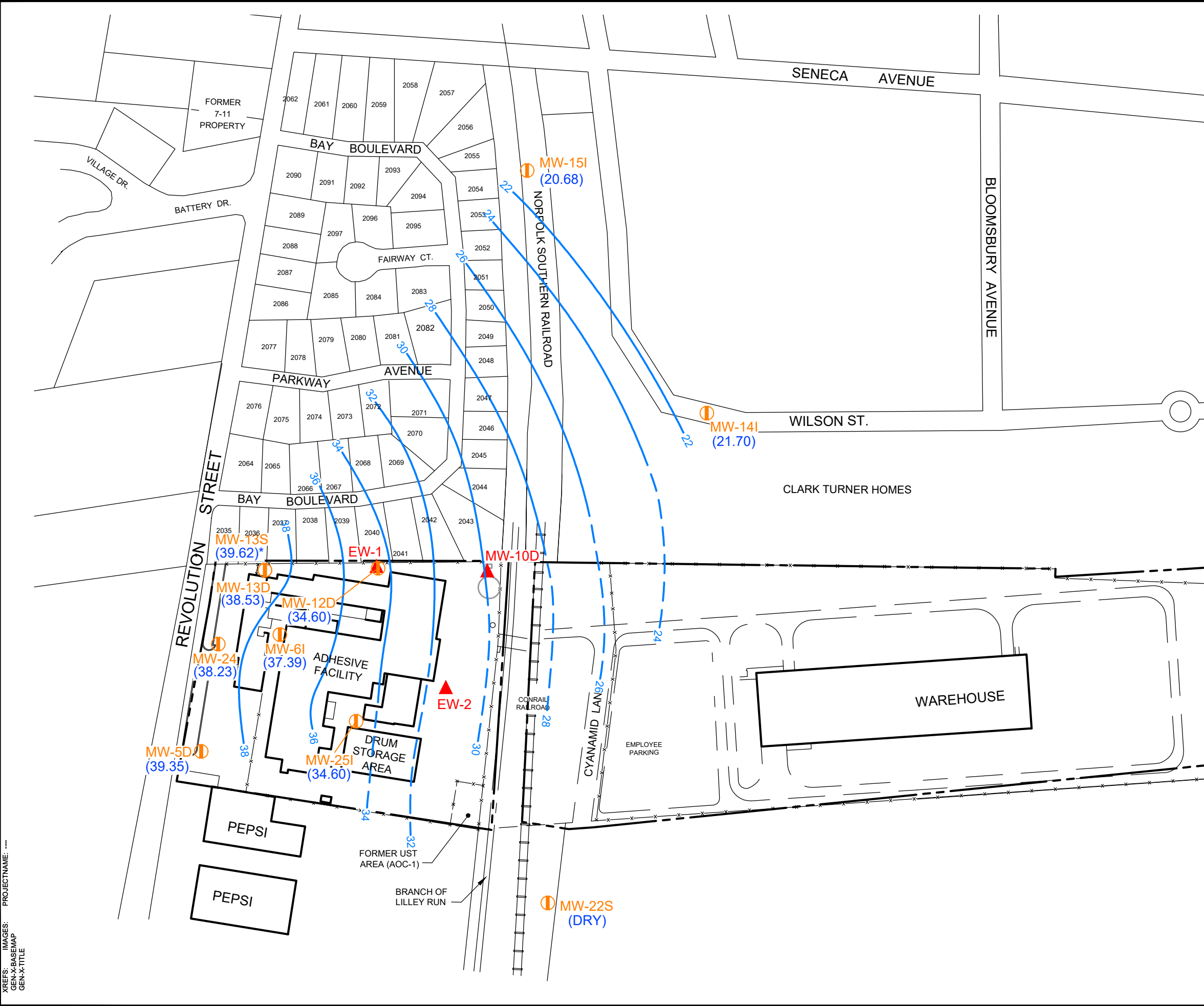


CYTEC SOLVAY GROUP
 HAVRE DE GRACE, MARYLAND
2022 ANNUAL GROUNDWATER PERFORMANCE MONITORING REPORT

GROUNDWATER ELEVATION CONTOUR MAP SHALLOW OVERBURDEN ZONE SEPTEMBER 13, 2022



CITY: (SYRACUSE) NY DIVISION/CAD DR/P(LISTER) MEYER LD: PIC: PMT ARMSTRONG TM: LYRON*OFF+REF
 C:\Users\pms6833\OneDrive\Work\Projects\2022\01-11\Progress\01-DWG\GWMW-2022-F05-GWCMH0Z.dwg LAYOUT: 5 SAVED: 11/20/2022 5:57 PM ACADVER: 24.2S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ----
 PLOTTED: 11/30/2022 3:43 PM BY: MURUGESAN, GOKULAKANNAN
 XREFS: IMAGES: PROJECTNAME: ---
 GEN-X-BASEMAP
 GEN-X-TITLE



LEGEND:

- CYTEC PROPERTY BOUNDARY
- INTERMEDIATE OVERBURDEN ZONE MONITORING WELL
- EXTRACTION WELL
- SEPTEMBER 2022 INTERMEDIATE OVERBURDEN GROUNDWATER ELEVATION (FEET AMSL)
- GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)

- NOTES:**
1. BASEMAP INFORMATION OBTAINED FROM MAP TITLED GROUND-WATER SURFACE ELEVATION [FEET], AUGUST 12, 1992, PREPARED BY GROUNDWATER TECHNOLOGY, 10610 IRON BRIDGE RD., JESSUP, MD. 20794, PROJECT NO. 01322-5479 FOR AMERICAN CYANAMID COMPANY, DATED OCT. 5, 1992.
 2. THE GROUNDWATER STABILIZATION SYSTEM WAS OPERATIONAL DURING THE SYNOPTIC GROUNDWATER ELEVATION SURVEY.
 3. AMSL = ABOVE MEAN SEA LEVEL
 4. AOC = AREA OF CONCERN
 5. UST = UNDERGROUND STORAGE TANK
 6. * = WELL NOT USED FOR CONTOURING



CYTEC SOLVAY GROUP
 HAVRE DE GRACE, MARYLAND
2022 ANNUAL GROUNDWATER PERFORMANCE MONITORING REPORT
GROUNDWATER ELEVATION CONTOUR MAP INTERMEDIATE OVERBURDEN ZONE
SEPTEMBER 13, 2022

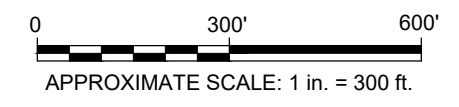
CITY:(SYRACUSE)NY DIV(GROUP)ENVCAD DR:(P)LISTER,IMEYER LD: PIC: PMT,ARMSTRONG, TM: LYRONS*OFF+REF-
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 PLOTSTYLETABLE: PLOTTED: 12/8/2022 9:50 AM BY: MURUGESAN, GOKULAKANNAN
 XREFS: IMAGES: PROJECTNAME: GEN-X-BASEMAP GEN-X-TITLE



LEGEND:

- CYTEC PROPERTY BOUNDARY
- DEEP OVERBURDEN ZONE MONITORING WELL
- EXTRACTION WELL (GROUNDWATER ELEVATIONS POSTED CORRECTED FOR WELL LOSSES)
- (34.74) SEPTEMBER 2022 DEEP OVERBURDEN GROUNDWATER ELEVATION (FEET AMSL)
- GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- INTERPRETIVE CAPTURE ZONE
- TARGET CAPTURE ZONE
- APPROXIMATE CONE OF DEPRESSION (INDIVIDUAL CONTOURS NOT SHOWN)

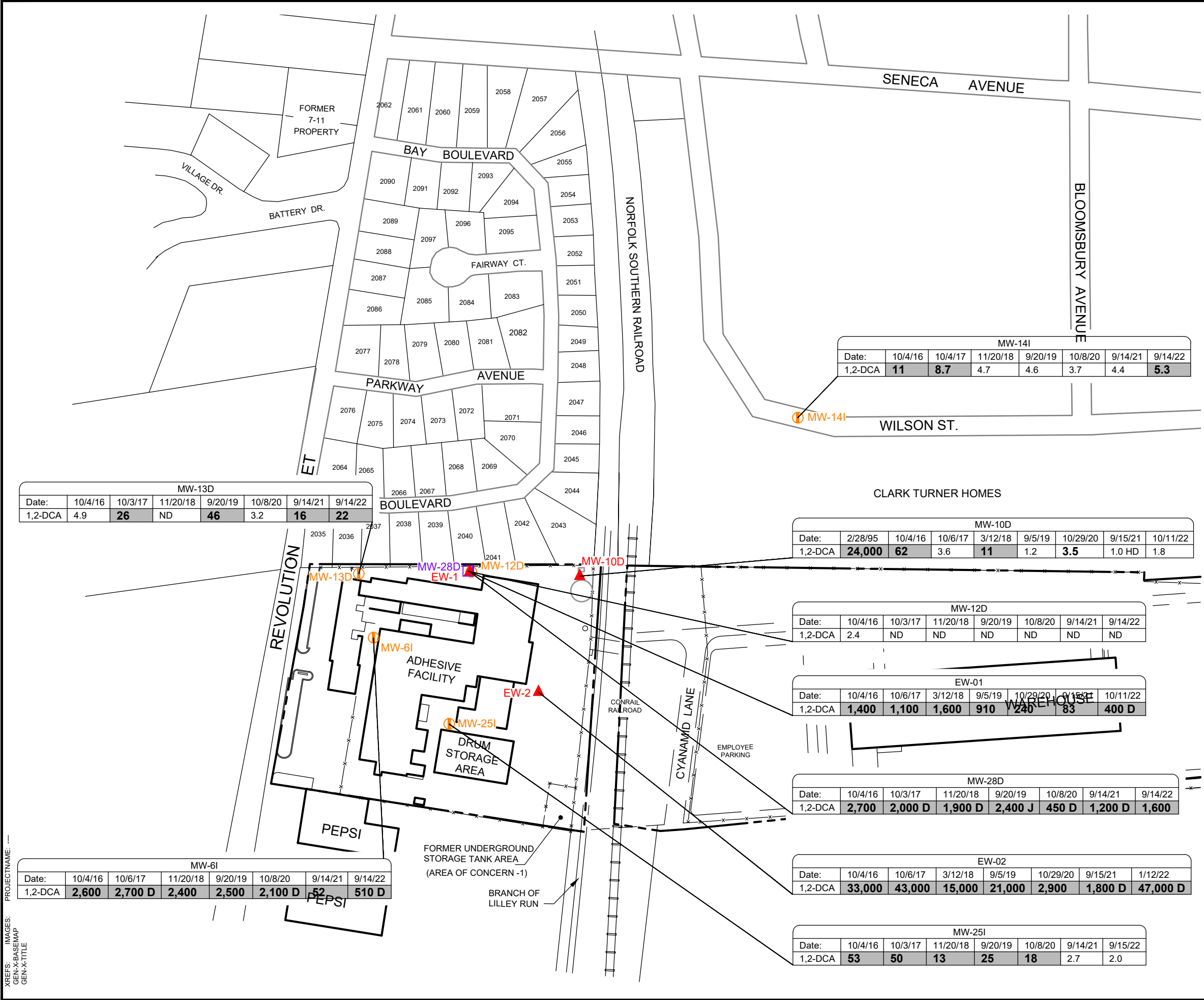
- NOTES:**
1. BASEMAP INFORMATION OBTAINED FROM MAP TITLED GROUND-WATER SURFACE ELEVATION [FEET], AUGUST 12, 1992, PREPARED BY GROUNDWATER TECHNOLOGY, 10610 IRON BRIDGE RD., JESSUP, MD. 20794, PROJECT NO. 01322-5479 FOR AMERICAN CYANAMID COMPANY, DATED OCT. 5, 1992.
 2. AMSL = ABOVE MEAN SEA LEVEL
 3. AOC = AREA OF CONCERN
 4. UST = UNDERGROUND STORAGE TANK
 5. THE GROUNDWATER STABILIZATION SYSTEM WAS OPERATIONAL DURING THE SYNOPTIC GROUNDWATER ELEVATION SURVEY, EXCEPT FOR EW-2 WHICH HAS BEEN INACTIVE SINCE MARCH 2022.
 6. * = WELL NOT USED FOR CONTOURING



CYTEC SOLVAY GROUP
 HAVRE DE GRACE, MARYLAND
2022 ANNUAL GROUNDWATER PERFORMANCE MONITORING REPORT
GROUNDWATER ELEVATION CONTOUR MAP DEEP OVERBURDEN ZONE
SEPTEMBER 13, 2022



CITY: (SYRACUSE-NY) CRANBURY-NJ DIV/GROUP/ENVCAD DB:(P) LISTER, J MEYER LD: PIC: PMT ARMSTRONG TM: LYR ONE "OFF-REF"
 C:\Users\mrunge\OneDrive\Acad\GIS\CYTEC-SOLVAY GROUP-HAVRE DE GRACE Maryland\Project Files\2022\01-10 Progress\01-DWG\GWM-2022-F07-1-2-DCA INTERMEDIATE.dwg LAYOUT: 7 SAVED: 12/11/2022 11:33 AM ACADVER: 24.25 (LMS TECH) PAGES: 7
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MW-13D							
Date:	10/4/16	10/3/17	11/20/18	9/20/19	10/8/20	9/14/21	9/14/22
1,2-DCA	4.9	26	ND	46	3.2	16	22

MW-6I							
Date:	10/4/16	10/6/17	11/20/18	9/20/19	10/8/20	9/14/21	9/14/22
1,2-DCA	2,600	2,700 D	2,400	2,500	2,100 D	52	510 D

MW-14I							
Date:	10/4/16	10/4/17	11/20/18	9/20/19	10/8/20	9/14/21	9/14/22
1,2-DCA	11	8.7	4.7	4.6	3.7	4.4	5.3

MW-10D								
Date:	2/28/95	10/4/16	10/6/17	3/12/18	9/5/19	10/29/20	9/15/21	10/11/22
1,2-DCA	24,000	62	3.6	11	1.2	3.5	1.0 HD	1.8

MW-12D							
Date:	10/4/16	10/3/17	11/20/18	9/20/19	10/8/20	9/14/21	9/14/22
1,2-DCA	2.4	ND	ND	ND	ND	ND	ND

EW-01							
Date:	10/4/16	10/6/17	3/12/18	9/5/19	10/29/20	9/15/21	10/11/22
1,2-DCA	1,400	1,100	1,600	910	240	83	400 D

MW-28D							
Date:	10/4/16	10/3/17	11/20/18	9/20/19	10/8/20	9/14/21	9/14/22
1,2-DCA	2,700	2,000 D	1,900 D	2,400 J	450 D	1,200 D	1,600

EW-02							
Date:	10/4/16	10/6/17	3/12/18	9/5/19	10/29/20	9/15/21	1/12/22
1,2-DCA	33,000	43,000	15,000	21,000	2,900	1,800 D	47,000 D

MW-25I							
Date:	10/4/16	10/3/17	11/20/18	9/20/19	10/8/20	9/14/21	9/15/22
1,2-DCA	53	50	13	25	18	2.7	2.0

LEGEND:

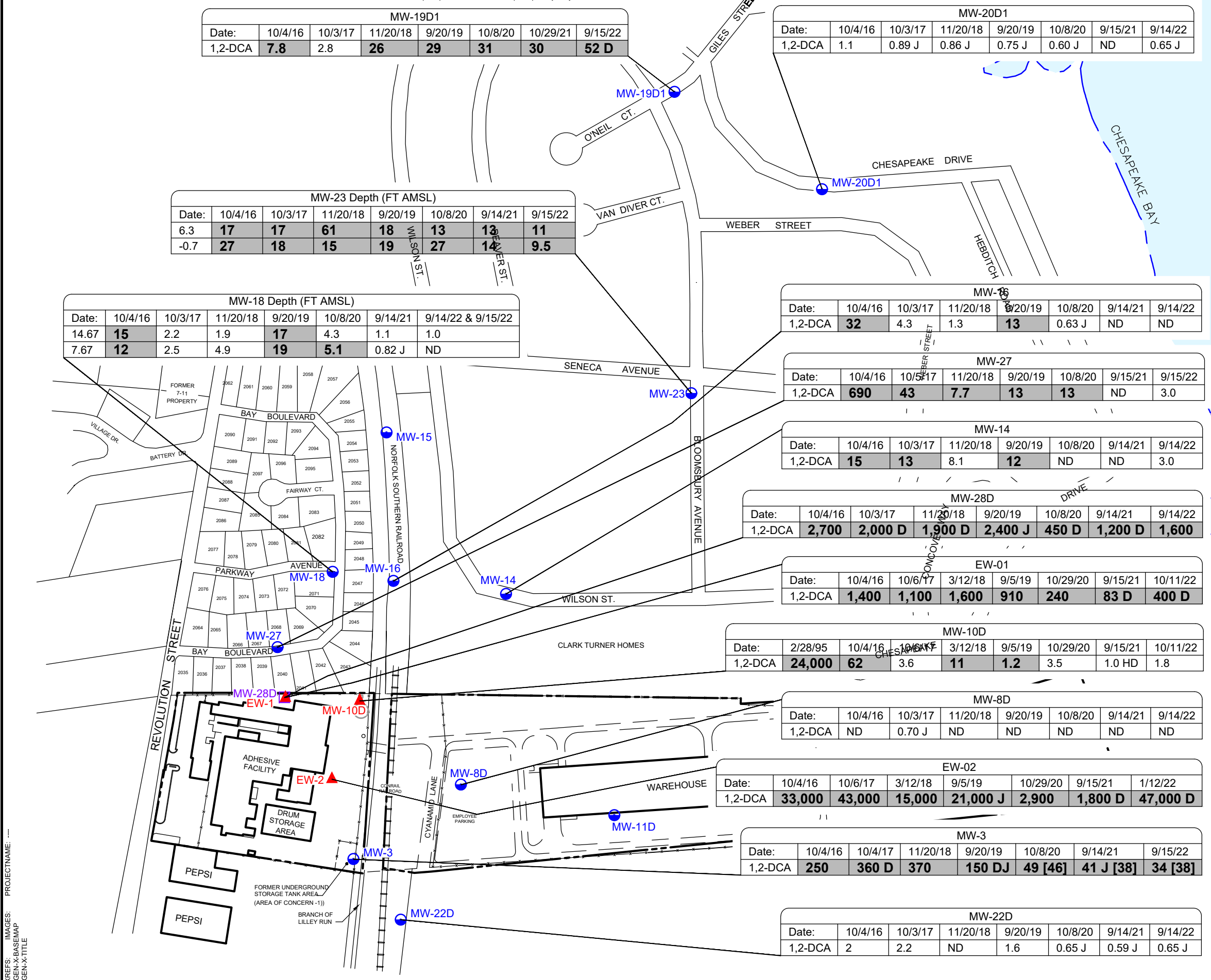
- CYTEC PROPERTY BOUNDARY
- INTERMEDIATE OVERBURDEN ZONE MONITORING WELL INCLUDED IN PMP
- WELL SCREENED IN BOTH INTERMEDIATE AND DEEP OVERBURDEN ZONES INCLUDED IN PMP
- EXTRACTION WELL

- NOTES:**
- BASEMAP INFORMATION OBTAINED FROM MAP TITLED GROUND-WATER SURFACE ELEVATION [FEET], AUGUST 12, 1992, PREPARED BY GROUNDWATER TECHNOLOGY, 10610 IRON BRIDGE RD., JESSUP, MD. 20794, PROJECT No. 01322-5479 FOR AMERICAN CYANAMID COMPANY, DATED OCT. 5, 1992.
 - VALUES EXCEEDING THE NUMERICAL CORRECTIVE ACTION OBJECTIVE GOAL FOR 1,2-DCA (5 µg/L) ARE BOLDED AND SHADED.
 - ANALYTICAL DATA PRESENTED HEREON INCLUDE THE LAST EIGHT ROUNDS OF 1,2-DCA DATA COLLECTED AS A COMPONENT OF THE PMP (2014-PRESENT) AND AT OR IMMEDIATELY FOLLOWING WELL INSTALLATION. THE BASELINE DATA WASN'T COLLECTED AS PART OF THE PMP WHICH BEGAN IN 2015. A HISTORICAL ANALYTICAL TABLE IS PROVIDED IN APPENDIX G AND TREND PLOTS FOR SELECT MONITORING LOCATIONS ARE PRESENTED IN APPENDIX H.
 - ND = ANALYTE WAS NOT DETECTED ABOVE LABORATORY REPORTING LIMITS
 - µg/L = MICROGRAMS PER LITER
 - 1,2-DCA = 1,2-DICHLOROETHANE
 - PMP = PERFORMANCE MONITORING PLAN
 - J = ESTIMATED RESULT
 - D = COMPOUND QUANTITATED USING A SECONDARY DILUTION
 - H = SAMPLE WAS PREPPED OR ANALYZED BEYOND THE SPECIFIED HOLDING TIME
 - EW-02 REMAINS SHUT DOWN SINCE MARCH 2022. THE PUMPING SYSTEM WAS SHUT DOWN FOR 3 WEEKS PRIOR TO JAN 2022 SAMPLING, WHICH MAY HAVE LED TO INCREASED CONCENTRATIONS.



CYTEC SOLVAY GROUP
 HAVRE DE GRACE, MARYLAND
2022 ANNUAL GROUNDWATER PERFORMANCE MONITORING REPORT
1,2-DICHLOROETHANE RESULTS FOR INTERMEDIATE OVERBURDEN

CITY: (SYRACUSE-NY) CRABURY-NJ DIV(GROUP)ENVCAD DB(P LISTER) JMEYER LD: PIC: PMT ARMSTRONG TM: LYR ONE "OFF-REF"
 C:\Users\mrunings\OneDrive\Acad\AUS-CYTEC-CYTEC-SOLVAY GROUP-HAVRE DE GRACE Maryland\Project Files\2022\01-10 Progress\01-DWG\GWM-2022-F08-1,2-DCA DEEP.dwg LAYOUT: 8 SAVED: 12/8/2022 9:43 AM ACADVER: 24.2S (LMS TECH) PAGES: 10 PAGES SETUP: PLOTSTYLETABLE: PLOTTED: 12/8/2022 9:48 AM BY: MURUGESAN, GOKULAKANNAN



MW-19D1							
Date:	10/4/16	10/3/17	11/20/18	9/20/19	10/8/20	10/29/21	9/15/22
1,2-DCA	7.8	2.8	26	29	31	30	52 D

MW-20D1							
Date:	10/4/16	10/3/17	11/20/18	9/20/19	10/8/20	9/15/21	9/14/22
1,2-DCA	1.1	0.89 J	0.86 J	0.75 J	0.60 J	ND	0.65 J

MW-23 Depth (FT AMSL)							
Date:	10/4/16	10/3/17	11/20/18	9/20/19	10/8/20	9/14/21	9/15/22
6.3	17	17	61	18	13	13	11
-0.7	27	18	15	19	27	14	9.5

MW-18 Depth (FT AMSL)							
Date:	10/4/16	10/3/17	11/20/18	9/20/19	10/8/20	9/14/21	9/14/22 & 9/15/22
14.67	15	2.2	1.9	17	4.3	1.1	1.0
7.67	12	2.5	4.9	19	5.1	0.82 J	ND

MW-18							
Date:	10/4/16	10/3/17	11/20/18	9/20/19	10/8/20	9/14/21	9/14/22
1,2-DCA	32	4.3	1.3	13	0.63 J	ND	ND

MW-27							
Date:	10/4/16	10/3/17	11/20/18	9/20/19	10/8/20	9/15/21	9/15/22
1,2-DCA	690	43	7.7	13	13	ND	3.0

MW-14							
Date:	10/4/16	10/3/17	11/20/18	9/20/19	10/8/20	9/14/21	9/14/22
1,2-DCA	15	13	8.1	12	ND	ND	3.0

MW-28D							
Date:	10/4/16	10/3/17	11/20/18	9/20/19	10/8/20	9/14/21	9/14/22
1,2-DCA	2,700	2,000 D	1,900 D	2,400 J	450 D	1,200 D	1,600

EW-01							
Date:	10/4/16	10/6/17	3/12/18	9/5/19	10/29/20	9/15/21	10/11/22
1,2-DCA	1,400	1,100	1,600	910	240	83 D	400 D

MW-10D								
Date:	2/28/95	10/4/16	10/6/17	3/12/18	9/5/19	10/29/20	9/15/21	10/11/22
1,2-DCA	24,000	62	3.6	11	1.2	3.5	1.0 HD	1.8

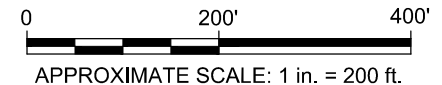
MW-8D							
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1,2-DCA	ND	0.70 J	ND	ND	ND	ND	ND

EW-02							
Date:	10/4/16	10/6/17	3/12/18	9/5/19	10/29/20	9/15/21	1/12/22
1,2-DCA	33,000	43,000	15,000	21,000 J	2,900	1,800 D	47,000 D

MW-3							
Date:	10/4/16	10/4/17	11/20/18	9/20/19	10/8/20	9/14/21	9/15/22
1,2-DCA	250	360 D	370	150 DJ	49 [46]	41 J [38]	34 [38]

MW-22D							
Date:	10/4/16	10/3/17	11/20/18	9/20/19	10/8/20	9/14/21	9/14/22
1,2-DCA	2	2.2	ND	1.6	0.65 J	0.59 J	0.65 J

- LEGEND:**
- CYTEC PROPERTY BOUNDARY
 - DEEP OVERBURDEN ZONE MONITORING WELL INCLUDED IN PMP
 - MW-28D WELL SCREENED IN BOTH INTERMEDIATE AND DEEP OVERBURDEN ZONES INCLUDED IN PMP
 - ▲ EXTRACTION WELL
- NOTES:**
1. BASEMAP INFORMATION OBTAINED FROM MAP TITLED GROUND-WATER SURFACE ELEVATION [FEET], AUGUST 12, 1992, PREPARED BY GROUNDWATER TECHNOLOGY, 10610 IRON BRIDGE RD., JESSUP, MD. 20794, PROJECT No. 01322-5479 FOR AMERICAN CYANAMID COMPANY, DATED OCT. 5, 1992.
 2. VALUES EXCEEDING THE NUMERICAL CORRECTIVE ACTION OBJECTIVE GOAL FOR 1,2-DCA (5 µg/L) ARE BOLDED AND SHADED.
 3. ANALYTICAL DATA PRESENTED HEREON INCLUDE THE LAST EIGHT ROUNDS OF 1,2-DCA DATA COLLECTED AS A COMPONENT OF THE PMP (2014-PRESENT) AND AT OR IMMEDIATELY FOLLOWING WELL INSTALLATION. THE BASELINE DATA WASN'T COLLECTED AS PART OF THE PERFORMANCE MONITORING PROGRAM (PMP) WHICH BEGAN IN 2015. A HISTORICAL ANALYTICAL TABLE IS PROVIDED IN APPENDIX G AND TREND PLOTS FOR SELECT MONITORING LOCATIONS ARE PRESENTED IN APPENDIX H.
 4. ND = ANALYTE WAS NOT DETECTED ABOVE LABORATORY REPORTING LIMITS
 5. µg/L = MICROGRAMS PER LITER
 6. 1,2-DCA = 1,2-DICHLOROETHANE
 7. PMP = PERFORMANCE MONITORING PLAN
 8. J = ESTIMATED RESULT
 9. FT AMSL = FEET ABOVE MEAN SEA LEVEL
 10. D = COMPOUND QUANTITATED USING A SECONDARY DILUTION
 11. H = SAMPLE WAS PREPPED OR ANALYZED BEYOND THE SPECIFIED HOLDING TIME
 12. BASED ON THE REFINEMENT OF THE CONCEPTUAL SITE MODEL PRESENTED IN THE 2017 ANNUAL MONITORING REPORT AND FOLLOWING REGULATORY CONCURRENCE, MW-11D, MW-16, AND MW-27 WERE RECLASSIFIED FROM INTERMEDIATE OVERBURDEN WELLS TO DEEP OVERBURDEN WELLS IN 2018.
 13. [46] - DUPLICATE SAMPLE



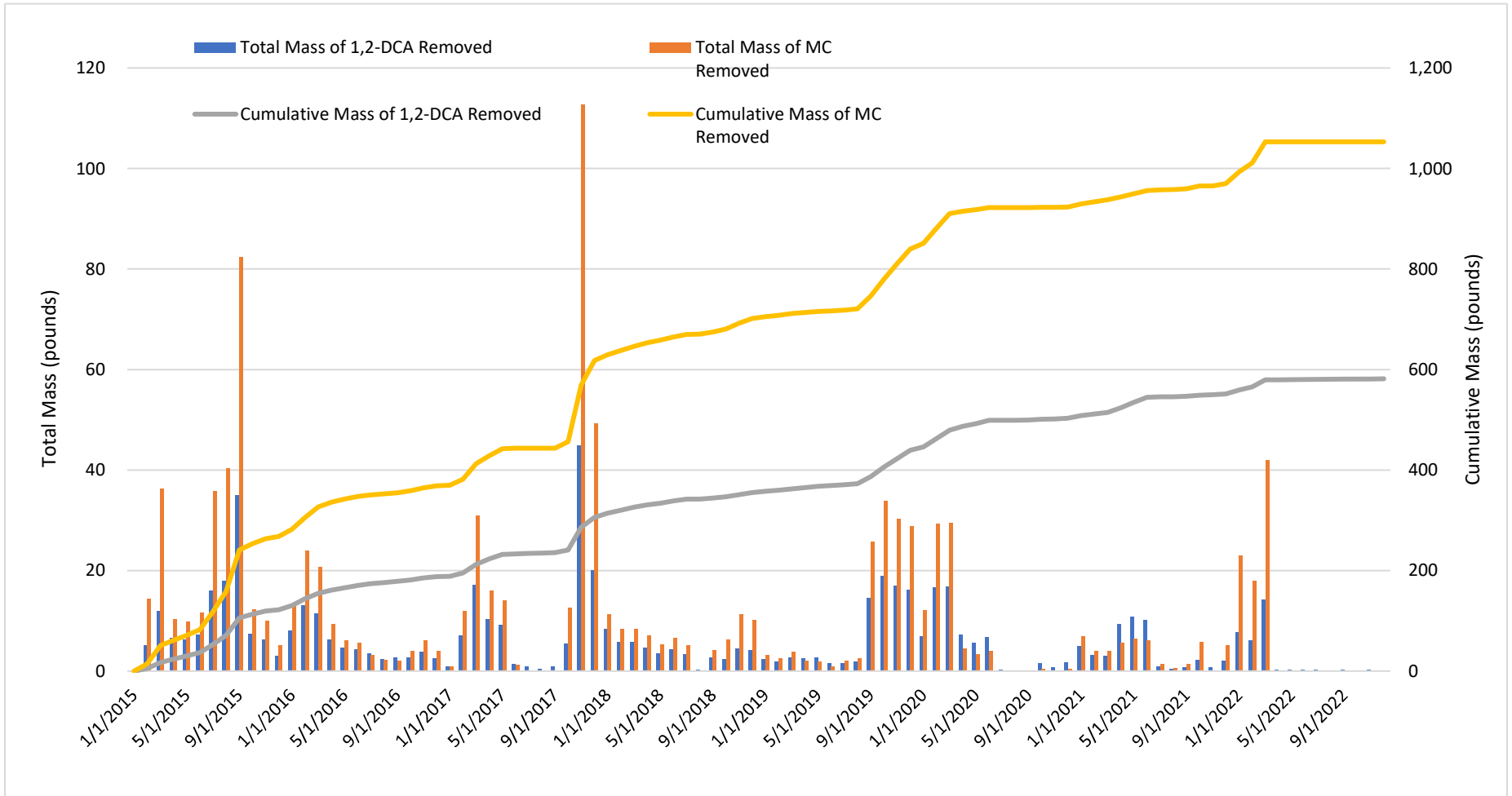
CYTEC SOLVAY GROUP
 HAVRE DE GRACE, MARYLAND
2022 ANNUAL GROUNDWATER PERFORMANCE MONITORING REPORT

1,2-DICHLOROETHANE RESULTS FOR DEEP OVERBURDEN

ARCADIS

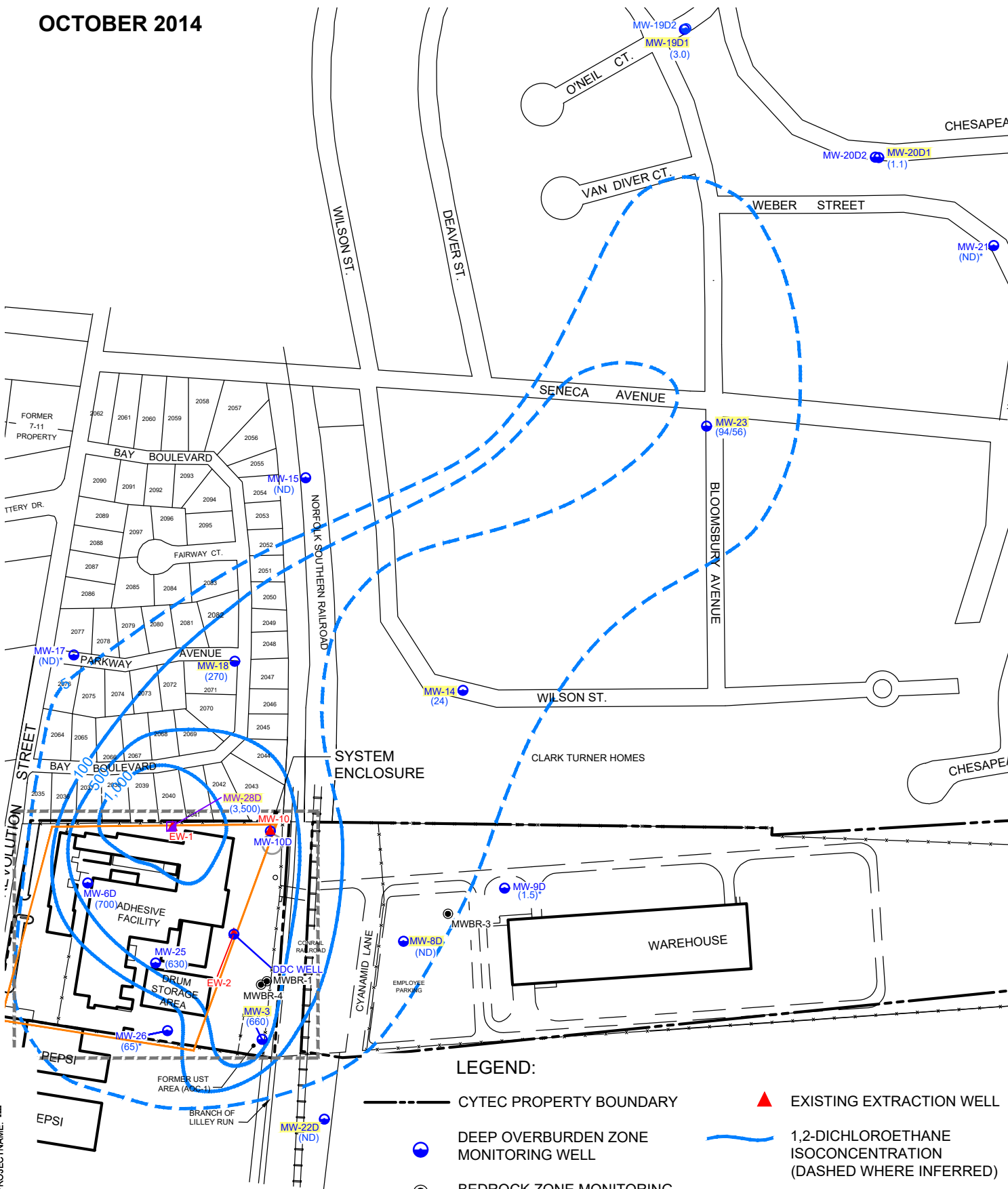
FIGURE
8

Figure 9
Mass Removal of 1,2-DCA and Methylene Chloride
Cytec Solvay Group
Havre de Grace, Maryland
2022 Annual Groundwater Performance Monitoring Report



CITY: (SYRACUSE-NY) CRNABURY-NJ DIV(GROUP)ENVCAD DB:(P LISTER) JMEYER LD: PIC: PMT ARMSTRONG TM: LYRONE "OFF-REF"
 C:\Users\munge6893\OneDrive\Acad\GIS\CYTEC-SOLVAY GROUP-HAVRE DE GRACE Maryland\Project Files\2022\10-1-2-DCA ISO.dwg LAYOUT: 10 SAVED: 11/30/2022 4:08 PM ACADVER: 24.2S (LMS TECH) PAGES: 25 PLOTSTYLETABLE: ---
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 IMAGES: PROJECTNAME: ---

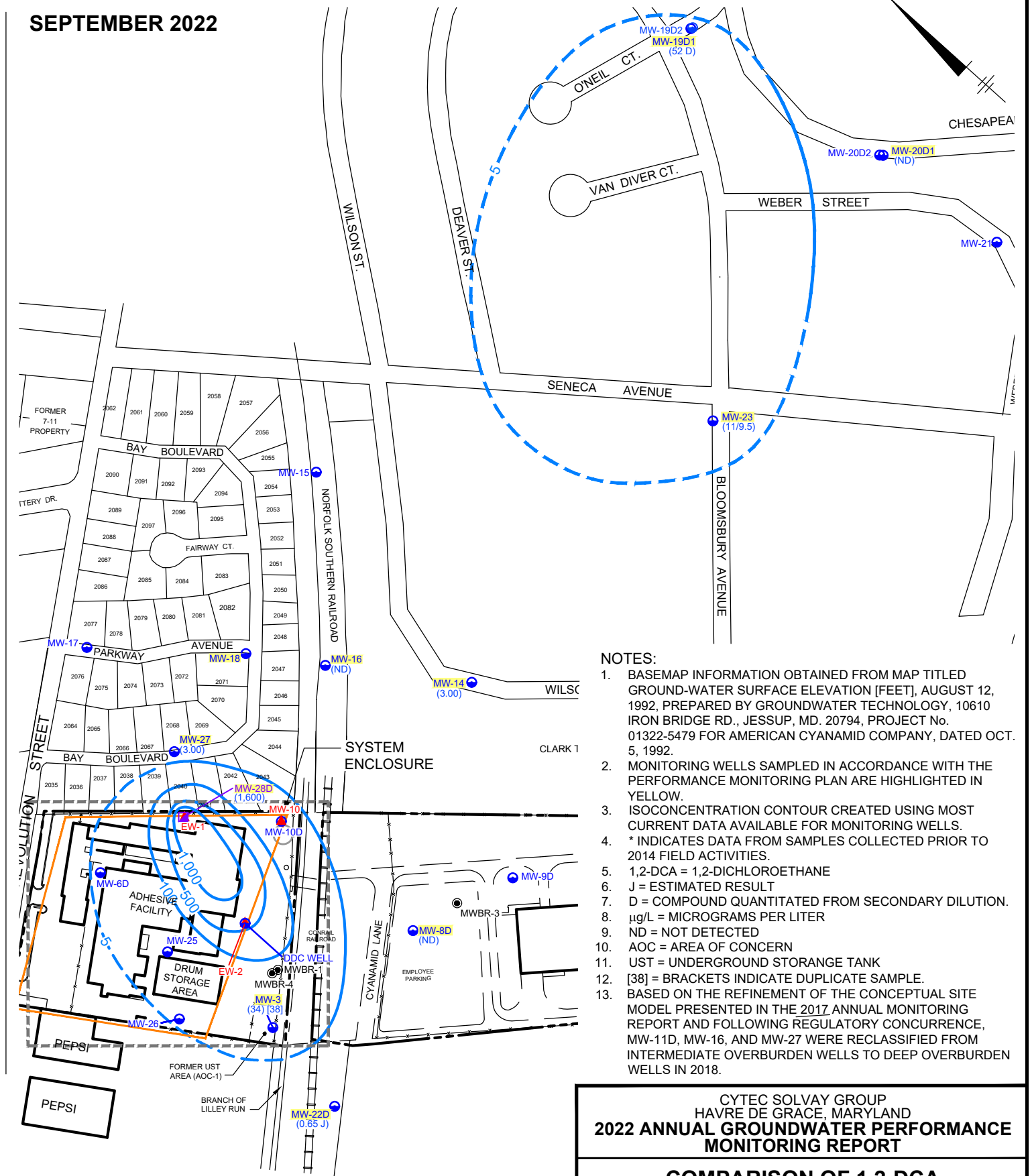
OCTOBER 2014



LEGEND:

- CYTEC PROPERTY BOUNDARY
- DEEP OVERBURDEN ZONE MONITORING WELL
- BEDROCK ZONE MONITORING WELL
- WELL SCREENED IN BOTH INTERMEDIATE AND DEEP OVERBURDEN ZONES
- ▲ EXISTING EXTRACTION WELL
- 1,2-DICHLOROETHANE ISOCONCENTRATION (DASHED WHERE INFERRED)
- (47,000 D) 1,2-DICHLOROETHANE CONCENTRATION (ug/L)

SEPTEMBER 2022



NOTES:

1. BASEMAP INFORMATION OBTAINED FROM MAP TITLED GROUND-WATER SURFACE ELEVATION [FEET], AUGUST 12, 1992, PREPARED BY GROUNDWATER TECHNOLOGY, 10610 IRON BRIDGE RD., JESSUP, MD. 20794, PROJECT No. 01322-5479 FOR AMERICAN CYANAMID COMPANY, DATED OCT. 5, 1992.
2. MONITORING WELLS SAMPLED IN ACCORDANCE WITH THE PERFORMANCE MONITORING PLAN ARE HIGHLIGHTED IN YELLOW.
3. ISOCONCENTRATION CONTOUR CREATED USING MOST CURRENT DATA AVAILABLE FOR MONITORING WELLS.
4. * INDICATES DATA FROM SAMPLES COLLECTED PRIOR TO 2014 FIELD ACTIVITIES.
5. 1,2-DCA = 1,2-DICHLOROETHANE
6. J = ESTIMATED RESULT
7. D = COMPOUND QUANTITATED FROM SECONDARY DILUTION.
8. ug/L = MICROGRAMS PER LITER
9. ND = NOT DETECTED
10. AOC = AREA OF CONCERN
11. UST = UNDERGROUND STORAGE TANK
12. [38] = BRACKETS INDICATE DUPLICATE SAMPLE.
13. BASED ON THE REFINEMENT OF THE CONCEPTUAL SITE MODEL PRESENTED IN THE 2017 ANNUAL MONITORING REPORT AND FOLLOWING REGULATORY CONCURRENCE, MW-11D, MW-16, AND MW-27 WERE RECLASSIFIED FROM INTERMEDIATE OVERBURDEN WELLS TO DEEP OVERBURDEN WELLS IN 2018.

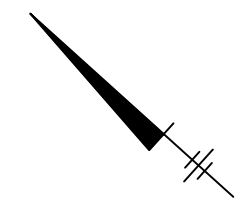
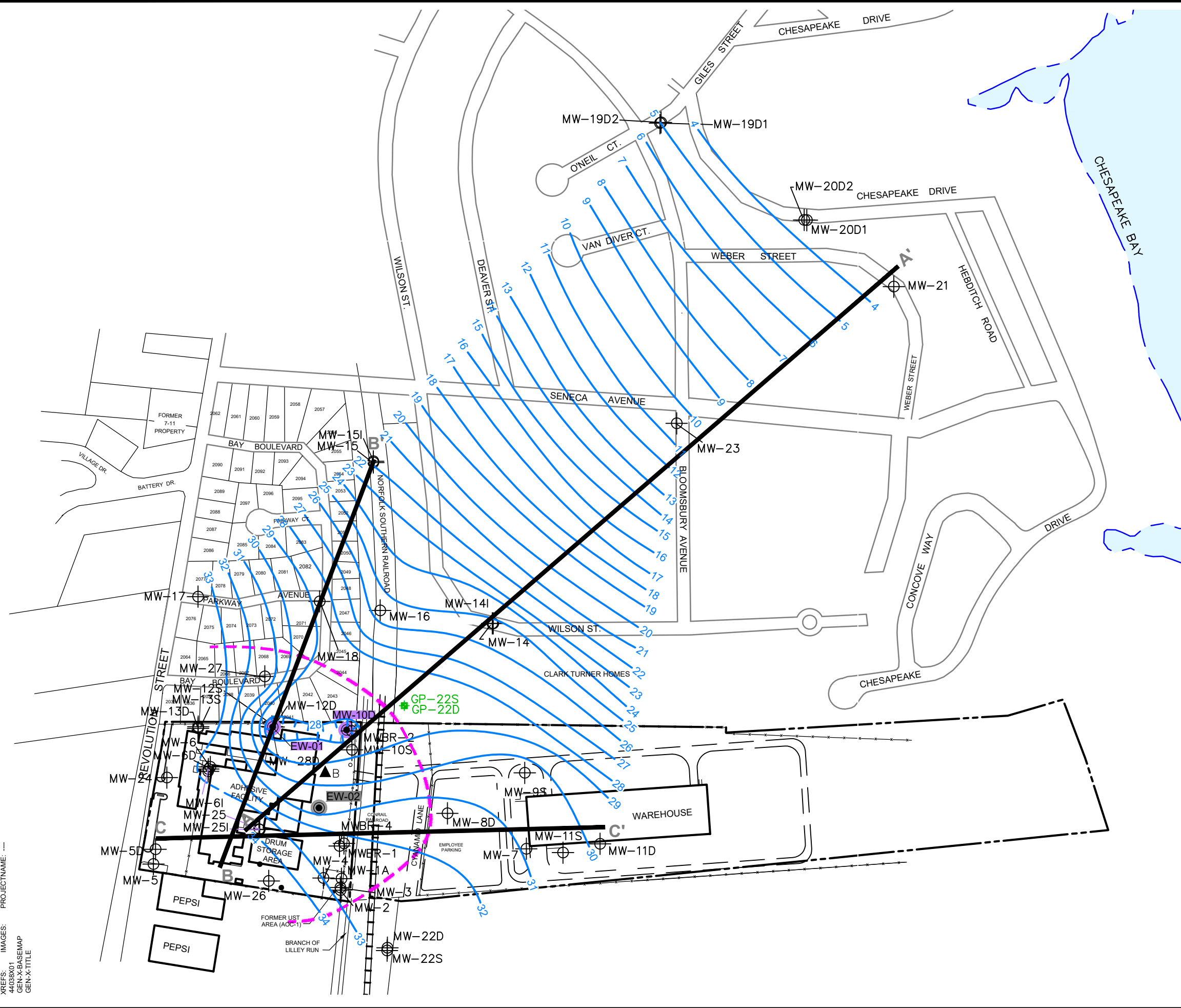


CYTEC SOLVAY GROUP
 HAVRE DE GRACE, MARYLAND
2022 ANNUAL GROUNDWATER PERFORMANCE MONITORING REPORT

COMPARISON OF 1,2-DCA ISOCONCENTRATION CONTOURS (2014 AND 2022)



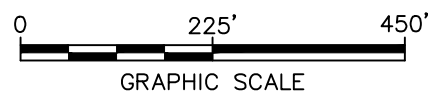
FIGURE
10



- LEGEND:**
- CYTEC PROPERTY BOUNDARY
 - ⊕ EXISTING MONITORING WELL
 - ▲ HISTORICAL SOIL BORING LOCATION
 - ⊕ HISTORICAL GEOPROBE SOIL BORING LOCATION
 - ⊕ ACTIVE EXTRACTION WELL
 - ⊕ INACTIVE EXTRACTION WELL
 - ~ SEPTEMBER 2022 DEEP OVERBURDEN GROUNDWATER ELEVATION (FEET AMSL)
 - APPROXIMATE CONE OF DEPRESSION (INDIVIDUAL CONTOURS NOT SHOWN)
 - - - INTERPRETIVE CAPTURE ZONE
 - A — A' CROSS SECTION TRANSECT

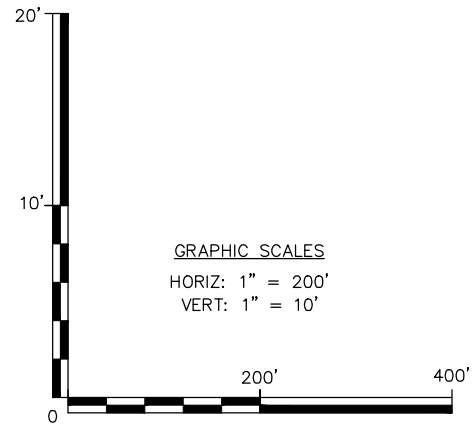
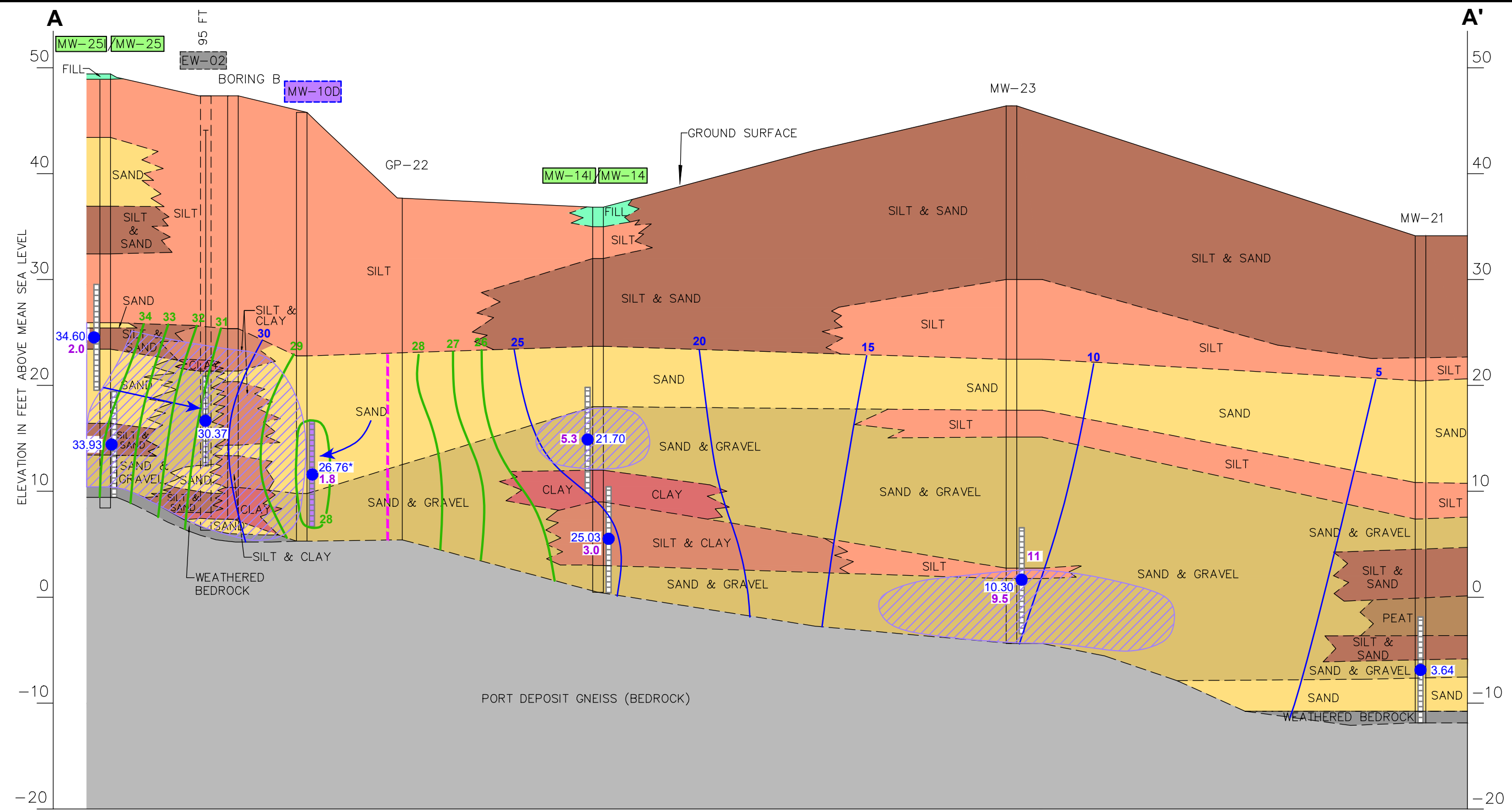
SOURCE:
 SITE INFORMATION TAKEN FROM A MAP ENTITLED "GROUND-WATER SURFACE ELEVATION [FEET], AUGUST 12, 1992. PREPARED BY GROUNDWATER TECHNOLOGY, 10610 IRON BRIDGE RD., JESSUP, MD. 20794. PROJECT No. 01322-5479 FOR AMERICAN CYANAMID COMPANY. DATED OCT. 5, 1992.

NOTES:
 1. AMSL = ABOVE MEAN SEA LEVEL



CYTEC SOLVAY GROUP HAVRE DE GRACE, MARYLAND 2022 ANNUAL GROUNDWATER PERFORMANCE MONITORING REPORT	
CROSS SECTION LOCATION MAP	
	FIGURE 11

CITY: (SYRACUSE)NY, CRANBURY, NJ, DIV: (GROUP)EN/CAD, DR: (P) LISTER, LMEYER, LD: PIC: PMT, ARMSTRONG, TM: LYRON, *OFF+REF+
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 GEN-X-TITLE: ---



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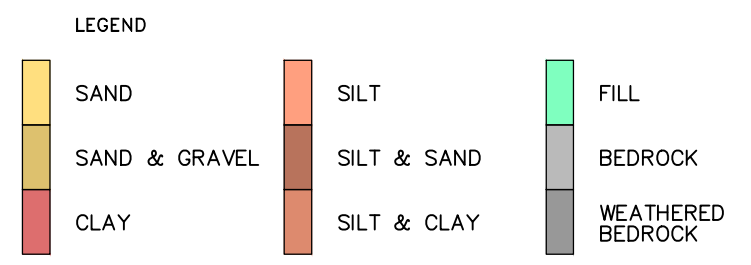
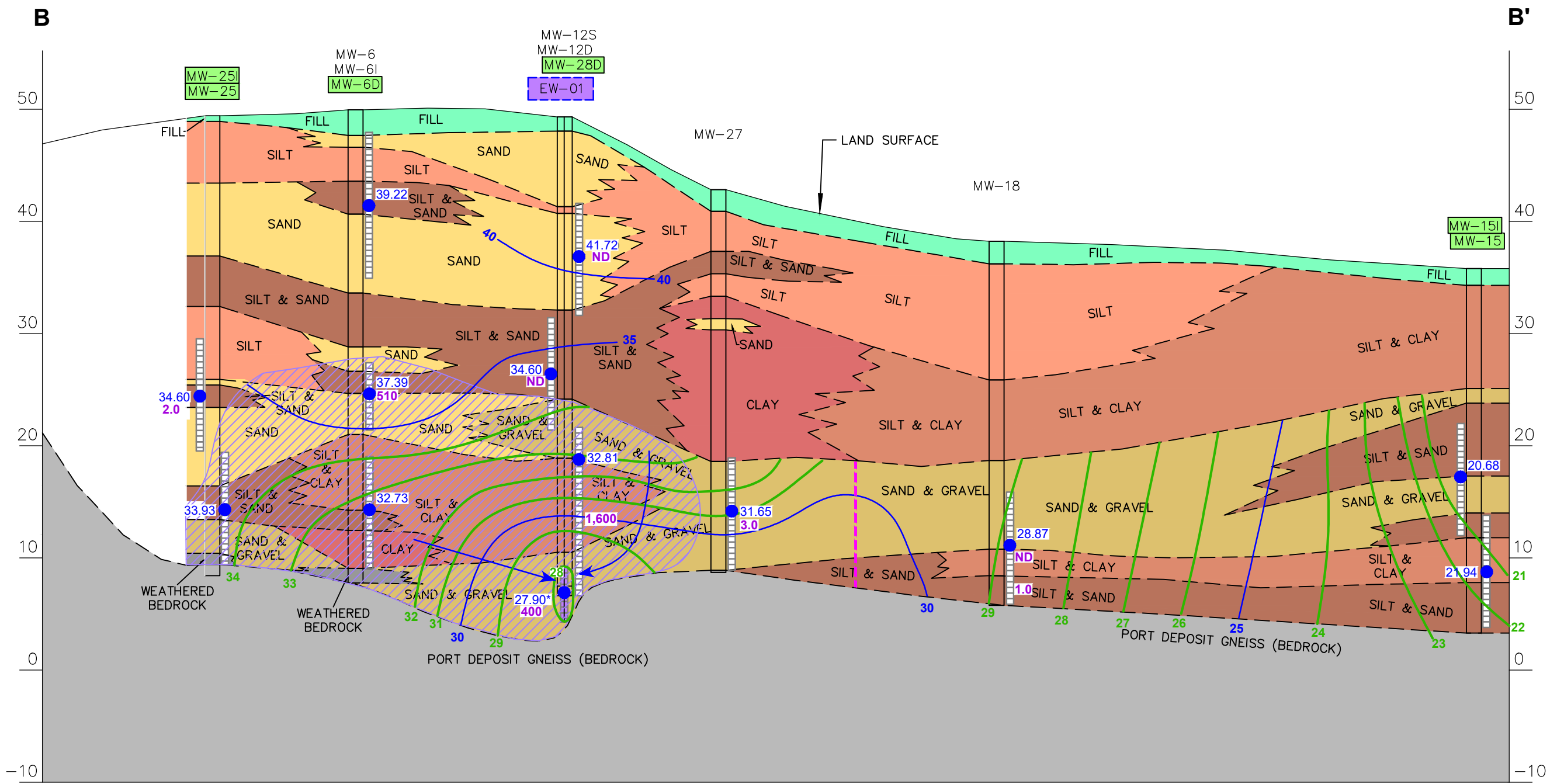
	FILL		SILT & SAND
	SAND		SILT & CLAY
	SAND & GRAVEL		PEAT
	CLAY		WEATHERED BEDROCK
	SILT		BEDROCK

- GROUNDWATER ELEVATION (SEPTEMBER 2022)
- SCREENED INTERVAL
- * EXTRACTION WELL GROUNDWATER ELEVATIONS POSTED ARE CORRECTED FOR WELL LOSSES
- 1,2-DCA CONCENTRATION IN MICROGRAMS PER LITER (SEPTEMBER 2022)
- INDICATES LITHOLOGIC LOG/LOGS USED FOR CROSS-SECTION GENERATION
- INDICATES ACTIVE EXTRACTION WELL
- INDICATES INACTIVE EXTRACTION WELL
- GROUNDWATER POTENTIOMETRIC CONTOUR LINE
- GROUNDWATER POTENTIOMETRIC CONTOUR LINE - OUTSIDE OF MAIN CONTOUR INTERVAL TO DEPICT ESTIMATED NEAR PUMPING INFLUENCE
- GROUNDWATER FLOW LINE
- APPROXIMATE AREA OF 1,2-DCA CONCENTRATION ABOVE 5 MICROGRAMS PER LITER (SEPTEMBER 2022)
- INTERPRETIVE CAPTURE ZONE BOUNDARY 1,2-DCA = 1,2 DICHLOROETHANE

CYTEC SOLVAY GROUP
 HAVRE DE GRACE, MARYLAND
2022 ANNUAL GROUNDWATER PERFORMANCE MONITORING REPORT

**CROSS SECTION A-A'
 WITH PROFILE FLOW NETS**

CITY: (SYRACUSE) NY, DIV: (GROUPE) CAD, DR: (P) LISTER, I, MEYER, LD: PIC, PMT, ARMSTRONG, TM, LYRON, "OFF" REF, C:\Users\james6893\Documents\Projects\2022\2022-11\Progress\01-DWG\GWN-2022-F13-CS-BB.dwg LAYOUT: 13, SAVER: 1/12/2022 6:19 PM, ACADVER: 24.2S (LMS TECH), PAGES SETUP: ---, PLOT STYLE TABLE: ---, PLOTTED: 11/30/2022 4:33 PM, BY: MURUGESAN, GOKULAKANNAN, XREFS: IMAGES: PROJECT NAME: ---, GEN-X-TITLE: ---

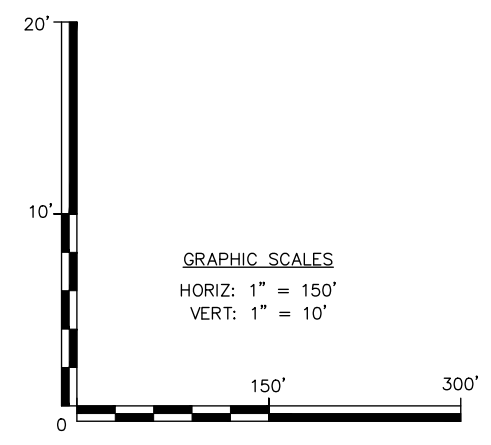
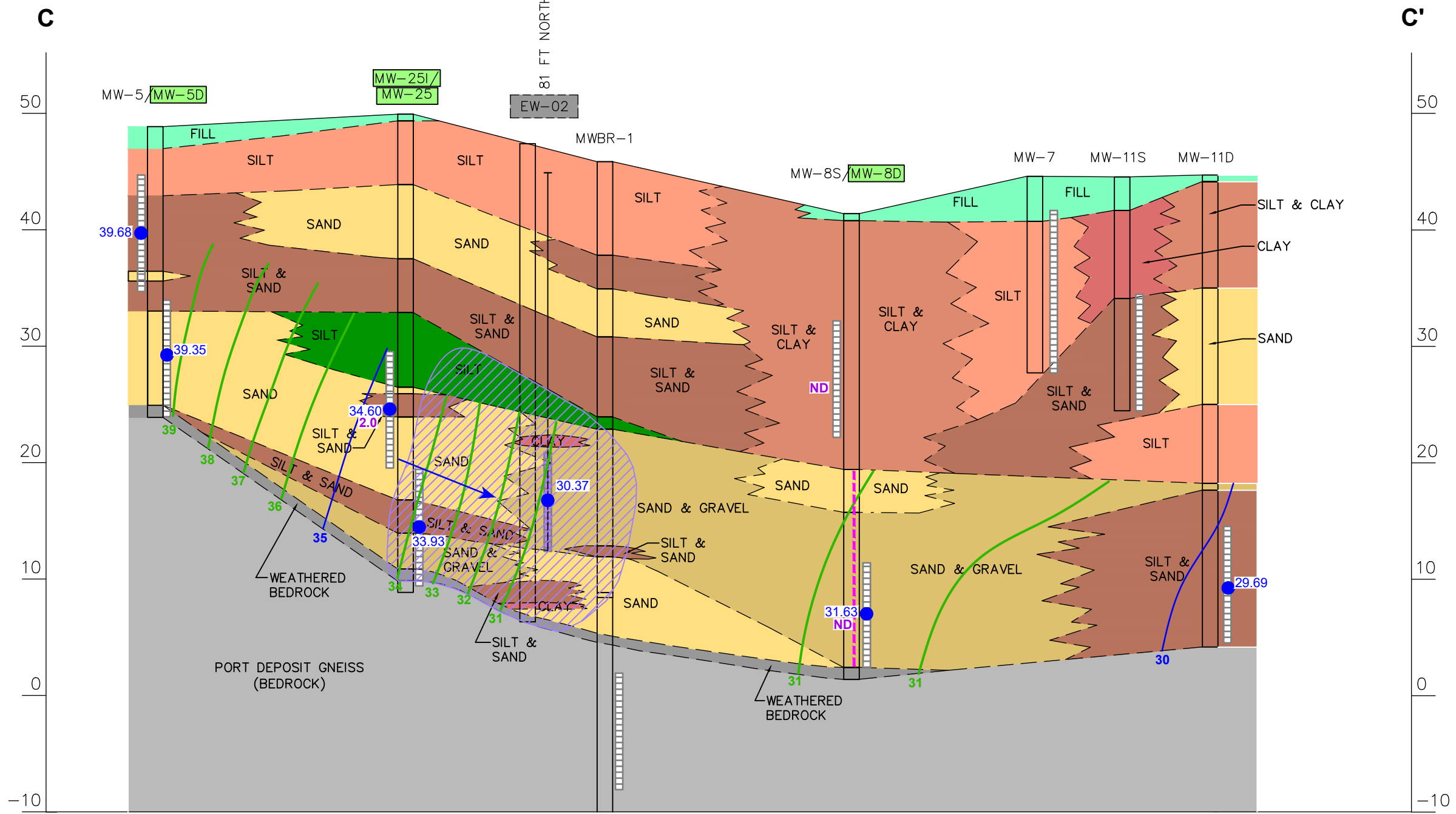


- 34.60 GROUNDWATER ELEVATION (SEPTEMBER 2022)
- SCREENED INTERVAL
- * EXTRACTION WELL GROUNDWATER ELEVATIONS POSTED ARE CORRECTED FOR WELL LOSSES
- 2.0 1,2-DCA CONCENTRATION IN MICROGRAMS PER LITER (SEPTEMBER/OCTOBER 2022)
- INDICATES LITHOLOGIC LOG/LOGS USED FOR CROSS-SECTION GENERATION
- EW-01 INDICATES INACTIVE EXTRACTION WELL
- 30 GROUNDWATER POTENTIOMETRIC CONTOUR LINE
- 26 GROUNDWATER POTENTIOMETRIC CONTOUR LINE - OUTSIDE OF MAIN CONTOUR INTERVAL TO DEPICT ESTIMATED NEAR PUMPING INFLUENCE
- GROUNDWATER FLOW LINE
- 1,2 DCA = 1,2-DICHLOROETHANE

- ND NON-DETECT
- APPROXIMATE AREA OF 1,2-DCA CONCENTRATION ABOVE 5 MICROGRAMS PER LITER (SEPTEMBER/OCTOBER 2022)
- INTERPRETIVE CAPTURE ZONE BOUNDARY

CYTEC SOLVAY GROUP HAVRE DE GRACE, MARYLAND 2022 ANNUAL GROUNDWATER PERFORMANCE MONITORING REPORT	
CROSS SECTION B-B' WITH PROFILE FLOW NETS	
	FIGURE 13

CITY: (SYRACUSE) NY; CRIMBURY, NJ; DIV: (GROUP) ENVCAD; DR: (P LISTER); IMEYER, LD.; PIC: PMT; ARMSTRONG, TM.; LYRON, OFE; REF: C:\Users\lmeyer\OneDrive\Documents\2022\202201-11\Progress\01-DWG\GWM-2022\F14-CS-CC.dwg; LAYOUT: 14; SAVED: 11/29/2022 8:19 PM; ACADVER: 24.2S (LMS TECH); PAGES: 14; PLOTSTYLE: TABLE; XREFS: IMAGES; PROJECTNAME:



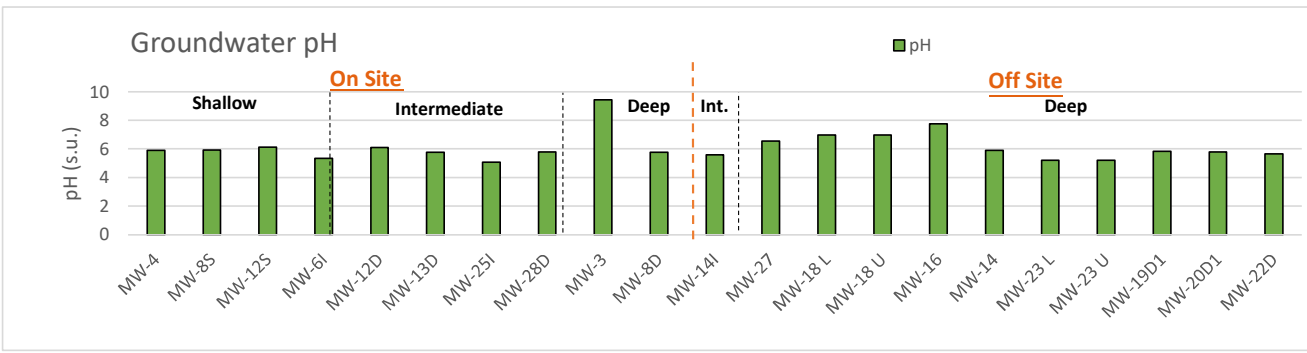
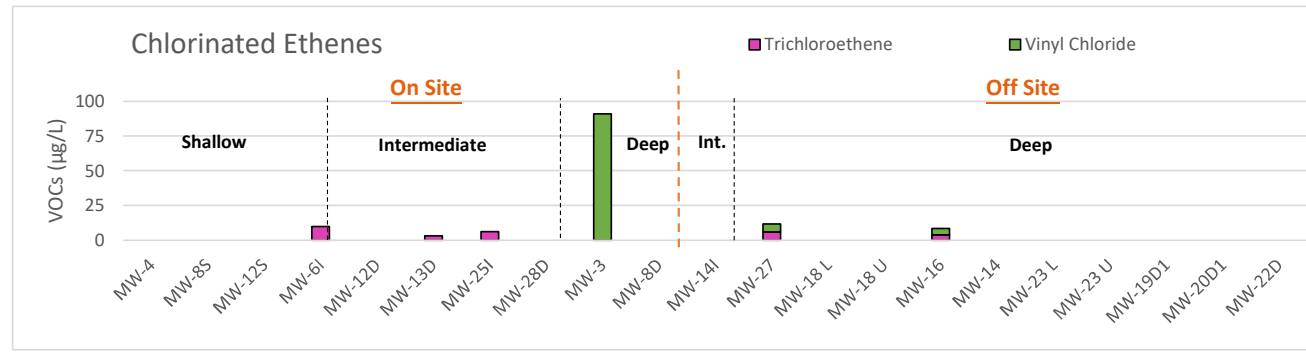
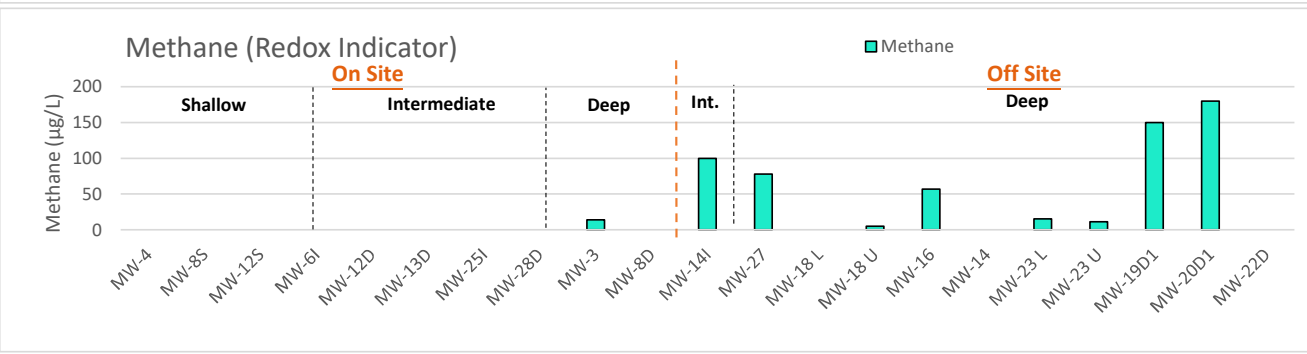
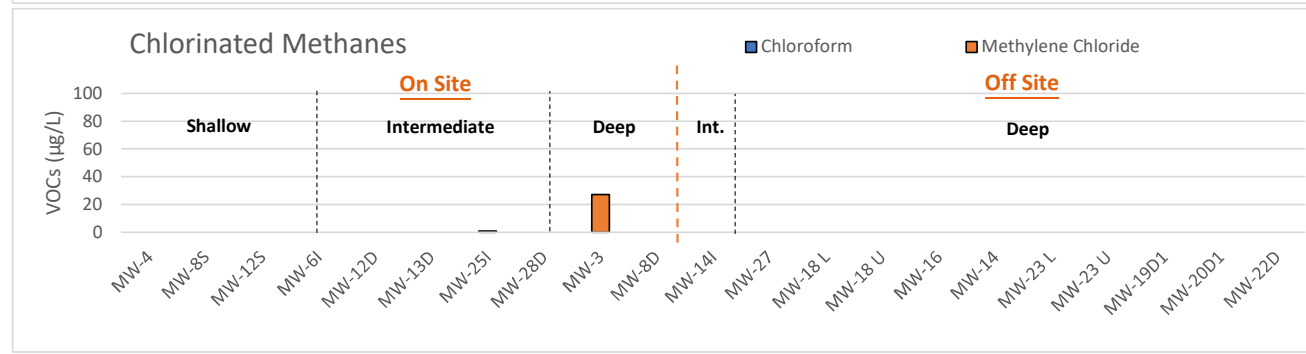
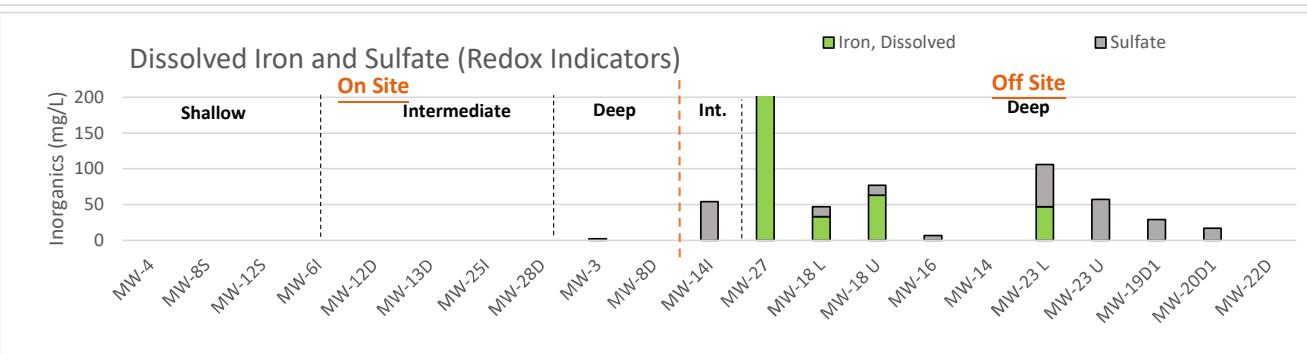
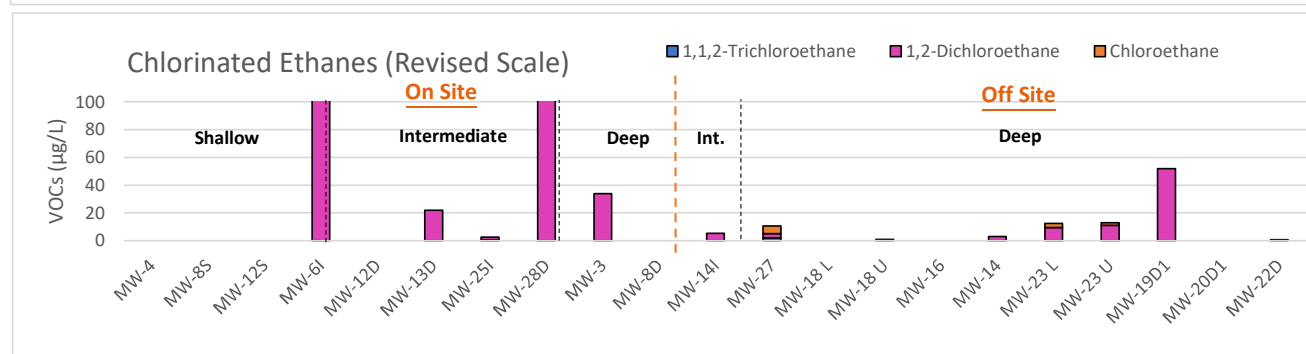
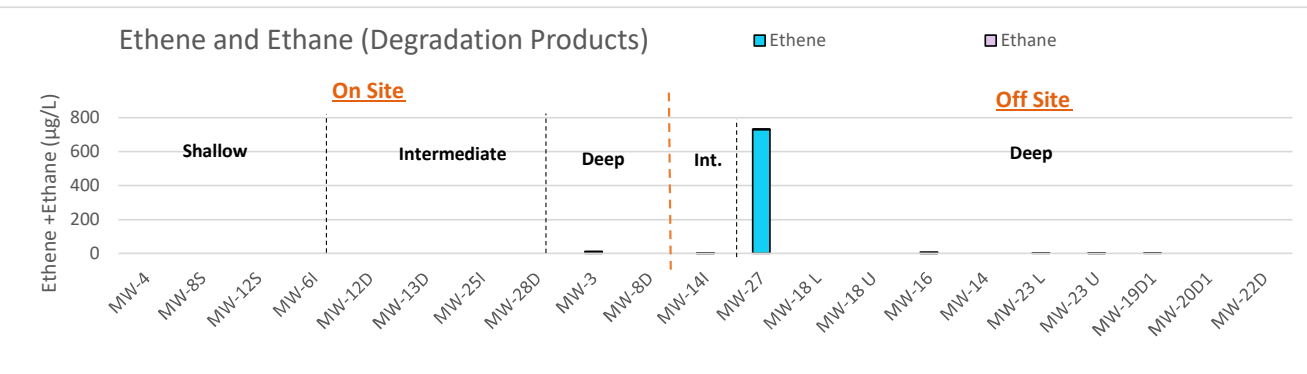
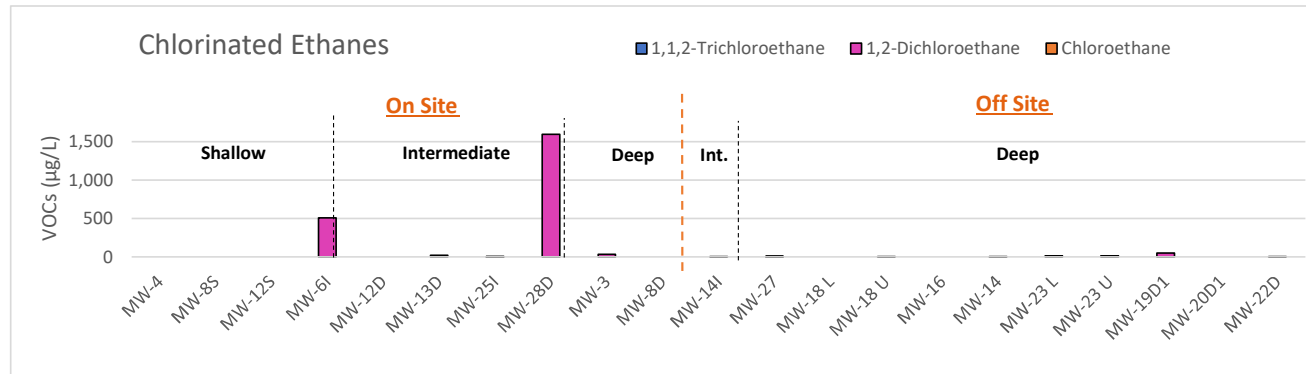
- LEGEND:**
- FILL
 - SAND
 - SAND & GRAVEL
 - CLAY
 - SILT
 - SILT & SAND
 - SILT & CLAY
 - BEDROCK
 - WEATHERED BEDROCK

- 34.60 GROUNDWATER ELEVATION (SEPTEMBER 2022)
 - SCREENED INTERVAL
 - 2.0 1,2-DCA CONCENTRATION IN MICROGRAMS PER LITER (SEPTEMBER 2022)
 - INDICATES LITHOLOGIC LOG/LOGS USED FOR CROSS-SECTION GENERATION
 - EW-02 INDICATES INACTIVE EXTRACTION WELL
 - 35 GROUNDWATER POTENTIOMETRIC CONTOUR LINE
 - 29 GROUNDWATER POTENTIOMETRIC CONTOUR LINE - OUTSIDE OF MAIN CONTOUR INTERVAL TO DEPICT ESTIMATED NEAR PUMPING INFLUENCE
 - GROUNDWATER FLOW LINE
- 1,2-DCA = 1,2-DICHLOROETHANE

- ND NON-DETECT
- APPROXIMATE AREA OF 1,2-DCA CONCENTRATION ABOVE 5 MICROGRAMS PER LITER (SEPTEMBER 2022)
- INTERPRETIVE CAPTURE ZONE BOUNDARY

CYTEC SOLVAY GROUP
 HAVRE DE GRACE, MARYLAND
2022 ANNUAL GROUNDWATER PERFORMANCE MONITORING REPORT

**CROSS SECTION C-C'
 WITH PROFILE FLOW NETS**



Notes:

1. Nondetects are presented as zeros for graphing purposes.
 2. Monitored natural attenuation parameters are collected annually at a subset of the monitoring wells including MW-3, MW-14I, MW-16, MW-18, MW-19D1, MW-20D1, MW-23, and MW-27.
- µg/L = microgram per liter mg/L = milligram per liter
s.u. = standard units VOC = volatile organic compound
MNA = monitored natural Redox =
attenuation

Appendix A

Field Documentation

Summary of Routine and Non-Routine Operation and Maintenance Activities
Appendix A - Field Documentation
2021 Annual Groundwater Performance Monitoring Report
1300 Revolution Street
Havre de Grace, Maryland



Date	Activities
12/9/2021	Arcadis staff were onsite to replace faulty pH probe and water-level transducer at EW-02.
12/16/2021	An EW-02 pipe leak alarm was triggered during a period of heavy rainfall, as water infiltrated the well vault. The system was restarted within 24 hours.
12/21/2021	Multiple high differential flow alarms were received. These alarms may indicate a leak in the system if the effluent flow is higher than the influent flow. However, these alarms may also be triggered if there are a string of other alarms. The system was inspected and alarms were cleared on 1/11.
1/11/2022	Arcadis staff on site to conduct routine operation and maintenance (O&M), including quarterly system sampling.
1/15/2022	An EW-01 low level alarm was received, triggered by low water level in the extraction well. Additionally, the remote system access was unresponsive so the system could not be turned back on. The system remained shut down for the rest of the month. The alarm was cleared by onsite personnel on 1/20.
1/16/2022	A drive fault alarm was received. The alarm was cleared by onsite personnel on 1/20 but the system remained shut down.
1/20/2022	An E-stop alarm was received on 1/20. While the system remained shut down, the POTW facility notified Cytec that there may be a potential leak at the POTW pipe, prior to the system water entering the digester. Arcadis staff restarted the system on 2/1, determined there were no leaks present, and replaced corroded pipe above ground at the POTW.
1/24/2022	A MW-10D high level alarm was received while the system remained shut down. This alarm may be triggered when water levels in MW-10D rise due to prolonged system shutdown.
2/1/2022	Arcadis staff on site at POTW to replace corroded piping into digester.
2/10/2022	An above ground leak was noted at POTW and the Cytec system was shut down until Arcadis staff could replace the leaking parts on 2/14. The system was restarted on 2/23.
2/23/2022	Arcadis staff on site to repair faulty pH probe, clean the EW-02 flow meter, and to replace the remote access panel with upgraded model.
2/28/2022	An E-stop alarm was received. The system was reset by Arcadis staff on 3/3.
3/2/2022	An E-stop alarm was received. The system was reset by Arcadis staff on 3/3.
3/9/2022	An EW-01 pipe leak alarm was triggered during a period of heavy rainfall, as water infiltrated the well vault. The system was restarted within 24 hours.
3/15/2022	An P-300 overload fault alarm was received, as a result of the overload on the motor starter tripping (failing motor on EW-02 pump). Pumping at EW-02 remains shut down since this alarm was received, until a new motor can be installed by staff with proper electrical training.
4/11/2022	An MW-10D vault sump high level alarm was received, usually indicative of a leak in the system. The system was restarted on 4/15 after inspection.
4/12/2022	Arcadis staff on site to conduct routine O&M, including hydrojetting event. Arcadis and Parratt Wolff staff on site to conduct well rehabilitation event.
5/3/2022	An E-stop alarm was received. The system was reset by on-site personnel and restarted within 24 hours of shutting down.
5/5/2022	A drive fault alarm was received. The system was reset by on-site personnel and restarted within 24 hours of shutting down.

Summary of Routine and Non-Routine Operation and Maintenance Activities
 Appendix A - Field Documentation
 2021 Annual Groundwater Performance Monitoring Report
 1300 Revolution Street
 Havre de Grace, Maryland



Date	Activities
5/6/2022	An EW-01 pipe leak alarm was triggered during a period of heavy rainfall, as water infiltrated the well vault. The system was restarted within 24 hours.
5/24/2022	A drive fault alarm was received. The system was reset by on-site personnel and restarted within 24 hours of shutting down.
6/27/2022	System manually turned off due to pipe leak at MW-10D. Arcadis on site on 7/15 to replace leaking parts, including MD-10D flange and nipple.
7/7/2022	An EW-01 transducer failure alarm was received. Arcadis responded to this alarm on 8/25, the transducer needs to be replaced by staff with proper electrical training.
7/16/2022	A drive fault alarm was received. The system was reset by Arcadis staff on 7/18.
7/21/2022	An E-stop alarm was received. The system was reset by on-site personnel and restarted within 24 hours of shutting down.
8/17/2022	An E-stop alarm was received. The system was reset by on-site personnel and restarted on 8/23.
9/19/2022	An E-stop alarm was received. The system was reset by on-site personnel and restarted within 24 hours of shutting down.
10/5/2022	An E-stop alarm was received. The system was reset by on-site personnel and restarted within 24 hours of shutting down.
10/11/2022	A drive fault alarm was received. The system was reset by on-site personnel and restarted within 24 hours of shutting down.
11/26/2022	An E-stop alarm was received. The system was reset by on-site personnel and restarted on 11/29.

Well Identification	On/Off Facility	Type	Total Depth (ft bgs)	Total Sounded Depth (ft bTOC)	Depth to Water (ft bTOC)	Stick Up or Flush Mount	Well Diameter (inches) - Material	Secured? (i.e., bolts or locks present?)	Capped? (i.e., well cap present with tight seal)	Any Damage Noted?	Additional Comments
DDC Well	On - Main	Pilot Sparge Well	40				4-PVC				
EW-1	On - Main	Extraction	47	40.73	20.46	Vault	8-SS	yes	yes	no	
EW-2	On - Main	Extraction	34	29.41	11.53	Vault	6-SS	yes	yes	no	
MW-1A	On - Main	Monitoring	20	15.36	8.53	ST	2-SS	yes	yes	no	
MW-2	On - Main	Monitoring	20.5	6.66	3.44	ST	2-SS	yes	yes	no	
MW-3	On - Main	Monitoring	40	40.08	13.13	F	2-SS	yes	yes	no	
MW-4	On - Main	Monitoring	15	14.89	3.96	F	2-SS	yes	yes	no	
MW-5	On - Main	Monitoring	15	14.21	10.02	F	2-SS	No	yes	No	bolts missing
MW-5D	On - Main	Monitoring		23.83	9.20	F	2-PVC	No	yes	yes	bolts broken in holes
MW-6	On - Main	Monitoring	16	13.22	11.71	F	2-PVC	yes	yes	no	
MW-6D	On - Main	Monitoring		33.72	12.61	F	2-PVC	yes	yes	yes	bolt holes broken
MW-6I	On - Main	Monitoring		28.06	12.81	F	2-PVC	yes	yes	yes	bolt holes broken
MW-7	On-Warehouse	Monitoring	18	15.05	6.71	F	2-PVC	yes	yes	no	
MW-8D	On-Warehouse	Monitoring	40	38.53	9.56	F	2-SS	yes	yes	no	
MW-8S	On-Warehouse	Monitoring	19	18.88	4.91	F	2-SS	yes	yes	no	
MW-9D	On-Warehouse	Monitoring	33	25.30	11.01	F	2-SS	yes	yes	no	
MW-9S	On-Warehouse	Monitoring	20	19.23	10.29	F	2-SS	no	yes	no	bolts add
MW-10D	On - Main	Extraction	39.2	32.31	15.94	Vault	6-SS	yes	yes	no	
MW-10S	On - Main	Monitoring	20	14.09	5.65	F	2-SS	yes	yes	no	
MW-11D	On-Warehouse	Monitoring	40	31.96	14.84	F	2-SS	yes	yes	no	under stone next to first
MW-11S	On-Warehouse	Monitoring	20	19.97	6.06	F	2-SS	yes	yes	no	concrete filler
MW-12D	On - Main	Monitoring	28	27.19	14.81	F	2-SS	yes	yes	no	
MW-12S	On - Main	Monitoring	18	17.34	7.90	F	2-SS	yes	yes	no	
MW-13D	On - Main	Monitoring	32	31.08	12.26	F	2-SS	yes	yes	yes	1 ear broken
MW-13S	On - Main	Monitoring	20	19.86	11.19	F	2-SS	yes	yes	yes	3 ears broken
MW-14	Off	Monitoring	36	35.40	11.40	F	2-SS	yes	yes	yes	1 bolt hole broke
MW-14I	Off	Monitoring	26	24.95	14.10	F	2-PVC	No	yes	yes	bolt holes broken
MW-15	Off	Monitoring	32	31.02	13.38	F	2-SS	yes	yes	no	
MW-15I	Off	Monitoring	23	22.08	14.31	F	2-PVC	yes	yes	no	
MW-16	Off	Monitoring	37	36.25	12.52	F	2-SS	yes	yes	no	
MW-17	Off	Monitoring	10.6	10.33	6.30	F	2-PVC	No	yes	yes	bolt holes broken
MW-18	Off	Monitoring	32.5	30.62	9.50	F	2-SS	yes	yes	No	

Well Identification	On/Off Facility	Type	Total Depth (ft bgs)	Total Sounded Depth (ft bTOC)	Depth to Water (ft bTOC)	Stick Up or Flush Mount	Well Diameter (inches) - Material	Secured? (i.e., bolts or locks present?)	Capped? (i.e., well cap present with tight seal)	Any Damage Noted?	Additional Comments
MW-19D1	Off	Monitoring	44	44.35	24.26	F	2-4" PVC	no	yes	yes	bolt holes broken
MW-19D2	Off	Monitoring	74	74.91	32.03	F	2-PVC	no	yes	yes	bolt holes broken
MW-20D1	Off	Monitoring	47	36.74	31.21	F	2 PVC	yes	yes	no	
MW-20D2	Off	Monitoring	95	95.32	21.89	F	2 PVC	yes	yes	no	
MW-21	Off	Monitoring	46	45.31	36.20	F	2 PVC	no	yes	yes	bolt holes broken
MW-22D	Off	Monitoring	37.5	36.02	11.77	F	2 PVC	yes	yes	no	
MW-22S	Off	Monitoring	17	10.65	-	F	2 PVC	yes	yes	NO	dry
MW-23	Off	Monitoring	49.4	49.69	35.66	F	2 PVC	NO	yes	yes	bolt holes broken
MW-24	On - Main	Monitoring		29.16	10.48	F	2 PVC	NO	yes	NO	bolt holes broken
MW-25	On - Main	Monitoring		36.55	15.49	F	2 PVC	yes	yes	yes	bolt holes broken
MW-25I	On - Main	Monitoring	30	29.32	14.94	F	2 PVC	yes	yes	yes	bolt holes broken
MW-26	On - Main	Monitoring		34.96	12.50	F	2 PVC	yes	yes	no	
MW-27	Off	Monitoring	34	33.86	11.42	F	2 PVC	yes	yes	NO	
MW-28D	On - Main	Monitoring	42.5	41.95	16.33	F	2 PVC	yes	yes	yes	bolt holes broken
MWBR-1	On - Main	Monitoring	54	54.85	13.49	F	2 PVC	yes	yes	yes	3 bolt holes broken
MWBR-2	On - Main	Monitoring	78	79.09	15.63	F	2 PVC	yes	yes	yes	1 bolt hole broken
MWBR-3	On-Warehouse	Monitoring	100	34.48	10.78	F	2-PVC	no	yes	yes	bolt holes broken
MWBR-4	On - Main	Monitoring	117	118.38	14.41	F	2 PVC	yes	yes	yes	bolts holes broken



Hydrasleeve™ Field Form

Site and Well Information

Site: Cytec	Location and Well ID: HDG, MW-14
Well Finish: Flush	Measuring Point: Top of Casing
Total Depth as Constructed (ft btoc):	Screened Interval (ft btoc): to
Well Casing Diameter: 2	Well Casing Material: PVC

Deployment

Date and Time of Deployment: 09/13/2022 09:25	Weather Condition: Sunny	
Depth to water at time of deployment (ft btoc): 11.4	Total well depth at time of deployment (ft btoc): 35.4	
Hydrasleeve length (in): 30	Hydrasleeve diameter (in): 1.5	Hydrasleeve™ model: Gsh110
Deployment Method/Position of weight: Bottom Anchor: Weight attached to bottom of Hydrasleeve TM. Weight rest on well bottom		
Deployment Depth (top of Hydrasleeve™) (ft btoc): 35		

Retrieval

Date and time of Retrieval: 09/14/2022 09:25	Total Days of Deployment: 1			
Weather Condition: Sunny	PID (ppm): 0.2			
Depth to Groundwater at Time of Retrieval (measured before retrieval) (ft btoc): 12.03	Total Well Depth at Time of Retrieval (measured before retrieval) (ft btoc): 35.56			
Downhole Field Parameter Upon Retrieval:				
Temp (deg C)	ORP (mV)	pH	DO (mg/L)	Cond (us/cm)
18.41	138.6	5.9	2.8	0.128
Water Quality Meter: YSI 600 XLM		Serial #:		
Turbidity of Groundwater Sample (dispensed from Hydrasleeve™):				
Turbidity Meter:		Serial#:		
Pre-filtered Turbidity (NTU):		Post-filtered Turbidity (NTU):		
Sample ID: MW14(091422)		Replicate ID:	Sample Time: 09:25	
Notes/Observations: Clear				
Sampled for (minimum volume (mL) in parentheses): VOC				
QA/QC:		Field Sampling Technician(S): Person 1, Person 2		



Hydrasleeve™ Field Form

Site and Well Information

Site: Cytec	Location and Well ID: HDG, MW-22D
Well Finish: Flush	Measuring Point: Top of Casing
Total Depth as Constructed (ft btoc):	Screened Interval (ft btoc): to
Well Casing Diameter: 2	Well Casing Material: PVC

Deployment

Date and Time of Deployment: 09/13/2022 10:22	Weather Condition: Sunny	
Depth to water at time of deployment (ft btoc): 11.77	Total well depth at time of deployment (ft btoc): 36.02	
Hydrasleeve length (in): 30	Hydrasleeve diameter (in): 1.5	Hydrasleeve™ model: Gsh110
Deployment Method/Position of weight: Bottom Anchor: Weight attached to bottom of Hydrasleeve TM. Weight rest on well		
Deployment Depth (top of Hydrasleeve™) (ft btoc): 32		

Retrieval

Date and time of Retrieval: 09/14/2022 10:00	Total Days of Deployment: 1			
Weather Condition: Sunny	PID (ppm): 0			
Depth to Groundwater at Time of Retrieval (measured before retrieval) (ft btoc): 11.81	Total Well Depth at Time of Retrieval (measured before retrieval) (ft btoc): 36.15			
Downhole Field Parameter Upon Retrieval:				
Temp (deg C)	ORP (mV)	pH	DO (mg/L)	Cond (us/cm)
17.64	129.8	5.64	9.44	0.21
Water Quality Meter: YSI 600 XLM	Serial #:			
Turbidity of Groundwater Sample (dispensed from Hydrasleeve™):				
Turbidity Meter:	Serial#:			
Pre-filtered Turbidity (NTU):	Post-filtered Turbidity (NTU):			
Sample ID: MW22D(091422)	Replicate ID:	Sample Time: 10:00		
Notes/Observations: Slightly turbid				
Sampled for (minimum volume (mL) in parentheses): VOC				
QA/QC:	Field Sampling Technician(S): Person 1,Person 2			



Hydrasleeve™ Field Form

Site and Well Information

Site: Cytec	Location and Well ID: HDG, MW-8S
Well Finish: Flush	Measuring Point: Top of Casing
Total Depth as Constructed (ft btoc):	Screened Interval (ft btoc): to
Well Casing Diameter: 2	Well Casing Material: Ss

Deployment

Date and Time of Deployment: 09/13/2022 13:14	Weather Condition: Sunny	
Depth to water at time of deployment (ft btoc): 4.91	Total well depth at time of deployment (ft btoc): 18.88	
Hydrasleeve length (in): 38	Hydrasleeve diameter (in): 1.9	Hydrasleeve™ model: Gsh130
Deployment Method/Position of weight: Bottom Anchor: Weight attached to bottom of Hydrasleeve TM. Weight rest on well		
Deployment Depth (top of Hydrasleeve™) (ft btoc): 16		

Retrieval

Date and time of Retrieval: 09/14/2022 10:30	Total Days of Deployment: 1			
Weather Condition: Sunny	PID (ppm): 0			
Depth to Groundwater at Time of Retrieval (measured before retrieval) (ft btoc): 5.32	Total Well Depth at Time of Retrieval (measured before retrieval) (ft btoc): 18.73			
Downhole Field Parameter Upon Retrieval:				
Temp (deg C)	ORP (mV)	pH	DO (mg/L)	Cond (us/cm)
21.19	12.1	5.91	4.95	0.651
Water Quality Meter: YSI 600 XLM	Serial #:			
Turbidity of Groundwater Sample (dispensed from Hydrasleeve™):				
Turbidity Meter:	Serial#:			
Pre-filtered Turbidity (NTU):	Post-filtered Turbidity (NTU):			
Sample ID: MW8S(091422)	Replicate ID: DUP01(091422)	Sample Time: 10:30		
Notes/Observations: Clear				
Sampled for (minimum volume (mL) in parentheses): VOC				
QA/QC: Duplicate	Field Sampling Technician(S): Person 1,Person 2			



Hydrasleeve™ Field Form

Site and Well Information

Site: Cytec	Location and Well ID: HDG, MW-8D
Well Finish: Flush	Measuring Point: Top of Casing
Total Depth as Constructed (ft btoc):	Screened Interval (ft btoc): to
Well Casing Diameter: 2	Well Casing Material: Ss

Deployment

Date and Time of Deployment: 09/13/2022 13:09	Weather Condition: Sunny	
Depth to water at time of deployment (ft btoc): 9.56	Total well depth at time of deployment (ft btoc): 38.53	
Hydrasleeve length (in): 30	Hydrasleeve diameter (in): 1.5	Hydrasleeve™ model: Gsh110
Deployment Method/Position of weight: Bottom Anchor: Weight attached to bottom of Hydrasleeve TM. Weight rest on well		
Deployment Depth (top of Hydrasleeve™) (ft btoc): 35		

Retrieval

Date and time of Retrieval: 09/14/2022 10:40	Total Days of Deployment: 1			
Weather Condition: Sunny	PID (ppm): 0			
Depth to Groundwater at Time of Retrieval (measured before retrieval) (ft btoc): 9.51	Total Well Depth at Time of Retrieval (measured before retrieval) (ft btoc): 38.4			
Downhole Field Parameter Upon Retrieval:				
Temp (deg C)	ORP (mV)	pH	DO (mg/L)	Cond (us/cm)
24.72	11.1	5.75	3.13	0.008
Water Quality Meter: YSI 600 XLM	Serial #:			
Turbidity of Groundwater Sample (dispensed from Hydrasleeve™):				
Turbidity Meter:	Serial#:			
Pre-filtered Turbidity (NTU):	Post-filtered Turbidity (NTU):			
Sample ID: MW8D(091422)	Replicate ID:	Sample Time: 10:40		
Notes/Observations: Clear				
Sampled for (minimum volume (mL) in parentheses): VOC				
QA/QC:	Field Sampling Technician(S): Person 1,Person 2			



Hydrasleeve™ Field Form

Site and Well Information

Site: Cytec	Location and Well ID: HDG, MW-13D
Well Finish: Flush	Measuring Point: Top of Casing
Total Depth as Constructed (ft btoc):	Screened Interval (ft btoc): to
Well Casing Diameter: 2	Well Casing Material: Ss

Deployment

Date and Time of Deployment: 09/13/2022 11:21	Weather Condition: Sunny	
Depth to water at time of deployment (ft btoc): 12.26	Total well depth at time of deployment (ft btoc): 31.08	
Hydrasleeve length (in): 30	Hydrasleeve diameter (in): 1.5	Hydrasleeve™ model: HS-2
Deployment Method/Position of weight: Bottom Anchor: Weight attached to bottom of Hydrasleeve TM. Weight rest on well		
Deployment Depth (top of Hydrasleeve™) (ft btoc): 29.5		

Retrieval

Date and time of Retrieval: 09/14/2022 10:55	Total Days of Deployment: 1			
Weather Condition: Sunny	PID (ppm): 0			
Depth to Groundwater at Time of Retrieval (measured before retrieval) (ft btoc): 16.54	Total Well Depth at Time of Retrieval (measured before retrieval) (ft btoc): 31.44			
Downhole Field Parameter Upon Retrieval:				
Temp (deg C)	ORP (mV)	pH	DO (mg/L)	Cond (us/cm)
24.72	11.1	5.75	3.13	0.008
Water Quality Meter: YSI 600 XLM		Serial #:		
Turbidity of Groundwater Sample (dispensed from Hydrasleeve™):				
Turbidity Meter:		Serial#:		
Pre-filtered Turbidity (NTU):		Post-filtered Turbidity (NTU):		
Sample ID: MW13D(091422)		Replicate ID:		Sample Time: 10:55
Notes/Observations: Clear				
Sampled for (minimum volume (mL) in parentheses): VOC				
QA/QC:		Field Sampling Technician(S): Person 1,Person 2		



Hydrasleeve™ Field Form

Site and Well Information

Site: Cytec	Location and Well ID: HDG, MW-28D
Well Finish: Flush	Measuring Point: Top of Casing
Total Depth as Constructed (ft btoc):	Screened Interval (ft btoc): to
Well Casing Diameter: 2	Well Casing Material: PVC

Deployment

Date and Time of Deployment: 09/13/2022 11:40	Weather Condition: Sunny	
Depth to water at time of deployment (ft btoc): 16.33	Total well depth at time of deployment (ft btoc): 41.95	
Hydrasleeve length (in): 30	Hydrasleeve diameter (in): 1.5	Hydrasleeve™ model: Gsh110
Deployment Method/Position of weight: Bottom Anchor: Weight attached to bottom of Hydrasleeve TM. Weight rest on well		
Deployment Depth (top of Hydrasleeve™) (ft btoc): 30		

Retrieval

Date and time of Retrieval: 09/14/2022 11:05	Total Days of Deployment: 1			
Weather Condition: Sunny	PID (ppm): 0			
Depth to Groundwater at Time of Retrieval (measured before retrieval) (ft btoc): 16.43	Total Well Depth at Time of Retrieval (measured before retrieval) (ft btoc): 41.36			
Downhole Field Parameter Upon Retrieval:				
Temp (deg C)	ORP (mV)	pH	DO (mg/L)	Cond (us/cm)
17.84	65.6	5.79	6.32	0.484
Water Quality Meter: YSI 600 XLM	Serial #:			
Turbidity of Groundwater Sample (dispensed from Hydrasleeve™):				
Turbidity Meter:	Serial#:			
Pre-filtered Turbidity (NTU):	Post-filtered Turbidity (NTU):			
Sample ID: MW28D(091422)	Replicate ID:	Sample Time: 11:05		
Notes/Observations: Clear				
Sampled for (minimum volume (mL) in parentheses): VOC				
QA/QC:	Field Sampling Technician(S): Person 1,Person 2			



Hydrasleeve™ Field Form

Site and Well Information

Site: Cytec	Location and Well ID: HDG, MW-12S
Well Finish: Flush	Measuring Point: Top of Casing
Total Depth as Constructed (ft btoc):	Screened Interval (ft btoc): to
Well Casing Diameter: 2	Well Casing Material: Ss

Deployment

Date and Time of Deployment: 09/13/2022 11:44	Weather Condition: Sunny	
Depth to water at time of deployment (ft btoc): 7.9	Total well depth at time of deployment (ft btoc): 17.34	
Hydrasleeve length (in): 30	Hydrasleeve diameter (in): 1.5	Hydrasleeve™ model: Gsh110
Deployment Method/Position of weight: Bottom Anchor: Weight attached to bottom of Hydrasleeve TM. Weight rest on well		
Deployment Depth (top of Hydrasleeve™) (ft btoc): 15		

Retrieval

Date and time of Retrieval: 09/14/2022 11:15	Total Days of Deployment: 1			
Weather Condition: Sunny	PID (ppm): 0			
Depth to Groundwater at Time of Retrieval (measured before retrieval) (ft btoc): 8.32	Total Well Depth at Time of Retrieval (measured before retrieval) (ft btoc): 17.31			
Downhole Field Parameter Upon Retrieval:				
Temp (deg C)	ORP (mV)	pH	DO (mg/L)	Cond (us/cm)
20.61	35	6.11	6.58	1.165
Water Quality Meter: YSI 600 XLM	Serial #:			
Turbidity of Groundwater Sample (dispensed from Hydrasleeve™):				
Turbidity Meter:	Serial#:			
Pre-filtered Turbidity (NTU):	Post-filtered Turbidity (NTU):			
Sample ID: MW12S(91422)	Replicate ID:	Sample Time: 11:15		
Notes/Observations: Orange, very turbid, 1/4 sleeve full				
Sampled for (minimum volume (mL) in parentheses): VOC				
QA/QC:	Field Sampling Technician(S): Person 1			



Hydrasleeve™ Field Form

Site and Well Information

Site: Cytec	Location and Well ID: HDG, MW-12D
Well Finish: Flush	Measuring Point: Top of Casing
Total Depth as Constructed (ft btoc):	Screened Interval (ft btoc): to
Well Casing Diameter: 2	Well Casing Material: Ss

Deployment

Date and Time of Deployment: 09/13/2022 11:46	Weather Condition: Sunny	
Depth to water at time of deployment (ft btoc): 14.81	Total well depth at time of deployment (ft btoc): 27.19	
Hydrasleeve length (in): 38	Hydrasleeve diameter (in): 1.9	Hydrasleeve™ model: Gsh130
Deployment Method/Position of weight: Bottom Anchor: Weight attached to bottom of Hydrasleeve TM. Weight rest on well		
Deployment Depth (top of Hydrasleeve™) (ft btoc): 26.5		

Retrieval

Date and time of Retrieval: 09/14/2022 11:25	Total Days of Deployment: 1			
Weather Condition: Sunny	PID (ppm): 0			
Depth to Groundwater at Time of Retrieval (measured before retrieval) (ft btoc): 15.75	Total Well Depth at Time of Retrieval (measured before retrieval) (ft btoc): 27.27			
Downhole Field Parameter Upon Retrieval:				
Temp (deg C)	ORP (mV)	pH	DO (mg/L)	Cond (us/cm)
18.03	69.1	6.09	7.26	0.732
Water Quality Meter: YSI 600 XLM	Serial #:			
Turbidity of Groundwater Sample (dispensed from Hydrasleeve™):				
Turbidity Meter:	Serial#:			
Pre-filtered Turbidity (NTU):	Post-filtered Turbidity (NTU):			
Sample ID: MW12D(091422)	Replicate ID: MW12D(091422)	Sample Time: 11:25		
Notes/Observations: Clear				
Sampled for (minimum volume (mL) in parentheses): VOC				
QA/QC: MS/SD	Field Sampling Technician(S): Person 1,Person 2			



Hydrasleeve™ Field Form

Site and Well Information

Site: Cytec	Location and Well ID: HDG, MW-25I
Well Finish: Flush	Measuring Point: Top of Casing
Total Depth as Constructed (ft btoc):	Screened Interval (ft btoc): to
Well Casing Diameter: 2	Well Casing Material: PVC

Deployment

Date and Time of Deployment: 09/13/2022 12:19	Weather Condition: Sunny	
Depth to water at time of deployment (ft btoc): 14.94	Total well depth at time of deployment (ft btoc): 29.32	
Hydrasleeve length (in): 30	Hydrasleeve diameter (in): 1.5	Hydrasleeve™ model: Gsh110
Deployment Method/Position of weight: Bottom Anchor: Weight attached to bottom of Hydrasleeve TM. Weight rest on well		
Deployment Depth (top of Hydrasleeve™) (ft btoc): 28.5		

Retrieval

Date and time of Retrieval: 09/14/2022 11:40	Total Days of Deployment: 1			
Weather Condition: Sunny	PID (ppm): 0			
Depth to Groundwater at Time of Retrieval (measured before retrieval) (ft btoc): 15.07	Total Well Depth at Time of Retrieval (measured before retrieval) (ft btoc): 29.25			
Downhole Field Parameter Upon Retrieval:				
Temp (deg C)	ORP (mV)	pH	DO (mg/L)	Cond (us/cm)
17.99	143	5.07	6.66	0.553
Water Quality Meter: YSI 600 XLM	Serial #:			
Turbidity of Groundwater Sample (dispensed from Hydrasleeve™):				
Turbidity Meter:	Serial#:			
Pre-filtered Turbidity (NTU):	Post-filtered Turbidity (NTU):			
Sample ID: MW25I(091422)	Replicate ID:	Sample Time: 11:40		
Notes/Observations: Clear				
Sampled for (minimum volume (mL) in parentheses): VOC				
QA/QC:	Field Sampling Technician(S): Person 1,Person 2			



Hydrasleeve™ Field Form

Site and Well Information

Site: Cytec	Location and Well ID: HDG, MW-4
Well Finish: Flush	Measuring Point: Top of Casing
Total Depth as Constructed (ft btoc):	Screened Interval (ft btoc): to
Well Casing Diameter: 2	Well Casing Material: Ss

Deployment

Date and Time of Deployment: 09/13/2022 12:30	Weather Condition: Sunny	
Depth to water at time of deployment (ft btoc): 3.96	Total well depth at time of deployment (ft btoc): 14.89	
Hydrasleeve length (in): 30	Hydrasleeve diameter (in): 1.5	Hydrasleeve™ model: Gsh110
Deployment Method/Position of weight: Bottom Anchor: Weight attached to bottom of Hydrasleeve TM. Weight rest on well		
Deployment Depth (top of Hydrasleeve™) (ft btoc): 12		

Retrieval

Date and time of Retrieval: 09/14/2022 11:50	Total Days of Deployment: 1			
Weather Condition: Sunny	PID (ppm): 0			
Depth to Groundwater at Time of Retrieval (measured before retrieval) (ft btoc): 4.65	Total Well Depth at Time of Retrieval (measured before retrieval) (ft btoc): 15			
Downhole Field Parameter Upon Retrieval:				
Temp (deg C)	ORP (mV)	pH	DO (mg/L)	Cond (us/cm)
20.99	327.09	5.9	6.16	0.943
Water Quality Meter: YSI 600 XLM	Serial #:			
Turbidity of Groundwater Sample (dispensed from Hydrasleeve™):				
Turbidity Meter:	Serial#:			
Pre-filtered Turbidity (NTU):	Post-filtered Turbidity (NTU):			
Sample ID: MW4(091422)	Replicate ID:	Sample Time: 11:50		
Notes/Observations: Clear				
Sampled for (minimum volume (mL) in parentheses): VOC				
QA/QC:	Field Sampling Technician(S): Person 1,Person 2			



Hydrasleeve™ Field Form

Site and Well Information

Site: Cytec	Location and Well ID: HDG, MW-6I
Well Finish: Flush	Measuring Point: Top of Casing
Total Depth as Constructed (ft btoc):	Screened Interval (ft btoc): to
Well Casing Diameter: 2	Well Casing Material: PVC

Deployment

Date and Time of Deployment: 09/13/2022 12:55	Weather Condition: Sunny	
Depth to water at time of deployment (ft btoc): 12.81	Total well depth at time of deployment (ft btoc): 28.06	
Hydrasleeve length (in): 30	Hydrasleeve diameter (in): 1.5	Hydrasleeve™ model: Gsh110
Deployment Method/Position of weight: Bottom Anchor: Weight attached to bottom of Hydrasleeve TM. Weight rest on well		
Deployment Depth (top of Hydrasleeve™) (ft btoc): 26.5		

Retrieval

Date and time of Retrieval: 09/14/2022 12:00	Total Days of Deployment: 1			
Weather Condition: Sunny	PID (ppm): 0			
Depth to Groundwater at Time of Retrieval (measured before retrieval) (ft btoc): 13.01	Total Well Depth at Time of Retrieval (measured before retrieval) (ft btoc): 28.33			
Downhole Field Parameter Upon Retrieval:				
Temp (deg C)	ORP (mV)	pH	DO (mg/L)	Cond (us/cm)
20.2	75.8	5.33	6.4	0.535
Water Quality Meter: YSI 600 XLM	Serial #:			
Turbidity of Groundwater Sample (dispensed from Hydrasleeve™):				
Turbidity Meter:	Serial#:			
Pre-filtered Turbidity (NTU):	Post-filtered Turbidity (NTU):			
Sample ID: MW6I(091422)	Replicate ID:	Sample Time: 12:00		
Notes/Observations: Clear				
Sampled for (minimum volume (mL) in parentheses): VOC				
QA/QC:	Field Sampling Technician(S): Person 1,Person 2			



Hydrasleeve™ Field Form

Site and Well Information

Site: Cytec	Location and Well ID: HDG, MW-18
Well Finish: Flush	Measuring Point: Top of Casing
Total Depth as Constructed (ft btoc):	Screened Interval (ft btoc): to
Well Casing Diameter: 2	Well Casing Material: PVC

Deployment

Date and Time of Deployment: 09/13/2022 08:45	Weather Condition: Sunny	
Depth to water at time of deployment (ft btoc): 9.5	Total well depth at time of deployment (ft btoc): 30.62	
Hydrasleeve length (in): 30	Hydrasleeve diameter (in): 1.5	Hydrasleeve™ model: GHS110
Deployment Method/Position of weight: Bottom Anchor: Weight attached to bottom of Hydrasleeve TM. Weight rest on well		
Deployment Depth (top of Hydrasleeve™) (ft btoc): 24		

Retrieval

Date and time of Retrieval: 09/15/2022 08:10	Total Days of Deployment: 2			
Weather Condition: Sunny	PID (ppm): 0			
Depth to Groundwater at Time of Retrieval (measured before retrieval) (ft btoc): 9.72	Total Well Depth at Time of Retrieval (measured before retrieval) (ft btoc): 30.5			
Downhole Field Parameter Upon Retrieval:				
Temp (deg C)	ORP (mV)	pH	DO (mg/L)	Cond (us/cm)
19.87	120.2	6.96	5.75	0.336
Water Quality Meter: YSI 600 XLM		Serial #:		
Turbidity of Groundwater Sample (dispensed from Hydrasleeve™):				
Turbidity Meter:		Serial#:		
Pre-filtered Turbidity (NTU):		Post-filtered Turbidity (NTU):		
Sample ID: MW18(091522)_24 ,		Replicate ID:		Sample Time: 08:10
Notes/Observations: 0810, 0820				
Sampled for (minimum volume (mL) in parentheses):				
QA/QC:		Field Sampling Technician(S): Person 1, Person 2		



Hydrasleeve™ Field Form

Site and Well Information

Site: Cytec	Location and Well ID: HDG, MW-27
Well Finish: Flush	Measuring Point: Top of Casing
Total Depth as Constructed (ft btoc):	Screened Interval (ft btoc): to
Well Casing Diameter: 2	Well Casing Material: PVC

Deployment

Date and Time of Deployment: 09/13/2022 09:01	Weather Condition: Sunny	
Depth to water at time of deployment (ft btoc): 11.42	Total well depth at time of deployment (ft btoc): 33.86	
Hydrasleeve length (in): 30	Hydrasleeve diameter (in): 1.5	Hydrasleeve™ model: Gsh110
Deployment Method/Position of weight: Bottom Anchor: Weight attached to bottom of Hydrasleeve TM. Weight rest on well		
Deployment Depth (top of Hydrasleeve™) (ft btoc): 41.5		

Retrieval

Date and time of Retrieval: 09/15/2022 07:45	Total Days of Deployment: 2			
Weather Condition: Sunny	PID (ppm): 0			
Depth to Groundwater at Time of Retrieval (measured before retrieval) (ft btoc): 11.67	Total Well Depth at Time of Retrieval (measured before retrieval) (ft btoc): 33.69			
Downhole Field Parameter Upon Retrieval:				
Temp (deg C)	ORP (mV)	pH	DO (mg/L)	Cond (us/cm)
21.03	142	6.54	5.73	0.167
Water Quality Meter: YSI 600 XLM	Serial #:			
Turbidity of Groundwater Sample (dispensed from Hydrasleeve™):				
Turbidity Meter:	Serial#:			
Pre-filtered Turbidity (NTU):	Post-filtered Turbidity (NTU):			
Sample ID: MW27(091522)	Replicate ID:	Sample Time: 07:45		
Notes/Observations: Clear				
Sampled for (minimum volume (mL) in parentheses):				
QA/QC:	Field Sampling Technician(S): Person 1,Person 2			



Hydrasleeve™ Field Form

Site and Well Information

Site: Cytec	Location and Well ID: HDG, MW-14I
Well Finish: Flush	Measuring Point: Top of Casing
Total Depth as Constructed (ft btoc):	Screened Interval (ft btoc): to
Well Casing Diameter: 2	Well Casing Material: GHS110

Deployment

Date and Time of Deployment: 09/13/2022 09:14	Weather Condition: Sunny	
Depth to water at time of deployment (ft btoc): 14.1	Total well depth at time of deployment (ft btoc): 24.95	
Hydrasleeve length (in): 30	Hydrasleeve diameter (in): 1.5	Hydrasleeve™ model: Gsh110
Deployment Method/Position of weight: Bottom Anchor: Weight attached to bottom of Hydrasleeve TM. Weight rest on well		
Deployment Depth (top of Hydrasleeve™) (ft btoc): 23		

Retrieval

Date and time of Retrieval: 09/15/2022 08:30	Total Days of Deployment: 2			
Weather Condition: Sunny	PID (ppm): 0			
Depth to Groundwater at Time of Retrieval (measured before retrieval) (ft btoc): 14.38	Total Well Depth at Time of Retrieval (measured before retrieval) (ft btoc): 25.12			
Downhole Field Parameter Upon Retrieval:				
Temp (deg C)	ORP (mV)	pH	DO (mg/L)	Cond (us/cm)
19.5	159.7	5.59	5.39	0.277
Water Quality Meter: YSI 600 XLM	Serial #:			
Turbidity of Groundwater Sample (dispensed from Hydrasleeve™):				
Turbidity Meter:	Serial#:			
Pre-filtered Turbidity (NTU):	Post-filtered Turbidity (NTU):			
Sample ID: MW14I(091522)	Replicate ID:	Sample Time: 08:30		
Notes/Observations: Clear				
Sampled for (minimum volume (mL) in parentheses):				
QA/QC:	Field Sampling Technician(S): Person 1,Person 2			



Hydrasleeve™ Field Form

Site and Well Information

Site: Cytec	Location and Well ID: HDG, MW-23
Well Finish: Flush	Measuring Point: Top of Casing
Total Depth as Constructed (ft btoc):	Screened Interval (ft btoc): to
Well Casing Diameter: 2	Well Casing Material: PVC

Deployment

Date and Time of Deployment: 09/13/2022 09:33	Weather Condition: Sunny	
Depth to water at time of deployment (ft btoc): 35.66	Total well depth at time of deployment (ft btoc): 49.69	
Hydrasleeve length (in): 30	Hydrasleeve diameter (in): 1.5	Hydrasleeve™ model: Gsh110
Deployment Method/Position of weight: Bottom Anchor: Weight attached to bottom of Hydrasleeve TM. Weight rest on well		
Deployment Depth (top of Hydrasleeve™) (ft btoc): 40		

Retrieval

Date and time of Retrieval: 09/15/2022 09:00	Total Days of Deployment: 2			
Weather Condition: Sunny	PID (ppm): 0			
Depth to Groundwater at Time of Retrieval (measured before retrieval) (ft btoc): 35.78	Total Well Depth at Time of Retrieval (measured before retrieval) (ft btoc): 49.32			
Downhole Field Parameter Upon Retrieval:				
Temp (deg C)	ORP (mV)	pH	DO (mg/L)	Cond (us/cm)
15.23	100.2	5.21	2.5	0.233
Water Quality Meter: YSI 600 XLM		Serial #:		
Turbidity of Groundwater Sample (dispensed from Hydrasleeve™):				
Turbidity Meter:		Serial#:		
Pre-filtered Turbidity (NTU):		Post-filtered Turbidity (NTU):		
Sample ID: MW23(091522)_40, Replicate ID: Sample Time: 09:00				
Notes/Observations: 40, 47				
Sampled for (minimum volume (mL) in parentheses):				
QA/QC:		Field Sampling Technician(S): Person 1, Person 2		



Hydrasleeve™ Field Form

Site and Well Information

Site: Cytec	Location and Well ID: HDG, MW-20D1
Well Finish: Flush	Measuring Point: Top of Casing
Total Depth as Constructed (ft btoc):	Screened Interval (ft btoc): to
Well Casing Diameter: 2	Well Casing Material: PVC

Deployment

Date and Time of Deployment: 09/13/2022 09:46	Weather Condition: Sunny	
Depth to water at time of deployment (ft btoc): 31.21	Total well depth at time of deployment (ft btoc): 36.74	
Hydrasleeve length (in): 30	Hydrasleeve diameter (in): 1.5	Hydrasleeve™ model: Gsh110
Deployment Method/Position of weight: Bottom Anchor: Weight attached to bottom of Hydrasleeve TM. Weight rest on well		
Deployment Depth (top of Hydrasleeve™) (ft btoc): 40		

Retrieval

Date and time of Retrieval: 09/15/2022 09:50	Total Days of Deployment: 2			
Weather Condition: Sunny	PID (ppm): 0			
Depth to Groundwater at Time of Retrieval (measured before retrieval) (ft btoc): 22.45	Total Well Depth at Time of Retrieval (measured before retrieval) (ft btoc): 46.6			
Downhole Field Parameter Upon Retrieval:				
Temp (deg C)	ORP (mV)	pH	DO (mg/L)	Cond (us/cm)
15.13	102.3	5.79	5.78	0.133
Water Quality Meter: YSI 600 XLM	Serial #:			
Turbidity of Groundwater Sample (dispensed from Hydrasleeve™):				
Turbidity Meter:	Serial#:			
Pre-filtered Turbidity (NTU):	Post-filtered Turbidity (NTU):			
Sample ID: MW20D1(091522)	Replicate ID:	Sample Time: 09:50		
Notes/Observations: Clear				
Sampled for (minimum volume (mL) in parentheses):				
QA/QC:	Field Sampling Technician(S): Person 1,Person 2			



Hydrasleeve™ Field Form

Site and Well Information

Site: Cytec	Location and Well ID: HDG, MW-3
Well Finish: Flush	Measuring Point: Top of Casing
Total Depth as Constructed (ft btoc):	Screened Interval (ft btoc): to
Well Casing Diameter: 2	Well Casing Material: Ss

Deployment

Date and Time of Deployment: 09/13/2022 12:34	Weather Condition: Sunny	
Depth to water at time of deployment (ft btoc): 13.14	Total well depth at time of deployment (ft btoc): 40.08	
Hydrasleeve length (in): 5	Hydrasleeve diameter (in): 1.9	Hydrasleeve™ model: Gsh440
Deployment Method/Position of weight: Bottom Anchor: Weight attached to bottom of Hydrasleeve TM. Weight rest on well		
Deployment Depth (top of Hydrasleeve™) (ft btoc): 37		

Retrieval

Date and time of Retrieval: 09/15/2022 10:45	Total Days of Deployment: 2			
Weather Condition: Sunny	PID (ppm): 0			
Depth to Groundwater at Time of Retrieval (measured before retrieval) (ft btoc): 13.21	Total Well Depth at Time of Retrieval (measured before retrieval) (ft btoc): 40			
Downhole Field Parameter Upon Retrieval:				
Temp (deg C)	ORP (mV)	pH	DO (mg/L)	Cond (us/cm)
18.34	61.9	9.21	8.9	0.228
Water Quality Meter: YSI 600 XLM	Serial #:			
Turbidity of Groundwater Sample (dispensed from Hydrasleeve™):				
Turbidity Meter:	Serial#:			
Pre-filtered Turbidity (NTU):	Post-filtered Turbidity (NTU):			
Sample ID: MW3(091522)	Replicate ID: DUP02(091522)	Sample Time: 10:45		
Notes/Observations: Hydra sleeve leaked, high volume of sample lost.				
Sampled for (minimum volume (mL) in parentheses): VOC				
QA/QC: Duplicate	Field Sampling Technician(S): Person 1,Person 2			



Hydrasleeve™ Field Form

Site and Well Information

Site: Cytec	Location and Well ID: HDG, MW-19D1
Well Finish: Flush	Measuring Point: Top of Casing
Total Depth as Constructed (ft btoc):	Screened Interval (ft btoc): to
Well Casing Diameter: 2	Well Casing Material: PVC

Deployment

Date and Time of Deployment: 09/13/2022 14:25	Weather Condition: Sunny	
Depth to water at time of deployment (ft btoc): 24.26	Total well depth at time of deployment (ft btoc): 44.35	
Hydrasleeve length (in): 30	Hydrasleeve diameter (in): 1.5	Hydrasleeve™ model: Gsh110
Deployment Method/Position of weight: Bottom Anchor: Weight attached to bottom of Hydrasleeve TM. Weight rest on well		
Deployment Depth (top of Hydrasleeve™) (ft btoc): 39		

Retrieval

Date and time of Retrieval: 09/15/2022 09:30	Total Days of Deployment: 2			
Weather Condition: Sunny	PID (ppm): 0			
Depth to Groundwater at Time of Retrieval (measured before retrieval) (ft btoc): 24.49	Total Well Depth at Time of Retrieval (measured before retrieval) (ft btoc): 43.96			
Downhole Field Parameter Upon Retrieval:				
Temp (deg C)	ORP (mV)	pH	DO (mg/L)	Cond (us/cm)
15.42	93.4	5.83	6.47	0.179
Water Quality Meter: YSI 600 XLM	Serial #:			
Turbidity of Groundwater Sample (dispensed from Hydrasleeve™):				
Turbidity Meter:	Serial#:			
Pre-filtered Turbidity (NTU):	Post-filtered Turbidity (NTU):			
Sample ID: MW19DI(91522)	Replicate ID:	Sample Time: 09:30		
Notes/Observations: Clear				
Sampled for (minimum volume (mL) in parentheses):				
QA/QC:	Field Sampling Technician(S): Person 1,Person 2			



Hydrasleeve™ Field Form

Site and Well Information

Site: Cytec	Location and Well ID: HDG, MW-16
Well Finish: Flush	Measuring Point: Top of Casing
Total Depth as Constructed (ft btoc):	Screened Interval (ft btoc): to
Well Casing Diameter: 2	Well Casing Material: Ss

Deployment

Date and Time of Deployment: 09/13/2022 10:11	Weather Condition: Sunny	
Depth to water at time of deployment (ft btoc): 12.52	Total well depth at time of deployment (ft btoc): 36.25	
Hydrasleeve length (in): 30	Hydrasleeve diameter (in): 1.5	Hydrasleeve™ model: Gsh110
Deployment Method/Position of weight: Bottom Anchor: Weight attached to bottom of Hydrasleeve TM. Weight rest on well		
Deployment Depth (top of Hydrasleeve™) (ft btoc): 30		

Retrieval

Date and time of Retrieval: 09/15/2022 12:00	Total Days of Deployment: 2			
Weather Condition: Sunny	PID (ppm): 0			
Depth to Groundwater at Time of Retrieval (measured before retrieval) (ft btoc): 12.83	Total Well Depth at Time of Retrieval (measured before retrieval) (ft btoc): 36.3			
Downhole Field Parameter Upon Retrieval:				
Temp (deg C)	ORP (mV)	pH	DO (mg/L)	Cond (us/cm)
15.54	-91.1	7.76	2.1	0.222
Water Quality Meter: YSI 600 XLM	Serial #:			
Turbidity of Groundwater Sample (dispensed from Hydrasleeve™):				
Turbidity Meter:	Serial#:			
Pre-filtered Turbidity (NTU):	Post-filtered Turbidity (NTU):			
Sample ID: MW16(091522)	Replicate ID:	Sample Time: 12:00		
Notes/Observations: Clear				
Sampled for (minimum volume (mL) in parentheses):				
QA/QC:	Field Sampling Technician(S): Person 1,Person 2			

Eurofins Pittsburgh

301 Alpha Drive RIDC Park
Pittsburgh, PA 15238
Phone: 412-963-7058 Fax: 412-963-2468

Chain of Custody Record



Environment Testing
America

Client Information		Sampler: <i>Andy Feil</i>		Lab PM: Colussy, Jill L		Carrier Tracking No(s): 180-83959-14117.2		COC No: 180-83959-14117.2					
Client Contact: Ms. Shwetha Sridharan		Phone: <i>443 354 0186</i>		E-Mail: Jill.Colussy@et.eurofinsus.com		State of Origin: <i>Maryland</i>		Page: Page 2 of 5					
Company: ARCADIS U.S., Inc.		PWSID:		Analysis Requested						Job #:			
Address: 7550 Teague Road Suite 210		Due Date Requested: <i>Standard</i>		Field Filtered Sample: (Yes or No) UDCS 3260D 300.085FM - Sulfate 601DB - dissolved Iron 6020B - Total Iron 9060A TOC						Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Y - Trizma Z - other (specify)			
City: Hanover		TAT Requested (days): <i>Normal</i>											
State, Zip: MD, 21076		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No											
Phone: 302-897-8993(Tel)		PO #: 30005455.0002.											
Email: shwetha.sridharan@arcadis.com		WO #: 30114618											
Project Name: Cytec Havre de Grace MD		Project #: 18017987		Total Number of containers						Other:			
Site: <i>Maryland</i>		SSOW#:											
Sample Identification		Sample Date		Sample Time		Sample Type (C=comp, G=grab)		Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)		Field Filtered Sample: (Yes or No)		Special Instructions/Note:	
<i>DUP01 (091422)</i>		<i>9/14/22</i>		<i>1200</i>		<i>G W</i>		<i>W 3</i>					
<i>MW18 (091522) - 24</i>		<i>9/15/22</i>		<i>0810</i>		<i>G W</i>		<i>W 3 1 1 1 2</i>					
<i>MW18 (091522) - 31</i>		<i>9/15/22</i>		<i>0820</i>		<i>G W</i>		<i>W 3 1 1 1 2</i>					
<i>MW17 (091522)</i>		<i>9/15/22</i>		<i>0745</i>		<i>G W</i>		<i>W 3 1 1 1 2</i>					
<i>MW14I (091522)</i>		<i>9/15/22</i>		<i>0830</i>		<i>G W</i>		<i>W 3 1 1 1 2</i>					
<i>MW23 (091522) - 40</i>		<i>9/15/22</i>		<i>0900</i>		<i>G W</i>		<i>W 3 1 1 1 2</i>					
<i>MW23 (091522) - 47</i>		<i>9/15/22</i>		<i>0910</i>		<i>G W</i>		<i>W 3 1 1 1 2</i>					
<i>MW19DI (091522)</i>		<i>9/15/22</i>		<i>0930</i>		<i>G W</i>		<i>W 3 1 1 1 2</i>					
<i>MW20DI (091522)</i>		<i>9/15/22</i>		<i>0950</i>		<i>G W</i>		<i>W 3 1 1 1 2</i>					
<i>MW3 (091522)</i>		<i>9/15/22</i>		<i>1045</i>		<i>G W</i>		<i>W 3 1 1 1 2</i>					
<i>MW16 (091522)</i>		<i>9/15/22</i>		<i>1200</i>		<i>G W</i>		<i>W 3 1 1 1 2</i>					
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)							
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological						<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months							
Deliverable Requested: I, II, III, IV, Other (specify)						Special Instructions/OG Requirements:							
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:							
Relinquished by: <i>[Signature]</i>		Date/Time: <i>9/15/22 1450</i>		Company: <i>ANA</i>		Received by:		Date/Time:		Company:			
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:			
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:			
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) C and Other Remarks									

Eurofins Pittsburgh

301 Alpha Drive RIDC Park
Pittsburgh, PA 15238
Phone: 412-963-7058 Fax: 412-963-2468

Chain of Custody Record

Client Information		Sampler: <i>Andy Feild</i>	Lab PM: Colussy, Jill L	Carrier Tracking No(s):	COC No: 180-83959-14117.1			
Client Contact: Ms. Shwetha Sridharan		Phone: <i>443 354 0186</i>	E-Mail: Jill.Colussy@et.eurofinsus.com	State of Origin: <i>Maryland</i>	Page: Page 1 of 5			
Company: ARCADIS U.S., Inc.		Analysis Requested			Job #:			
Address: 7550 Teague Road Suite 210		Due Date Requested: <i>Standard</i>	Total Number of Containers VOC's 8260D					
City: Hanover		TAT Requested (days): <i>Normal</i>						
State, Zip: MD, 21076		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No						
Phone: 302-897-8993(Tel)		PO #: 30005455.0002.						
Email: shwetha.sridharan@arcadis.com		WO #: 30114618						
Project Name: Cytec Havre de Grace MD		Project #: 18017987	Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Y - Trizma Z - other (specify)					
Site: <i>Maryland</i>		SSOW#:						
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Preservation Code	Special Instructions/Note:	
<i>MW 14 (091422)</i>		<i>9/14/22</i>	<i>0925</i>	<i>G</i>	<i>W</i>	<i>W 3</i>		
<i>MW 22 D (091422)</i>		<i>9/14/22</i>	<i>1000</i>	<i>G</i>	<i>W</i>	<i>W 3</i>		
<i>MW 13 D (091422)</i>		<i>9/14/22</i>	<i>1055</i>	<i>G</i>	<i>W</i>	<i>W 3</i>		
<i>MW 12 D (091422)</i>		<i>9/14/22</i>	<i>1125</i>	<i>G</i>	<i>W</i>	<i>W 9</i>	<i>MS/MSD</i>	
<i>MW 12 S (091422)</i>		<i>9/14/22</i>	<i>1115</i>	<i>G</i>	<i>W</i>	<i>W 3</i>		
<i>MW 28 D (091422)</i>		<i>9/14/22</i>	<i>1105</i>	<i>G</i>	<i>W</i>	<i>W 3</i>		
<i>MW 25 I (091422)</i>		<i>9/14/22</i>	<i>1140</i>	<i>G</i>	<i>W</i>	<i>W 3</i>		
<i>MW - 4 (091422)</i>		<i>9/14/22</i>	<i>1150</i>	<i>G</i>	<i>W</i>	<i>W 3</i>		
<i>MW - 6 I (091422)</i>		<i>9/14/22</i>	<i>1200</i>	<i>G</i>	<i>W</i>	<i>W 3</i>		
<i>MW 8 S (091422)</i>		<i>9/14/22</i>	<i>1030</i>	<i>G</i>	<i>W</i>	<i>W 3</i>		
<i>MW 8 D (091422)</i>		<i>9/14/22</i>	<i>1040</i>	<i>G</i>	<i>W</i>	<i>W 3</i>		
Possible Hazard Identification				Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)				
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological				<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months				
Deliverable Requested: I, II, III, IV, Other (specify)				Special Instructions/QC Requirements:				
Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:				
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:			
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:			
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:			
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No :	Cooler Temperature(s) °C and Other Remarks:						

Eurofins Pittsburgh

301 Alpha Drive RIDC Park
 Pittsburgh, PA 15238
 Phone: 412-963-7058 Fax: 412-963-2468

Chain of Custody Record

Client Information		Sampler: <i>Andy Feild</i>		Lab PM: Colussy, Jill L		Carrier Tracking No(s):		COC No: 180-83959-14117.3						
Client Contact: Ms. Shwetha Sridharan		Phone: <i>443 354 0186</i>		E-Mail: Jill.Colussy@et.eurofinsus.com		State of Origin: <i>Maryland</i>		Page: Page 3 of 5						
Company: ARCADIS U.S., Inc.		PWSID:		Analysis Requested					Job #:					
Address: 7550 Teague Road Suite 210		Due Date Requested: <i>Standard</i>							Filtered/Unfiltered Sample (Yes or No) VOCs 8260D 300. ORGFM - Sulfate 6020B - dissolved Iron 6020B - Total Iron 9060A TOC		Total Number of containers		Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Y - Trizma Z - other (specify) Other:	
City: Hanover		TAT Requested (days): <i>Normal</i>												
State, Zip: MD, 21076		Compliance Project: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No												
Phone: 302-897-8993(Tel)		PO #: 30005455.0002.		WO #: 30114618		Project #: 18017987		SSOW#:						
Email: shwetha.sridharan@arcadis.com		Project Name: Cytex Havre de Grace MD		Site: <i>Maryland</i>										
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Flux	Flow	Temp	Pressure	Other					
<i>DUP02 (091522)</i>	<i>9/15/22</i>	<i>1200</i>	<i>G</i>	<i>W</i>	<i>42</i>	<i>3</i>	<i>1</i>	<i>1</i>	<i>2</i>					
Special Instructions/Note:														
Possible Hazard Identification					Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)									
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological					<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For Months									
Deliverable Requested: I, II, III, IV, Other (specify)					Special Instructions/QC Requirements:									
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:								
Relinquished by:		Date/Time: <i>9/15/22 1450</i>		Company: <i>ANA</i>		Received by:		Date/Time:						
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:						
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:						
Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:										

Eurofins Pittsburgh

301 Alpha Drive RIDC Park
 Pittsburgh, PA 15238
 Phone: 412-963-7058 Fax: 412-963-2468

Chain of Custody Record



Environment Testing
America

Client Information			Sampler:		Lab PM: Colussy, Jill L		Carrier Tracking No(s):		COC No: 180-83959-14117.4							
Client Contact: Ms. Shwetha Sridharan			Phone:		E-Mail: Jill.Colussy@et.eurofinsus.com		State of Origin:		Page: Page 4 of 5							
Company: ARCADIS U.S., Inc.			PWSID:		Analysis Requested				Job #:							
Address: 7550 Teague Road Suite 210			Due Date Requested:						Field Filtered Sample (Yes or No)		Total Number of containers		Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Y - Trizma Z - other (specify) Other:			
City: Hanover			TAT Requested (days):													
State, Zip: MD, 21076			Compliance Project: Δ Yes Δ No		Field Filtered Sample (Yes or No)		Total Number of containers		Special Instructions/Note:							
Phone: 302-897-8993(Tel)			PO #: 30005455.0002.													
Email: shwetha.sridharan@arcadis.com			WO #: 30114618													
Project Name: Cytex Havre de Grace MD			Project #: 18017987		Field Filtered Sample (Yes or No)		Total Number of containers		Special Instructions/Note:							
Site: Pennsylvania			SSOW#:													
Sample Identification			Sample Date		Sample Time		Sample Type (C=Comp, G=grab)		Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)		Field Filtered Sample (Yes or No)		Total Number of containers		Special Instructions/Note:	
Possible Hazard Identification								Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)								
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological								<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For Months								
Deliverable Requested: I, II, III, IV, Other (specify)								Special Instructions/QC Requirements:								
Empty Kit Relinquished by:				Date:		Time:		Method of Shipment:								
Relinquished by:				Date/Time:		Company		Received by:				Date/Time:		Company		
Relinquished by:				Date/Time:		Company		Received by:				Date/Time:		Company		
Relinquished by:				Date/Time:		Company		Received by:				Date/Time:		Company		
Custody Seals Intact. Δ Yes Δ No				Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:										

F-CUSTODY Analytical Request Document

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

Custody is a LEGAL DOCUMENT - Complete all relevant fields

ALL SHADED AREAS are for LAB USE ONLY

Container Preservative Type **

Lab Project Manager:

Billing Information:

Email To: *shwetha.sridharan@cccadis.com*

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Site Collection Info/Address: *Maryland*

State: *MD* County/City: *Harford* Time Zone Collected: [] PT [] MT [] CT [] ET

Analyses

Lab Profile/Line

Compliance Monitoring? Yes [] No

DW PWS ID #: DW Location Code:

Lab Sample Receipt Checklist:

- Custody Seals Present/Intact Y N NA
- Custody Signatures Present Y N NA
- Collector Signature Present Y N NA
- Bottles Intact Y N NA
- Correct Bottles Y N NA
- Sufficient Volume Y N NA
- Samples Received on Ice Y N NA
- VOA - Headspace Acceptable Y N NA
- USDA Regulated Soils Y N NA
- Samples in Holding Time Y N NA
- Residual Chlorine Present Y N NA
- Cl Strips: _____
- Sample pH Acceptable Y N NA
- pH Strips: _____
- Sulfide Present Y N NA
- Lead Acetate Strips: _____

LAB USE ONLY:
Lab Sample # / Comments

AMZOGAX dissolved gases

Required: Immediately Packed on Ice: Yes [] No

Day [] Next Day [] 3 Day [] 4 Day [] 5 Day [] (Late Charges Apply)
Field Filtered (if applicable): [] Yes [] No
Analysis: _____

Water (DW), Ground Water (GW), Wastewater (WW), (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
	Date	Time	Date	Time		
G	9/15	0810				3
G	9/15	0820				3
G	9/15	0745				3
G	9/15	0830				3
G	9/15	0900				3
G	9/15	0910				3
G	9/15	0930				3
G	9/15	0950				3
G	9/15	1045				3
G	9/15	1200				3

ards: Type of Ice Used: Wet Blue Dry None

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Packing Material Used:

Lab Tracking #: **2812581**

Radchem sample(s) screened (<500 cpm): Y N NA

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:

Temp Blank Received: Y N NA
Therm ID# _____
Cooler 1 Temp Upon Receipt: _____oC
Cooler 1 Therm Corr. Factor: _____oC
Cooler 1 Corrected Temp: _____oC
Comments:

Date/Time: *9/15/22 1450* Received by/Company: (Signature)

Date/Time: _____ MTJL LAB USE ONLY

Date/Time: _____ Received by/Company: (Signature)

Table #: _____

Date/Time: _____ Received by/Company: (Signature)

Acctnum: _____

Template: _____

Prelogin: _____

PM: _____

PB: _____

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO Page: _____ of: _____

Appendix B

System O&M Laboratory Analytical Reports

ANALYTICAL REPORT

Eurofins Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-132389-1

Client Project/Site: Cytex Havre de Grace MD

For:
ARCADIS U.S., Inc.
7550 Teague Road
Suite 210
Hanover, Maryland 21076

Attn: Ms. Shwetha Sridharan



Authorized for release by:
1/26/2022 4:47:45 PM

Jill Colussy, Project Manager I
(412)963-2444
Jill.Colussy@Eurofinset.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:

www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

PA Lab ID: 02-00416



Table of Contents

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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-132389-1

Job ID: 180-132389-1

Laboratory: Eurofins Pittsburgh

Narrative

**Job Narrative
180-132389-1**

Receipt

The samples were received on 1/14/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.0° C.

GC/MS VOA

Due to the concentration of target compounds detected, samples EW-1 (11222) (180-132389-1), EW-2 (11222) (180-132389-2) and EFFLUENT (11222) (180-132389-4) were analyzed at a dilution. Elevated reporting limits (RLs) are provided.

The laboratory control sample (LCS) for analytical batch 180-385256 recovered outside control limits for the following analytes: Acrylonitrile, Bromoform and Dibromochloromethane. A low-level LCS (LLCS), spiked at the reporting limit (RL), was prepared with this batch. The affected target analytes recovered within acceptance limits; therefore, the LLCS demonstrates the analytical system had sufficient sensitivity to detect the compounds had they been present. Since the affected target compounds were not detected in the samples, the data have been reported and qualified.



Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-132389-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*-	LCS and/or LCSD is outside acceptance limits, low biased.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Cytex Havre de Grace MD

Job ID: 180-132389-1

Laboratory: Eurofins Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	19-033-0	06-27-22
California	State	2891	04-30-22
Connecticut	State	PH-0688	09-30-22
Florida	NELAP	E871008	06-30-22
Georgia	State	PA 02-00416	04-30-22
Illinois	NELAP	004375	06-30-22
Kansas	NELAP	E-10350	01-31-22
Kentucky (UST)	State	162013	04-30-22
Kentucky (WW)	State	KY98043	12-31-22
Louisiana	NELAP	04041	06-30-22
Maine	State	PA00164	03-06-22
Minnesota	NELAP	042-999-482	12-31-22
Nevada	State	PA00164	08-31-22
New Hampshire	NELAP	2030	04-05-22
New Jersey	NELAP	PA005	06-30-22
New York	NELAP	11182	04-02-22
North Carolina (WW/SW)	State	434	12-31-22
North Dakota	State	R-227	04-30-22
Oregon	NELAP	PA-2151	02-06-22
Pennsylvania	NELAP	02-00416	04-30-22
Rhode Island	State	LAO00362	12-31-21 *
South Carolina	State	89014	04-30-22
Texas	NELAP	T104704528	03-31-22
USDA	Federal	P-Soil-01	06-26-22
USDA	US Federal Programs	P330-16-00211	06-26-22
Utah	NELAP	PA001462019-8	05-31-22
Virginia	NELAP	10043	09-15-22
West Virginia DEP	State	142	01-31-23
Wisconsin	State	998027800	08-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.



Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-132389-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-132389-1	EW-1 (11222)	Water	01/12/22 12:05	01/14/22 09:30
180-132389-2	EW-2 (11222)	Water	01/12/22 12:10	01/14/22 09:30
180-132389-3	MW-10D (11222)	Water	01/12/22 12:15	01/14/22 09:30
180-132389-4	EFFLUENT (11222)	Water	01/12/22 12:20	01/14/22 09:30
180-132389-5	TRIP BLANK	Water	01/12/22 00:00	01/14/22 09:30

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Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-132389-1

Method	Method Description	Protocol	Laboratory
EPA 624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL PIT

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

Laboratory References:

TAL PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058



Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-132389-1

Client Sample ID: EW-1 (11222)

Lab Sample ID: 180-132389-1

Date Collected: 01/12/22 12:05

Matrix: Water

Date Received: 01/14/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624		40	5 mL	5 mL	385256	01/15/22 18:51	PJJ	TAL PIT
Instrument ID: CHHP6										

Client Sample ID: EW-2 (11222)

Lab Sample ID: 180-132389-2

Date Collected: 01/12/22 12:10

Matrix: Water

Date Received: 01/14/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624		5000	5 mL	5 mL	385256	01/15/22 17:20	PJJ	TAL PIT
Instrument ID: CHHP6										

Client Sample ID: MW-10D (11222)

Lab Sample ID: 180-132389-3

Date Collected: 01/12/22 12:15

Matrix: Water

Date Received: 01/14/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624		1	5 mL	5 mL	385256	01/15/22 18:21	PJJ	TAL PIT
Instrument ID: CHHP6										

Client Sample ID: EFFLUENT (11222)

Lab Sample ID: 180-132389-4

Date Collected: 01/12/22 12:20

Matrix: Water

Date Received: 01/14/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624		2500	5 mL	5 mL	385256	01/15/22 17:50	PJJ	TAL PIT
Instrument ID: CHHP6										

Client Sample ID: TRIP BLANK

Lab Sample ID: 180-132389-5

Date Collected: 01/12/22 00:00

Matrix: Water

Date Received: 01/14/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624		1	5 mL	5 mL	385256	01/15/22 16:18	PJJ	TAL PIT
Instrument ID: CHHP6										

Laboratory References:

TAL PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Analyst References:

Lab: TAL PIT

Batch Type: Analysis

PJJ = Patrick Journet

Eurofins Pittsburgh

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-132389-1

Client Sample ID: EW-1 (11222)

Lab Sample ID: 180-132389-1

Date Collected: 01/12/22 12:05

Matrix: Water

Date Received: 01/14/22 09:30

Method: EPA 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		40	24	ug/L			01/15/22 18:51	40
1,1,2,2-Tetrachloroethane	ND		40	24	ug/L			01/15/22 18:51	40
1,1,2-Trichloroethane	ND		40	18	ug/L			01/15/22 18:51	40
1,1-Dichloroethane	ND		40	12	ug/L			01/15/22 18:51	40
1,1-Dichloroethene	ND		40	22	ug/L			01/15/22 18:51	40
1,2-Dichloroethane	350		40	23	ug/L			01/15/22 18:51	40
1,2-Dichloropropane	ND		40	26	ug/L			01/15/22 18:51	40
1,2-Dichlorobenzene	ND		40	15	ug/L			01/15/22 18:51	40
1,3-Dichlorobenzene	ND		40	20	ug/L			01/15/22 18:51	40
1,4-Dichlorobenzene	ND		40	22	ug/L			01/15/22 18:51	40
2-Chloroethyl vinyl ether	ND		80	69	ug/L			01/15/22 18:51	40
Acrolein	ND		800	640	ug/L			01/15/22 18:51	40
Acrylonitrile	ND	*	800	310	ug/L			01/15/22 18:51	40
Benzene	ND		40	24	ug/L			01/15/22 18:51	40
Bromoform	ND	*	40	39	ug/L			01/15/22 18:51	40
Bromomethane	ND		40	35	ug/L			01/15/22 18:51	40
Carbon tetrachloride	ND		40	35	ug/L			01/15/22 18:51	40
Chlorobenzene	ND		40	20	ug/L			01/15/22 18:51	40
Chloroform	ND		40	24	ug/L			01/15/22 18:51	40
Chloromethane	ND		40	36	ug/L			01/15/22 18:51	40
cis-1,3-Dichloropropene	ND		40	24	ug/L			01/15/22 18:51	40
Ethylbenzene	ND		40	20	ug/L			01/15/22 18:51	40
Methylene Chloride	56		40	35	ug/L			01/15/22 18:51	40
Tetrachloroethene	ND		40	19	ug/L			01/15/22 18:51	40
Toluene	ND		40	18	ug/L			01/15/22 18:51	40
trans-1,2-Dichloroethene	ND		40	27	ug/L			01/15/22 18:51	40
trans-1,3-Dichloropropene	ND		40	23	ug/L			01/15/22 18:51	40
Trichloroethene	ND		40	28	ug/L			01/15/22 18:51	40
Vinyl chloride	ND		40	16	ug/L			01/15/22 18:51	40
Dibromochloromethane	ND	*	40	34	ug/L			01/15/22 18:51	40
Bromodichloromethane	ND		40	26	ug/L			01/15/22 18:51	40
Chloroethane	ND		40	36	ug/L			01/15/22 18:51	40

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	65		28 - 163		01/15/22 18:51	40
4-Bromofluorobenzene (Surr)	81		41 - 122		01/15/22 18:51	40
Toluene-d8 (Surr)	97		53 - 125		01/15/22 18:51	40
Dibromofluoromethane (Surr)	81		59 - 168		01/15/22 18:51	40

Client Sample ID: EW-2 (11222)

Lab Sample ID: 180-132389-2

Date Collected: 01/12/22 12:10

Matrix: Water

Date Received: 01/14/22 09:30

Method: EPA 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5000	3000	ug/L			01/15/22 17:20	5000
1,1,2,2-Tetrachloroethane	ND		5000	3000	ug/L			01/15/22 17:20	5000
1,1,2-Trichloroethane	ND		5000	2300	ug/L			01/15/22 17:20	5000
1,1-Dichloroethane	ND		5000	1500	ug/L			01/15/22 17:20	5000
1,1-Dichloroethene	ND		5000	2800	ug/L			01/15/22 17:20	5000

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-132389-1

Client Sample ID: EW-2 (11222)

Lab Sample ID: 180-132389-2

Date Collected: 01/12/22 12:10

Matrix: Water

Date Received: 01/14/22 09:30

Method: EPA 624 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane	47000		5000	2900	ug/L			01/15/22 17:20	5000
1,2-Dichloropropane	ND		5000	3300	ug/L			01/15/22 17:20	5000
1,2-Dichlorobenzene	ND		5000	1800	ug/L			01/15/22 17:20	5000
1,3-Dichlorobenzene	ND		5000	2500	ug/L			01/15/22 17:20	5000
1,4-Dichlorobenzene	ND		5000	2700	ug/L			01/15/22 17:20	5000
2-Chloroethyl vinyl ether	ND		10000	8600	ug/L			01/15/22 17:20	5000
Acrolein	ND		100000	80000	ug/L			01/15/22 17:20	5000
Acrylonitrile	ND	*	100000	39000	ug/L			01/15/22 17:20	5000
Benzene	ND		5000	3000	ug/L			01/15/22 17:20	5000
Bromoform	ND	*	5000	4900	ug/L			01/15/22 17:20	5000
Bromomethane	ND		5000	4400	ug/L			01/15/22 17:20	5000
Carbon tetrachloride	ND		5000	4400	ug/L			01/15/22 17:20	5000
Chlorobenzene	ND		5000	2500	ug/L			01/15/22 17:20	5000
Chloroform	3200	J	5000	3000	ug/L			01/15/22 17:20	5000
Chloromethane	ND		5000	4500	ug/L			01/15/22 17:20	5000
cis-1,3-Dichloropropene	ND		5000	3000	ug/L			01/15/22 17:20	5000
Ethylbenzene	ND		5000	2500	ug/L			01/15/22 17:20	5000
Methylene Chloride	140000		5000	4400	ug/L			01/15/22 17:20	5000
Tetrachloroethene	ND		5000	2300	ug/L			01/15/22 17:20	5000
Toluene	ND		5000	2300	ug/L			01/15/22 17:20	5000
trans-1,2-Dichloroethene	ND		5000	3400	ug/L			01/15/22 17:20	5000
trans-1,3-Dichloropropene	ND		5000	2900	ug/L			01/15/22 17:20	5000
Trichloroethene	ND		5000	3400	ug/L			01/15/22 17:20	5000
Vinyl chloride	ND		5000	2000	ug/L			01/15/22 17:20	5000
Dibromochloromethane	ND	*	5000	4200	ug/L			01/15/22 17:20	5000
Bromodichloromethane	ND		5000	3200	ug/L			01/15/22 17:20	5000
Chloroethane	ND		5000	4500	ug/L			01/15/22 17:20	5000

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	61		28 - 163		01/15/22 17:20	5000
4-Bromofluorobenzene (Surr)	72		41 - 122		01/15/22 17:20	5000
Toluene-d8 (Surr)	86		53 - 125		01/15/22 17:20	5000
Dibromofluoromethane (Surr)	75		59 - 168		01/15/22 17:20	5000

Client Sample ID: MW-10D (11222)

Lab Sample ID: 180-132389-3

Date Collected: 01/12/22 12:15

Matrix: Water

Date Received: 01/14/22 09:30

Method: EPA 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.60	ug/L			01/15/22 18:21	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.60	ug/L			01/15/22 18:21	1
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			01/15/22 18:21	1
1,1-Dichloroethane	ND		1.0	0.31	ug/L			01/15/22 18:21	1
1,1-Dichloroethene	ND		1.0	0.55	ug/L			01/15/22 18:21	1
1,2-Dichloroethane	2.1		1.0	0.57	ug/L			01/15/22 18:21	1
1,2-Dichloropropane	ND		1.0	0.66	ug/L			01/15/22 18:21	1
1,2-Dichlorobenzene	ND		1.0	0.36	ug/L			01/15/22 18:21	1
1,3-Dichlorobenzene	ND		1.0	0.50	ug/L			01/15/22 18:21	1
1,4-Dichlorobenzene	ND		1.0	0.54	ug/L			01/15/22 18:21	1

Eurofins Pittsburgh

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-132389-1

Client Sample ID: MW-10D (11222)

Lab Sample ID: 180-132389-3

Date Collected: 01/12/22 12:15

Matrix: Water

Date Received: 01/14/22 09:30

Method: EPA 624 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloroethyl vinyl ether	ND		2.0	1.7	ug/L			01/15/22 18:21	1
Acrolein	ND		20	16	ug/L			01/15/22 18:21	1
Acrylonitrile	ND	*-	20	7.8	ug/L			01/15/22 18:21	1
Benzene	ND		1.0	0.60	ug/L			01/15/22 18:21	1
Bromoform	ND	*-	1.0	0.98	ug/L			01/15/22 18:21	1
Bromomethane	ND		1.0	0.89	ug/L			01/15/22 18:21	1
Carbon tetrachloride	ND		1.0	0.88	ug/L			01/15/22 18:21	1
Chlorobenzene	ND		1.0	0.50	ug/L			01/15/22 18:21	1
Chloroform	ND		1.0	0.60	ug/L			01/15/22 18:21	1
Chloromethane	ND		1.0	0.90	ug/L			01/15/22 18:21	1
cis-1,3-Dichloropropene	ND		1.0	0.59	ug/L			01/15/22 18:21	1
Ethylbenzene	ND		1.0	0.51	ug/L			01/15/22 18:21	1
Methylene Chloride	ND		1.0	0.89	ug/L			01/15/22 18:21	1
Tetrachloroethene	ND		1.0	0.47	ug/L			01/15/22 18:21	1
Toluene	ND		1.0	0.46	ug/L			01/15/22 18:21	1
trans-1,2-Dichloroethene	ND		1.0	0.67	ug/L			01/15/22 18:21	1
trans-1,3-Dichloropropene	ND		1.0	0.58	ug/L			01/15/22 18:21	1
Trichloroethene	1.1		1.0	0.69	ug/L			01/15/22 18:21	1
Vinyl chloride	0.50	J	1.0	0.40	ug/L			01/15/22 18:21	1
Dibromochloromethane	ND	*-	1.0	0.84	ug/L			01/15/22 18:21	1
Bromodichloromethane	ND		1.0	0.64	ug/L			01/15/22 18:21	1
Chloroethane	ND		1.0	0.90	ug/L			01/15/22 18:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	64		28 - 163		01/15/22 18:21	1
4-Bromofluorobenzene (Surr)	80		41 - 122		01/15/22 18:21	1
Toluene-d8 (Surr)	98		53 - 125		01/15/22 18:21	1
Dibromofluoromethane (Surr)	86		59 - 168		01/15/22 18:21	1

Client Sample ID: EFFLUENT (11222)

Lab Sample ID: 180-132389-4

Date Collected: 01/12/22 12:20

Matrix: Water

Date Received: 01/14/22 09:30

Method: EPA 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		2500	1500	ug/L			01/15/22 17:50	2500
1,1,2,2-Tetrachloroethane	ND		2500	1500	ug/L			01/15/22 17:50	2500
1,1,2-Trichloroethane	ND		2500	1100	ug/L			01/15/22 17:50	2500
1,1-Dichloroethane	ND		2500	770	ug/L			01/15/22 17:50	2500
1,1-Dichloroethene	ND		2500	1400	ug/L			01/15/22 17:50	2500
1,2-Dichloroethane	13000		2500	1400	ug/L			01/15/22 17:50	2500
1,2-Dichloropropane	ND		2500	1600	ug/L			01/15/22 17:50	2500
1,2-Dichlorobenzene	ND		2500	910	ug/L			01/15/22 17:50	2500
1,3-Dichlorobenzene	ND		2500	1300	ug/L			01/15/22 17:50	2500
1,4-Dichlorobenzene	ND		2500	1400	ug/L			01/15/22 17:50	2500
2-Chloroethyl vinyl ether	ND		5000	4300	ug/L			01/15/22 17:50	2500
Acrolein	ND		50000	40000	ug/L			01/15/22 17:50	2500
Acrylonitrile	ND	*-	50000	20000	ug/L			01/15/22 17:50	2500
Benzene	ND		2500	1500	ug/L			01/15/22 17:50	2500
Bromoform	ND	*-	2500	2400	ug/L			01/15/22 17:50	2500

Eurofins Pittsburgh

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-132389-1

Client Sample ID: EFFLUENT (11222)

Lab Sample ID: 180-132389-4

Date Collected: 01/12/22 12:20

Matrix: Water

Date Received: 01/14/22 09:30

Method: EPA 624 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND		2500	2200	ug/L			01/15/22 17:50	2500
Carbon tetrachloride	ND		2500	2200	ug/L			01/15/22 17:50	2500
Chlorobenzene	ND		2500	1300	ug/L			01/15/22 17:50	2500
Chloroform	1600	J	2500	1500	ug/L			01/15/22 17:50	2500
Chloromethane	ND		2500	2200	ug/L			01/15/22 17:50	2500
cis-1,3-Dichloropropene	ND		2500	1500	ug/L			01/15/22 17:50	2500
Ethylbenzene	ND		2500	1300	ug/L			01/15/22 17:50	2500
Methylene Chloride	37000		2500	2200	ug/L			01/15/22 17:50	2500
Tetrachloroethene	ND		2500	1200	ug/L			01/15/22 17:50	2500
Toluene	ND		2500	1100	ug/L			01/15/22 17:50	2500
trans-1,2-Dichloroethene	ND		2500	1700	ug/L			01/15/22 17:50	2500
trans-1,3-Dichloropropene	ND		2500	1500	ug/L			01/15/22 17:50	2500
Trichloroethene	ND		2500	1700	ug/L			01/15/22 17:50	2500
Vinyl chloride	ND		2500	1000	ug/L			01/15/22 17:50	2500
Dibromochloromethane	ND	*	2500	2100	ug/L			01/15/22 17:50	2500
Bromodichloromethane	ND		2500	1600	ug/L			01/15/22 17:50	2500
Chloroethane	ND		2500	2200	ug/L			01/15/22 17:50	2500

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	66		28 - 163		01/15/22 17:50	2500
4-Bromofluorobenzene (Surr)	86		41 - 122		01/15/22 17:50	2500
Toluene-d8 (Surr)	106		53 - 125		01/15/22 17:50	2500
Dibromofluoromethane (Surr)	93		59 - 168		01/15/22 17:50	2500

Client Sample ID: TRIP BLANK

Lab Sample ID: 180-132389-5

Date Collected: 01/12/22 00:00

Matrix: Water

Date Received: 01/14/22 09:30

Method: EPA 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.60	ug/L			01/15/22 16:18	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.60	ug/L			01/15/22 16:18	1
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			01/15/22 16:18	1
1,1-Dichloroethane	ND		1.0	0.31	ug/L			01/15/22 16:18	1
1,1-Dichloroethene	ND		1.0	0.55	ug/L			01/15/22 16:18	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			01/15/22 16:18	1
1,2-Dichloropropane	ND		1.0	0.66	ug/L			01/15/22 16:18	1
1,2-Dichlorobenzene	ND		1.0	0.36	ug/L			01/15/22 16:18	1
1,3-Dichlorobenzene	ND		1.0	0.50	ug/L			01/15/22 16:18	1
1,4-Dichlorobenzene	ND		1.0	0.54	ug/L			01/15/22 16:18	1
2-Chloroethyl vinyl ether	ND		2.0	1.7	ug/L			01/15/22 16:18	1
Acrolein	ND		20	16	ug/L			01/15/22 16:18	1
Acrylonitrile	ND	*	20	7.8	ug/L			01/15/22 16:18	1
Benzene	ND		1.0	0.60	ug/L			01/15/22 16:18	1
Bromoform	ND	*	1.0	0.98	ug/L			01/15/22 16:18	1
Bromomethane	ND		1.0	0.89	ug/L			01/15/22 16:18	1
Carbon tetrachloride	ND		1.0	0.88	ug/L			01/15/22 16:18	1
Chlorobenzene	ND		1.0	0.50	ug/L			01/15/22 16:18	1
Chloroform	ND		1.0	0.60	ug/L			01/15/22 16:18	1
Chloromethane	ND		1.0	0.90	ug/L			01/15/22 16:18	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Cytex Havre de Grace MD

Job ID: 180-132389-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 180-132389-5

Date Collected: 01/12/22 00:00

Matrix: Water

Date Received: 01/14/22 09:30

Method: EPA 624 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,3-Dichloropropene	ND		1.0	0.59	ug/L			01/15/22 16:18	1
Ethylbenzene	ND		1.0	0.51	ug/L			01/15/22 16:18	1
Methylene Chloride	ND		1.0	0.89	ug/L			01/15/22 16:18	1
Tetrachloroethene	ND		1.0	0.47	ug/L			01/15/22 16:18	1
Toluene	ND		1.0	0.46	ug/L			01/15/22 16:18	1
trans-1,2-Dichloroethene	ND		1.0	0.67	ug/L			01/15/22 16:18	1
trans-1,3-Dichloropropene	ND		1.0	0.58	ug/L			01/15/22 16:18	1
Trichloroethene	ND		1.0	0.69	ug/L			01/15/22 16:18	1
Vinyl chloride	ND		1.0	0.40	ug/L			01/15/22 16:18	1
Dibromochloromethane	ND	*	1.0	0.84	ug/L			01/15/22 16:18	1
Bromodichloromethane	ND		1.0	0.64	ug/L			01/15/22 16:18	1
Chloroethane	ND		1.0	0.90	ug/L			01/15/22 16:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	60		28 - 163		01/15/22 16:18	1
4-Bromofluorobenzene (Surr)	73		41 - 122		01/15/22 16:18	1
Toluene-d8 (Surr)	90		53 - 125		01/15/22 16:18	1
Dibromofluoromethane (Surr)	77		59 - 168		01/15/22 16:18	1

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-132389-1

Method: EPA 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 180-385256/7
Matrix: Water
Analysis Batch: 385256

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1,1-Trichloroethane	ND		1.0	0.60	ug/L			01/15/22 13:46	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.60	ug/L			01/15/22 13:46	1
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			01/15/22 13:46	1
1,1-Dichloroethane	ND		1.0	0.31	ug/L			01/15/22 13:46	1
1,1-Dichloroethene	ND		1.0	0.55	ug/L			01/15/22 13:46	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			01/15/22 13:46	1
1,2-Dichloropropane	ND		1.0	0.66	ug/L			01/15/22 13:46	1
1,2-Dichlorobenzene	ND		1.0	0.36	ug/L			01/15/22 13:46	1
1,3-Dichlorobenzene	ND		1.0	0.50	ug/L			01/15/22 13:46	1
1,4-Dichlorobenzene	ND		1.0	0.54	ug/L			01/15/22 13:46	1
2-Chloroethyl vinyl ether	ND		2.0	1.7	ug/L			01/15/22 13:46	1
Acrolein	ND		20	16	ug/L			01/15/22 13:46	1
Acrylonitrile	ND		20	7.8	ug/L			01/15/22 13:46	1
Benzene	ND		1.0	0.60	ug/L			01/15/22 13:46	1
Bromoform	ND		1.0	0.98	ug/L			01/15/22 13:46	1
Bromomethane	ND		1.0	0.89	ug/L			01/15/22 13:46	1
Carbon tetrachloride	ND		1.0	0.88	ug/L			01/15/22 13:46	1
Chlorobenzene	ND		1.0	0.50	ug/L			01/15/22 13:46	1
Chloroform	ND		1.0	0.60	ug/L			01/15/22 13:46	1
Chloromethane	ND		1.0	0.90	ug/L			01/15/22 13:46	1
cis-1,3-Dichloropropene	ND		1.0	0.59	ug/L			01/15/22 13:46	1
Ethylbenzene	ND		1.0	0.51	ug/L			01/15/22 13:46	1
Methylene Chloride	ND		1.0	0.89	ug/L			01/15/22 13:46	1
Tetrachloroethene	ND		1.0	0.47	ug/L			01/15/22 13:46	1
Toluene	ND		1.0	0.46	ug/L			01/15/22 13:46	1
trans-1,2-Dichloroethene	ND		1.0	0.67	ug/L			01/15/22 13:46	1
trans-1,3-Dichloropropene	ND		1.0	0.58	ug/L			01/15/22 13:46	1
Trichloroethene	ND		1.0	0.69	ug/L			01/15/22 13:46	1
Vinyl chloride	ND		1.0	0.40	ug/L			01/15/22 13:46	1
Dibromochloromethane	ND		1.0	0.84	ug/L			01/15/22 13:46	1
Bromodichloromethane	ND		1.0	0.64	ug/L			01/15/22 13:46	1
Chloroethane	ND		1.0	0.90	ug/L			01/15/22 13:46	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	60		28 - 163		01/15/22 13:46	1
4-Bromofluorobenzene (Surr)	75		41 - 122		01/15/22 13:46	1
Toluene-d8 (Surr)	91		53 - 125		01/15/22 13:46	1
Dibromofluoromethane (Surr)	77		59 - 168		01/15/22 13:46	1

Lab Sample ID: LCS 180-385256/3
Matrix: Water
Analysis Batch: 385256

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	10.0	7.72		ug/L		77	60 - 140
1,1,2-Trichloroethane	10.0	8.27		ug/L		83	70 - 130
1,1-Dichloroethane	10.0	10.1		ug/L		101	70 - 130

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-132389-1

Method: EPA 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 180-385256/3
Matrix: Water
Analysis Batch: 385256

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	10.0	12.4		ug/L		124	50 - 150
1,2-Dichloroethane	10.0	7.57		ug/L		76	70 - 130
1,2-Dichloropropane	10.0	9.62		ug/L		96	35 - 165
1,2-Dichlorobenzene	10.0	10.6		ug/L		106	65 - 135
1,3-Dichlorobenzene	10.0	11.3		ug/L		113	70 - 130
1,4-Dichlorobenzene	10.0	10.8		ug/L		108	65 - 135
2-Chloroethyl vinyl ether	20.0	10.8		ug/L		54	10 - 170
Acrolein	30.0	41.3		ug/L		138	60 - 140
Acrylonitrile	100	58.6	*-	ug/L		59	60 - 140
Benzene	10.0	11.2		ug/L		112	65 - 135
Bromoform	10.0	6.90	*-	ug/L		69	70 - 130
Bromomethane	10.0	9.01		ug/L		90	15 - 170
Carbon tetrachloride	10.0	8.43		ug/L		84	70 - 130
Chlorobenzene	10.0	10.7		ug/L		107	65 - 135
Chloroform	10.0	9.75		ug/L		97	70 - 135
Chloromethane	10.0	8.06		ug/L		81	10 - 170
cis-1,3-Dichloropropene	10.0	10.8		ug/L		108	25 - 170
Ethylbenzene	10.0	11.6		ug/L		116	60 - 140
Methylene Chloride	10.0	11.0		ug/L		110	60 - 140
Tetrachloroethene	10.0	10.1		ug/L		101	70 - 130
Toluene	10.0	10.9		ug/L		109	70 - 130
trans-1,2-Dichloroethene	10.0	11.0		ug/L		110	70 - 130
trans-1,3-Dichloropropene	10.0	7.84		ug/L		78	50 - 150
Trichloroethene	10.0	11.2		ug/L		112	65 - 135
Vinyl chloride	10.0	9.80		ug/L		98	10 - 170
Dibromochloromethane	10.0	6.90	*-	ug/L		69	70 - 135
Bromodichloromethane	10.0	8.31		ug/L		83	65 - 135
Chloroethane	10.0	9.91		ug/L		99	40 - 160

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	62		28 - 163
4-Bromofluorobenzene (Surr)	83		41 - 122
Toluene-d8 (Surr)	81		53 - 125
Dibromofluoromethane (Surr)	84		59 - 168

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD


Job ID: 180-132389-1

GC/MS VOA

Analysis Batch: 385256

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-132389-1	EW-1 (11222)	Total/NA	Water	EPA 624	
180-132389-2	EW-2 (11222)	Total/NA	Water	EPA 624	
180-132389-3	MW-10D (11222)	Total/NA	Water	EPA 624	
180-132389-4	EFFLUENT (11222)	Total/NA	Water	EPA 624	
180-132389-5	TRIP BLANK	Total/NA	Water	EPA 624	
MB 180-385256/7	Method Blank	Total/NA	Water	EPA 624	
LCS 180-385256/3	Lab Control Sample	Total/NA	Water	EPA 624	

Client Information				Sampler: <i>D. Kramer / J. Bukovsky</i>				Lab PM: Colussy, Jill L				Carrier Tracking No(s):				COC No: 180-77576-14808.1												
Client Contact: Ms. Shwetha Sridharan				Phone: <i>443-936-9029</i>				E-Mail: Jill.Colussy@Eurofinset.com				State of Origin: MD				Page: Page 1 of 1												
Company: ARCADIS U.S., Inc.				PWSID:				Analysis Requested												Job #:								
Address: 7550 Teague Road Suite 210				Due Date Requested:				Perform MSMSD (Yes or No)	VOC via EPA 624 VOC via EPA 624												Total Number of Containers				Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify)			
City: Hanover				TAT Requested (days):																								
State, Zip: MD, 21076				Compliance Project: Yes No																								
Phone: 302-897-8993(Tel)				PO #: 30005455.0002																								
Email: shwetha.sridharan@arcadis.com				WO #:																								
Project Name: Cytec Havre de Grace MD				Project #: 18017987																								
Site: Pennsylvania				SSOW#:																								
Sample Identification				Sample Date		Sample Time		Sample Type (C=comp, G=grab)		Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Ak)		Field Filtered Sample (Yes or No)				Total Number of Containers				Special Instructions/Note:								
																Preservation Code:		AN										
FW-1 (1122 2 2)				1/12/22		1205		G		W		MN				3 3												
EW-2 (1122 2 2)				1/12/22		1210		G		W		MN				3 3												
MW100 (1122 2 2)				1/12/22		1215		G		W		MN				3 3												
Effluent (1122 2 2)				1/12/22		1220		G		W		MN				3 3												
Trip Blank				-		-		-		W		MN				2 2												


 180-132389 Chain of Custody

Possible Hazard Identification										Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)														
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological					<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months																			
Deliverable Requested: I, II, III, IV, Other (specify)										Special Instructions/QC Requirements:														
Empty Kit Relinquished by: _____					Date: _____					Time: _____					Method of Shipment: _____									
Relinquished by: <i>[Signature]</i>					Date/Time: <i>1/12/22 1545</i>					Company: _____					Received by: <i>[Signature]</i>					Date/Time: <i>1/19/22 1015</i>				
Relinquished by: <i>[Signature]</i>					Date/Time: <i>1/13/22 1700</i>					Company: <i>PETROBRAS</i>					Received by: <i>D. Waters</i>					Date/Time: <i>1-14-22 9:30</i>				
Relinquished by: _____					Date/Time: _____					Company: _____					Received by: _____					Date/Time: _____				

Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:			
--	--	-------------------	--	---	--	--	--



Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 180-132389-1

Login Number: 132389

List Source: Eurofins Pittsburgh

List Number: 1

Creator: Watson, Debbie

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



ANALYTICAL REPORT

Eurofins Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-137972-1

Client Project/Site: Cytex Havre de Grace MD

For:
ARCADIS U.S., Inc.
7550 Teague Road
Suite 210
Hanover, Maryland 21076

Attn: Ms. Shwetha Sridharan



Authorized for release by:
6/2/2022 12:10:34 PM

Jill Colussy, Project Manager I
(412)963-2444
Jill.Colussy@et.eurofinsus.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

PA Lab ID: 02-00416



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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-137972-1

Job ID: 180-137972-1

Laboratory: Eurofins Pittsburgh

Narrative

Job Narrative 180-137972-1

Receipt

The samples were received on 5/11/2022 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.8° C.

GC/MS VOA

Due to the concentration of target compounds detected, samples EW-1 (051022) (180-137972-1), EFFLUENT (051022) (180-137972-3) and POTW (051022) (180-137972-4). were analyzed at a dilution. Elevated reporting limits (RLs) are provided.

The laboratory control sample (LCS) for batch 180-398499 recovered outside control limits for 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, Acrylonitrile and Bromoform. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

GC/MS Semi VOA

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.



Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-137972-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC/MS Semi VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Cytex Havre de Grace MD

Job ID: 180-137972-1

Laboratory: Eurofins Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	19-033-0	06-27-22
California	State	2891	04-30-22 *
Connecticut	State	PH-0688	09-30-22
Florida	NELAP	E871008	06-30-22
Georgia	State	PA 02-00416	04-30-23
Illinois	NELAP	004375	06-30-22
Kansas	NELAP	E-10350	03-31-23
Kentucky (UST)	State	162013	04-30-22 *
Kentucky (WW)	State	KY98043	12-31-22
Louisiana	NELAP	04041	06-30-22
Maine	State	PA00164	03-06-24
Minnesota	NELAP	042-999-482	12-31-22
Nevada	State	PA00164	08-31-22
New Hampshire	NELAP	2030	04-04-23
New Jersey	NELAP	PA005	06-30-23
New York	NELAP	11182	04-01-23
North Carolina (WW/SW)	State	434	12-31-22
North Dakota	State	R-227	04-30-22 *
Oregon	NELAP	PA-2151	02-07-23
Pennsylvania	NELAP	02-00416	04-30-23
Rhode Island	State	LAO00362	12-31-21 *
South Carolina	State	89014	06-30-22
Texas	NELAP	T104704528	03-31-23
USDA	Federal	P-Soil-01	06-26-22
USDA	US Federal Programs	P330-16-00211	06-26-22
Utah	NELAP	PA001462019-8	05-31-22 *
Virginia	NELAP	10043	09-14-22
West Virginia DEP	State	142	01-31-23
Wisconsin	State	998027800	08-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-137972-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-137972-1	EW-1 (051022)	Water	05/10/22 10:30	05/11/22 09:00
180-137972-2	MW-10D (051022)	Water	05/10/22 10:35	05/11/22 09:00
180-137972-3	EFFLUENT (051022)	Water	05/10/22 10:40	05/11/22 09:00
180-137972-4	POTW (051022)	Water	05/10/22 11:00	05/11/22 09:00
180-137972-5	TRIP BLANK	Water	05/10/22 00:00	05/11/22 09:00

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Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-137972-1

Method	Method Description	Protocol	Laboratory
EPA 624.1	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL PIT
EPA 625.1	Semivolatile Organic Compounds (GC/MS)	40 CFR 761	TAL PIT
EPA 200.7 Rev 4	Metals (ICP)	EPA	TAL PIT
EPA 245.1 Rev.	Mercury (CVAA)	EPA	TAL PIT
SM 4500CN E	Total Cyanide	SM	TAL PIT
200.7	Preparation, Total Recoverable Metals	EPA	TAL PIT
245.1	Preparation, Mercury	EPA	TAL PIT
625	Liquid-Liquid Extraction	40CFR136A	TAL PIT
SM 4500 CN C	Cyanide, Distillation	SM	TAL PIT

Protocol References:

40 CFR 761 = Toxic Substances Control Act (TSCA)

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

TAL PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Client Sample ID: EW-1 (051022)
Date Collected: 05/10/22 10:30
Date Received: 05/11/22 09:00

Lab Sample ID: 180-137972-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624.1		50	5 mL	5 mL	398499	05/12/22 14:57	SW1	TAL PIT
Instrument ID: CHHP6										

Client Sample ID: MW-10D (051022)
Date Collected: 05/10/22 10:35
Date Received: 05/11/22 09:00

Lab Sample ID: 180-137972-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624.1		1	5 mL	5 mL	398499	05/12/22 15:23	SW1	TAL PIT
Instrument ID: CHHP6										

Client Sample ID: EFFLUENT (051022)
Date Collected: 05/10/22 10:40
Date Received: 05/11/22 09:00

Lab Sample ID: 180-137972-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624.1		5	5 mL	5 mL	398499	05/12/22 13:14	SW1	TAL PIT
Instrument ID: CHHP6										

Client Sample ID: POTW (051022)
Date Collected: 05/10/22 11:00
Date Received: 05/11/22 09:00

Lab Sample ID: 180-137972-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624.1		5	5 mL	5 mL	398499	05/12/22 14:06	SW1	TAL PIT
Instrument ID: CHHP6										
Total/NA	Prep	625			240 mL	250 uL	399113	05/17/22 14:55	BJT	TAL PIT
Total/NA	Analysis	EPA 625.1		1	1 mL	1 mL	399580	05/21/22 16:11	VVP	TAL PIT
Instrument ID: CH733										
Total Recoverable	Prep	200.7			25 mL	25 mL	399223	05/18/22 13:03	NAF	TAL PIT
Total Recoverable	Analysis	EPA 200.7 Rev 4		1			399442	05/19/22 23:55	RJG	TAL PIT
Instrument ID: C										
Total/NA	Prep	245.1			50 mL	50 mL	400485	06/01/22 07:25	RJR	TAL PIT
Total/NA	Analysis	EPA 245.1 Rev.		1			400599	06/01/22 18:43	RJR	TAL PIT
Instrument ID: HGY										
Total/NA	Prep	SM 4500 CN C			6 mL	6 mL	398646	05/17/22 08:00	CMR	TAL PIT
Total/NA	Analysis	SM 4500CN E		1			399126	05/17/22 13:50	CMR	TAL PIT
Instrument ID: SEAL1										

Client Sample ID: TRIP BLANK
Date Collected: 05/10/22 00:00
Date Received: 05/11/22 09:00

Lab Sample ID: 180-137972-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624.1		1	5 mL	5 mL	398499	05/12/22 13:40	SW1	TAL PIT
Instrument ID: CHHP6										

Eurofins Pittsburgh

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-137972-1

Laboratory References:

TAL PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Analyst References:

Lab: TAL PIT

Batch Type: Prep

BJT = Bill Trout

CMR = Carl Reagle

NAF = Nicholas Frankos

RJR = Ron Rosenbaum

Batch Type: Analysis

CMR = Carl Reagle

RJG = Rob Good

RJR = Ron Rosenbaum

SW1 = Sunan Wang-un

VVP = Vincent Piccolino

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Client Sample ID: EW-1 (051022)

Lab Sample ID: 180-137972-1

Date Collected: 05/10/22 10:30

Matrix: Water

Date Received: 05/11/22 09:00

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		50	30	ug/L			05/12/22 14:57	50
1,1,2,2-Tetrachloroethane	ND	*+	50	30	ug/L			05/12/22 14:57	50
1,1,2-Trichloroethane	ND	*+	50	23	ug/L			05/12/22 14:57	50
1,1-Dichloroethane	ND		50	15	ug/L			05/12/22 14:57	50
1,1-Dichloroethene	ND		50	28	ug/L			05/12/22 14:57	50
1,2-Dichloroethane	670		50	29	ug/L			05/12/22 14:57	50
1,2-Dichloropropane	ND		50	33	ug/L			05/12/22 14:57	50
1,2-Dichlorobenzene	ND		50	18	ug/L			05/12/22 14:57	50
1,3-Dichlorobenzene	ND		50	25	ug/L			05/12/22 14:57	50
1,4-Dichlorobenzene	ND		50	27	ug/L			05/12/22 14:57	50
2-Chloroethyl vinyl ether	ND		100	86	ug/L			05/12/22 14:57	50
Acrolein	ND		1000	800	ug/L			05/12/22 14:57	50
Acrylonitrile	ND	*+	1000	390	ug/L			05/12/22 14:57	50
Benzene	ND		50	30	ug/L			05/12/22 14:57	50
Bromoform	ND	*+	50	49	ug/L			05/12/22 14:57	50
Bromomethane	ND		50	44	ug/L			05/12/22 14:57	50
Carbon tetrachloride	ND		50	44	ug/L			05/12/22 14:57	50
Chlorobenzene	ND		50	25	ug/L			05/12/22 14:57	50
Chloroform	ND		50	30	ug/L			05/12/22 14:57	50
Chloromethane	ND		50	45	ug/L			05/12/22 14:57	50
cis-1,3-Dichloropropene	ND		50	30	ug/L			05/12/22 14:57	50
Ethylbenzene	ND		50	25	ug/L			05/12/22 14:57	50
Methylene Chloride	ND		50	44	ug/L			05/12/22 14:57	50
Tetrachloroethene	ND		50	23	ug/L			05/12/22 14:57	50
Toluene	ND		50	23	ug/L			05/12/22 14:57	50
trans-1,2-Dichloroethene	ND		50	34	ug/L			05/12/22 14:57	50
trans-1,3-Dichloropropene	ND		50	29	ug/L			05/12/22 14:57	50
Trichloroethene	ND		50	34	ug/L			05/12/22 14:57	50
Vinyl chloride	ND		50	20	ug/L			05/12/22 14:57	50
Dibromochloromethane	ND		50	42	ug/L			05/12/22 14:57	50
Bromodichloromethane	ND		50	32	ug/L			05/12/22 14:57	50
Chloroethane	ND		50	45	ug/L			05/12/22 14:57	50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	121		28 - 163		05/12/22 14:57	50
4-Bromofluorobenzene (Surr)	99		41 - 122		05/12/22 14:57	50
Toluene-d8 (Surr)	87		53 - 125		05/12/22 14:57	50
Dibromofluoromethane (Surr)	103		59 - 168		05/12/22 14:57	50

Client Sample ID: MW-10D (051022)

Lab Sample ID: 180-137972-2

Date Collected: 05/10/22 10:35

Matrix: Water

Date Received: 05/11/22 09:00

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.60	ug/L			05/12/22 15:23	1
1,1,2,2-Tetrachloroethane	ND	*+	1.0	0.60	ug/L			05/12/22 15:23	1
1,1,2-Trichloroethane	ND	*+	1.0	0.45	ug/L			05/12/22 15:23	1
1,1-Dichloroethane	ND		1.0	0.31	ug/L			05/12/22 15:23	1
1,1-Dichloroethene	ND		1.0	0.55	ug/L			05/12/22 15:23	1

Eurofins Pittsburgh

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Client Sample ID: MW-10D (051022)

Lab Sample ID: 180-137972-2

Date Collected: 05/10/22 10:35

Matrix: Water

Date Received: 05/11/22 09:00

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane	ND		1.0	0.57	ug/L			05/12/22 15:23	1
1,2-Dichloropropane	ND		1.0	0.66	ug/L			05/12/22 15:23	1
1,2-Dichlorobenzene	ND		1.0	0.36	ug/L			05/12/22 15:23	1
1,3-Dichlorobenzene	ND		1.0	0.50	ug/L			05/12/22 15:23	1
1,4-Dichlorobenzene	ND		1.0	0.54	ug/L			05/12/22 15:23	1
2-Chloroethyl vinyl ether	ND		2.0	1.7	ug/L			05/12/22 15:23	1
Acrolein	ND		20	16	ug/L			05/12/22 15:23	1
Acrylonitrile	ND	*+	20	7.8	ug/L			05/12/22 15:23	1
Benzene	ND		1.0	0.60	ug/L			05/12/22 15:23	1
Bromoform	ND	*+	1.0	0.98	ug/L			05/12/22 15:23	1
Bromomethane	ND		1.0	0.89	ug/L			05/12/22 15:23	1
Carbon tetrachloride	ND		1.0	0.88	ug/L			05/12/22 15:23	1
Chlorobenzene	ND		1.0	0.50	ug/L			05/12/22 15:23	1
Chloroform	ND		1.0	0.60	ug/L			05/12/22 15:23	1
Chloromethane	ND		1.0	0.90	ug/L			05/12/22 15:23	1
cis-1,3-Dichloropropene	ND		1.0	0.59	ug/L			05/12/22 15:23	1
Ethylbenzene	ND		1.0	0.51	ug/L			05/12/22 15:23	1
Methylene Chloride	ND		1.0	0.89	ug/L			05/12/22 15:23	1
Tetrachloroethene	ND		1.0	0.47	ug/L			05/12/22 15:23	1
Toluene	ND		1.0	0.46	ug/L			05/12/22 15:23	1
trans-1,2-Dichloroethene	ND		1.0	0.67	ug/L			05/12/22 15:23	1
trans-1,3-Dichloropropene	ND		1.0	0.58	ug/L			05/12/22 15:23	1
Trichloroethene	ND		1.0	0.69	ug/L			05/12/22 15:23	1
Vinyl chloride	ND		1.0	0.40	ug/L			05/12/22 15:23	1
Dibromochloromethane	ND		1.0	0.84	ug/L			05/12/22 15:23	1
Bromodichloromethane	ND		1.0	0.64	ug/L			05/12/22 15:23	1
Chloroethane	ND		1.0	0.90	ug/L			05/12/22 15:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		28 - 163		05/12/22 15:23	1
4-Bromofluorobenzene (Surr)	98		41 - 122		05/12/22 15:23	1
Toluene-d8 (Surr)	89		53 - 125		05/12/22 15:23	1
Dibromofluoromethane (Surr)	105		59 - 168		05/12/22 15:23	1

Client Sample ID: EFFLUENT (051022)

Lab Sample ID: 180-137972-3

Date Collected: 05/10/22 10:40

Matrix: Water

Date Received: 05/11/22 09:00

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	3.0	ug/L			05/12/22 13:14	5
1,1,1,2,2-Tetrachloroethane	ND	*+	5.0	3.0	ug/L			05/12/22 13:14	5
1,1,2-Trichloroethane	ND	*+	5.0	2.3	ug/L			05/12/22 13:14	5
1,1-Dichloroethane	ND		5.0	1.5	ug/L			05/12/22 13:14	5
1,1-Dichloroethene	ND		5.0	2.8	ug/L			05/12/22 13:14	5
1,2-Dichloroethane	140		5.0	2.9	ug/L			05/12/22 13:14	5
1,2-Dichloropropane	ND		5.0	3.3	ug/L			05/12/22 13:14	5
1,2-Dichlorobenzene	ND		5.0	1.8	ug/L			05/12/22 13:14	5
1,3-Dichlorobenzene	ND		5.0	2.5	ug/L			05/12/22 13:14	5
1,4-Dichlorobenzene	ND		5.0	2.7	ug/L			05/12/22 13:14	5

Eurofins Pittsburgh

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Client Sample ID: EFFLUENT (051022)

Lab Sample ID: 180-137972-3

Date Collected: 05/10/22 10:40

Matrix: Water

Date Received: 05/11/22 09:00

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloroethyl vinyl ether	ND		10	8.6	ug/L			05/12/22 13:14	5
Acrolein	ND		100	80	ug/L			05/12/22 13:14	5
Acrylonitrile	ND	*+	100	39	ug/L			05/12/22 13:14	5
Benzene	ND		5.0	3.0	ug/L			05/12/22 13:14	5
Bromoform	ND	*+	5.0	4.9	ug/L			05/12/22 13:14	5
Bromomethane	ND		5.0	4.4	ug/L			05/12/22 13:14	5
Carbon tetrachloride	ND		5.0	4.4	ug/L			05/12/22 13:14	5
Chlorobenzene	ND		5.0	2.5	ug/L			05/12/22 13:14	5
Chloroform	ND		5.0	3.0	ug/L			05/12/22 13:14	5
Chloromethane	ND		5.0	4.5	ug/L			05/12/22 13:14	5
cis-1,3-Dichloropropene	ND		5.0	3.0	ug/L			05/12/22 13:14	5
Ethylbenzene	ND		5.0	2.5	ug/L			05/12/22 13:14	5
Methylene Chloride	ND		5.0	4.4	ug/L			05/12/22 13:14	5
Tetrachloroethene	ND		5.0	2.3	ug/L			05/12/22 13:14	5
Toluene	ND		5.0	2.3	ug/L			05/12/22 13:14	5
trans-1,2-Dichloroethene	ND		5.0	3.4	ug/L			05/12/22 13:14	5
trans-1,3-Dichloropropene	ND		5.0	2.9	ug/L			05/12/22 13:14	5
Trichloroethene	4.1	J	5.0	3.4	ug/L			05/12/22 13:14	5
Vinyl chloride	ND		5.0	2.0	ug/L			05/12/22 13:14	5
Dibromochloromethane	ND		5.0	4.2	ug/L			05/12/22 13:14	5
Bromodichloromethane	ND		5.0	3.2	ug/L			05/12/22 13:14	5
Chloroethane	ND		5.0	4.5	ug/L			05/12/22 13:14	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	137		28 - 163		05/12/22 13:14	5
4-Bromofluorobenzene (Surr)	102		41 - 122		05/12/22 13:14	5
Toluene-d8 (Surr)	83		53 - 125		05/12/22 13:14	5
Dibromofluoromethane (Surr)	115		59 - 168		05/12/22 13:14	5

Client Sample ID: POTW (051022)

Lab Sample ID: 180-137972-4

Date Collected: 05/10/22 11:00

Matrix: Water

Date Received: 05/11/22 09:00

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	3.0	ug/L			05/12/22 14:06	5
1,1,2,2-Tetrachloroethane	ND	*+	5.0	3.0	ug/L			05/12/22 14:06	5
1,1,2-Trichloroethane	ND	*+	5.0	2.3	ug/L			05/12/22 14:06	5
1,1-Dichloroethane	ND		5.0	1.5	ug/L			05/12/22 14:06	5
1,1-Dichloroethene	ND		5.0	2.8	ug/L			05/12/22 14:06	5
1,2-Dichloroethane	130		5.0	2.9	ug/L			05/12/22 14:06	5
1,2-Dichloropropane	ND		5.0	3.3	ug/L			05/12/22 14:06	5
1,2-Dichlorobenzene	ND		5.0	1.8	ug/L			05/12/22 14:06	5
1,3-Dichlorobenzene	ND		5.0	2.5	ug/L			05/12/22 14:06	5
1,4-Dichlorobenzene	ND		5.0	2.7	ug/L			05/12/22 14:06	5
2-Chloroethyl vinyl ether	ND		10	8.6	ug/L			05/12/22 14:06	5
Acrolein	ND		100	80	ug/L			05/12/22 14:06	5
Acrylonitrile	ND	*+	100	39	ug/L			05/12/22 14:06	5
Benzene	ND		5.0	3.0	ug/L			05/12/22 14:06	5
Bromoform	ND	*+	5.0	4.9	ug/L			05/12/22 14:06	5

Eurofins Pittsburgh

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Client Sample ID: POTW (051022)

Lab Sample ID: 180-137972-4

Date Collected: 05/10/22 11:00

Matrix: Water

Date Received: 05/11/22 09:00

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND		5.0	4.4	ug/L			05/12/22 14:06	5
Carbon tetrachloride	ND		5.0	4.4	ug/L			05/12/22 14:06	5
Chlorobenzene	ND		5.0	2.5	ug/L			05/12/22 14:06	5
Chloroform	ND		5.0	3.0	ug/L			05/12/22 14:06	5
Chloromethane	ND		5.0	4.5	ug/L			05/12/22 14:06	5
cis-1,3-Dichloropropene	ND		5.0	3.0	ug/L			05/12/22 14:06	5
Ethylbenzene	ND		5.0	2.5	ug/L			05/12/22 14:06	5
Methylene Chloride	ND		5.0	4.4	ug/L			05/12/22 14:06	5
Tetrachloroethene	ND		5.0	2.3	ug/L			05/12/22 14:06	5
Toluene	ND		5.0	2.3	ug/L			05/12/22 14:06	5
trans-1,2-Dichloroethene	ND		5.0	3.4	ug/L			05/12/22 14:06	5
trans-1,3-Dichloropropene	ND		5.0	2.9	ug/L			05/12/22 14:06	5
Trichloroethene	4.0	J	5.0	3.4	ug/L			05/12/22 14:06	5
Vinyl chloride	ND		5.0	2.0	ug/L			05/12/22 14:06	5
Dibromochloromethane	ND		5.0	4.2	ug/L			05/12/22 14:06	5
Bromodichloromethane	ND		5.0	3.2	ug/L			05/12/22 14:06	5
Chloroethane	ND		5.0	4.5	ug/L			05/12/22 14:06	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	136		28 - 163		05/12/22 14:06	5
4-Bromofluorobenzene (Surr)	101		41 - 122		05/12/22 14:06	5
Toluene-d8 (Surr)	85		53 - 125		05/12/22 14:06	5
Dibromofluoromethane (Surr)	112		59 - 168		05/12/22 14:06	5

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	ND		0.20	0.068	ug/L		05/17/22 14:55	05/21/22 16:11	1
Acenaphthene	ND		0.20	0.068	ug/L		05/17/22 14:55	05/21/22 16:11	1
Anthracene	ND		0.20	0.051	ug/L		05/17/22 14:55	05/21/22 16:11	1
Benzidine	ND	F1	21	9.5	ug/L		05/17/22 14:55	05/21/22 16:11	1
Benzo[a]anthracene	ND		0.20	0.078	ug/L		05/17/22 14:55	05/21/22 16:11	1
Benzo[b]fluoranthene	ND		0.20	0.10	ug/L		05/17/22 14:55	05/21/22 16:11	1
Benzo[k]fluoranthene	ND		0.20	0.092	ug/L		05/17/22 14:55	05/21/22 16:11	1
Benzo[g,h,i]perylene	ND		0.20	0.072	ug/L		05/17/22 14:55	05/21/22 16:11	1
Benzo[a]pyrene	ND		0.20	0.055	ug/L		05/17/22 14:55	05/21/22 16:11	1
Bis(2-chloroethyl)ether	ND		0.20	0.042	ug/L		05/17/22 14:55	05/21/22 16:11	1
Bis(2-ethylhexyl) phthalate	ND		10	6.5	ug/L		05/17/22 14:55	05/21/22 16:11	1
4-Bromophenyl phenyl ether	ND		1.0	0.33	ug/L		05/17/22 14:55	05/21/22 16:11	1
Butyl benzyl phthalate	ND		1.0	0.48	ug/L		05/17/22 14:55	05/21/22 16:11	1
4-Chloro-3-methylphenol	ND		1.0	0.29	ug/L		05/17/22 14:55	05/21/22 16:11	1
2-Chloronaphthalene	ND		0.20	0.061	ug/L		05/17/22 14:55	05/21/22 16:11	1
2-Chlorophenol	ND		1.0	0.13	ug/L		05/17/22 14:55	05/21/22 16:11	1
Chrysene	ND		0.20	0.084	ug/L		05/17/22 14:55	05/21/22 16:11	1
Dibenzo(a,h)-anthracene	ND		0.20	0.075	ug/L		05/17/22 14:55	05/21/22 16:11	1
Di-n-butyl phthalate	2.1		1.0	0.77	ug/L		05/17/22 14:55	05/21/22 16:11	1
3,3'-Dichlorobenzidine	ND		1.0	0.61	ug/L		05/17/22 14:55	05/21/22 16:11	1
2,4-Dichlorophenol	ND		0.20	0.053	ug/L		05/17/22 14:55	05/21/22 16:11	1
Diethyl phthalate	ND		1.0	0.59	ug/L		05/17/22 14:55	05/21/22 16:11	1
2,4-Dimethylphenol	ND		1.0	0.17	ug/L		05/17/22 14:55	05/21/22 16:11	1
Dimethyl phthalate	ND		1.0	0.21	ug/L		05/17/22 14:55	05/21/22 16:11	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Client Sample ID: POTW (051022)

Lab Sample ID: 180-137972-4

Date Collected: 05/10/22 11:00

Matrix: Water

Date Received: 05/11/22 09:00

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,6-Dinitro-2-methylphenol	ND		5.2	1.5	ug/L		05/17/22 14:55	05/21/22 16:11	1
2,4-Dinitrophenol	ND		10	1.6	ug/L		05/17/22 14:55	05/21/22 16:11	1
2,4-Dinitrotoluene	ND		1.0	0.37	ug/L		05/17/22 14:55	05/21/22 16:11	1
2,6-Dinitrotoluene	ND		1.0	0.18	ug/L		05/17/22 14:55	05/21/22 16:11	1
Di-n-octyl phthalate	ND		1.0	0.71	ug/L		05/17/22 14:55	05/21/22 16:11	1
Fluoranthene	ND		0.20	0.063	ug/L		05/17/22 14:55	05/21/22 16:11	1
Fluorene	ND		0.20	0.072	ug/L		05/17/22 14:55	05/21/22 16:11	1
Hexachlorobenzene	ND		0.20	0.058	ug/L		05/17/22 14:55	05/21/22 16:11	1
Hexachlorobutadiene	ND		0.20	0.072	ug/L		05/17/22 14:55	05/21/22 16:11	1
Hexachlorocyclopentadiene	ND		1.0	0.52	ug/L		05/17/22 14:55	05/21/22 16:11	1
Hexachloroethane	ND		1.0	0.14	ug/L		05/17/22 14:55	05/21/22 16:11	1
Indeno[1,2,3-cd]pyrene	ND		0.20	0.089	ug/L		05/17/22 14:55	05/21/22 16:11	1
Isophorone	ND		1.0	0.20	ug/L		05/17/22 14:55	05/21/22 16:11	1
Naphthalene	ND		0.20	0.061	ug/L		05/17/22 14:55	05/21/22 16:11	1
Nitrobenzene	ND		2.1	0.52	ug/L		05/17/22 14:55	05/21/22 16:11	1
2-Nitrophenol	ND		1.0	0.20	ug/L		05/17/22 14:55	05/21/22 16:11	1
4-Nitrophenol	ND		5.2	0.98	ug/L		05/17/22 14:55	05/21/22 16:11	1
N-Nitrosodimethylamine	ND		1.0	0.070	ug/L		05/17/22 14:55	05/21/22 16:11	1
N-Nitrosodiphenylamine	ND		1.0	0.12	ug/L		05/17/22 14:55	05/21/22 16:11	1
N-Nitrosodi-n-propylamine	ND		0.20	0.074	ug/L		05/17/22 14:55	05/21/22 16:11	1
2,2'-oxybis[1-chloropropane]	ND		0.20	0.060	ug/L		05/17/22 14:55	05/21/22 16:11	1
Pentachlorophenol	ND		5.2	0.88	ug/L		05/17/22 14:55	05/21/22 16:11	1
Phenanthrene	ND		0.20	0.057	ug/L		05/17/22 14:55	05/21/22 16:11	1
Phenol	ND		1.0	0.51	ug/L		05/17/22 14:55	05/21/22 16:11	1
Pyrene	ND		0.20	0.056	ug/L		05/17/22 14:55	05/21/22 16:11	1
1,2,4-Trichlorobenzene	ND		1.0	0.14	ug/L		05/17/22 14:55	05/21/22 16:11	1
2,4,6-Trichlorophenol	ND		1.0	0.23	ug/L		05/17/22 14:55	05/21/22 16:11	1
Bis(2-chloroethoxy)methane	ND		1.0	0.16	ug/L		05/17/22 14:55	05/21/22 16:11	1
4-Chlorophenyl phenyl ether	ND		1.0	0.23	ug/L		05/17/22 14:55	05/21/22 16:11	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.0	0.20	ug/L		05/17/22 14:55	05/21/22 16:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	73		47 - 107	05/17/22 14:55	05/21/22 16:11	1
2-Fluorophenol	68		35 - 109	05/17/22 14:55	05/21/22 16:11	1
2,4,6-Tribromophenol	52		32 - 127	05/17/22 14:55	05/21/22 16:11	1
Nitrobenzene-d5	80		47 - 110	05/17/22 14:55	05/21/22 16:11	1
Phenol-d5	65		37 - 110	05/17/22 14:55	05/21/22 16:11	1
Terphenyl-d14	85		32 - 115	05/17/22 14:55	05/21/22 16:11	1

Method: EPA 200.7 Rev 4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.3	J	10	5.7	ug/L		05/18/22 13:03	05/19/22 23:55	1
Cadmium	ND		5.0	0.33	ug/L		05/18/22 13:03	05/19/22 23:55	1
Chromium	ND		5.0	2.6	ug/L		05/18/22 13:03	05/19/22 23:55	1
Copper	ND		25	3.9	ug/L		05/18/22 13:03	05/19/22 23:55	1
Lead	ND		10	2.3	ug/L		05/18/22 13:03	05/19/22 23:55	1
Nickel	5.7	J	40	2.1	ug/L		05/18/22 13:03	05/19/22 23:55	1
Silver	ND		5.0	0.87	ug/L		05/18/22 13:03	05/19/22 23:55	1
Zinc	6.0	J	20	3.3	ug/L		05/18/22 13:03	05/19/22 23:55	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Client Sample ID: POTW (051022)

Lab Sample ID: 180-137972-4

Date Collected: 05/10/22 11:00

Matrix: Water

Date Received: 05/11/22 09:00

Method: EPA 245.1 Rev. - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		06/01/22 07:25	06/01/22 18:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	0.0091	J	0.010	0.0080	mg/L		05/17/22 08:00	05/17/22 13:50	1

Client Sample ID: TRIP BLANK

Lab Sample ID: 180-137972-5

Date Collected: 05/10/22 00:00

Matrix: Water

Date Received: 05/11/22 09:00

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.60	ug/L			05/12/22 13:40	1
1,1,1,2-Tetrachloroethane	ND	+	1.0	0.60	ug/L			05/12/22 13:40	1
1,1,2-Trichloroethane	ND	+	1.0	0.45	ug/L			05/12/22 13:40	1
1,1-Dichloroethane	ND		1.0	0.31	ug/L			05/12/22 13:40	1
1,1-Dichloroethene	ND		1.0	0.55	ug/L			05/12/22 13:40	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			05/12/22 13:40	1
1,2-Dichloropropane	ND		1.0	0.66	ug/L			05/12/22 13:40	1
1,2-Dichlorobenzene	ND		1.0	0.36	ug/L			05/12/22 13:40	1
1,3-Dichlorobenzene	ND		1.0	0.50	ug/L			05/12/22 13:40	1
1,4-Dichlorobenzene	ND		1.0	0.54	ug/L			05/12/22 13:40	1
2-Chloroethyl vinyl ether	ND		2.0	1.7	ug/L			05/12/22 13:40	1
Acrolein	ND		20	16	ug/L			05/12/22 13:40	1
Acrylonitrile	ND	+	20	7.8	ug/L			05/12/22 13:40	1
Benzene	ND		1.0	0.60	ug/L			05/12/22 13:40	1
Bromoform	ND	+	1.0	0.98	ug/L			05/12/22 13:40	1
Bromomethane	ND		1.0	0.89	ug/L			05/12/22 13:40	1
Carbon tetrachloride	ND		1.0	0.88	ug/L			05/12/22 13:40	1
Chlorobenzene	ND		1.0	0.50	ug/L			05/12/22 13:40	1
Chloroform	ND		1.0	0.60	ug/L			05/12/22 13:40	1
Chloromethane	ND		1.0	0.90	ug/L			05/12/22 13:40	1
cis-1,3-Dichloropropene	ND		1.0	0.59	ug/L			05/12/22 13:40	1
Ethylbenzene	ND		1.0	0.51	ug/L			05/12/22 13:40	1
Methylene Chloride	ND		1.0	0.89	ug/L			05/12/22 13:40	1
Tetrachloroethene	ND		1.0	0.47	ug/L			05/12/22 13:40	1
Toluene	ND		1.0	0.46	ug/L			05/12/22 13:40	1
trans-1,2-Dichloroethene	ND		1.0	0.67	ug/L			05/12/22 13:40	1
trans-1,3-Dichloropropene	ND		1.0	0.58	ug/L			05/12/22 13:40	1
Trichloroethene	ND		1.0	0.69	ug/L			05/12/22 13:40	1
Vinyl chloride	ND		1.0	0.40	ug/L			05/12/22 13:40	1
Dibromochloromethane	ND		1.0	0.84	ug/L			05/12/22 13:40	1
Bromodichloromethane	ND		1.0	0.64	ug/L			05/12/22 13:40	1
Chloroethane	ND		1.0	0.90	ug/L			05/12/22 13:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	138		28 - 163		05/12/22 13:40	1
4-Bromofluorobenzene (Surr)	100		41 - 122		05/12/22 13:40	1
Toluene-d8 (Surr)	85		53 - 125		05/12/22 13:40	1
Dibromofluoromethane (Surr)	113		59 - 168		05/12/22 13:40	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 180-398499/6
Matrix: Water
Analysis Batch: 398499

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1,1-Trichloroethane	ND		1.0	0.60	ug/L			05/12/22 09:46	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.60	ug/L			05/12/22 09:46	1
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			05/12/22 09:46	1
1,1-Dichloroethane	ND		1.0	0.31	ug/L			05/12/22 09:46	1
1,1-Dichloroethene	ND		1.0	0.55	ug/L			05/12/22 09:46	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			05/12/22 09:46	1
1,2-Dichloropropane	ND		1.0	0.66	ug/L			05/12/22 09:46	1
1,2-Dichlorobenzene	ND		1.0	0.36	ug/L			05/12/22 09:46	1
1,3-Dichlorobenzene	ND		1.0	0.50	ug/L			05/12/22 09:46	1
1,4-Dichlorobenzene	ND		1.0	0.54	ug/L			05/12/22 09:46	1
2-Chloroethyl vinyl ether	ND		2.0	1.7	ug/L			05/12/22 09:46	1
Acrolein	ND		20	16	ug/L			05/12/22 09:46	1
Acrylonitrile	ND		20	7.8	ug/L			05/12/22 09:46	1
Benzene	ND		1.0	0.60	ug/L			05/12/22 09:46	1
Bromoform	ND		1.0	0.98	ug/L			05/12/22 09:46	1
Bromomethane	ND		1.0	0.89	ug/L			05/12/22 09:46	1
Carbon tetrachloride	ND		1.0	0.88	ug/L			05/12/22 09:46	1
Chlorobenzene	ND		1.0	0.50	ug/L			05/12/22 09:46	1
Chloroform	ND		1.0	0.60	ug/L			05/12/22 09:46	1
Chloromethane	ND		1.0	0.90	ug/L			05/12/22 09:46	1
cis-1,3-Dichloropropene	ND		1.0	0.59	ug/L			05/12/22 09:46	1
Ethylbenzene	ND		1.0	0.51	ug/L			05/12/22 09:46	1
Methylene Chloride	ND		1.0	0.89	ug/L			05/12/22 09:46	1
Tetrachloroethene	ND		1.0	0.47	ug/L			05/12/22 09:46	1
Toluene	ND		1.0	0.46	ug/L			05/12/22 09:46	1
trans-1,2-Dichloroethene	ND		1.0	0.67	ug/L			05/12/22 09:46	1
trans-1,3-Dichloropropene	ND		1.0	0.58	ug/L			05/12/22 09:46	1
Trichloroethene	ND		1.0	0.69	ug/L			05/12/22 09:46	1
Vinyl chloride	ND		1.0	0.40	ug/L			05/12/22 09:46	1
Dibromochloromethane	ND		1.0	0.84	ug/L			05/12/22 09:46	1
Bromodichloromethane	ND		1.0	0.64	ug/L			05/12/22 09:46	1
Chloroethane	ND		1.0	0.90	ug/L			05/12/22 09:46	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	127		28 - 163		05/12/22 09:46	1
4-Bromofluorobenzene (Surr)	105		41 - 122		05/12/22 09:46	1
Toluene-d8 (Surr)	88		53 - 125		05/12/22 09:46	1
Dibromofluoromethane (Surr)	106		59 - 168		05/12/22 09:46	1

Lab Sample ID: LCS 180-398499/4
Matrix: Water
Analysis Batch: 398499

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,2,2-Tetrachloroethane	10.0	17.6	*+	ug/L		176	60 - 140
1,1,2-Trichloroethane	10.0	13.1	*+	ug/L		131	70 - 130
1,1-Dichloroethane	10.0	9.06		ug/L		91	70 - 130

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 180-398499/4
Matrix: Water
Analysis Batch: 398499

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	10.0	8.61		ug/L		86	50 - 150
1,2-Dichloroethane	10.0	12.8		ug/L		128	70 - 130
1,2-Dichloropropane	10.0	10.3		ug/L		103	35 - 165
1,2-Dichlorobenzene	10.0	10.4		ug/L		104	65 - 135
1,3-Dichlorobenzene	10.0	9.64		ug/L		96	70 - 130
1,4-Dichlorobenzene	10.0	9.82		ug/L		98	65 - 135
2-Chloroethyl vinyl ether	20.0	32.7		ug/L		164	10 - 170
Acrolein	30.0	29.5		ug/L		98	60 - 140
Acrylonitrile	100	305	*+	ug/L		305	60 - 140
Benzene	10.0	9.29		ug/L		93	65 - 135
Bromoform	10.0	15.5	*+	ug/L		155	70 - 130
Bromomethane	10.0	5.87		ug/L		59	15 - 170
Carbon tetrachloride	10.0	8.59		ug/L		86	70 - 130
Chlorobenzene	10.0	9.71		ug/L		97	65 - 135
Chloroform	10.0	9.92		ug/L		99	70 - 135
Chloromethane	10.0	9.90		ug/L		99	10 - 170
cis-1,3-Dichloropropene	10.0	14.0		ug/L		140	25 - 170
Ethylbenzene	10.0	9.36		ug/L		94	60 - 140
Methylene Chloride	10.0	8.95		ug/L		90	60 - 140
Tetrachloroethene	10.0	9.49		ug/L		95	70 - 130
Toluene	10.0	8.41		ug/L		84	70 - 130
trans-1,2-Dichloroethene	10.0	8.79		ug/L		88	70 - 130
trans-1,3-Dichloropropene	10.0	12.5		ug/L		125	50 - 150
Trichloroethene	10.0	10.1		ug/L		101	65 - 135
Vinyl chloride	10.0	7.57		ug/L		76	10 - 170
Dibromochloromethane	10.0	11.5		ug/L		115	70 - 135
Bromodichloromethane	10.0	10.4		ug/L		104	65 - 135
Chloroethane	10.0	9.70		ug/L		97	40 - 160

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	111		28 - 163
4-Bromofluorobenzene (Surr)	99		41 - 122
Toluene-d8 (Surr)	79		53 - 125
Dibromofluoromethane (Surr)	94		59 - 168

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 180-399113/1-A
Matrix: Water
Analysis Batch: 399580

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 399113

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	ND		0.19	0.065	ug/L		05/17/22 14:55	05/21/22 15:10	1
Acenaphthene	ND		0.19	0.065	ug/L		05/17/22 14:55	05/21/22 15:10	1
Anthracene	ND		0.19	0.049	ug/L		05/17/22 14:55	05/21/22 15:10	1
Benzidine	ND		20	9.1	ug/L		05/17/22 14:55	05/21/22 15:10	1
Benzo[a]anthracene	ND		0.19	0.075	ug/L		05/17/22 14:55	05/21/22 15:10	1
Benzo[b]fluoranthene	ND		0.19	0.097	ug/L		05/17/22 14:55	05/21/22 15:10	1
Benzo[k]fluoranthene	ND		0.19	0.088	ug/L		05/17/22 14:55	05/21/22 15:10	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 180-399113/1-A
Matrix: Water
Analysis Batch: 399580

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 399113

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzo[g,h,i]perylene	ND		0.19	0.069	ug/L		05/17/22 14:55	05/21/22 15:10	1
Benzo[a]pyrene	ND		0.19	0.053	ug/L		05/17/22 14:55	05/21/22 15:10	1
Bis(2-chloroethyl)ether	ND		0.19	0.040	ug/L		05/17/22 14:55	05/21/22 15:10	1
Bis(2-ethylhexyl) phthalate	ND		10	6.2	ug/L		05/17/22 14:55	05/21/22 15:10	1
4-Bromophenyl phenyl ether	ND		1.0	0.32	ug/L		05/17/22 14:55	05/21/22 15:10	1
Butyl benzyl phthalate	ND		1.0	0.46	ug/L		05/17/22 14:55	05/21/22 15:10	1
4-Chloro-3-methylphenol	ND		1.0	0.28	ug/L		05/17/22 14:55	05/21/22 15:10	1
2-Chloronaphthalene	ND		0.19	0.059	ug/L		05/17/22 14:55	05/21/22 15:10	1
2-Chlorophenol	ND		1.0	0.13	ug/L		05/17/22 14:55	05/21/22 15:10	1
Chrysene	ND		0.19	0.081	ug/L		05/17/22 14:55	05/21/22 15:10	1
Dibenzo(a,h)-anthracene	ND		0.19	0.072	ug/L		05/17/22 14:55	05/21/22 15:10	1
Di-n-butyl phthalate	ND		1.0	0.74	ug/L		05/17/22 14:55	05/21/22 15:10	1
3,3'-Dichlorobenzidine	ND		1.0	0.58	ug/L		05/17/22 14:55	05/21/22 15:10	1
2,4-Dichlorophenol	ND		0.19	0.051	ug/L		05/17/22 14:55	05/21/22 15:10	1
Diethyl phthalate	ND		1.0	0.57	ug/L		05/17/22 14:55	05/21/22 15:10	1
2,4-Dimethylphenol	ND		1.0	0.17	ug/L		05/17/22 14:55	05/21/22 15:10	1
Dimethyl phthalate	ND		1.0	0.20	ug/L		05/17/22 14:55	05/21/22 15:10	1
4,6-Dinitro-2-methylphenol	ND		5.0	1.5	ug/L		05/17/22 14:55	05/21/22 15:10	1
2,4-Dinitrophenol	ND		10	1.5	ug/L		05/17/22 14:55	05/21/22 15:10	1
2,4-Dinitrotoluene	ND		1.0	0.35	ug/L		05/17/22 14:55	05/21/22 15:10	1
2,6-Dinitrotoluene	ND		1.0	0.17	ug/L		05/17/22 14:55	05/21/22 15:10	1
Di-n-octyl phthalate	ND		1.0	0.69	ug/L		05/17/22 14:55	05/21/22 15:10	1
Fluoranthene	ND		0.19	0.060	ug/L		05/17/22 14:55	05/21/22 15:10	1
Fluorene	ND		0.19	0.069	ug/L		05/17/22 14:55	05/21/22 15:10	1
Hexachlorobenzene	ND		0.19	0.056	ug/L		05/17/22 14:55	05/21/22 15:10	1
Hexachlorobutadiene	ND		0.19	0.069	ug/L		05/17/22 14:55	05/21/22 15:10	1
Hexachlorocyclopentadiene	ND		1.0	0.50	ug/L		05/17/22 14:55	05/21/22 15:10	1
Hexachloroethane	ND		1.0	0.13	ug/L		05/17/22 14:55	05/21/22 15:10	1
Indeno[1,2,3-cd]pyrene	ND		0.19	0.085	ug/L		05/17/22 14:55	05/21/22 15:10	1
Isophorone	ND		1.0	0.19	ug/L		05/17/22 14:55	05/21/22 15:10	1
Naphthalene	ND		0.19	0.059	ug/L		05/17/22 14:55	05/21/22 15:10	1
Nitrobenzene	ND		2.0	0.50	ug/L		05/17/22 14:55	05/21/22 15:10	1
2-Nitrophenol	ND		1.0	0.19	ug/L		05/17/22 14:55	05/21/22 15:10	1
4-Nitrophenol	ND		5.0	0.94	ug/L		05/17/22 14:55	05/21/22 15:10	1
N-Nitrosodimethylamine	ND		1.0	0.067	ug/L		05/17/22 14:55	05/21/22 15:10	1
N-Nitrosodiphenylamine	ND		1.0	0.12	ug/L		05/17/22 14:55	05/21/22 15:10	1
N-Nitrosodi-n-propylamine	ND		0.19	0.071	ug/L		05/17/22 14:55	05/21/22 15:10	1
2,2'-oxybis[1-chloropropane]	ND		0.19	0.058	ug/L		05/17/22 14:55	05/21/22 15:10	1
Pentachlorophenol	ND		5.0	0.85	ug/L		05/17/22 14:55	05/21/22 15:10	1
Phenanthrene	ND		0.19	0.055	ug/L		05/17/22 14:55	05/21/22 15:10	1
Phenol	ND		1.0	0.49	ug/L		05/17/22 14:55	05/21/22 15:10	1
Pyrene	ND		0.19	0.054	ug/L		05/17/22 14:55	05/21/22 15:10	1
1,2,4-Trichlorobenzene	ND		1.0	0.13	ug/L		05/17/22 14:55	05/21/22 15:10	1
2,4,6-Trichlorophenol	ND		1.0	0.22	ug/L		05/17/22 14:55	05/21/22 15:10	1
Bis(2-chloroethoxy)methane	ND		1.0	0.15	ug/L		05/17/22 14:55	05/21/22 15:10	1
4-Chlorophenyl phenyl ether	ND		1.0	0.22	ug/L		05/17/22 14:55	05/21/22 15:10	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.0	0.20	ug/L		05/17/22 14:55	05/21/22 15:10	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 180-399113/1-A
Matrix: Water
Analysis Batch: 399580

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 399113

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
2-Fluorobiphenyl	90		47 - 107	05/17/22 14:55	05/21/22 15:10	1
2-Fluorophenol	98		35 - 109	05/17/22 14:55	05/21/22 15:10	1
2,4,6-Tribromophenol	69		32 - 127	05/17/22 14:55	05/21/22 15:10	1
Nitrobenzene-d5	95		47 - 110	05/17/22 14:55	05/21/22 15:10	1
Phenol-d5	94		37 - 110	05/17/22 14:55	05/21/22 15:10	1
Terphenyl-d14	96		32 - 115	05/17/22 14:55	05/21/22 15:10	1

Lab Sample ID: LCS 180-399113/2-A
Matrix: Water
Analysis Batch: 399580

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 399113

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acenaphthene	10.0	7.45		ug/L		75	47 - 145
Anthracene	10.0	7.54		ug/L		75	27 - 133
Benzidine	10.0	ND		ug/L		22	5 - 100
Benzo[a]anthracene	10.0	7.42		ug/L		74	33 - 143
Benzo[b]fluoranthene	10.0	6.16		ug/L		62	24 - 150
Benzo[k]fluoranthene	10.0	7.50		ug/L		75	11 - 150
Benzo[g,h,i]perylene	10.0	7.90		ug/L		79	10 - 150
Benzo[a]pyrene	10.0	7.60		ug/L		76	17 - 150
Bis(2-chloroethyl)ether	10.0	7.61		ug/L		76	12 - 150
Bis(2-ethylhexyl) phthalate	10.0	8.12	J	ug/L		81	10 - 150
4-Bromophenyl phenyl ether	10.0	7.13		ug/L		71	53 - 127
Butyl benzyl phthalate	10.0	8.17		ug/L		82	10 - 150
4-Chloro-3-methylphenol	10.0	8.40		ug/L		84	22 - 147
2-Chloronaphthalene	10.0	7.26		ug/L		73	60 - 120
2-Chlorophenol	10.0	7.75		ug/L		77	23 - 134
Chrysene	10.0	7.27		ug/L		73	17 - 150
Dibenzo(a,h)-anthracene	10.0	7.52		ug/L		75	10 - 150
Di-n-butyl phthalate	10.0	7.88		ug/L		79	10 - 120
3,3'-Dichlorobenzidine	10.0	6.31		ug/L		63	10 - 150
2,4-Dichlorophenol	10.0	7.63		ug/L		76	39 - 135
Diethyl phthalate	10.0	7.58		ug/L		76	10 - 120
2,4-Dimethylphenol	10.0	8.21		ug/L		82	32 - 120
Dimethyl phthalate	10.0	7.11		ug/L		71	10 - 120
4,6-Dinitro-2-methylphenol	20.0	12.1		ug/L		61	10 - 150
2,4-Dinitrophenol	20.0	10.5		ug/L		52	10 - 150
2,4-Dinitrotoluene	10.0	7.69		ug/L		77	39 - 139
2,6-Dinitrotoluene	10.0	7.56		ug/L		76	50 - 150
Di-n-octyl phthalate	10.0	6.83		ug/L		68	10 - 146
Fluoranthene	10.0	7.66		ug/L		77	26 - 137
Fluorene	10.0	7.41		ug/L		74	59 - 121
Hexachlorobenzene	10.0	6.74		ug/L		67	10 - 150
Hexachlorobutadiene	10.0	7.13		ug/L		71	24 - 120
Hexachlorocyclopentadiene	10.0	6.68		ug/L		67	37 - 121
Hexachloroethane	10.0	8.41		ug/L		84	40 - 120
Indeno[1,2,3-cd]pyrene	10.0	7.77		ug/L		78	10 - 150

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 180-399113/2-A
Matrix: Water
Analysis Batch: 399580

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 399113

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Isophorone	10.0	7.91		ug/L		79	21 - 150
Naphthalene	10.0	7.53		ug/L		75	21 - 133
Nitrobenzene	10.0	7.99		ug/L		80	35 - 150
2-Nitrophenol	10.0	7.87		ug/L		79	29 - 150
4-Nitrophenol	20.0	16.4		ug/L		82	10 - 132
N-Nitrosodimethylamine	10.0	7.82		ug/L		78	33 - 130
N-Nitrosodiphenylamine	10.0	7.18		ug/L		72	51 - 100
N-Nitrosodi-n-propylamine	10.0	8.24		ug/L		82	10 - 150
2,2'-oxybis[1-chloropropane]	10.0	8.43		ug/L		84	36 - 150
Pentachlorophenol	20.0	12.2		ug/L		61	14 - 150
Phenanthrene	10.0	7.20		ug/L		72	54 - 120
Phenol	10.0	7.69		ug/L		77	10 - 120
Pyrene	10.0	7.47		ug/L		75	52 - 120
1,2,4-Trichlorobenzene	10.0	7.19		ug/L		72	44 - 142
2,4,6-Trichlorophenol	10.0	7.36		ug/L		74	37 - 144
Bis(2-chloroethoxy)methane	10.0	6.55		ug/L		65	33 - 150
4-Chlorophenyl phenyl ether	10.0	7.09		ug/L		71	25 - 150
1,2-Diphenylhydrazine(as Azobenzene)	10.0	8.01		ug/L		80	43 - 105

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl	74		47 - 107
2-Fluorophenol	80		35 - 109
2,4,6-Tribromophenol	71		32 - 127
Nitrobenzene-d5	84		47 - 110
Phenol-d5	79		37 - 110
Terphenyl-d14	71		32 - 115

Lab Sample ID: 180-137972-4 MS
Matrix: Water
Analysis Batch: 399580

Client Sample ID: POTW (051022)
Prep Type: Total/NA
Prep Batch: 399113

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Acenaphthylene	ND		10.4	7.72		ug/L		74	35 - 145
Acenaphthene	ND		10.4	7.38		ug/L		71	47 - 145
Anthracene	ND		10.4	7.79		ug/L		75	27 - 133
Benzidine	ND	F1	10.4	ND	F1	ug/L		0	5 - 100
Benzo[a]anthracene	ND		10.4	7.88		ug/L		76	33 - 143
Benzo[b]fluoranthene	ND		10.4	7.11		ug/L		68	24 - 159
Benzo[k]fluoranthene	ND		10.4	7.59		ug/L		73	11 - 162
Benzo[g,h,i]perylene	ND		10.4	8.59		ug/L		82	10 - 170
Benzo[a]pyrene	ND		10.4	7.98		ug/L		77	17 - 163
Bis(2-chloroethyl)ether	ND		10.4	7.48		ug/L		72	12 - 158
Bis(2-ethylhexyl) phthalate	ND		10.4	9.76	J	ug/L		94	10 - 158
4-Bromophenyl phenyl ether	ND		10.4	7.31		ug/L		70	53 - 127
Butyl benzyl phthalate	ND		10.4	9.58		ug/L		92	10 - 152
4-Chloro-3-methylphenol	ND		10.4	7.04		ug/L		68	22 - 147
2-Chloronaphthalene	ND		10.4	7.07		ug/L		68	60 - 120
2-Chlorophenol	ND		10.4	5.99		ug/L		58	23 - 134

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 180-137972-4 MS

Matrix: Water

Analysis Batch: 399580

Client Sample ID: POTW (051022)

Prep Type: Total/NA

Prep Batch: 399113

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec Limits
	Result	Qualifier	Added	Result	Qualifier				
Chrysene	ND		10.4	7.72		ug/L		74	17 - 168
Dibenzo(a,h)-anthracene	ND		10.4	8.25		ug/L		79	10 - 170
Di-n-butyl phthalate	2.1		10.4	11.5		ug/L		90	10 - 120
3,3'-Dichlorobenzidine	ND		10.4	6.06		ug/L		58	10 - 170
2,4-Dichlorophenol	ND		10.4	5.67		ug/L		54	39 - 135
Diethyl phthalate	ND		10.4	6.61		ug/L		63	10 - 120
2,4-Dimethylphenol	ND		10.4	7.10		ug/L		68	32 - 120
Dimethyl phthalate	ND		10.4	6.06		ug/L		58	10 - 120
4,6-Dinitro-2-methylphenol	ND		20.8	13.6		ug/L		65	10 - 170
2,4-Dinitrophenol	ND		20.8	14.2		ug/L		68	10 - 170
2,4-Dinitrotoluene	ND		10.4	8.03		ug/L		77	39 - 139
2,6-Dinitrotoluene	ND		10.4	7.92		ug/L		76	50 - 158
Di-n-octyl phthalate	ND		10.4	8.18		ug/L		79	10 - 146
Fluoranthene	ND		10.4	8.14		ug/L		78	26 - 137
Fluorene	ND		10.4	7.36		ug/L		71	59 - 121
Hexachlorobenzene	ND		10.4	6.95		ug/L		67	10 - 152
Hexachlorobutadiene	ND		10.4	6.25		ug/L		60	24 - 120
Hexachlorocyclopentadiene	ND		10.4	5.33		ug/L		51	41 - 106
Hexachloroethane	ND		10.4	7.58		ug/L		73	40 - 120
Indeno[1,2,3-cd]pyrene	ND		10.4	8.28		ug/L		80	10 - 170
Isophorone	ND		10.4	7.53		ug/L		72	21 - 170
Naphthalene	ND		10.4	6.77		ug/L		65	21 - 133
Nitrobenzene	ND		10.4	7.54		ug/L		72	35 - 170
2-Nitrophenol	ND		10.4	5.98		ug/L		57	29 - 170
4-Nitrophenol	ND		20.8	13.2		ug/L		63	10 - 132
N-Nitrosodimethylamine	ND		10.4	7.21		ug/L		69	48 - 109
N-Nitrosodiphenylamine	ND		10.4	7.29		ug/L		70	56 - 100
N-Nitrosodi-n-propylamine	ND		10.4	7.85		ug/L		75	10 - 170
2,2'-oxybis[1-chloropropane]	ND		10.4	8.05		ug/L		77	36 - 166
Pentachlorophenol	ND		20.8	8.94		ug/L		43	17 - 170
Phenanthrene	ND		10.4	7.63		ug/L		73	54 - 120
Phenol	ND		10.4	6.06		ug/L		58	10 - 120
Pyrene	ND		10.4	7.88		ug/L		76	52 - 120
1,2,4-Trichlorobenzene	ND		10.4	6.48		ug/L		62	44 - 142
2,4,6-Trichlorophenol	ND		10.4	5.63		ug/L		54	37 - 144
Bis(2-chloroethoxy)methane	ND		10.4	6.31		ug/L		61	33 - 170
4-Chlorophenyl phenyl ether	ND		10.4	7.15		ug/L		69	25 - 158
1,2-Diphenylhydrazine(as Azobenzene)	ND		10.4	8.49		ug/L		82	46 - 103

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl	66		47 - 107
2-Fluorophenol	59		35 - 109
2,4,6-Tribromophenol	50		32 - 127
Nitrobenzene-d5	74		47 - 110
Phenol-d5	61		37 - 110
Terphenyl-d14	73		32 - 115

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Method: EPA 200.7 Rev 4 - Metals (ICP)

Lab Sample ID: MB 180-399223/1-A
Matrix: Water
Analysis Batch: 399442

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 399223

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		10	5.7	ug/L		05/18/22 13:03	05/19/22 22:56	1
Cadmium	ND		5.0	0.33	ug/L		05/18/22 13:03	05/19/22 22:56	1
Chromium	ND		5.0	2.6	ug/L		05/18/22 13:03	05/19/22 22:56	1
Copper	ND		25	3.9	ug/L		05/18/22 13:03	05/19/22 22:56	1
Lead	ND		10	2.3	ug/L		05/18/22 13:03	05/19/22 22:56	1
Nickel	ND		40	2.1	ug/L		05/18/22 13:03	05/19/22 22:56	1
Silver	ND		5.0	0.87	ug/L		05/18/22 13:03	05/19/22 22:56	1
Zinc	ND		20	3.3	ug/L		05/18/22 13:03	05/19/22 22:56	1

Lab Sample ID: LCS 180-399223/2-A
Matrix: Water
Analysis Batch: 399442

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 399223

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cadmium	500	552		ug/L		110	85 - 115
Chromium	500	531		ug/L		106	85 - 115
Copper	500	518		ug/L		104	85 - 115
Lead	500	542		ug/L		108	85 - 115
Nickel	500	548		ug/L		110	85 - 115
Silver	250	272		ug/L		109	85 - 115
Zinc	250	273		ug/L		109	85 - 115

Method: EPA 245.1 Rev. - Mercury (CVAA)

Lab Sample ID: MB 180-400485/1-A
Matrix: Water
Analysis Batch: 400599

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 400485

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.20	0.13	ug/L		06/01/22 07:25	06/01/22 18:12	1

Lab Sample ID: LCS 180-400485/2-A
Matrix: Water
Analysis Batch: 400599

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 400485

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits

Method: SM 4500CN E - Total Cyanide

Lab Sample ID: MB 180-398646/4-A
Matrix: Water
Analysis Batch: 399126

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 398646

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Cyanide, Total	ND		0.010	0.0080	mg/L		05/17/22 08:00	05/17/22 13:22	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Cytex Havre de Grace MD

Job ID: 180-137972-1

Method: SM 4500CN E - Total Cyanide (Continued)

Lab Sample ID: HLCS 180-398646/2-A
Matrix: Water
Analysis Batch: 399126

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 398646

Analyte	Spike Added	HLCS Result	HLCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.250	0.251		mg/L		100	90 - 110

Lab Sample ID: LCS 180-398646/3-A
Matrix: Water
Analysis Batch: 399126

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 398646

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.200	0.198		mg/L		99	90 - 110

Lab Sample ID: LLCS 180-398646/1-A
Matrix: Water
Analysis Batch: 399126

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 398646

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.0500	0.0509		mg/L		102	90 - 110



QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

GC/MS VOA

Analysis Batch: 398499

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-137972-1	EW-1 (051022)	Total/NA	Water	EPA 624.1	
180-137972-2	MW-10D (051022)	Total/NA	Water	EPA 624.1	
180-137972-3	EFFLUENT (051022)	Total/NA	Water	EPA 624.1	
180-137972-4	POTW (051022)	Total/NA	Water	EPA 624.1	
180-137972-5	TRIP BLANK	Total/NA	Water	EPA 624.1	
MB 180-398499/6	Method Blank	Total/NA	Water	EPA 624.1	
LCS 180-398499/4	Lab Control Sample	Total/NA	Water	EPA 624.1	

GC/MS Semi VOA

Prep Batch: 399113

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-137972-4	POTW (051022)	Total/NA	Water	625	
MB 180-399113/1-A	Method Blank	Total/NA	Water	625	
LCS 180-399113/2-A	Lab Control Sample	Total/NA	Water	625	
180-137972-4 MS	POTW (051022)	Total/NA	Water	625	

Analysis Batch: 399580

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-137972-4	POTW (051022)	Total/NA	Water	EPA 625.1	399113
MB 180-399113/1-A	Method Blank	Total/NA	Water	EPA 625.1	399113
LCS 180-399113/2-A	Lab Control Sample	Total/NA	Water	EPA 625.1	399113
180-137972-4 MS	POTW (051022)	Total/NA	Water	EPA 625.1	399113

Metals

Prep Batch: 399223

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-137972-4	POTW (051022)	Total Recoverable	Water	200.7	
MB 180-399223/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 180-399223/2-A	Lab Control Sample	Total Recoverable	Water	200.7	

Analysis Batch: 399442

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-137972-4	POTW (051022)	Total Recoverable	Water	EPA 200.7 Rev 4	399223
MB 180-399223/1-A	Method Blank	Total Recoverable	Water	EPA 200.7 Rev 4	399223
LCS 180-399223/2-A	Lab Control Sample	Total Recoverable	Water	EPA 200.7 Rev 4	399223

Prep Batch: 400485

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-137972-4	POTW (051022)	Total/NA	Water	245.1	
MB 180-400485/1-A	Method Blank	Total/NA	Water	245.1	
LCS 180-400485/2-A	Lab Control Sample	Total/NA	Water	245.1	

Analysis Batch: 400599

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-137972-4	POTW (051022)	Total/NA	Water	EPA 245.1 Rev.	400485
MB 180-400485/1-A	Method Blank	Total/NA	Water	EPA 245.1 Rev.	400485
LCS 180-400485/2-A	Lab Control Sample	Total/NA	Water	EPA 245.1 Rev.	400485

Eurofins Pittsburgh

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-137972-1

General Chemistry

Prep Batch: 398646

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-137972-4	POTW (051022)	Total/NA	Water	SM 4500 CN C	
MB 180-398646/4-A	Method Blank	Total/NA	Water	SM 4500 CN C	
HLCS 180-398646/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN C	
LCS 180-398646/3-A	Lab Control Sample	Total/NA	Water	SM 4500 CN C	
LLCS 180-398646/1-A	Lab Control Sample	Total/NA	Water	SM 4500 CN C	

Analysis Batch: 399126

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-137972-4	POTW (051022)	Total/NA	Water	SM 4500CN E	398646
MB 180-398646/4-A	Method Blank	Total/NA	Water	SM 4500CN E	398646
HLCS 180-398646/2-A	Lab Control Sample	Total/NA	Water	SM 4500CN E	398646
LCS 180-398646/3-A	Lab Control Sample	Total/NA	Water	SM 4500CN E	398646
LLCS 180-398646/1-A	Lab Control Sample	Total/NA	Water	SM 4500CN E	398646

Eurofins Pittsburgh

301, Alpha Drive RIDC Park
Pittsburgh, PA 15238
Phone: 412-963-7058 Fax: 412-963-2468

Chain of Custody Record

Baltimore #201



Environment Testing America

Client Information		Sampler: Andy Feild		Lab PM: Colussy, Jill L		Carrier Tracking No(s):		COC No: 180-77576-14808.1									
Client Contact: Ms. Shwetha Sridharan		Phone: 443 354 0186		E-Mail: Jill.Colussy@Eurofinset.com		State of Origin: Maryland		Page: Page 1 of 1									
Company: ARCADIS U.S., Inc.		PWSID:		Analysis Requested				Job #:									
Address: 7550 Teague Road Suite 210		Due Date Requested: Standard		Field Filtered Sample (Yes or No)		VOC 624.1 - PREC VOC 624.25mL - UP Semivolatiles 625.1-LL.PREC Mercury 245.1 Metals 200.7 Cyanide 4500CN.E		Total Number of Containers		Preservation Codes:							
City: Hanover		TAT Requested (days): Normal								A - HCL		M - Hexane		B - NaOH		N - None	
State, Zip: MD, 21076		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No								C - Zn Acetate		O - AsNaO2		D - Nitric Acid		P - Na2O4S	
Phone: 302-897-8993(Tel)		PO #: 30005455.0002								E - NaHSO4		Q - Na2SO3		F - MeOH		R - Na2S2O3	
Email: shwetha.sridharan@arcadis.com		WO #:		G - Amchlor		S - H2SO4		H - Ascorbic Acid		T - TSP Dodecahydrate							
Project Name: Cytec Havre de Grace MD		Project #: 18017987		I - Ice		U - Acetone		J - DI Water		V - MCAA							
Site: Pennsylvania		SSOW#:		K - EDTA		W - pH 4-5		L - EDA		Z - other (specify)							
Other:																	
Sample Identification		Sample Date		Sample Time		Sample Type (C=comp, G=grab)		Matrix (W=water, S=solid, O=waste/sol, BT=Tissue, A=Air)		Preservation Code:							
EW-1 (051022)		5/10/22		1030		G		W		NN							
MW-10D (051022)				1035													
Effluent (051022)				1040													
POTW (051022)		5/10/22		1100		G		W		NA							
Trip Blank		-		-		-		-		--							
Possible Hazard Identification		<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)													
Deliverable Requested: I, II, III, IV, Other (specify)				<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		Special Instructions/QC Requirements:											
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:											
Relinquished by: <i>[Signature]</i>		Date/Time: 5/10/22 1315		Company: ANA		Received by: <i>[Signature]</i>		Date/Time: 5/10/22 1315		Company: EA-Ball T							
Relinquished by: <i>[Signature]</i>		Date/Time: 5/10/22 1700		Company: EA-Ball T		Received by: <i>[Signature]</i>		Date/Time: 5-11-22		Company: <i>[Signature]</i>							
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time: 900		Company:							
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:				Cooler Temperature(s) °C and Other Remarks:											



Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 180-137972-1

Login Number: 137972

List Number: 1

Creator: Watson, Debbie

List Source: Eurofins Pittsburgh

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

Eurofins Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-141418-1

Client Project/Site: Cytex Havre de Grace MD

For:
ARCADIS U.S., Inc.
7550 Teague Road
Suite 210
Hanover, Maryland 21076

Attn: Ms. Shwetha Sridharan



Authorized for release by:
8/9/2022 10:18:26 AM

Jill Colussy, Project Manager I
(412)963-2444
Jill.Colussy@et.eurofinsus.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

PA Lab ID: 02-00416



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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-141418-1

Job ID: 180-141418-1

Laboratory: Eurofins Pittsburgh

Narrative

Job Narrative 180-141418-1

Receipt

The samples were received on 7/16/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.7° C.

GC/MS VOA

Due to the concentration of target compounds detected and/or matrix, sample EW-1 (071522) (180-141418-1) and EFFLUENT (071522) (180-141418-3) were analyzed at a dilution. Elevated reporting limits (RLs) are provided.

Samples EW-1 (071522) (180-141418-1) and MW10D (071522) (180-141418-2) had surrogate 1,2-Dichloroethne-d4 recover above the control limits. Evidence of matrix interferences was not obvious. These were re-analyses to confirm results. All data was reported.

The laboratory control sample (LCS) for batch 180-405301 recovered outside control limits for 1,1,2,2-Tetrachloroethane, 1,2-Dichloroethane, Acrylonitrile and Bromoform. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

The laboratory control sample (LCS) for batch 180-405464 recovered outside control limits for Acrylonitrile and Bromoform. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

The laboratory control sample (LCS) for batch 180-405464 recovered outside control limits for Toluene. A low-level LCS (LLCS), spiked at the reporting limit (RL), was prepared with this batch. The affected target analytes recovered within acceptance limits; therefore, the LLCS demonstrates the analytical system had sufficient sensitivity to detect the compounds had they been present. Since the affected target compounds were not detected in the samples, the data have been reported and qualified.



Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-141418-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*-	LCS and/or LCSD is outside acceptance limits, low biased.
*+	LCS and/or LCSD is outside acceptance limits, high biased.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1+	Surrogate recovery exceeds control limits, high biased.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFI	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Cytec Havre de Grace MD

Job ID: 180-141418-1

Laboratory: Eurofins Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	19-033-0	06-27-22 *
California	State	2891	04-30-23
Connecticut	State	PH-0688	09-30-22
Florida	NELAP	E871008	06-30-23
Georgia	State	PA 02-00416	04-30-23
Illinois	NELAP	004375	06-30-23
Kansas	NELAP	E-10350	03-31-23
Kentucky (UST)	State	162013	04-30-23
Kentucky (WW)	State	KY98043	12-31-22
Louisiana	NELAP	04041	06-30-22 *
Louisiana (All)	NELAP	04041	06-30-23
Maine	State	PA00164	03-06-24
Minnesota	NELAP	042-999-482	12-31-22
Nevada	State	PA00164	08-31-22
New Hampshire	NELAP	2030	04-04-23
New Jersey	NELAP	PA005	06-30-23
New York	NELAP	11182	04-01-23
North Carolina (WW/SW)	State	434	12-31-22
North Dakota	State	R-227	04-30-23
Oregon	NELAP	PA-2151	02-07-23
Pennsylvania	NELAP	02-00416	04-30-23
Rhode Island	State	LAO00362	12-31-21 *
South Carolina	State	89014	06-30-22 *
Texas	NELAP	T104704528	03-31-23
USDA	US Federal Programs	P330-16-00211	06-26-22 *
Utah	NELAP	PA001462019-8	05-31-23
Virginia	NELAP	10043	09-14-22
West Virginia DEP	State	142	01-31-23
Wisconsin	State	998027800	08-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.



Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-141418-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-141418-1	EW-1 (071522)	Water	07/15/22 09:30	07/16/22 09:30
180-141418-2	MW10D (071522)	Water	07/15/22 09:40	07/16/22 09:30
180-141418-3	EFFLUENT (071522)	Water	07/15/22 09:45	07/16/22 09:30
180-141418-4	TRIP BLANK	Water	07/15/22 00:01	07/16/22 09:30

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-141418-1

Method	Method Description	Protocol	Laboratory
EPA 624.1	Volatile Organic Compounds (GC/MS)	40CFR136A	EETNE PIT

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

Laboratory References:

EETNE PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058



Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Cytec Havre de Grace MD

Job ID: 180-141418-1

Client Sample ID: EW-1 (071522)

Lab Sample ID: 180-141418-1

Date Collected: 07/15/22 09:30

Matrix: Water

Date Received: 07/16/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624.1		5	5 mL	5 mL	405301	07/16/22 15:35	SW1	EETNE PIT
Instrument ID: CHHP6										
Total/NA	Analysis	EPA 624.1	RADL	100	5 mL	5 mL	405464	07/19/22 23:35	PJJ	EETNE PI
Instrument ID: CHHP6										

Client Sample ID: MW10D (071522)

Lab Sample ID: 180-141418-2

Date Collected: 07/15/22 09:40

Matrix: Water

Date Received: 07/16/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624.1		1	5 mL	5 mL	405301	07/16/22 16:02	SW1	EETNE PIT
Instrument ID: CHHP6										
Total/NA	Analysis	EPA 624.1	RA	1	5 mL	5 mL	405464	07/19/22 22:42	PJJ	EETNE PI
Instrument ID: CHHP6										

Client Sample ID: EFFLUENT (071522)

Lab Sample ID: 180-141418-3

Date Collected: 07/15/22 09:45

Matrix: Water

Date Received: 07/16/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624.1		5	5 mL	5 mL	405301	07/16/22 16:28	SW1	EETNE PIT
Instrument ID: CHHP6										
Total/NA	Analysis	EPA 624.1	RA	5	5 mL	5 mL	405464	07/19/22 23:08	PJJ	EETNE PI
Instrument ID: CHHP6										

Client Sample ID: TRIP BLANK

Lab Sample ID: 180-141418-4

Date Collected: 07/15/22 00:01

Matrix: Water

Date Received: 07/16/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624.1		1	5 mL	5 mL	405301	07/16/22 16:55	SW1	EETNE PIT
Instrument ID: CHHP6										

Laboratory References:

EETNE PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Analyst References:

Lab: EETNE PIT

Batch Type: Analysis

PJJ = Patrick Journet

SW1 = Sunan Wang-un

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-141418-1

Client Sample ID: EW-1 (071522)

Lab Sample ID: 180-141418-1

Date Collected: 07/15/22 09:30

Matrix: Water

Date Received: 07/16/22 09:30

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	3.0	ug/L			07/16/22 15:35	5
1,1,2,2-Tetrachloroethane	ND	*+	5.0	3.0	ug/L			07/16/22 15:35	5
1,1,2-Trichloroethane	ND		5.0	2.3	ug/L			07/16/22 15:35	5
1,1-Dichloroethane	ND		5.0	1.5	ug/L			07/16/22 15:35	5
1,1-Dichloroethene	ND		5.0	2.8	ug/L			07/16/22 15:35	5
1,2-Dichloropropane	ND		5.0	3.3	ug/L			07/16/22 15:35	5
1,2-Dichlorobenzene	ND		5.0	1.8	ug/L			07/16/22 15:35	5
1,3-Dichlorobenzene	ND		5.0	2.5	ug/L			07/16/22 15:35	5
1,4-Dichlorobenzene	ND		5.0	2.7	ug/L			07/16/22 15:35	5
2-Chloroethyl vinyl ether	ND		10	8.6	ug/L			07/16/22 15:35	5
Acrolein	ND		100	80	ug/L			07/16/22 15:35	5
Acrylonitrile	ND	*+	100	39	ug/L			07/16/22 15:35	5
Benzene	ND		5.0	3.0	ug/L			07/16/22 15:35	5
Bromoform	ND	*+	5.0	4.9	ug/L			07/16/22 15:35	5
Bromomethane	ND		5.0	4.4	ug/L			07/16/22 15:35	5
Carbon tetrachloride	ND		5.0	4.4	ug/L			07/16/22 15:35	5
Chlorobenzene	ND		5.0	2.5	ug/L			07/16/22 15:35	5
Chloroform	ND		5.0	3.0	ug/L			07/16/22 15:35	5
Chloromethane	ND		5.0	4.5	ug/L			07/16/22 15:35	5
cis-1,3-Dichloropropene	ND		5.0	3.0	ug/L			07/16/22 15:35	5
Ethylbenzene	ND		5.0	2.5	ug/L			07/16/22 15:35	5
Methylene Chloride	ND		5.0	4.4	ug/L			07/16/22 15:35	5
Tetrachloroethene	ND		5.0	2.3	ug/L			07/16/22 15:35	5
Toluene	ND	*-	5.0	2.3	ug/L			07/16/22 15:35	5
trans-1,2-Dichloroethene	ND		5.0	3.4	ug/L			07/16/22 15:35	5
trans-1,3-Dichloropropene	ND		5.0	2.9	ug/L			07/16/22 15:35	5
Trichloroethene	8.0		5.0	3.4	ug/L			07/16/22 15:35	5
Vinyl chloride	ND		5.0	2.0	ug/L			07/16/22 15:35	5
Dibromochloromethane	ND		5.0	4.2	ug/L			07/16/22 15:35	5
Bromodichloromethane	ND		5.0	3.2	ug/L			07/16/22 15:35	5
Chloroethane	ND		5.0	4.5	ug/L			07/16/22 15:35	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	128		28 - 163		07/16/22 15:35	5
4-Bromofluorobenzene (Surr)	91		41 - 122		07/16/22 15:35	5
Toluene-d8 (Surr)	60		53 - 125		07/16/22 15:35	5
Dibromofluoromethane (Surr)	98		59 - 168		07/16/22 15:35	5

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS) - RADL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane	790		100	57	ug/L			07/19/22 23:35	100

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	165	S1+	28 - 163		07/19/22 23:35	100
4-Bromofluorobenzene (Surr)	118		41 - 122		07/19/22 23:35	100
Toluene-d8 (Surr)	70		53 - 125		07/19/22 23:35	100
Dibromofluoromethane (Surr)	135		59 - 168		07/19/22 23:35	100

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-141418-1

Client Sample ID: MW10D (071522)

Lab Sample ID: 180-141418-2

Date Collected: 07/15/22 09:40

Matrix: Water

Date Received: 07/16/22 09:30

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.60	ug/L			07/16/22 16:02	1
1,1,2,2-Tetrachloroethane	ND	*+	1.0	0.60	ug/L			07/16/22 16:02	1
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			07/16/22 16:02	1
1,1-Dichloroethane	ND		1.0	0.31	ug/L			07/16/22 16:02	1
1,1-Dichloroethene	ND		1.0	0.55	ug/L			07/16/22 16:02	1
1,2-Dichloropropane	ND		1.0	0.66	ug/L			07/16/22 16:02	1
1,2-Dichlorobenzene	ND		1.0	0.36	ug/L			07/16/22 16:02	1
1,3-Dichlorobenzene	ND		1.0	0.50	ug/L			07/16/22 16:02	1
1,4-Dichlorobenzene	ND		1.0	0.54	ug/L			07/16/22 16:02	1
2-Chloroethyl vinyl ether	ND		2.0	1.7	ug/L			07/16/22 16:02	1
Acrolein	ND		20	16	ug/L			07/16/22 16:02	1
Acrylonitrile	ND	*+	20	7.8	ug/L			07/16/22 16:02	1
Benzene	ND		1.0	0.60	ug/L			07/16/22 16:02	1
Bromoform	ND	*+	1.0	0.98	ug/L			07/16/22 16:02	1
Bromomethane	ND		1.0	0.89	ug/L			07/16/22 16:02	1
Carbon tetrachloride	ND		1.0	0.88	ug/L			07/16/22 16:02	1
Chlorobenzene	ND		1.0	0.50	ug/L			07/16/22 16:02	1
Chloroform	ND		1.0	0.60	ug/L			07/16/22 16:02	1
Chloromethane	ND		1.0	0.90	ug/L			07/16/22 16:02	1
cis-1,3-Dichloropropene	ND		1.0	0.59	ug/L			07/16/22 16:02	1
Ethylbenzene	ND		1.0	0.51	ug/L			07/16/22 16:02	1
Methylene Chloride	ND		1.0	0.89	ug/L			07/16/22 16:02	1
Tetrachloroethene	ND		1.0	0.47	ug/L			07/16/22 16:02	1
Toluene	ND	*-	1.0	0.46	ug/L			07/16/22 16:02	1
trans-1,2-Dichloroethene	ND		1.0	0.67	ug/L			07/16/22 16:02	1
trans-1,3-Dichloropropene	ND		1.0	0.58	ug/L			07/16/22 16:02	1
Trichloroethene	ND		1.0	0.69	ug/L			07/16/22 16:02	1
Vinyl chloride	ND		1.0	0.40	ug/L			07/16/22 16:02	1
Dibromochloromethane	ND		1.0	0.84	ug/L			07/16/22 16:02	1
Bromodichloromethane	ND		1.0	0.64	ug/L			07/16/22 16:02	1
Chloroethane	ND		1.0	0.90	ug/L			07/16/22 16:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		28 - 163		07/16/22 16:02	1
4-Bromofluorobenzene (Surr)	83		41 - 122		07/16/22 16:02	1
Toluene-d8 (Surr)	54		53 - 125		07/16/22 16:02	1
Dibromofluoromethane (Surr)	90		59 - 168		07/16/22 16:02	1

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS) - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane	0.73	J	1.0	0.57	ug/L			07/19/22 22:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	167	S1+	28 - 163		07/19/22 22:42	1
4-Bromofluorobenzene (Surr)	110		41 - 122		07/19/22 22:42	1
Toluene-d8 (Surr)	69		53 - 125		07/19/22 22:42	1
Dibromofluoromethane (Surr)	143		59 - 168		07/19/22 22:42	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-141418-1

Client Sample ID: EFFLUENT (071522)

Lab Sample ID: 180-141418-3

Date Collected: 07/15/22 09:45

Matrix: Water

Date Received: 07/16/22 09:30

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	3.0	ug/L			07/16/22 16:28	5
1,1,2,2-Tetrachloroethane	ND	*+	5.0	3.0	ug/L			07/16/22 16:28	5
1,1,2-Trichloroethane	ND		5.0	2.3	ug/L			07/16/22 16:28	5
1,1-Dichloroethane	ND		5.0	1.5	ug/L			07/16/22 16:28	5
1,1-Dichloroethene	ND		5.0	2.8	ug/L			07/16/22 16:28	5
1,2-Dichloropropane	ND		5.0	3.3	ug/L			07/16/22 16:28	5
1,2-Dichlorobenzene	ND		5.0	1.8	ug/L			07/16/22 16:28	5
1,3-Dichlorobenzene	ND		5.0	2.5	ug/L			07/16/22 16:28	5
1,4-Dichlorobenzene	ND		5.0	2.7	ug/L			07/16/22 16:28	5
2-Chloroethyl vinyl ether	ND		10	8.6	ug/L			07/16/22 16:28	5
Acrolein	ND		100	80	ug/L			07/16/22 16:28	5
Acrylonitrile	ND	*+	100	39	ug/L			07/16/22 16:28	5
Benzene	ND		5.0	3.0	ug/L			07/16/22 16:28	5
Bromoform	ND	*+	5.0	4.9	ug/L			07/16/22 16:28	5
Bromomethane	ND		5.0	4.4	ug/L			07/16/22 16:28	5
Carbon tetrachloride	ND		5.0	4.4	ug/L			07/16/22 16:28	5
Chlorobenzene	ND		5.0	2.5	ug/L			07/16/22 16:28	5
Chloroform	ND		5.0	3.0	ug/L			07/16/22 16:28	5
Chloromethane	ND		5.0	4.5	ug/L			07/16/22 16:28	5
cis-1,3-Dichloropropene	ND		5.0	3.0	ug/L			07/16/22 16:28	5
Ethylbenzene	ND		5.0	2.5	ug/L			07/16/22 16:28	5
Methylene Chloride	ND		5.0	4.4	ug/L			07/16/22 16:28	5
Tetrachloroethene	ND		5.0	2.3	ug/L			07/16/22 16:28	5
Toluene	ND	*-	5.0	2.3	ug/L			07/16/22 16:28	5
trans-1,2-Dichloroethene	ND		5.0	3.4	ug/L			07/16/22 16:28	5
trans-1,3-Dichloropropene	ND		5.0	2.9	ug/L			07/16/22 16:28	5
Trichloroethene	ND		5.0	3.4	ug/L			07/16/22 16:28	5
Vinyl chloride	ND		5.0	2.0	ug/L			07/16/22 16:28	5
Dibromochloromethane	ND		5.0	4.2	ug/L			07/16/22 16:28	5
Bromodichloromethane	ND		5.0	3.2	ug/L			07/16/22 16:28	5
Chloroethane	ND		5.0	4.5	ug/L			07/16/22 16:28	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	138		28 - 163		07/16/22 16:28	5
4-Bromofluorobenzene (Surr)	101		41 - 122		07/16/22 16:28	5
Toluene-d8 (Surr)	68		53 - 125		07/16/22 16:28	5
Dibromofluoromethane (Surr)	106		59 - 168		07/16/22 16:28	5

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS) - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane	160		5.0	2.9	ug/L			07/19/22 23:08	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	134		28 - 163		07/19/22 23:08	5
4-Bromofluorobenzene (Surr)	106		41 - 122		07/19/22 23:08	5
Toluene-d8 (Surr)	66		53 - 125		07/19/22 23:08	5
Dibromofluoromethane (Surr)	112		59 - 168		07/19/22 23:08	5

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Cytec Havre de Grace MD

Job ID: 180-141418-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 180-141418-4

Date Collected: 07/15/22 00:01

Matrix: Water

Date Received: 07/16/22 09:30

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.60	ug/L			07/16/22 16:55	1
1,1,2,2-Tetrachloroethane	ND	*+	1.0	0.60	ug/L			07/16/22 16:55	1
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			07/16/22 16:55	1
1,1-Dichloroethane	ND		1.0	0.31	ug/L			07/16/22 16:55	1
1,1-Dichloroethene	ND		1.0	0.55	ug/L			07/16/22 16:55	1
1,2-Dichloroethane	ND	*+	1.0	0.57	ug/L			07/16/22 16:55	1
1,2-Dichloropropane	ND		1.0	0.66	ug/L			07/16/22 16:55	1
1,2-Dichlorobenzene	ND		1.0	0.36	ug/L			07/16/22 16:55	1
1,3-Dichlorobenzene	ND		1.0	0.50	ug/L			07/16/22 16:55	1
1,4-Dichlorobenzene	ND		1.0	0.54	ug/L			07/16/22 16:55	1
2-Chloroethyl vinyl ether	ND		2.0	1.7	ug/L			07/16/22 16:55	1
Acrolein	ND		20	16	ug/L			07/16/22 16:55	1
Acrylonitrile	ND	*+	20	7.8	ug/L			07/16/22 16:55	1
Benzene	ND		1.0	0.60	ug/L			07/16/22 16:55	1
Bromoform	ND	*+	1.0	0.98	ug/L			07/16/22 16:55	1
Bromomethane	ND		1.0	0.89	ug/L			07/16/22 16:55	1
Carbon tetrachloride	ND		1.0	0.88	ug/L			07/16/22 16:55	1
Chlorobenzene	ND		1.0	0.50	ug/L			07/16/22 16:55	1
Chloroform	ND		1.0	0.60	ug/L			07/16/22 16:55	1
Chloromethane	ND		1.0	0.90	ug/L			07/16/22 16:55	1
cis-1,3-Dichloropropene	ND		1.0	0.59	ug/L			07/16/22 16:55	1
Ethylbenzene	ND		1.0	0.51	ug/L			07/16/22 16:55	1
Methylene Chloride	ND		1.0	0.89	ug/L			07/16/22 16:55	1
Tetrachloroethene	ND		1.0	0.47	ug/L			07/16/22 16:55	1
Toluene	ND	*-	1.0	0.46	ug/L			07/16/22 16:55	1
trans-1,2-Dichloroethene	ND		1.0	0.67	ug/L			07/16/22 16:55	1
trans-1,3-Dichloropropene	ND		1.0	0.58	ug/L			07/16/22 16:55	1
Trichloroethene	ND		1.0	0.69	ug/L			07/16/22 16:55	1
Vinyl chloride	ND		1.0	0.40	ug/L			07/16/22 16:55	1
Dibromochloromethane	ND		1.0	0.84	ug/L			07/16/22 16:55	1
Bromodichloromethane	ND		1.0	0.64	ug/L			07/16/22 16:55	1
Chloroethane	ND		1.0	0.90	ug/L			07/16/22 16:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	154		28 - 163		07/16/22 16:55	1
4-Bromofluorobenzene (Surr)	113		41 - 122		07/16/22 16:55	1
Toluene-d8 (Surr)	76		53 - 125		07/16/22 16:55	1
Dibromofluoromethane (Surr)	121		59 - 168		07/16/22 16:55	1

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-141418-1

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 180-405301/7
Matrix: Water
Analysis Batch: 405301

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1,1-Trichloroethane	ND		1.0	0.60	ug/L			07/16/22 14:08	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.60	ug/L			07/16/22 14:08	1
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			07/16/22 14:08	1
1,1-Dichloroethane	ND		1.0	0.31	ug/L			07/16/22 14:08	1
1,1-Dichloroethene	ND		1.0	0.55	ug/L			07/16/22 14:08	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			07/16/22 14:08	1
1,2-Dichloropropane	ND		1.0	0.66	ug/L			07/16/22 14:08	1
1,2-Dichlorobenzene	ND		1.0	0.36	ug/L			07/16/22 14:08	1
1,3-Dichlorobenzene	ND		1.0	0.50	ug/L			07/16/22 14:08	1
1,4-Dichlorobenzene	ND		1.0	0.54	ug/L			07/16/22 14:08	1
2-Chloroethyl vinyl ether	ND		2.0	1.7	ug/L			07/16/22 14:08	1
Acrolein	ND		20	16	ug/L			07/16/22 14:08	1
Acrylonitrile	ND		20	7.8	ug/L			07/16/22 14:08	1
Benzene	ND		1.0	0.60	ug/L			07/16/22 14:08	1
Bromoform	ND		1.0	0.98	ug/L			07/16/22 14:08	1
Bromomethane	ND		1.0	0.89	ug/L			07/16/22 14:08	1
Carbon tetrachloride	ND		1.0	0.88	ug/L			07/16/22 14:08	1
Chlorobenzene	ND		1.0	0.50	ug/L			07/16/22 14:08	1
Chloroform	ND		1.0	0.60	ug/L			07/16/22 14:08	1
Chloromethane	ND		1.0	0.90	ug/L			07/16/22 14:08	1
cis-1,3-Dichloropropene	ND		1.0	0.59	ug/L			07/16/22 14:08	1
Ethylbenzene	ND		1.0	0.51	ug/L			07/16/22 14:08	1
Methylene Chloride	ND		1.0	0.89	ug/L			07/16/22 14:08	1
Tetrachloroethene	ND		1.0	0.47	ug/L			07/16/22 14:08	1
Toluene	ND		1.0	0.46	ug/L			07/16/22 14:08	1
trans-1,2-Dichloroethene	ND		1.0	0.67	ug/L			07/16/22 14:08	1
trans-1,3-Dichloropropene	ND		1.0	0.58	ug/L			07/16/22 14:08	1
Trichloroethene	ND		1.0	0.69	ug/L			07/16/22 14:08	1
Vinyl chloride	ND		1.0	0.40	ug/L			07/16/22 14:08	1
Dibromochloromethane	ND		1.0	0.84	ug/L			07/16/22 14:08	1
Bromodichloromethane	ND		1.0	0.64	ug/L			07/16/22 14:08	1
Chloroethane	ND		1.0	0.90	ug/L			07/16/22 14:08	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	149		28 - 163		07/16/22 14:08	1
4-Bromofluorobenzene (Surr)	108		41 - 122		07/16/22 14:08	1
Toluene-d8 (Surr)	65		53 - 125		07/16/22 14:08	1
Dibromofluoromethane (Surr)	117		59 - 168		07/16/22 14:08	1

Lab Sample ID: LCS 180-405301/5
Matrix: Water
Analysis Batch: 405301

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,2,2-Tetrachloroethane	10.0	17.1	+	ug/L		171	60 - 140
1,1,2-Trichloroethane	10.0	12.9		ug/L		129	70 - 130
1,1-Dichloroethane	10.0	9.43		ug/L		94	70 - 130

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-141418-1

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 180-405301/5
Matrix: Water
Analysis Batch: 405301

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	10.0	9.16		ug/L		92	50 - 150
1,2-Dichloroethane	10.0	15.1	*+	ug/L		151	70 - 130
1,2-Dichloropropane	10.0	8.75		ug/L		87	35 - 165
1,2-Dichlorobenzene	10.0	8.36		ug/L		84	65 - 135
1,3-Dichlorobenzene	10.0	8.09		ug/L		81	70 - 130
1,4-Dichlorobenzene	10.0	8.40		ug/L		84	65 - 135
2-Chloroethyl vinyl ether	20.0	22.0		ug/L		110	10 - 170
Acrolein	30.0	27.1		ug/L		90	60 - 140
Acrylonitrile	100	242	*+	ug/L		242	60 - 140
Benzene	10.0	8.76		ug/L		88	65 - 135
Bromoform	10.0	17.2	*+	ug/L		172	70 - 130
Bromomethane	10.0	9.63		ug/L		96	15 - 170
Carbon tetrachloride	10.0	11.2		ug/L		112	70 - 130
Chlorobenzene	10.0	9.37		ug/L		94	65 - 135
Chloroform	10.0	11.4		ug/L		114	70 - 135
Chloromethane	10.0	11.4		ug/L		114	10 - 170
cis-1,3-Dichloropropene	10.0	13.8		ug/L		138	25 - 170
Ethylbenzene	10.0	7.57		ug/L		76	60 - 140
Methylene Chloride	10.0	9.83		ug/L		98	60 - 140
Tetrachloroethene	10.0	7.30		ug/L		73	70 - 130
Toluene	10.0	6.97		ug/L		70	70 - 130
trans-1,2-Dichloroethene	10.0	9.38		ug/L		94	70 - 130
trans-1,3-Dichloropropene	10.0	12.9		ug/L		129	50 - 150
Trichloroethene	10.0	9.42		ug/L		94	65 - 135
Vinyl chloride	10.0	8.24		ug/L		82	10 - 170
Dibromochloromethane	10.0	11.6		ug/L		116	70 - 135
Bromodichloromethane	10.0	12.3		ug/L		123	65 - 135
Chloroethane	10.0	8.88		ug/L		89	40 - 160

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	136		28 - 163
4-Bromofluorobenzene (Surr)	105		41 - 122
Toluene-d8 (Surr)	63		53 - 125
Dibromofluoromethane (Surr)	105		59 - 168

Lab Sample ID: MB 180-405464/13
Matrix: Water
Analysis Batch: 405464

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.60	ug/L			07/19/22 13:51	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.60	ug/L			07/19/22 13:51	1
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			07/19/22 13:51	1
1,1-Dichloroethane	ND		1.0	0.31	ug/L			07/19/22 13:51	1
1,1-Dichloroethene	ND		1.0	0.55	ug/L			07/19/22 13:51	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			07/19/22 13:51	1
1,2-Dichloropropane	ND		1.0	0.66	ug/L			07/19/22 13:51	1
1,2-Dichlorobenzene	ND		1.0	0.36	ug/L			07/19/22 13:51	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-141418-1

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 180-405464/13
Matrix: Water
Analysis Batch: 405464

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		1.0	0.50	ug/L			07/19/22 13:51	1
1,4-Dichlorobenzene	ND		1.0	0.54	ug/L			07/19/22 13:51	1
2-Chloroethyl vinyl ether	ND		2.0	1.7	ug/L			07/19/22 13:51	1
Acrolein	ND		20	16	ug/L			07/19/22 13:51	1
Acrylonitrile	ND		20	7.8	ug/L			07/19/22 13:51	1
Benzene	ND		1.0	0.60	ug/L			07/19/22 13:51	1
Bromoform	ND		1.0	0.98	ug/L			07/19/22 13:51	1
Bromomethane	ND		1.0	0.89	ug/L			07/19/22 13:51	1
Carbon tetrachloride	ND		1.0	0.88	ug/L			07/19/22 13:51	1
Chlorobenzene	ND		1.0	0.50	ug/L			07/19/22 13:51	1
Chloroform	ND		1.0	0.60	ug/L			07/19/22 13:51	1
Chloromethane	ND		1.0	0.90	ug/L			07/19/22 13:51	1
cis-1,3-Dichloropropene	ND		1.0	0.59	ug/L			07/19/22 13:51	1
Ethylbenzene	ND		1.0	0.51	ug/L			07/19/22 13:51	1
Methylene Chloride	ND		1.0	0.89	ug/L			07/19/22 13:51	1
Tetrachloroethene	ND		1.0	0.47	ug/L			07/19/22 13:51	1
Toluene	ND		1.0	0.46	ug/L			07/19/22 13:51	1
trans-1,2-Dichloroethene	ND		1.0	0.67	ug/L			07/19/22 13:51	1
trans-1,3-Dichloropropene	ND		1.0	0.58	ug/L			07/19/22 13:51	1
Trichloroethene	ND		1.0	0.69	ug/L			07/19/22 13:51	1
Vinyl chloride	ND		1.0	0.40	ug/L			07/19/22 13:51	1
Dibromochloromethane	ND		1.0	0.84	ug/L			07/19/22 13:51	1
Bromodichloromethane	ND		1.0	0.64	ug/L			07/19/22 13:51	1
Chloroethane	ND		1.0	0.90	ug/L			07/19/22 13:51	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	141		28 - 163		07/19/22 13:51	1
4-Bromofluorobenzene (Surr)	108		41 - 122		07/19/22 13:51	1
Toluene-d8 (Surr)	69		53 - 125		07/19/22 13:51	1
Dibromofluoromethane (Surr)	119		59 - 168		07/19/22 13:51	1

Lab Sample ID: LCS 180-405464/11
Matrix: Water
Analysis Batch: 405464

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	10.0	11.1		ug/L		111	70 - 130
1,1,2,2-Tetrachloroethane	10.0	12.4		ug/L		124	60 - 140
1,1,2-Trichloroethane	10.0	9.83		ug/L		98	70 - 130
1,1-Dichloroethane	10.0	7.82		ug/L		78	70 - 130
1,1-Dichloroethene	10.0	8.81		ug/L		88	50 - 150
1,2-Dichloroethane	10.0	11.1		ug/L		111	70 - 130
1,2-Dichloropropane	10.0	6.95		ug/L		70	35 - 165
1,2-Dichlorobenzene	10.0	7.30		ug/L		73	65 - 135
1,3-Dichlorobenzene	10.0	7.24		ug/L		72	70 - 130
1,4-Dichlorobenzene	10.0	7.22		ug/L		72	65 - 135
2-Chloroethyl vinyl ether	20.0	19.4		ug/L		97	10 - 170
Acrolein	30.0	19.3	J	ug/L		64	60 - 140

Eurofins Pittsburgh

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Cytec Havre de Grace MD

Job ID: 180-141418-1

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 180-405464/11
Matrix: Water
Analysis Batch: 405464

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acrylonitrile	100	167	*+	ug/L		167	60 - 140
Benzene	10.0	7.56		ug/L		76	65 - 135
Bromoform	10.0	13.5	*+	ug/L		135	70 - 130
Bromomethane	10.0	8.49		ug/L		85	15 - 170
Carbon tetrachloride	10.0	10.5		ug/L		105	70 - 130
Chlorobenzene	10.0	8.34		ug/L		83	65 - 135
Chloroform	10.0	9.54		ug/L		95	70 - 135
Chloromethane	10.0	9.92		ug/L		99	10 - 170
cis-1,3-Dichloropropene	10.0	11.1		ug/L		111	25 - 170
Ethylbenzene	10.0	6.98		ug/L		70	60 - 140
Methylene Chloride	10.0	7.32		ug/L		73	60 - 140
Tetrachloroethene	10.0	7.61		ug/L		76	70 - 130
Toluene	10.0	6.22	*-	ug/L		62	70 - 130
trans-1,2-Dichloroethene	10.0	8.32		ug/L		83	70 - 130
trans-1,3-Dichloropropene	10.0	10.0		ug/L		100	50 - 150
Trichloroethene	10.0	8.98		ug/L		90	65 - 135
Vinyl chloride	10.0	7.90		ug/L		79	10 - 170
Dibromochloromethane	10.0	9.50		ug/L		95	70 - 135
Bromodichloromethane	10.0	9.42		ug/L		94	65 - 135
Chloroethane	10.0	8.59		ug/L		86	40 - 160

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	122		28 - 163
4-Bromofluorobenzene (Surr)	105		41 - 122
Toluene-d8 (Surr)	66		53 - 125
Dibromofluoromethane (Surr)	99		59 - 168

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-141418-1


GC/MS VOA

Analysis Batch: 405301

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-141418-1	EW-1 (071522)	Total/NA	Water	EPA 624.1	
180-141418-2	MW10D (071522)	Total/NA	Water	EPA 624.1	
180-141418-3	EFFLUENT (071522)	Total/NA	Water	EPA 624.1	
180-141418-4	TRIP BLANK	Total/NA	Water	EPA 624.1	
MB 180-405301/7	Method Blank	Total/NA	Water	EPA 624.1	
LCS 180-405301/5	Lab Control Sample	Total/NA	Water	EPA 624.1	

Analysis Batch: 405464

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-141418-1 - RADL	EW-1 (071522)	Total/NA	Water	EPA 624.1	
180-141418-2 - RA	MW10D (071522)	Total/NA	Water	EPA 624.1	
180-141418-3 - RA	EFFLUENT (071522)	Total/NA	Water	EPA 624.1	
MB 180-405464/13	Method Blank	Total/NA	Water	EPA 624.1	
LCS 180-405464/11	Lab Control Sample	Total/NA	Water	EPA 624.1	

Client Information		Sampler: D. Kramer / A. Feild		Lab PM: Collussy, Jill L		COC No: 180-82953-15662.1	
Client Contact: Ms. Shwetha Sridharan		Phone: 443-936-9029		E-Mail: Jill.Collussy@et.eurofins.com		Page: Page 1 of 1	
Company: ARCADIS U.S., Inc.		PWSID		State of Origin		Job #	
Address: 7550 Teague Road Suite 210		Due Date Requested:		Analysis Requested		Total Number of Containers	
City: Hanover		TAT Requested (days):		Perform MS/MSD (Yes or No)		Special Instructions/Note:	
State, Zip: MD, 21076		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No		Field Filtered Sample (Yes or No)		Preservation Codes:	
Phone: 302-897-8993(Tel)		PO #: 30005455.0002.		Matrix (W=water, S=solid, O=wastewater, BT=Tissue, A=Air)		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Ni/ric Acid R - Na2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Y - Trizma Z - other (specify)	
Email: shwetha.sridharan@arcadis.com		WO #: 30114618		Sample Type (C=Comp, G=grab)		A - HCL B - NaOH C - Zn Acetate D - Ni/ric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Project Name: Cytec Havre de Grace MD		Project #: 18017987		Sample Date		Special Instructions/Note:	
Site: Pennsylvania		SSOW#		Sample Time		Special Instructions/Note:	
Sample Identification		Sample Date		Sample Time		Special Instructions/Note:	
EW-1 (071522)		7/15/22 0930		G		W	
EW-2 (071522)		7/15/22 0935		G		W	
MW100 (071522)		7/15/22 0940		G		W	
Effluent (071522)		7/15/22 0945		G		W	
Trip Blank		-		-		W	
Barcode: 		180-141418 Chain of Custody					
Possible Hazard Identification		Sample Disposal By, Lab		Archive For		Months	
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Return To Client		Disposal By, Lab		Archive For	
Deliverable Requested: I, II, III, IV, Other (specify)		Special Instructions/QC Requirements:		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)		Return To Client <input type="checkbox"/> Disposal By, Lab <input type="checkbox"/> Archive For <input type="checkbox"/> Months	
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:	
Relinquished by: David Kramer		Date/Time: 7/15/22 1230		Company: Arcadis		Receiver/By: [Signature]	
Relinquished by: [Signature]		Date/Time: 7/15/22 1700		Company: ET		Receiver/By: [Signature]	
Relinquished by: [Signature]		Date/Time:		Company:		Receiver/By:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:			



Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 180-141418-1

Login Number: 141418

List Number: 1

Creator: Abernathy, Eric L

List Source: Eurofins Pittsburgh

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



ANALYTICAL REPORT

Eurofins Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-146141-1

Client Project/Site: Cytex Havre de Grace MD

For:
ARCADIS U.S., Inc.
7550 Teague Road
Suite 210
Hanover, Maryland 21076

Attn: Ms. Shwetha Sridharan



Authorized for release by:
11/3/2022 3:48:54 PM

Jill Colussy, Project Manager I
(412)963-2444
Jill.Colussy@et.eurofinsus.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

PA Lab ID: 02-00416



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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-146141-1

Job ID: 180-146141-1

Laboratory: Eurofins Pittsburgh

Narrative

Job Narrative 180-146141-1

Receipt

The samples were received on 10/13/2022 10:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.2° C.

The laboratory did not receive the TRIP BLANK listed on the chain of custody.

GC/MS VOA

The preservative used in the sample containers provided is not compatible with the Method 624 analytes requested. The following sample was received preserved with hydrochloric acid: POTWOUTFALL (101222) (180-146141-1). The requested target analyte list contains 2-Chloroethyl vinyl ether and/or Acrolein, which are acid-labile compounds that degrade in an acidic medium.

Due to the concentration of target compounds detected, sample POTWOUTFALL (101222) (180-146141-1) was analyzed at a dilution. Elevated reporting limits (RLs) are provided.

The laboratory control sample (LCS) for batch 180-415073 recovered outside control limits for 1,1,2,2-Tetrachloroethane, 1,1-Dichloroethane and 1,1-Dichloroethene. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

GC/MS Semi VOA

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals

The associated samples are included in 11 analyses between CCV/CCB. The bracketing QC was within the control limits. Data will be reported as is with this narrative.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-146141-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.

GC/MS Semi VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Cytex Havre de Grace MD

Job ID: 180-146141-1

Laboratory: Eurofins Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	19-033-0	06-27-22 *
California	State	2891	04-30-23
Connecticut	State	PH-0688	09-30-22 *
Florida	NELAP	E871008	06-30-23
Georgia	State	PA 02-00416	04-30-23
Illinois	NELAP	004375	06-30-23
Kansas	NELAP	E-10350	03-31-23
Kentucky (UST)	State	162013	04-30-23
Kentucky (WW)	State	KY98043	12-31-22
Louisiana	NELAP	04041	06-30-22 *
Louisiana (All)	NELAP	04041	06-30-23
Maine	State	PA00164	03-06-24
Minnesota	NELAP	042-999-482	12-31-22
New Hampshire	NELAP	2030	04-04-23
New Jersey	NELAP	PA005	06-30-23
New York	NELAP	11182	04-01-23
North Carolina (WW/SW)	State	434	12-31-22
North Dakota	State	R-227	04-30-23
Oregon	NELAP	PA-2151	02-07-23
Pennsylvania	NELAP	02-00416	04-30-23
Rhode Island	State	LAO00362	12-31-22
South Carolina	State	89014	04-20-23
Texas	NELAP	T104704528	03-31-23
USDA	US Federal Programs	P330-16-00211	06-21-24
Utah	NELAP	PA001462019-8	05-31-23
Virginia	NELAP	10043	10-31-22
West Virginia DEP	State	142	01-31-23
Wisconsin	State	998027800	08-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.



Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-146141-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-146141-1	POTWOUTFALL (101222)	Water	10/12/22 10:30	10/13/22 10:40

1

2

3

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Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-146141-1

Method	Method Description	Protocol	Laboratory
EPA 624.1	Volatile Organic Compounds (GC/MS)	40CFR136A	EET PIT
EPA 625.1	Semivolatile Organic Compounds (GC/MS)	40 CFR 761	EET PIT
EPA 200.7 Rev 4	Metals (ICP)	EPA	EET PIT
EPA 245.1 Rev.	Mercury (CVAA)	EPA	EET PIT
SM 4500CN E	Total Cyanide	SM	EET PIT
200.7	Preparation, Total Recoverable Metals	EPA	EET PIT
245.1	Preparation, Mercury	EPA	EET PIT
625	Liquid-Liquid Extraction	40CFR136A	EET PIT
SM 4500 CN C	Cyanide, Distillation	SM	EET PIT

Protocol References:

40 CFR 761 = Toxic Substances Control Act (TSCA)

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

EET PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Cytex Havre de Grace MD

Job ID: 180-146141-1

Client Sample ID: POTWOUTFALL (101222)

Lab Sample ID: 180-146141-1

Date Collected: 10/12/22 10:30

Matrix: Water

Date Received: 10/13/22 10:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624.1		2	5 mL	5 mL	415073	10/14/22 15:18	J1T	EET PIT
Instrument ID: CHHP6										
Total/NA	Prep	625			250 mL	250 uL	415298	10/17/22 11:51	BJT	EET PIT
Total/NA	Analysis	EPA 625.1		1	1 mL	1 mL	415666	10/20/22 16:33	VVP	EET PIT
Instrument ID: CH71										
Total Recoverable	Prep	200.7			25 mL	25 mL	416128	10/25/22 11:45	HCY	EET PIT
Total Recoverable	Analysis	EPA 200.7 Rev 4		1			416359	10/27/22 02:56	RJG	EET PIT
Instrument ID: C										
Total/NA	Prep	245.1			25 mL	25 mL	416511	10/28/22 06:47	RJR	EET PIT
Total/NA	Analysis	EPA 245.1 Rev.		1			416617	10/28/22 14:13	RJR	EET PIT
Instrument ID: HGY										
Total/NA	Prep	SM 4500 CN C			6 mL	6 mL	416138	10/25/22 13:45	CMR	EET PIT
Total/NA	Analysis	SM 4500CN E		1			416228	10/25/22 16:54	CMR	EET PIT
Instrument ID: SEAL1										

Laboratory References:

EET PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Analyst References:

Lab: EET PIT

Batch Type: Prep

BJT = Bill Trout

CMR = Carl Reagle

HCY = Harrison Yaeger

RJR = Ron Rosenbaum

Batch Type: Analysis

CMR = Carl Reagle

J1T = Jianwu Tang

RJG = Rob Good

RJR = Ron Rosenbaum

VVP = Vincent Piccolino

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146141-1

Client Sample ID: POTWOUTFALL (101222)

Lab Sample ID: 180-146141-1

Date Collected: 10/12/22 10:30

Matrix: Water

Date Received: 10/13/22 10:40

Method: 40CFR136A EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		2.0	1.2	ug/L			10/14/22 15:18	2
1,1,1,2-Tetrachloroethane	ND	*+	2.0	1.2	ug/L			10/14/22 15:18	2
1,1,2-Trichloroethane	ND		2.0	0.91	ug/L			10/14/22 15:18	2
1,1-Dichloroethane	ND	*+	2.0	0.61	ug/L			10/14/22 15:18	2
1,1-Dichloroethene	ND	*+	2.0	1.1	ug/L			10/14/22 15:18	2
1,2-Dichloroethane	63		2.0	1.1	ug/L			10/14/22 15:18	2
1,2-Dichloropropane	ND		2.0	1.3	ug/L			10/14/22 15:18	2
1,2-Dichlorobenzene	ND		2.0	0.73	ug/L			10/14/22 15:18	2
1,3-Dichlorobenzene	ND		2.0	1.0	ug/L			10/14/22 15:18	2
1,4-Dichlorobenzene	ND		2.0	1.1	ug/L			10/14/22 15:18	2
2-Chloroethyl vinyl ether	ND		4.0	3.4	ug/L			10/14/22 15:18	2
Acrolein	ND		40	32	ug/L			10/14/22 15:18	2
Acrylonitrile	ND		40	16	ug/L			10/14/22 15:18	2
Benzene	ND		2.0	1.2	ug/L			10/14/22 15:18	2
Bromoform	ND		2.0	2.0	ug/L			10/14/22 15:18	2
Bromomethane	ND		2.0	1.8	ug/L			10/14/22 15:18	2
Carbon tetrachloride	ND		2.0	1.8	ug/L			10/14/22 15:18	2
Chlorobenzene	ND		2.0	1.0	ug/L			10/14/22 15:18	2
Chloroform	ND		2.0	1.2	ug/L			10/14/22 15:18	2
Chloromethane	ND		2.0	1.8	ug/L			10/14/22 15:18	2
cis-1,3-Dichloropropene	ND		2.0	1.2	ug/L			10/14/22 15:18	2
Ethylbenzene	ND		2.0	1.0	ug/L			10/14/22 15:18	2
Methylene Chloride	ND		2.0	1.8	ug/L			10/14/22 15:18	2
Tetrachloroethene	ND		2.0	0.93	ug/L			10/14/22 15:18	2
Toluene	ND		2.0	0.91	ug/L			10/14/22 15:18	2
trans-1,2-Dichloroethene	3.4		2.0	1.3	ug/L			10/14/22 15:18	2
trans-1,3-Dichloropropene	ND		2.0	1.2	ug/L			10/14/22 15:18	2
Trichloroethene	4.4		2.0	1.4	ug/L			10/14/22 15:18	2
Vinyl chloride	10		2.0	0.80	ug/L			10/14/22 15:18	2
Dibromochloromethane	ND		2.0	1.7	ug/L			10/14/22 15:18	2
Bromodichloromethane	ND		2.0	1.3	ug/L			10/14/22 15:18	2
Chloroethane	ND		2.0	1.8	ug/L			10/14/22 15:18	2

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		28 - 163		10/14/22 15:18	2
4-Bromofluorobenzene (Surr)	61		41 - 122		10/14/22 15:18	2
Toluene-d8 (Surr)	99		53 - 125		10/14/22 15:18	2
Dibromofluoromethane (Surr)	118		59 - 168		10/14/22 15:18	2

Method: 40 CFR 761 EPA 625.1 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	ND		0.19	0.065	ug/L		10/17/22 11:51	10/20/22 16:33	1
Acenaphthene	ND		0.19	0.065	ug/L		10/17/22 11:51	10/20/22 16:33	1
Anthracene	ND		0.19	0.049	ug/L		10/17/22 11:51	10/20/22 16:33	1
Benzidine	ND	F1	20	9.1	ug/L		10/17/22 11:51	10/20/22 16:33	1
Benzo[a]anthracene	ND		0.19	0.075	ug/L		10/17/22 11:51	10/20/22 16:33	1
Benzo[b]fluoranthene	ND		0.19	0.097	ug/L		10/17/22 11:51	10/20/22 16:33	1
Benzo[k]fluoranthene	ND		0.19	0.088	ug/L		10/17/22 11:51	10/20/22 16:33	1
Benzo[g,h,i]perylene	ND		0.19	0.069	ug/L		10/17/22 11:51	10/20/22 16:33	1
Benzo[a]pyrene	ND		0.19	0.053	ug/L		10/17/22 11:51	10/20/22 16:33	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146141-1

Client Sample ID: POTWOUTFALL (101222)

Lab Sample ID: 180-146141-1

Date Collected: 10/12/22 10:30

Matrix: Water

Date Received: 10/13/22 10:40

Method: 40 CFR 761 EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-chloroethyl)ether	ND		0.19	0.040	ug/L		10/17/22 11:51	10/20/22 16:33	1
Bis(2-ethylhexyl) phthalate	ND		10	6.2	ug/L		10/17/22 11:51	10/20/22 16:33	1
4-Bromophenyl phenyl ether	ND		1.0	0.32	ug/L		10/17/22 11:51	10/20/22 16:33	1
Butyl benzyl phthalate	ND		1.0	0.46	ug/L		10/17/22 11:51	10/20/22 16:33	1
4-Chloro-3-methylphenol	ND		1.0	0.28	ug/L		10/17/22 11:51	10/20/22 16:33	1
2-Chloronaphthalene	ND	F1	0.19	0.059	ug/L		10/17/22 11:51	10/20/22 16:33	1
2-Chlorophenol	ND		1.0	0.13	ug/L		10/17/22 11:51	10/20/22 16:33	1
Chrysene	ND		0.19	0.081	ug/L		10/17/22 11:51	10/20/22 16:33	1
Dibenzo(a,h)-anthracene	ND		0.19	0.072	ug/L		10/17/22 11:51	10/20/22 16:33	1
Di-n-butyl phthalate	ND		1.0	0.74	ug/L		10/17/22 11:51	10/20/22 16:33	1
3,3'-Dichlorobenzidine	ND		1.0	0.58	ug/L		10/17/22 11:51	10/20/22 16:33	1
2,4-Dichlorophenol	ND		0.19	0.051	ug/L		10/17/22 11:51	10/20/22 16:33	1
Diethyl phthalate	ND		1.0	0.57	ug/L		10/17/22 11:51	10/20/22 16:33	1
2,4-Dimethylphenol	ND		1.0	0.17	ug/L		10/17/22 11:51	10/20/22 16:33	1
Dimethyl phthalate	ND		1.0	0.20	ug/L		10/17/22 11:51	10/20/22 16:33	1
4,6-Dinitro-2-methylphenol	ND		5.0	1.5	ug/L		10/17/22 11:51	10/20/22 16:33	1
2,4-Dinitrophenol	ND		10	1.5	ug/L		10/17/22 11:51	10/20/22 16:33	1
2,4-Dinitrotoluene	ND		1.0	0.35	ug/L		10/17/22 11:51	10/20/22 16:33	1
2,6-Dinitrotoluene	ND		1.0	0.17	ug/L		10/17/22 11:51	10/20/22 16:33	1
Di-n-octyl phthalate	ND		1.0	0.69	ug/L		10/17/22 11:51	10/20/22 16:33	1
Fluoranthene	ND		0.19	0.060	ug/L		10/17/22 11:51	10/20/22 16:33	1
Fluorene	ND		0.19	0.069	ug/L		10/17/22 11:51	10/20/22 16:33	1
Hexachlorobenzene	ND		0.19	0.056	ug/L		10/17/22 11:51	10/20/22 16:33	1
Hexachlorobutadiene	ND		0.19	0.069	ug/L		10/17/22 11:51	10/20/22 16:33	1
Hexachlorocyclopentadiene	ND		1.0	0.50	ug/L		10/17/22 11:51	10/20/22 16:33	1
Hexachloroethane	ND		1.0	0.13	ug/L		10/17/22 11:51	10/20/22 16:33	1
Indeno[1,2,3-cd]pyrene	ND		0.19	0.085	ug/L		10/17/22 11:51	10/20/22 16:33	1
Isophorone	ND		1.0	0.19	ug/L		10/17/22 11:51	10/20/22 16:33	1
Naphthalene	ND		0.19	0.059	ug/L		10/17/22 11:51	10/20/22 16:33	1
Nitrobenzene	ND		2.0	0.50	ug/L		10/17/22 11:51	10/20/22 16:33	1
2-Nitrophenol	ND		1.0	0.19	ug/L		10/17/22 11:51	10/20/22 16:33	1
4-Nitrophenol	ND		5.0	0.94	ug/L		10/17/22 11:51	10/20/22 16:33	1
N-Nitrosodimethylamine	ND		1.0	0.067	ug/L		10/17/22 11:51	10/20/22 16:33	1
N-Nitrosodiphenylamine	ND	F1	1.0	0.12	ug/L		10/17/22 11:51	10/20/22 16:33	1
N-Nitrosodi-n-propylamine	ND		0.19	0.071	ug/L		10/17/22 11:51	10/20/22 16:33	1
2,2'-oxybis[1-chloropropane]	ND		0.19	0.058	ug/L		10/17/22 11:51	10/20/22 16:33	1
Pentachlorophenol	ND		5.0	0.85	ug/L		10/17/22 11:51	10/20/22 16:33	1
Phenanthrene	ND		0.19	0.055	ug/L		10/17/22 11:51	10/20/22 16:33	1
Phenol	ND		1.0	0.49	ug/L		10/17/22 11:51	10/20/22 16:33	1
Pyrene	ND		0.19	0.054	ug/L		10/17/22 11:51	10/20/22 16:33	1
1,2,4-Trichlorobenzene	ND		1.0	0.13	ug/L		10/17/22 11:51	10/20/22 16:33	1
2,4,6-Trichlorophenol	ND		1.0	0.22	ug/L		10/17/22 11:51	10/20/22 16:33	1
Bis(2-chloroethoxy)methane	ND		1.0	0.15	ug/L		10/17/22 11:51	10/20/22 16:33	1
4-Chlorophenyl phenyl ether	ND		1.0	0.22	ug/L		10/17/22 11:51	10/20/22 16:33	1
1,2-Diphenylhydrazine(as Azobenzene)	ND	F1	1.0	0.20	ug/L		10/17/22 11:51	10/20/22 16:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	77		47 - 107	10/17/22 11:51	10/20/22 16:33	1
2-Fluorophenol	78		35 - 109	10/17/22 11:51	10/20/22 16:33	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Cytex Havre de Grace MD

Job ID: 180-146141-1

Client Sample ID: POTWOUTFALL (101222)

Lab Sample ID: 180-146141-1

Date Collected: 10/12/22 10:30

Matrix: Water

Date Received: 10/13/22 10:40

Method: 40 CFR 761 EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	82		32 - 127	10/17/22 11:51	10/20/22 16:33	1
Nitrobenzene-d5	79		47 - 110	10/17/22 11:51	10/20/22 16:33	1
Phenol-d5	75		37 - 110	10/17/22 11:51	10/20/22 16:33	1
Terphenyl-d14	86		32 - 115	10/17/22 11:51	10/20/22 16:33	1

Method: EPA 200.7 Rev 4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	5.7	ug/L		10/25/22 11:45	10/27/22 02:56	1
Cadmium	ND		5.0	0.33	ug/L		10/25/22 11:45	10/27/22 02:56	1
Chromium	ND		5.0	2.6	ug/L		10/25/22 11:45	10/27/22 02:56	1
Copper	ND		25	3.9	ug/L		10/25/22 11:45	10/27/22 02:56	1
Lead	3.3	J	10	2.3	ug/L		10/25/22 11:45	10/27/22 02:56	1
Nickel	6.3	J	40	2.1	ug/L		10/25/22 11:45	10/27/22 02:56	1
Silver	ND		5.0	0.87	ug/L		10/25/22 11:45	10/27/22 02:56	1
Zinc	ND		20	3.3	ug/L		10/25/22 11:45	10/27/22 02:56	1

Method: EPA 245.1 Rev. - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		10/28/22 06:47	10/28/22 14:13	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total (SM 4500CN E)	0.011		0.010	0.0080	mg/L		10/25/22 13:45	10/25/22 16:54	1

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146141-1

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 180-415073/7
Matrix: Water
Analysis Batch: 415073

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1,1-Trichloroethane	ND		1.0	0.60	ug/L			10/14/22 13:32	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.60	ug/L			10/14/22 13:32	1
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			10/14/22 13:32	1
1,1-Dichloroethane	ND		1.0	0.31	ug/L			10/14/22 13:32	1
1,1-Dichloroethene	ND		1.0	0.55	ug/L			10/14/22 13:32	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			10/14/22 13:32	1
1,2-Dichloropropane	ND		1.0	0.66	ug/L			10/14/22 13:32	1
1,2-Dichlorobenzene	ND		1.0	0.36	ug/L			10/14/22 13:32	1
1,3-Dichlorobenzene	ND		1.0	0.50	ug/L			10/14/22 13:32	1
1,4-Dichlorobenzene	ND		1.0	0.54	ug/L			10/14/22 13:32	1
2-Chloroethyl vinyl ether	ND		2.0	1.7	ug/L			10/14/22 13:32	1
Acrolein	ND		20	16	ug/L			10/14/22 13:32	1
Acrylonitrile	ND		20	7.8	ug/L			10/14/22 13:32	1
Benzene	ND		1.0	0.60	ug/L			10/14/22 13:32	1
Bromoform	ND		1.0	0.98	ug/L			10/14/22 13:32	1
Bromomethane	ND		1.0	0.89	ug/L			10/14/22 13:32	1
Carbon tetrachloride	ND		1.0	0.88	ug/L			10/14/22 13:32	1
Chlorobenzene	ND		1.0	0.50	ug/L			10/14/22 13:32	1
Chloroform	ND		1.0	0.60	ug/L			10/14/22 13:32	1
Chloromethane	ND		1.0	0.90	ug/L			10/14/22 13:32	1
cis-1,3-Dichloropropene	ND		1.0	0.59	ug/L			10/14/22 13:32	1
Ethylbenzene	ND		1.0	0.51	ug/L			10/14/22 13:32	1
Methylene Chloride	ND		1.0	0.89	ug/L			10/14/22 13:32	1
Tetrachloroethene	ND		1.0	0.47	ug/L			10/14/22 13:32	1
Toluene	ND		1.0	0.46	ug/L			10/14/22 13:32	1
trans-1,2-Dichloroethene	ND		1.0	0.67	ug/L			10/14/22 13:32	1
trans-1,3-Dichloropropene	ND		1.0	0.58	ug/L			10/14/22 13:32	1
Trichloroethene	ND		1.0	0.69	ug/L			10/14/22 13:32	1
Vinyl chloride	ND		1.0	0.40	ug/L			10/14/22 13:32	1
Dibromochloromethane	ND		1.0	0.84	ug/L			10/14/22 13:32	1
Bromodichloromethane	ND		1.0	0.64	ug/L			10/14/22 13:32	1
Chloroethane	ND		1.0	0.90	ug/L			10/14/22 13:32	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	96		28 - 163		10/14/22 13:32	1
4-Bromofluorobenzene (Surr)	108		41 - 122		10/14/22 13:32	1
Toluene-d8 (Surr)	122		53 - 125		10/14/22 13:32	1
Dibromofluoromethane (Surr)	118		59 - 168		10/14/22 13:32	1

Lab Sample ID: LCS 180-415073/5
Matrix: Water
Analysis Batch: 415073

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,2-Tetrachloroethane	10.0	16.1	*+	ug/L		161	60 - 140
1,1,2-Trichloroethane	10.0	10.1		ug/L		101	70 - 130
1,1-Dichloroethane	10.0	15.3	*+	ug/L		153	70 - 130

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146141-1

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 180-415073/5
Matrix: Water
Analysis Batch: 415073

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	10.0	16.5	*+	ug/L		165	50 - 150
1,2-Dichloroethane	10.0	7.86		ug/L		79	70 - 130
1,2-Dichloropropane	10.0	11.9		ug/L		119	35 - 165
1,2-Dichlorobenzene	10.0	9.05		ug/L		91	65 - 135
1,3-Dichlorobenzene	10.0	8.72		ug/L		87	70 - 130
1,4-Dichlorobenzene	10.0	9.03		ug/L		90	65 - 135
2-Chloroethyl vinyl ether	20.0	15.5		ug/L		77	10 - 170
Acrolein	30.0	29.4		ug/L		98	60 - 140
Acrylonitrile	100	137		ug/L		137	60 - 140
Benzene	10.0	10.1		ug/L		101	65 - 135
Bromoform	10.0	10.6		ug/L		106	70 - 130
Bromomethane	10.0	6.23		ug/L		62	15 - 170
Carbon tetrachloride	10.0	11.3		ug/L		113	70 - 130
Chlorobenzene	10.0	8.22		ug/L		82	65 - 135
Chloroform	10.0	9.67		ug/L		97	70 - 135
Chloromethane	10.0	15.6		ug/L		156	10 - 170
cis-1,3-Dichloropropene	10.0	8.32		ug/L		83	25 - 170
Ethylbenzene	10.0	9.00		ug/L		90	60 - 140
Methylene Chloride	10.0	13.8		ug/L		138	60 - 140
Tetrachloroethene	10.0	9.78		ug/L		98	70 - 130
Toluene	10.0	12.2		ug/L		122	70 - 130
trans-1,2-Dichloroethene	10.0	12.9		ug/L		129	70 - 130
trans-1,3-Dichloropropene	10.0	8.78		ug/L		88	50 - 150
Trichloroethene	10.0	8.52		ug/L		85	65 - 135
Vinyl chloride	10.0	14.4		ug/L		144	10 - 170
Dibromochloromethane	10.0	10.0		ug/L		100	70 - 135
Bromodichloromethane	10.0	8.93		ug/L		89	65 - 135
Chloroethane	10.0	8.18		ug/L		82	40 - 160

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	72		28 - 163
4-Bromofluorobenzene (Surr)	94		41 - 122
Toluene-d8 (Surr)	116		53 - 125
Dibromofluoromethane (Surr)	96		59 - 168

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 180-415298/1-A
Matrix: Water
Analysis Batch: 415666

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 415298

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	ND		0.19	0.065	ug/L		10/17/22 11:51	10/20/22 15:50	1
Acenaphthene	ND		0.19	0.065	ug/L		10/17/22 11:51	10/20/22 15:50	1
Anthracene	ND		0.19	0.049	ug/L		10/17/22 11:51	10/20/22 15:50	1
Benzidine	ND		20	9.1	ug/L		10/17/22 11:51	10/20/22 15:50	1
Benzo[a]anthracene	ND		0.19	0.075	ug/L		10/17/22 11:51	10/20/22 15:50	1
Benzo[b]fluoranthene	ND		0.19	0.097	ug/L		10/17/22 11:51	10/20/22 15:50	1
Benzo[k]fluoranthene	ND		0.19	0.088	ug/L		10/17/22 11:51	10/20/22 15:50	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Cytec Havre de Grace MD

Job ID: 180-146141-1

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 180-415298/1-A
Matrix: Water
Analysis Batch: 415666

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 415298

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[g,h,i]perylene	ND		0.19	0.069	ug/L		10/17/22 11:51	10/20/22 15:50	1
Benzo[a]pyrene	ND		0.19	0.053	ug/L		10/17/22 11:51	10/20/22 15:50	1
Bis(2-chloroethyl)ether	ND		0.19	0.040	ug/L		10/17/22 11:51	10/20/22 15:50	1
Bis(2-ethylhexyl) phthalate	ND		10	6.2	ug/L		10/17/22 11:51	10/20/22 15:50	1
4-Bromophenyl phenyl ether	ND		1.0	0.32	ug/L		10/17/22 11:51	10/20/22 15:50	1
Butyl benzyl phthalate	ND		1.0	0.46	ug/L		10/17/22 11:51	10/20/22 15:50	1
4-Chloro-3-methylphenol	ND		1.0	0.28	ug/L		10/17/22 11:51	10/20/22 15:50	1
2-Chloronaphthalene	ND		0.19	0.059	ug/L		10/17/22 11:51	10/20/22 15:50	1
2-Chlorophenol	ND		1.0	0.13	ug/L		10/17/22 11:51	10/20/22 15:50	1
Chrysene	ND		0.19	0.081	ug/L		10/17/22 11:51	10/20/22 15:50	1
Dibenzo(a,h)-anthracene	ND		0.19	0.072	ug/L		10/17/22 11:51	10/20/22 15:50	1
Di-n-butyl phthalate	ND		1.0	0.74	ug/L		10/17/22 11:51	10/20/22 15:50	1
3,3'-Dichlorobenzidine	ND		1.0	0.58	ug/L		10/17/22 11:51	10/20/22 15:50	1
2,4-Dichlorophenol	ND		0.19	0.051	ug/L		10/17/22 11:51	10/20/22 15:50	1
Diethyl phthalate	ND		1.0	0.57	ug/L		10/17/22 11:51	10/20/22 15:50	1
2,4-Dimethylphenol	ND		1.0	0.17	ug/L		10/17/22 11:51	10/20/22 15:50	1
Dimethyl phthalate	ND		1.0	0.20	ug/L		10/17/22 11:51	10/20/22 15:50	1
4,6-Dinitro-2-methylphenol	ND		5.0	1.5	ug/L		10/17/22 11:51	10/20/22 15:50	1
2,4-Dinitrophenol	ND		10	1.5	ug/L		10/17/22 11:51	10/20/22 15:50	1
2,4-Dinitrotoluene	ND		1.0	0.35	ug/L		10/17/22 11:51	10/20/22 15:50	1
2,6-Dinitrotoluene	ND		1.0	0.17	ug/L		10/17/22 11:51	10/20/22 15:50	1
Di-n-octyl phthalate	ND		1.0	0.69	ug/L		10/17/22 11:51	10/20/22 15:50	1
Fluoranthene	ND		0.19	0.060	ug/L		10/17/22 11:51	10/20/22 15:50	1
Fluorene	ND		0.19	0.069	ug/L		10/17/22 11:51	10/20/22 15:50	1
Hexachlorobenzene	ND		0.19	0.056	ug/L		10/17/22 11:51	10/20/22 15:50	1
Hexachlorobutadiene	ND		0.19	0.069	ug/L		10/17/22 11:51	10/20/22 15:50	1
Hexachlorocyclopentadiene	ND		1.0	0.50	ug/L		10/17/22 11:51	10/20/22 15:50	1
Hexachloroethane	ND		1.0	0.13	ug/L		10/17/22 11:51	10/20/22 15:50	1
Indeno[1,2,3-cd]pyrene	ND		0.19	0.085	ug/L		10/17/22 11:51	10/20/22 15:50	1
Isophorone	ND		1.0	0.19	ug/L		10/17/22 11:51	10/20/22 15:50	1
Naphthalene	ND		0.19	0.059	ug/L		10/17/22 11:51	10/20/22 15:50	1
Nitrobenzene	ND		2.0	0.50	ug/L		10/17/22 11:51	10/20/22 15:50	1
2-Nitrophenol	ND		1.0	0.19	ug/L		10/17/22 11:51	10/20/22 15:50	1
4-Nitrophenol	ND		5.0	0.94	ug/L		10/17/22 11:51	10/20/22 15:50	1
N-Nitrosodimethylamine	ND		1.0	0.067	ug/L		10/17/22 11:51	10/20/22 15:50	1
N-Nitrosodiphenylamine	ND		1.0	0.12	ug/L		10/17/22 11:51	10/20/22 15:50	1
N-Nitrosodi-n-propylamine	ND		0.19	0.071	ug/L		10/17/22 11:51	10/20/22 15:50	1
2,2'-oxybis[1-chloropropane]	ND		0.19	0.058	ug/L		10/17/22 11:51	10/20/22 15:50	1
Pentachlorophenol	ND		5.0	0.85	ug/L		10/17/22 11:51	10/20/22 15:50	1
Phenanthrene	ND		0.19	0.055	ug/L		10/17/22 11:51	10/20/22 15:50	1
Phenol	ND		1.0	0.49	ug/L		10/17/22 11:51	10/20/22 15:50	1
Pyrene	ND		0.19	0.054	ug/L		10/17/22 11:51	10/20/22 15:50	1
1,2,4-Trichlorobenzene	ND		1.0	0.13	ug/L		10/17/22 11:51	10/20/22 15:50	1
2,4,6-Trichlorophenol	ND		1.0	0.22	ug/L		10/17/22 11:51	10/20/22 15:50	1
Bis(2-chloroethoxy)methane	ND		1.0	0.15	ug/L		10/17/22 11:51	10/20/22 15:50	1
4-Chlorophenyl phenyl ether	ND		1.0	0.22	ug/L		10/17/22 11:51	10/20/22 15:50	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.0	0.20	ug/L		10/17/22 11:51	10/20/22 15:50	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146141-1

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 180-415298/1-A
Matrix: Water
Analysis Batch: 415666

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 415298

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
2-Fluorobiphenyl	86		47 - 107	10/17/22 11:51	10/20/22 15:50	1
2-Fluorophenol	99		35 - 109	10/17/22 11:51	10/20/22 15:50	1
2,4,6-Tribromophenol	93		32 - 127	10/17/22 11:51	10/20/22 15:50	1
Nitrobenzene-d5	86		47 - 110	10/17/22 11:51	10/20/22 15:50	1
Phenol-d5	95		37 - 110	10/17/22 11:51	10/20/22 15:50	1
Terphenyl-d14	99		32 - 115	10/17/22 11:51	10/20/22 15:50	1

Lab Sample ID: LCS 180-415298/2-A
Matrix: Water
Analysis Batch: 415666

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 415298

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acenaphthene	10.0	7.03		ug/L		70	47 - 145
Anthracene	10.0	6.86		ug/L		69	27 - 133
Benzidine	10.0	ND		ug/L		51	5 - 100
Benzo[a]anthracene	10.0	6.76		ug/L		68	33 - 143
Benzo[b]fluoranthene	10.0	5.39		ug/L		54	24 - 150
Benzo[k]fluoranthene	10.0	6.94		ug/L		69	11 - 150
Benzo[g,h,i]perylene	10.0	7.60		ug/L		76	10 - 150
Benzo[a]pyrene	10.0	6.06		ug/L		61	17 - 150
Bis(2-chloroethyl)ether	10.0	7.00		ug/L		70	12 - 150
Bis(2-ethylhexyl) phthalate	10.0	ND		ug/L		58	10 - 150
4-Bromophenyl phenyl ether	10.0	6.78		ug/L		68	53 - 127
Butyl benzyl phthalate	10.0	5.92		ug/L		59	10 - 150
4-Chloro-3-methylphenol	10.0	7.50		ug/L		75	22 - 147
2-Chloronaphthalene	10.0	6.41		ug/L		64	60 - 120
2-Chlorophenol	10.0	7.45		ug/L		75	23 - 134
Chrysene	10.0	6.90		ug/L		69	17 - 150
Dibenzo(a,h)-anthracene	10.0	7.24		ug/L		72	10 - 150
Di-n-butyl phthalate	10.0	7.07		ug/L		71	10 - 120
3,3'-Dichlorobenzidine	10.0	7.12		ug/L		71	10 - 150
2,4-Dichlorophenol	10.0	7.07		ug/L		71	39 - 135
Diethyl phthalate	10.0	6.99		ug/L		70	10 - 120
2,4-Dimethylphenol	10.0	6.72		ug/L		67	32 - 120
Dimethyl phthalate	10.0	6.67		ug/L		67	10 - 120
4,6-Dinitro-2-methylphenol	20.0	11.6		ug/L		58	10 - 150
2,4-Dinitrophenol	20.0	11.5		ug/L		57	10 - 150
2,4-Dinitrotoluene	10.0	7.83		ug/L		78	39 - 139
2,6-Dinitrotoluene	10.0	7.43		ug/L		74	50 - 150
Di-n-octyl phthalate	10.0	4.63		ug/L		46	10 - 146
Fluoranthene	10.0	7.78		ug/L		78	26 - 137
Fluorene	10.0	7.21		ug/L		72	59 - 121
Hexachlorobenzene	10.0	7.36		ug/L		74	10 - 150
Hexachlorobutadiene	10.0	6.64		ug/L		66	24 - 120
Hexachlorocyclopentadiene	10.0	5.51		ug/L		55	37 - 121
Hexachloroethane	10.0	6.90		ug/L		69	40 - 120
Indeno[1,2,3-cd]pyrene	10.0	7.37		ug/L		74	10 - 150

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146141-1

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 180-415298/2-A
Matrix: Water
Analysis Batch: 415666

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 415298

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Isophorone	10.0	6.64		ug/L		66	21 - 150
Naphthalene	10.0	7.28		ug/L		73	21 - 133
Nitrobenzene	10.0	6.40		ug/L		64	35 - 150
2-Nitrophenol	10.0	7.26		ug/L		73	29 - 150
4-Nitrophenol	20.0	10.6		ug/L		53	10 - 132
N-Nitrosodimethylamine	10.0	7.09		ug/L		71	33 - 130
N-Nitrosodiphenylamine	10.0	6.58		ug/L		66	51 - 100
N-Nitrosodi-n-propylamine	10.0	7.94		ug/L		79	10 - 150
2,2'-oxybis[1-chloropropane]	10.0	9.87		ug/L		99	36 - 150
Pentachlorophenol	20.0	15.2		ug/L		76	14 - 150
Phenanthrene	10.0	6.70		ug/L		67	54 - 120
Phenol	10.0	7.14		ug/L		71	10 - 120
Pyrene	10.0	6.11		ug/L		61	52 - 120
1,2,4-Trichlorobenzene	10.0	6.55		ug/L		65	44 - 142
2,4,6-Trichlorophenol	10.0	6.35		ug/L		63	37 - 144
Bis(2-chloroethoxy)methane	10.0	5.96		ug/L		60	33 - 150
4-Chlorophenyl phenyl ether	10.0	6.91		ug/L		69	25 - 150
1,2-Diphenylhydrazine(as Azobenzene)	10.0	4.78		ug/L		48	43 - 105

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl	85		47 - 107
2-Fluorophenol	95		35 - 109
2,4,6-Tribromophenol	108		32 - 127
Nitrobenzene-d5	87		47 - 110
Phenol-d5	93		37 - 110
Terphenyl-d14	88		32 - 115

Lab Sample ID: 180-146141-1 MS
Matrix: Water
Analysis Batch: 415666

Client Sample ID: POTWOUTFALL (101222)
Prep Type: Total/NA
Prep Batch: 415298

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Acenaphthylene	ND		10.0	6.14		ug/L		61	35 - 145
Acenaphthene	ND		10.0	6.30		ug/L		63	47 - 145
Anthracene	ND		10.0	5.92		ug/L		59	27 - 133
Benzidine	ND	F1	10.0	ND	F1	ug/L		0	5 - 100
Benzo[a]anthracene	ND		10.0	6.21		ug/L		62	33 - 143
Benzo[b]fluoranthene	ND		10.0	5.07		ug/L		51	24 - 159
Benzo[k]fluoranthene	ND		10.0	5.97		ug/L		60	11 - 162
Benzo[g,h,i]perylene	ND		10.0	7.13		ug/L		71	10 - 170
Benzo[a]pyrene	ND		10.0	5.18		ug/L		52	17 - 163
Bis(2-chloroethyl)ether	ND		10.0	6.31		ug/L		63	12 - 158
Bis(2-ethylhexyl) phthalate	ND		10.0	6.39	J	ug/L		64	10 - 158
4-Bromophenyl phenyl ether	ND		10.0	6.27		ug/L		63	53 - 127
Butyl benzyl phthalate	ND		10.0	5.81		ug/L		58	10 - 152
4-Chloro-3-methylphenol	ND		10.0	5.66		ug/L		57	22 - 147
2-Chloronaphthalene	ND	F1	10.0	5.69	F1	ug/L		57	60 - 120
2-Chlorophenol	ND		10.0	5.45		ug/L		54	23 - 134

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146141-1

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 180-146141-1 MS

Matrix: Water

Analysis Batch: 415666

Client Sample ID: POTWOUTFALL (101222)

Prep Type: Total/NA

Prep Batch: 415298

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec Limits
	Result	Qualifier	Added	Result	Qualifier				
Chrysene	ND		10.0	6.23		ug/L		62	17 - 168
Dibenzo(a,h)-anthracene	ND		10.0	6.78		ug/L		68	10 - 170
Di-n-butyl phthalate	ND		10.0	6.77		ug/L		68	10 - 120
3,3'-Dichlorobenzidine	ND		10.0	4.54		ug/L		45	10 - 170
2,4-Dichlorophenol	ND		10.0	5.01		ug/L		50	39 - 135
Diethyl phthalate	ND		10.0	5.01		ug/L		50	10 - 120
2,4-Dimethylphenol	ND		10.0	4.78		ug/L		48	32 - 120
Dimethyl phthalate	ND		10.0	4.65		ug/L		47	10 - 120
4,6-Dinitro-2-methylphenol	ND		20.0	11.0		ug/L		55	10 - 170
2,4-Dinitrophenol	ND		20.0	11.8		ug/L		59	10 - 170
2,4-Dinitrotoluene	ND		10.0	7.06		ug/L		71	39 - 139
2,6-Dinitrotoluene	ND		10.0	6.74		ug/L		67	50 - 158
Di-n-octyl phthalate	ND		10.0	4.91		ug/L		49	10 - 146
Fluoranthene	ND		10.0	7.11		ug/L		71	26 - 137
Fluorene	ND		10.0	6.51		ug/L		65	59 - 121
Hexachlorobenzene	ND		10.0	6.87		ug/L		69	10 - 152
Hexachlorobutadiene	ND		10.0	5.68		ug/L		57	24 - 120
Hexachlorocyclopentadiene	ND		10.0	4.73		ug/L		47	41 - 106
Hexachloroethane	ND		10.0	5.97		ug/L		60	40 - 120
Indeno[1,2,3-cd]pyrene	ND		10.0	6.78		ug/L		68	10 - 170
Isophorone	ND		10.0	6.23		ug/L		62	21 - 170
Naphthalene	ND		10.0	6.31		ug/L		63	21 - 133
Nitrobenzene	ND		10.0	5.79		ug/L		58	35 - 170
2-Nitrophenol	ND		10.0	5.42		ug/L		54	29 - 170
4-Nitrophenol	ND		20.0	8.02		ug/L		40	10 - 132
N-Nitrosodimethylamine	ND		10.0	6.40		ug/L		64	48 - 109
N-Nitrosodiphenylamine	ND	F1	10.0	4.49	F1	ug/L		45	56 - 100
N-Nitrosodi-n-propylamine	ND		10.0	7.21		ug/L		72	10 - 170
2,2'-oxybis[1-chloropropane]	ND		10.0	9.09		ug/L		91	36 - 166
Pentachlorophenol	ND		20.0	10.7		ug/L		54	17 - 170
Phenanthrene	ND		10.0	6.29		ug/L		63	54 - 120
Phenol	ND		10.0	5.48		ug/L		55	10 - 120
Pyrene	ND		10.0	5.56		ug/L		56	52 - 120
1,2,4-Trichlorobenzene	ND		10.0	5.62		ug/L		56	44 - 142
2,4,6-Trichlorophenol	ND		10.0	4.27		ug/L		43	37 - 144
Bis(2-chloroethoxy)methane	ND		10.0	5.58		ug/L		56	33 - 170
4-Chlorophenyl phenyl ether	ND		10.0	6.19		ug/L		62	25 - 158
1,2-Diphenylhydrazine(as Azobenzene)	ND	F1	10.0	4.37	F1	ug/L		44	46 - 103

Surrogate	MS %Recovery	MS Qualifier	Limits
2-Fluorobiphenyl	80		47 - 107
2-Fluorophenol	83		35 - 109
2,4,6-Tribromophenol	91		32 - 127
Nitrobenzene-d5	86		47 - 110
Phenol-d5	83		37 - 110
Terphenyl-d14	87		32 - 115

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146141-1

Method: EPA 200.7 Rev 4 - Metals (ICP)

Lab Sample ID: MB 180-416128/1-A
Matrix: Water
Analysis Batch: 416359

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 416128

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		10	5.7	ug/L		10/25/22 11:45	10/27/22 00:11	1
Cadmium	ND		5.0	0.33	ug/L		10/25/22 11:45	10/27/22 00:11	1
Chromium	ND		5.0	2.6	ug/L		10/25/22 11:45	10/27/22 00:11	1
Copper	ND		25	3.9	ug/L		10/25/22 11:45	10/27/22 00:11	1
Lead	ND		10	2.3	ug/L		10/25/22 11:45	10/27/22 00:11	1
Nickel	ND		40	2.1	ug/L		10/25/22 11:45	10/27/22 00:11	1
Silver	ND		5.0	0.87	ug/L		10/25/22 11:45	10/27/22 00:11	1
Zinc	ND		20	3.3	ug/L		10/25/22 11:45	10/27/22 00:11	1

Lab Sample ID: LCS 180-416128/2-A
Matrix: Water
Analysis Batch: 416359

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 416128

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cadmium	500	577		ug/L		115	85 - 115
Chromium	500	544		ug/L		109	85 - 115
Copper	500	539		ug/L		108	85 - 115
Lead	500	535		ug/L		107	85 - 115
Nickel	500	559		ug/L		112	85 - 115
Silver	250	277		ug/L		111	85 - 115
Zinc	250	277		ug/L		111	85 - 115

Method: EPA 245.1 Rev. - Mercury (CVAA)

Lab Sample ID: MB 180-416511/1-A
Matrix: Water
Analysis Batch: 416617

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 416511

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.20	0.13	ug/L		10/28/22 06:47	10/28/22 13:55	1

Lab Sample ID: LCS 180-416511/2-A
Matrix: Water
Analysis Batch: 416617

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 416511

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits

Method: SM 4500CN E - Total Cyanide

Lab Sample ID: MB 180-416138/4-A
Matrix: Water
Analysis Batch: 416228

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 416138

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Cyanide, Total	ND		0.010	0.0080	mg/L		10/25/22 13:45	10/25/22 16:31	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Cytex Havre de Grace MD

Job ID: 180-146141-1

Method: SM 4500CN E - Total Cyanide (Continued)

Lab Sample ID: HLCS 180-416138/2-A
Matrix: Water
Analysis Batch: 416228

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 416138

Analyte	Spike Added	HLCS Result	HLCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.250	0.252		mg/L		101	90 - 110

Lab Sample ID: LCS 180-416138/3-A
Matrix: Water
Analysis Batch: 416228

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 416138

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.200	0.215		mg/L		107	90 - 110

Lab Sample ID: LLCS 180-416138/1-A
Matrix: Water
Analysis Batch: 416228

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 416138

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.0500	0.0515		mg/L		103	90 - 110

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146141-1

GC/MS VOA

Analysis Batch: 415073

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-146141-1	POTWOUTFALL (101222)	Total/NA	Water	EPA 624.1	
MB 180-415073/7	Method Blank	Total/NA	Water	EPA 624.1	
LCS 180-415073/5	Lab Control Sample	Total/NA	Water	EPA 624.1	

GC/MS Semi VOA

Prep Batch: 415298

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-146141-1	POTWOUTFALL (101222)	Total/NA	Water	625	
MB 180-415298/1-A	Method Blank	Total/NA	Water	625	
LCS 180-415298/2-A	Lab Control Sample	Total/NA	Water	625	
180-146141-1 MS	POTWOUTFALL (101222)	Total/NA	Water	625	

Analysis Batch: 415666

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-146141-1	POTWOUTFALL (101222)	Total/NA	Water	EPA 625.1	415298
MB 180-415298/1-A	Method Blank	Total/NA	Water	EPA 625.1	415298
LCS 180-415298/2-A	Lab Control Sample	Total/NA	Water	EPA 625.1	415298
180-146141-1 MS	POTWOUTFALL (101222)	Total/NA	Water	EPA 625.1	415298

Metals

Prep Batch: 416128

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-146141-1	POTWOUTFALL (101222)	Total Recoverable	Water	200.7	
MB 180-416128/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 180-416128/2-A	Lab Control Sample	Total Recoverable	Water	200.7	

Analysis Batch: 416359

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-146141-1	POTWOUTFALL (101222)	Total Recoverable	Water	EPA 200.7 Rev 4	416128
MB 180-416128/1-A	Method Blank	Total Recoverable	Water	EPA 200.7 Rev 4	416128
LCS 180-416128/2-A	Lab Control Sample	Total Recoverable	Water	EPA 200.7 Rev 4	416128

Prep Batch: 416511

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-146141-1	POTWOUTFALL (101222)	Total/NA	Water	245.1	
MB 180-416511/1-A	Method Blank	Total/NA	Water	245.1	
LCS 180-416511/2-A	Lab Control Sample	Total/NA	Water	245.1	

Analysis Batch: 416617

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-146141-1	POTWOUTFALL (101222)	Total/NA	Water	EPA 245.1 Rev.	416511
MB 180-416511/1-A	Method Blank	Total/NA	Water	EPA 245.1 Rev.	416511
LCS 180-416511/2-A	Lab Control Sample	Total/NA	Water	EPA 245.1 Rev.	416511

General Chemistry

Prep Batch: 416138

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-146141-1	POTWOUTFALL (101222)	Total/NA	Water	SM 4500 CN C	
MB 180-416138/4-A	Method Blank	Total/NA	Water	SM 4500 CN C	

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QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-146141-1

General Chemistry (Continued)

Prep Batch: 416138 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HLCS 180-416138/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN C	
LCS 180-416138/3-A	Lab Control Sample	Total/NA	Water	SM 4500 CN C	
LLCS 180-416138/1-A	Lab Control Sample	Total/NA	Water	SM 4500 CN C	

Analysis Batch: 416228

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-146141-1	POTWOUTFALL (101222)	Total/NA	Water	SM 4500CN E	416138
MB 180-416138/4-A	Method Blank	Total/NA	Water	SM 4500CN E	416138
HLCS 180-416138/2-A	Lab Control Sample	Total/NA	Water	SM 4500CN E	416138
LCS 180-416138/3-A	Lab Control Sample	Total/NA	Water	SM 4500CN E	416138
LLCS 180-416138/1-A	Lab Control Sample	Total/NA	Water	SM 4500CN E	416138

Client Information		Lab PVI: Colussy Jill L		Carrier Tracking No(s): 180-85399-15093 1	
Client Contact: Ms. Shwetha Sridharan		E-Mail: Jill.Colussy@eurofins.com		Page: Page 1 of 1	
Company: ARCADIS U.S. Inc.		PWSID:		Job #:	
Address: 7550 Teague Road Suite 210		Due Date Requested:		Analysis Requested	
City: Hanover		TAT Requested (days):		Total Number of Containers:	
State, Zip: MD, 21076		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No		Preservation Codes:	
Phone: 302-897-8993(Tel)		PO #: 30005455.0002		A HCL B NaOH C Zn Acetate D Nitric Acid E NaHSO4 F MeOH G Amchlor H Ascorbic Acid I Ice J DI Water K EDTA L EDA Other:	
Email: shwetha.sridharan@arcadis.com		WO #: 30114618		M Hexane N None O AsNaO2 P Na2O4S Q Na2SO3 R Na2S2O3 S H2SO4 T TSP Dodecahydrate U Acetone V MCAA W pH 4-5 Y Triama Z other (specify)	
Project Name: Cytec Havre de Grace MD		Project #: 18017987		~Note:	
Site: Pennsylvania		SSOW#:		180-146141 Chain of Custody	
Sample Identification		Sample Date		Sample Time	
POTW Outfall (101222)		10/12/22		1030	
Trip Blank		---		---	
Sample Type (C=Comp, G=grab)		Sample Time		Matrix (N=water, S=solid, O=organic)	
G		---		W	
---		---		W	
Field Filtered Sample (Yes or No)		Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)	
---		---		---	
Preservation Code:		Preservation Code:		Preservation Code:	
---		---		---	
Possible Hazard Identification		<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Deliverable Requested: I II III IV Other (specify)		Date/Time:		<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
Empty Kit Relinquished by:		Date/Time:		Special Instructions/QC Requirements	
Relinquished by: David Kramer		10/12/22 1700		Method of Shipment:	
Relinquished by: DK		Date/Time:		Received by: [Signature]	
Relinquished by:		Date/Time:		Received by: [Signature]	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Received by: [Signature]	
Cooler Temperature(s) °C and Other Remarks:		Date/Time:		Received by: [Signature]	



Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 180-146141-1

Login Number: 146141

List Source: Eurofins Pittsburgh

List Number: 1

Creator: Kovitch, Christina M

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



ANALYTICAL REPORT

Eurofins Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-146143-1

Client Project/Site: Cytex Havre de Grace MD

For:
ARCADIS U.S., Inc.
7550 Teague Road
Suite 210
Hanover, Maryland 21076

Attn: Ms. Shwetha Sridharan



Authorized for release by:

11/11/2022 9:34:48 AM

Jill Colussy, Project Manager I

(412)963-2444

Jill.Colussy@et.eurofinsus.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

PA Lab ID: 02-00416

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the {0} Project Manager.



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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-146143-1

Job ID: 180-146143-1

Laboratory: Eurofins Pittsburgh

Narrative

Job Narrative 180-146143-1

Receipt

The samples were received on 10/13/2022 10:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.2° C.

GC/MS VOA

Due to the concentration of target compounds detected, sample EW-1 (101122) (180-146143-1) and EFFLUENT (101122) (180-146143-3) were analyzed at a dilution. Elevated reporting limits (RLs) are provided.

Sample MW-10D (101122) (180-146143-2) was re-analyzed outside of the holding time to confirm the results for 1,1-Dichloroethane. Both sets of data are reported.

The laboratory control sample (LCS) for analytical batch 180-415073 recovered above the control limits for 1,1,2,2-Tetrachloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene and Carbon disulfide. These analytes were biased high in the LCS and were not detected in the associated samples except sample MW-10D (101122) (180-146143-2).



Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-146143-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
H	Sample was prepped or analyzed beyond the specified holding time
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Cytex Havre de Grace MD

Job ID: 180-146143-1

Laboratory: Eurofins Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	19-033-0	06-27-22 *
California	State	2891	04-30-23
Connecticut	State	PH-0688	09-30-22 *
Florida	NELAP	E871008	10-23-22
Georgia	State	PA 02-00416	10-23-22
Illinois	NELAP	004375	10-23-22
Kansas	NELAP	E-10350	10-23-22
Kentucky (UST)	State	162013	04-30-23
Kentucky (WW)	State	KY98043	12-31-22
Louisiana	NELAP	04041	06-30-22 *
Louisiana (All)	NELAP	04041	10-23-22
Maine	State	PA00164	03-06-24
Minnesota	NELAP	042-999-482	10-23-22
New Hampshire	NELAP	2030	10-23-22
New Jersey	NELAP	PA005	10-23-22
New York	NELAP	11182	10-23-22
North Carolina (WW/SW)	State	434	12-31-22
North Dakota	State	R-227	10-23-22
Oregon	NELAP	PA-2151	10-23-22
Pennsylvania	NELAP	02-00416	10-23-22
Rhode Island	State	LAO00362	12-31-22
South Carolina	State	89014	04-20-23
Texas	NELAP	T104704528	10-23-22
USDA	US Federal Programs	P330-16-00211	06-21-24
Utah	NELAP	PA001462019-8	10-23-22
Virginia	NELAP	10043	10-23-22
West Virginia DEP	State	142	10-23-22
Wisconsin	State	998027800	08-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.



Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-146143-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-146143-1	EW-1 (101122)	Water	10/11/22 13:00	10/13/22 10:40
180-146143-2	MW-10D (101122)	Water	10/11/22 13:10	10/13/22 10:40
180-146143-3	EFFLUENT (101122)	Water	10/11/22 13:20	10/13/22 10:40
180-146143-4	TRIP BLANK	Water	10/11/22 00:00	10/13/22 10:40

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Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146143-1

Method	Method Description	Protocol	Laboratory
EPA 624.1	Volatile Organic Compounds (GC/MS)	40CFR136A	EET PIT

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

Laboratory References:

EET PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058



Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Cytec Havre de Grace MD

Job ID: 180-146143-1

Client Sample ID: EW-1 (101122)

Lab Sample ID: 180-146143-1

Date Collected: 10/11/22 13:00

Matrix: Water

Date Received: 10/13/22 10:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624.1		10	5 mL	5 mL	415073	10/14/22 19:43	J1T	EET PIT
Instrument ID: CHHP6										

Client Sample ID: MW-10D (101122)

Lab Sample ID: 180-146143-2

Date Collected: 10/11/22 13:10

Matrix: Water

Date Received: 10/13/22 10:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624.1		1	5 mL	5 mL	415073	10/14/22 19:17	J1T	EET PIT
Instrument ID: CHHP6										
Total/NA	Analysis	EPA 624.1	RA	1	5 mL	5 mL	415270	10/17/22 21:13	J1T	EET PIT
Instrument ID: CHHP6										

Client Sample ID: EFFLUENT (101122)

Lab Sample ID: 180-146143-3

Date Collected: 10/11/22 13:20

Matrix: Water

Date Received: 10/13/22 10:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624.1		5	5 mL	5 mL	415073	10/14/22 17:58	J1T	EET PIT
Instrument ID: CHHP6										

Client Sample ID: TRIP BLANK

Lab Sample ID: 180-146143-4

Date Collected: 10/11/22 00:00

Matrix: Water

Date Received: 10/13/22 10:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624.1		1	5 mL	5 mL	415073	10/14/22 13:59	J1T	EET PIT
Instrument ID: CHHP6										

Laboratory References:

EET PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Analyst References:

Lab: EET PIT

Batch Type: Analysis

J1T = Jianwu Tang

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146143-1

Client Sample ID: EW-1 (101122)

Lab Sample ID: 180-146143-1

Date Collected: 10/11/22 13:00

Matrix: Water

Date Received: 10/13/22 10:40

Method: 40CFR136A EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		10	6.0	ug/L			10/14/22 19:43	10
1,1,1,2-Tetrachloroethane	ND	*+	10	6.0	ug/L			10/14/22 19:43	10
1,1,2-Trichloroethane	ND		10	4.5	ug/L			10/14/22 19:43	10
1,1-Dichloroethane	ND	*+	10	3.1	ug/L			10/14/22 19:43	10
1,1-Dichloroethene	ND	*+	10	5.5	ug/L			10/14/22 19:43	10
1,2-Dichloroethane	400		10	5.7	ug/L			10/14/22 19:43	10
1,2-Dichloropropane	ND		10	6.6	ug/L			10/14/22 19:43	10
1,2-Dichlorobenzene	ND		10	3.6	ug/L			10/14/22 19:43	10
1,3-Dichlorobenzene	ND		10	5.0	ug/L			10/14/22 19:43	10
1,4-Dichlorobenzene	ND		10	5.4	ug/L			10/14/22 19:43	10
2-Chloroethyl vinyl ether	ND		20	17	ug/L			10/14/22 19:43	10
Acrolein	ND		200	160	ug/L			10/14/22 19:43	10
Acrylonitrile	ND		200	78	ug/L			10/14/22 19:43	10
Benzene	ND		10	6.0	ug/L			10/14/22 19:43	10
Bromoform	ND		10	9.8	ug/L			10/14/22 19:43	10
Bromomethane	ND		10	8.9	ug/L			10/14/22 19:43	10
Carbon disulfide	ND	*+	10	8.8	ug/L			10/14/22 19:43	10
Carbon tetrachloride	ND		10	8.8	ug/L			10/14/22 19:43	10
Chlorobenzene	ND		10	5.0	ug/L			10/14/22 19:43	10
Chloroform	ND		10	6.0	ug/L			10/14/22 19:43	10
Chloromethane	ND		10	9.0	ug/L			10/14/22 19:43	10
cis-1,2-Dichloroethene	ND		10	7.1	ug/L			10/14/22 19:43	10
cis-1,3-Dichloropropene	ND		10	5.9	ug/L			10/14/22 19:43	10
Ethylbenzene	ND		10	5.1	ug/L			10/14/22 19:43	10
Methylene Chloride	ND		10	8.9	ug/L			10/14/22 19:43	10
Tetrachloroethene	ND		10	4.7	ug/L			10/14/22 19:43	10
Toluene	ND		10	4.6	ug/L			10/14/22 19:43	10
trans-1,2-Dichloroethene	ND		10	6.7	ug/L			10/14/22 19:43	10
trans-1,3-Dichloropropene	ND		10	5.8	ug/L			10/14/22 19:43	10
Trichloroethene	8.7	J	10	6.9	ug/L			10/14/22 19:43	10
Vinyl chloride	ND		10	4.0	ug/L			10/14/22 19:43	10
Dibromochloromethane	ND		10	8.4	ug/L			10/14/22 19:43	10
Bromodichloromethane	ND		10	6.4	ug/L			10/14/22 19:43	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		28 - 163		10/14/22 19:43	10
4-Bromofluorobenzene (Surr)	100		41 - 122		10/14/22 19:43	10
Toluene-d8 (Surr)	103		53 - 125		10/14/22 19:43	10
Dibromofluoromethane (Surr)	113		59 - 168		10/14/22 19:43	10

Client Sample ID: MW-10D (101122)

Lab Sample ID: 180-146143-2

Date Collected: 10/11/22 13:10

Matrix: Water

Date Received: 10/13/22 10:40

Method: 40CFR136A EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.60	ug/L			10/14/22 19:17	1
1,1,1,2-Tetrachloroethane	ND	*+	1.0	0.60	ug/L			10/14/22 19:17	1
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			10/14/22 19:17	1
1,1-Dichloroethane	2.9	*+	1.0	0.31	ug/L			10/14/22 19:17	1

Eurofins Pittsburgh

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146143-1

Client Sample ID: MW-10D (101122)

Lab Sample ID: 180-146143-2

Date Collected: 10/11/22 13:10

Matrix: Water

Date Received: 10/13/22 10:40

Method: 40CFR136A EPA 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND	*+	1.0	0.55	ug/L			10/14/22 19:17	1
1,2-Dichloroethane	1.8		1.0	0.57	ug/L			10/14/22 19:17	1
1,2-Dichloropropane	ND		1.0	0.66	ug/L			10/14/22 19:17	1
1,2-Dichlorobenzene	ND		1.0	0.36	ug/L			10/14/22 19:17	1
1,3-Dichlorobenzene	ND		1.0	0.50	ug/L			10/14/22 19:17	1
1,4-Dichlorobenzene	ND		1.0	0.54	ug/L			10/14/22 19:17	1
2-Chloroethyl vinyl ether	ND		2.0	1.7	ug/L			10/14/22 19:17	1
Acrolein	ND		20	16	ug/L			10/14/22 19:17	1
Acrylonitrile	ND		20	7.8	ug/L			10/14/22 19:17	1
Benzene	ND		1.0	0.60	ug/L			10/14/22 19:17	1
Bromoform	ND		1.0	0.98	ug/L			10/14/22 19:17	1
Bromomethane	ND		1.0	0.89	ug/L			10/14/22 19:17	1
Carbon disulfide	ND	*+	1.0	0.88	ug/L			10/14/22 19:17	1
Carbon tetrachloride	ND		1.0	0.88	ug/L			10/14/22 19:17	1
Chlorobenzene	ND		1.0	0.50	ug/L			10/14/22 19:17	1
Chloroform	ND		1.0	0.60	ug/L			10/14/22 19:17	1
Chloromethane	ND		1.0	0.90	ug/L			10/14/22 19:17	1
cis-1,2-Dichloroethene	6.0		1.0	0.71	ug/L			10/14/22 19:17	1
cis-1,3-Dichloropropene	ND		1.0	0.59	ug/L			10/14/22 19:17	1
Ethylbenzene	ND		1.0	0.51	ug/L			10/14/22 19:17	1
Methylene Chloride	ND		1.0	0.89	ug/L			10/14/22 19:17	1
Tetrachloroethene	ND		1.0	0.47	ug/L			10/14/22 19:17	1
Toluene	ND		1.0	0.46	ug/L			10/14/22 19:17	1
trans-1,2-Dichloroethene	4.4		1.0	0.67	ug/L			10/14/22 19:17	1
trans-1,3-Dichloropropene	ND		1.0	0.58	ug/L			10/14/22 19:17	1
Trichloroethene	2.9		1.0	0.69	ug/L			10/14/22 19:17	1
Vinyl chloride	8.2		1.0	0.40	ug/L			10/14/22 19:17	1
Dibromochloromethane	ND		1.0	0.84	ug/L			10/14/22 19:17	1
Bromodichloromethane	ND		1.0	0.64	ug/L			10/14/22 19:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		28 - 163		10/14/22 19:17	1
4-Bromofluorobenzene (Surr)	88		41 - 122		10/14/22 19:17	1
Toluene-d8 (Surr)	116		53 - 125		10/14/22 19:17	1
Dibromofluoromethane (Surr)	121		59 - 168		10/14/22 19:17	1

Method: 40CFR136A EPA 624.1 - Volatile Organic Compounds (GC/MS) - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	2.2	H	1.0	0.31	ug/L			10/17/22 21:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		28 - 163		10/17/22 21:13	1
4-Bromofluorobenzene (Surr)	93		41 - 122		10/17/22 21:13	1
Toluene-d8 (Surr)	116		53 - 125		10/17/22 21:13	1
Dibromofluoromethane (Surr)	116		59 - 168		10/17/22 21:13	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146143-1

Client Sample ID: EFFLUENT (101122)

Lab Sample ID: 180-146143-3

Date Collected: 10/11/22 13:20

Matrix: Water

Date Received: 10/13/22 10:40

Method: 40CFR136A EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	3.0	ug/L			10/14/22 17:58	5
1,1,1,2-Tetrachloroethane	ND	*+	5.0	3.0	ug/L			10/14/22 17:58	5
1,1,2-Trichloroethane	ND		5.0	2.3	ug/L			10/14/22 17:58	5
1,1-Dichloroethane	ND	*+	5.0	1.5	ug/L			10/14/22 17:58	5
1,1-Dichloroethene	ND	*+	5.0	2.8	ug/L			10/14/22 17:58	5
1,2-Dichloroethane	60		5.0	2.9	ug/L			10/14/22 17:58	5
1,2-Dichloropropane	ND		5.0	3.3	ug/L			10/14/22 17:58	5
1,2-Dichlorobenzene	ND		5.0	1.8	ug/L			10/14/22 17:58	5
1,3-Dichlorobenzene	ND		5.0	2.5	ug/L			10/14/22 17:58	5
1,4-Dichlorobenzene	ND		5.0	2.7	ug/L			10/14/22 17:58	5
2-Chloroethyl vinyl ether	ND		10	8.6	ug/L			10/14/22 17:58	5
Acrolein	ND		100	80	ug/L			10/14/22 17:58	5
Acrylonitrile	ND		100	39	ug/L			10/14/22 17:58	5
Benzene	ND		5.0	3.0	ug/L			10/14/22 17:58	5
Bromoform	ND		5.0	4.9	ug/L			10/14/22 17:58	5
Bromomethane	ND		5.0	4.4	ug/L			10/14/22 17:58	5
Carbon disulfide	ND	*+	5.0	4.4	ug/L			10/14/22 17:58	5
Carbon tetrachloride	ND		5.0	4.4	ug/L			10/14/22 17:58	5
Chlorobenzene	ND		5.0	2.5	ug/L			10/14/22 17:58	5
Chloroform	ND		5.0	3.0	ug/L			10/14/22 17:58	5
Chloromethane	ND		5.0	4.5	ug/L			10/14/22 17:58	5
cis-1,2-Dichloroethene	4.0	J	5.0	3.5	ug/L			10/14/22 17:58	5
cis-1,3-Dichloropropene	ND		5.0	3.0	ug/L			10/14/22 17:58	5
Ethylbenzene	ND		5.0	2.5	ug/L			10/14/22 17:58	5
Methylene Chloride	ND		5.0	4.4	ug/L			10/14/22 17:58	5
Tetrachloroethene	ND		5.0	2.3	ug/L			10/14/22 17:58	5
Toluene	ND		5.0	2.3	ug/L			10/14/22 17:58	5
trans-1,2-Dichloroethene	3.8	J	5.0	3.4	ug/L			10/14/22 17:58	5
trans-1,3-Dichloropropene	ND		5.0	2.9	ug/L			10/14/22 17:58	5
Trichloroethene	4.1	J	5.0	3.4	ug/L			10/14/22 17:58	5
Vinyl chloride	4.8	J	5.0	2.0	ug/L			10/14/22 17:58	5
Dibromochloromethane	ND		5.0	4.2	ug/L			10/14/22 17:58	5
Bromodichloromethane	ND		5.0	3.2	ug/L			10/14/22 17:58	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		28 - 163		10/14/22 17:58	5
4-Bromofluorobenzene (Surr)	94		41 - 122		10/14/22 17:58	5
Toluene-d8 (Surr)	119		53 - 125		10/14/22 17:58	5
Dibromofluoromethane (Surr)	117		59 - 168		10/14/22 17:58	5

Client Sample ID: TRIP BLANK

Lab Sample ID: 180-146143-4

Date Collected: 10/11/22 00:00

Matrix: Water

Date Received: 10/13/22 10:40

Method: 40CFR136A EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.60	ug/L			10/14/22 13:59	1
1,1,1,2-Tetrachloroethane	ND	*+	1.0	0.60	ug/L			10/14/22 13:59	1
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			10/14/22 13:59	1
1,1-Dichloroethane	ND	*+	1.0	0.31	ug/L			10/14/22 13:59	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Cytec Havre de Grace MD

Job ID: 180-146143-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 180-146143-4

Date Collected: 10/11/22 00:00

Matrix: Water

Date Received: 10/13/22 10:40

Method: 40CFR136A EPA 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND	*+	1.0	0.55	ug/L			10/14/22 13:59	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			10/14/22 13:59	1
1,2-Dichloropropane	ND		1.0	0.66	ug/L			10/14/22 13:59	1
1,2-Dichlorobenzene	ND		1.0	0.36	ug/L			10/14/22 13:59	1
1,3-Dichlorobenzene	ND		1.0	0.50	ug/L			10/14/22 13:59	1
1,4-Dichlorobenzene	ND		1.0	0.54	ug/L			10/14/22 13:59	1
2-Chloroethyl vinyl ether	ND		2.0	1.7	ug/L			10/14/22 13:59	1
Acrolein	ND		20	16	ug/L			10/14/22 13:59	1
Acrylonitrile	ND		20	7.8	ug/L			10/14/22 13:59	1
Benzene	ND		1.0	0.60	ug/L			10/14/22 13:59	1
Bromoform	ND		1.0	0.98	ug/L			10/14/22 13:59	1
Bromomethane	ND		1.0	0.89	ug/L			10/14/22 13:59	1
Carbon disulfide	ND	*+	1.0	0.88	ug/L			10/14/22 13:59	1
Carbon tetrachloride	ND		1.0	0.88	ug/L			10/14/22 13:59	1
Chlorobenzene	ND		1.0	0.50	ug/L			10/14/22 13:59	1
Chloroform	ND		1.0	0.60	ug/L			10/14/22 13:59	1
Chloromethane	ND		1.0	0.90	ug/L			10/14/22 13:59	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			10/14/22 13:59	1
cis-1,3-Dichloropropene	ND		1.0	0.59	ug/L			10/14/22 13:59	1
Ethylbenzene	ND		1.0	0.51	ug/L			10/14/22 13:59	1
Methylene Chloride	ND		1.0	0.89	ug/L			10/14/22 13:59	1
Tetrachloroethene	ND		1.0	0.47	ug/L			10/14/22 13:59	1
Toluene	ND		1.0	0.46	ug/L			10/14/22 13:59	1
trans-1,2-Dichloroethene	ND		1.0	0.67	ug/L			10/14/22 13:59	1
trans-1,3-Dichloropropene	ND		1.0	0.58	ug/L			10/14/22 13:59	1
Trichloroethene	ND		1.0	0.69	ug/L			10/14/22 13:59	1
Vinyl chloride	ND		1.0	0.40	ug/L			10/14/22 13:59	1
Dibromochloromethane	ND		1.0	0.84	ug/L			10/14/22 13:59	1
Bromodichloromethane	ND		1.0	0.64	ug/L			10/14/22 13:59	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		28 - 163					10/14/22 13:59	1
4-Bromofluorobenzene (Surr)	85		41 - 122					10/14/22 13:59	1
Toluene-d8 (Surr)	106		53 - 125					10/14/22 13:59	1
Dibromofluoromethane (Surr)	120		59 - 168					10/14/22 13:59	1

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146143-1

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 180-415073/7
Matrix: Water
Analysis Batch: 415073

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1,1-Trichloroethane	ND		1.0	0.60	ug/L			10/14/22 13:32	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.60	ug/L			10/14/22 13:32	1
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			10/14/22 13:32	1
1,1-Dichloroethane	ND		1.0	0.31	ug/L			10/14/22 13:32	1
1,1-Dichloroethene	ND		1.0	0.55	ug/L			10/14/22 13:32	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			10/14/22 13:32	1
1,2-Dichloropropane	ND		1.0	0.66	ug/L			10/14/22 13:32	1
1,2-Dichlorobenzene	ND		1.0	0.36	ug/L			10/14/22 13:32	1
1,3-Dichlorobenzene	ND		1.0	0.50	ug/L			10/14/22 13:32	1
1,4-Dichlorobenzene	ND		1.0	0.54	ug/L			10/14/22 13:32	1
2-Chloroethyl vinyl ether	ND		2.0	1.7	ug/L			10/14/22 13:32	1
Acrolein	ND		20	16	ug/L			10/14/22 13:32	1
Acrylonitrile	ND		20	7.8	ug/L			10/14/22 13:32	1
Benzene	ND		1.0	0.60	ug/L			10/14/22 13:32	1
Bromoform	ND		1.0	0.98	ug/L			10/14/22 13:32	1
Bromomethane	ND		1.0	0.89	ug/L			10/14/22 13:32	1
Carbon disulfide	ND		1.0	0.88	ug/L			10/14/22 13:32	1
Carbon tetrachloride	ND		1.0	0.88	ug/L			10/14/22 13:32	1
Chlorobenzene	ND		1.0	0.50	ug/L			10/14/22 13:32	1
Chloroform	ND		1.0	0.60	ug/L			10/14/22 13:32	1
Chloromethane	ND		1.0	0.90	ug/L			10/14/22 13:32	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			10/14/22 13:32	1
cis-1,3-Dichloropropene	ND		1.0	0.59	ug/L			10/14/22 13:32	1
Ethylbenzene	ND		1.0	0.51	ug/L			10/14/22 13:32	1
Methylene Chloride	ND		1.0	0.89	ug/L			10/14/22 13:32	1
Tetrachloroethene	ND		1.0	0.47	ug/L			10/14/22 13:32	1
Toluene	ND		1.0	0.46	ug/L			10/14/22 13:32	1
trans-1,2-Dichloroethene	ND		1.0	0.67	ug/L			10/14/22 13:32	1
trans-1,3-Dichloropropene	ND		1.0	0.58	ug/L			10/14/22 13:32	1
Trichloroethene	ND		1.0	0.69	ug/L			10/14/22 13:32	1
Vinyl chloride	ND		1.0	0.40	ug/L			10/14/22 13:32	1
Dibromochloromethane	ND		1.0	0.84	ug/L			10/14/22 13:32	1
Bromodichloromethane	ND		1.0	0.64	ug/L			10/14/22 13:32	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	96		28 - 163		10/14/22 13:32	1
4-Bromofluorobenzene (Surr)	108		41 - 122		10/14/22 13:32	1
Toluene-d8 (Surr)	122		53 - 125		10/14/22 13:32	1
Dibromofluoromethane (Surr)	118		59 - 168		10/14/22 13:32	1

Lab Sample ID: LCS 180-415073/5
Matrix: Water
Analysis Batch: 415073

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,2-Tetrachloroethane	10.0	16.1	*+	ug/L		161	60 - 140
1,1,2-Trichloroethane	10.0	10.1		ug/L		101	70 - 130

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146143-1

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 180-415073/5
Matrix: Water
Analysis Batch: 415073

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethane	10.0	15.3	*+	ug/L		153	70 - 130
1,1-Dichloroethene	10.0	16.5	*+	ug/L		165	50 - 150
1,2-Dichloroethane	10.0	7.86		ug/L		79	70 - 130
1,2-Dichloropropane	10.0	11.9		ug/L		119	35 - 165
1,2-Dichlorobenzene	10.0	9.05		ug/L		91	65 - 135
1,3-Dichlorobenzene	10.0	8.72		ug/L		87	70 - 130
1,4-Dichlorobenzene	10.0	9.03		ug/L		90	65 - 135
2-Chloroethyl vinyl ether	20.0	15.5		ug/L		77	10 - 170
Acrolein	30.0	29.4		ug/L		98	60 - 140
Acrylonitrile	100	137		ug/L		137	60 - 140
Benzene	10.0	10.1		ug/L		101	65 - 135
Bromoform	10.0	10.6		ug/L		106	70 - 130
Bromomethane	10.0	6.23		ug/L		62	15 - 170
Carbon disulfide	10.0	16.2	*+	ug/L		162	50 - 152
Carbon tetrachloride	10.0	11.3		ug/L		113	70 - 130
Chlorobenzene	10.0	8.22		ug/L		82	65 - 135
Chloroform	10.0	9.67		ug/L		97	70 - 135
Chloromethane	10.0	15.6		ug/L		156	10 - 170
cis-1,2-Dichloroethene	10.0	10.5		ug/L		105	67 - 124
cis-1,3-Dichloropropene	10.0	8.32		ug/L		83	25 - 170
Ethylbenzene	10.0	9.00		ug/L		90	60 - 140
Methylene Chloride	10.0	13.8		ug/L		138	60 - 140
Tetrachloroethene	10.0	9.78		ug/L		98	70 - 130
Toluene	10.0	12.2		ug/L		122	70 - 130
trans-1,2-Dichloroethene	10.0	12.9		ug/L		129	70 - 130
trans-1,3-Dichloropropene	10.0	8.78		ug/L		88	50 - 150
Trichloroethene	10.0	8.52		ug/L		85	65 - 135
Vinyl chloride	10.0	14.4		ug/L		144	10 - 170
Dibromochloromethane	10.0	10.0		ug/L		100	70 - 135
Bromodichloromethane	10.0	8.93		ug/L		89	65 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	72		28 - 163
4-Bromofluorobenzene (Surr)	94		41 - 122
Toluene-d8 (Surr)	116		53 - 125
Dibromofluoromethane (Surr)	96		59 - 168

Lab Sample ID: MB 180-415270/5
Matrix: Water
Analysis Batch: 415270

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	ND		1.0	0.31	ug/L			10/17/22 15:02	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	66		28 - 163		10/17/22 15:02	1
4-Bromofluorobenzene (Surr)	97		41 - 122		10/17/22 15:02	1
Toluene-d8 (Surr)	116		53 - 125		10/17/22 15:02	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Cytex Havre de Grace MD

Job ID: 180-146143-1

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 180-415270/5
Matrix: Water
Analysis Batch: 415270

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Dibromofluoromethane (Surr)	86		59 - 168		10/17/22 15:02	1

Lab Sample ID: LCS 180-415270/3
Matrix: Water
Analysis Batch: 415270

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	65		28 - 163
4-Bromofluorobenzene (Surr)	115		41 - 122
Toluene-d8 (Surr)	122		53 - 125
Dibromofluoromethane (Surr)	81		59 - 168

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-146143-1

GC/MS VOA

Analysis Batch: 415073

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-146143-1	EW-1 (101122)	Total/NA	Water	EPA 624.1	
180-146143-2	MW-10D (101122)	Total/NA	Water	EPA 624.1	
180-146143-3	EFFLUENT (101122)	Total/NA	Water	EPA 624.1	
180-146143-4	TRIP BLANK	Total/NA	Water	EPA 624.1	
MB 180-415073/7	Method Blank	Total/NA	Water	EPA 624.1	
LCS 180-415073/5	Lab Control Sample	Total/NA	Water	EPA 624.1	

Analysis Batch: 415270

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-146143-2 - RA	MW-10D (101122)	Total/NA	Water	EPA 624.1	
MB 180-415270/5	Method Blank	Total/NA	Water	EPA 624.1	
LCS 180-415270/3	Lab Control Sample	Total/NA	Water	EPA 624.1	

301 Alpha Drive RIDC Park
Pittsburgh PA 15238
Phone: 412-963-7058 Fax: 412-963-2468

Client Information Client Contact: Ms. Shwetha Sridharan Company: ARCADIS U.S. Inc. Address: 7550 Teague Road Suite 210 City: Hanover State, Zip: MD 21076 Phone: 302-897-8993(Tel) Email: shwetha.sridharan@arcadis.com Project Name: Cytex Havre de Grace MD Site:		Lab PM: Colussy Jill L E-Mail: Jill.Colussy@Eurofins.com Carrier Tracking No(s): State of Origin: MD Lab PWSID:		COC No: 180-72855-14121 1 Page: Page 1 of 2 Job #:	
Due Date Requested: TAT Requested (days): Compliance Project: Yes No PO #: 30005455 0002 WO #:		Analysis Requested		Preservation Codes: A HCL M Hexane B NaOH N None C Zn Acetate O AshNaO2 D Nitric Acid P Na2O4S E MeOH Q Na2SO3 F Amchlor R Na2S2O3 G Ascorbic Acid S H2SO4 H Ice T TSP Dodecahydrate J DI Water U Acetone K EDTA V MCAA L EDA W pH 4-5 Other: Z other (specify)	
Sample Identification EW-1 (10/11/22) MW10P(10/12/22) Effluent (10/12/22) T-IP Blank		Sample Date 10/11/22 ↓ -		Sample Time 1300 1310 1320 -	
Sample Type (C=Comp, G=grab) G G G -		Matrix (W=water, S=solid, O=other) W W W W		Field Filtered Sample (Yes or No) Yes Yes Yes Yes	
Perform MS/MSD (Yes or No) Yes Yes Yes Yes		Total Number of Containers X X X X		Barcode: 180-146143 Chain of Custody Comments/Note:	
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Radiological Deliverable Requested I, II, III, IV Other (specify)					
Empty Kit Relinquished by:					
Relinquished by: David Kramer Relinquished by: JH Relinquished by:		Date/Time: 10/12/22 1540 Date/Time: 10/11/22 1700 Date/Time:		Method of Shipment: Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For <input type="checkbox"/> Months	
Company: FEA Company: FEA Company:		Date/Time: 10/12/22 15 40 Date/Time: 10/11/22 10 10 Date/Time:		Cooler Temperature(s) °C and Other Remarks:	



Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 180-146143-1

Login Number: 146143

List Source: Eurofins Pittsburgh

List Number: 1

Creator: Kovitch, Christina M

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Appendix C

Monthly Compliance Reports – 2022



Cytec Solvay Group
1300 Revolution Street
Havre de Grace, MD 21078
410.939.1910

January 11, 2022

Ms. Jennie Kilby
Industrial Pretreatment Coordinator
City of Havre de Grace
Department of Public Works
711 Pennington Avenue
Havre de Grace, Maryland 21078

Re: CYTEC SOLVAY GROUP AEROSPACE MATERIALS
Periodic Compliance Report – December 2021
Permit Number: CYT-2015-101

Dear Ms. Kilby:

CYTEC SOLVAY GROUP (Cytec) has prepared this Periodic Compliance Report for the month of December 2021 in accordance with the conditions set forth in Cytec's Industrial User Wastewater Discharge Permit (Permit No. CYT-2015-101). This Periodic Compliance Report presents the results of all monitoring requirements and operational issues encountered during the month of December 2021. The monthly certification form is included as Attachment A.

For the month of December, the system pumped an estimated 82,766 gallons of wastewater at an estimated average flow rate of 1.85 gallons per minute to the City of Havre de Grace Wastewater Treatment Plant during active system operation. The estimated average flow rate of 1.85 gallons per minute for the month of December satisfied both permit flow limitations (maximum of 30,000 gallons per day; 30-minute maximum of 1,000 gallons). Cytec complied with all permit conditions for flow for the month of December.

One pH meter is presently installed in-line with the effluent discharge pipe to measure pH continuously. pH results from the effluent wastewater complied with all permit conditions for pH during the month of December and no significant deviations were noted during active operation. Table 1 presents the daily flow volumes and weekly pH readings recorded for the month of December.

On November 25, an E-stop alarm was received. This alarm may occur when the facility experiences a power fluctuation and requires a system reset. After the November 25, 2021 alarm, the system remained shut down due to concerns with running the EW-02 well dry, as the water-level transducer in the well was faulty. Additionally, the remote system access was not functioning and required Arcadis staff to reset the system on-site. The alarm was cleared by Arcadis personnel and the system restarted on December 9, 2021. On December 9, 2021, Arcadis staff were onsite to replace a faulty pH probe and to replace the water-level transducer at EW-02. An EW-01 transducer failure alarm was received on December 18, and the system was automatically shut down. The transducer at EW-01 may need to be replaced and will be inspected during the next Arcadis site visit in January. On December 16, an EW-02 pipe leak alarm was received and the system was automatically shut down. This alarm typically occurs during rain events when runoff infiltrates the vaults, triggering the alarm. Arcadis staff reset the alarm on December 16. Several high differential flow warning alarms were received on December 17 and December 21. These

alarms may indicate a leak in the system if the effluent flow is higher than the influent flow. However, these alarms may also be triggered if there are a string of other alarms. The system remains shut down until Arcadis staff can determine the cause of the alarms on January 11. On December 22, an EW-01 pipe leak alarm was received while the system was already shut down; this alarm typically occurs during rain events when runoff infiltrates the vaults, triggering the alarm. The system remained off after the December 22 alarm.

The January 2022 Periodic Compliance Report will be submitted in February 2022. Daily flow and pH will continue to be measured continuously. If the system is shut down for a period of at least 24 hours, pH results will be monitored and reported for three consecutive days to maintain compliance with permit conditions.

If you have any questions or comments, please contact me at 443-252-1093.

Sincerely,
Cytex Solvay Group

Jose Cortez
HSE Manager

Enclosure

cc: Mr. Luis Pizarro, United States Environmental Protection Agency
Mr. Paul Nemanic, Cytex Solvay Group
Ms. Tina Armstrong, Ph.D., Arcadis
Ms. Shwetha Sridharan, Arcadis

Table 1
Flow and pH Monitoring for December 2021
Cytec Solvay Group
Havre de Grace, Maryland

Date	Cumulative Total Gallons Extracted (MW-10D)	Cumulative Total Gallons Extracted (EW-01)	Cumulative Total Gallons Extracted (EW-02)	Combined Cumulative Total Gallons Extracted	Daily Total Gallons Extracted	pH
<i>12/01/21</i>	<i>19,177,847</i>	<i>4,331,232</i>	<i>3,311,987</i>	<i>26,821,066</i>	<i>0</i>	
<i>12/02/21</i>	<i>19,177,847</i>	<i>4,331,232</i>	<i>3,311,987</i>	<i>26,821,066</i>	<i>0</i>	
<i>12/03/21</i>	<i>19,177,847</i>	<i>4,331,232</i>	<i>3,311,987</i>	<i>26,821,066</i>	<i>0</i>	
<i>12/04/21</i>	<i>19,177,847</i>	<i>4,331,232</i>	<i>3,311,987</i>	<i>26,821,066</i>	<i>0</i>	
<i>12/05/21</i>	<i>19,177,847</i>	<i>4,331,232</i>	<i>3,311,987</i>	<i>26,821,066</i>	<i>0</i>	
<i>12/06/21</i>	<i>19,177,847</i>	<i>4,331,232</i>	<i>3,311,987</i>	<i>26,821,066</i>	<i>0</i>	
<i>12/07/21</i>	<i>19,177,847</i>	<i>4,331,232</i>	<i>3,311,987</i>	<i>26,821,066</i>	<i>0</i>	
<i>12/08/21</i>	<i>19,177,847</i>	<i>4,331,232</i>	<i>3,311,987</i>	<i>26,821,066</i>	<i>0</i>	
<i>12/09/21</i>	<i>19,177,847</i>	<i>4,331,232</i>	<i>3,311,987</i>	<i>26,821,066</i>	<i>13,777</i>	<i>5.67</i>
<i>12/10/21</i>	<i>19,188,659</i>	<i>4,333,286</i>	<i>3,312,898</i>	<i>26,834,843</i>	<i>0</i>	<i>5.93</i>
<i>12/11/21</i>	<i>19,188,659</i>	<i>4,333,286</i>	<i>3,312,898</i>	<i>26,834,843</i>	<i>0</i>	<i>5.86</i>
<i>12/12/21</i>	<i>19,188,659</i>	<i>4,333,286</i>	<i>3,312,898</i>	<i>26,834,843</i>	<i>0</i>	
<i>12/13/21</i>	<i>19,188,659</i>	<i>4,333,286</i>	<i>3,312,898</i>	<i>26,834,843</i>	<i>10,156</i>	<i>5.88</i>
<i>12/14/21</i>	<i>19,194,950</i>	<i>4,334,474</i>	<i>3,315,575</i>	<i>26,844,999</i>	<i>14,461</i>	<i>5.40</i>
<i>12/15/21</i>	<i>19,203,937</i>	<i>4,336,171</i>	<i>3,319,353</i>	<i>26,859,460</i>	<i>14,461</i>	<i>5.46</i>
<i>12/16/21</i>	<i>19,212,923</i>	<i>4,337,867</i>	<i>3,323,131</i>	<i>26,873,921</i>	<i>14,460</i>	
<i>12/17/21</i>	<i>19,221,870</i>	<i>4,339,555</i>	<i>3,326,956</i>	<i>26,888,381</i>	<i>1,654</i>	<i>5.53</i>
<i>12/18/21</i>	<i>19,222,893</i>	<i>4,339,747</i>	<i>3,327,395</i>	<i>26,890,035</i>	<i>0</i>	
<i>12/19/21</i>	<i>19,222,893</i>	<i>4,339,747</i>	<i>3,327,395</i>	<i>26,890,035</i>	<i>0</i>	
<i>12/20/21</i>	<i>19,222,893</i>	<i>4,339,747</i>	<i>3,327,395</i>	<i>26,890,035</i>	<i>6,933</i>	<i>5.43</i>
<i>12/21/21</i>	<i>19,227,692</i>	<i>4,339,747</i>	<i>3,329,529</i>	<i>26,896,968</i>	<i>6,864</i>	<i>5.49</i>
<i>12/22/21</i>	<i>19,232,448</i>	<i>4,339,747</i>	<i>3,331,637</i>	<i>26,903,832</i>	<i>0</i>	<i>5.51</i>
<i>12/23/21</i>	<i>19,232,448</i>	<i>4,339,747</i>	<i>3,331,637</i>	<i>26,903,832</i>	<i>0</i>	
<i>12/24/21</i>	<i>19,232,448</i>	<i>4,339,747</i>	<i>3,331,637</i>	<i>26,903,832</i>	<i>0</i>	
<i>12/25/21</i>	<i>19,232,448</i>	<i>4,339,747</i>	<i>3,331,637</i>	<i>26,903,832</i>	<i>0</i>	
<i>12/26/21</i>	<i>19,232,448</i>	<i>4,339,747</i>	<i>3,331,637</i>	<i>26,903,832</i>	<i>0</i>	
<i>12/27/21</i>	<i>19,232,448</i>	<i>4,339,747</i>	<i>3,331,637</i>	<i>26,903,832</i>	<i>0</i>	
<i>12/28/21</i>	<i>19,232,448</i>	<i>4,339,747</i>	<i>3,331,637</i>	<i>26,903,832</i>	<i>0</i>	
<i>12/29/21</i>	<i>19,232,448</i>	<i>4,339,747</i>	<i>3,331,637</i>	<i>26,903,832</i>	<i>0</i>	
<i>12/30/21</i>	<i>19,232,448</i>	<i>4,339,747</i>	<i>3,331,637</i>	<i>26,903,832</i>	<i>0</i>	
<i>12/31/21</i>	<i>19,232,448</i>	<i>4,339,747</i>	<i>3,331,637</i>	<i>26,903,832</i>	<i>0</i>	

Notes:

1. Operation of the expanded system began on January 16, 2015.
2. Totalizer readings are collected daily at 0800 at EW-01 and EW-02. In May 2018, the totalizer at MW-10D rolled over to a value greater than 10 million and the value was no longer presented on the system data tab. As a result, the totalizer reading was estimated between May 2018 and August 2019, based on the total flow in gallons recorded for the previous 24 hours. A system update was completed in August 2019 that reduced the totalizer reading for MW-10D by 10 million gallons.

3. Italics indicates estimated value for monthly and daily flow.

Table 2
Operational Issues for December 2021
Cytec Solvay Group
Havre de Grace, Maryland

Date	Root Cause for Alarm	Response
11/25/2021 - 12/9/2021	P-100/P-200 Drive Fault	A P-100 and P-200 drive fault alarm was received and the system was automatically shut down. This alarm may occur when the facility experiences a power fluctuation and requires a system reset. The system was not restarted immediately due to the faulty transducer at EW-02 and concerns about running the well dry. Additionally, the remote system access was not functioning and required Arcadis staff to reset the system on-site. The alarm was cleared by on-site personnel and the system was restarted on 12/9/2021.
12/9/2021	Routine O&M	Arcadis staff were onsite to replace faulty pH probe and water-level transducer at EW-02.
12/16/2021	EW-02 Pipe Leak	An EW-02 pipe leak alarm was received and the system was automatically shut down. This alarm typically occurs during rain events when runoff infiltrates the vault. Arcadis staff restarted the system within 24 hours.
12/18/2021	EW-01 Transducer Alarm	An EW-01 transducer alarm was received and the system was automatically shut down. Arcadis staff restarted the system on 12/20, without running EW-01. Arcadis staff will respond to this alarm in January to determine if the transducer needs to be replaced.
12/17/2021 & 12/21/2021	High Differential Flow	Multiple high differential flow alarms were received. These alarms may indicate a leak in the system if the effluent flow is higher than the influent flow. However, these alarms may also be triggered if there are a string of other alarms. The system remains shut down since 12/21 until Arcadis staff can determine the cause of the alarms in January.
12/22/2021	EW-01 Pipe Leak	An EW-01 pipe leak alarm was received while the system was already shut down. This alarm typically occurs during rain events when runoff infiltrates the vault. Arcadis staff cleared the alarm and the system remains turned off until January.

Attachment A

Attachment A

**CYTEC SOLVAY GROUP
PERIODIC COMPLIANCE REPORT**

REPORTING MONTH/YEAR _____ December 2021 _____

TOTAL VOLUME DISCHARGED _____ 82,766 Gallons _____

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Date

Authorized Representative



Cytec Solvay Group
1300 Revolution Street
Havre de Grace, MD 21078
410.939.1910

February 4, 2022

Ms. Jennie Kilby
Industrial Pretreatment Coordinator
City of Havre de Grace
Department of Public Works
711 Pennington Avenue
Havre de Grace, Maryland 21078

Re: CYTEC SOLVAY GROUP AEROSPACE MATERIALS
Periodic Compliance Report – January 2022
Permit Number: CYT-2015-101

Dear Ms. Kilby:

CYTEC SOLVAY GROUP (Cytec) has prepared this Periodic Compliance Report for the month of January 2022 in accordance with the conditions set forth in Cytec's Industrial User Wastewater Discharge Permit (Permit No. CYT-2015-101). This Periodic Compliance Report presents the results of all monitoring requirements and operational issues encountered during the month of January 2022. The monthly certification form is included as Attachment A.

For the month of January, the system pumped an estimated 55,402 gallons of wastewater at an estimated average flow rate of 1.24 gallons per minute to the City of Havre de Grace Wastewater Treatment Plant during active system operation. The estimated average flow rate of 1.24 gallons per minute for the month of January satisfied both permit flow limitations (maximum of 30,000 gallons per day; 30-minute maximum of 1,000 gallons). Cytec complied with all permit conditions for flow for the month of January.

One pH meter is presently installed in-line with the effluent discharge pipe to measure pH continuously. pH results from the effluent wastewater complied with all permit conditions for pH during the month of January and no significant deviations were noted during active operation. Table 1 presents the daily flow volumes and weekly pH readings recorded for the month of January.

On December 17 and 21, 2021, several high differential flow warning alarms were received. These alarms may indicate a leak in the system if the effluent flow is higher than the influent flow. However, these alarms may also be triggered if there are a string of other alarms. The system remained shut down until Arcadis staff could determine the cause of the alarms on January 11, 2022. The system was restarted on January 11 when Arcadis staff were onsite for routine O&M and sampling. On January 15, an EW-01 low level alarm was received and on January 16, a drive fault alarm was received. The system was automatically shut down and the remote system access was not responsive. Alarms were cleared by onsite personnel on January 20. An EW-01 low level alarm may be triggered if the water level in the extraction well is too low. The drive fault alarms may be triggered if the facility experiences a power fluctuation and requires a system reset.

An E-stop alarm was triggered on January 20, while the system remained shut down. Also on January 20, the POTW notified Arcadis that there may be a potential leak at the POTW discharge point, prior to the

Cytec system water entering the digester. The system was remained shut down until Arcadis staff were onsite to inspect for any possible leaks on February 1. On January 24, a MW-10D high level alarm was received, this alarm may be triggered when water levels in MW-10D rise due to prolonged system shutdown. On January 27, Arcadis staff were onsite to inspect the discharge pipes at the POTW and to restart the router so that remote system access could be reestablished, but the system remained shut down. On February 1, Arcadis staff restarted the system and determined that there were no visible leaks at the POTW discharge point and replaced corroded pipe connections at the POTW.

The February Compliance Report will be submitted in March 2022. Daily flow and pH will continue to be measured continuously. If the system is shut down for a period of at least 24 hours, pH results will be monitored and reported for three consecutive days to maintain compliance with permit conditions.

If you have any questions or comments, please contact me at 443-252-1093.

Sincerely,
Cytec Solvay Group

Jose Cortez
HSE Manager

Enclosure

cc: Mr. Luis Pizarro, United States Environmental Protection Agency
Mr. Paul Nemanic, Cytec Solvay Group
Ms. Tina Armstrong, Ph.D., Arcadis
Ms. Shwetha Sridharan, Arcadis

Table 1
Flow and pH Monitoring for January 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Cumulative Total Gallons Extracted (MW-10D)	Cumulative Total Gallons Extracted (EW-01)	Cumulative Total Gallons Extracted (EW-02)	Combined Cumulative Total Gallons Extracted	Daily Total Gallons Extracted	pH
01/01/22	19,232,448	4,339,747	3,331,637	26,903,832	0	
01/02/22	19,232,448	4,339,747	3,331,637	26,903,832	0	
01/03/22	19,232,448	4,339,747	3,331,637	26,903,832	0	
01/04/22	19,232,448	4,339,747	3,331,637	26,903,832	0	
01/05/22	19,232,448	4,339,747	3,331,637	26,903,832	0	
01/06/22	19,232,448	4,339,747	3,331,637	26,903,832	0	
01/07/22	19,232,448	4,339,747	3,331,637	26,903,832	0	
01/08/22	19,232,448	4,339,747	3,331,637	26,903,832	0	
01/09/22	19,232,448	4,339,747	3,331,637	26,903,832	0	
01/10/22	19,232,448	4,339,747	3,331,637	26,903,832	0	
01/11/22	19,232,448	4,339,747	3,331,637	26,903,832	28	
01/12/22	19,232,468	4,339,751	3,331,641	26,903,860	12,084	
01/13/22	19,239,908	4,341,163	3,334,873	26,915,944	14,613	
01/14/22	19,248,899	4,342,871	3,338,787	26,930,557	14,647	
01/15/22	19,257,892	4,344,581	3,342,731	26,945,204	14,030	
01/16/22	19,267,250	4,344,997	3,346,987	26,959,234	0	
01/17/22	19,267,250	4,344,997	3,346,987	26,959,234	0	
01/18/22	19,267,250	4,344,997	3,346,987	26,959,234	0	
01/19/22	19,267,250	4,344,997	3,346,987	26,959,234	0	
01/20/22	19,267,250	4,344,997	3,346,987	26,959,234	0	
01/21/22	19,267,250	4,344,997	3,346,987	26,959,234	0	
01/22/22	19,267,250	4,344,997	3,346,987	26,959,234	0	
01/23/22	19,267,250	4,344,997	3,346,987	26,959,234	0	
01/24/22	19,267,250	4,344,997	3,346,987	26,959,234	0	
01/25/22	19,267,250	4,344,997	3,346,987	26,959,234	0	
01/26/22	19,267,250	4,344,997	3,346,987	26,959,234	0	
01/27/22	19,267,250	4,344,997	3,346,987	26,959,234	0	
01/28/22	19,267,250	4,344,997	3,346,987	26,959,234	0	
01/29/22	19,267,250	4,344,997	3,346,987	26,959,234	0	
01/30/22	19,267,250	4,344,997	3,346,987	26,959,234	0	
01/31/22	19,267,250	4,344,997	3,346,987	26,959,234	0	

Notes:

1. Operation of the expanded system began on January 16, 2015.
2. Totalizer readings are collected daily at 0800 at EW-01 and EW-02. In May 2018, the totalizer at MW-10D rolled over to a value greater than 10 million and the value was no longer presented on the system data tab. As a result, the totalizer reading was estimated between May 2018 and August 2019, based on the total flow in gallons recorded for the previous 24 hours. A system update was completed in August 2019 that reduced the totalizer reading for MW-10D by 10 million gallons.

3. Italics indicates estimated value for monthly and daily flow.

Table 2
Operational Issues for January 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Root Cause for Alarm	Response
12/17/2021 & 12/21/2021	High Differential Flow	Multiple high differential flow alarms were received during this time. These alarms may indicate a leak in the system if the effluent flow is higher than the influent flow. However, these alarms may also be triggered if there are a string of other alarms. The system remained shut down from 12/21 to 1/11, when Arcadis staff were onsite to determine the cause of the alarms.
1/11/2022 - 1/12/2022	Routine O&M	Arcadis staff were onsite to conduct quarterly system sampling and to troubleshoot the system alarms. Arcadis staff determined the EW-01 transducer alarm from 12/18 was a false alarm and transducer is working properly.
1/15/2022	EW-01 Low Level	An EW-01 low level alarm was received and the system was automatically shut down. This alarm may be triggered if the water level in the extraction well is low. Additionally, the remote system access was unresponsive so the system could not be turned back on. The system remained shut down for the rest of the month. The alarm was cleared by onsite personnel on 1/20.
1/16/2022	Drive Fault	A P-100 and P-200 drive fault alarm was received and the system was automatically shut down. This alarm may occur when the facility experiences a power fluctuation and requires a system reset. The alarm was cleared by onsite personnel on 1/20 but the system remained shut down.
1/20/2022	E-Stop and POTW leak	An E-stop alarm was received on 1/20, while the system remained shut down. The POTW facility notified Cytec that there may be a potential leak at the POTW pipe, prior to the system water entering the digester. Arcadis staff restarted the system on 2/1, determined there were no leaks present, and replaced corroded pipe at the POTW.
1/24/2022	MW-10D High Level	A MW-10D high level alarm was received while the system remained shut down. This alarm may be triggered when water levels in MW-10D rise due to prolonged system shutdown.
1/27/2022	N/A	Arcadis staff were onsite to check the pipes at POTW and to restart the router so that remote system access could be reestablished.

Attachment A

Attachment A

**CYTEC SOLVAY GROUP
PERIODIC COMPLIANCE REPORT**

REPORTING MONTH/YEAR January 2022

TOTAL VOLUME DISCHARGED 55,402 Gallons

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Date

Authorized Representative



Cytec Solvay Group
1300 Revolution Street
Havre de Grace, MD 21078
410.939.1910

March 7, 2022

Ms. Jennie Kilby
Industrial Pretreatment Coordinator
City of Havre de Grace
Department of Public Works
711 Pennington Avenue
Havre de Grace, Maryland 21078

Re: CYTEC SOLVAY GROUP AEROSPACE MATERIALS
Periodic Compliance Report – February 2022
Permit Number: CYT-2015-101

Dear Ms. Kilby:

CYTEC SOLVAY GROUP (Cytec) has prepared this Periodic Compliance Report for the month of February 2022 in accordance with the conditions set forth in Cytec's Industrial User Wastewater Discharge Permit (Permit No. CYT-2015-101). This Periodic Compliance Report presents the results of all monitoring requirements and operational issues encountered during the month of February 2022. The monthly certification form is included as Attachment A.

For the month of February, the system pumped an estimated 142,433 gallons of wastewater at an estimated average flow rate of 3.53 gallons per minute to the City of Havre de Grace Wastewater Treatment Plant during active system operation. The estimated average flow rate of 3.53 gallons per minute for the month of February satisfied both permit flow limitations (maximum of 30,000 gallons per day; 30-minute maximum of 1,000 gallons). Cytec complied with all permit conditions for flow for the month of February.

One pH meter is presently installed in-line with the effluent discharge pipe to measure pH continuously. pH results from the effluent wastewater complied with all permit conditions for pH during the month of February and no significant deviations were noted during active operation. Table 1 presents the daily flow volumes and weekly pH readings recorded for the month of February.

On January 20, the POTW notified Arcadis that there may be a potential leak at the POTW discharge point, prior to the stabilization system water entering the digester. The system remained shut down until Arcadis staff were onsite to inspect for any possible leaks on February 1. On February 1, Arcadis staff restarted the system and determined that there were no visible leaks at the POTW discharge point and replaced above ground corroded pipe connections at the discharge point at the POTW. On February 10, an above ground leak was noted at the POTW, and the system was shut down until the leaking parts were replaced by Arcadis staff on February 14. The system remained shut down due to freezing conditions and was restarted on February 23. Arcadis staff were onsite on February 23 to replace the faulty pH probe, and clean the EW-02 flow meter. The C-more panel was also upgraded to a new version, to increase the reliability of remote system access. On February 28, an E-stop alarm was received. This alarm may occur when the facility experiences a power fluctuation and requires a system reset. The alarms were cleared, and the system was restarted on March 3 by Arcadis staff.

Ms. Jennie Kilby

March 7, 2022

Page 2 of 2

The March Compliance Report will be submitted in April 2022. Daily flow and pH will continue to be measured continuously. If the system is shut down for a period of at least 24 hours, pH results will be monitored and reported for three consecutive days to maintain compliance with permit conditions.

If you have any questions or comments, please contact me at 443-252-1093.

Sincerely,
Cytec Solvay Group

Jose Cortez
HSE Manager

Enclosure

cc: Mr. Luis Pizarro, United States Environmental Protection Agency
Mr. Paul Nemanic, Cytec Solvay Group
Ms. Tina Armstrong, Ph.D., Arcadis
Ms. Shwetha Sridharan, Arcadis

Table 1
Flow and pH Monitoring for February 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Cumulative Total Gallons Extracted (MW-10D)	Cumulative Total Gallons Extracted (EW-01)	Cumulative Total Gallons Extracted (EW-02)	Combined Cumulative Total Gallons Extracted	Daily Total Gallons Extracted	pH
02/01/22	<i>19,267,250</i>	<i>4,344,997</i>	<i>3,346,987</i>	26,959,234	<i>11,126</i>	
02/02/22	19,274,089	4,346,298	3,349,973	26,970,360	14,632	
02/03/22	19,283,117	4,348,012	3,353,863	26,984,992	7,708	
02/04/22	19,287,896	4,348,916	3,355,888	26,992,700	14,475	5.28
02/05/22	19,296,890	4,350,620	3,359,665	27,007,175	5,949	
<i>02/06/22</i>	<i>19,300,619</i>	<i>4,351,328</i>	<i>3,361,177</i>	<i>27,013,124</i>	<i>5,949</i>	
<i>02/07/22</i>	<i>19,304,347</i>	<i>4,352,036</i>	<i>3,362,689</i>	<i>27,019,072</i>	<i>5,949</i>	
<i>02/08/22</i>	<i>19,308,076</i>	<i>4,352,744</i>	<i>3,364,201</i>	<i>27,025,021</i>	<i>5,949</i>	
02/09/22	19,311,804	4,353,452	3,365,713	27,030,969	13,812	
02/10/22	19,320,527	4,355,112	3,369,142	27,044,781	0	
02/11/22	19,320,527	4,355,112	3,369,142	27,044,781	0	5.51
02/12/22	<i>19,320,527</i>	<i>4,355,112</i>	<i>3,369,142</i>	<i>27,044,781</i>	<i>0</i>	
02/13/22	<i>19,320,527</i>	<i>4,355,112</i>	<i>3,369,142</i>	<i>27,044,781</i>	<i>3,043</i>	
02/14/22	19,322,455	4,355,478	3,369,891	27,047,824	0	
02/15/22	<i>19,322,455</i>	<i>4,355,478</i>	<i>3,369,891</i>	<i>27,047,824</i>	<i>0</i>	
02/16/22	<i>19,322,455</i>	<i>4,355,478</i>	<i>3,369,891</i>	<i>27,047,824</i>	<i>0</i>	
02/17/22	<i>19,322,455</i>	<i>4,355,478</i>	<i>3,369,891</i>	<i>27,047,824</i>	<i>0</i>	
02/18/22	<i>19,322,455</i>	<i>4,355,478</i>	<i>3,369,891</i>	<i>27,047,824</i>	<i>0</i>	
02/19/22	<i>19,322,455</i>	<i>4,355,478</i>	<i>3,369,891</i>	<i>27,047,824</i>	<i>0</i>	
02/20/22	<i>19,322,455</i>	<i>4,355,478</i>	<i>3,369,891</i>	<i>27,047,824</i>	<i>0</i>	
02/21/22	<i>19,322,455</i>	<i>4,355,478</i>	<i>3,369,891</i>	<i>27,047,824</i>	<i>0</i>	
02/22/22	<i>19,322,455</i>	<i>4,355,478</i>	<i>3,369,891</i>	<i>27,047,824</i>	<i>0</i>	
02/23/22	<i>19,322,455</i>	<i>4,355,478</i>	<i>3,369,891</i>	<i>27,047,824</i>	<i>10,476</i>	5.29
02/24/22	19,329,095	4,356,732	3,372,473	27,058,300	14,135	5.61
02/25/22	19,338,083	4,358,435	3,375,917	27,072,435	14,064	5.67
02/26/22	19,347,073	4,360,137	3,379,289	27,086,499	14,013	
02/27/22	19,356,064	4,361,837	3,382,611	27,100,512	1,155	
02/28/22	19,356,806	4,361,978	3,382,883	27,101,667	0	

Notes:

1. Operation of the expanded system began on January 16, 2015.
2. Totalizer readings are collected daily at 0800 at EW-01 and EW-02. In May 2018, the totalizer at MW-10D rolled over to a value greater than 10 million and the value was no longer presented on the system data tab. As a result, the totalizer reading was estimated between May 2018 and August 2019, based on the total flow in gallons recorded for the previous 24 hours. A system update was completed in August 2019 that reduced the totalizer reading for MW-10D by 10 million gallons.
3. Italics indicates estimated value for monthly and daily flow.

Table 2
Operational Issues for February 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Root Cause for Alarm	Response
2/1/2022	N/A	Arcadis staff were onsite at POTW to replace corroded piping into the digester.
2/10/2022	leak at POTW discharge point	An above ground leak was noted at POTW and the Cytec system was shut down until Arcadis staff could replace the leaking parts on 2/14. The system was restarted on 2/23.
2/23/2022	N/A	Arcadis staff were onsite to replace a faulty pH probe and to clean the EW-02 flow meter. Staff also replaced the C-more remote access panel with an upgraded model.
2/28/2022	E-Stop	An E-stop alarm was received and the system was automatically shut down. This alarm may occur when the facility experiences a power fluctuation and requires a system reset. The alarm was cleared by Arcadis staff on 3/3 and the system was restarted.

Attachment A

Attachment A

**CYTEC SOLVAY GROUP
PERIODIC COMPLIANCE REPORT**

REPORTING MONTH/YEAR February 2022

TOTAL VOLUME DISCHARGED 142,433 Gallons

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Date

Authorized Representative



Cytec Solvay Group
1300 Revolution Street
Havre de Grace, MD 21078
410.939.1910

April 5, 2022

Ms. Jennie Kilby
Industrial Pretreatment Coordinator
City of Havre de Grace
Department of Public Works
711 Pennington Avenue
Havre de Grace, Maryland 21078

Re: CYTEC SOLVAY GROUP AEROSPACE MATERIALS
Periodic Compliance Report – March 2022
Permit Number: CYT-2015-101

Dear Ms. Kilby:

CYTEC SOLVAY GROUP (Cytec) has prepared this Periodic Compliance Report for the month of March 2022 in accordance with the conditions set forth in Cytec's Industrial User Wastewater Discharge Permit (Permit No. CYT-2015-101). This Periodic Compliance Report presents the results of all monitoring requirements and operational issues encountered during the month of March 2022. The monthly certification form is included as Attachment A.

For the month of March, the system pumped an estimated 285,664 gallons of wastewater at an estimated average flow rate of 6.40 gallons per minute to the City of Havre de Grace Wastewater Treatment Plant during active system operation. The estimated average flow rate of 6.40 gallons per minute for the month of March satisfied both permit flow limitations (maximum of 30,000 gallons per day; 30-minute maximum of 1,000 gallons). Cytec complied with all permit conditions for flow for the month of March.

One pH meter is presently installed in-line with the effluent discharge pipe to measure pH continuously. pH results from the effluent wastewater complied with all permit conditions for pH during the month of March and no significant deviations were noted during active operation. Table 1 presents the daily flow volumes and weekly pH readings recorded for the month of March.

On March 2, an E-stop alarm was received. This alarm may occur when the facility experiences a power fluctuation and requires a system reset. The alarms were cleared, and the system was restarted on March 3 by Arcadis staff. On March 6, the system was turned off in advance of a rain event, to ensure that any ponding noted near the discharge point at the POTW system was due to rain, and not due to an underground pipe leak. The system was restarted on March 7, after confirmation with POTW staff. On March 9, an EW-02 pipe leak was received, and the system was automatically shut down. This alarm typically occurs during rain events when runoff infiltrates the EW-02 vault, triggering the alarm. Arcadis staff reset the alarm within 24-hours. On March 15, a P-300 Overload Fault alarm was received, and the system was automatically shut down. This alarm occurred as a result of the overload on the motor starter tripping (due to too much current). This alarm requires a manual reset onsite and will be inspected when Arcadis staff are onsite in April. This alarm affects the pumping at EW-02, and this well has been shut down since 3/15/22.

Ms. Jennie Kilby

April 5, 2022

Page 2 of 2

The April Compliance Report will be submitted in May 2022. Daily flow and pH will continue to be measured continuously. If the system is shut down for a period of at least 24 hours, pH results will be monitored and reported for three consecutive days to maintain compliance with permit conditions.

If you have any questions or comments, please contact me at 443-252-1093.

Sincerely,
Cytec Solvay Group

Jose Cortez
HSE Manager

Enclosure

cc: Mr. Luis Pizarro, United States Environmental Protection Agency
Mr. Paul Nemanic, Cytec Solvay Group
Ms. Tina Armstrong, Ph.D., Arcadis
Ms. Shwetha Sridharan, Arcadis

Table 1
Flow and pH Monitoring for March 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Cumulative Total Gallons Extracted (MW-10D)	Cumulative Total Gallons Extracted (EW-01)	Cumulative Total Gallons Extracted (EW-02)	Combined Cumulative Total Gallons Extracted	Daily Total Gallons Extracted	pH
03/01/22	19,356,806	4,361,978	3,382,883	27,101,667	216	
03/02/22	19,356,806	4,361,978	3,383,099	27,101,883	0	
03/03/22	19,356,806	4,361,978	3,383,099	27,101,883	12,551	5.18
03/04/22	19,364,888	4,363,513	3,386,033	27,114,434	13,892	5.66
03/05/22	19,373,883	4,365,224	3,389,219	27,128,326	7,772	5.68
03/06/22	19,378,936	4,366,183	3,390,979	27,136,098	0	
03/07/22	19,378,936	4,366,183	3,390,979	27,136,098	81	5.33
03/08/22	19,378,989	4,366,193	3,390,997	27,136,179	9,482	5.29
03/09/22	19,385,172	4,367,367	3,393,122	27,145,661	74	5.67
03/10/22	19,385,221	4,367,376	3,393,138	27,145,735	13,647	
03/11/22	19,394,176	4,369,077	3,396,129	27,159,382	13,636	5.66
03/12/22	19,403,165	4,370,782	3,399,071	27,173,018	13,583	
03/13/22	19,412,157	4,372,494	3,401,950	27,186,601	13,487	
03/14/22	19,421,149	4,374,205	3,404,734	27,200,088	13,361	
03/15/22	19,430,138	4,375,910	3,407,401	27,213,449	3,098	
03/16/22	19,432,344	4,376,332	3,407,871	27,216,547	10,420	
03/17/22	19,441,106	4,377,990	3,407,871	27,226,967	10,687	
03/18/22	19,450,093	4,379,690	3,407,871	27,237,654	10,680	5.85
03/19/22	19,459,077	4,381,386	3,407,871	27,248,334	10,674	
03/20/22	19,468,058	4,383,079	3,407,871	27,259,008	10,691	
03/21/22	19,477,047	4,384,781	3,407,871	27,269,699	10,686	
03/22/22	19,486,032	4,386,482	3,407,871	27,280,385	10,690	
03/23/22	19,495,019	4,388,185	3,407,871	27,291,075	10,694	
03/24/22	19,504,009	4,389,889	3,407,871	27,301,769	10,698	
03/25/22	19,513,000	4,391,596	3,407,871	27,312,467	10,685	5.83
03/26/22	19,521,985	4,393,296	3,407,871	27,323,152	10,693	
03/27/22	19,530,973	4,395,001	3,407,871	27,333,845	10,701	
03/28/22	19,539,965	4,396,710	3,407,871	27,344,546	10,704	
03/29/22	19,548,958	4,398,421	3,407,871	27,355,250	10,704	
03/30/22	19,557,950	4,400,133	3,407,871	27,365,954	10,700	
03/31/22	19,566,939	4,401,844	3,407,871	27,376,654	10,677	

Notes:

1. Operation of the expanded system began on January 16, 2015.
2. Totalizer readings are collected daily at 0800 at EW-01 and EW-02. In May 2018, the totalizer at MW-10D rolled over to a value greater than 10 million and the value was no longer presented on the system data tab. As a result, the totalizer reading was estimated between May 2018 and August 2019, based on the total flow in gallons recorded for the previous 24 hours. A system update was completed in August 2019 that reduced the totalizer reading for MW-10D by 10 million gallons.

Table 2
Operational Issues for March 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Root Cause for Alarm	Response
3/2/2022	E-Stop	An E-stop alarm was received and the system was automatically shut down. This alarm may occur when the facility experiences a power fluctuation and requires a system reset. The alarm was cleared by Arcadis staff on 3/3 and the system was restarted.
3/6/2022	N/A	The system was turned off in advance of a rain event, to make sure ponding noted at the POTW system was due to rain and not due to a pipe leak. The system was restarted on 3/7.
3/9/2022	EW-02 Pipe Leak	An EW-02 pipe leak alarm was received and the system was automatically shut down. This alarm typically occurs during rain events when runoff infiltrates the EW-02 vault, triggering the alarm. Arcadis staff reset the alarms within 24 hours.
3/15/2022	P-300 Overload Fault	An overload fault alarm was received and the system was automatically shut down. This alarm occurred as a result of the overload on the motor starter tripping (due to too much current going through). This alarm requires a manual reset onsite and will be inspected when Arcadis staff are onsite in April. This alarm affects the pumping at EW-02; that well has been shut down since 3/15/22.

Attachment A

Attachment A

**CYTEC SOLVAY GROUP
PERIODIC COMPLIANCE REPORT**

REPORTING MONTH/YEAR March 2022

TOTAL VOLUME DISCHARGED 285,664 Gallons

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Date

Authorized Representative



Cytec Solvay Group
1300 Revolution Street
Havre de Grace, MD 21078
410.939.1910

May 11, 2022

Ms. Jennie Kilby
Industrial Pretreatment Coordinator
City of Havre de Grace
Department of Public Works
711 Pennington Avenue
Havre de Grace, Maryland 21078

Re: CYTEC SOLVAY GROUP AEROSPACE MATERIALS
Periodic Compliance Report – April 2022
Permit Number: CYT-2015-101

Dear Ms. Kilby:

CYTEC SOLVAY GROUP (Cytec) has prepared this Periodic Compliance Report for the month of April 2022 in accordance with the conditions set forth in Cytec's Industrial User Wastewater Discharge Permit (Permit No. CYT-2015-101). This Periodic Compliance Report presents the results of all monitoring requirements and operational issues encountered during the month of April 2022. The monthly certification form is included as Attachment A.

For the month of April, the system pumped an estimated 247,191 gallons of wastewater at an estimated average flow rate of 5.72 gallons per minute to the City of Havre de Grace Wastewater Treatment Plant during active system operation. The estimated average flow rate of 5.72 gallons per minute for the month of April satisfied both permit flow limitations (maximum of 30,000 gallons per day; 30-minute maximum of 1,000 gallons).

One pH meter is presently installed in-line with the effluent discharge pipe to measure pH continuously. pH results from the effluent wastewater complied with all permit conditions for pH during the month of April and no significant deviations were noted during active operation. Table 1 presents the daily flow volumes and weekly pH readings recorded for the month of April.

On April 11, an MW-10D vault sump high level alarm was received and the system was automatically shut down. The alarm is usually indicative of a leak in the system and the system was left off until it could be inspected by Arcadis staff on April 12. Arcadis was onsite between April 12 and April 15 to conduct routine O&M, including pipe jetting and well rehab. All existing alarms were cleared and the system was restarted, no leaks were noted. As noted in the March 2022 report, the pump motor at EW-02 is faulty and is currently pending replacement and EW-02 has been shut down since March 15, 2022. Arcadis is currently reviewing options to replace this motor, dependent on when parts can be shipped from the manufacturer. On April 28, there was a power outage at the site and the system shut down. The system was restarted by on-site personnel on May 3, 2022.

The May Compliance Report will be submitted in June 2022. Daily flow and pH will continue to be measured continuously. If the system is shut down for a period of at least 24 hours, pH results will be monitored and reported for three consecutive days to maintain compliance with permit conditions.

If you have any questions or comments, please contact me at 443-252-1093.

Sincerely,
Cytec Solvay Group

Jose Cortez
HSE Manager

Enclosure

cc: Mr. Luis Pizarro, United States Environmental Protection Agency
Mr. Paul Nemanic, Cytec Solvay Group
Mr. Joshua Wilson, Arcadis
Ms. Shwetha Sridharan, Arcadis

Table 1
Flow and pH Monitoring for April 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Cumulative Total Gallons Extracted (MW-10D)	Cumulative Total Gallons Extracted (EW-01)	Cumulative Total Gallons Extracted (EW-02)	Combined Cumulative Total Gallons Extracted	Daily Total Gallons Extracted	pH
04/01/22	19,575,921	4,403,539	3,407,871	27,387,331	10,693	5.83
04/02/22	19,584,909	4,405,244	3,407,871	27,398,024	10,692	
04/03/22	19,593,897	4,406,948	3,407,871	27,408,716	10,692	
04/04/22	19,602,884	4,408,653	3,407,871	27,419,408	10,691	
04/05/22	19,611,871	4,410,357	3,407,871	27,430,099	10,682	
04/06/22	19,620,856	4,412,054	3,407,871	27,440,781	10,682	
04/07/22	19,629,841	4,413,751	3,407,871	27,451,463	10,693	
04/08/22	19,638,830	4,415,455	3,407,871	27,462,156	10,686	5.83
04/09/22	19,647,815	4,417,156	3,407,871	27,472,842	10,690	
04/10/22	19,656,802	4,418,859	3,407,871	27,483,532	10,695	
04/11/22	19,665,792	4,420,564	3,407,871	27,494,227	2,927	
04/12/22	19,668,255	4,421,028	3,407,871	27,497,154	162	
04/13/22	19,668,374	4,421,049	3,407,893	27,497,316	0	
04/14/22	19,668,374	4,421,049	3,407,893	27,497,316	0	
04/15/22	19,668,374	4,421,049	3,407,893	27,497,316	8,824	5.90
04/16/22	19,675,560	4,422,414	3,408,166	27,506,140	10,689	5.87
04/17/22	19,684,546	4,424,117	3,408,166	27,516,829	10,705	5.87
04/18/22	19,693,538	4,425,830	3,408,166	27,527,534	10,710	
04/19/22	19,702,534	4,427,544	3,408,166	27,538,244	10,708	
04/20/22	19,711,528	4,429,258	3,408,166	27,548,952	10,699	
04/21/22	19,720,518	4,430,967	3,408,166	27,559,651	10,698	
04/22/22	19,729,506	4,432,677	3,408,166	27,570,349	10,693	5.74
04/23/22	<i>19,738,492</i>	<i>4,434,384</i>	<i>3,408,166</i>	<i>27,581,042</i>	<i>10,693</i>	
04/24/22	19,747,478	4,436,090	3,408,166	27,591,734	10,691	
04/25/22	19,756,463	4,437,796	3,408,166	27,602,425	10,696	
04/26/22	19,765,449	4,439,506	3,408,166	27,613,121	10,696	
04/27/22	19,774,437	4,441,214	3,408,166	27,623,817	10,705	
04/28/22	19,783,428	4,442,928	3,408,166	27,634,522	0	
04/29/22	19,783,428	4,442,928	3,408,166	27,634,522	0	5.60
04/30/22	19,783,428	4,442,928	3,408,166	27,634,522	0	

Notes:

1. Operation of the expanded system began on January 16, 2015.
2. Totalizer readings are collected daily at 0800 at EW-01 and EW-02. In May 2018, the totalizer at MW-10D rolled over to a value greater than 10 million and the value was no longer presented on the system data tab. As a result, the totalizer reading was estimated between May 2018 and August 2019, based on the total flow in gallons recorded for the previous 24 hours. A system update was completed in August 2019 that reduced the totalizer reading for MW-10D by 10 million gallons.
3. Italics indicates estimated value for monthly and daily flow.

Table 2
Operational Issues for April 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Root Cause for Alarm	Response
4/11/2022	MW-10D Vault Sump High Level	An MW-10D vault sump high level alarm was received and the system was automatically shut down. This alarm is usually indicative of a leak in the system and the system was left off until it could be inspected.
4/12/2022 - 4/15/2022	O&M	Arcadis was onsite to conduct routine yearly pipe jetting, well rehab, and O&M event. The P-300 Overload alarm remains active as the motor at EW-02 has failed and needs to be replaced. Arcadis is currently considering replacement motors for EW-02. All other alarms were cleared and the system was restarted, though EW-02 was left off. No leaks were noted.
4/28/2022	N/A	A power outage at the plant turned the system off. The modem was also turned off and the system was restarted on 5/3/22 by on-site personnel.

Attachment A

Attachment A

**CYTEC SOLVAY GROUP
PERIODIC COMPLIANCE REPORT**

REPORTING MONTH/YEAR April 2022

TOTAL VOLUME DISCHARGED 247,191 Gallons

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Date

Authorized Representative



Cytec Solvay Group
1300 Revolution Street
Havre de Grace, MD 21078
410.939.1910

June 14, 2022

Mr. Ken Montgomery
Industrial Pretreatment Coordinator
City of Havre de Grace
Department of Public Works
711 Pennington Avenue
Havre de Grace, Maryland 21078

Re: CYTEC SOLVAY GROUP AEROSPACE MATERIALS
Periodic Compliance Report – May 2022
Permit Number: CYT-2015-101

Dear Mr. Montgomery:

CYTEC SOLVAY GROUP (Cytec) has prepared this Periodic Compliance Report for the month of May 2022 in accordance with the conditions set forth in Cytec's Industrial User Wastewater Discharge Permit (Permit No. CYT-2015-101). This Periodic Compliance Report presents the results of all monitoring requirements and operational issues encountered during the month of May 2022. The monthly certification form is included as Attachment A.

For the month of May, the system pumped an estimated 277,962 gallons of wastewater at an estimated average flow rate of 6.23 gallons per minute to the City of Havre de Grace Wastewater Treatment Plant during active system operation. The estimated average flow rate of 6.23 gallons per minute for the month of May satisfied both permit flow limitations (maximum of 30,000 gallons per day; 30-minute maximum of 1,000 gallons).

One pH meter is presently installed in-line with the effluent discharge pipe to measure pH continuously. pH results from the effluent wastewater complied with all permit conditions for pH during the month of May and no significant deviations were noted during active operation. Table 1 presents the daily flow volumes and weekly pH readings recorded for the month of May.

As noted in the March 2022 report, the pump motor at EW-02 is faulty and is currently pending replacement and EW-02 has been shut down since March 15, 2022. Arcadis is currently reviewing options to replace this motor, dependent on when parts can be shipped from the manufacturer. One E-stop (May 3, 2022) and two drive fault alarms (May 5 and May 24, 2022) were received which automatically shut down the system. These alarms may occur when the facility experiences a power fluctuation. All alarms were cleared by onsite personnel within 24 hours. On May 6, 2022, an EW-01 pipe leak alarm was received, and the system was automatically shut down. The alarm was over-ridden and the system was restarted within 24 hours. This alarm currently remains over-ridden and continues to be triggered, though this could be due to standing water in the EW-01 vault; this is a common alarm and does not necessarily indicate a leaking pipe. Arcadis staff will inspect the vault during the next site visit. Alarms are summarized on Table 2.

The June Compliance Report will be submitted in July 2022. Daily flow and pH will continue to be

measured continuously. If the system is shut down for a period of at least 24 hours, pH results will be monitored and reported for three consecutive days to maintain compliance with permit conditions.

The first semi-annual effluent grab sample for 2022 was collected from the point of discharge at the POTW on May 10, 2022. The effluent grab sample was analyzed for Priority Pollutant volatile organic compounds, semi-volatile organic compounds, metals, and cyanide. Analytical results for the effluent groundwater samples for metals and cyanide are compared to the effluent limitations specified in Cytex's Industrial User Wastewater Discharge Permit (Permit No. CYT-2015-101). Table 3 presents the analytical results required by the Permit. As summarized in Table 3 below, no exceedances of the effluent limitations were observed. The analytical laboratory report is presented as Attachment B, including volatile organic compound and semi-volatile organic compound results.

Table 3. Analytical Data Summary

Parameter	Effluent Limitations (µg/l)	May 2022 POTW Discharge (µg/l)
Total Arsenic	4,060	6.3 J
Total Cadmium	90	ND
Total Chromium	390	ND
Total Copper	80	ND
Total Lead	650	ND
Total Nickel	780	5.7 J
Total Silver	50	ND
Total Zinc	9,300	6.0 J
Total Mercury	0.3	ND
Total Cyanide	180	0.0091 J

If you have any questions or comments, please contact me at 443-252-1093.

Sincerely,
Cytex Solvay Group

Jose Cortez
HSE Manager

Enclosure

cc: Mr. Luis Pizarro, United States Environmental Protection Agency
Mr. Paul Nemanic, Cytec Solvay Group
Mr. Joshua Wilson, Arcadis
Ms. Shwetha Sridharan, Arcadis

Table 1
Flow and pH Monitoring for May 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Cumulative Total Gallons Extracted (MW-10D)	Cumulative Total Gallons Extracted (EW-01)	Cumulative Total Gallons Extracted (EW-02)	Combined Cumulative Total Gallons Extracted	Daily Total Gallons Extracted	pH
05/01/22	19,783,428	4,442,928	3,408,166	27,634,522	0	
05/02/22	19,783,428	4,442,928	3,408,166	27,634,522	1,635	
05/03/22	19,784,802	4,443,189	3,408,166	27,636,157	5,574	
<i>05/04/22</i>	<i>19,789,486</i>	<i>4,444,079</i>	<i>3,408,166</i>	<i>27,641,731</i>	<i>3,716</i>	
<i>05/05/22</i>	<i>19,792,608</i>	<i>4,444,672</i>	<i>3,408,166</i>	<i>27,645,446</i>	<i>7,432</i>	
05/06/22	19,798,853	4,445,859	3,408,166	27,652,878	10,685	5.77
05/07/22	19,807,828	4,447,569	3,408,166	27,663,563	10,711	
05/08/22	19,816,825	4,449,283	3,408,166	27,674,274	10,705	
05/09/22	19,825,817	4,450,996	3,408,166	27,684,979	10,694	
05/10/22	19,834,804	4,452,703	3,408,166	27,695,673	10,692	
05/11/22	19,843,788	4,454,411	3,408,166	27,706,365	10,694	
05/12/22	19,852,771	4,456,122	3,408,166	27,717,059	10,688	
05/13/22	19,861,752	4,457,829	3,408,166	27,727,747	10,689	5.76
05/14/22	19,870,732	4,459,538	3,408,166	27,738,436	10,696	
05/15/22	19,879,714	4,461,252	3,408,166	27,749,132	10,686	
05/16/22	19,888,694	4,462,958	3,408,166	27,759,818	10,693	
05/17/22	19,897,677	4,464,668	3,408,166	27,770,511	10,685	
05/18/22	19,906,657	4,466,373	3,408,166	27,781,196	10,692	
05/19/22	19,915,640	4,468,082	3,408,166	27,791,888	10,688	
05/20/22	19,924,622	4,469,788	3,408,166	27,802,576	10,680	5.77
05/21/22	19,933,599	4,471,491	3,408,166	27,813,256	10,676	
05/22/22	19,942,573	4,473,193	3,408,166	27,823,932	6,908	
<i>05/23/22</i>	<i>19,948,378</i>	<i>4,474,296</i>	<i>3,408,166</i>	<i>27,830,840</i>	<i>3,454</i>	
<i>05/24/22</i>	<i>19,951,280</i>	<i>4,474,848</i>	<i>3,408,166</i>	<i>27,834,293</i>	<i>3,454</i>	
05/25/22	19,954,182	4,475,399	3,408,166	27,837,747	10,686	
05/26/22	19,963,162	4,477,105	3,408,166	27,848,433	10,686	
05/27/22	19,972,142	4,478,811	3,408,166	27,859,119	10,681	5.75
05/28/22	19,981,122	4,480,512	3,408,166	27,869,800	10,680	
05/29/22	19,990,101	4,482,213	3,408,166	27,880,480	10,676	
05/30/22	19,999,077	4,483,913	3,408,166	27,891,156	10,668	
05/31/22	20,008,050	4,485,608	3,408,166	27,901,824	10,660	

Notes:

1. Operation of the expanded system began on January 16, 2015.
2. Totalizer readings are collected daily at 0800 at EW-01 and EW-02. In May 2018, the totalizer at MW-10D rolled over to a value greater than 10 million and the value was no longer presented on the system data tab. As a result, the totalizer reading was estimated between May 2018 and August 2019, based on the total flow in gallons recorded for the previous 24 hours. A system update was completed in August 2019 that reduced the totalizer reading for MW-10D by 10 million gallons.
3. Italics indicates estimated value for monthly and daily flow.

Table 2
Operational Issues for May 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Root Cause for Alarm	Response
5/3/2022	E-Stop	An E-stop alarm was received and the system was automatically shut down. This alarm may occur when the facility experiences a power fluctuation and requires a system reset. The alarm was cleared by onsite staff within 24 hours and the system was restarted.
5/5/2022 & 5/24/2022	Drive Fault Alarms	Drive fault alarms were received and the system was automatically shut down. This alarm may occur when the facility experiences a power fluctuation and requires a system reset. The alarm was cleared by onsite staff within 24 hours and the system was restarted.
5/6/2022	EW-01 Pipe Leak	An EW-01 pipe leak alarm was received and the system was automatically shut down. This alarm typically occurs during rain events when runoff infiltrates the EW-01 vault, triggering the alarm. The alarm was disabled and the system restarted within 24 hours. The alarm remains active, Arcadis staff will inspect the vault for standing water during the next site visit.

Attachment A

Attachment A

**CYTEC SOLVAY GROUP
PERIODIC COMPLIANCE REPORT**

REPORTING MONTH/YEAR May 2022

TOTAL VOLUME DISCHARGED 277,962 Gallons

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Date

Authorized Representative

Attachment B

ANALYTICAL REPORT

Eurofins Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-137972-1

Client Project/Site: Cytex Havre de Grace MD

For:

ARCADIS U.S., Inc.
7550 Teague Road
Suite 210
Hanover, Maryland 21076

Attn: Ms. Shwetha Sridharan



Authorized for release by:

6/2/2022 12:10:34 PM

Jill Colussy, Project Manager I
(412)963-2444

Jill.Colussy@et.eurofinsus.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

PA Lab ID: 02-00416



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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-137972-1

Job ID: 180-137972-1

Laboratory: Eurofins Pittsburgh

Narrative

Job Narrative 180-137972-1

Receipt

The samples were received on 5/11/2022 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.8° C.

GC/MS VOA

Due to the concentration of target compounds detected, samples EW-1 (051022) (180-137972-1), EFFLUENT (051022) (180-137972-3) and POTW (051022) (180-137972-4). were analyzed at a dilution. Elevated reporting limits (RLs) are provided.

The laboratory control sample (LCS) for batch 180-398499 recovered outside control limits for 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, Acrylonitrile and Bromoform. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

GC/MS Semi VOA

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.



Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-137972-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC/MS Semi VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Cytex Havre de Grace MD

Job ID: 180-137972-1

Laboratory: Eurofins Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	19-033-0	06-27-22
California	State	2891	04-30-22 *
Connecticut	State	PH-0688	09-30-22
Florida	NELAP	E871008	06-30-22
Georgia	State	PA 02-00416	04-30-23
Illinois	NELAP	004375	06-30-22
Kansas	NELAP	E-10350	03-31-23
Kentucky (UST)	State	162013	04-30-22 *
Kentucky (WW)	State	KY98043	12-31-22
Louisiana	NELAP	04041	06-30-22
Maine	State	PA00164	03-06-24
Minnesota	NELAP	042-999-482	12-31-22
Nevada	State	PA00164	08-31-22
New Hampshire	NELAP	2030	04-04-23
New Jersey	NELAP	PA005	06-30-23
New York	NELAP	11182	04-01-23
North Carolina (WW/SW)	State	434	12-31-22
North Dakota	State	R-227	04-30-22 *
Oregon	NELAP	PA-2151	02-07-23
Pennsylvania	NELAP	02-00416	04-30-23
Rhode Island	State	LAO00362	12-31-21 *
South Carolina	State	89014	06-30-22
Texas	NELAP	T104704528	03-31-23
USDA	Federal	P-Soil-01	06-26-22
USDA	US Federal Programs	P330-16-00211	06-26-22
Utah	NELAP	PA001462019-8	05-31-22 *
Virginia	NELAP	10043	09-14-22
West Virginia DEP	State	142	01-31-23
Wisconsin	State	998027800	08-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-137972-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-137972-1	EW-1 (051022)	Water	05/10/22 10:30	05/11/22 09:00
180-137972-2	MW-10D (051022)	Water	05/10/22 10:35	05/11/22 09:00
180-137972-3	EFFLUENT (051022)	Water	05/10/22 10:40	05/11/22 09:00
180-137972-4	POTW (051022)	Water	05/10/22 11:00	05/11/22 09:00
180-137972-5	TRIP BLANK	Water	05/10/22 00:00	05/11/22 09:00

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Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-137972-1

Method	Method Description	Protocol	Laboratory
EPA 624.1	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL PIT
EPA 625.1	Semivolatile Organic Compounds (GC/MS)	40 CFR 761	TAL PIT
EPA 200.7 Rev 4	Metals (ICP)	EPA	TAL PIT
EPA 245.1 Rev.	Mercury (CVAA)	EPA	TAL PIT
SM 4500CN E	Total Cyanide	SM	TAL PIT
200.7	Preparation, Total Recoverable Metals	EPA	TAL PIT
245.1	Preparation, Mercury	EPA	TAL PIT
625	Liquid-Liquid Extraction	40CFR136A	TAL PIT
SM 4500 CN C	Cyanide, Distillation	SM	TAL PIT

Protocol References:

40 CFR 761 = Toxic Substances Control Act (TSCA)

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

TAL PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Client Sample ID: EW-1 (051022)
 Date Collected: 05/10/22 10:30
 Date Received: 05/11/22 09:00

Lab Sample ID: 180-137972-1
 Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624.1		50	5 mL	5 mL	398499	05/12/22 14:57	SW1	TAL PIT
Instrument ID: CHHP6										

Client Sample ID: MW-10D (051022)
 Date Collected: 05/10/22 10:35
 Date Received: 05/11/22 09:00

Lab Sample ID: 180-137972-2
 Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624.1		1	5 mL	5 mL	398499	05/12/22 15:23	SW1	TAL PIT
Instrument ID: CHHP6										

Client Sample ID: EFFLUENT (051022)
 Date Collected: 05/10/22 10:40
 Date Received: 05/11/22 09:00

Lab Sample ID: 180-137972-3
 Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624.1		5	5 mL	5 mL	398499	05/12/22 13:14	SW1	TAL PIT
Instrument ID: CHHP6										

Client Sample ID: POTW (051022)
 Date Collected: 05/10/22 11:00
 Date Received: 05/11/22 09:00

Lab Sample ID: 180-137972-4
 Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624.1		5	5 mL	5 mL	398499	05/12/22 14:06	SW1	TAL PIT
Instrument ID: CHHP6										
Total/NA	Prep	625			240 mL	250 uL	399113	05/17/22 14:55	BJT	TAL PIT
Total/NA	Analysis	EPA 625.1		1	1 mL	1 mL	399580	05/21/22 16:11	VVP	TAL PIT
Instrument ID: CH733										
Total Recoverable	Prep	200.7			25 mL	25 mL	399223	05/18/22 13:03	NAF	TAL PIT
Total Recoverable	Analysis	EPA 200.7 Rev 4		1			399442	05/19/22 23:55	RJG	TAL PIT
Instrument ID: C										
Total/NA	Prep	245.1			50 mL	50 mL	400485	06/01/22 07:25	RJR	TAL PIT
Total/NA	Analysis	EPA 245.1 Rev.		1			400599	06/01/22 18:43	RJR	TAL PIT
Instrument ID: HGY										
Total/NA	Prep	SM 4500 CN C			6 mL	6 mL	398646	05/17/22 08:00	CMR	TAL PIT
Total/NA	Analysis	SM 4500CN E		1			399126	05/17/22 13:50	CMR	TAL PIT
Instrument ID: SEAL1										

Client Sample ID: TRIP BLANK
 Date Collected: 05/10/22 00:00
 Date Received: 05/11/22 09:00

Lab Sample ID: 180-137972-5
 Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624.1		1	5 mL	5 mL	398499	05/12/22 13:40	SW1	TAL PIT
Instrument ID: CHHP6										

Eurofins Pittsburgh

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-137972-1

Laboratory References:

TAL PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Analyst References:

Lab: TAL PIT

Batch Type: Prep

BJT = Bill Trout

CMR = Carl Reagle

NAF = Nicholas Frankos

RJR = Ron Rosenbaum

Batch Type: Analysis

CMR = Carl Reagle

RJG = Rob Good

RJR = Ron Rosenbaum

SW1 = Sunan Wang-un

VVP = Vincent Piccolino

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Client Sample ID: EW-1 (051022)

Lab Sample ID: 180-137972-1

Date Collected: 05/10/22 10:30

Matrix: Water

Date Received: 05/11/22 09:00

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		50	30	ug/L			05/12/22 14:57	50
1,1,2,2-Tetrachloroethane	ND	*+	50	30	ug/L			05/12/22 14:57	50
1,1,2-Trichloroethane	ND	*+	50	23	ug/L			05/12/22 14:57	50
1,1-Dichloroethane	ND		50	15	ug/L			05/12/22 14:57	50
1,1-Dichloroethene	ND		50	28	ug/L			05/12/22 14:57	50
1,2-Dichloroethane	670		50	29	ug/L			05/12/22 14:57	50
1,2-Dichloropropane	ND		50	33	ug/L			05/12/22 14:57	50
1,2-Dichlorobenzene	ND		50	18	ug/L			05/12/22 14:57	50
1,3-Dichlorobenzene	ND		50	25	ug/L			05/12/22 14:57	50
1,4-Dichlorobenzene	ND		50	27	ug/L			05/12/22 14:57	50
2-Chloroethyl vinyl ether	ND		100	86	ug/L			05/12/22 14:57	50
Acrolein	ND		1000	800	ug/L			05/12/22 14:57	50
Acrylonitrile	ND	*+	1000	390	ug/L			05/12/22 14:57	50
Benzene	ND		50	30	ug/L			05/12/22 14:57	50
Bromoform	ND	*+	50	49	ug/L			05/12/22 14:57	50
Bromomethane	ND		50	44	ug/L			05/12/22 14:57	50
Carbon tetrachloride	ND		50	44	ug/L			05/12/22 14:57	50
Chlorobenzene	ND		50	25	ug/L			05/12/22 14:57	50
Chloroform	ND		50	30	ug/L			05/12/22 14:57	50
Chloromethane	ND		50	45	ug/L			05/12/22 14:57	50
cis-1,3-Dichloropropene	ND		50	30	ug/L			05/12/22 14:57	50
Ethylbenzene	ND		50	25	ug/L			05/12/22 14:57	50
Methylene Chloride	ND		50	44	ug/L			05/12/22 14:57	50
Tetrachloroethene	ND		50	23	ug/L			05/12/22 14:57	50
Toluene	ND		50	23	ug/L			05/12/22 14:57	50
trans-1,2-Dichloroethene	ND		50	34	ug/L			05/12/22 14:57	50
trans-1,3-Dichloropropene	ND		50	29	ug/L			05/12/22 14:57	50
Trichloroethene	ND		50	34	ug/L			05/12/22 14:57	50
Vinyl chloride	ND		50	20	ug/L			05/12/22 14:57	50
Dibromochloromethane	ND		50	42	ug/L			05/12/22 14:57	50
Bromodichloromethane	ND		50	32	ug/L			05/12/22 14:57	50
Chloroethane	ND		50	45	ug/L			05/12/22 14:57	50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	121		28 - 163		05/12/22 14:57	50
4-Bromofluorobenzene (Surr)	99		41 - 122		05/12/22 14:57	50
Toluene-d8 (Surr)	87		53 - 125		05/12/22 14:57	50
Dibromofluoromethane (Surr)	103		59 - 168		05/12/22 14:57	50

Client Sample ID: MW-10D (051022)

Lab Sample ID: 180-137972-2

Date Collected: 05/10/22 10:35

Matrix: Water

Date Received: 05/11/22 09:00

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.60	ug/L			05/12/22 15:23	1
1,1,2,2-Tetrachloroethane	ND	*+	1.0	0.60	ug/L			05/12/22 15:23	1
1,1,2-Trichloroethane	ND	*+	1.0	0.45	ug/L			05/12/22 15:23	1
1,1-Dichloroethane	ND		1.0	0.31	ug/L			05/12/22 15:23	1
1,1-Dichloroethene	ND		1.0	0.55	ug/L			05/12/22 15:23	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Client Sample ID: MW-10D (051022)

Lab Sample ID: 180-137972-2

Date Collected: 05/10/22 10:35

Matrix: Water

Date Received: 05/11/22 09:00

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane	ND		1.0	0.57	ug/L			05/12/22 15:23	1
1,2-Dichloropropane	ND		1.0	0.66	ug/L			05/12/22 15:23	1
1,2-Dichlorobenzene	ND		1.0	0.36	ug/L			05/12/22 15:23	1
1,3-Dichlorobenzene	ND		1.0	0.50	ug/L			05/12/22 15:23	1
1,4-Dichlorobenzene	ND		1.0	0.54	ug/L			05/12/22 15:23	1
2-Chloroethyl vinyl ether	ND		2.0	1.7	ug/L			05/12/22 15:23	1
Acrolein	ND		20	16	ug/L			05/12/22 15:23	1
Acrylonitrile	ND	+	20	7.8	ug/L			05/12/22 15:23	1
Benzene	ND		1.0	0.60	ug/L			05/12/22 15:23	1
Bromoform	ND	+	1.0	0.98	ug/L			05/12/22 15:23	1
Bromomethane	ND		1.0	0.89	ug/L			05/12/22 15:23	1
Carbon tetrachloride	ND		1.0	0.88	ug/L			05/12/22 15:23	1
Chlorobenzene	ND		1.0	0.50	ug/L			05/12/22 15:23	1
Chloroform	ND		1.0	0.60	ug/L			05/12/22 15:23	1
Chloromethane	ND		1.0	0.90	ug/L			05/12/22 15:23	1
cis-1,3-Dichloropropene	ND		1.0	0.59	ug/L			05/12/22 15:23	1
Ethylbenzene	ND		1.0	0.51	ug/L			05/12/22 15:23	1
Methylene Chloride	ND		1.0	0.89	ug/L			05/12/22 15:23	1
Tetrachloroethene	ND		1.0	0.47	ug/L			05/12/22 15:23	1
Toluene	ND		1.0	0.46	ug/L			05/12/22 15:23	1
trans-1,2-Dichloroethene	ND		1.0	0.67	ug/L			05/12/22 15:23	1
trans-1,3-Dichloropropene	ND		1.0	0.58	ug/L			05/12/22 15:23	1
Trichloroethene	ND		1.0	0.69	ug/L			05/12/22 15:23	1
Vinyl chloride	ND		1.0	0.40	ug/L			05/12/22 15:23	1
Dibromochloromethane	ND		1.0	0.84	ug/L			05/12/22 15:23	1
Bromodichloromethane	ND		1.0	0.64	ug/L			05/12/22 15:23	1
Chloroethane	ND		1.0	0.90	ug/L			05/12/22 15:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		28 - 163		05/12/22 15:23	1
4-Bromofluorobenzene (Surr)	98		41 - 122		05/12/22 15:23	1
Toluene-d8 (Surr)	89		53 - 125		05/12/22 15:23	1
Dibromofluoromethane (Surr)	105		59 - 168		05/12/22 15:23	1

Client Sample ID: EFFLUENT (051022)

Lab Sample ID: 180-137972-3

Date Collected: 05/10/22 10:40

Matrix: Water

Date Received: 05/11/22 09:00

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	3.0	ug/L			05/12/22 13:14	5
1,1,1,2,2-Tetrachloroethane	ND	+	5.0	3.0	ug/L			05/12/22 13:14	5
1,1,2-Trichloroethane	ND	+	5.0	2.3	ug/L			05/12/22 13:14	5
1,1-Dichloroethane	ND		5.0	1.5	ug/L			05/12/22 13:14	5
1,1-Dichloroethene	ND		5.0	2.8	ug/L			05/12/22 13:14	5
1,2-Dichloroethane	140		5.0	2.9	ug/L			05/12/22 13:14	5
1,2-Dichloropropane	ND		5.0	3.3	ug/L			05/12/22 13:14	5
1,2-Dichlorobenzene	ND		5.0	1.8	ug/L			05/12/22 13:14	5
1,3-Dichlorobenzene	ND		5.0	2.5	ug/L			05/12/22 13:14	5
1,4-Dichlorobenzene	ND		5.0	2.7	ug/L			05/12/22 13:14	5

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Client Sample ID: EFFLUENT (051022)

Lab Sample ID: 180-137972-3

Date Collected: 05/10/22 10:40

Matrix: Water

Date Received: 05/11/22 09:00

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloroethyl vinyl ether	ND		10	8.6	ug/L			05/12/22 13:14	5
Acrolein	ND		100	80	ug/L			05/12/22 13:14	5
Acrylonitrile	ND	*+	100	39	ug/L			05/12/22 13:14	5
Benzene	ND		5.0	3.0	ug/L			05/12/22 13:14	5
Bromoform	ND	*+	5.0	4.9	ug/L			05/12/22 13:14	5
Bromomethane	ND		5.0	4.4	ug/L			05/12/22 13:14	5
Carbon tetrachloride	ND		5.0	4.4	ug/L			05/12/22 13:14	5
Chlorobenzene	ND		5.0	2.5	ug/L			05/12/22 13:14	5
Chloroform	ND		5.0	3.0	ug/L			05/12/22 13:14	5
Chloromethane	ND		5.0	4.5	ug/L			05/12/22 13:14	5
cis-1,3-Dichloropropene	ND		5.0	3.0	ug/L			05/12/22 13:14	5
Ethylbenzene	ND		5.0	2.5	ug/L			05/12/22 13:14	5
Methylene Chloride	ND		5.0	4.4	ug/L			05/12/22 13:14	5
Tetrachloroethene	ND		5.0	2.3	ug/L			05/12/22 13:14	5
Toluene	ND		5.0	2.3	ug/L			05/12/22 13:14	5
trans-1,2-Dichloroethene	ND		5.0	3.4	ug/L			05/12/22 13:14	5
trans-1,3-Dichloropropene	ND		5.0	2.9	ug/L			05/12/22 13:14	5
Trichloroethene	4.1	J	5.0	3.4	ug/L			05/12/22 13:14	5
Vinyl chloride	ND		5.0	2.0	ug/L			05/12/22 13:14	5
Dibromochloromethane	ND		5.0	4.2	ug/L			05/12/22 13:14	5
Bromodichloromethane	ND		5.0	3.2	ug/L			05/12/22 13:14	5
Chloroethane	ND		5.0	4.5	ug/L			05/12/22 13:14	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	137		28 - 163		05/12/22 13:14	5
4-Bromofluorobenzene (Surr)	102		41 - 122		05/12/22 13:14	5
Toluene-d8 (Surr)	83		53 - 125		05/12/22 13:14	5
Dibromofluoromethane (Surr)	115		59 - 168		05/12/22 13:14	5

Client Sample ID: POTW (051022)

Lab Sample ID: 180-137972-4

Date Collected: 05/10/22 11:00

Matrix: Water

Date Received: 05/11/22 09:00

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	3.0	ug/L			05/12/22 14:06	5
1,1,2,2-Tetrachloroethane	ND	*+	5.0	3.0	ug/L			05/12/22 14:06	5
1,1,2-Trichloroethane	ND	*+	5.0	2.3	ug/L			05/12/22 14:06	5
1,1-Dichloroethane	ND		5.0	1.5	ug/L			05/12/22 14:06	5
1,1-Dichloroethene	ND		5.0	2.8	ug/L			05/12/22 14:06	5
1,2-Dichloroethane	130		5.0	2.9	ug/L			05/12/22 14:06	5
1,2-Dichloropropane	ND		5.0	3.3	ug/L			05/12/22 14:06	5
1,2-Dichlorobenzene	ND		5.0	1.8	ug/L			05/12/22 14:06	5
1,3-Dichlorobenzene	ND		5.0	2.5	ug/L			05/12/22 14:06	5
1,4-Dichlorobenzene	ND		5.0	2.7	ug/L			05/12/22 14:06	5
2-Chloroethyl vinyl ether	ND		10	8.6	ug/L			05/12/22 14:06	5
Acrolein	ND		100	80	ug/L			05/12/22 14:06	5
Acrylonitrile	ND	*+	100	39	ug/L			05/12/22 14:06	5
Benzene	ND		5.0	3.0	ug/L			05/12/22 14:06	5
Bromoform	ND	*+	5.0	4.9	ug/L			05/12/22 14:06	5

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Client Sample ID: POTW (051022)

Lab Sample ID: 180-137972-4

Date Collected: 05/10/22 11:00

Matrix: Water

Date Received: 05/11/22 09:00

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND		5.0	4.4	ug/L			05/12/22 14:06	5
Carbon tetrachloride	ND		5.0	4.4	ug/L			05/12/22 14:06	5
Chlorobenzene	ND		5.0	2.5	ug/L			05/12/22 14:06	5
Chloroform	ND		5.0	3.0	ug/L			05/12/22 14:06	5
Chloromethane	ND		5.0	4.5	ug/L			05/12/22 14:06	5
cis-1,3-Dichloropropene	ND		5.0	3.0	ug/L			05/12/22 14:06	5
Ethylbenzene	ND		5.0	2.5	ug/L			05/12/22 14:06	5
Methylene Chloride	ND		5.0	4.4	ug/L			05/12/22 14:06	5
Tetrachloroethene	ND		5.0	2.3	ug/L			05/12/22 14:06	5
Toluene	ND		5.0	2.3	ug/L			05/12/22 14:06	5
trans-1,2-Dichloroethene	ND		5.0	3.4	ug/L			05/12/22 14:06	5
trans-1,3-Dichloropropene	ND		5.0	2.9	ug/L			05/12/22 14:06	5
Trichloroethene	4.0	J	5.0	3.4	ug/L			05/12/22 14:06	5
Vinyl chloride	ND		5.0	2.0	ug/L			05/12/22 14:06	5
Dibromochloromethane	ND		5.0	4.2	ug/L			05/12/22 14:06	5
Bromodichloromethane	ND		5.0	3.2	ug/L			05/12/22 14:06	5
Chloroethane	ND		5.0	4.5	ug/L			05/12/22 14:06	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	136		28 - 163		05/12/22 14:06	5
4-Bromofluorobenzene (Surr)	101		41 - 122		05/12/22 14:06	5
Toluene-d8 (Surr)	85		53 - 125		05/12/22 14:06	5
Dibromofluoromethane (Surr)	112		59 - 168		05/12/22 14:06	5

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	ND		0.20	0.068	ug/L		05/17/22 14:55	05/21/22 16:11	1
Acenaphthene	ND		0.20	0.068	ug/L		05/17/22 14:55	05/21/22 16:11	1
Anthracene	ND		0.20	0.051	ug/L		05/17/22 14:55	05/21/22 16:11	1
Benzidine	ND	F1	21	9.5	ug/L		05/17/22 14:55	05/21/22 16:11	1
Benzo[a]anthracene	ND		0.20	0.078	ug/L		05/17/22 14:55	05/21/22 16:11	1
Benzo[b]fluoranthene	ND		0.20	0.10	ug/L		05/17/22 14:55	05/21/22 16:11	1
Benzo[k]fluoranthene	ND		0.20	0.092	ug/L		05/17/22 14:55	05/21/22 16:11	1
Benzo[g,h,i]perylene	ND		0.20	0.072	ug/L		05/17/22 14:55	05/21/22 16:11	1
Benzo[a]pyrene	ND		0.20	0.055	ug/L		05/17/22 14:55	05/21/22 16:11	1
Bis(2-chloroethyl)ether	ND		0.20	0.042	ug/L		05/17/22 14:55	05/21/22 16:11	1
Bis(2-ethylhexyl) phthalate	ND		10	6.5	ug/L		05/17/22 14:55	05/21/22 16:11	1
4-Bromophenyl phenyl ether	ND		1.0	0.33	ug/L		05/17/22 14:55	05/21/22 16:11	1
Butyl benzyl phthalate	ND		1.0	0.48	ug/L		05/17/22 14:55	05/21/22 16:11	1
4-Chloro-3-methylphenol	ND		1.0	0.29	ug/L		05/17/22 14:55	05/21/22 16:11	1
2-Chloronaphthalene	ND		0.20	0.061	ug/L		05/17/22 14:55	05/21/22 16:11	1
2-Chlorophenol	ND		1.0	0.13	ug/L		05/17/22 14:55	05/21/22 16:11	1
Chrysene	ND		0.20	0.084	ug/L		05/17/22 14:55	05/21/22 16:11	1
Dibenzo(a,h)-anthracene	ND		0.20	0.075	ug/L		05/17/22 14:55	05/21/22 16:11	1
Di-n-butyl phthalate	2.1		1.0	0.77	ug/L		05/17/22 14:55	05/21/22 16:11	1
3,3'-Dichlorobenzidine	ND		1.0	0.61	ug/L		05/17/22 14:55	05/21/22 16:11	1
2,4-Dichlorophenol	ND		0.20	0.053	ug/L		05/17/22 14:55	05/21/22 16:11	1
Diethyl phthalate	ND		1.0	0.59	ug/L		05/17/22 14:55	05/21/22 16:11	1
2,4-Dimethylphenol	ND		1.0	0.17	ug/L		05/17/22 14:55	05/21/22 16:11	1
Dimethyl phthalate	ND		1.0	0.21	ug/L		05/17/22 14:55	05/21/22 16:11	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Client Sample ID: POTW (051022)

Lab Sample ID: 180-137972-4

Date Collected: 05/10/22 11:00

Matrix: Water

Date Received: 05/11/22 09:00

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,6-Dinitro-2-methylphenol	ND		5.2	1.5	ug/L		05/17/22 14:55	05/21/22 16:11	1
2,4-Dinitrophenol	ND		10	1.6	ug/L		05/17/22 14:55	05/21/22 16:11	1
2,4-Dinitrotoluene	ND		1.0	0.37	ug/L		05/17/22 14:55	05/21/22 16:11	1
2,6-Dinitrotoluene	ND		1.0	0.18	ug/L		05/17/22 14:55	05/21/22 16:11	1
Di-n-octyl phthalate	ND		1.0	0.71	ug/L		05/17/22 14:55	05/21/22 16:11	1
Fluoranthene	ND		0.20	0.063	ug/L		05/17/22 14:55	05/21/22 16:11	1
Fluorene	ND		0.20	0.072	ug/L		05/17/22 14:55	05/21/22 16:11	1
Hexachlorobenzene	ND		0.20	0.058	ug/L		05/17/22 14:55	05/21/22 16:11	1
Hexachlorobutadiene	ND		0.20	0.072	ug/L		05/17/22 14:55	05/21/22 16:11	1
Hexachlorocyclopentadiene	ND		1.0	0.52	ug/L		05/17/22 14:55	05/21/22 16:11	1
Hexachloroethane	ND		1.0	0.14	ug/L		05/17/22 14:55	05/21/22 16:11	1
Indeno[1,2,3-cd]pyrene	ND		0.20	0.089	ug/L		05/17/22 14:55	05/21/22 16:11	1
Isophorone	ND		1.0	0.20	ug/L		05/17/22 14:55	05/21/22 16:11	1
Naphthalene	ND		0.20	0.061	ug/L		05/17/22 14:55	05/21/22 16:11	1
Nitrobenzene	ND		2.1	0.52	ug/L		05/17/22 14:55	05/21/22 16:11	1
2-Nitrophenol	ND		1.0	0.20	ug/L		05/17/22 14:55	05/21/22 16:11	1
4-Nitrophenol	ND		5.2	0.98	ug/L		05/17/22 14:55	05/21/22 16:11	1
N-Nitrosodimethylamine	ND		1.0	0.070	ug/L		05/17/22 14:55	05/21/22 16:11	1
N-Nitrosodiphenylamine	ND		1.0	0.12	ug/L		05/17/22 14:55	05/21/22 16:11	1
N-Nitrosodi-n-propylamine	ND		0.20	0.074	ug/L		05/17/22 14:55	05/21/22 16:11	1
2,2'-oxybis[1-chloropropane]	ND		0.20	0.060	ug/L		05/17/22 14:55	05/21/22 16:11	1
Pentachlorophenol	ND		5.2	0.88	ug/L		05/17/22 14:55	05/21/22 16:11	1
Phenanthrene	ND		0.20	0.057	ug/L		05/17/22 14:55	05/21/22 16:11	1
Phenol	ND		1.0	0.51	ug/L		05/17/22 14:55	05/21/22 16:11	1
Pyrene	ND		0.20	0.056	ug/L		05/17/22 14:55	05/21/22 16:11	1
1,2,4-Trichlorobenzene	ND		1.0	0.14	ug/L		05/17/22 14:55	05/21/22 16:11	1
2,4,6-Trichlorophenol	ND		1.0	0.23	ug/L		05/17/22 14:55	05/21/22 16:11	1
Bis(2-chloroethoxy)methane	ND		1.0	0.16	ug/L		05/17/22 14:55	05/21/22 16:11	1
4-Chlorophenyl phenyl ether	ND		1.0	0.23	ug/L		05/17/22 14:55	05/21/22 16:11	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.0	0.20	ug/L		05/17/22 14:55	05/21/22 16:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	73		47 - 107	05/17/22 14:55	05/21/22 16:11	1
2-Fluorophenol	68		35 - 109	05/17/22 14:55	05/21/22 16:11	1
2,4,6-Tribromophenol	52		32 - 127	05/17/22 14:55	05/21/22 16:11	1
Nitrobenzene-d5	80		47 - 110	05/17/22 14:55	05/21/22 16:11	1
Phenol-d5	65		37 - 110	05/17/22 14:55	05/21/22 16:11	1
Terphenyl-d14	85		32 - 115	05/17/22 14:55	05/21/22 16:11	1

Method: EPA 200.7 Rev 4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.3	J	10	5.7	ug/L		05/18/22 13:03	05/19/22 23:55	1
Cadmium	ND		5.0	0.33	ug/L		05/18/22 13:03	05/19/22 23:55	1
Chromium	ND		5.0	2.6	ug/L		05/18/22 13:03	05/19/22 23:55	1
Copper	ND		25	3.9	ug/L		05/18/22 13:03	05/19/22 23:55	1
Lead	ND		10	2.3	ug/L		05/18/22 13:03	05/19/22 23:55	1
Nickel	5.7	J	40	2.1	ug/L		05/18/22 13:03	05/19/22 23:55	1
Silver	ND		5.0	0.87	ug/L		05/18/22 13:03	05/19/22 23:55	1
Zinc	6.0	J	20	3.3	ug/L		05/18/22 13:03	05/19/22 23:55	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Client Sample ID: POTW (051022)

Lab Sample ID: 180-137972-4

Date Collected: 05/10/22 11:00

Matrix: Water

Date Received: 05/11/22 09:00

Method: EPA 245.1 Rev. - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		06/01/22 07:25	06/01/22 18:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	0.0091	J	0.010	0.0080	mg/L		05/17/22 08:00	05/17/22 13:50	1

Client Sample ID: TRIP BLANK

Lab Sample ID: 180-137972-5

Date Collected: 05/10/22 00:00

Matrix: Water

Date Received: 05/11/22 09:00

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.60	ug/L			05/12/22 13:40	1
1,1,1,2-Tetrachloroethane	ND	*+	1.0	0.60	ug/L			05/12/22 13:40	1
1,1,2-Trichloroethane	ND	*+	1.0	0.45	ug/L			05/12/22 13:40	1
1,1-Dichloroethane	ND		1.0	0.31	ug/L			05/12/22 13:40	1
1,1-Dichloroethene	ND		1.0	0.55	ug/L			05/12/22 13:40	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			05/12/22 13:40	1
1,2-Dichloropropane	ND		1.0	0.66	ug/L			05/12/22 13:40	1
1,2-Dichlorobenzene	ND		1.0	0.36	ug/L			05/12/22 13:40	1
1,3-Dichlorobenzene	ND		1.0	0.50	ug/L			05/12/22 13:40	1
1,4-Dichlorobenzene	ND		1.0	0.54	ug/L			05/12/22 13:40	1
2-Chloroethyl vinyl ether	ND		2.0	1.7	ug/L			05/12/22 13:40	1
Acrolein	ND		20	16	ug/L			05/12/22 13:40	1
Acrylonitrile	ND	*+	20	7.8	ug/L			05/12/22 13:40	1
Benzene	ND		1.0	0.60	ug/L			05/12/22 13:40	1
Bromoform	ND	*+	1.0	0.98	ug/L			05/12/22 13:40	1
Bromomethane	ND		1.0	0.89	ug/L			05/12/22 13:40	1
Carbon tetrachloride	ND		1.0	0.88	ug/L			05/12/22 13:40	1
Chlorobenzene	ND		1.0	0.50	ug/L			05/12/22 13:40	1
Chloroform	ND		1.0	0.60	ug/L			05/12/22 13:40	1
Chloromethane	ND		1.0	0.90	ug/L			05/12/22 13:40	1
cis-1,3-Dichloropropene	ND		1.0	0.59	ug/L			05/12/22 13:40	1
Ethylbenzene	ND		1.0	0.51	ug/L			05/12/22 13:40	1
Methylene Chloride	ND		1.0	0.89	ug/L			05/12/22 13:40	1
Tetrachloroethene	ND		1.0	0.47	ug/L			05/12/22 13:40	1
Toluene	ND		1.0	0.46	ug/L			05/12/22 13:40	1
trans-1,2-Dichloroethene	ND		1.0	0.67	ug/L			05/12/22 13:40	1
trans-1,3-Dichloropropene	ND		1.0	0.58	ug/L			05/12/22 13:40	1
Trichloroethene	ND		1.0	0.69	ug/L			05/12/22 13:40	1
Vinyl chloride	ND		1.0	0.40	ug/L			05/12/22 13:40	1
Dibromochloromethane	ND		1.0	0.84	ug/L			05/12/22 13:40	1
Bromodichloromethane	ND		1.0	0.64	ug/L			05/12/22 13:40	1
Chloroethane	ND		1.0	0.90	ug/L			05/12/22 13:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	138		28 - 163		05/12/22 13:40	1
4-Bromofluorobenzene (Surr)	100		41 - 122		05/12/22 13:40	1
Toluene-d8 (Surr)	85		53 - 125		05/12/22 13:40	1
Dibromofluoromethane (Surr)	113		59 - 168		05/12/22 13:40	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 180-398499/6
Matrix: Water
Analysis Batch: 398499

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1,1-Trichloroethane	ND		1.0	0.60	ug/L			05/12/22 09:46	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.60	ug/L			05/12/22 09:46	1
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			05/12/22 09:46	1
1,1-Dichloroethane	ND		1.0	0.31	ug/L			05/12/22 09:46	1
1,1-Dichloroethene	ND		1.0	0.55	ug/L			05/12/22 09:46	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			05/12/22 09:46	1
1,2-Dichloropropane	ND		1.0	0.66	ug/L			05/12/22 09:46	1
1,2-Dichlorobenzene	ND		1.0	0.36	ug/L			05/12/22 09:46	1
1,3-Dichlorobenzene	ND		1.0	0.50	ug/L			05/12/22 09:46	1
1,4-Dichlorobenzene	ND		1.0	0.54	ug/L			05/12/22 09:46	1
2-Chloroethyl vinyl ether	ND		2.0	1.7	ug/L			05/12/22 09:46	1
Acrolein	ND		20	16	ug/L			05/12/22 09:46	1
Acrylonitrile	ND		20	7.8	ug/L			05/12/22 09:46	1
Benzene	ND		1.0	0.60	ug/L			05/12/22 09:46	1
Bromoform	ND		1.0	0.98	ug/L			05/12/22 09:46	1
Bromomethane	ND		1.0	0.89	ug/L			05/12/22 09:46	1
Carbon tetrachloride	ND		1.0	0.88	ug/L			05/12/22 09:46	1
Chlorobenzene	ND		1.0	0.50	ug/L			05/12/22 09:46	1
Chloroform	ND		1.0	0.60	ug/L			05/12/22 09:46	1
Chloromethane	ND		1.0	0.90	ug/L			05/12/22 09:46	1
cis-1,3-Dichloropropene	ND		1.0	0.59	ug/L			05/12/22 09:46	1
Ethylbenzene	ND		1.0	0.51	ug/L			05/12/22 09:46	1
Methylene Chloride	ND		1.0	0.89	ug/L			05/12/22 09:46	1
Tetrachloroethene	ND		1.0	0.47	ug/L			05/12/22 09:46	1
Toluene	ND		1.0	0.46	ug/L			05/12/22 09:46	1
trans-1,2-Dichloroethene	ND		1.0	0.67	ug/L			05/12/22 09:46	1
trans-1,3-Dichloropropene	ND		1.0	0.58	ug/L			05/12/22 09:46	1
Trichloroethene	ND		1.0	0.69	ug/L			05/12/22 09:46	1
Vinyl chloride	ND		1.0	0.40	ug/L			05/12/22 09:46	1
Dibromochloromethane	ND		1.0	0.84	ug/L			05/12/22 09:46	1
Bromodichloromethane	ND		1.0	0.64	ug/L			05/12/22 09:46	1
Chloroethane	ND		1.0	0.90	ug/L			05/12/22 09:46	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	127		28 - 163		05/12/22 09:46	1
4-Bromofluorobenzene (Surr)	105		41 - 122		05/12/22 09:46	1
Toluene-d8 (Surr)	88		53 - 125		05/12/22 09:46	1
Dibromofluoromethane (Surr)	106		59 - 168		05/12/22 09:46	1

Lab Sample ID: LCS 180-398499/4
Matrix: Water
Analysis Batch: 398499

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,2,2-Tetrachloroethane	10.0	17.6	*+	ug/L		176	60 - 140
1,1,2-Trichloroethane	10.0	13.1	*+	ug/L		131	70 - 130
1,1-Dichloroethane	10.0	9.06		ug/L		91	70 - 130

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 180-398499/4
Matrix: Water
Analysis Batch: 398499

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	10.0	8.61		ug/L		86	50 - 150
1,2-Dichloroethane	10.0	12.8		ug/L		128	70 - 130
1,2-Dichloropropane	10.0	10.3		ug/L		103	35 - 165
1,2-Dichlorobenzene	10.0	10.4		ug/L		104	65 - 135
1,3-Dichlorobenzene	10.0	9.64		ug/L		96	70 - 130
1,4-Dichlorobenzene	10.0	9.82		ug/L		98	65 - 135
2-Chloroethyl vinyl ether	20.0	32.7		ug/L		164	10 - 170
Acrolein	30.0	29.5		ug/L		98	60 - 140
Acrylonitrile	100	305	*+	ug/L		305	60 - 140
Benzene	10.0	9.29		ug/L		93	65 - 135
Bromoform	10.0	15.5	*+	ug/L		155	70 - 130
Bromomethane	10.0	5.87		ug/L		59	15 - 170
Carbon tetrachloride	10.0	8.59		ug/L		86	70 - 130
Chlorobenzene	10.0	9.71		ug/L		97	65 - 135
Chloroform	10.0	9.92		ug/L		99	70 - 135
Chloromethane	10.0	9.90		ug/L		99	10 - 170
cis-1,3-Dichloropropene	10.0	14.0		ug/L		140	25 - 170
Ethylbenzene	10.0	9.36		ug/L		94	60 - 140
Methylene Chloride	10.0	8.95		ug/L		90	60 - 140
Tetrachloroethene	10.0	9.49		ug/L		95	70 - 130
Toluene	10.0	8.41		ug/L		84	70 - 130
trans-1,2-Dichloroethene	10.0	8.79		ug/L		88	70 - 130
trans-1,3-Dichloropropene	10.0	12.5		ug/L		125	50 - 150
Trichloroethene	10.0	10.1		ug/L		101	65 - 135
Vinyl chloride	10.0	7.57		ug/L		76	10 - 170
Dibromochloromethane	10.0	11.5		ug/L		115	70 - 135
Bromodichloromethane	10.0	10.4		ug/L		104	65 - 135
Chloroethane	10.0	9.70		ug/L		97	40 - 160

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	111		28 - 163
4-Bromofluorobenzene (Surr)	99		41 - 122
Toluene-d8 (Surr)	79		53 - 125
Dibromofluoromethane (Surr)	94		59 - 168

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 180-399113/1-A
Matrix: Water
Analysis Batch: 399580

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 399113

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	ND		0.19	0.065	ug/L		05/17/22 14:55	05/21/22 15:10	1
Acenaphthene	ND		0.19	0.065	ug/L		05/17/22 14:55	05/21/22 15:10	1
Anthracene	ND		0.19	0.049	ug/L		05/17/22 14:55	05/21/22 15:10	1
Benzidine	ND		20	9.1	ug/L		05/17/22 14:55	05/21/22 15:10	1
Benzo[a]anthracene	ND		0.19	0.075	ug/L		05/17/22 14:55	05/21/22 15:10	1
Benzo[b]fluoranthene	ND		0.19	0.097	ug/L		05/17/22 14:55	05/21/22 15:10	1
Benzo[k]fluoranthene	ND		0.19	0.088	ug/L		05/17/22 14:55	05/21/22 15:10	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 180-399113/1-A
Matrix: Water
Analysis Batch: 399580

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 399113

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzo[g,h,i]perylene	ND		0.19	0.069	ug/L		05/17/22 14:55	05/21/22 15:10	1
Benzo[a]pyrene	ND		0.19	0.053	ug/L		05/17/22 14:55	05/21/22 15:10	1
Bis(2-chloroethyl)ether	ND		0.19	0.040	ug/L		05/17/22 14:55	05/21/22 15:10	1
Bis(2-ethylhexyl) phthalate	ND		10	6.2	ug/L		05/17/22 14:55	05/21/22 15:10	1
4-Bromophenyl phenyl ether	ND		1.0	0.32	ug/L		05/17/22 14:55	05/21/22 15:10	1
Butyl benzyl phthalate	ND		1.0	0.46	ug/L		05/17/22 14:55	05/21/22 15:10	1
4-Chloro-3-methylphenol	ND		1.0	0.28	ug/L		05/17/22 14:55	05/21/22 15:10	1
2-Chloronaphthalene	ND		0.19	0.059	ug/L		05/17/22 14:55	05/21/22 15:10	1
2-Chlorophenol	ND		1.0	0.13	ug/L		05/17/22 14:55	05/21/22 15:10	1
Chrysene	ND		0.19	0.081	ug/L		05/17/22 14:55	05/21/22 15:10	1
Dibenzo(a,h)-anthracene	ND		0.19	0.072	ug/L		05/17/22 14:55	05/21/22 15:10	1
Di-n-butyl phthalate	ND		1.0	0.74	ug/L		05/17/22 14:55	05/21/22 15:10	1
3,3'-Dichlorobenzidine	ND		1.0	0.58	ug/L		05/17/22 14:55	05/21/22 15:10	1
2,4-Dichlorophenol	ND		0.19	0.051	ug/L		05/17/22 14:55	05/21/22 15:10	1
Diethyl phthalate	ND		1.0	0.57	ug/L		05/17/22 14:55	05/21/22 15:10	1
2,4-Dimethylphenol	ND		1.0	0.17	ug/L		05/17/22 14:55	05/21/22 15:10	1
Dimethyl phthalate	ND		1.0	0.20	ug/L		05/17/22 14:55	05/21/22 15:10	1
4,6-Dinitro-2-methylphenol	ND		5.0	1.5	ug/L		05/17/22 14:55	05/21/22 15:10	1
2,4-Dinitrophenol	ND		10	1.5	ug/L		05/17/22 14:55	05/21/22 15:10	1
2,4-Dinitrotoluene	ND		1.0	0.35	ug/L		05/17/22 14:55	05/21/22 15:10	1
2,6-Dinitrotoluene	ND		1.0	0.17	ug/L		05/17/22 14:55	05/21/22 15:10	1
Di-n-octyl phthalate	ND		1.0	0.69	ug/L		05/17/22 14:55	05/21/22 15:10	1
Fluoranthene	ND		0.19	0.060	ug/L		05/17/22 14:55	05/21/22 15:10	1
Fluorene	ND		0.19	0.069	ug/L		05/17/22 14:55	05/21/22 15:10	1
Hexachlorobenzene	ND		0.19	0.056	ug/L		05/17/22 14:55	05/21/22 15:10	1
Hexachlorobutadiene	ND		0.19	0.069	ug/L		05/17/22 14:55	05/21/22 15:10	1
Hexachlorocyclopentadiene	ND		1.0	0.50	ug/L		05/17/22 14:55	05/21/22 15:10	1
Hexachloroethane	ND		1.0	0.13	ug/L		05/17/22 14:55	05/21/22 15:10	1
Indeno[1,2,3-cd]pyrene	ND		0.19	0.085	ug/L		05/17/22 14:55	05/21/22 15:10	1
Isophorone	ND		1.0	0.19	ug/L		05/17/22 14:55	05/21/22 15:10	1
Naphthalene	ND		0.19	0.059	ug/L		05/17/22 14:55	05/21/22 15:10	1
Nitrobenzene	ND		2.0	0.50	ug/L		05/17/22 14:55	05/21/22 15:10	1
2-Nitrophenol	ND		1.0	0.19	ug/L		05/17/22 14:55	05/21/22 15:10	1
4-Nitrophenol	ND		5.0	0.94	ug/L		05/17/22 14:55	05/21/22 15:10	1
N-Nitrosodimethylamine	ND		1.0	0.067	ug/L		05/17/22 14:55	05/21/22 15:10	1
N-Nitrosodiphenylamine	ND		1.0	0.12	ug/L		05/17/22 14:55	05/21/22 15:10	1
N-Nitrosodi-n-propylamine	ND		0.19	0.071	ug/L		05/17/22 14:55	05/21/22 15:10	1
2,2'-oxybis[1-chloropropane]	ND		0.19	0.058	ug/L		05/17/22 14:55	05/21/22 15:10	1
Pentachlorophenol	ND		5.0	0.85	ug/L		05/17/22 14:55	05/21/22 15:10	1
Phenanthrene	ND		0.19	0.055	ug/L		05/17/22 14:55	05/21/22 15:10	1
Phenol	ND		1.0	0.49	ug/L		05/17/22 14:55	05/21/22 15:10	1
Pyrene	ND		0.19	0.054	ug/L		05/17/22 14:55	05/21/22 15:10	1
1,2,4-Trichlorobenzene	ND		1.0	0.13	ug/L		05/17/22 14:55	05/21/22 15:10	1
2,4,6-Trichlorophenol	ND		1.0	0.22	ug/L		05/17/22 14:55	05/21/22 15:10	1
Bis(2-chloroethoxy)methane	ND		1.0	0.15	ug/L		05/17/22 14:55	05/21/22 15:10	1
4-Chlorophenyl phenyl ether	ND		1.0	0.22	ug/L		05/17/22 14:55	05/21/22 15:10	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.0	0.20	ug/L		05/17/22 14:55	05/21/22 15:10	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 180-399113/1-A
Matrix: Water
Analysis Batch: 399580

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 399113

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
2-Fluorobiphenyl	90		47 - 107	05/17/22 14:55	05/21/22 15:10	1
2-Fluorophenol	98		35 - 109	05/17/22 14:55	05/21/22 15:10	1
2,4,6-Tribromophenol	69		32 - 127	05/17/22 14:55	05/21/22 15:10	1
Nitrobenzene-d5	95		47 - 110	05/17/22 14:55	05/21/22 15:10	1
Phenol-d5	94		37 - 110	05/17/22 14:55	05/21/22 15:10	1
Terphenyl-d14	96		32 - 115	05/17/22 14:55	05/21/22 15:10	1

Lab Sample ID: LCS 180-399113/2-A
Matrix: Water
Analysis Batch: 399580

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 399113

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acenaphthene	10.0	7.45		ug/L		75	47 - 145
Anthracene	10.0	7.54		ug/L		75	27 - 133
Benzidine	10.0	ND		ug/L		22	5 - 100
Benzo[a]anthracene	10.0	7.42		ug/L		74	33 - 143
Benzo[b]fluoranthene	10.0	6.16		ug/L		62	24 - 150
Benzo[k]fluoranthene	10.0	7.50		ug/L		75	11 - 150
Benzo[g,h,i]perylene	10.0	7.90		ug/L		79	10 - 150
Benzo[a]pyrene	10.0	7.60		ug/L		76	17 - 150
Bis(2-chloroethyl)ether	10.0	7.61		ug/L		76	12 - 150
Bis(2-ethylhexyl) phthalate	10.0	8.12	J	ug/L		81	10 - 150
4-Bromophenyl phenyl ether	10.0	7.13		ug/L		71	53 - 127
Butyl benzyl phthalate	10.0	8.17		ug/L		82	10 - 150
4-Chloro-3-methylphenol	10.0	8.40		ug/L		84	22 - 147
2-Chloronaphthalene	10.0	7.26		ug/L		73	60 - 120
2-Chlorophenol	10.0	7.75		ug/L		77	23 - 134
Chrysene	10.0	7.27		ug/L		73	17 - 150
Dibenzo(a,h)-anthracene	10.0	7.52		ug/L		75	10 - 150
Di-n-butyl phthalate	10.0	7.88		ug/L		79	10 - 120
3,3'-Dichlorobenzidine	10.0	6.31		ug/L		63	10 - 150
2,4-Dichlorophenol	10.0	7.63		ug/L		76	39 - 135
Diethyl phthalate	10.0	7.58		ug/L		76	10 - 120
2,4-Dimethylphenol	10.0	8.21		ug/L		82	32 - 120
Dimethyl phthalate	10.0	7.11		ug/L		71	10 - 120
4,6-Dinitro-2-methylphenol	20.0	12.1		ug/L		61	10 - 150
2,4-Dinitrophenol	20.0	10.5		ug/L		52	10 - 150
2,4-Dinitrotoluene	10.0	7.69		ug/L		77	39 - 139
2,6-Dinitrotoluene	10.0	7.56		ug/L		76	50 - 150
Di-n-octyl phthalate	10.0	6.83		ug/L		68	10 - 146
Fluoranthene	10.0	7.66		ug/L		77	26 - 137
Fluorene	10.0	7.41		ug/L		74	59 - 121
Hexachlorobenzene	10.0	6.74		ug/L		67	10 - 150
Hexachlorobutadiene	10.0	7.13		ug/L		71	24 - 120
Hexachlorocyclopentadiene	10.0	6.68		ug/L		67	37 - 121
Hexachloroethane	10.0	8.41		ug/L		84	40 - 120
Indeno[1,2,3-cd]pyrene	10.0	7.77		ug/L		78	10 - 150

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 180-399113/2-A
Matrix: Water
Analysis Batch: 399580

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 399113

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Isophorone	10.0	7.91		ug/L		79	21 - 150
Naphthalene	10.0	7.53		ug/L		75	21 - 133
Nitrobenzene	10.0	7.99		ug/L		80	35 - 150
2-Nitrophenol	10.0	7.87		ug/L		79	29 - 150
4-Nitrophenol	20.0	16.4		ug/L		82	10 - 132
N-Nitrosodimethylamine	10.0	7.82		ug/L		78	33 - 130
N-Nitrosodiphenylamine	10.0	7.18		ug/L		72	51 - 100
N-Nitrosodi-n-propylamine	10.0	8.24		ug/L		82	10 - 150
2,2'-oxybis[1-chloropropane]	10.0	8.43		ug/L		84	36 - 150
Pentachlorophenol	20.0	12.2		ug/L		61	14 - 150
Phenanthrene	10.0	7.20		ug/L		72	54 - 120
Phenol	10.0	7.69		ug/L		77	10 - 120
Pyrene	10.0	7.47		ug/L		75	52 - 120
1,2,4-Trichlorobenzene	10.0	7.19		ug/L		72	44 - 142
2,4,6-Trichlorophenol	10.0	7.36		ug/L		74	37 - 144
Bis(2-chloroethoxy)methane	10.0	6.55		ug/L		65	33 - 150
4-Chlorophenyl phenyl ether	10.0	7.09		ug/L		71	25 - 150
1,2-Diphenylhydrazine(as Azobenzene)	10.0	8.01		ug/L		80	43 - 105

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl	74		47 - 107
2-Fluorophenol	80		35 - 109
2,4,6-Tribromophenol	71		32 - 127
Nitrobenzene-d5	84		47 - 110
Phenol-d5	79		37 - 110
Terphenyl-d14	71		32 - 115

Lab Sample ID: 180-137972-4 MS
Matrix: Water
Analysis Batch: 399580

Client Sample ID: POTW (051022)
Prep Type: Total/NA
Prep Batch: 399113

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Acenaphthylene	ND		10.4	7.72		ug/L		74	35 - 145
Acenaphthene	ND		10.4	7.38		ug/L		71	47 - 145
Anthracene	ND		10.4	7.79		ug/L		75	27 - 133
Benzidine	ND	F1	10.4	ND	F1	ug/L		0	5 - 100
Benzo[a]anthracene	ND		10.4	7.88		ug/L		76	33 - 143
Benzo[b]fluoranthene	ND		10.4	7.11		ug/L		68	24 - 159
Benzo[k]fluoranthene	ND		10.4	7.59		ug/L		73	11 - 162
Benzo[g,h,i]perylene	ND		10.4	8.59		ug/L		82	10 - 170
Benzo[a]pyrene	ND		10.4	7.98		ug/L		77	17 - 163
Bis(2-chloroethyl)ether	ND		10.4	7.48		ug/L		72	12 - 158
Bis(2-ethylhexyl) phthalate	ND		10.4	9.76	J	ug/L		94	10 - 158
4-Bromophenyl phenyl ether	ND		10.4	7.31		ug/L		70	53 - 127
Butyl benzyl phthalate	ND		10.4	9.58		ug/L		92	10 - 152
4-Chloro-3-methylphenol	ND		10.4	7.04		ug/L		68	22 - 147
2-Chloronaphthalene	ND		10.4	7.07		ug/L		68	60 - 120
2-Chlorophenol	ND		10.4	5.99		ug/L		58	23 - 134

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 180-137972-4 MS

Matrix: Water

Analysis Batch: 399580

Client Sample ID: POTW (051022)

Prep Type: Total/NA

Prep Batch: 399113

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chrysene	ND		10.4	7.72		ug/L		74	17 - 168
Dibenzo(a,h)-anthracene	ND		10.4	8.25		ug/L		79	10 - 170
Di-n-butyl phthalate	2.1		10.4	11.5		ug/L		90	10 - 120
3,3'-Dichlorobenzidine	ND		10.4	6.06		ug/L		58	10 - 170
2,4-Dichlorophenol	ND		10.4	5.67		ug/L		54	39 - 135
Diethyl phthalate	ND		10.4	6.61		ug/L		63	10 - 120
2,4-Dimethylphenol	ND		10.4	7.10		ug/L		68	32 - 120
Dimethyl phthalate	ND		10.4	6.06		ug/L		58	10 - 120
4,6-Dinitro-2-methylphenol	ND		20.8	13.6		ug/L		65	10 - 170
2,4-Dinitrophenol	ND		20.8	14.2		ug/L		68	10 - 170
2,4-Dinitrotoluene	ND		10.4	8.03		ug/L		77	39 - 139
2,6-Dinitrotoluene	ND		10.4	7.92		ug/L		76	50 - 158
Di-n-octyl phthalate	ND		10.4	8.18		ug/L		79	10 - 146
Fluoranthene	ND		10.4	8.14		ug/L		78	26 - 137
Fluorene	ND		10.4	7.36		ug/L		71	59 - 121
Hexachlorobenzene	ND		10.4	6.95		ug/L		67	10 - 152
Hexachlorobutadiene	ND		10.4	6.25		ug/L		60	24 - 120
Hexachlorocyclopentadiene	ND		10.4	5.33		ug/L		51	41 - 106
Hexachloroethane	ND		10.4	7.58		ug/L		73	40 - 120
Indeno[1,2,3-cd]pyrene	ND		10.4	8.28		ug/L		80	10 - 170
Isophorone	ND		10.4	7.53		ug/L		72	21 - 170
Naphthalene	ND		10.4	6.77		ug/L		65	21 - 133
Nitrobenzene	ND		10.4	7.54		ug/L		72	35 - 170
2-Nitrophenol	ND		10.4	5.98		ug/L		57	29 - 170
4-Nitrophenol	ND		20.8	13.2		ug/L		63	10 - 132
N-Nitrosodimethylamine	ND		10.4	7.21		ug/L		69	48 - 109
N-Nitrosodiphenylamine	ND		10.4	7.29		ug/L		70	56 - 100
N-Nitrosodi-n-propylamine	ND		10.4	7.85		ug/L		75	10 - 170
2,2'-oxybis[1-chloropropane]	ND		10.4	8.05		ug/L		77	36 - 166
Pentachlorophenol	ND		20.8	8.94		ug/L		43	17 - 170
Phenanthrene	ND		10.4	7.63		ug/L		73	54 - 120
Phenol	ND		10.4	6.06		ug/L		58	10 - 120
Pyrene	ND		10.4	7.88		ug/L		76	52 - 120
1,2,4-Trichlorobenzene	ND		10.4	6.48		ug/L		62	44 - 142
2,4,6-Trichlorophenol	ND		10.4	5.63		ug/L		54	37 - 144
Bis(2-chloroethoxy)methane	ND		10.4	6.31		ug/L		61	33 - 170
4-Chlorophenyl phenyl ether	ND		10.4	7.15		ug/L		69	25 - 158
1,2-Diphenylhydrazine(as Azobenzene)	ND		10.4	8.49		ug/L		82	46 - 103

Surrogate	MS %Recovery	MS Qualifier	MS Limits
2-Fluorobiphenyl	66		47 - 107
2-Fluorophenol	59		35 - 109
2,4,6-Tribromophenol	50		32 - 127
Nitrobenzene-d5	74		47 - 110
Phenol-d5	61		37 - 110
Terphenyl-d14	73		32 - 115

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

Method: EPA 200.7 Rev 4 - Metals (ICP)

Lab Sample ID: MB 180-399223/1-A
Matrix: Water
Analysis Batch: 399442

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 399223

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		10	5.7	ug/L		05/18/22 13:03	05/19/22 22:56	1
Cadmium	ND		5.0	0.33	ug/L		05/18/22 13:03	05/19/22 22:56	1
Chromium	ND		5.0	2.6	ug/L		05/18/22 13:03	05/19/22 22:56	1
Copper	ND		25	3.9	ug/L		05/18/22 13:03	05/19/22 22:56	1
Lead	ND		10	2.3	ug/L		05/18/22 13:03	05/19/22 22:56	1
Nickel	ND		40	2.1	ug/L		05/18/22 13:03	05/19/22 22:56	1
Silver	ND		5.0	0.87	ug/L		05/18/22 13:03	05/19/22 22:56	1
Zinc	ND		20	3.3	ug/L		05/18/22 13:03	05/19/22 22:56	1

Lab Sample ID: LCS 180-399223/2-A
Matrix: Water
Analysis Batch: 399442

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 399223

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cadmium	500	552		ug/L		110	85 - 115
Chromium	500	531		ug/L		106	85 - 115
Copper	500	518		ug/L		104	85 - 115
Lead	500	542		ug/L		108	85 - 115
Nickel	500	548		ug/L		110	85 - 115
Silver	250	272		ug/L		109	85 - 115
Zinc	250	273		ug/L		109	85 - 115

Method: EPA 245.1 Rev. - Mercury (CVAA)

Lab Sample ID: MB 180-400485/1-A
Matrix: Water
Analysis Batch: 400599

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 400485

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.20	0.13	ug/L		06/01/22 07:25	06/01/22 18:12	1

Lab Sample ID: LCS 180-400485/2-A
Matrix: Water
Analysis Batch: 400599

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 400485

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits

Method: SM 4500CN E - Total Cyanide

Lab Sample ID: MB 180-398646/4-A
Matrix: Water
Analysis Batch: 399126

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 398646

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Cyanide, Total	ND		0.010	0.0080	mg/L		05/17/22 08:00	05/17/22 13:22	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Cytex Havre de Grace MD

Job ID: 180-137972-1

Method: SM 4500CN E - Total Cyanide (Continued)

Lab Sample ID: HLCS 180-398646/2-A
Matrix: Water
Analysis Batch: 399126

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 398646

Analyte	Spike Added	HLCS Result	HLCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.250	0.251		mg/L		100	90 - 110

Lab Sample ID: LCS 180-398646/3-A
Matrix: Water
Analysis Batch: 399126

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 398646

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.200	0.198		mg/L		99	90 - 110

Lab Sample ID: LLCS 180-398646/1-A
Matrix: Water
Analysis Batch: 399126

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 398646

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.0500	0.0509		mg/L		102	90 - 110



QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-137972-1

GC/MS VOA

Analysis Batch: 398499

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-137972-1	EW-1 (051022)	Total/NA	Water	EPA 624.1	
180-137972-2	MW-10D (051022)	Total/NA	Water	EPA 624.1	
180-137972-3	EFFLUENT (051022)	Total/NA	Water	EPA 624.1	
180-137972-4	POTW (051022)	Total/NA	Water	EPA 624.1	
180-137972-5	TRIP BLANK	Total/NA	Water	EPA 624.1	
MB 180-398499/6	Method Blank	Total/NA	Water	EPA 624.1	
LCS 180-398499/4	Lab Control Sample	Total/NA	Water	EPA 624.1	

GC/MS Semi VOA

Prep Batch: 399113

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-137972-4	POTW (051022)	Total/NA	Water	625	
MB 180-399113/1-A	Method Blank	Total/NA	Water	625	
LCS 180-399113/2-A	Lab Control Sample	Total/NA	Water	625	
180-137972-4 MS	POTW (051022)	Total/NA	Water	625	

Analysis Batch: 399580

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-137972-4	POTW (051022)	Total/NA	Water	EPA 625.1	399113
MB 180-399113/1-A	Method Blank	Total/NA	Water	EPA 625.1	399113
LCS 180-399113/2-A	Lab Control Sample	Total/NA	Water	EPA 625.1	399113
180-137972-4 MS	POTW (051022)	Total/NA	Water	EPA 625.1	399113

Metals

Prep Batch: 399223

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-137972-4	POTW (051022)	Total Recoverable	Water	200.7	
MB 180-399223/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 180-399223/2-A	Lab Control Sample	Total Recoverable	Water	200.7	

Analysis Batch: 399442

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-137972-4	POTW (051022)	Total Recoverable	Water	EPA 200.7 Rev 4	399223
MB 180-399223/1-A	Method Blank	Total Recoverable	Water	EPA 200.7 Rev 4	399223
LCS 180-399223/2-A	Lab Control Sample	Total Recoverable	Water	EPA 200.7 Rev 4	399223

Prep Batch: 400485

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-137972-4	POTW (051022)	Total/NA	Water	245.1	
MB 180-400485/1-A	Method Blank	Total/NA	Water	245.1	
LCS 180-400485/2-A	Lab Control Sample	Total/NA	Water	245.1	

Analysis Batch: 400599

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-137972-4	POTW (051022)	Total/NA	Water	EPA 245.1 Rev.	400485
MB 180-400485/1-A	Method Blank	Total/NA	Water	EPA 245.1 Rev.	400485
LCS 180-400485/2-A	Lab Control Sample	Total/NA	Water	EPA 245.1 Rev.	400485

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QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-137972-1

General Chemistry

Prep Batch: 398646

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-137972-4	POTW (051022)	Total/NA	Water	SM 4500 CN C	
MB 180-398646/4-A	Method Blank	Total/NA	Water	SM 4500 CN C	
HLCS 180-398646/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN C	
LCS 180-398646/3-A	Lab Control Sample	Total/NA	Water	SM 4500 CN C	
LLCS 180-398646/1-A	Lab Control Sample	Total/NA	Water	SM 4500 CN C	

Analysis Batch: 399126

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-137972-4	POTW (051022)	Total/NA	Water	SM 4500CN E	398646
MB 180-398646/4-A	Method Blank	Total/NA	Water	SM 4500CN E	398646
HLCS 180-398646/2-A	Lab Control Sample	Total/NA	Water	SM 4500CN E	398646
LCS 180-398646/3-A	Lab Control Sample	Total/NA	Water	SM 4500CN E	398646
LLCS 180-398646/1-A	Lab Control Sample	Total/NA	Water	SM 4500CN E	398646

Eurofins Pittsburgh
 301, Alpha Drive RIDC Park
 Pittsburgh, PA 15238
 Phone: 412-963-7058 Fax: 412-963-2468

Chain of Custody Record

Baltimore #201

eurofins Environment Testing America

Client Information		Sampler: Andy Feild	Lab PM: Colussy, Jill L	Carrier Tracking No(s):	COC No: 180-77576-14808.1																								
Client Contact: Ms. Shwetha Sridharan		Phone: 443 354 0186	E-Mail: Jill.Colussy@Eurofinset.com	State of Origin: Maryland	Page: Page 1 of 1																								
Company: ARCADIS U.S., Inc.		PWSID:	Analysis Requested																										
Address: 7550 Teague Road Suite 210		Due Date Requested: Standard	<table border="1"> <tr><td>Field Filtered Sample (Yes or No)</td><td>VOC 624.1 - PREC</td><td>VOC 624.25mL - UP</td><td>Semivolatiles 625.1 - LL - PREC</td><td>Mercury 245.1</td><td>Metals 200.7</td><td>Cyanide 4500CNLE</td></tr> <tr><td>Total Number of Containers</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>			Field Filtered Sample (Yes or No)	VOC 624.1 - PREC	VOC 624.25mL - UP	Semivolatiles 625.1 - LL - PREC	Mercury 245.1	Metals 200.7	Cyanide 4500CNLE	Total Number of Containers																
Field Filtered Sample (Yes or No)	VOC 624.1 - PREC	VOC 624.25mL - UP				Semivolatiles 625.1 - LL - PREC	Mercury 245.1	Metals 200.7	Cyanide 4500CNLE																				
Total Number of Containers																													
City: Hanover		TAT Requested (days): Normal																											
State, Zip: MD, 21076		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No																											
Phone: 302-897-8993(Tel)		PO #: 30005455.0002.																											
Email: shwetha.sridharan@arcadis.com		WO #:																											
Project Name: Cytec Havre de Grace MD		Project #: 18017987	Preservation Codes:																										
Site: Pennsylvania		SSOW#:	<table border="0"> <tr><td>A - HCL</td><td>M - Hexane</td></tr> <tr><td>B - NaOH</td><td>N - None</td></tr> <tr><td>C - Zn Acetate</td><td>O - AsNaO2</td></tr> <tr><td>D - Nitric Acid</td><td>P - Na2O4S</td></tr> <tr><td>E - NaHSO4</td><td>Q - Na2SO3</td></tr> <tr><td>F - MeOH</td><td>R - Na2S2O3</td></tr> <tr><td>G - Amchlor</td><td>S - H2SO4</td></tr> <tr><td>H - Ascorbic Acid</td><td>T - TSP Dodecahydrate</td></tr> <tr><td>I - Ice</td><td>U - Acetone</td></tr> <tr><td>J - DI Water</td><td>V - MCAA</td></tr> <tr><td>K - EDTA</td><td>W - pH 4-5</td></tr> <tr><td>L - EDA</td><td>Z - other (specify)</td></tr> </table>			A - HCL	M - Hexane	B - NaOH	N - None	C - Zn Acetate	O - AsNaO2	D - Nitric Acid	P - Na2O4S	E - NaHSO4	Q - Na2SO3	F - MeOH	R - Na2S2O3	G - Amchlor	S - H2SO4	H - Ascorbic Acid	T - TSP Dodecahydrate	I - Ice	U - Acetone	J - DI Water	V - MCAA	K - EDTA	W - pH 4-5	L - EDA	Z - other (specify)
A - HCL	M - Hexane																												
B - NaOH	N - None																												
C - Zn Acetate	O - AsNaO2																												
D - Nitric Acid	P - Na2O4S																												
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L - EDA	Z - other (specify)																												
Sample Identification		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/sol, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	VOC 624.1 - PREC	VOC 624.25mL - UP	Semivolatiles 625.1 - LL - PREC	Mercury 245.1	Metals 200.7	Cyanide 4500CNLE	Total Number of Containers	Other:															
		Preservation Code: <input type="checkbox"/> A <input type="checkbox"/> N <input type="checkbox"/> O <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F <input type="checkbox"/> G <input type="checkbox"/> H <input type="checkbox"/> I <input type="checkbox"/> J <input type="checkbox"/> K <input type="checkbox"/> L <input type="checkbox"/> M <input type="checkbox"/> P <input type="checkbox"/> Q <input type="checkbox"/> R <input type="checkbox"/> S <input type="checkbox"/> T <input type="checkbox"/> U <input type="checkbox"/> V <input type="checkbox"/> W <input type="checkbox"/> X <input type="checkbox"/> Y <input type="checkbox"/> Z																											
EW-1 (051022)		5/10/22	1030	G	W	NN	3	3																					
MW-10D (051022)			1035	I	I	I	3	3																					
Effluent (051022)			1040	I	I	I	3	3	1																				
POTW (051022)		5/10/22	1100	G	W	NA	3	3	2	1		1																	
Trip Blank		-	-	-	-	-	2	2																					
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)																							
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Radiological						<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months																							
Deliverable Requested: I, II, III, IV, Other (specify)						Special Instructions/QC Requirements:																							
Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:																									
Relinquished by: <i>[Signature]</i>		Date/Time: 5/10/22 1315	Company: ANA	Received by: <i>[Signature]</i>		Date/Time: 5/10/22 1315	Company: EA-Ball T																						
Relinquished by: <i>[Signature]</i>		Date/Time: 5/10/22 1700	Company: EA-Ball T	Received by: <i>[Signature]</i>		Date/Time: 5-11-22	Company: EA-Ball T																						
Relinquished by:		Date/Time:	Company:	Received by:		Date/Time: 900	Company:																						
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:																									



Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 180-137972-1

Login Number: 137972

List Source: Eurofins Pittsburgh

List Number: 1

Creator: Watson, Debbie

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





Cytec Solvay Group
1300 Revolution Street
Havre de Grace, MD 21078
410.939.1910

July 14, 2022

Mr. Ken Montgomery
Industrial Pretreatment Coordinator
City of Havre de Grace
Department of Public Works
711 Pennington Avenue
Havre de Grace, Maryland 21078

Re: CYTEC SOLVAY GROUP AEROSPACE MATERIALS
Periodic Compliance Report – June 2022
Permit Number: CYT-2015-101

Dear Mr. Montgomery:

CYTEC SOLVAY GROUP (Cytec) has prepared this Periodic Compliance Report for the month of June 2022 in accordance with the conditions set forth in Cytec's Industrial User Wastewater Discharge Permit (Permit No. CYT-2015-101). This Periodic Compliance Report presents the results of all monitoring requirements and operational issues encountered during the month of June 2022. The monthly certification form is included as Attachment A.

For the month of June, the system pumped an estimated 280,172 gallons of wastewater at an estimated average flow rate of 6.49 gallons per minute to the City of Havre de Grace Wastewater Treatment Plant during active system operation. The estimated average flow rate of 6.49 gallons per minute for the month of June satisfied both permit flow limitations (maximum of 30,000 gallons per day; 30-minute maximum of 1,000 gallons).

One pH meter is presently installed in-line with the effluent discharge pipe to measure pH continuously. pH results from the effluent wastewater complied with all permit conditions for pH during the month of June and no significant deviations were noted during active operation. Table 1 presents the daily flow volumes and weekly pH readings recorded for the month of June.

As noted in the March 2022 report, the pump motor at EW-02 is faulty and currently pending replacement, dependent on when parts can be shipped from the manufacturer, and EW-02 has been shut down since March 15, 2022. On June 27, a pipe leak within the system shed from MW-10D was discovered and the system was manually shut down. Arcadis staff was onsite July 11 and 12 and identified a leaking flange. The system will remain off until necessary replacement parts are available to repair the piping, expected to be completed in July 2022.

The July Compliance Report will be submitted in August 2022. Daily flow and pH will continue to be measured continuously. If the system is shut down for a period of at least 24 hours, pH results will be monitored and reported for three consecutive days to maintain compliance with permit conditions.

If you have any questions or comments, please contact me at 443-252-1093.

Sincerely,
Cytec Solvay Group

Jose Cortez
HSE Manager

Enclosure

cc: Mr. Luis Pizarro, United States Environmental Protection Agency
Mr. Charles Jones, Cytec Solvay Group
Mr. Joshua Wilson, Arcadis
Ms. Shwetha Sridharan, Arcadis

Table 1
Flow and pH Monitoring for June 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Cumulative Total Gallons Extracted (MW-10D)	Cumulative Total Gallons Extracted (EW-01)	Cumulative Total Gallons Extracted (EW-02)	Combined Cumulative Total Gallons Extracted	Daily Total Gallons Extracted	pH
06/01/22	20,017,019	4,487,299	3,408,166	27,912,484	10,667	
06/02/22	20,025,990	4,488,995	3,408,166	27,923,151	10,667	
06/03/22	20,034,963	4,490,689	3,408,166	27,933,818	10,675	5.82
06/04/22	20,043,937	4,492,390	3,408,166	27,944,493	10,674	
06/05/22	20,052,912	4,494,089	3,408,166	27,955,167	10,681	
06/06/22	20,061,888	4,495,794	3,408,166	27,965,848	10,677	
06/07/22	20,070,863	4,497,496	3,408,166	27,976,525	10,680	
06/08/22	20,079,840	4,499,199	3,408,166	27,987,205	10,663	
06/09/22	20,088,812	4,500,890	3,408,166	27,997,868	10,674	
06/10/22	20,097,787	4,502,589	3,408,166	28,008,542	10,676	5.81
06/11/22	20,106,762	4,504,290	3,408,166	28,019,218	10,686	
06/12/22	20,115,741	4,505,997	3,408,166	28,029,904	10,670	
06/13/22	20,124,716	4,507,692	3,408,166	28,040,574	10,661	
06/14/22	20,133,687	4,509,382	3,408,166	28,051,235	10,669	
06/15/22	20,142,660	4,511,078	3,408,166	28,061,904	10,663	
06/16/22	20,151,631	4,512,770	3,408,166	28,072,567	10,666	
06/17/22	20,160,604	4,514,463	3,408,166	28,083,233	10,660	5.81
06/18/22	20,169,573	4,516,154	3,408,166	28,093,893	10,678	
06/19/22	20,178,549	4,517,856	3,408,166	28,104,571	10,683	
06/20/22	20,187,526	4,519,562	3,408,166	28,115,254	10,681	
06/21/22	20,196,502	4,521,267	3,408,166	28,125,935	10,675	
06/22/22	20,205,477	4,522,967	3,408,166	28,136,610	10,677	
06/23/22	20,214,453	4,524,668	3,408,166	28,147,287	10,687	
06/24/22	20,223,433	4,526,375	3,408,166	28,157,974	10,671	5.80
06/25/22	20,232,407	4,528,072	3,408,166	28,168,645	10,665	
06/26/22	20,241,379	4,529,765	3,408,166	28,179,310	10,666	
06/27/22	20,250,351	4,531,459	3,408,166	28,189,976	2,680	
06/28/22	20,252,606	4,531,884	3,408,166	28,192,656	0	
06/29/22	20,252,606	4,531,884	3,408,166	28,192,656	0	
06/30/22	20,252,606	4,531,884	3,408,166	28,192,656	0	

Notes:

1. Operation of the expanded system began on January 16, 2015.
2. Totalizer readings are collected daily at 0800 at EW-01 and EW-02. In May 2018, the totalizer at MW-10D rolled over to a value greater than 10 million and the value was no longer presented on the system data tab. As a result, the totalizer reading was estimated between May 2018 and August 2019, based on the total flow in gallons recorded for the previous 24 hours. A system update was completed in August 2019 that reduced the totalizer reading for MW-10D by 10 million gallons.
3. Italics indicates estimated value for monthly and daily flow.

Table 2
Operational Issues for June 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Root Cause for Alarm	Response
6/27/2022	Pipe Leak	System manually shut off due to a pipe leak at MW-10D discovered by Solvay on-site staff. Arcadis staff were onsite on July 11-12 to repair the leak. Replacement parts are needed and the system remains shut off until parts are ordered and the leak can be repaired.

Attachment A



Cytec Solvay Group
1300 Revolution Street
Havre de Grace, MD 21078
410.939.1910

August 12, 2022

Mr. Ken Montgomery
Industrial Pretreatment Coordinator
City of Havre de Grace
Department of Public Works
711 Pennington Avenue
Havre de Grace, Maryland 21078

Re: CYTEC SOLVAY GROUP AEROSPACE MATERIALS
Periodic Compliance Report – July 2022
Permit Number: CYT-2015-101

Dear Mr. Montgomery:

CYTEC SOLVAY GROUP (Cytec) has prepared this Periodic Compliance Report for the month of July 2022 in accordance with the conditions set forth in Cytec's Industrial User Wastewater Discharge Permit (Permit No. CYT-2015-101). This Periodic Compliance Report presents the results of all monitoring requirements and operational issues encountered during the month of July 2022. The monthly certification form is included as Attachment A.

For the month of July, the system pumped an estimated 146,055 gallons of wastewater at an estimated average flow rate of 3.27 gallons per minute to the City of Havre de Grace Wastewater Treatment Plant during active system operation. The estimated average flow rate of 3.27 gallons per minute for the month of July satisfied both permit flow limitations (maximum of 30,000 gallons per day; 30-minute maximum of 1,000 gallons).

One pH meter is presently installed in-line with the effluent discharge pipe to measure pH continuously. pH results from the effluent wastewater complied with all permit conditions for pH during the month of July and no significant deviations were noted during active operation. Table 1 presents the daily flow volumes and weekly pH readings recorded for the month of July.

As noted in the March 2022 report, the pump motor at EW-02 is faulty and currently pending replacement, dependent on when parts can be shipped from the manufacturer, and EW-02 has been shut down since March 15, 2022. On June 27, a pipe leak within the system shed from MW-10D was discovered and the system was manually shut down. Arcadis staff was onsite July 11 and 12 and identified a leaking flange. Replacement parts were ordered, and on July 15, Arcadis staff were onsite to repair the leak.

On July 7, an EW-01 transducer failure and high-level alarms were received. This alarm may occur when the transducer in the well is faulty. The alarms are currently disabled until Arcadis staff can inspect the transducer. On July 16, a P-100/P-200 drive fault alarm and on July 21, an E-stop alarm was received and the system was automatically shut down. These alarms may occur when the facility experiences a power fluctuation and requires a system reset. The system was restarted manually on July 18 after the P-100/P-200 drive fault alarms were cleared. The E-stop alarm was cleared, and the system was restarted manually

within 24 hours.

The August Compliance Report will be submitted in September 2022. Daily flow and pH will continue to be measured continuously. If the system is shut down for a period of at least 24 hours, pH results will be monitored and reported for three consecutive days to maintain compliance with permit conditions.

If you have any questions or comments, please contact me at 443-252-1093.

Sincerely,
Cytec Solvay Group

Tyler Stephens
HSE Manager

Enclosure

cc: Mr. Luis Pizarro, United States Environmental Protection Agency
Mr. Charles Jones, Cytec Solvay Group
Mr. Joshua Wilson, Arcadis
Ms. Shwetha Sridharan, Arcadis

Table 1
Flow and pH Monitoring for July 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Cumulative Total Gallons Extracted (MW-10D)	Cumulative Total Gallons Extracted (EW-01)	Cumulative Total Gallons Extracted (EW-02)	Combined Cumulative Total Gallons Extracted	Daily Total Gallons Extracted	pH
07/01/22	20,252,606	4,531,884	3,408,166	28,192,656	0	5.14
07/02/22	20,252,606	4,531,884	3,408,166	28,192,656	0	
07/03/22	20,252,606	4,531,884	3,408,166	28,192,656	0	
07/04/22	20,252,606	4,531,884	3,408,166	28,192,656	0	
07/05/22	20,252,606	4,531,884	3,408,166	28,192,656	0	
07/06/22	20,252,606	4,531,884	3,408,166	28,192,656	0	
07/07/22	20,252,606	4,531,884	3,408,166	28,192,656	0	
07/08/22	20,252,606	4,531,884	3,408,166	28,192,656	0	5.14
07/09/22	20,252,606	4,531,884	3,408,166	28,192,656	0	
07/10/22	20,252,606	4,531,884	3,408,166	28,192,656	0	
07/11/22	20,252,606	4,531,884	3,408,166	28,192,656	0	
07/12/22	20,252,606	4,531,884	3,408,166	28,192,656	0	
07/13/22	20,252,606	4,531,884	3,408,166	28,192,656	0	
07/14/22	20,252,606	4,531,884	3,408,166	28,192,656	0	
07/15/22	20,252,606	4,531,884	3,408,166	28,192,656	6,938	6.49
07/16/22	20,258,420	4,532,976	3,408,198	28,199,594	0	5.84
07/17/22	20,258,420	4,532,976	3,408,198	28,199,594	0	5.87
07/18/22	20,258,420	4,532,976	3,408,198	28,199,594	5,550	
<i>07/19/22</i>	<i>20,263,085</i>	<i>4,533,861</i>	3,408,198	<i>28,205,144</i>	<i>5,550</i>	5.56
07/20/22	20,267,751	4,534,745	3,408,198	28,210,694	10,575	5.82
07/21/22	20,276,639	4,536,432	3,408,198	28,221,269	10,653	
07/22/22	20,285,593	4,538,131	3,408,198	28,231,922	10,673	5.84
07/23/22	20,294,563	4,539,834	3,408,198	28,242,595	10,673	
07/24/22	20,303,535	4,541,535	3,408,198	28,253,268	10,670	
07/25/22	20,312,506	4,543,234	3,408,198	28,263,938	10,678	
07/26/22	20,321,481	4,544,937	3,408,198	28,274,616	10,688	
07/27/22	20,330,459	4,546,647	3,408,198	28,285,304	10,679	
07/28/22	20,339,433	4,548,352	3,408,198	28,295,983	10,681	
07/29/22	20,348,408	4,550,058	3,408,198	28,306,664	10,683	5.84
07/30/22	20,357,383	4,551,766	3,408,198	28,317,347	10,680	
07/31/22	20,366,358	4,553,471	3,408,198	28,328,027	10,684	

Notes:

1. Operation of the expanded system began on January 16, 2015.
2. Totalizer readings are collected daily at 0800 at EW-01 and EW-02. In May 2018, the totalizer at MW-10D rolled over to a value greater than 10 million and the value was no longer presented on the system data tab. As a result, the totalizer reading was estimated between May 2018 and August 2019, based on the total flow in gallons recorded for the previous 24 hours. A system update was completed in August 2019 that reduced the totalizer reading for MW-10D by 10 million gallons.
3. Italics indicates estimated value for monthly and daily flow.

Table 2
Operational Issues for July 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Root Cause for Alarm	Response
6/27/2022-7/15/2022	Pipe Leak	System manually shut off on 6/27 due to a pipe leak at MW-10D discovered by Solvay on-site staff. Arcadis staff on-site on July 15th to repair leaks. Replaced MW-10D flange and nipple.
7/7/2022	EW-01 Transducer Failure and High-Level Alarm	A EW-01 transducer failure alarm and high level alarm was received. This alarm could potentially be due to a faulty transducer in the well. The alarms are currently disabled until Arcadis staff can inspect the transducer.
7/16/2022	P-100/P-200 Drive Fault Alarms	A P-100 and P-200 drive fault alarm was received and the system was automatically shut down. This alarm may occur when the facility experiences a power fluctuation and requires a system reset. The alarm was cleared by Arcadis staff and the system was restarted on 7/18/2022.
7/21/2022	E-stop Alarm	An E-stop alarm was received and the system was automatically shut down. This alarm may occur when the facility experiences a power fluctuation and requires a system reset. The alarm was cleared by on-site personnel and the system was restarted within 24 hours.

Attachment A

Attachment A

**CYTEC SOLVAY GROUP
PERIODIC COMPLIANCE REPORT**

REPORTING MONTH/YEAR July 2022

TOTAL VOLUME DISCHARGED 146,055 Gallons

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Date

Authorized Representative



Cytec Solvay Group
1300 Revolution Street
Havre de Grace, MD 21078
410.939.1910

September 8, 2022

Mr. Ken Montgomery
Industrial Pretreatment Coordinator
City of Havre de Grace
Department of Public Works
711 Pennington Avenue
Havre de Grace, Maryland 21078

Re: CYTEC SOLVAY GROUP AEROSPACE MATERIALS
Periodic Compliance Report – August 2022
Permit Number: CYT-2015-101

Dear Mr. Montgomery:

CYTEC SOLVAY GROUP (Cytec) has prepared this Periodic Compliance Report for the month of August 2022 in accordance with the conditions set forth in Cytec's Industrial User Wastewater Discharge Permit (Permit No. CYT-2015-101). This Periodic Compliance Report presents the results of all monitoring requirements and operational issues encountered during the month of August 2022. The monthly certification form is included as Attachment A.

For the month of August, the system pumped an estimated 265,693 gallons of wastewater at an estimated average flow rate of 5.95 gallons per minute to the City of Havre de Grace Wastewater Treatment Plant during active system operation. The estimated average flow rate of 5.95 gallons per minute for the month of August satisfied both permit flow limitations (maximum of 30,000 gallons per day; 30-minute maximum of 1,000 gallons).

One pH meter is presently installed in-line with the effluent discharge pipe to measure pH continuously. pH results from the effluent wastewater complied with all permit conditions for pH during the month of August and no significant deviations were noted during active operation. Table 1 presents the daily flow volumes and weekly pH readings recorded for the month of August.

As noted in the March 2022 report, the pump motor at EW-02 is faulty and currently pending replacement, dependent on when parts can be shipped from the manufacturer, and EW-02 has been shut down since March 15, 2022. Parts are expected in the next few weeks. On July 7, an EW-01 transducer failure and high-level alarms were received. This alarm may occur when the transducer in the well is faulty. Arcadis staff evaluated the transducer on August 25 and a replacement transducer is pending. On August 17, the system was automatically shut down due a suspected E-stop alarm, triggered by a power fluctuation in the facility. The system was restarted by onsite staff on August 23.

The September Compliance Report will be submitted in October 2022. Daily flow and pH will continue to be measured continuously. If the system is shut down for a period of at least 24 hours, pH results will be monitored and reported for three consecutive days to maintain compliance with permit conditions.

If you have any questions or comments, please contact me at 443-252-1093.

Sincerely,
Cytec Solvay Group

Tyler Stephens
HSE Manager

Enclosure

cc: Mr. Luis Pizarro, United States Environmental Protection Agency
Mr. Charles Jones, Cytec Solvay Group
Mr. Joshua Wilson, Arcadis
Ms. Shwetha Sridharan, Arcadis

Table 1
Flow and pH Monitoring for August 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Cumulative Total Gallons Extracted (MW-10D)	Cumulative Total Gallons Extracted (EW-01)	Cumulative Total Gallons Extracted (EW-02)	Combined Cumulative Total Gallons Extracted	Daily Total Gallons Extracted	pH
08/01/22	20,375,334	4,555,179	3,408,198	28,338,711	10,685	
08/02/22	20,384,310	4,556,888	3,408,198	28,349,396	10,674	
08/03/22	20,393,283	4,558,589	3,408,198	28,360,070	10,679	
08/04/22	20,402,256	4,560,295	3,408,198	28,370,749	10,678	
08/05/22	20,411,229	4,562,000	3,408,198	28,381,427	10,677	5.78
08/06/22	20,420,202	4,563,704	3,408,198	28,392,104	10,676	
08/07/22	20,429,173	4,565,409	3,408,198	28,402,780	10,675	
08/08/22	20,438,145	4,567,112	3,408,198	28,413,455	10,669	
08/09/22	20,447,116	4,568,810	3,408,198	28,424,124	10,672	
08/10/22	20,456,087	4,570,511	3,408,198	28,434,796	10,676	
08/11/22	20,465,059	4,572,215	3,408,198	28,445,472	10,678	
08/12/22	20,474,032	4,573,920	3,408,198	28,456,150	10,681	5.78
08/13/22	20,483,007	4,575,626	3,408,198	28,466,831	10,686	
08/14/22	20,491,985	4,577,334	3,408,198	28,477,517	10,685	
08/15/22	20,500,961	4,579,043	3,408,198	28,488,202	10,685	
08/16/22	20,509,938	4,580,751	3,408,198	28,498,887	10,684	
08/17/22	20,518,915	4,582,458	3,408,198	28,509,571	0	
08/18/22	20,518,915	4,582,458	3,408,198	28,509,571	0	
08/19/22	20,518,915	4,582,458	3,408,198	28,509,571	0	
08/20/22	20,518,915	4,582,458	3,408,198	28,509,571	0	
08/21/22	20,518,915	4,582,458	3,408,198	28,509,571	0	
08/22/22	20,518,915	4,582,458	3,408,198	28,509,571	0	
08/23/22	20,518,915	4,582,458	3,408,198	28,509,571	9,411	6.49
08/24/22	20,526,822	4,583,962	3,408,198	28,518,982	10,681	5.82
08/25/22	20,535,798	4,585,667	3,408,198	28,529,663	10,669	5.80
08/26/22	20,544,762	4,587,372	3,408,198	28,540,332	10,678	5.80
08/27/22	20,553,736	4,589,076	3,408,198	28,551,010	10,678	
08/28/22	20,562,710	4,590,780	3,408,198	28,561,688	10,678	
08/29/22	20,571,683	4,592,485	3,408,198	28,572,366	10,672	
08/30/22	20,580,655	4,594,185	3,408,198	28,583,038	10,683	
08/31/22	20,589,630	4,595,893	3,408,198	28,593,721	10,683	

Notes:

1. Operation of the expanded system began on January 16, 2015.
2. Totalizer readings are collected daily at 0800 at EW-01 and EW-02. In May 2018, the totalizer at MW-10D rolled over to a value greater than 10 million and the value was no longer presented on the system data tab. As a result, the totalizer reading was estimated between May 2018 and August 2019, based on the total flow in gallons recorded for the previous 24 hours. A system update was completed in August 2019 that reduced the totalizer reading for MW-10D by 10 million gallons.
3. Italics indicates estimated value for monthly and daily flow.

Table 2
Flow and pH Monitoring for August 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Root Cause for Alarm	Response
3/15/2022 - Present	P-300 Overload Fault	The P-300 Overload alarm remains active as the motor at EW-02 has failed and needs to be replaced. Arcadis is currently waiting on a new motor to be shipped from the manufacturer. EW-02 currently remains off.
8/17/2022	E-Stop	The system was automatically shut down due to a suspected E-stop alarm, potentially triggered by a power fluctuation. Alarms were cleared and the system was restarted on 8/23.
8/25/2022	--	Arcadis staff were onsite to inspect the EW-01 transducer. The transducer needs to be replaced and requires staff with proper electrical training to do so. Arcadis is looking into options for replacement of the transducer.

Attachment A

Attachment A

**CYTEC SOLVAY GROUP
PERIODIC COMPLIANCE REPORT**

REPORTING MONTH/YEAR August 2022

TOTAL VOLUME DISCHARGED 265,693 Gallons

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Date

Authorized Representative



Cytec Solvay Group
1300 Revolution Street
Havre de Grace, MD 21078
410.939.1910

October 17, 2022

Mr. Ken Montgomery
Industrial Pretreatment Coordinator
City of Havre de Grace
Department of Public Works
711 Pennington Avenue
Havre de Grace, Maryland 21078

Re: CYTEC SOLVAY GROUP AEROSPACE MATERIALS
Periodic Compliance Report – September 2022
Permit Number: CYT-2015-101

Dear Mr. Montgomery:

CYTEC SOLVAY GROUP (Cytec) has prepared this Periodic Compliance Report for the month of September 2022 in accordance with the conditions set forth in Cytec's Industrial User Wastewater Discharge Permit (Permit No. CYT-2015-101). This Periodic Compliance Report presents the results of all monitoring requirements and operational issues encountered during the month of September 2022. The monthly certification form is included as Attachment A.

For the month of September, the system pumped an estimated 319,666 gallons of wastewater at an estimated average flow rate of 7.40 gallons per minute to the City of Havre de Grace Wastewater Treatment Plant during active system operation. The estimated average flow rate of 7.40 gallons per minute for the month of September satisfied both permit flow limitations (maximum of 30,000 gallons per day; 30-minute maximum of 1,000 gallons).

One pH meter is presently installed in-line with the effluent discharge pipe to measure pH continuously. pH results from the effluent wastewater complied with all permit conditions for pH during the month of September and no significant deviations were noted during active operation. Table 1 presents the daily flow volumes and weekly pH readings recorded for the month of September.

As noted in previous monthly reports, the pump motor at EW-02 is faulty and currently pending replacement, dependent on replacement part availability, and EW-02 has been shut down since March 15, 2022. Parts have been shipped and will be replaced as soon as possible. On September 19, 2022 the system was automatically shut down due an E-stop alarm, triggered by a power fluctuation in the facility. The system was restarted within 24 hours by onsite staff.

The October Compliance Report will be submitted in November 2022. Daily flow and pH will continue to be measured continuously. If the system is shut down for a period of at least 24 hours, pH results will be monitored and reported for three consecutive days to maintain compliance with permit conditions.

If you have any questions or comments, please contact me at 443-252-1093.

Sincerely,
Cytec Solvay Group

Tyler Stephens
HSE Manager

Enclosure

cc: Mr. Luis Pizarro, United States Environmental Protection Agency
Mr. Charles Jones, Cytec Solvay Group
Mr. Joshua Wilson, Arcadis
Ms. Shwetha Sridharan, Arcadis

Table 1
Flow and pH Monitoring for September 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Cumulative Total Gallons Extracted (MW-10D)	Cumulative Total Gallons Extracted (EW-01)	Cumulative Total Gallons Extracted (EW-02)	Combined Cumulative Total Gallons Extracted	Daily Total Gallons Extracted	pH
09/01/22	20,598,606	4,597,600	3,408,198	28,604,404	10,682	
09/02/22	20,607,582	4,599,306	3,408,198	28,615,086	10,684	5.80
09/03/22	20,616,559	4,601,013	3,408,198	28,625,770	10,682	
09/04/22	20,625,534	4,602,720	3,408,198	28,636,452	10,679	
09/05/22	20,634,508	4,604,425	3,408,198	28,647,131	10,684	
09/06/22	20,643,482	4,606,135	3,408,198	28,657,815	10,693	
09/07/22	20,652,461	4,607,849	3,408,198	28,668,508	10,694	
09/08/22	20,661,440	4,609,564	3,408,198	28,679,202	10,693	
09/09/22	20,670,418	4,611,279	3,408,198	28,689,895	10,690	5.79
09/10/22	20,679,396	4,612,991	3,408,198	28,700,585	10,686	
09/11/22	20,688,372	4,614,701	3,408,198	28,711,271	10,693	
09/12/22	20,697,350	4,616,416	3,408,198	28,721,964	10,685	
09/13/22	20,706,326	4,618,125	3,408,198	28,732,649	10,687	
09/14/22	20,715,304	4,619,834	3,408,198	28,743,336	10,691	
09/15/22	20,724,283	4,621,546	3,408,198	28,754,027	10,698	
09/16/22	20,733,266	4,623,261	3,408,198	28,764,725	10,696	5.80
09/17/22	20,742,249	4,624,974	3,408,198	28,775,421	10,694	
09/18/22	20,751,229	4,626,688	3,408,198	28,786,115	9,696	
09/19/22	20,759,373	4,628,240	3,408,198	28,795,811	10,673	
09/20/22	20,768,348	4,629,938	3,408,198	28,806,484	10,676	
09/21/22	20,777,324	4,631,638	3,408,198	28,817,160	10,670	
09/22/22	20,786,300	4,633,332	3,408,198	28,827,830	10,684	
09/23/22	20,795,279	4,635,037	3,408,198	28,838,514	10,698	5.81
09/24/22	20,804,265	4,636,749	3,408,198	28,849,212	10,693	
09/25/22	20,813,247	4,638,460	3,408,198	28,859,905	10,692	
09/26/22	20,822,227	4,640,172	3,408,198	28,870,597	10,686	
09/27/22	20,831,205	4,641,880	3,408,198	28,881,283	10,693	
09/28/22	20,840,188	4,643,590	3,408,198	28,891,976	10,697	
09/29/22	20,849,171	4,645,304	3,408,198	28,902,673	10,697	
09/30/22	20,858,153	4,647,019	3,408,198	28,913,370	10,700	5.80

Notes:

1. Operation of the expanded system began on January 16, 2015.
2. Totalizer readings are collected daily at 0800 at EW-01 and EW-02. In May 2018, the totalizer at MW-10D rolled over to a value greater than 10 million and the value was no longer presented on the system data tab. As a result, the totalizer reading was estimated between May 2018 and August 2019, based on the total flow in gallons recorded for the previous 24 hours. A system update was completed in August 2019 that reduced the totalizer reading for MW-10D by 10 million gallons.

Table 2
Flow and pH Monitoring for September 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Root Cause for Alarm	Response
3/15/2022 - Present	P-300 Overload Fault	The P-300 Overload alarm remains active as the motor at EW-02 has failed and needs to be replaced. Arcadis is currently waiting on a new motor to be shipped from the manufacturer. EW-02 currently remains off.
9/19/2022	E-Stop	The system was automatically shut down due to a suspected E-stop alarm, potentially triggered by a power fluctuation. Alarms were cleared and the system was restarted within 24 hours by onsite personnel.

Attachment A

Attachment A

**CYTEC SOLVAY GROUP
PERIODIC COMPLIANCE REPORT**

REPORTING MONTH/YEAR _____ September 2022 _____

TOTAL VOLUME DISCHARGED _____ 319,666 Gallons _____

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Date

Authorized Representative



Cytec Solvay Group
1300 Revolution Street
Havre de Grace, MD 21078
410.939.1910

November 9, 2022

Mr. Ken Montgomery
Industrial Pretreatment Coordinator
City of Havre de Grace
Department of Public Works
711 Pennington Avenue
Havre de Grace, Maryland 21078

Re: CYTEC SOLVAY GROUP AEROSPACE MATERIALS
Periodic Compliance Report – October 2022
Permit Number: CYT-2015-101

Dear Mr. Montgomery:

CYTEC SOLVAY GROUP (Cytec) has prepared this Periodic Compliance Report for the month of October 2022 in accordance with the conditions set forth in Cytec's Industrial User Wastewater Discharge Permit (Permit No. CYT-2015-101). This Periodic Compliance Report presents the results of all monitoring requirements and operational issues encountered during the month of October 2022. The monthly certification form is included as Attachment A.

For the month of October, the system pumped an estimated 319,207 gallons of wastewater at an estimated average flow rate of 7.15 gallons per minute to the City of Havre de Grace Wastewater Treatment Plant during active system operation. The estimated average flow rate of 7.15 gallons per minute for the month of October satisfied both permit flow limitations (maximum of 30,000 gallons per day; 30-minute maximum of 1,000 gallons).

One pH meter is presently installed in-line with the effluent discharge pipe to measure pH continuously. pH results from the effluent wastewater complied with all permit conditions for pH during the month of October and no significant deviations were noted during active operation. Table 1 presents the daily flow volumes and weekly pH readings recorded for the month of October.

As noted in the March 2022 report, the pump motor at EW-02 is faulty and currently pending replacement, dependent on when parts can be shipped from the manufacturer, and EW-02 has been shut down since March 15, 2022. Parts have been shipped and will be replaced upon electrician availability. On October 5 and October 11, the system was automatically shut down due an E-stop alarm and P-100/P-200 drive fault alarms, respectively, triggered by a power fluctuation in the facility. The system was restarted within 24 hours by onsite staff on both dates.

The November Compliance Report will be submitted in December 2022. Daily flow and pH will continue to be measured continuously. If the system is shut down for a period of at least 24 hours, pH results will be monitored and reported for three consecutive days to maintain compliance with permit conditions.

If you have any questions or comments, please contact me at 443-252-1093.

Sincerely,
Cytec Solvay Group

Tyler Stephens
HSE Manager

Enclosure

cc: Mr. Luis Pizarro, United States Environmental Protection Agency
Mr. Charles Jones, Cytec Solvay Group
Mr. Joshua Wilson, Arcadis
Ms. Shwetha Sridharan, Arcadis

Table 1
Flow and pH Monitoring for October 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Cumulative Total Gallons Extracted (MW-10D)	Cumulative Total Gallons Extracted (EW-01)	Cumulative Total Gallons Extracted (EW-02)	Combined Cumulative Total Gallons Extracted	Daily Total Gallons Extracted	pH
10/01/22	20,867,138	4,648,734	3,408,198	28,924,070	10,698	
10/02/22	20,876,122	4,650,448	3,408,198	28,934,768	10,704	
10/03/22	20,885,111	4,652,163	3,408,198	28,945,472	10,709	
10/04/22	20,894,104	4,653,879	3,408,198	28,956,181	6,035	
10/05/22	<i>20,899,174</i>	<i>4,654,844</i>	<i>3,408,198</i>	<i>28,962,216</i>	<i>6,035</i>	
10/06/22	20,904,244	4,655,808	3,408,198	28,968,250	10,683	
10/07/22	20,913,225	4,657,510	3,408,198	28,978,933	10,683	5.81
10/08/22	20,922,204	4,659,214	3,408,198	28,989,616	10,698	
10/09/22	20,931,191	4,660,925	3,408,198	29,000,314	10,696	
10/10/22	20,940,177	4,662,635	3,408,198	29,011,010	10,016	
10/11/22	<i>20,948,598</i>	<i>4,664,229</i>	<i>3,408,198</i>	<i>29,021,026</i>	<i>10,181</i>	
10/12/22	<i>20,957,160</i>	<i>4,665,849</i>	<i>3,408,198</i>	<i>29,031,207</i>	<i>10,304</i>	
10/13/22	<i>20,965,826</i>	<i>4,667,488</i>	<i>3,408,198</i>	<i>29,041,511</i>	<i>9,561</i>	
10/14/22	20,973,862	4,669,012	3,408,198	29,051,072	10,679	5.81
10/15/22	20,982,844	4,670,709	3,408,198	29,061,751	10,673	
10/16/22	20,991,823	4,672,403	3,408,198	29,072,424	10,671	
10/17/22	21,000,801	4,674,096	3,408,198	29,083,095	10,677	
10/18/22	21,009,781	4,675,793	3,408,198	29,093,772	10,688	
10/19/22	21,018,765	4,677,497	3,408,198	29,104,460	10,693	
10/20/22	21,027,751	4,679,204	3,408,198	29,115,153	10,687	
10/21/22	21,036,735	4,680,907	3,408,198	29,125,840	10,686	5.83
10/22/22	21,045,718	4,682,610	3,408,198	29,136,526	10,683	
10/23/22	21,054,700	4,684,311	3,408,198	29,147,209	10,672	
10/24/22	21,063,680	4,686,003	3,408,198	29,157,881	10,672	
10/25/22	21,072,660	4,687,695	3,408,198	29,168,553	10,669	
10/26/22	21,081,637	4,689,387	3,408,198	29,179,222	10,669	
10/27/22	21,090,615	4,691,078	3,408,198	29,189,891	10,674	
10/28/22	21,099,596	4,692,771	3,408,198	29,200,565	10,677	
10/29/22	21,108,578	4,694,466	3,408,198	29,211,242	10,685	5.83
10/30/22	21,117,561	4,696,168	3,408,198	29,221,927	10,680	
10/31/22	21,126,542	4,697,867	3,408,198	29,232,607	10,670	

Notes:

1. Operation of the expanded system began on January 16, 2015.
2. Totalizer readings are collected daily at 0800 at EW-01 and EW-02. In May 2018, the totalizer at MW-10D rolled over to a value greater than 10 million and the value was no longer presented on the system data tab. As a result, the totalizer reading was estimated between May 2018 and August 2019, based on the total flow in gallons recorded for the previous 24 hours. A system update was completed in August 2019 that reduced the totalizer reading for MW-10D by 10 million gallons.
3. Italics indicates estimated value for monthly and daily flow.

Table 2
Flow and pH Monitoring for October 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Root Cause for Alarm	Response
3/15/2022 - Present	P-300 Overload Fault	The P-300 Overload alarm remains active as the motor at EW-02 has failed and needs to be replaced. EW-02 currently remains off.
10/5/2022	E-Stop	The system was automatically shut down due to an E-stop alarm, triggered by a power fluctuation. Alarms were cleared and the system was restarted within 24 hours by onsite personnel.
10/11/2022	P-100/P-200 Drive Fault	The system was automatically shut down due to P-100/P-200 drive fault alarms, triggered by a power fluctuation. Alarms were cleared and the system was restarted within 24 hours by onsite personnel.

Attachment A



Cytec Solvay Group
1300 Revolution Street
Havre de Grace, MD 21078
410.939.1910

December 7, 2022

Mr. Ken Montgomery
Industrial Pretreatment Coordinator
City of Havre de Grace
Department of Public Works
711 Pennington Avenue
Havre de Grace, Maryland 21078

Re: CYTEC SOLVAY GROUP AEROSPACE MATERIALS
Periodic Compliance Report – November 2022
Permit Number: CYT-2015-101

Dear Mr. Montgomery:

CYTEC SOLVAY GROUP (Cytec) has prepared this Periodic Compliance Report for the month of November 2022 in accordance with the conditions set forth in Cytec's Industrial User Wastewater Discharge Permit (Permit No. CYT-2015-101). This Periodic Compliance Report presents the results of all monitoring requirements and operational issues encountered during the month of November 2022. The monthly certification form is included as Attachment A.

For the month of November, the system pumped an estimated 277,821 gallons of wastewater at an estimated average flow rate of 6.43 gallons per minute to the City of Havre de Grace Wastewater Treatment Plant during active system operation. The estimated average flow rate of 6.43 gallons per minute for the month of November satisfied both permit flow limitations (maximum of 30,000 gallons per day; 30-minute maximum of 1,000 gallons).

One pH meter is presently installed in-line with the effluent discharge pipe to measure pH continuously. pH results from the effluent wastewater complied with all permit conditions for pH during the month of November and no significant deviations were noted during active operation. Table 1 presents the daily flow volumes and weekly pH readings recorded for the month of November.

As noted in the March 2022 report, the pump motor at EW-02 is faulty and currently pending replacement, and EW-02 has been shut down since March 15, 2022. Parts have been shipped and will be replaced upon electrician availability. On November 26, the system was automatically shut down due an E-stop alarm, triggered by a power fluctuation in the facility. The system was restarted on November 29 by onsite personnel.

The December Compliance Report will be submitted in January 2023. Daily flow and pH will continue to be measured continuously. If the system is shut down for a period of at least 24 hours, pH results will be monitored and reported for three consecutive days to maintain compliance with permit conditions.

The second semi-annual effluent grab sample for 2022 was collected from the point of discharge at the POTW on October 12, 2022. The effluent grab sample was analyzed for Priority Pollutant volatile organic compounds, semi-volatile organic compounds, metals, and cyanide. Analytical results for the effluent

groundwater samples for metals and cyanide are compared to the effluent limitations specified in Cytec's Industrial User Wastewater Discharge Permit (Permit No. CYT-2015-101). Table 3 presents the analytical results required by the Permit. As summarized in Table 3 below, no exceedances of the effluent limitations were observed. The analytical laboratory report is presented as Attachment B, including volatile organic compound and semi-volatile organic compound results.

Table 3. Analytical Data Summary

Parameter	Effluent Limitations (µg/l)	October 2022 POTW Discharge (µg/l)
Total Arsenic	4,060	ND
Total Cadmium	90	ND
Total Chromium	390	ND
Total Copper	80	ND
Total Lead	650	3.3 J
Total Nickel	780	6.3 J
Total Silver	50	ND
Total Zinc	9,300	ND
Total Mercury	0.3	ND
Total Cyanide	180	11

If you have any questions or comments, please contact me at 443-252-1093.

Sincerely,
Cytec Solvay Group

Tyler Stephens
HSE Manager

Enclosure

cc: Mr. Luis Pizarro, United States Environmental Protection Agency
Mr. Charles Jones, Cytec Solvay Group
Mr. Joshua Wilson, Arcadis
Ms. Shwetha Sridharan, Arcadis

Table 1
Flow and pH Monitoring for November 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Cumulative Total Gallons Extracted (MW-10D)	Cumulative Total Gallons Extracted (EW-01)	Cumulative Total Gallons Extracted (EW-02)	Combined Cumulative Total Gallons Extracted	Daily Total Gallons Extracted	pH
11/01/22	21,135,521	4,699,558	3,408,198	29,243,277	10,667	
11/02/22	21,144,497	4,701,249	3,408,198	29,253,944	10,677	
11/03/22	21,153,476	4,702,947	3,408,198	29,264,621	7,668	
11/04/22	<i>21,159,204</i>	<i>4,704,887</i>	3,408,198	29,272,289	5,963	5.56
11/05/22	21,164,931	4,705,122	3,408,198	29,278,251	10,685	
11/06/22	21,173,911	4,706,827	3,408,198	29,288,936	10,676	
11/07/22	21,182,891	4,708,523	3,408,198	29,299,612	10,690	
11/08/22	21,191,873	4,710,231	3,408,198	29,310,302	10,706	
11/09/22	21,200,865	4,711,945	3,408,198	29,321,008	10,707	
11/10/22	21,209,857	4,713,660	3,408,198	29,331,715	10,698	
11/11/22	21,218,841	4,715,374	3,408,198	29,342,413	10,693	5.83
11/12/22	21,227,822	4,717,086	3,408,198	29,353,106	10,690	
11/13/22	21,236,805	4,718,793	3,408,198	29,363,796	10,709	
11/14/22	21,245,798	4,720,509	3,408,198	29,374,505	10,710	
11/15/22	21,254,792	4,722,225	3,408,198	29,385,215	10,708	
11/16/22	21,263,785	4,723,940	3,408,198	29,395,923	10,706	
11/17/22	21,272,776	4,725,655	3,408,198	29,406,629	10,709	
11/18/22	21,281,769	4,727,371	3,408,198	29,417,338	10,710	5.83
11/19/22	21,290,763	4,729,087	3,408,198	29,428,048	10,710	
11/20/22	21,299,757	4,730,803	3,408,198	29,438,758	10,712	
11/21/22	21,308,753	4,732,519	3,408,198	29,449,470	10,713	
11/22/22	21,317,750	4,734,235	3,408,198	29,460,183	10,708	
11/23/22	21,326,743	4,735,950	3,408,198	29,470,891	10,708	
11/24/22	21,335,735	4,737,666	3,408,198	29,481,599	10,707	
11/25/22	21,344,727	4,739,381	3,408,198	29,492,306	0	
<i>11/26/22</i>	<i>21,344,727</i>	<i>4,739,381</i>	<i>3,408,198</i>	<i>29,492,306</i>	0	
<i>11/27/22</i>	<i>21,344,727</i>	<i>4,739,381</i>	<i>3,408,198</i>	<i>29,492,306</i>	0	
<i>11/28/22</i>	<i>21,344,727</i>	<i>4,739,381</i>	<i>3,408,198</i>	<i>29,492,306</i>	9,730	
11/29/22	21,352,898	4,740,940	3,408,198	29,502,036	8,364	6.32
11/30/22	21,359,924	4,742,278	3,408,198	29,510,400	10,698	5.82

Notes:

1. Operation of the expanded system began on January 16, 2015.
2. Totalizer readings are collected daily at 0800 at EW-01 and EW-02. In May 2018, the totalizer at MW-10D rolled over to a value greater than 10 million and the value was no longer presented on the system data tab. As a result, the totalizer reading was estimated between May 2018 and August 2019, based on the total flow in gallons recorded for the previous 24 hours. A system update was completed in August 2019 that reduced the totalizer reading for MW-10D by 10 million gallons.
3. Italics indicates estimated value for monthly and daily flow.

Table 2
Flow and pH Monitoring for November 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Root Cause for Alarm	Response
3/15/2022 - Present	P-300 Overload Fault	The P-300 Overload alarm remains active as the motor at EW-02 has failed and needs to be replaced. EW-02 currently remains off.
11/26/2022	E-Stop	The system was automatically shut down due to an E-stop alarm, triggered by a power fluctuation. Alarms were cleared and the system was restarted on 11/29 by onsite personnel.

Attachment A

Attachment A

**CYTEC SOLVAY GROUP
PERIODIC COMPLIANCE REPORT**

REPORTING MONTH/YEAR _____ November 2022 _____

TOTAL VOLUME DISCHARGED _____ 277,821 Gallons _____

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Date

Authorized Representative

Attachment B

ANALYTICAL REPORT

Eurofins Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-146141-1

Client Project/Site: Cytex Havre de Grace MD

For:

ARCADIS U.S., Inc.
7550 Teague Road
Suite 210
Hanover, Maryland 21076

Attn: Ms. Shwetha Sridharan



Authorized for release by:

11/3/2022 3:48:54 PM

Jill Colussy, Project Manager I
(412)963-2444

Jill.Colussy@et.eurofinsus.com

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Results relate only to the items tested and the sample(s) as received by the laboratory.

PA Lab ID: 02-00416



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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-146141-1

Job ID: 180-146141-1

Laboratory: Eurofins Pittsburgh

Narrative

Job Narrative 180-146141-1

Receipt

The samples were received on 10/13/2022 10:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.2° C.

The laboratory did not receive the TRIP BLANK listed on the chain of custody.

GC/MS VOA

The preservative used in the sample containers provided is not compatible with the Method 624 analytes requested. The following sample was received preserved with hydrochloric acid: POTWOUTFALL (101222) (180-146141-1). The requested target analyte list contains 2-Chloroethyl vinyl ether and/or Acrolein, which are acid-labile compounds that degrade in an acidic medium.

Due to the concentration of target compounds detected, sample POTWOUTFALL (101222) (180-146141-1) was analyzed at a dilution. Elevated reporting limits (RLs) are provided.

The laboratory control sample (LCS) for batch 180-415073 recovered outside control limits for 1,1,2,2-Tetrachloroethane, 1,1-Dichloroethane and 1,1-Dichloroethene. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

GC/MS Semi VOA

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals

The associated samples are included in 11 analyses between CCV/CCB. The bracketing QC was within the control limits. Data will be reported as is with this narrative.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-146141-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.

GC/MS Semi VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Cytex Havre de Grace MD

Job ID: 180-146141-1

Laboratory: Eurofins Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	19-033-0	06-27-22 *
California	State	2891	04-30-23
Connecticut	State	PH-0688	09-30-22 *
Florida	NELAP	E871008	06-30-23
Georgia	State	PA 02-00416	04-30-23
Illinois	NELAP	004375	06-30-23
Kansas	NELAP	E-10350	03-31-23
Kentucky (UST)	State	162013	04-30-23
Kentucky (WW)	State	KY98043	12-31-22
Louisiana	NELAP	04041	06-30-22 *
Louisiana (All)	NELAP	04041	06-30-23
Maine	State	PA00164	03-06-24
Minnesota	NELAP	042-999-482	12-31-22
New Hampshire	NELAP	2030	04-04-23
New Jersey	NELAP	PA005	06-30-23
New York	NELAP	11182	04-01-23
North Carolina (WW/SW)	State	434	12-31-22
North Dakota	State	R-227	04-30-23
Oregon	NELAP	PA-2151	02-07-23
Pennsylvania	NELAP	02-00416	04-30-23
Rhode Island	State	LAO00362	12-31-22
South Carolina	State	89014	04-20-23
Texas	NELAP	T104704528	03-31-23
USDA	US Federal Programs	P330-16-00211	06-21-24
Utah	NELAP	PA001462019-8	05-31-23
Virginia	NELAP	10043	10-31-22
West Virginia DEP	State	142	01-31-23
Wisconsin	State	998027800	08-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.



Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146141-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-146141-1	POTWOUTFALL (101222)	Water	10/12/22 10:30	10/13/22 10:40

1

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Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-146141-1

Method	Method Description	Protocol	Laboratory
EPA 624.1	Volatile Organic Compounds (GC/MS)	40CFR136A	EET PIT
EPA 625.1	Semivolatile Organic Compounds (GC/MS)	40 CFR 761	EET PIT
EPA 200.7 Rev 4	Metals (ICP)	EPA	EET PIT
EPA 245.1 Rev.	Mercury (CVAA)	EPA	EET PIT
SM 4500CN E	Total Cyanide	SM	EET PIT
200.7	Preparation, Total Recoverable Metals	EPA	EET PIT
245.1	Preparation, Mercury	EPA	EET PIT
625	Liquid-Liquid Extraction	40CFR136A	EET PIT
SM 4500 CN C	Cyanide, Distillation	SM	EET PIT

Protocol References:

40 CFR 761 = Toxic Substances Control Act (TSCA)

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

EET PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Cytex Havre de Grace MD

Job ID: 180-146141-1

Client Sample ID: POTWOUTFALL (101222)

Lab Sample ID: 180-146141-1

Date Collected: 10/12/22 10:30

Matrix: Water

Date Received: 10/13/22 10:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 624.1		2	5 mL	5 mL	415073	10/14/22 15:18	J1T	EET PIT
Instrument ID: CHHP6										
Total/NA	Prep	625			250 mL	250 uL	415298	10/17/22 11:51	BJT	EET PIT
Total/NA	Analysis	EPA 625.1		1	1 mL	1 mL	415666	10/20/22 16:33	VVP	EET PIT
Instrument ID: CH71										
Total Recoverable	Prep	200.7			25 mL	25 mL	416128	10/25/22 11:45	HCY	EET PIT
Total Recoverable	Analysis	EPA 200.7 Rev 4		1			416359	10/27/22 02:56	RJG	EET PIT
Instrument ID: C										
Total/NA	Prep	245.1			25 mL	25 mL	416511	10/28/22 06:47	RJR	EET PIT
Total/NA	Analysis	EPA 245.1 Rev.		1			416617	10/28/22 14:13	RJR	EET PIT
Instrument ID: HGY										
Total/NA	Prep	SM 4500 CN C			6 mL	6 mL	416138	10/25/22 13:45	CMR	EET PIT
Total/NA	Analysis	SM 4500CN E		1			416228	10/25/22 16:54	CMR	EET PIT
Instrument ID: SEAL1										

Laboratory References:

EET PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Analyst References:

Lab: EET PIT

Batch Type: Prep

BJT = Bill Trout

CMR = Carl Reagle

HCY = Harrison Yaeger

RJR = Ron Rosenbaum

Batch Type: Analysis

CMR = Carl Reagle

J1T = Jianwu Tang

RJG = Rob Good

RJR = Ron Rosenbaum

VVP = Vincent Piccolino

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146141-1

Client Sample ID: POTWOUTFALL (101222)

Lab Sample ID: 180-146141-1

Date Collected: 10/12/22 10:30

Matrix: Water

Date Received: 10/13/22 10:40

Method: 40CFR136A EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		2.0	1.2	ug/L			10/14/22 15:18	2
1,1,1,2-Tetrachloroethane	ND	*+	2.0	1.2	ug/L			10/14/22 15:18	2
1,1,2-Trichloroethane	ND		2.0	0.91	ug/L			10/14/22 15:18	2
1,1-Dichloroethane	ND	*+	2.0	0.61	ug/L			10/14/22 15:18	2
1,1-Dichloroethene	ND	*+	2.0	1.1	ug/L			10/14/22 15:18	2
1,2-Dichloroethane	63		2.0	1.1	ug/L			10/14/22 15:18	2
1,2-Dichloropropane	ND		2.0	1.3	ug/L			10/14/22 15:18	2
1,2-Dichlorobenzene	ND		2.0	0.73	ug/L			10/14/22 15:18	2
1,3-Dichlorobenzene	ND		2.0	1.0	ug/L			10/14/22 15:18	2
1,4-Dichlorobenzene	ND		2.0	1.1	ug/L			10/14/22 15:18	2
2-Chloroethyl vinyl ether	ND		4.0	3.4	ug/L			10/14/22 15:18	2
Acrolein	ND		40	32	ug/L			10/14/22 15:18	2
Acrylonitrile	ND		40	16	ug/L			10/14/22 15:18	2
Benzene	ND		2.0	1.2	ug/L			10/14/22 15:18	2
Bromoform	ND		2.0	2.0	ug/L			10/14/22 15:18	2
Bromomethane	ND		2.0	1.8	ug/L			10/14/22 15:18	2
Carbon tetrachloride	ND		2.0	1.8	ug/L			10/14/22 15:18	2
Chlorobenzene	ND		2.0	1.0	ug/L			10/14/22 15:18	2
Chloroform	ND		2.0	1.2	ug/L			10/14/22 15:18	2
Chloromethane	ND		2.0	1.8	ug/L			10/14/22 15:18	2
cis-1,3-Dichloropropene	ND		2.0	1.2	ug/L			10/14/22 15:18	2
Ethylbenzene	ND		2.0	1.0	ug/L			10/14/22 15:18	2
Methylene Chloride	ND		2.0	1.8	ug/L			10/14/22 15:18	2
Tetrachloroethene	ND		2.0	0.93	ug/L			10/14/22 15:18	2
Toluene	ND		2.0	0.91	ug/L			10/14/22 15:18	2
trans-1,2-Dichloroethene	3.4		2.0	1.3	ug/L			10/14/22 15:18	2
trans-1,3-Dichloropropene	ND		2.0	1.2	ug/L			10/14/22 15:18	2
Trichloroethene	4.4		2.0	1.4	ug/L			10/14/22 15:18	2
Vinyl chloride	10		2.0	0.80	ug/L			10/14/22 15:18	2
Dibromochloromethane	ND		2.0	1.7	ug/L			10/14/22 15:18	2
Bromodichloromethane	ND		2.0	1.3	ug/L			10/14/22 15:18	2
Chloroethane	ND		2.0	1.8	ug/L			10/14/22 15:18	2

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		28 - 163		10/14/22 15:18	2
4-Bromofluorobenzene (Surr)	61		41 - 122		10/14/22 15:18	2
Toluene-d8 (Surr)	99		53 - 125		10/14/22 15:18	2
Dibromofluoromethane (Surr)	118		59 - 168		10/14/22 15:18	2

Method: 40 CFR 761 EPA 625.1 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	ND		0.19	0.065	ug/L		10/17/22 11:51	10/20/22 16:33	1
Acenaphthene	ND		0.19	0.065	ug/L		10/17/22 11:51	10/20/22 16:33	1
Anthracene	ND		0.19	0.049	ug/L		10/17/22 11:51	10/20/22 16:33	1
Benzidine	ND	F1	20	9.1	ug/L		10/17/22 11:51	10/20/22 16:33	1
Benzo[a]anthracene	ND		0.19	0.075	ug/L		10/17/22 11:51	10/20/22 16:33	1
Benzo[b]fluoranthene	ND		0.19	0.097	ug/L		10/17/22 11:51	10/20/22 16:33	1
Benzo[k]fluoranthene	ND		0.19	0.088	ug/L		10/17/22 11:51	10/20/22 16:33	1
Benzo[g,h,i]perylene	ND		0.19	0.069	ug/L		10/17/22 11:51	10/20/22 16:33	1
Benzo[a]pyrene	ND		0.19	0.053	ug/L		10/17/22 11:51	10/20/22 16:33	1

Eurofins Pittsburgh

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146141-1

Client Sample ID: POTWOUTFALL (101222)

Lab Sample ID: 180-146141-1

Date Collected: 10/12/22 10:30

Matrix: Water

Date Received: 10/13/22 10:40

Method: 40 CFR 761 EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-chloroethyl)ether	ND		0.19	0.040	ug/L		10/17/22 11:51	10/20/22 16:33	1
Bis(2-ethylhexyl) phthalate	ND		10	6.2	ug/L		10/17/22 11:51	10/20/22 16:33	1
4-Bromophenyl phenyl ether	ND		1.0	0.32	ug/L		10/17/22 11:51	10/20/22 16:33	1
Butyl benzyl phthalate	ND		1.0	0.46	ug/L		10/17/22 11:51	10/20/22 16:33	1
4-Chloro-3-methylphenol	ND		1.0	0.28	ug/L		10/17/22 11:51	10/20/22 16:33	1
2-Chloronaphthalene	ND	F1	0.19	0.059	ug/L		10/17/22 11:51	10/20/22 16:33	1
2-Chlorophenol	ND		1.0	0.13	ug/L		10/17/22 11:51	10/20/22 16:33	1
Chrysene	ND		0.19	0.081	ug/L		10/17/22 11:51	10/20/22 16:33	1
Dibenzo(a,h)-anthracene	ND		0.19	0.072	ug/L		10/17/22 11:51	10/20/22 16:33	1
Di-n-butyl phthalate	ND		1.0	0.74	ug/L		10/17/22 11:51	10/20/22 16:33	1
3,3'-Dichlorobenzidine	ND		1.0	0.58	ug/L		10/17/22 11:51	10/20/22 16:33	1
2,4-Dichlorophenol	ND		0.19	0.051	ug/L		10/17/22 11:51	10/20/22 16:33	1
Diethyl phthalate	ND		1.0	0.57	ug/L		10/17/22 11:51	10/20/22 16:33	1
2,4-Dimethylphenol	ND		1.0	0.17	ug/L		10/17/22 11:51	10/20/22 16:33	1
Dimethyl phthalate	ND		1.0	0.20	ug/L		10/17/22 11:51	10/20/22 16:33	1
4,6-Dinitro-2-methylphenol	ND		5.0	1.5	ug/L		10/17/22 11:51	10/20/22 16:33	1
2,4-Dinitrophenol	ND		10	1.5	ug/L		10/17/22 11:51	10/20/22 16:33	1
2,4-Dinitrotoluene	ND		1.0	0.35	ug/L		10/17/22 11:51	10/20/22 16:33	1
2,6-Dinitrotoluene	ND		1.0	0.17	ug/L		10/17/22 11:51	10/20/22 16:33	1
Di-n-octyl phthalate	ND		1.0	0.69	ug/L		10/17/22 11:51	10/20/22 16:33	1
Fluoranthene	ND		0.19	0.060	ug/L		10/17/22 11:51	10/20/22 16:33	1
Fluorene	ND		0.19	0.069	ug/L		10/17/22 11:51	10/20/22 16:33	1
Hexachlorobenzene	ND		0.19	0.056	ug/L		10/17/22 11:51	10/20/22 16:33	1
Hexachlorobutadiene	ND		0.19	0.069	ug/L		10/17/22 11:51	10/20/22 16:33	1
Hexachlorocyclopentadiene	ND		1.0	0.50	ug/L		10/17/22 11:51	10/20/22 16:33	1
Hexachloroethane	ND		1.0	0.13	ug/L		10/17/22 11:51	10/20/22 16:33	1
Indeno[1,2,3-cd]pyrene	ND		0.19	0.085	ug/L		10/17/22 11:51	10/20/22 16:33	1
Isophorone	ND		1.0	0.19	ug/L		10/17/22 11:51	10/20/22 16:33	1
Naphthalene	ND		0.19	0.059	ug/L		10/17/22 11:51	10/20/22 16:33	1
Nitrobenzene	ND		2.0	0.50	ug/L		10/17/22 11:51	10/20/22 16:33	1
2-Nitrophenol	ND		1.0	0.19	ug/L		10/17/22 11:51	10/20/22 16:33	1
4-Nitrophenol	ND		5.0	0.94	ug/L		10/17/22 11:51	10/20/22 16:33	1
N-Nitrosodimethylamine	ND		1.0	0.067	ug/L		10/17/22 11:51	10/20/22 16:33	1
N-Nitrosodiphenylamine	ND	F1	1.0	0.12	ug/L		10/17/22 11:51	10/20/22 16:33	1
N-Nitrosodi-n-propylamine	ND		0.19	0.071	ug/L		10/17/22 11:51	10/20/22 16:33	1
2,2'-oxybis[1-chloropropane]	ND		0.19	0.058	ug/L		10/17/22 11:51	10/20/22 16:33	1
Pentachlorophenol	ND		5.0	0.85	ug/L		10/17/22 11:51	10/20/22 16:33	1
Phenanthrene	ND		0.19	0.055	ug/L		10/17/22 11:51	10/20/22 16:33	1
Phenol	ND		1.0	0.49	ug/L		10/17/22 11:51	10/20/22 16:33	1
Pyrene	ND		0.19	0.054	ug/L		10/17/22 11:51	10/20/22 16:33	1
1,2,4-Trichlorobenzene	ND		1.0	0.13	ug/L		10/17/22 11:51	10/20/22 16:33	1
2,4,6-Trichlorophenol	ND		1.0	0.22	ug/L		10/17/22 11:51	10/20/22 16:33	1
Bis(2-chloroethoxy)methane	ND		1.0	0.15	ug/L		10/17/22 11:51	10/20/22 16:33	1
4-Chlorophenyl phenyl ether	ND		1.0	0.22	ug/L		10/17/22 11:51	10/20/22 16:33	1
1,2-Diphenylhydrazine(as Azobenzene)	ND	F1	1.0	0.20	ug/L		10/17/22 11:51	10/20/22 16:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	77		47 - 107	10/17/22 11:51	10/20/22 16:33	1
2-Fluorophenol	78		35 - 109	10/17/22 11:51	10/20/22 16:33	1

Eurofins Pittsburgh

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Cytex Havre de Grace MD

Job ID: 180-146141-1

Client Sample ID: POTWOUTFALL (101222)

Lab Sample ID: 180-146141-1

Date Collected: 10/12/22 10:30

Matrix: Water

Date Received: 10/13/22 10:40

Method: 40 CFR 761 EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	82		32 - 127	10/17/22 11:51	10/20/22 16:33	1
Nitrobenzene-d5	79		47 - 110	10/17/22 11:51	10/20/22 16:33	1
Phenol-d5	75		37 - 110	10/17/22 11:51	10/20/22 16:33	1
Terphenyl-d14	86		32 - 115	10/17/22 11:51	10/20/22 16:33	1

Method: EPA 200.7 Rev 4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	5.7	ug/L		10/25/22 11:45	10/27/22 02:56	1
Cadmium	ND		5.0	0.33	ug/L		10/25/22 11:45	10/27/22 02:56	1
Chromium	ND		5.0	2.6	ug/L		10/25/22 11:45	10/27/22 02:56	1
Copper	ND		25	3.9	ug/L		10/25/22 11:45	10/27/22 02:56	1
Lead	3.3	J	10	2.3	ug/L		10/25/22 11:45	10/27/22 02:56	1
Nickel	6.3	J	40	2.1	ug/L		10/25/22 11:45	10/27/22 02:56	1
Silver	ND		5.0	0.87	ug/L		10/25/22 11:45	10/27/22 02:56	1
Zinc	ND		20	3.3	ug/L		10/25/22 11:45	10/27/22 02:56	1

Method: EPA 245.1 Rev. - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		10/28/22 06:47	10/28/22 14:13	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total (SM 4500CN E)	0.011		0.010	0.0080	mg/L		10/25/22 13:45	10/25/22 16:54	1

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146141-1

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 180-415073/7
Matrix: Water
Analysis Batch: 415073

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1,1-Trichloroethane	ND		1.0	0.60	ug/L			10/14/22 13:32	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.60	ug/L			10/14/22 13:32	1
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			10/14/22 13:32	1
1,1-Dichloroethane	ND		1.0	0.31	ug/L			10/14/22 13:32	1
1,1-Dichloroethene	ND		1.0	0.55	ug/L			10/14/22 13:32	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			10/14/22 13:32	1
1,2-Dichloropropane	ND		1.0	0.66	ug/L			10/14/22 13:32	1
1,2-Dichlorobenzene	ND		1.0	0.36	ug/L			10/14/22 13:32	1
1,3-Dichlorobenzene	ND		1.0	0.50	ug/L			10/14/22 13:32	1
1,4-Dichlorobenzene	ND		1.0	0.54	ug/L			10/14/22 13:32	1
2-Chloroethyl vinyl ether	ND		2.0	1.7	ug/L			10/14/22 13:32	1
Acrolein	ND		20	16	ug/L			10/14/22 13:32	1
Acrylonitrile	ND		20	7.8	ug/L			10/14/22 13:32	1
Benzene	ND		1.0	0.60	ug/L			10/14/22 13:32	1
Bromoform	ND		1.0	0.98	ug/L			10/14/22 13:32	1
Bromomethane	ND		1.0	0.89	ug/L			10/14/22 13:32	1
Carbon tetrachloride	ND		1.0	0.88	ug/L			10/14/22 13:32	1
Chlorobenzene	ND		1.0	0.50	ug/L			10/14/22 13:32	1
Chloroform	ND		1.0	0.60	ug/L			10/14/22 13:32	1
Chloromethane	ND		1.0	0.90	ug/L			10/14/22 13:32	1
cis-1,3-Dichloropropene	ND		1.0	0.59	ug/L			10/14/22 13:32	1
Ethylbenzene	ND		1.0	0.51	ug/L			10/14/22 13:32	1
Methylene Chloride	ND		1.0	0.89	ug/L			10/14/22 13:32	1
Tetrachloroethene	ND		1.0	0.47	ug/L			10/14/22 13:32	1
Toluene	ND		1.0	0.46	ug/L			10/14/22 13:32	1
trans-1,2-Dichloroethene	ND		1.0	0.67	ug/L			10/14/22 13:32	1
trans-1,3-Dichloropropene	ND		1.0	0.58	ug/L			10/14/22 13:32	1
Trichloroethene	ND		1.0	0.69	ug/L			10/14/22 13:32	1
Vinyl chloride	ND		1.0	0.40	ug/L			10/14/22 13:32	1
Dibromochloromethane	ND		1.0	0.84	ug/L			10/14/22 13:32	1
Bromodichloromethane	ND		1.0	0.64	ug/L			10/14/22 13:32	1
Chloroethane	ND		1.0	0.90	ug/L			10/14/22 13:32	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	96		28 - 163		10/14/22 13:32	1
4-Bromofluorobenzene (Surr)	108		41 - 122		10/14/22 13:32	1
Toluene-d8 (Surr)	122		53 - 125		10/14/22 13:32	1
Dibromofluoromethane (Surr)	118		59 - 168		10/14/22 13:32	1

Lab Sample ID: LCS 180-415073/5
Matrix: Water
Analysis Batch: 415073

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,2-Tetrachloroethane	10.0	16.1	*+	ug/L		161	60 - 140
1,1,2-Trichloroethane	10.0	10.1		ug/L		101	70 - 130
1,1-Dichloroethane	10.0	15.3	*+	ug/L		153	70 - 130

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146141-1

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 180-415073/5
Matrix: Water
Analysis Batch: 415073

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	10.0	16.5	*+	ug/L		165	50 - 150
1,2-Dichloroethane	10.0	7.86		ug/L		79	70 - 130
1,2-Dichloropropane	10.0	11.9		ug/L		119	35 - 165
1,2-Dichlorobenzene	10.0	9.05		ug/L		91	65 - 135
1,3-Dichlorobenzene	10.0	8.72		ug/L		87	70 - 130
1,4-Dichlorobenzene	10.0	9.03		ug/L		90	65 - 135
2-Chloroethyl vinyl ether	20.0	15.5		ug/L		77	10 - 170
Acrolein	30.0	29.4		ug/L		98	60 - 140
Acrylonitrile	100	137		ug/L		137	60 - 140
Benzene	10.0	10.1		ug/L		101	65 - 135
Bromoform	10.0	10.6		ug/L		106	70 - 130
Bromomethane	10.0	6.23		ug/L		62	15 - 170
Carbon tetrachloride	10.0	11.3		ug/L		113	70 - 130
Chlorobenzene	10.0	8.22		ug/L		82	65 - 135
Chloroform	10.0	9.67		ug/L		97	70 - 135
Chloromethane	10.0	15.6		ug/L		156	10 - 170
cis-1,3-Dichloropropene	10.0	8.32		ug/L		83	25 - 170
Ethylbenzene	10.0	9.00		ug/L		90	60 - 140
Methylene Chloride	10.0	13.8		ug/L		138	60 - 140
Tetrachloroethene	10.0	9.78		ug/L		98	70 - 130
Toluene	10.0	12.2		ug/L		122	70 - 130
trans-1,2-Dichloroethene	10.0	12.9		ug/L		129	70 - 130
trans-1,3-Dichloropropene	10.0	8.78		ug/L		88	50 - 150
Trichloroethene	10.0	8.52		ug/L		85	65 - 135
Vinyl chloride	10.0	14.4		ug/L		144	10 - 170
Dibromochloromethane	10.0	10.0		ug/L		100	70 - 135
Bromodichloromethane	10.0	8.93		ug/L		89	65 - 135
Chloroethane	10.0	8.18		ug/L		82	40 - 160

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	72		28 - 163
4-Bromofluorobenzene (Surr)	94		41 - 122
Toluene-d8 (Surr)	116		53 - 125
Dibromofluoromethane (Surr)	96		59 - 168

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 180-415298/1-A
Matrix: Water
Analysis Batch: 415666

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 415298

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	ND		0.19	0.065	ug/L		10/17/22 11:51	10/20/22 15:50	1
Acenaphthene	ND		0.19	0.065	ug/L		10/17/22 11:51	10/20/22 15:50	1
Anthracene	ND		0.19	0.049	ug/L		10/17/22 11:51	10/20/22 15:50	1
Benzidine	ND		20	9.1	ug/L		10/17/22 11:51	10/20/22 15:50	1
Benzo[a]anthracene	ND		0.19	0.075	ug/L		10/17/22 11:51	10/20/22 15:50	1
Benzo[b]fluoranthene	ND		0.19	0.097	ug/L		10/17/22 11:51	10/20/22 15:50	1
Benzo[k]fluoranthene	ND		0.19	0.088	ug/L		10/17/22 11:51	10/20/22 15:50	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Cytec Havre de Grace MD

Job ID: 180-146141-1

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 180-415298/1-A
Matrix: Water
Analysis Batch: 415666

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 415298

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[g,h,i]perylene	ND		0.19	0.069	ug/L		10/17/22 11:51	10/20/22 15:50	1
Benzo[a]pyrene	ND		0.19	0.053	ug/L		10/17/22 11:51	10/20/22 15:50	1
Bis(2-chloroethyl)ether	ND		0.19	0.040	ug/L		10/17/22 11:51	10/20/22 15:50	1
Bis(2-ethylhexyl) phthalate	ND		10	6.2	ug/L		10/17/22 11:51	10/20/22 15:50	1
4-Bromophenyl phenyl ether	ND		1.0	0.32	ug/L		10/17/22 11:51	10/20/22 15:50	1
Butyl benzyl phthalate	ND		1.0	0.46	ug/L		10/17/22 11:51	10/20/22 15:50	1
4-Chloro-3-methylphenol	ND		1.0	0.28	ug/L		10/17/22 11:51	10/20/22 15:50	1
2-Chloronaphthalene	ND		0.19	0.059	ug/L		10/17/22 11:51	10/20/22 15:50	1
2-Chlorophenol	ND		1.0	0.13	ug/L		10/17/22 11:51	10/20/22 15:50	1
Chrysene	ND		0.19	0.081	ug/L		10/17/22 11:51	10/20/22 15:50	1
Dibenzo(a,h)-anthracene	ND		0.19	0.072	ug/L		10/17/22 11:51	10/20/22 15:50	1
Di-n-butyl phthalate	ND		1.0	0.74	ug/L		10/17/22 11:51	10/20/22 15:50	1
3,3'-Dichlorobenzidine	ND		1.0	0.58	ug/L		10/17/22 11:51	10/20/22 15:50	1
2,4-Dichlorophenol	ND		0.19	0.051	ug/L		10/17/22 11:51	10/20/22 15:50	1
Diethyl phthalate	ND		1.0	0.57	ug/L		10/17/22 11:51	10/20/22 15:50	1
2,4-Dimethylphenol	ND		1.0	0.17	ug/L		10/17/22 11:51	10/20/22 15:50	1
Dimethyl phthalate	ND		1.0	0.20	ug/L		10/17/22 11:51	10/20/22 15:50	1
4,6-Dinitro-2-methylphenol	ND		5.0	1.5	ug/L		10/17/22 11:51	10/20/22 15:50	1
2,4-Dinitrophenol	ND		10	1.5	ug/L		10/17/22 11:51	10/20/22 15:50	1
2,4-Dinitrotoluene	ND		1.0	0.35	ug/L		10/17/22 11:51	10/20/22 15:50	1
2,6-Dinitrotoluene	ND		1.0	0.17	ug/L		10/17/22 11:51	10/20/22 15:50	1
Di-n-octyl phthalate	ND		1.0	0.69	ug/L		10/17/22 11:51	10/20/22 15:50	1
Fluoranthene	ND		0.19	0.060	ug/L		10/17/22 11:51	10/20/22 15:50	1
Fluorene	ND		0.19	0.069	ug/L		10/17/22 11:51	10/20/22 15:50	1
Hexachlorobenzene	ND		0.19	0.056	ug/L		10/17/22 11:51	10/20/22 15:50	1
Hexachlorobutadiene	ND		0.19	0.069	ug/L		10/17/22 11:51	10/20/22 15:50	1
Hexachlorocyclopentadiene	ND		1.0	0.50	ug/L		10/17/22 11:51	10/20/22 15:50	1
Hexachloroethane	ND		1.0	0.13	ug/L		10/17/22 11:51	10/20/22 15:50	1
Indeno[1,2,3-cd]pyrene	ND		0.19	0.085	ug/L		10/17/22 11:51	10/20/22 15:50	1
Isophorone	ND		1.0	0.19	ug/L		10/17/22 11:51	10/20/22 15:50	1
Naphthalene	ND		0.19	0.059	ug/L		10/17/22 11:51	10/20/22 15:50	1
Nitrobenzene	ND		2.0	0.50	ug/L		10/17/22 11:51	10/20/22 15:50	1
2-Nitrophenol	ND		1.0	0.19	ug/L		10/17/22 11:51	10/20/22 15:50	1
4-Nitrophenol	ND		5.0	0.94	ug/L		10/17/22 11:51	10/20/22 15:50	1
N-Nitrosodimethylamine	ND		1.0	0.067	ug/L		10/17/22 11:51	10/20/22 15:50	1
N-Nitrosodiphenylamine	ND		1.0	0.12	ug/L		10/17/22 11:51	10/20/22 15:50	1
N-Nitrosodi-n-propylamine	ND		0.19	0.071	ug/L		10/17/22 11:51	10/20/22 15:50	1
2,2'-oxybis[1-chloropropane]	ND		0.19	0.058	ug/L		10/17/22 11:51	10/20/22 15:50	1
Pentachlorophenol	ND		5.0	0.85	ug/L		10/17/22 11:51	10/20/22 15:50	1
Phenanthrene	ND		0.19	0.055	ug/L		10/17/22 11:51	10/20/22 15:50	1
Phenol	ND		1.0	0.49	ug/L		10/17/22 11:51	10/20/22 15:50	1
Pyrene	ND		0.19	0.054	ug/L		10/17/22 11:51	10/20/22 15:50	1
1,2,4-Trichlorobenzene	ND		1.0	0.13	ug/L		10/17/22 11:51	10/20/22 15:50	1
2,4,6-Trichlorophenol	ND		1.0	0.22	ug/L		10/17/22 11:51	10/20/22 15:50	1
Bis(2-chloroethoxy)methane	ND		1.0	0.15	ug/L		10/17/22 11:51	10/20/22 15:50	1
4-Chlorophenyl phenyl ether	ND		1.0	0.22	ug/L		10/17/22 11:51	10/20/22 15:50	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.0	0.20	ug/L		10/17/22 11:51	10/20/22 15:50	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146141-1

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 180-415298/1-A
Matrix: Water
Analysis Batch: 415666

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 415298

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
2-Fluorobiphenyl	86		47 - 107	10/17/22 11:51	10/20/22 15:50	1
2-Fluorophenol	99		35 - 109	10/17/22 11:51	10/20/22 15:50	1
2,4,6-Tribromophenol	93		32 - 127	10/17/22 11:51	10/20/22 15:50	1
Nitrobenzene-d5	86		47 - 110	10/17/22 11:51	10/20/22 15:50	1
Phenol-d5	95		37 - 110	10/17/22 11:51	10/20/22 15:50	1
Terphenyl-d14	99		32 - 115	10/17/22 11:51	10/20/22 15:50	1

Lab Sample ID: LCS 180-415298/2-A
Matrix: Water
Analysis Batch: 415666

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 415298

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acenaphthene	10.0	7.03		ug/L		70	47 - 145
Anthracene	10.0	6.86		ug/L		69	27 - 133
Benzidine	10.0	ND		ug/L		51	5 - 100
Benzo[a]anthracene	10.0	6.76		ug/L		68	33 - 143
Benzo[b]fluoranthene	10.0	5.39		ug/L		54	24 - 150
Benzo[k]fluoranthene	10.0	6.94		ug/L		69	11 - 150
Benzo[g,h,i]perylene	10.0	7.60		ug/L		76	10 - 150
Benzo[a]pyrene	10.0	6.06		ug/L		61	17 - 150
Bis(2-chloroethyl)ether	10.0	7.00		ug/L		70	12 - 150
Bis(2-ethylhexyl) phthalate	10.0	ND		ug/L		58	10 - 150
4-Bromophenyl phenyl ether	10.0	6.78		ug/L		68	53 - 127
Butyl benzyl phthalate	10.0	5.92		ug/L		59	10 - 150
4-Chloro-3-methylphenol	10.0	7.50		ug/L		75	22 - 147
2-Chloronaphthalene	10.0	6.41		ug/L		64	60 - 120
2-Chlorophenol	10.0	7.45		ug/L		75	23 - 134
Chrysene	10.0	6.90		ug/L		69	17 - 150
Dibenzo(a,h)-anthracene	10.0	7.24		ug/L		72	10 - 150
Di-n-butyl phthalate	10.0	7.07		ug/L		71	10 - 120
3,3'-Dichlorobenzidine	10.0	7.12		ug/L		71	10 - 150
2,4-Dichlorophenol	10.0	7.07		ug/L		71	39 - 135
Diethyl phthalate	10.0	6.99		ug/L		70	10 - 120
2,4-Dimethylphenol	10.0	6.72		ug/L		67	32 - 120
Dimethyl phthalate	10.0	6.67		ug/L		67	10 - 120
4,6-Dinitro-2-methylphenol	20.0	11.6		ug/L		58	10 - 150
2,4-Dinitrophenol	20.0	11.5		ug/L		57	10 - 150
2,4-Dinitrotoluene	10.0	7.83		ug/L		78	39 - 139
2,6-Dinitrotoluene	10.0	7.43		ug/L		74	50 - 150
Di-n-octyl phthalate	10.0	4.63		ug/L		46	10 - 146
Fluoranthene	10.0	7.78		ug/L		78	26 - 137
Fluorene	10.0	7.21		ug/L		72	59 - 121
Hexachlorobenzene	10.0	7.36		ug/L		74	10 - 150
Hexachlorobutadiene	10.0	6.64		ug/L		66	24 - 120
Hexachlorocyclopentadiene	10.0	5.51		ug/L		55	37 - 121
Hexachloroethane	10.0	6.90		ug/L		69	40 - 120
Indeno[1,2,3-cd]pyrene	10.0	7.37		ug/L		74	10 - 150

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146141-1

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 180-415298/2-A
Matrix: Water
Analysis Batch: 415666

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 415298

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Isophorone	10.0	6.64		ug/L		66	21 - 150
Naphthalene	10.0	7.28		ug/L		73	21 - 133
Nitrobenzene	10.0	6.40		ug/L		64	35 - 150
2-Nitrophenol	10.0	7.26		ug/L		73	29 - 150
4-Nitrophenol	20.0	10.6		ug/L		53	10 - 132
N-Nitrosodimethylamine	10.0	7.09		ug/L		71	33 - 130
N-Nitrosodiphenylamine	10.0	6.58		ug/L		66	51 - 100
N-Nitrosodi-n-propylamine	10.0	7.94		ug/L		79	10 - 150
2,2'-oxybis[1-chloropropane]	10.0	9.87		ug/L		99	36 - 150
Pentachlorophenol	20.0	15.2		ug/L		76	14 - 150
Phenanthrene	10.0	6.70		ug/L		67	54 - 120
Phenol	10.0	7.14		ug/L		71	10 - 120
Pyrene	10.0	6.11		ug/L		61	52 - 120
1,2,4-Trichlorobenzene	10.0	6.55		ug/L		65	44 - 142
2,4,6-Trichlorophenol	10.0	6.35		ug/L		63	37 - 144
Bis(2-chloroethoxy)methane	10.0	5.96		ug/L		60	33 - 150
4-Chlorophenyl phenyl ether	10.0	6.91		ug/L		69	25 - 150
1,2-Diphenylhydrazine(as Azobenzene)	10.0	4.78		ug/L		48	43 - 105

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl	85		47 - 107
2-Fluorophenol	95		35 - 109
2,4,6-Tribromophenol	108		32 - 127
Nitrobenzene-d5	87		47 - 110
Phenol-d5	93		37 - 110
Terphenyl-d14	88		32 - 115

Lab Sample ID: 180-146141-1 MS
Matrix: Water
Analysis Batch: 415666

Client Sample ID: POTWOUTFALL (101222)
Prep Type: Total/NA
Prep Batch: 415298

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Acenaphthylene	ND		10.0	6.14		ug/L		61	35 - 145
Acenaphthene	ND		10.0	6.30		ug/L		63	47 - 145
Anthracene	ND		10.0	5.92		ug/L		59	27 - 133
Benzidine	ND	F1	10.0	ND	F1	ug/L		0	5 - 100
Benzo[a]anthracene	ND		10.0	6.21		ug/L		62	33 - 143
Benzo[b]fluoranthene	ND		10.0	5.07		ug/L		51	24 - 159
Benzo[k]fluoranthene	ND		10.0	5.97		ug/L		60	11 - 162
Benzo[g,h,i]perylene	ND		10.0	7.13		ug/L		71	10 - 170
Benzo[a]pyrene	ND		10.0	5.18		ug/L		52	17 - 163
Bis(2-chloroethyl)ether	ND		10.0	6.31		ug/L		63	12 - 158
Bis(2-ethylhexyl) phthalate	ND		10.0	6.39	J	ug/L		64	10 - 158
4-Bromophenyl phenyl ether	ND		10.0	6.27		ug/L		63	53 - 127
Butyl benzyl phthalate	ND		10.0	5.81		ug/L		58	10 - 152
4-Chloro-3-methylphenol	ND		10.0	5.66		ug/L		57	22 - 147
2-Chloronaphthalene	ND	F1	10.0	5.69	F1	ug/L		57	60 - 120
2-Chlorophenol	ND		10.0	5.45		ug/L		54	23 - 134

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146141-1

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 180-146141-1 MS

Matrix: Water

Analysis Batch: 415666

Client Sample ID: POTWOUTFALL (101222)

Prep Type: Total/NA

Prep Batch: 415298

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec Limits
	Result	Qualifier	Added	Result	Qualifier				
Chrysene	ND		10.0	6.23		ug/L		62	17 - 168
Dibenzo(a,h)-anthracene	ND		10.0	6.78		ug/L		68	10 - 170
Di-n-butyl phthalate	ND		10.0	6.77		ug/L		68	10 - 120
3,3'-Dichlorobenzidine	ND		10.0	4.54		ug/L		45	10 - 170
2,4-Dichlorophenol	ND		10.0	5.01		ug/L		50	39 - 135
Diethyl phthalate	ND		10.0	5.01		ug/L		50	10 - 120
2,4-Dimethylphenol	ND		10.0	4.78		ug/L		48	32 - 120
Dimethyl phthalate	ND		10.0	4.65		ug/L		47	10 - 120
4,6-Dinitro-2-methylphenol	ND		20.0	11.0		ug/L		55	10 - 170
2,4-Dinitrophenol	ND		20.0	11.8		ug/L		59	10 - 170
2,4-Dinitrotoluene	ND		10.0	7.06		ug/L		71	39 - 139
2,6-Dinitrotoluene	ND		10.0	6.74		ug/L		67	50 - 158
Di-n-octyl phthalate	ND		10.0	4.91		ug/L		49	10 - 146
Fluoranthene	ND		10.0	7.11		ug/L		71	26 - 137
Fluorene	ND		10.0	6.51		ug/L		65	59 - 121
Hexachlorobenzene	ND		10.0	6.87		ug/L		69	10 - 152
Hexachlorobutadiene	ND		10.0	5.68		ug/L		57	24 - 120
Hexachlorocyclopentadiene	ND		10.0	4.73		ug/L		47	41 - 106
Hexachloroethane	ND		10.0	5.97		ug/L		60	40 - 120
Indeno[1,2,3-cd]pyrene	ND		10.0	6.78		ug/L		68	10 - 170
Isophorone	ND		10.0	6.23		ug/L		62	21 - 170
Naphthalene	ND		10.0	6.31		ug/L		63	21 - 133
Nitrobenzene	ND		10.0	5.79		ug/L		58	35 - 170
2-Nitrophenol	ND		10.0	5.42		ug/L		54	29 - 170
4-Nitrophenol	ND		20.0	8.02		ug/L		40	10 - 132
N-Nitrosodimethylamine	ND		10.0	6.40		ug/L		64	48 - 109
N-Nitrosodiphenylamine	ND	F1	10.0	4.49	F1	ug/L		45	56 - 100
N-Nitrosodi-n-propylamine	ND		10.0	7.21		ug/L		72	10 - 170
2,2'-oxybis[1-chloropropane]	ND		10.0	9.09		ug/L		91	36 - 166
Pentachlorophenol	ND		20.0	10.7		ug/L		54	17 - 170
Phenanthrene	ND		10.0	6.29		ug/L		63	54 - 120
Phenol	ND		10.0	5.48		ug/L		55	10 - 120
Pyrene	ND		10.0	5.56		ug/L		56	52 - 120
1,2,4-Trichlorobenzene	ND		10.0	5.62		ug/L		56	44 - 142
2,4,6-Trichlorophenol	ND		10.0	4.27		ug/L		43	37 - 144
Bis(2-chloroethoxy)methane	ND		10.0	5.58		ug/L		56	33 - 170
4-Chlorophenyl phenyl ether	ND		10.0	6.19		ug/L		62	25 - 158
1,2-Diphenylhydrazine(as Azobenzene)	ND	F1	10.0	4.37	F1	ug/L		44	46 - 103

Surrogate	MS %Recovery	MS Qualifier	Limits
2-Fluorobiphenyl	80		47 - 107
2-Fluorophenol	83		35 - 109
2,4,6-Tribromophenol	91		32 - 127
Nitrobenzene-d5	86		47 - 110
Phenol-d5	83		37 - 110
Terphenyl-d14	87		32 - 115

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146141-1

Method: EPA 200.7 Rev 4 - Metals (ICP)

Lab Sample ID: MB 180-416128/1-A
Matrix: Water
Analysis Batch: 416359

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 416128

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		10	5.7	ug/L		10/25/22 11:45	10/27/22 00:11	1
Cadmium	ND		5.0	0.33	ug/L		10/25/22 11:45	10/27/22 00:11	1
Chromium	ND		5.0	2.6	ug/L		10/25/22 11:45	10/27/22 00:11	1
Copper	ND		25	3.9	ug/L		10/25/22 11:45	10/27/22 00:11	1
Lead	ND		10	2.3	ug/L		10/25/22 11:45	10/27/22 00:11	1
Nickel	ND		40	2.1	ug/L		10/25/22 11:45	10/27/22 00:11	1
Silver	ND		5.0	0.87	ug/L		10/25/22 11:45	10/27/22 00:11	1
Zinc	ND		20	3.3	ug/L		10/25/22 11:45	10/27/22 00:11	1

Lab Sample ID: LCS 180-416128/2-A
Matrix: Water
Analysis Batch: 416359

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 416128

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cadmium	500	577		ug/L		115	85 - 115
Chromium	500	544		ug/L		109	85 - 115
Copper	500	539		ug/L		108	85 - 115
Lead	500	535		ug/L		107	85 - 115
Nickel	500	559		ug/L		112	85 - 115
Silver	250	277		ug/L		111	85 - 115
Zinc	250	277		ug/L		111	85 - 115

Method: EPA 245.1 Rev. - Mercury (CVAA)

Lab Sample ID: MB 180-416511/1-A
Matrix: Water
Analysis Batch: 416617

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 416511

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.20	0.13	ug/L		10/28/22 06:47	10/28/22 13:55	1

Lab Sample ID: LCS 180-416511/2-A
Matrix: Water
Analysis Batch: 416617

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 416511

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits

Method: SM 4500CN E - Total Cyanide

Lab Sample ID: MB 180-416138/4-A
Matrix: Water
Analysis Batch: 416228

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 416138

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Cyanide, Total	ND		0.010	0.0080	mg/L		10/25/22 13:45	10/25/22 16:31	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Cytex Havre de Grace MD

Job ID: 180-146141-1

Method: SM 4500CN E - Total Cyanide (Continued)

Lab Sample ID: HLCS 180-416138/2-A
Matrix: Water
Analysis Batch: 416228

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 416138

Analyte	Spike Added	HLCS Result	HLCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.250	0.252		mg/L		101	90 - 110

Lab Sample ID: LCS 180-416138/3-A
Matrix: Water
Analysis Batch: 416228

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 416138

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.200	0.215		mg/L		107	90 - 110

Lab Sample ID: LLCS 180-416138/1-A
Matrix: Water
Analysis Batch: 416228

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 416138

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.0500	0.0515		mg/L		103	90 - 110

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-146141-1

GC/MS VOA

Analysis Batch: 415073

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-146141-1	POTWOUTFALL (101222)	Total/NA	Water	EPA 624.1	
MB 180-415073/7	Method Blank	Total/NA	Water	EPA 624.1	
LCS 180-415073/5	Lab Control Sample	Total/NA	Water	EPA 624.1	

GC/MS Semi VOA

Prep Batch: 415298

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-146141-1	POTWOUTFALL (101222)	Total/NA	Water	625	
MB 180-415298/1-A	Method Blank	Total/NA	Water	625	
LCS 180-415298/2-A	Lab Control Sample	Total/NA	Water	625	
180-146141-1 MS	POTWOUTFALL (101222)	Total/NA	Water	625	

Analysis Batch: 415666

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-146141-1	POTWOUTFALL (101222)	Total/NA	Water	EPA 625.1	415298
MB 180-415298/1-A	Method Blank	Total/NA	Water	EPA 625.1	415298
LCS 180-415298/2-A	Lab Control Sample	Total/NA	Water	EPA 625.1	415298
180-146141-1 MS	POTWOUTFALL (101222)	Total/NA	Water	EPA 625.1	415298

Metals

Prep Batch: 416128

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-146141-1	POTWOUTFALL (101222)	Total Recoverable	Water	200.7	
MB 180-416128/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 180-416128/2-A	Lab Control Sample	Total Recoverable	Water	200.7	

Analysis Batch: 416359

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-146141-1	POTWOUTFALL (101222)	Total Recoverable	Water	EPA 200.7 Rev 4	416128
MB 180-416128/1-A	Method Blank	Total Recoverable	Water	EPA 200.7 Rev 4	416128
LCS 180-416128/2-A	Lab Control Sample	Total Recoverable	Water	EPA 200.7 Rev 4	416128

Prep Batch: 416511

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-146141-1	POTWOUTFALL (101222)	Total/NA	Water	245.1	
MB 180-416511/1-A	Method Blank	Total/NA	Water	245.1	
LCS 180-416511/2-A	Lab Control Sample	Total/NA	Water	245.1	

Analysis Batch: 416617

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-146141-1	POTWOUTFALL (101222)	Total/NA	Water	EPA 245.1 Rev.	416511
MB 180-416511/1-A	Method Blank	Total/NA	Water	EPA 245.1 Rev.	416511
LCS 180-416511/2-A	Lab Control Sample	Total/NA	Water	EPA 245.1 Rev.	416511

General Chemistry

Prep Batch: 416138

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-146141-1	POTWOUTFALL (101222)	Total/NA	Water	SM 4500 CN C	
MB 180-416138/4-A	Method Blank	Total/NA	Water	SM 4500 CN C	

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QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-146141-1

General Chemistry (Continued)

Prep Batch: 416138 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HLCS 180-416138/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN C	
LCS 180-416138/3-A	Lab Control Sample	Total/NA	Water	SM 4500 CN C	
LLCS 180-416138/1-A	Lab Control Sample	Total/NA	Water	SM 4500 CN C	

Analysis Batch: 416228

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-146141-1	POTWOUTFALL (101222)	Total/NA	Water	SM 4500CN E	416138
MB 180-416138/4-A	Method Blank	Total/NA	Water	SM 4500CN E	416138
HLCS 180-416138/2-A	Lab Control Sample	Total/NA	Water	SM 4500CN E	416138
LCS 180-416138/3-A	Lab Control Sample	Total/NA	Water	SM 4500CN E	416138
LLCS 180-416138/1-A	Lab Control Sample	Total/NA	Water	SM 4500CN E	416138

Client Information		Lab PVI: Colussy Jill L		Carrier Tracking No(s): 180-85399-15093 1	
Client Contact: Ms. Shwetha Sridharan		E-Mail: Jill.Colussy@eurofins.com		Page: Page 1 of 1	
Company: ARCADIS U.S. Inc.		PWSID:		Job #:	
Address: 7550 Teague Road Suite 210		Due Date Requested:		Analysis Requested	
City: Hanover		TAT Requested (days):		Total Number of Containers:	
State, Zip: MD, 21076		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No		Preservation Codes:	
Phone: 302-897-8993(Tel)		PO #: 30005455.0002		A HCL B NaOH C Zn Acetate D Nitric Acid E NaHSO4 F MeOH G Amchlor H Ascorbic Acid I Ice J DI Water K EDTA L EDA Other:	
Email: shwetha.sridharan@arcadis.com		WO #: 30114618		M Hexane N None O AsNaO2 P Na2O4S Q Na2SO3 R Na2S2O3 S H2SO4 T TSP Dodecahydrate U Acetone V MCAA W pH 4-5 Y Triam Z other (specify)	
Project Name: Cytec Havre de Grace MD		Project #: 18017987		Note:	
Site: Pennsylvania		SSOW#: _____		180-146141 Chain of Custody	
Sample Identification		Sample Date		Field Filtered Sample (Yes or No)	
POTW Outfall (101222)		10/12/22 1030 G W		Perform MS/MSD (Yes or No)	
Trip Blank		- - - - W		Matrix (Newer, Swab, On-site)	
		Sample Time		Sample Type (C=Comp, G=grab)	
		- - - - W		Preservation Code:	
		- - - - W		WV 3 2 1 1	
		- - - - W		EPA 624.1 Volatiles - PPL list	
		- - - - W		EPA 625.1 PPL - Semivolatiles	
		- - - - W		EPA 200.7 Rev 4/24/51 Rev 4	
		- - - - W		SM 4500CNF, (Lyondex Total)	
Possible Hazard Identification		<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Deliverable Requested: I II III IV Other (specify)		Date: 10/12/22 1700		<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
Empty Kit Relinquished by:		Date/Time: 10/12/22 1700		Special Instructions/QC Requirements	
Relinquished by: David Kramer		Date/Time: 10/12/22 1640		Method of Shipment:	
Relinquished by: DK		Date/Time: 10/12/22 1640		Received by: [Signature]	
Relinquished by:		Date/Time:		Received by: [Signature]	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Received by: [Signature]	
Cooler Temperature(s) °C and Other Remarks:		Company: [Signature]		Company: [Signature]	
		Company: [Signature]		Company: [Signature]	



Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 180-146141-1

Login Number: 146141

List Source: Eurofins Pittsburgh

List Number: 1

Creator: Kovitch, Christina M

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





Cytec Solvay Group
1300 Revolution Street
Havre de Grace, MD 21078
410.939.1910

January 9, 2023

Mr. Ken Montgomery
Industrial Pretreatment Coordinator
City of Havre de Grace
Department of Public Works
711 Pennington Avenue
Havre de Grace, Maryland 21078

Re: CYTEC SOLVAY GROUP AEROSPACE MATERIALS
Periodic Compliance Report – December 2022
Permit Number: CYT-2015-101

Dear Mr. Montgomery:

CYTEC SOLVAY GROUP (Cytec) has prepared this Periodic Compliance Report for the month of December 2022 in accordance with the conditions set forth in Cytec's Industrial User Wastewater Discharge Permit (Permit No. CYT-2015-101). This Periodic Compliance Report presents the results of all monitoring requirements and operational issues encountered during the month of December 2022. The monthly certification form is included as Attachment A.

For the month of December, the system pumped an estimated 220,914 gallons of wastewater at an estimated average flow rate of 4.95 gallons per minute to the City of Havre de Grace Wastewater Treatment Plant during active system operation. The estimated average flow rate of 4.95 gallons per minute for the month of December satisfied both permit flow limitations (maximum of 30,000 gallons per day; 30-minute maximum of 1,000 gallons).

One pH meter is presently installed in-line with the effluent discharge pipe to measure pH continuously. pH results from the effluent wastewater complied with all permit conditions for pH during the month of December and no significant deviations were noted during active operation. Table 1 presents the daily flow volumes and weekly pH readings recorded for the month of December.

As noted in the March 2022 report, the pump motor at EW-02 is faulty and currently pending replacement, dependent on when parts can be shipped from the manufacturer, and EW-02 has been shut down since March 15, 2022. Parts have been procured and replacement will be completed on January 10, 2023. On December 10, the system was automatically shut down due a drive-fault alarm, triggered by a power fluctuation in the facility. The system was restarted on December 14, 2022 by onsite staff. On December 16, the system was automatically shut down due to an E-stop alarm. The system was restarted within 24 hours by onsite staff.

The January Compliance Report will be submitted in February 2023. Daily flow and pH will continue to be measured continuously. If the system is shut down for a period of at least 24 hours, pH results will be monitored and reported for three consecutive days to maintain compliance with permit conditions.

If you have any questions or comments, please contact me at 443-252-1093.

Mr. Ken Montgomery
January 9, 2023
Page 2 of 2

Sincerely,
Cytec Solvay Group

Tyler Stephens
HSE Manager

Enclosure

cc: Mr. Luis Pizarro, United States Environmental Protection Agency
Mr. Charles Jones, Cytec Solvay Group
Mr. Joshua Wilson, Arcadis
Ms. Shwetha Sridharan, Arcadis

Table 1
Flow and pH Monitoring for December 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Cumulative Total Gallons Extracted (MW-10D)	Cumulative Total Gallons Extracted (EW-01)	Cumulative Total Gallons Extracted (EW-02)	Combined Cumulative Total Gallons Extracted	Daily Total Gallons Extracted	pH
12/01/22	21,368,910	4,743,990	3,408,198	29,521,098	10,699	
12/02/22	21,377,897	4,745,702	3,408,198	29,531,797	10,698	5.83
12/03/22	21,386,884	4,747,413	3,408,198	29,542,495	10,696	
12/04/22	21,395,870	4,749,123	3,408,198	29,553,191	10,701	
12/05/22	21,404,858	4,750,836	3,408,198	29,563,892	10,700	
12/06/22	21,413,846	4,752,548	3,408,198	29,574,592	10,700	
12/07/22	21,422,835	4,754,259	3,408,198	29,585,292	10,687	
12/08/22	21,431,820	4,755,961	3,408,198	29,595,979	10,695	
12/09/22	21,440,806	4,757,670	3,408,198	29,606,674	8,993	5.84
12/10/22	21,448,361	4,759,108	3,408,198	29,615,667	0	
12/11/22	21,448,361	4,759,108	3,408,198	29,615,667	0	
12/12/22	21,448,361	4,759,108	3,408,198	29,615,667	0	
12/13/22	21,448,361	4,759,108	3,408,198	29,615,667	0	
12/14/22	21,448,361	4,759,108	3,408,198	29,615,667	8,882	6.31
12/15/22	21,455,823	4,760,528	3,408,198	29,624,549	4,062	5.83
12/16/22	21,459,235	4,761,178	3,408,198	29,628,611	8,447	5.71
12/17/22	21,466,332	4,762,528	3,408,198	29,637,058	10,701	
12/18/22	21,475,322	4,764,239	3,408,198	29,647,759	10,700	
12/19/22	21,484,311	4,765,950	3,408,198	29,658,459	10,702	
12/20/22	21,493,301	4,767,662	3,408,198	29,669,161	10,701	
12/21/22	21,502,290	4,769,374	3,408,198	29,679,862	10,703	
12/22/22	21,511,280	4,771,087	3,408,198	29,690,565	10,701	5.76
12/23/22	21,520,270	4,772,798	3,408,198	29,701,266	<i>1,454</i>	
12/24/22	<i>21,521,494</i>	<i>4,773,028</i>	3,408,198	29,702,720	<i>1,454</i>	
12/25/22	<i>21,522,718</i>	<i>4,773,257</i>	3,408,198	29,704,174	<i>1,454</i>	
12/26/22	<i>21,523,943</i>	<i>4,773,487</i>	3,408,198	29,705,628	<i>1,454</i>	
12/27/22	<i>21,525,167</i>	<i>4,773,717</i>	3,408,198	29,707,081	<i>1,454</i>	
12/28/22	<i>21,526,391</i>	<i>4,773,946</i>	3,408,198	29,708,535	<i>1,454</i>	
12/29/22	21,527,615	4,774,176	3,408,198	29,709,989	10,675	
12/30/22	21,536,598	4,775,868	3,408,198	29,720,664	10,675	5.77
12/31/22	21,545,580	4,777,561	3,408,198	29,731,339	10,673	

Notes:

1. Operation of the expanded system began on January 16, 2015.
2. Totalizer readings are collected daily at 0800 at EW-01 and EW-02. In May 2018, the totalizer at MW-10D rolled over to a value greater than 10 million and the value was no longer presented on the system data tab. As a result, the totalizer reading was estimated between May 2018 and August 2019, based on the total flow in gallons recorded for the previous 24 hours. A system update was completed in August 2019 that reduced the totalizer reading for MW-10D by 10 million gallons.

3. Italics indicates estimated value for monthly and daily flow.

Table 2
Flow and pH Monitoring for December 2022
Cytec Solvay Group
Havre de Grace, Maryland

Date	Root Cause for Alarm	Response
3/15/2022 - Present	P-300 Overload Fault	The P-300 Overload alarm remains active as the motor at EW-02 has failed and needs to be replaced. EW-02 currently remains off. Motor to be replaced on 1/10/23.
12/10/2022	Drive-fault alarms	The system was automatically shut down due to a drive fault alarm, triggered by a power fluctuation. Alarms were cleared and the system was restarted on 12/14 by onsite personnel.
12/16/2022	E-Stop	The system was automatically shut down due to an E-stop alarm, triggered by a power fluctuation. Alarms were cleared and the system was restarted within 24 hours by onsite personnel.

Attachment A

Appendix D

Groundwater Laboratory Analytical Reports

ANALYTICAL REPORT

Eurofins Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-144683-1

Client Project/Site: Cytex Havre de Grace MD

For:
ARCADIS U.S., Inc.
7550 Teague Road
Suite 210
Hanover, Maryland 21076

Attn: Ms. Shwetha Sridharan



Authorized for release by:
10/17/2022 10:45:57 AM

Jill Colussy, Project Manager I
(412)963-2444
Jill.Colussy@et.eurofinsus.com

LINKS

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results through



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www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

PA Lab ID: 02-00416



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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-144683-1

Job ID: 180-144683-1

Laboratory: Eurofins Pittsburgh

Narrative

Job Narrative 180-144683-1

Receipt

The samples were received on 9/17/2022 8:55 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.0° C, 2.8° C and 4.0° C.

The laboratory received a TRIP BLANK that was not listed on the chain of custody.

GC/MS VOA

Due to the concentration of target compounds detected, several samples were analyzed at a dilution. The reporting limits have been adjusted accordingly.

The continuing calibration verification (CCV) analyzed in 180-412846 was outside the method criteria for the following analyte(s): Chloroethane. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

The continuing calibration verification (CCV) analyzed in 180-412972 was outside the method criteria for the following analyte(s): Chloroethane. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

IC

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals

following samples were not filtered within 15 minutes of sample collection as required by the method: MW18 (091522)_24 (180-144683-2), MW18 (091522)_31 (180-144683-3), MW27 (091522) (180-144683-4), MW14I (091522) (180-144683-5), MW23 (091522)_40 (180-144683-6), MW23 (091522)_47 (180-144683-7), MW19DI (091522) (180-144683-8), MW20DI (091522) (180-144683-9), MW3 (091522) (180-144683-10), MW16 (091522) (180-144683-11) and DUP02 (091522) (180-144683-12). The sample(s) was filtered prior to analysis at the laboratory, and the results have been reported.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-144683-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

HPLC/IC

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Laboratory: Eurofins Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	19-033-0	06-27-22 *
California	State	2891	04-30-23
Connecticut	State	PH-0688	09-30-22 *
Florida	NELAP	E871008	06-30-23
Georgia	State	PA 02-00416	04-30-23
Illinois	NELAP	004375	06-30-23
Kansas	NELAP	E-10350	03-31-23
Kentucky (UST)	State	162013	04-30-23
Kentucky (WW)	State	KY98043	12-31-22
Louisiana	NELAP	04041	06-30-22 *
Louisiana (All)	NELAP	04041	06-30-23
Maine	State	PA00164	03-06-24
Minnesota	NELAP	042-999-482	12-31-22
New Hampshire	NELAP	2030	04-04-23
New Jersey	NELAP	PA005	06-30-23
New York	NELAP	11182	04-01-23
North Carolina (WW/SW)	State	434	12-31-22
North Dakota	State	R-227	04-30-23
Oregon	NELAP	PA-2151	02-07-23
Pennsylvania	NELAP	02-00416	04-30-23
Rhode Island	State	LAO00362	12-31-22
South Carolina	State	89014	04-20-23
Texas	NELAP	T104704528	03-31-23
USDA	US Federal Programs	P330-16-00211	06-21-24
Utah	NELAP	PA001462019-8	05-31-23
Virginia	NELAP	10043	09-14-23
West Virginia DEP	State	142	01-31-23
Wisconsin	State	998027800	08-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.



Sample Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-144683-1	DUP01 (091422)	Water	09/14/22 12:00	09/17/22 08:55
180-144683-2	MW18 (091522)_24	Water	09/15/22 08:10	09/17/22 08:55
180-144683-3	MW18 (091522)_31	Water	09/15/22 08:20	09/17/22 08:55
180-144683-4	MW27 (091522)	Water	09/15/22 07:45	09/17/22 08:55
180-144683-5	MW14I (091522)	Water	09/15/22 08:30	09/17/22 08:55
180-144683-6	MW23 (091522)_40	Water	09/15/22 09:00	09/17/22 08:55
180-144683-7	MW23 (091522)_47	Water	09/15/22 09:10	09/17/22 08:55
180-144683-8	MW19DI (091522)	Water	09/15/22 09:30	09/17/22 08:55
180-144683-9	MW20DI (091522)	Water	09/15/22 09:50	09/17/22 08:55
180-144683-10	MW3 (091522)	Water	09/15/22 10:45	09/17/22 08:55
180-144683-11	MW16 (091522)	Water	09/15/22 12:00	09/17/22 08:55
180-144683-12	DUP02 (091522)	Water	09/15/22 12:00	09/17/22 08:55
180-144683-13	MW14(091422)	Water	09/14/22 09:25	09/17/22 08:55
180-144683-14	MW22D(091422)	Water	09/14/22 10:00	09/17/22 08:55
180-144683-15	MW13D(091422)	Water	09/14/22 10:55	09/17/22 08:55
180-144683-16	MW12D(091422)	Water	09/14/22 11:25	09/17/22 08:55
180-144683-17	MW12S(091422)	Water	09/14/22 11:15	09/17/22 08:55
180-144683-18	MW28D(091422)	Water	09/14/22 11:05	09/17/22 08:55
180-144683-19	MW25I(091422)	Water	09/14/22 11:40	09/17/22 08:55
180-144683-20	MW-4(091422)	Water	09/14/22 11:50	09/17/22 08:55
180-144683-21	MW-6I(091422)	Water	09/14/22 12:00	09/17/22 08:55
180-144683-22	MW8S(091422)	Water	09/14/22 10:30	09/17/22 08:55
180-144683-23	MW8D(091422)	Water	09/14/22 10:40	09/17/22 08:55
180-144683-24	TRIP BLANK	Water	09/14/22 00:00	09/17/22 08:55
180-144683-25	TRIP BLANK	Water	09/14/22 00:00	09/17/22 08:55

- 1
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Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-144683-1

Method	Method Description	Protocol	Laboratory
EPA 8260C	Volatile Organic Compounds (GC/MS)	SW846	EET PIT
EPA 9056A	Anions, Ion Chromatography	SW846	EET PIT
EPA 6020A	Metals (ICP/MS)	SW846	EET PIT
EPA 9060A	Organic Carbon, Total (TOC)	SW846	EET PIT
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	EET PIT
5030C	Purge and Trap	SW846	EET PIT
Filtration	Sample Filtration	None	EET PIT

Protocol References:

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058



Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Cytex Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: DUP01 (091422)

Lab Sample ID: 180-144683-1

Date Collected: 09/14/22 12:00

Matrix: Water

Date Received: 09/17/22 08:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C		1	5 mL	5 mL	412837	09/22/22 10:44	J1T	EET PIT
Instrument ID: CHHP5										

Client Sample ID: MW18 (091522)_24

Lab Sample ID: 180-144683-2

Date Collected: 09/15/22 08:10

Matrix: Water

Date Received: 09/17/22 08:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C		1	5 mL	5 mL	412837	09/22/22 16:36	J1T	EET PIT
Instrument ID: CHHP5										
Total/NA	Analysis	EPA 9056A		1			412610	09/20/22 18:06	M1D	EET PIT
Instrument ID: CHICS2100B										
Dissolved	Filtration	Filtration			1.0 mL	250 mL	414063	10/04/22 13:30	HCY	EET PIT
Dissolved	Prep	3005A			25 mL	25 mL	414345	10/06/22 16:00	HCY	EET PIT
Dissolved	Analysis	EPA 6020A		1			415186	10/14/22 12:50	RSK	EET PIT
Instrument ID: DORY										
Total Recoverable	Prep	3005A			25 mL	25 mL	413183	09/26/22 11:10	HCY	EET PIT
Total Recoverable	Analysis	EPA 6020A		1			414147	10/04/22 18:22	RSK	EET PIT
Instrument ID: DORY										
Total/NA	Analysis	EPA 9060A		1	40 mL	40 mL	414563	10/08/22 10:53	LWM	EET PIT
Instrument ID: SAM										

Client Sample ID: MW18 (091522)_31

Lab Sample ID: 180-144683-3

Date Collected: 09/15/22 08:20

Matrix: Water

Date Received: 09/17/22 08:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C		1	5 mL	5 mL	412837	09/22/22 17:00	J1T	EET PIT
Instrument ID: CHHP5										
Total/NA	Analysis	EPA 9056A		1			412610	09/20/22 18:50	M1D	EET PIT
Instrument ID: CHICS2100B										
Dissolved	Filtration	Filtration			1.0 mL	250 mL	414063	10/04/22 13:30	HCY	EET PIT
Dissolved	Prep	3005A			25 mL	25 mL	414345	10/06/22 16:00	HCY	EET PIT
Dissolved	Analysis	EPA 6020A		1			415186	10/14/22 12:53	RSK	EET PIT
Instrument ID: DORY										
Total Recoverable	Prep	3005A			25 mL	25 mL	413183	09/26/22 11:10	HCY	EET PIT
Total Recoverable	Analysis	EPA 6020A		1			414147	10/04/22 18:25	RSK	EET PIT
Instrument ID: DORY										
Total/NA	Analysis	EPA 9060A		1	40 mL	40 mL	414563	10/08/22 12:59	LWM	EET PIT
Instrument ID: SAM										

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW27 (091522)
Date Collected: 09/15/22 07:45
Date Received: 09/17/22 08:55

Lab Sample ID: 180-144683-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C Instrument ID: CHHP5		1	5 mL	5 mL	412837	09/22/22 17:23	J1T	EET PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2100B		1			412610	09/20/22 19:05	M1D	EET PIT
Dissolved	Filtration	Filtration			1.0 mL	250 mL	414063	10/04/22 13:30	HCY	EET PIT
Dissolved	Prep	3005A			25 mL	25 mL	414345	10/06/22 16:00	HCY	EET PIT
Dissolved	Analysis	EPA 6020A Instrument ID: DORY		1			415186	10/14/22 12:56	RSK	EET PIT
Total Recoverable	Prep	3005A			25 mL	25 mL	413183	09/26/22 11:10	HCY	EET PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: DORY		1			414147	10/04/22 18:29	RSK	EET PIT
Total/NA	Analysis	EPA 9060A Instrument ID: SAM		1	40 mL	40 mL	414563	10/08/22 13:46	LWM	EET PIT

Client Sample ID: MW14I (091522)
Date Collected: 09/15/22 08:30
Date Received: 09/17/22 08:55

Lab Sample ID: 180-144683-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C Instrument ID: CHHP5		1	5 mL	5 mL	412837	09/22/22 17:47	J1T	EET PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2100B		1			412610	09/20/22 19:20	M1D	EET PIT
Dissolved	Filtration	Filtration			1.0 mL	250 mL	414063	10/04/22 13:30	HCY	EET PIT
Dissolved	Prep	3005A			25 mL	25 mL	414345	10/06/22 16:00	HCY	EET PIT
Dissolved	Analysis	EPA 6020A Instrument ID: DORY		1			415186	10/14/22 13:00	RSK	EET PIT
Total Recoverable	Prep	3005A			25 mL	25 mL	413183	09/26/22 11:10	HCY	EET PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: DORY		1			414147	10/04/22 18:32	RSK	EET PIT
Total/NA	Analysis	EPA 9060A Instrument ID: SAM		1	40 mL	40 mL	414563	10/08/22 14:34	LWM	EET PIT

Client Sample ID: MW23 (091522)_40
Date Collected: 09/15/22 09:00
Date Received: 09/17/22 08:55

Lab Sample ID: 180-144683-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C Instrument ID: CHHP9		1	5 mL	5 mL	412972	09/23/22 09:47	J1T	EET PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2100B		1			412610	09/20/22 19:35	M1D	EET PIT
Dissolved	Filtration	Filtration			1.0 mL	250 mL	414063	10/04/22 13:30	HCY	EET PIT
Dissolved	Prep	3005A			25 mL	25 mL	414345	10/06/22 16:00	HCY	EET PIT
Dissolved	Analysis	EPA 6020A Instrument ID: DORY		1			415186	10/14/22 13:03	RSK	EET PIT

Eurofins Pittsburgh

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW23 (091522)_40

Lab Sample ID: 180-144683-6

Date Collected: 09/15/22 09:00

Matrix: Water

Date Received: 09/17/22 08:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			25 mL	25 mL	413183	09/26/22 11:10	HCY	EET PIT
Total Recoverable	Analysis	EPA 6020A		1			414147	10/04/22 18:36	RSK	EET PIT
		Instrument ID: DORY								
Total/NA	Analysis	EPA 9060A		1	40 mL	40 mL	414563	10/08/22 14:58	LWM	EET PIT
		Instrument ID: SAM								

Client Sample ID: MW23 (091522)_47

Lab Sample ID: 180-144683-7

Date Collected: 09/15/22 09:10

Matrix: Water

Date Received: 09/17/22 08:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C		1	5 mL	5 mL	412972	09/23/22 11:13	J1T	EET PIT
		Instrument ID: CHHP9								
Total/NA	Analysis	EPA 9056A		1			412610	09/20/22 19:50	M1D	EET PIT
		Instrument ID: CHICS2100B								
Dissolved	Filtration	Filtration			1.0 mL	250 mL	414063	10/04/22 13:30	HCY	EET PIT
Dissolved	Prep	3005A			25 mL	25 mL	414345	10/06/22 16:00	HCY	EET PIT
Dissolved	Analysis	EPA 6020A		1			415186	10/14/22 13:06	RSK	EET PIT
		Instrument ID: DORY								
Total Recoverable	Prep	3005A			25 mL	25 mL	413183	09/26/22 11:10	HCY	EET PIT
Total Recoverable	Analysis	EPA 6020A		1			414147	10/04/22 18:39	RSK	EET PIT
		Instrument ID: DORY								
Total/NA	Analysis	EPA 9060A		1	40 mL	40 mL	414563	10/08/22 15:22	LWM	EET PIT
		Instrument ID: SAM								

Client Sample ID: MW19DI (091522)

Lab Sample ID: 180-144683-8

Date Collected: 09/15/22 09:30

Matrix: Water

Date Received: 09/17/22 08:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C		1	5 mL	5 mL	412972	09/23/22 14:47	J1T	EET PIT
		Instrument ID: CHHP9								
Total/NA	Analysis	EPA 8260C	DL	5	5 mL	5 mL	412972	09/23/22 16:34	J1T	EET PIT
		Instrument ID: CHHP9								
Total/NA	Analysis	EPA 9056A		1			412610	09/20/22 20:34	M1D	EET PIT
		Instrument ID: CHICS2100B								
Dissolved	Filtration	Filtration			1.0 mL	250 mL	414063	10/04/22 13:30	HCY	EET PIT
Dissolved	Prep	3005A			25 mL	25 mL	414345	10/06/22 16:00	HCY	EET PIT
Dissolved	Analysis	EPA 6020A		1			415186	10/14/22 13:10	RSK	EET PIT
		Instrument ID: DORY								
Total Recoverable	Prep	3005A			25 mL	25 mL	413618	09/29/22 12:30	HCY	EET PIT
Total Recoverable	Analysis	EPA 6020A		1			414119	10/04/22 14:31	RSK	EET PIT
		Instrument ID: A								
Total/NA	Analysis	EPA 9060A		1	40 mL	40 mL	414563	10/08/22 15:46	LWM	EET PIT
		Instrument ID: SAM								

Eurofins Pittsburgh

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW20DI (091522)

Lab Sample ID: 180-144683-9

Date Collected: 09/15/22 09:50

Matrix: Water

Date Received: 09/17/22 08:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C		1	5 mL	5 mL	412972	09/23/22 12:17	J1T	EET PIT
	Instrument ID: CHHP9									
Total/NA	Analysis	EPA 9056A		1			412610	09/20/22 20:49	M1D	EET PIT
	Instrument ID: CHICS2100B									
Dissolved	Filtration	Filtration			1.0 mL	250 mL	414063	10/04/22 13:30	HCY	EET PIT
Dissolved	Prep	3005A			25 mL	25 mL	414345	10/06/22 16:00	HCY	EET PIT
Dissolved	Analysis	EPA 6020A		1			415186	10/14/22 13:13	RSK	EET PIT
	Instrument ID: DORY									
Total Recoverable	Prep	3005A			25 mL	25 mL	413618	09/29/22 12:30	HCY	EET PIT
Total Recoverable	Analysis	EPA 6020A		1			414119	10/04/22 14:35	RSK	EET PIT
	Instrument ID: A									
Total/NA	Analysis	EPA 9060A		1	40 mL	40 mL	414563	10/08/22 16:10	LWM	EET PIT
	Instrument ID: SAM									

Client Sample ID: MW3 (091522)

Lab Sample ID: 180-144683-10

Date Collected: 09/15/22 10:45

Matrix: Water

Date Received: 09/17/22 08:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C		10	5 mL	5 mL	412972	09/23/22 11:34	J1T	EET PIT
	Instrument ID: CHHP9									
Total/NA	Analysis	EPA 9056A		1			412610	09/20/22 21:04	M1D	EET PIT
	Instrument ID: CHICS2100B									
Dissolved	Filtration	Filtration			1.0 mL	250 mL	414063	10/04/22 13:30	HCY	EET PIT
Dissolved	Prep	3005A			25 mL	25 mL	414345	10/06/22 16:00	HCY	EET PIT
Dissolved	Analysis	EPA 6020A		1			415186	10/14/22 13:16	RSK	EET PIT
	Instrument ID: DORY									
Total Recoverable	Prep	3005A			25 mL	25 mL	413618	09/29/22 12:30	HCY	EET PIT
Total Recoverable	Analysis	EPA 6020A		1			414119	10/04/22 14:38	RSK	EET PIT
	Instrument ID: A									
Total/NA	Analysis	EPA 9060A		1	40 mL	40 mL	414563	10/08/22 16:33	LWM	EET PIT
	Instrument ID: SAM									

Client Sample ID: MW16 (091522)

Lab Sample ID: 180-144683-11

Date Collected: 09/15/22 12:00

Matrix: Water

Date Received: 09/17/22 08:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C		1	5 mL	5 mL	412972	09/23/22 11:56	J1T	EET PIT
	Instrument ID: CHHP9									
Total/NA	Analysis	EPA 9056A		1			412610	09/20/22 21:19	M1D	EET PIT
	Instrument ID: CHICS2100B									
Dissolved	Filtration	Filtration			1.0 mL	250 mL	414063	10/04/22 13:30	HCY	EET PIT
Dissolved	Prep	3005A			25 mL	25 mL	414345	10/06/22 16:00	HCY	EET PIT
Dissolved	Analysis	EPA 6020A		1			415186	10/14/22 13:26	RSK	EET PIT
	Instrument ID: DORY									

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Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW16 (091522)
Date Collected: 09/15/22 12:00
Date Received: 09/17/22 08:55

Lab Sample ID: 180-144683-11
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			25 mL	25 mL	413618	09/29/22 12:30	HCY	EET PIT
Total Recoverable	Analysis	EPA 6020A		1			414119	10/04/22 14:42	RSK	EET PIT
Instrument ID: A										
Total/NA	Analysis	EPA 9060A		1	40 mL	40 mL	414563	10/08/22 18:39	LWM	EET PIT
Instrument ID: SAM										

Client Sample ID: DUP02 (091522)
Date Collected: 09/15/22 12:00
Date Received: 09/17/22 08:55

Lab Sample ID: 180-144683-12
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C		5	5 mL	5 mL	412846	09/22/22 15:09	J1T	EET PIT
Instrument ID: CHHP9										
Total/NA	Analysis	EPA 9056A		1			412610	09/20/22 21:34	M1D	EET PIT
Instrument ID: CHICS2100B										
Dissolved	Filtration	Filtration			1.0 mL	250 mL	414063	10/04/22 13:30	HCY	EET PIT
Dissolved	Prep	3005A			25 mL	25 mL	414345	10/06/22 16:00	HCY	EET PIT
Dissolved	Analysis	EPA 6020A		1			415186	10/14/22 13:30	RSK	EET PIT
Instrument ID: DORY										
Total Recoverable	Prep	3005A			25 mL	25 mL	413336	09/27/22 13:15	HCY	EET PIT
Total Recoverable	Analysis	EPA 6020A		1			414243	10/05/22 18:58	RSK	EET PIT
Instrument ID: DORY										
Total/NA	Analysis	EPA 9060A		1	40 mL	40 mL	414563	10/08/22 19:27	LWM	EET PIT
Instrument ID: SAM										

Client Sample ID: MW14(091422)
Date Collected: 09/14/22 09:25
Date Received: 09/17/22 08:55

Lab Sample ID: 180-144683-13
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C		1	5 mL	5 mL	412846	09/22/22 19:48	J1T	EET PIT
Instrument ID: CHHP9										

Client Sample ID: MW22D(091422)
Date Collected: 09/14/22 10:00
Date Received: 09/17/22 08:55

Lab Sample ID: 180-144683-14
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C		1	5 mL	5 mL	412972	09/23/22 10:09	J1T	EET PIT
Instrument ID: CHHP9										

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW13D(091422)

Lab Sample ID: 180-144683-15

Date Collected: 09/14/22 10:55

Matrix: Water

Date Received: 09/17/22 08:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C		1	5 mL	5 mL	412846	09/22/22 16:35	J1T	EET PIT
Instrument ID: CHHP9										

Client Sample ID: MW12D(091422)

Lab Sample ID: 180-144683-16

Date Collected: 09/14/22 11:25

Matrix: Water

Date Received: 09/17/22 08:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C		1	5 mL	5 mL	412837	09/22/22 09:34	J1T	EET PIT
Instrument ID: CHHP5										

Client Sample ID: MW12S(091422)

Lab Sample ID: 180-144683-17

Date Collected: 09/14/22 11:15

Matrix: Water

Date Received: 09/17/22 08:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C		1	5 mL	5 mL	412846	09/22/22 16:56	J1T	EET PIT
Instrument ID: CHHP9										

Client Sample ID: MW28D(091422)

Lab Sample ID: 180-144683-18

Date Collected: 09/14/22 11:05

Matrix: Water

Date Received: 09/17/22 08:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C		50	5 mL	5 mL	412846	09/22/22 17:18	J1T	EET PIT
Instrument ID: CHHP9										

Client Sample ID: MW25I(091422)

Lab Sample ID: 180-144683-19

Date Collected: 09/14/22 11:40

Matrix: Water

Date Received: 09/17/22 08:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C		1	5 mL	5 mL	412846	09/22/22 17:39	J1T	EET PIT
Instrument ID: CHHP9										

Client Sample ID: MW-4(091422)

Lab Sample ID: 180-144683-20

Date Collected: 09/14/22 11:50

Matrix: Water

Date Received: 09/17/22 08:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C		1	5 mL	5 mL	412846	09/22/22 18:01	J1T	EET PIT
Instrument ID: CHHP9										

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Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW-6I(091422)
Date Collected: 09/14/22 12:00
Date Received: 09/17/22 08:55

Lab Sample ID: 180-144683-21
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C		5	5 mL	5 mL	412846	09/22/22 15:30	J1T	EET PIT
Instrument ID: CHHP9										
Total/NA	Analysis	EPA 8260C	DL	50	5 mL	5 mL	412846	09/22/22 20:31	J1T	EET PIT
Instrument ID: CHHP9										

Client Sample ID: MW8S(091422)
Date Collected: 09/14/22 10:30
Date Received: 09/17/22 08:55

Lab Sample ID: 180-144683-22
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C		1	5 mL	5 mL	412846	09/22/22 18:22	J1T	EET PIT
Instrument ID: CHHP9										

Client Sample ID: MW8D(091422)
Date Collected: 09/14/22 10:40
Date Received: 09/17/22 08:55

Lab Sample ID: 180-144683-23
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C		1	5 mL	5 mL	412846	09/22/22 18:43	J1T	EET PIT
Instrument ID: CHHP9										

Client Sample ID: TRIP BLANK
Date Collected: 09/14/22 00:00
Date Received: 09/17/22 08:55

Lab Sample ID: 180-144683-24
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C		1	5 mL	5 mL	412846	09/22/22 19:05	J1T	EET PIT
Instrument ID: CHHP9										

Client Sample ID: TRIP BLANK
Date Collected: 09/14/22 00:00
Date Received: 09/17/22 08:55

Lab Sample ID: 180-144683-25
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 8260C		1	5 mL	5 mL	412846	09/22/22 19:26	J1T	EET PIT
Instrument ID: CHHP9										

Laboratory References:

EET PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Analyst References:

Lab: EET PIT

Batch Type: Filtration

HCY = Harrison Yaeger

Batch Type: Prep

HCY = Harrison Yaeger

Batch Type: Analysis

J1T = Jianwu Tang

LWM = Leslie McIntire

M1D = Maureen Donlin

RSK = Robert Kurtz

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: DUP01 (091422)

Lab Sample ID: 180-144683-1

Date Collected: 09/14/22 12:00

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 10:44	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/22/22 10:44	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 10:44	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 10:44	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 10:44	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 10:44	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 10:44	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 10:44	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 10:44	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 10:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		26 - 156					09/22/22 10:44	1
4-Bromofluorobenzene (Surr)	99		36 - 124					09/22/22 10:44	1
Dibromofluoromethane (Surr)	84		46 - 149					09/22/22 10:44	1
Toluene-d8 (Surr)	104		40 - 146					09/22/22 10:44	1

Client Sample ID: MW18 (091522)_24

Lab Sample ID: 180-144683-2

Date Collected: 09/15/22 08:10

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 16:36	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/22/22 16:36	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 16:36	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 16:36	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 16:36	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 16:36	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 16:36	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 16:36	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 16:36	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 16:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		26 - 156					09/22/22 16:36	1
4-Bromofluorobenzene (Surr)	98		36 - 124					09/22/22 16:36	1
Dibromofluoromethane (Surr)	89		46 - 149					09/22/22 16:36	1
Toluene-d8 (Surr)	102		40 - 146					09/22/22 16:36	1

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	14	F1	1.0	0.76	mg/L			09/20/22 18:06	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	35000		50	28	ug/L		09/26/22 11:10	10/04/22 18:22	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	33	J	50	28	ug/L		10/06/22 16:00	10/14/22 12:50	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW18 (091522)_24

Lab Sample ID: 180-144683-2

Date Collected: 09/15/22 08:10

Matrix: Water

Date Received: 09/17/22 08:55

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad (SW846 EPA 9060A)	4.9		1.0	0.51	mg/L			10/08/22 10:53	1

Client Sample ID: MW18 (091522)_31

Lab Sample ID: 180-144683-3

Date Collected: 09/15/22 08:20

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 17:00	1
1,2-Dichloroethane	1.0		1.0	0.57	ug/L			09/22/22 17:00	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 17:00	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 17:00	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 17:00	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 17:00	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 17:00	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 17:00	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 17:00	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 17:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		26 - 156		09/22/22 17:00	1
4-Bromofluorobenzene (Surr)	91		36 - 124		09/22/22 17:00	1
Dibromofluoromethane (Surr)	87		46 - 149		09/22/22 17:00	1
Toluene-d8 (Surr)	97		40 - 146		09/22/22 17:00	1

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	14		1.0	0.76	mg/L			09/20/22 18:50	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	16000		50	28	ug/L		09/26/22 11:10	10/04/22 18:25	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	63		50	28	ug/L		10/06/22 16:00	10/14/22 12:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad (SW846 EPA 9060A)	4.3		1.0	0.51	mg/L			10/08/22 12:59	1

Client Sample ID: MW27 (091522)

Lab Sample ID: 180-144683-4

Date Collected: 09/15/22 07:45

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	2.2		1.0	0.45	ug/L			09/22/22 17:23	1
1,2-Dichloroethane	3.0		1.0	0.57	ug/L			09/22/22 17:23	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 17:23	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW27 (091522)

Lab Sample ID: 180-144683-4

Date Collected: 09/15/22 07:45

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	5.4		1.0	0.90	ug/L			09/22/22 17:23	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 17:23	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 17:23	1
Trichloroethene	5.9		1.0	0.69	ug/L			09/22/22 17:23	1
Vinyl chloride	5.7		1.0	0.41	ug/L			09/22/22 17:23	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 17:23	1
cis-1,2-Dichloroethene	4.5		1.0	0.71	ug/L			09/22/22 17:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		26 - 156		09/22/22 17:23	1
4-Bromofluorobenzene (Surr)	95		36 - 124		09/22/22 17:23	1
Dibromofluoromethane (Surr)	86		46 - 149		09/22/22 17:23	1
Toluene-d8 (Surr)	100		40 - 146		09/22/22 17:23	1

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	2.3		1.0	0.76	mg/L			09/20/22 19:05	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	22000		50	28	ug/L		09/26/22 11:10	10/04/22 18:29	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	530		50	28	ug/L		10/06/22 16:00	10/14/22 12:56	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad (SW846 EPA 9060A)	0.68	J	1.0	0.51	mg/L			10/08/22 13:46	1

Client Sample ID: MW14I (091522)

Lab Sample ID: 180-144683-5

Date Collected: 09/15/22 08:30

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 17:47	1
1,2-Dichloroethane	5.3		1.0	0.57	ug/L			09/22/22 17:47	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 17:47	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 17:47	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 17:47	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 17:47	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 17:47	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 17:47	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 17:47	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 17:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		26 - 156		09/22/22 17:47	1
4-Bromofluorobenzene (Surr)	98		36 - 124		09/22/22 17:47	1
Dibromofluoromethane (Surr)	87		46 - 149		09/22/22 17:47	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW14I (091522)

Lab Sample ID: 180-144683-5

Date Collected: 09/15/22 08:30

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	103		40 - 146		09/22/22 17:47	1

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	54		1.0	0.76	mg/L			09/20/22 19:20	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	20000		50	28	ug/L		09/26/22 11:10	10/04/22 18:32	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		50	28	ug/L		10/06/22 16:00	10/14/22 13:00	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad (SW846 EPA 9060A)	1.9		1.0	0.51	mg/L			10/08/22 14:34	1

Client Sample ID: MW23 (091522)_40

Lab Sample ID: 180-144683-6

Date Collected: 09/15/22 09:00

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/23/22 09:47	1
1,2-Dichloroethane	11		1.0	0.57	ug/L			09/23/22 09:47	1
Chloroform	ND		1.0	0.60	ug/L			09/23/22 09:47	1
Chloroethane	2.0		1.0	0.90	ug/L			09/23/22 09:47	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/23/22 09:47	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/23/22 09:47	1
Trichloroethene	ND		1.0	0.69	ug/L			09/23/22 09:47	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/23/22 09:47	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/23/22 09:47	1
cis-1,2-Dichloroethene	0.86	J	1.0	0.71	ug/L			09/23/22 09:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		26 - 156		09/23/22 09:47	1
4-Bromofluorobenzene (Surr)	88		36 - 124		09/23/22 09:47	1
Dibromofluoromethane (Surr)	97		46 - 149		09/23/22 09:47	1
Toluene-d8 (Surr)	102		40 - 146		09/23/22 09:47	1

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	57		1.0	0.76	mg/L			09/20/22 19:35	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	10000		50	28	ug/L		09/26/22 11:10	10/04/22 18:36	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW23 (091522)_40

Lab Sample ID: 180-144683-6

Date Collected: 09/15/22 09:00

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		50	28	ug/L		10/06/22 16:00	10/14/22 13:03	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad (SW846 EPA 9060A)	0.96	J	1.0	0.51	mg/L			10/08/22 14:58	1

Client Sample ID: MW23 (091522)_47

Lab Sample ID: 180-144683-7

Date Collected: 09/15/22 09:10

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/23/22 11:13	1
1,2-Dichloroethane	9.5		1.0	0.57	ug/L			09/23/22 11:13	1
Chloroform	ND		1.0	0.60	ug/L			09/23/22 11:13	1
Chloroethane	3.0		1.0	0.90	ug/L			09/23/22 11:13	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/23/22 11:13	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/23/22 11:13	1
Trichloroethene	ND		1.0	0.69	ug/L			09/23/22 11:13	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/23/22 11:13	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/23/22 11:13	1
cis-1,2-Dichloroethene	0.89	J	1.0	0.71	ug/L			09/23/22 11:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		26 - 156		09/23/22 11:13	1
4-Bromofluorobenzene (Surr)	87		36 - 124		09/23/22 11:13	1
Dibromofluoromethane (Surr)	92		46 - 149		09/23/22 11:13	1
Toluene-d8 (Surr)	102		40 - 146		09/23/22 11:13	1

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	59		1.0	0.76	mg/L			09/20/22 19:50	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	12000		50	28	ug/L		09/26/22 11:10	10/04/22 18:39	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	47	J	50	28	ug/L		10/06/22 16:00	10/14/22 13:06	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad (SW846 EPA 9060A)	0.92	J	1.0	0.51	mg/L			10/08/22 15:22	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW19DI (091522)

Lab Sample ID: 180-144683-8

Date Collected: 09/15/22 09:30

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/23/22 14:47	1
Chloroform	ND		1.0	0.60	ug/L			09/23/22 14:47	1
Chloroethane	ND		1.0	0.90	ug/L			09/23/22 14:47	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/23/22 14:47	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/23/22 14:47	1
Trichloroethene	ND		1.0	0.69	ug/L			09/23/22 14:47	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/23/22 14:47	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/23/22 14:47	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/23/22 14:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		26 - 156					09/23/22 14:47	1
4-Bromofluorobenzene (Surr)	74		36 - 124					09/23/22 14:47	1
Dibromofluoromethane (Surr)	83		46 - 149					09/23/22 14:47	1
Toluene-d8 (Surr)	95		40 - 146					09/23/22 14:47	1

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane	52		5.0	2.9	ug/L			09/23/22 16:34	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		26 - 156					09/23/22 16:34	5
4-Bromofluorobenzene (Surr)	82		36 - 124					09/23/22 16:34	5
Dibromofluoromethane (Surr)	88		46 - 149					09/23/22 16:34	5
Toluene-d8 (Surr)	100		40 - 146					09/23/22 16:34	5

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	29		1.0	0.76	mg/L			09/20/22 20:34	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	22000		50	28	ug/L		09/29/22 12:30	10/04/22 14:31	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		50	28	ug/L		10/06/22 16:00	10/14/22 13:10	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad (SW846 EPA 9060A)	1.0		1.0	0.51	mg/L			10/08/22 15:46	1

Client Sample ID: MW20DI (091522)

Lab Sample ID: 180-144683-9

Date Collected: 09/15/22 09:50

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/23/22 12:17	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/23/22 12:17	1
Chloroform	ND		1.0	0.60	ug/L			09/23/22 12:17	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW20DI (091522)

Lab Sample ID: 180-144683-9

Date Collected: 09/15/22 09:50

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	ND		1.0	0.90	ug/L			09/23/22 12:17	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/23/22 12:17	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/23/22 12:17	1
Trichloroethene	ND		1.0	0.69	ug/L			09/23/22 12:17	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/23/22 12:17	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/23/22 12:17	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/23/22 12:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		26 - 156		09/23/22 12:17	1
4-Bromofluorobenzene (Surr)	89		36 - 124		09/23/22 12:17	1
Dibromofluoromethane (Surr)	94		46 - 149		09/23/22 12:17	1
Toluene-d8 (Surr)	101		40 - 146		09/23/22 12:17	1

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	17		1.0	0.76	mg/L			09/20/22 20:49	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	36000		50	28	ug/L		09/29/22 12:30	10/04/22 14:35	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		50	28	ug/L		10/06/22 16:00	10/14/22 13:13	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad (SW846 EPA 9060A)	0.99	J	1.0	0.51	mg/L			10/08/22 16:10	1

Client Sample ID: MW3 (091522)

Lab Sample ID: 180-144683-10

Date Collected: 09/15/22 10:45

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		10	4.5	ug/L			09/23/22 11:34	10
1,2-Dichloroethane	34		10	5.7	ug/L			09/23/22 11:34	10
Chloroform	ND		10	6.0	ug/L			09/23/22 11:34	10
Chloroethane	ND		10	9.0	ug/L			09/23/22 11:34	10
Methylene Chloride	27		10	8.9	ug/L			09/23/22 11:34	10
Tetrachloroethene	ND		10	4.7	ug/L			09/23/22 11:34	10
Trichloroethene	ND		10	6.9	ug/L			09/23/22 11:34	10
Vinyl chloride	91		10	4.1	ug/L			09/23/22 11:34	10
Carbon disulfide	ND		10	8.8	ug/L			09/23/22 11:34	10
cis-1,2-Dichloroethene	ND		10	7.1	ug/L			09/23/22 11:34	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		26 - 156		09/23/22 11:34	10
4-Bromofluorobenzene (Surr)	85		36 - 124		09/23/22 11:34	10
Dibromofluoromethane (Surr)	87		46 - 149		09/23/22 11:34	10

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW3 (091522)

Lab Sample ID: 180-144683-10

Date Collected: 09/15/22 10:45

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	106		40 - 146		09/23/22 11:34	10

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	2.1		1.0	0.76	mg/L			09/20/22 21:04	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	1900		50	28	ug/L		09/29/22 12:30	10/04/22 14:38	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		50	28	ug/L		10/06/22 16:00	10/14/22 13:16	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad (SW846 EPA 9060A)	0.94	J	1.0	0.51	mg/L			10/08/22 16:33	1

Client Sample ID: MW16 (091522)

Lab Sample ID: 180-144683-11

Date Collected: 09/15/22 12:00

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/23/22 11:56	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/23/22 11:56	1
Chloroform	ND		1.0	0.60	ug/L			09/23/22 11:56	1
Chloroethane	ND		1.0	0.90	ug/L			09/23/22 11:56	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/23/22 11:56	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/23/22 11:56	1
Trichloroethene	3.7		1.0	0.69	ug/L			09/23/22 11:56	1
Vinyl chloride	4.6		1.0	0.41	ug/L			09/23/22 11:56	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/23/22 11:56	1
cis-1,2-Dichloroethene	6.7		1.0	0.71	ug/L			09/23/22 11:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		26 - 156		09/23/22 11:56	1
4-Bromofluorobenzene (Surr)	89		36 - 124		09/23/22 11:56	1
Dibromofluoromethane (Surr)	96		46 - 149		09/23/22 11:56	1
Toluene-d8 (Surr)	99		40 - 146		09/23/22 11:56	1

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	6.8		1.0	0.76	mg/L			09/20/22 21:19	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	9900		50	28	ug/L		09/29/22 12:30	10/04/22 14:42	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW16 (091522)

Lab Sample ID: 180-144683-11

Date Collected: 09/15/22 12:00

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		50	28	ug/L		10/06/22 16:00	10/14/22 13:26	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad (SW846 EPA 9060A)	1.3		1.0	0.51	mg/L			10/08/22 18:39	1

Client Sample ID: DUP02 (091522)

Lab Sample ID: 180-144683-12

Date Collected: 09/15/22 12:00

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		5.0	2.3	ug/L			09/22/22 15:09	5
1,2-Dichloroethane	38		5.0	2.9	ug/L			09/22/22 15:09	5
Chloroform	ND		5.0	3.0	ug/L			09/22/22 15:09	5
Chloroethane	ND		5.0	4.5	ug/L			09/22/22 15:09	5
Methylene Chloride	31		5.0	4.4	ug/L			09/22/22 15:09	5
Tetrachloroethene	ND		5.0	2.3	ug/L			09/22/22 15:09	5
Trichloroethene	ND		5.0	3.4	ug/L			09/22/22 15:09	5
Vinyl chloride	100		5.0	2.0	ug/L			09/22/22 15:09	5
Carbon disulfide	ND		5.0	4.4	ug/L			09/22/22 15:09	5
cis-1,2-Dichloroethene	ND		5.0	3.5	ug/L			09/22/22 15:09	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		26 - 156		09/22/22 15:09	5
4-Bromofluorobenzene (Surr)	88		36 - 124		09/22/22 15:09	5
Dibromofluoromethane (Surr)	92		46 - 149		09/22/22 15:09	5
Toluene-d8 (Surr)	108		40 - 146		09/22/22 15:09	5

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	2.1		1.0	0.76	mg/L			09/20/22 21:34	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	4800		50	28	ug/L		09/27/22 13:15	10/05/22 18:58	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		50	28	ug/L		10/06/22 16:00	10/14/22 13:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad (SW846 EPA 9060A)	0.91	J	1.0	0.51	mg/L			10/08/22 19:27	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW14(091422)

Lab Sample ID: 180-144683-13

Date Collected: 09/14/22 09:25

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 19:48	1
1,2-Dichloroethane	3.0		1.0	0.57	ug/L			09/22/22 19:48	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 19:48	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 19:48	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 19:48	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 19:48	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 19:48	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 19:48	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 19:48	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 19:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		26 - 156					09/22/22 19:48	1
4-Bromofluorobenzene (Surr)	87		36 - 124					09/22/22 19:48	1
Dibromofluoromethane (Surr)	85		46 - 149					09/22/22 19:48	1
Toluene-d8 (Surr)	103		40 - 146					09/22/22 19:48	1

Client Sample ID: MW22D(091422)

Lab Sample ID: 180-144683-14

Date Collected: 09/14/22 10:00

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/23/22 10:09	1
1,2-Dichloroethane	0.65	J	1.0	0.57	ug/L			09/23/22 10:09	1
Chloroform	ND		1.0	0.60	ug/L			09/23/22 10:09	1
Chloroethane	ND		1.0	0.90	ug/L			09/23/22 10:09	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/23/22 10:09	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/23/22 10:09	1
Trichloroethene	ND		1.0	0.69	ug/L			09/23/22 10:09	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/23/22 10:09	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/23/22 10:09	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/23/22 10:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		26 - 156					09/23/22 10:09	1
4-Bromofluorobenzene (Surr)	87		36 - 124					09/23/22 10:09	1
Dibromofluoromethane (Surr)	89		46 - 149					09/23/22 10:09	1
Toluene-d8 (Surr)	108		40 - 146					09/23/22 10:09	1

Client Sample ID: MW13D(091422)

Lab Sample ID: 180-144683-15

Date Collected: 09/14/22 10:55

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 16:35	1
1,2-Dichloroethane	22		1.0	0.57	ug/L			09/22/22 16:35	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 16:35	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 16:35	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 16:35	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW13D(091422)

Lab Sample ID: 180-144683-15

Date Collected: 09/14/22 10:55

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	0.79	J	1.0	0.47	ug/L			09/22/22 16:35	1
Trichloroethene	3.0		1.0	0.69	ug/L			09/22/22 16:35	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 16:35	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 16:35	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 16:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		26 - 156		09/22/22 16:35	1
4-Bromofluorobenzene (Surr)	85		36 - 124		09/22/22 16:35	1
Dibromofluoromethane (Surr)	85		46 - 149		09/22/22 16:35	1
Toluene-d8 (Surr)	98		40 - 146		09/22/22 16:35	1

Client Sample ID: MW12D(091422)

Lab Sample ID: 180-144683-16

Date Collected: 09/14/22 11:25

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 09:34	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/22/22 09:34	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 09:34	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 09:34	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 09:34	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 09:34	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 09:34	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 09:34	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 09:34	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 09:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		26 - 156		09/22/22 09:34	1
4-Bromofluorobenzene (Surr)	104		36 - 124		09/22/22 09:34	1
Dibromofluoromethane (Surr)	89		46 - 149		09/22/22 09:34	1
Toluene-d8 (Surr)	107		40 - 146		09/22/22 09:34	1

Client Sample ID: MW12S(091422)

Lab Sample ID: 180-144683-17

Date Collected: 09/14/22 11:15

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 16:56	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/22/22 16:56	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 16:56	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 16:56	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 16:56	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 16:56	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 16:56	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 16:56	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 16:56	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 16:56	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW12S(091422)

Lab Sample ID: 180-144683-17

Date Collected: 09/14/22 11:15

Matrix: Water

Date Received: 09/17/22 08:55

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		26 - 156		09/22/22 16:56	1
4-Bromofluorobenzene (Surr)	84		36 - 124		09/22/22 16:56	1
Dibromofluoromethane (Surr)	85		46 - 149		09/22/22 16:56	1
Toluene-d8 (Surr)	101		40 - 146		09/22/22 16:56	1

Client Sample ID: MW28D(091422)

Lab Sample ID: 180-144683-18

Date Collected: 09/14/22 11:05

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		50	23	ug/L			09/22/22 17:18	50
1,2-Dichloroethane	1600		50	29	ug/L			09/22/22 17:18	50
Chloroform	ND		50	30	ug/L			09/22/22 17:18	50
Chloroethane	ND		50	45	ug/L			09/22/22 17:18	50
Methylene Chloride	ND		50	44	ug/L			09/22/22 17:18	50
Tetrachloroethene	ND		50	23	ug/L			09/22/22 17:18	50
Trichloroethene	ND		50	34	ug/L			09/22/22 17:18	50
Vinyl chloride	ND		50	20	ug/L			09/22/22 17:18	50
Carbon disulfide	ND		50	44	ug/L			09/22/22 17:18	50
cis-1,2-Dichloroethene	ND		50	35	ug/L			09/22/22 17:18	50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		26 - 156		09/22/22 17:18	50
4-Bromofluorobenzene (Surr)	83		36 - 124		09/22/22 17:18	50
Dibromofluoromethane (Surr)	84		46 - 149		09/22/22 17:18	50
Toluene-d8 (Surr)	103		40 - 146		09/22/22 17:18	50

Client Sample ID: MW25I(091422)

Lab Sample ID: 180-144683-19

Date Collected: 09/14/22 11:40

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	0.61	J	1.0	0.45	ug/L			09/22/22 17:39	1
1,2-Dichloroethane	2.0		1.0	0.57	ug/L			09/22/22 17:39	1
Chloroform	0.76	J	1.0	0.60	ug/L			09/22/22 17:39	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 17:39	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 17:39	1
Tetrachloroethene	0.67	J	1.0	0.47	ug/L			09/22/22 17:39	1
Trichloroethene	6.1		1.0	0.69	ug/L			09/22/22 17:39	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 17:39	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 17:39	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 17:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		26 - 156		09/22/22 17:39	1
4-Bromofluorobenzene (Surr)	87		36 - 124		09/22/22 17:39	1
Dibromofluoromethane (Surr)	85		46 - 149		09/22/22 17:39	1
Toluene-d8 (Surr)	102		40 - 146		09/22/22 17:39	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW-4(091422)

Lab Sample ID: 180-144683-20

Date Collected: 09/14/22 11:50

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 18:01	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/22/22 18:01	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 18:01	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 18:01	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 18:01	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 18:01	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 18:01	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 18:01	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 18:01	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 18:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		26 - 156		09/22/22 18:01	1
4-Bromofluorobenzene (Surr)	89		36 - 124		09/22/22 18:01	1
Dibromofluoromethane (Surr)	89		46 - 149		09/22/22 18:01	1
Toluene-d8 (Surr)	95		40 - 146		09/22/22 18:01	1

Client Sample ID: MW-6I(091422)

Lab Sample ID: 180-144683-21

Date Collected: 09/14/22 12:00

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		5.0	2.3	ug/L			09/22/22 15:30	5
Chloroform	ND		5.0	3.0	ug/L			09/22/22 15:30	5
Chloroethane	ND		5.0	4.5	ug/L			09/22/22 15:30	5
Methylene Chloride	ND		5.0	4.4	ug/L			09/22/22 15:30	5
Tetrachloroethene	ND		5.0	2.3	ug/L			09/22/22 15:30	5
Trichloroethene	9.7		5.0	3.4	ug/L			09/22/22 15:30	5
Vinyl chloride	ND		5.0	2.0	ug/L			09/22/22 15:30	5
Carbon disulfide	ND		5.0	4.4	ug/L			09/22/22 15:30	5
cis-1,2-Dichloroethene	3.7	J	5.0	3.5	ug/L			09/22/22 15:30	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		26 - 156		09/22/22 15:30	5
4-Bromofluorobenzene (Surr)	87		36 - 124		09/22/22 15:30	5
Dibromofluoromethane (Surr)	93		46 - 149		09/22/22 15:30	5
Toluene-d8 (Surr)	94		40 - 146		09/22/22 15:30	5

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane	510		50	29	ug/L			09/22/22 20:31	50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		26 - 156		09/22/22 20:31	50
4-Bromofluorobenzene (Surr)	91		36 - 124		09/22/22 20:31	50
Dibromofluoromethane (Surr)	89		46 - 149		09/22/22 20:31	50
Toluene-d8 (Surr)	107		40 - 146		09/22/22 20:31	50

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW8S(091422)

Lab Sample ID: 180-144683-22

Date Collected: 09/14/22 10:30

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 18:22	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/22/22 18:22	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 18:22	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 18:22	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 18:22	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 18:22	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 18:22	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 18:22	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 18:22	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 18:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		26 - 156					09/22/22 18:22	1
4-Bromofluorobenzene (Surr)	89		36 - 124					09/22/22 18:22	1
Dibromofluoromethane (Surr)	92		46 - 149					09/22/22 18:22	1
Toluene-d8 (Surr)	97		40 - 146					09/22/22 18:22	1

Client Sample ID: MW8D(091422)

Lab Sample ID: 180-144683-23

Date Collected: 09/14/22 10:40

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 18:43	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/22/22 18:43	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 18:43	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 18:43	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 18:43	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 18:43	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 18:43	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 18:43	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 18:43	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 18:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		26 - 156					09/22/22 18:43	1
4-Bromofluorobenzene (Surr)	91		36 - 124					09/22/22 18:43	1
Dibromofluoromethane (Surr)	89		46 - 149					09/22/22 18:43	1
Toluene-d8 (Surr)	103		40 - 146					09/22/22 18:43	1

Client Sample ID: TRIP BLANK

Lab Sample ID: 180-144683-24

Date Collected: 09/14/22 00:00

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 19:05	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/22/22 19:05	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 19:05	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 19:05	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 19:05	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 180-144683-24

Date Collected: 09/14/22 00:00

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 19:05	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 19:05	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 19:05	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 19:05	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 19:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		26 - 156		09/22/22 19:05	1
4-Bromofluorobenzene (Surr)	84		36 - 124		09/22/22 19:05	1
Dibromofluoromethane (Surr)	85		46 - 149		09/22/22 19:05	1
Toluene-d8 (Surr)	100		40 - 146		09/22/22 19:05	1

Client Sample ID: TRIP BLANK

Lab Sample ID: 180-144683-25

Date Collected: 09/14/22 00:00

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 19:26	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/22/22 19:26	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 19:26	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 19:26	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 19:26	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 19:26	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 19:26	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 19:26	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 19:26	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 19:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		26 - 156		09/22/22 19:26	1
4-Bromofluorobenzene (Surr)	78		36 - 124		09/22/22 19:26	1
Dibromofluoromethane (Surr)	82		46 - 149		09/22/22 19:26	1
Toluene-d8 (Surr)	109		40 - 146		09/22/22 19:26	1

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Method: EPA 8260C - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 180-412837/5
Matrix: Water
Analysis Batch: 412837

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 08:47	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/22/22 08:47	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 08:47	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 08:47	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 08:47	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 08:47	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 08:47	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 08:47	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 08:47	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 08:47	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		26 - 156		09/22/22 08:47	1
4-Bromofluorobenzene (Surr)	103		36 - 124		09/22/22 08:47	1
Dibromofluoromethane (Surr)	89		46 - 149		09/22/22 08:47	1
Toluene-d8 (Surr)	106		40 - 146		09/22/22 08:47	1

Lab Sample ID: LCS 180-412837/3
Matrix: Water
Analysis Batch: 412837

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,2-Trichloroethane	10.0	11.7		ug/L		117	62 - 131
1,2-Dichloroethane	10.0	10.4		ug/L		104	51 - 142
Chloroform	10.0	10.3		ug/L		103	66 - 125
Chloroethane	10.0	10.4		ug/L		104	10 - 170
Methylene Chloride	10.0	10.5		ug/L		105	24 - 170
Tetrachloroethene	10.0	11.9		ug/L		119	55 - 140
Trichloroethene	10.0	9.92		ug/L		99	60 - 129
Vinyl chloride	10.0	9.30		ug/L		93	33 - 154
Carbon disulfide	10.0	11.5		ug/L		115	46 - 148
cis-1,2-Dichloroethene	10.0	11.2		ug/L		112	60 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	92		26 - 156
4-Bromofluorobenzene (Surr)	122		36 - 124
Dibromofluoromethane (Surr)	95		46 - 149
Toluene-d8 (Surr)	118		40 - 146

Lab Sample ID: 180-144683-16 MS
Matrix: Water
Analysis Batch: 412837

Client Sample ID: MW12D(091422)
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,2-Trichloroethane	ND		10.0	11.4		ug/L		114	62 - 131
1,2-Dichloroethane	ND		10.0	10.3		ug/L		103	51 - 142
Chloroform	ND		10.0	9.71		ug/L		97	66 - 125
Chloroethane	ND		10.0	9.29		ug/L		93	10 - 170

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Method: EPA 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 180-144683-16 MS
Matrix: Water
Analysis Batch: 412837

Client Sample ID: MW12D(091422)
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Methylene Chloride	ND		10.0	8.83		ug/L		88	24 - 170
Tetrachloroethene	ND		10.0	10.7		ug/L		107	55 - 140
Trichloroethene	ND		10.0	9.27		ug/L		93	60 - 129
Vinyl chloride	ND		10.0	8.84		ug/L		88	33 - 154
Carbon disulfide	ND		10.0	11.0		ug/L		110	46 - 148
cis-1,2-Dichloroethene	ND		10.0	10.2		ug/L		102	60 - 130

Surrogate	MS %Recovery	MS Qualifier	MS Limits
1,2-Dichloroethane-d4 (Surr)	86		26 - 156
4-Bromofluorobenzene (Surr)	114		36 - 124
Dibromofluoromethane (Surr)	90		46 - 149
Toluene-d8 (Surr)	101		40 - 146

Lab Sample ID: 180-144683-16 MSD
Matrix: Water
Analysis Batch: 412837

Client Sample ID: MW12D(091422)
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1,2-Trichloroethane	ND		10.0	10.8		ug/L		108	62 - 131	6	26
1,2-Dichloroethane	ND		10.0	10.2		ug/L		102	51 - 142	1	27
Chloroform	ND		10.0	9.89		ug/L		99	66 - 125	2	25
Chloroethane	ND		10.0	9.46		ug/L		95	10 - 170	2	35
Methylene Chloride	ND		10.0	8.88		ug/L		89	24 - 170	1	35
Tetrachloroethene	ND		10.0	10.6		ug/L		106	55 - 140	1	27
Trichloroethene	ND		10.0	9.16		ug/L		92	60 - 129	1	25
Vinyl chloride	ND		10.0	8.58		ug/L		86	33 - 154	3	34
Carbon disulfide	ND		10.0	11.1		ug/L		111	46 - 148	1	30
cis-1,2-Dichloroethene	ND		10.0	10.0		ug/L		100	60 - 130	2	25

Surrogate	MSD %Recovery	MSD Qualifier	MSD Limits
1,2-Dichloroethane-d4 (Surr)	88		26 - 156
4-Bromofluorobenzene (Surr)	113		36 - 124
Dibromofluoromethane (Surr)	91		46 - 149
Toluene-d8 (Surr)	98		40 - 146

Lab Sample ID: MB 180-412846/13
Matrix: Water
Analysis Batch: 412846

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 13:22	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/22/22 13:22	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 13:22	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 13:22	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 13:22	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 13:22	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 13:22	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 13:22	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Method: EPA 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 180-412846/13
Matrix: Water
Analysis Batch: 412846

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 13:22	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 13:22	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		26 - 156		09/22/22 13:22	1
4-Bromofluorobenzene (Surr)	80		36 - 124		09/22/22 13:22	1
Dibromofluoromethane (Surr)	88		46 - 149		09/22/22 13:22	1
Toluene-d8 (Surr)	101		40 - 146		09/22/22 13:22	1

Lab Sample ID: LCS 180-412846/8
Matrix: Water
Analysis Batch: 412846

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,2-Trichloroethane	10.0	9.01		ug/L		90	62 - 131
1,2-Dichloroethane	10.0	9.55		ug/L		95	51 - 142
Chloroform	10.0	8.11		ug/L		81	66 - 125
Chloroethane	10.0	11.7		ug/L		117	10 - 170
Methylene Chloride	10.0	8.77		ug/L		88	24 - 170
Tetrachloroethene	10.0	10.2		ug/L		102	55 - 140
Trichloroethene	10.0	9.19		ug/L		92	60 - 129
Vinyl chloride	10.0	10.7		ug/L		107	33 - 154
Carbon disulfide	10.0	9.60		ug/L		96	46 - 148
cis-1,2-Dichloroethene	10.0	9.42		ug/L		94	60 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		26 - 156
4-Bromofluorobenzene (Surr)	92		36 - 124
Dibromofluoromethane (Surr)	95		46 - 149
Toluene-d8 (Surr)	96		40 - 146

Lab Sample ID: MB 180-412972/6
Matrix: Water
Analysis Batch: 412972

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/23/22 09:26	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/23/22 09:26	1
Chloroform	ND		1.0	0.60	ug/L			09/23/22 09:26	1
Chloroethane	ND		1.0	0.90	ug/L			09/23/22 09:26	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/23/22 09:26	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/23/22 09:26	1
Trichloroethene	ND		1.0	0.69	ug/L			09/23/22 09:26	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/23/22 09:26	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/23/22 09:26	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/23/22 09:26	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Method: EPA 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 180-412972/6
Matrix: Water
Analysis Batch: 412972

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	100		26 - 156		09/23/22 09:26	1
4-Bromofluorobenzene (Surr)	89		36 - 124		09/23/22 09:26	1
Dibromofluoromethane (Surr)	98		46 - 149		09/23/22 09:26	1
Toluene-d8 (Surr)	99		40 - 146		09/23/22 09:26	1

Lab Sample ID: LCS 180-412972/3
Matrix: Water
Analysis Batch: 412972

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,2-Dichloroethane	10.0	9.10		ug/L		91	51 - 142
Chloroform	10.0	8.54		ug/L		85	66 - 125
Chloroethane	10.0	12.5		ug/L		125	10 - 170
Methylene Chloride	10.0	9.06		ug/L		91	24 - 170
Tetrachloroethene	10.0	11.5		ug/L		115	55 - 140
Trichloroethene	10.0	10.3		ug/L		103	60 - 129
Vinyl chloride	10.0	11.6		ug/L		116	33 - 154
Carbon disulfide	10.0	10.8		ug/L		108	46 - 148
cis-1,2-Dichloroethene	10.0	9.84		ug/L		98	60 - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	96		26 - 156
4-Bromofluorobenzene (Surr)	86		36 - 124
Dibromofluoromethane (Surr)	93		46 - 149
Toluene-d8 (Surr)	100		40 - 146

Lab Sample ID: 180-144683-6 MS
Matrix: Water
Analysis Batch: 412972

Client Sample ID: MW23 (091522)_40
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,2-Dichloroethane	11		10.0	20.9		ug/L		100	51 - 142
Chloroform	ND		10.0	8.63		ug/L		86	66 - 125
Chloroethane	2.0		10.0	14.3		ug/L		123	10 - 170
Methylene Chloride	ND		10.0	8.22		ug/L		82	24 - 170
Tetrachloroethene	ND		10.0	11.2		ug/L		112	55 - 140
Trichloroethene	ND		10.0	10.5		ug/L		105	60 - 129
Vinyl chloride	ND		10.0	10.7		ug/L		107	33 - 154
Carbon disulfide	ND		10.0	9.90		ug/L		99	46 - 148
cis-1,2-Dichloroethene	0.86	J	10.0	10.9		ug/L		101	60 - 130

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	100		26 - 156
4-Bromofluorobenzene (Surr)	95		36 - 124
Dibromofluoromethane (Surr)	98		46 - 149
Toluene-d8 (Surr)	108		40 - 146

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Method: EPA 8260C - Volatile Organic Compounds (GC/MS)

Lab Sample ID: 180-144683-6 MSD
Matrix: Water
Analysis Batch: 412972

Client Sample ID: MW23 (091522)_40
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1,2-Trichloroethane	ND		10.0	10.0		ug/L		100	62 - 131	1	26
1,2-Dichloroethane	11		10.0	21.0		ug/L		102	51 - 142	1	27
Chloroform	ND		10.0	8.19		ug/L		82	66 - 125	5	25
Chloroethane	2.0		10.0	15.2		ug/L		132	10 - 170	6	35
Methylene Chloride	ND		10.0	8.59		ug/L		86	24 - 170	4	35
Tetrachloroethene	ND		10.0	9.64		ug/L		96	55 - 140	15	27
Trichloroethene	ND		10.0	9.51		ug/L		95	60 - 129	10	25
Vinyl chloride	ND		10.0	9.89		ug/L		99	33 - 154	8	34
Carbon disulfide	ND		10.0	9.29		ug/L		93	46 - 148	6	30
cis-1,2-Dichloroethene	0.86	J	10.0	10.6		ug/L		97	60 - 130	3	25

Surrogate	MSD %Recovery	MSD Qualifier	MSD Limits
1,2-Dichloroethane-d4 (Surr)	97		26 - 156
4-Bromofluorobenzene (Surr)	90		36 - 124
Dibromofluoromethane (Surr)	95		46 - 149
Toluene-d8 (Surr)	97		40 - 146

Method: EPA 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 180-412610/6
Matrix: Water
Analysis Batch: 412610

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		1.0	0.76	mg/L			09/20/22 11:50	1

Lab Sample ID: LCS 180-412610/7
Matrix: Water
Analysis Batch: 412610

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfate	50.0	47.7		mg/L		95	80 - 120

Lab Sample ID: 180-144683-2 MS
Matrix: Water
Analysis Batch: 412610

Client Sample ID: MW18 (091522)_24
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfate	14	F1	50.0	40.6	F1	mg/L		52	80 - 120

Lab Sample ID: 180-144683-2 MSD
Matrix: Water
Analysis Batch: 412610

Client Sample ID: MW18 (091522)_24
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sulfate	14	F1	50.0	38.1	F1	mg/L		47	80 - 120	6	15

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Method: EPA 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: 180-144683-12 MS
Matrix: Water
Analysis Batch: 412610

Client Sample ID: DUP02 (091522)
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfate	2.1		50.0	50.5		mg/L		97	80 - 120

Lab Sample ID: 180-144683-12 MSD
Matrix: Water
Analysis Batch: 412610

Client Sample ID: DUP02 (091522)
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sulfate	2.1		50.0	51.5		mg/L		99	80 - 120	2	15

Method: EPA 6020A - Metals (ICP/MS)

Lab Sample ID: MB 180-413183/1-A
Matrix: Water
Analysis Batch: 414147

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 413183

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		50	28	ug/L		09/26/22 11:10	10/04/22 15:02	1

Lab Sample ID: LCS 180-413183/2-A
Matrix: Water
Analysis Batch: 414147

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 413183

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	5000	5050		ug/L		101	80 - 120

Lab Sample ID: MB 180-413336/1-A
Matrix: Water
Analysis Batch: 414243

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 413336

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		50	28	ug/L		09/27/22 13:15	10/05/22 18:22	1

Lab Sample ID: LCS 180-413336/2-A
Matrix: Water
Analysis Batch: 414243

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 413336

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	5000	5020		ug/L		100	80 - 120

Lab Sample ID: MB 180-413618/1-A
Matrix: Water
Analysis Batch: 414119

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 413618

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		50	28	ug/L		09/29/22 12:30	10/04/22 13:54	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Cytex Havre de Grace MD

Job ID: 180-144683-1

Method: EPA 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 180-413618/2-A
Matrix: Water
Analysis Batch: 414119

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 413618

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	5000	5170		ug/L		103	80 - 120

Lab Sample ID: MB 180-414345/1-A
Matrix: Water
Analysis Batch: 415186

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 414345

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		50	28	ug/L		10/06/22 16:00	10/14/22 12:07	1

Lab Sample ID: LCS 180-414345/2-A
Matrix: Water
Analysis Batch: 415186

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 414345

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	5000	5200		ug/L		104	80 - 120

Method: EPA 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 180-414563/31
Matrix: Water
Analysis Batch: 414563

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad	ND		1.0	0.51	mg/L			10/08/22 08:28	1

Lab Sample ID: MB 180-414563/5
Matrix: Water
Analysis Batch: 414563

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad	ND		1.0	0.51	mg/L			10/07/22 19:26	1

Lab Sample ID: LCS 180-414563/30
Matrix: Water
Analysis Batch: 414563

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Organic Carbon - Quad	20.0	21.3		mg/L		106	85 - 115

Lab Sample ID: 180-144683-3 MS
Matrix: Water
Analysis Batch: 414563

Client Sample ID: MW18 (091522)_31
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Total Organic Carbon - Quad	4.3		10.0	14.1		mg/L		98	85 - 115

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Cytex Havre de Grace MD

Job ID: 180-144683-1

Method: EPA 9060A - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: 180-144683-11 MS
Matrix: Water
Analysis Batch: 414563

Client Sample ID: MW16 (091522)
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Total Organic Carbon - Quad	1.3		10.0	11.0		mg/L		97	85 - 115

Lab Sample ID: 180-144683-4 DU
Matrix: Water
Analysis Batch: 414563

Client Sample ID: MW27 (091522)
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Organic Carbon - Quad	0.68	J	0.677	J	mg/L		0.3	15

Lab Sample ID: 180-144683-12 DU
Matrix: Water
Analysis Batch: 414563

Client Sample ID: DUP02 (091522)
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Organic Carbon - Quad	0.91	J	0.891	J	mg/L		2	15



QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

GC/MS VOA

Analysis Batch: 412837

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-144683-1	DUP01 (091422)	Total/NA	Water	EPA 8260C	
180-144683-2	MW18 (091522)_24	Total/NA	Water	EPA 8260C	
180-144683-3	MW18 (091522)_31	Total/NA	Water	EPA 8260C	
180-144683-4	MW27 (091522)	Total/NA	Water	EPA 8260C	
180-144683-5	MW14I (091522)	Total/NA	Water	EPA 8260C	
180-144683-16	MW12D(091422)	Total/NA	Water	EPA 8260C	
MB 180-412837/5	Method Blank	Total/NA	Water	EPA 8260C	
LCS 180-412837/3	Lab Control Sample	Total/NA	Water	EPA 8260C	
180-144683-16 MS	MW12D(091422)	Total/NA	Water	EPA 8260C	
180-144683-16 MSD	MW12D(091422)	Total/NA	Water	EPA 8260C	

Analysis Batch: 412846

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-144683-12	DUP02 (091522)	Total/NA	Water	EPA 8260C	
180-144683-13	MW14(091422)	Total/NA	Water	EPA 8260C	
180-144683-15	MW13D(091422)	Total/NA	Water	EPA 8260C	
180-144683-17	MW12S(091422)	Total/NA	Water	EPA 8260C	
180-144683-18	MW28D(091422)	Total/NA	Water	EPA 8260C	
180-144683-19	MW25I(091422)	Total/NA	Water	EPA 8260C	
180-144683-20	MW-4(091422)	Total/NA	Water	EPA 8260C	
180-144683-21	MW-6I(091422)	Total/NA	Water	EPA 8260C	
180-144683-21 - DL	MW-6I(091422)	Total/NA	Water	EPA 8260C	
180-144683-22	MW8S(091422)	Total/NA	Water	EPA 8260C	
180-144683-23	MW8D(091422)	Total/NA	Water	EPA 8260C	
180-144683-24	TRIP BLANK	Total/NA	Water	EPA 8260C	
180-144683-25	TRIP BLANK	Total/NA	Water	EPA 8260C	
MB 180-412846/13	Method Blank	Total/NA	Water	EPA 8260C	
LCS 180-412846/8	Lab Control Sample	Total/NA	Water	EPA 8260C	

Analysis Batch: 412972

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-144683-6	MW23 (091522)_40	Total/NA	Water	EPA 8260C	
180-144683-7	MW23 (091522)_47	Total/NA	Water	EPA 8260C	
180-144683-8	MW19DI (091522)	Total/NA	Water	EPA 8260C	
180-144683-8 - DL	MW19DI (091522)	Total/NA	Water	EPA 8260C	
180-144683-9	MW20DI (091522)	Total/NA	Water	EPA 8260C	
180-144683-10	MW3 (091522)	Total/NA	Water	EPA 8260C	
180-144683-11	MW16 (091522)	Total/NA	Water	EPA 8260C	
180-144683-14	MW22D(091422)	Total/NA	Water	EPA 8260C	
MB 180-412972/6	Method Blank	Total/NA	Water	EPA 8260C	
LCS 180-412972/3	Lab Control Sample	Total/NA	Water	EPA 8260C	
180-144683-6 MS	MW23 (091522)_40	Total/NA	Water	EPA 8260C	
180-144683-6 MSD	MW23 (091522)_40	Total/NA	Water	EPA 8260C	

HPLC/IC

Analysis Batch: 412610

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-144683-2	MW18 (091522)_24	Total/NA	Water	EPA 9056A	
180-144683-3	MW18 (091522)_31	Total/NA	Water	EPA 9056A	
180-144683-4	MW27 (091522)	Total/NA	Water	EPA 9056A	

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QC Association Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

HPLC/IC (Continued)

Analysis Batch: 412610 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-144683-5	MW14I (091522)	Total/NA	Water	EPA 9056A	
180-144683-6	MW23 (091522)_40	Total/NA	Water	EPA 9056A	
180-144683-7	MW23 (091522)_47	Total/NA	Water	EPA 9056A	
180-144683-8	MW19DI (091522)	Total/NA	Water	EPA 9056A	
180-144683-9	MW20DI (091522)	Total/NA	Water	EPA 9056A	
180-144683-10	MW3 (091522)	Total/NA	Water	EPA 9056A	
180-144683-11	MW16 (091522)	Total/NA	Water	EPA 9056A	
180-144683-12	DUP02 (091522)	Total/NA	Water	EPA 9056A	
MB 180-412610/6	Method Blank	Total/NA	Water	EPA 9056A	
LCS 180-412610/7	Lab Control Sample	Total/NA	Water	EPA 9056A	
180-144683-2 MS	MW18 (091522)_24	Total/NA	Water	EPA 9056A	
180-144683-2 MSD	MW18 (091522)_24	Total/NA	Water	EPA 9056A	
180-144683-12 MS	DUP02 (091522)	Total/NA	Water	EPA 9056A	
180-144683-12 MSD	DUP02 (091522)	Total/NA	Water	EPA 9056A	

Metals

Prep Batch: 413183

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-144683-2	MW18 (091522)_24	Total Recoverable	Water	3005A	
180-144683-3	MW18 (091522)_31	Total Recoverable	Water	3005A	
180-144683-4	MW27 (091522)	Total Recoverable	Water	3005A	
180-144683-5	MW14I (091522)	Total Recoverable	Water	3005A	
180-144683-6	MW23 (091522)_40	Total Recoverable	Water	3005A	
180-144683-7	MW23 (091522)_47	Total Recoverable	Water	3005A	
MB 180-413183/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-413183/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 413336

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-144683-12	DUP02 (091522)	Total Recoverable	Water	3005A	
MB 180-413336/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-413336/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 413618

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-144683-8	MW19DI (091522)	Total Recoverable	Water	3005A	
180-144683-9	MW20DI (091522)	Total Recoverable	Water	3005A	
180-144683-10	MW3 (091522)	Total Recoverable	Water	3005A	
180-144683-11	MW16 (091522)	Total Recoverable	Water	3005A	
MB 180-413618/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-413618/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Filtration Batch: 414063

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-144683-2	MW18 (091522)_24	Dissolved	Water	Filtration	
180-144683-3	MW18 (091522)_31	Dissolved	Water	Filtration	
180-144683-4	MW27 (091522)	Dissolved	Water	Filtration	
180-144683-5	MW14I (091522)	Dissolved	Water	Filtration	
180-144683-6	MW23 (091522)_40	Dissolved	Water	Filtration	
180-144683-7	MW23 (091522)_47	Dissolved	Water	Filtration	

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QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Metals (Continued)

Filtration Batch: 414063 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-144683-8	MW19DI (091522)	Dissolved	Water	Filtration	
180-144683-9	MW20DI (091522)	Dissolved	Water	Filtration	
180-144683-10	MW3 (091522)	Dissolved	Water	Filtration	
180-144683-11	MW16 (091522)	Dissolved	Water	Filtration	
180-144683-12	DUP02 (091522)	Dissolved	Water	Filtration	

Analysis Batch: 414119

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-144683-8	MW19DI (091522)	Total Recoverable	Water	EPA 6020A	413618
180-144683-9	MW20DI (091522)	Total Recoverable	Water	EPA 6020A	413618
180-144683-10	MW3 (091522)	Total Recoverable	Water	EPA 6020A	413618
180-144683-11	MW16 (091522)	Total Recoverable	Water	EPA 6020A	413618
MB 180-413618/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	413618
LCS 180-413618/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	413618

Analysis Batch: 414147

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-144683-2	MW18 (091522)_24	Total Recoverable	Water	EPA 6020A	413183
180-144683-3	MW18 (091522)_31	Total Recoverable	Water	EPA 6020A	413183
180-144683-4	MW27 (091522)	Total Recoverable	Water	EPA 6020A	413183
180-144683-5	MW14I (091522)	Total Recoverable	Water	EPA 6020A	413183
180-144683-6	MW23 (091522)_40	Total Recoverable	Water	EPA 6020A	413183
180-144683-7	MW23 (091522)_47	Total Recoverable	Water	EPA 6020A	413183
MB 180-413183/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	413183
LCS 180-413183/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	413183

Analysis Batch: 414243

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-144683-12	DUP02 (091522)	Total Recoverable	Water	EPA 6020A	413336
MB 180-413336/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	413336
LCS 180-413336/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	413336

Prep Batch: 414345

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-144683-2	MW18 (091522)_24	Dissolved	Water	3005A	414063
180-144683-3	MW18 (091522)_31	Dissolved	Water	3005A	414063
180-144683-4	MW27 (091522)	Dissolved	Water	3005A	414063
180-144683-5	MW14I (091522)	Dissolved	Water	3005A	414063
180-144683-6	MW23 (091522)_40	Dissolved	Water	3005A	414063
180-144683-7	MW23 (091522)_47	Dissolved	Water	3005A	414063
180-144683-8	MW19DI (091522)	Dissolved	Water	3005A	414063
180-144683-9	MW20DI (091522)	Dissolved	Water	3005A	414063
180-144683-10	MW3 (091522)	Dissolved	Water	3005A	414063
180-144683-11	MW16 (091522)	Dissolved	Water	3005A	414063
180-144683-12	DUP02 (091522)	Dissolved	Water	3005A	414063
MB 180-414345/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-414345/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 415186

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-144683-2	MW18 (091522)_24	Dissolved	Water	EPA 6020A	414345

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QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Metals (Continued)

Analysis Batch: 415186 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-144683-3	MW18 (091522)_31	Dissolved	Water	EPA 6020A	414345
180-144683-4	MW27 (091522)	Dissolved	Water	EPA 6020A	414345
180-144683-5	MW14I (091522)	Dissolved	Water	EPA 6020A	414345
180-144683-6	MW23 (091522)_40	Dissolved	Water	EPA 6020A	414345
180-144683-7	MW23 (091522)_47	Dissolved	Water	EPA 6020A	414345
180-144683-8	MW19DI (091522)	Dissolved	Water	EPA 6020A	414345
180-144683-9	MW20DI (091522)	Dissolved	Water	EPA 6020A	414345
180-144683-10	MW3 (091522)	Dissolved	Water	EPA 6020A	414345
180-144683-11	MW16 (091522)	Dissolved	Water	EPA 6020A	414345
180-144683-12	DUP02 (091522)	Dissolved	Water	EPA 6020A	414345
MB 180-414345/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	414345
LCS 180-414345/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	414345

General Chemistry

Analysis Batch: 414563

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-144683-2	MW18 (091522)_24	Total/NA	Water	EPA 9060A	
180-144683-3	MW18 (091522)_31	Total/NA	Water	EPA 9060A	
180-144683-4	MW27 (091522)	Total/NA	Water	EPA 9060A	
180-144683-5	MW14I (091522)	Total/NA	Water	EPA 9060A	
180-144683-6	MW23 (091522)_40	Total/NA	Water	EPA 9060A	
180-144683-7	MW23 (091522)_47	Total/NA	Water	EPA 9060A	
180-144683-8	MW19DI (091522)	Total/NA	Water	EPA 9060A	
180-144683-9	MW20DI (091522)	Total/NA	Water	EPA 9060A	
180-144683-10	MW3 (091522)	Total/NA	Water	EPA 9060A	
180-144683-11	MW16 (091522)	Total/NA	Water	EPA 9060A	
180-144683-12	DUP02 (091522)	Total/NA	Water	EPA 9060A	
MB 180-414563/31	Method Blank	Total/NA	Water	EPA 9060A	
MB 180-414563/5	Method Blank	Total/NA	Water	EPA 9060A	
LCS 180-414563/30	Lab Control Sample	Total/NA	Water	EPA 9060A	
180-144683-3 MS	MW18 (091522)_31	Total/NA	Water	EPA 9060A	
180-144683-11 MS	MW16 (091522)	Total/NA	Water	EPA 9060A	
180-144683-4 DU	MW27 (091522)	Total/NA	Water	EPA 9060A	
180-144683-12 DU	DUP02 (091522)	Total/NA	Water	EPA 9060A	

Chain of Custody Record

Baltimore #201

Client Information		Lab PM Colussy, Jill L	Carrier Tracking No(s) 180-83959-14117.2
Client Contact: Ms. Shwetha Sridharan		E-Mail Jill.Colussy@et.eurofins.com	Page Page 2 of 5
Company: ARCADIS U.S., Inc.		PWSID	
Address: 7550 Teague Road Suite 210		Analysis Requested	
City: Hanover		Field Filtered Sample (Yes or No)	
State, Zip MD, 21076		Perform MS/MSD (Yes or No)	
Phone 302-897-8993(Tel)		Total Number of Containers	
PO # 30005455.0002		Special Instructions/Note:	
WO # 30114618		G - Ammonia H - Ascorbic Acid I - Acetone U - MCAA V - pH 4-5 W - DI Water X - EDTA Y - Trizma Z - other (specify) Other:	
Email: shwetha.sridharan@arcadis.com		180-144683 Chain of Custody	
Project Name: Cytex Havre de Grace MD		Barcode	
Site: Pennsylvania Maryland		180-144683 Chain of Custody	
Sample Identification		Special Instructions/Note:	
Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wastewater, BT=tissue, A=air)
9/14/22	1200	G	W
9/15/22	0810	G	W
9/15/22	0820	G	W
9/15/22	0745	G	W
9/15/22	0830	G	W
9/15/22	0900	G	W
9/15/22	0910	G	W
9/15/22	0930	G	W
9/15/22	0950	G	W
9/15/22	1045	G	W
9/15/22	1200	G	W
Possible Hazard Identification		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
Deliverable Requested: I, II, III, IV, Other (specify)		Special Instructions/QC Requirements:	
Empty Kit Relinquished by:		Method of Shipment:	
Relinquished by: <i>[Signature]</i>		Date/Time: 9/15/22 1450	
Relinquished by: <i>[Signature]</i>		Date/Time: 9/16/22 2015	
Relinquished by: <i>[Signature]</i>		Date/Time: 11/6/22 1700	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Cooler Temperature(s) °C and Other Remarks:	



Chain of Custody Record

Client Information		Lab P#:	Carrier Tracking No(s):	COCC No:					
Client Contact: Andy Feild		Colussy, Jill L		180-83959-14117.1					
Ms. Shwetha Sridharan		E-Mail: Jill.Colussy@et.eurofins.com	State of Origin: Maryland	Page: Page 1 of 5					
Company: ARCADIS U.S., Inc.		PWSID:	Analysis Requested	Job #:					
Address: 7550 Teague Road Suite 210		Due Date Requested: Standard	Preservation Codes:						
City: Hanover		TAT Requested (days): Normal	A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:						
State, Zip: MD, 21076		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No	M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Y - Trizma Z - other (specify)						
Phone: 302-897-8993(Tel)		PO #: 30005455.0002	Special Instructions/Note:						
Email: shwetha.sridharan@arcadis.com		WO #: 30114618	Total Number of Containers						
Project Name: Cytec Havre de Grace MD		Project #: 18017987	MS/MSD						
Site: Maryland		SSOW#:							
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix (W=Water, S=solid, O=wastewater, A=Asbestos, A&H)	Field Temperature (°C)	Analysis Requested	Carrier Tracking No(s)	COCC No	
MW 14 (091422)	9/14/22	0925	G	W	22.3				
MW 22 D (091422)	9/14/22	1000	G	W	22.3	VOCs 8260 D			
MW 13 D (091422)	9/14/22	1055	G	W	22.3				
MW 12 D (091422)	9/14/22	1125	G	W	22.9				
MW 12 S (091422)	9/14/22	1115	G	W	22.3				
MW 28 D (091422)	9/14/22	1105	G	W	22.3				
MW 25 I (091422)	9/14/22	1140	G	W	22.3				
MW -4 (091422)	9/14/22	1150	G	W	22.3				
MW -6 I (091422)	9/14/22	1200	G	W	22.3				
MW 8 S (091422)	9/14/22	1030	G	W	22.3				
MW 8 D (091422)	9/14/22	1040	G	W	22.3				
Possible Hazard Identification					Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)				
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological					<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months				
Deliverable Requested: I, II, III, IV, Other (specify)					Special Instructions/QC Requirements:				
Empty Kit Relinquished by:					Method of Shipment:				
Date/Time:					Date/Time:				
Relinquished by:					Received by: D Watson				
Date/Time:					Date/Time: 9-17-23				
Relinquished by:					Received by: YSS				
Date/Time:					Date/Time:				
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No					Custody Seal No.:				

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 180-144683-1

Login Number: 144683

List Source: Eurofins Pittsburgh

List Number: 1

Creator: Abernathy, Eric L

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Received Trip Blank(s) not listed on COC.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	False	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Appendix E

Data Validation Report

Cytec Solvay Group

DATA REVIEW

Havre de Grace, Maryland

Volatile Organic Compound (VOC), Dissolved Gases, Metals and Miscellaneous

SDGs # 180-144683-1 and 222091648

Analyses Performed By:
TestAmerica Laboratories, Inc.
Pittsburgh, PA
And
Pace Analytical
Gulf Coast

Report # 47333R
Review Level: Tier II
Project: 30114618.02



DATA USABILITY SUMMARY REPORT

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group SDGs# 180-144683-1 and 222091648 for samples collected in association with the Havre de Grace site in Maryland. The review was conducted as a Tier II evaluation and included review of data package completeness as required under USEPA Region III M3 validation. Only analytical data as reported by the laboratory were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

SDGs	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	DG	MET	MISC	
180-144683-1	DUP01 (091422)	180-144683-1	Water	09/14/22	MW8S(091422)	X				
	MW18 (091522)_24	180-144683-2	Water	09/15/22		X		X	X	
	MW18 (091522)_31	180-144683-3	Water	09/15/22		X		X	X	
	MW27 (091522)	180-144683-4	Water	09/15/22		X		X	X	
	MW14I (091522)	180-144683-5	Water	09/15/22		X		X	X	
	MW23 (091522)_40	180-144683-6	Water	09/15/22		X		X	X	
	MW23 (091522)_47	180-144683-7	Water	09/15/22		X		X	X	
	MW19DI (091522)	180-144683-8	Water	09/15/22		X		X	X	
	MW20DI (091522)	180-144683-9	Water	09/15/22		X		X	X	
	MW3 (091522)	180-144683-10	Water	09/15/22		X		X	X	
	MW16 (091522)	180-144683-11	Water	09/15/22		X		X	X	
	DUP02 (091522)	180-144683-12	Water	09/15/22		MW3 (091522)	X		X	X
	MW14(091422)	180-144683-13	Water	09/14/22			X			
	MW22D(091422)	180-144683-14	Water	09/14/22			X			
	MW13D(091422)	180-144683-15	Water	09/14/22			X			
	MW12D(091422)	180-144683-16	Water	09/14/22			X			
	MW12S(091422)	180-144683-17	Water	09/14/22			X			
	MW28D(091422)	180-144683-18	Water	09/14/22			X			
	MW25I(091422)	180-144683-19	Water	09/14/22			X			
	MW-4(091422)	180-144683-20	Water	09/14/22			X			
	MW-6I(091422)	180-144683-21	Water	09/14/22			X			
	MW8S(091422)	180-144683-22	Water	09/14/22			X			
	MW8D(091422)	180-144683-23	Water	09/14/22			X			
	TRIP BLANK	180-144683-24	Water	09/14/22			X			
	TRIP BLANK	180-144683-25	Water	09/14/22			X			
222091648	MW18(091522)-24	22209164801	Water	9/15/22			X			
	MW18(091522)-31	22209164802	Water	9/15/22			X			
	MW27(091522)	22209164803	Water	9/15/22		MW3 (091421)	X			
	MW14I(091522)	22209164804	Water	9/15/22			X			
	MW23(091522)-40	22209164805	Water	9/15/22			X			
	MW23(091522)-47	22209164806	Water	9/15/22			X			
	MW19D1(091522)	22209164807	Water	9/15/22			X			
	MW20D1(091522)	22209164808	Water	9/15/22			X			

DATA USABILITY SUMMARY REPORT

SDGs	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis			
						VOC	DG	MET	MISC
	MW3(091522)	22209164809	Water	9/15/22			X		
	MW16(091522)	22209164810	Water	9/15/22			X		
	DUP02(091522)	22209164812	Water	9/15/22	MW3 (091522)		X		
	FB(091522)	22209164811	Water	9/15/22			X		

Note:

VOC – Volatile Organic Compound

DG – Dissolved gases

MET – Metal analysis includes total and dissolved iron

MISC – Miscellaneous analysis includes sulfate and total organic carbon.

DATA USABILITY SUMMARY REPORT

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

Note:

QA - Quality Assurance

DATA USABILITY SUMMARY REPORT

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8260C and AM20GAX. All samples in this data set were subjected to M3 (Tier III) level data validation for organic compounds, as defined in the USEPA Region III Innovative Approaches to Data Validation (June 1995). Validation was performed following the procedures specified in Region III Modifications to National Functional Guidelines for Organic Data Review (September 1994) and USEPA National Functional Guidelines NFG for Organic Superfund Methods Data Review, EPA-540-R-20-005 (November 2020), with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
 - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
 - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
 - E The compound was quantitated above the calibration range.
 - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
 - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
 - UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
 - JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
 - UB Compound considered non-detect at the listed value due to associated blank contamination.
 - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
 - K The compound was positively identified; however, the associated numerical value is an estimated concentration only and the reported value may be biased high. Actual concentration is expected lower.

DATA USABILITY SUMMARY REPORT

- L The compound was positively identified; however, the associated numerical value is an estimated concentration only and the reported value may be biased low. Actual concentration is expected lower.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the “R” flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA USABILITY SUMMARY REPORT

VOLATILE ORGANIC COMPOUND (VOC) ANALYSIS

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW846 8260C	Water	14 days from collection to analysis	Cool to < 6°C; preserved to a pH of less than 2 s.u.

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

MS/MSD analysis was performed on sample MW23 (091522)_40 and MW12D(091422). The MS/MSD analysis exhibited acceptable recoveries and RPDs.

DATA USABILITY SUMMARY REPORT

5. Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) Analyses

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery and RPD within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries and RPDs.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (ug/L)	Duplicate Result (ug/L)	RPD
MW-8S (091422) / DUP-01 (091422)	All target compounds	U	U	AC
MW-3 (091522) / DUP-02 (091522)	1,2-Dichloroethane	34	38	AC
	Methylene Chloride	27	31	AC
	Vinyl chloride	91	100	9%

Notes:

U – Non detect

AC – Acceptable

The calculated RPDs and differences between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

Sample results associated with compound that exhibited a concentration greater than the linear range of the instrument calibration are summarized in the following table.

Sample IDs	Compound	Original Analysis	Diluted Analysis	Reported Analysis
MW19DI (091522)	1,2-Dichloroethane	--	52	52 D
MW-6I(091422)	1,2-Dichloroethane	--	510	510 D

Note: In the instance where both the original analysis and the diluted analysis sample results exhibited a concentration greater than and/or less than the calibration linear range of the instrument; the sample result exhibiting the greatest concentration will be reported as the final result.

Sample results associated with compounds exhibiting concentrations greater than the linear range are qualified as documented in the table below when reported as the final reported sample result.

Reported Sample Results	Qualification
Diluted sample result within calibration range	D
Diluted sample result less than the calibration range	DJ
Diluted sample result greater than the calibration range	EDJ

DATA USABILITY SUMMARY REPORT

Reported Sample Results	Qualification
Original sample result greater than the calibration range	EJ

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA USABILITY SUMMARY REPORT

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW846 8260C	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
C. Trip blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate (LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Lab Duplicate (RPD)	X				X
Field Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	

Notes:

%R Percent recovery

RPD Relative percent difference

DATA USABILITY SUMMARY REPORT

DISSOLVED GASES ANALYSIS

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
AM20GAX	Water	14 days from collection to analysis	Cool to <6°C; preserved to a pH of greater than 10 s.u.

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the detection limit (DL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the DL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

MS/MSD analysis was not performed on samples from this SDG.

4. Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) Analyses

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery and RPD within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries and RPDs within the control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent

DATA USABILITY SUMMARY REPORT

sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (ug/L)	Duplicate Result (ug/L)	RPD
MW-3 (091522) / DUP-02 (091522)	Ethane	0.93 J	1.0	AC
	Ethene	10	11	10%
	Methane	14	18	AC

Notes:

AC – Acceptable

The calculated RPDs and differences between the parent sample and field duplicate were acceptable.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA USABILITY SUMMARY REPORT

DATA VALIDATION CHECKLIST FOR DISSOLVED GASES

DISSOLVED GASES: AM20GAX	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X		X	
C. Trip blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate (LCSD) %R		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate (MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Lab Duplicate (RPD)	X				X
Field Duplicate (RPD)		X		X	
Dilution Factor		X		X	

Notes:

%R Percent recovery

RPD Relative percent difference

DATA USABILITY SUMMARY REPORT

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 6020A, 9056A and 9060A. Data were reviewed in accordance with USEPA National Functional Guidelines NFG for Inorganic Superfund Methods Data Review, EPA-540-R-20-006 (November 2020), with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, OSWER 9240.1-05A-P, October 2004, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
 - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
 - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
 - E The reported value is estimated due to the presence of interference.
 - N Spiked sample recovery is not within control limits.
 - * Duplicate analysis is not within control limits.
- Validation Qualifiers
 - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
 - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
 - UB Analyte is considered non-detect at the listed value due to associated blank contamination.
 - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA USABILITY SUMMARY REPORT

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6020B	Water	180 days from collection to analysis	Cool to < 6 C; pH <2 with HNO3

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Matrix Spike (MS)/ Matrix Spike Duplicate (MS/MSD) / Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The relative percent difference (RPD) between the MS and MSD results must be no greater than the established acceptance limit of 20%. The MS/MSD control limits do not apply for MS/MSDs performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD spiking concentration by a factor of four or greater. In instance where this is true, the data will not be qualified and the laboratory qualifier will be removed. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

The MS/MSD analysis was not performed on sample from this SDG.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

The laboratory duplicate was not performed on sample from this SDG.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent

DATA USABILITY SUMMARY REPORT

sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Analyte	Sample Result (ug/L)	Duplicate Result (ug/L)	RPD
MW-3 (091522) / DUP-02 (091522)	Iron, Total	1900	4800	87%
	Iron, Dissolved	U	U	AC

Notes:

U – Non detect

AC – Acceptable

The analyte Iron, Total associated with samples MW-3 (091522) / DUP-02 (091522) exhibited a field duplicate RPD greater than the control limit. The associated sample results were qualified as estimated.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

All LCS recoveries were within control limits.

6. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

The serial dilution analysis was not performed on a samples from this SDG.

7. General Assessment – Total vs. Dissolved

When the dissolved concentration exceeded the associated total concentration, and both results were five times greater than the LOQ, then the %D between the total and dissolved concentrations must be less than 10%.

The calculated %D between the total and the dissolved sample results were within the control limit.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA USABILITY SUMMARY REPORT

DATA VALIDATION CHECKLIST FOR METAL

METALS; SW-846 6020B	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)					
Atomic Absorption – Manual Cold Vapor (CV)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Instrument Blanks		X		X	
B. Method Blanks		X		X	
C. Equipment/Field Blanks		X		X	
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate (LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate (MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Lab Duplicate (RPD)	X				X
Field Duplicate (RPD)		X	X		
ICP Serial Dilution %D	X				X
Total vs. Dissolved		X		X	
Reporting Limit Verification		X		X	

Notes:

%R = Percent recovery

RPD = Relative percent difference

DATA USABILITY SUMMARY REPORT

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Sulfate by SM 9056A	Water	28 days from collection to analysis	Cool to <6 °C.
Total Organic Carbon (TOC) by SM 9060A	Water	28 days from collection to analysis	Cool to <6 °C; pH of <2

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Matrix Spike (MS)/ Matrix Spike Duplicate (MSD) / Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

MS analysis was performed on sample MW18 (091522)_31 and MW16 (091522) for the Total organic carbon analysis. The MS analysis exhibited acceptable recoveries.

MS/MSD analysis was performed on sample MW18 (091522)_24 and DUP02 (091522) for the Sulfate analysis. The MS/MSD analysis exhibited acceptable recoveries and RPDs with the exceptions noted in the table below.

Sample ID	Analyte	MS Recovery	MSD Recovery
MW18 (091522)_24	Sulfate	<LL but >30%	<LL but >30%

Note:

LL – Lower control limit

DATA USABILITY SUMMARY REPORT

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration.	Detect	No Action
	Non-detect	

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate analysis was performed on samples MW27 (091522) and DUP02 (091522). The laboratory duplicate analysis exhibited acceptable RPDs.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Analyte	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
MW-3 (091522) / DUP-02 (091522)	Sulfate	2.1	2.1	AC
	Total Organic Carbon	0.94 J	0.91 J	AC

Notes:

AC – Acceptable

The calculated differences between the parent sample and field duplicate were acceptable.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

DATA USABILITY SUMMARY REPORT

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA USABILITY SUMMARY REPORT

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: SM 9056A and SM 9060A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate (LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate (MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Lab Duplicate (RPD)		X		X	
Field Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%R - percent recovery

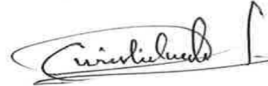
RPD - relative percent difference,

%D – difference

DATA USABILITY SUMMARY REPORT

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:



DATE: October 26, 2022

PEER REVIEW: Dennis Capria

DATE: November 9, 2022

**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**




Eurofins Pittsburgh

301 Alpha Drive RIDC Park
Pittsburgh, PA 15238
Phone: 412-963-7058 Fax: 412-963-2468

Chain of Custody Record

Williamore
#201

eurofins Environment Testing America

Client Information		Sampler: <i>Andy Feild</i>		Lab PM: Colussy, Jill L		Carrier Tracking No(s):		COC No: 180-83959-14117.2			
Client Contact: Ms. Shwetha Sridharan		Phone: <i>443 354 0186</i>		E-Mail: Jill.Colussy@et.eurofinsus.com		State of Origin: <i>Maryland</i>		Page: Page 2 of 5			
Company: ARCADIS U.S., Inc.		PWSID:		Analysis Requested							
Address: 7550 Teague Road Suite 210		Due Date Requested: <i>Standard</i>		Field Filtered Sample (Yes or No) Residual MS/MSID (Yes or No)		Total Number of Containers		<ul style="list-style-type: none"> G - Ammonium H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA U - Acetone V - MCAA W - pH 4-5 Y - Trizma Z - other (specify) 			
City: Hanover		TAT Requested (days): <i>Normal</i>									
State, Zip: MD, 21076		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No									
Phone: 302-897-8993(Tel)		PO #: 30005455.0002.									
Email: shwetha.sridharan@arcadis.com		WO #: 30114618		VOCs 8260D 300.ORGFM - Sulfate 6010B - dissolved Iron 6020B - Total Iron 9060A TOC		180-144683 Chain of Custody					
Project Name: Cytec Havre de Grace MD		Project #: 18017987									
Site: <i>Maryland</i>		SSOW#:		Field Filtered Sample (Yes or No) Residual MS/MSID (Yes or No)		Total Number of Containers		Other:			
Sample Identification		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)		Residual MS/MSID (Yes or No)		Special Instructions/Note:	
				Preservation Code:							
<i>DUP01 (091422)</i>		<i>9/14/22</i>	<i>1200</i>	<i>G</i>	<i>W</i>	<i>Y</i>	<i>N</i>	<i>3</i>			
<i>MW18 (091522) - 24</i>		<i>9/15/22</i>	<i>0810</i>	<i>G</i>	<i>W</i>	<i>Y</i>	<i>N</i>	<i>3</i>	<i>1</i>	<i>1</i>	<i>2</i>
<i>MW18 (091522) - 31</i>		<i>9/15/22</i>	<i>0820</i>	<i>G</i>	<i>W</i>	<i>Y</i>	<i>N</i>	<i>3</i>	<i>1</i>	<i>1</i>	<i>2</i>
<i>MW27 (091522)</i>		<i>9/15/22</i>	<i>0745</i>	<i>G</i>	<i>W</i>	<i>Y</i>	<i>N</i>	<i>3</i>	<i>1</i>	<i>1</i>	<i>2</i>
<i>MW14I (091522)</i>		<i>9/15/22</i>	<i>0830</i>	<i>G</i>	<i>W</i>	<i>Y</i>	<i>N</i>	<i>3</i>	<i>1</i>	<i>1</i>	<i>2</i>
<i>MW23 (091522) - 40</i>		<i>9/15/22</i>	<i>0900</i>	<i>G</i>	<i>W</i>	<i>Y</i>	<i>N</i>	<i>3</i>	<i>1</i>	<i>1</i>	<i>2</i>
<i>MW23 (091522) - 47</i>		<i>9/15/22</i>	<i>0910</i>	<i>G</i>	<i>W</i>	<i>Y</i>	<i>N</i>	<i>3</i>	<i>1</i>	<i>1</i>	<i>2</i>
<i>MW19DI (091522)</i>		<i>9/15/22</i>	<i>0930</i>	<i>G</i>	<i>W</i>	<i>Y</i>	<i>N</i>	<i>3</i>	<i>1</i>	<i>1</i>	<i>2</i>
<i>MW20DI (091522)</i>		<i>9/15/22</i>	<i>0950</i>	<i>G</i>	<i>W</i>	<i>Y</i>	<i>N</i>	<i>3</i>	<i>1</i>	<i>1</i>	<i>2</i>
<i>MW3 (091522)</i>		<i>9/15/22</i>	<i>1045</i>	<i>G</i>	<i>W</i>	<i>Y</i>	<i>N</i>	<i>3</i>	<i>1</i>	<i>1</i>	<i>2</i>
<i>MW16 (091522)</i>		<i>9/15/22</i>	<i>1200</i>	<i>G</i>	<i>W</i>	<i>Y</i>	<i>N</i>	<i>3</i>	<i>1</i>	<i>1</i>	<i>2</i>
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)					
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological						<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
Deliverable Requested: I, II, III, IV, Other (specify)						Special Instructions/QC Requirements:					
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:					
<i>[Signature]</i>		<i>9/15/22</i>		<i>1450</i>		<i>ANA</i>					
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
<i>[Signature]</i>		<i>9/16/22</i>		<i>3015</i>		<i>ANA</i>		<i>[Signature]</i>		<i>ET</i>	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
<i>[Signature]</i>		<i>11/6/22</i>		<i>1700</i>		<i>ET</i>		<i>[Signature]</i>		<i>BPTA</i>	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:							

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10/17/2022



Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: DUP01 (091422)

Lab Sample ID: 180-144683-1

Date Collected: 09/14/22 12:00

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 10:44	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/22/22 10:44	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 10:44	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 10:44	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 10:44	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 10:44	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 10:44	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 10:44	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 10:44	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 10:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		26 - 156					09/22/22 10:44	1
4-Bromofluorobenzene (Surr)	99		36 - 124					09/22/22 10:44	1
Dibromofluoromethane (Surr)	84		46 - 149					09/22/22 10:44	1
Toluene-d8 (Surr)	104		40 - 146					09/22/22 10:44	1

Client Sample ID: MW18 (091522)_24

Lab Sample ID: 180-144683-2

Date Collected: 09/15/22 08:10

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 16:36	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/22/22 16:36	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 16:36	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 16:36	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 16:36	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 16:36	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 16:36	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 16:36	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 16:36	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 16:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		26 - 156					09/22/22 16:36	1
4-Bromofluorobenzene (Surr)	98		36 - 124					09/22/22 16:36	1
Dibromofluoromethane (Surr)	89		46 - 149					09/22/22 16:36	1
Toluene-d8 (Surr)	102		40 - 146					09/22/22 16:36	1

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	14	F1 J	1.0	0.76	mg/L			09/20/22 18:06	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	35000		50	28	ug/L		09/26/22 11:10	10/04/22 18:22	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	33	J	50	28	ug/L		10/06/22 16:00	10/14/22 12:50	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW18 (091522)_24

Lab Sample ID: 180-144683-2

Date Collected: 09/15/22 08:10

Matrix: Water

Date Received: 09/17/22 08:55

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad (SW846 EPA 9060A)	4.9		1.0	0.51	mg/L			10/08/22 10:53	1

Client Sample ID: MW18 (091522)_31

Lab Sample ID: 180-144683-3

Date Collected: 09/15/22 08:20

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 17:00	1
1,2-Dichloroethane	1.0		1.0	0.57	ug/L			09/22/22 17:00	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 17:00	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 17:00	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 17:00	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 17:00	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 17:00	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 17:00	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 17:00	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 17:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		26 - 156		09/22/22 17:00	1
4-Bromofluorobenzene (Surr)	91		36 - 124		09/22/22 17:00	1
Dibromofluoromethane (Surr)	87		46 - 149		09/22/22 17:00	1
Toluene-d8 (Surr)	97		40 - 146		09/22/22 17:00	1

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	14		1.0	0.76	mg/L			09/20/22 18:50	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	16000		50	28	ug/L		09/26/22 11:10	10/04/22 18:25	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	63		50	28	ug/L		10/06/22 16:00	10/14/22 12:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad (SW846 EPA 9060A)	4.3		1.0	0.51	mg/L			10/08/22 12:59	1

Client Sample ID: MW27 (091522)

Lab Sample ID: 180-144683-4

Date Collected: 09/15/22 07:45

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	2.2		1.0	0.45	ug/L			09/22/22 17:23	1
1,2-Dichloroethane	3.0		1.0	0.57	ug/L			09/22/22 17:23	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 17:23	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW27 (091522)

Lab Sample ID: 180-144683-4

Date Collected: 09/15/22 07:45

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	5.4		1.0	0.90	ug/L			09/22/22 17:23	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 17:23	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 17:23	1
Trichloroethene	5.9		1.0	0.69	ug/L			09/22/22 17:23	1
Vinyl chloride	5.7		1.0	0.41	ug/L			09/22/22 17:23	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 17:23	1
cis-1,2-Dichloroethene	4.5		1.0	0.71	ug/L			09/22/22 17:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		26 - 156		09/22/22 17:23	1
4-Bromofluorobenzene (Surr)	95		36 - 124		09/22/22 17:23	1
Dibromofluoromethane (Surr)	86		46 - 149		09/22/22 17:23	1
Toluene-d8 (Surr)	100		40 - 146		09/22/22 17:23	1

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	2.3		1.0	0.76	mg/L			09/20/22 19:05	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	22000		50	28	ug/L		09/26/22 11:10	10/04/22 18:29	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	530		50	28	ug/L		10/06/22 16:00	10/14/22 12:56	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad (SW846 EPA 9060A)	0.68	J	1.0	0.51	mg/L			10/08/22 13:46	1

Client Sample ID: MW14I (091522)

Lab Sample ID: 180-144683-5

Date Collected: 09/15/22 08:30

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 17:47	1
1,2-Dichloroethane	5.3		1.0	0.57	ug/L			09/22/22 17:47	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 17:47	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 17:47	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 17:47	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 17:47	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 17:47	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 17:47	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 17:47	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 17:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		26 - 156		09/22/22 17:47	1
4-Bromofluorobenzene (Surr)	98		36 - 124		09/22/22 17:47	1
Dibromofluoromethane (Surr)	87		46 - 149		09/22/22 17:47	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW14I (091522)

Lab Sample ID: 180-144683-5

Date Collected: 09/15/22 08:30

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	103		40 - 146		09/22/22 17:47	1

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	54		1.0	0.76	mg/L			09/20/22 19:20	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	20000		50	28	ug/L		09/26/22 11:10	10/04/22 18:32	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		50	28	ug/L		10/06/22 16:00	10/14/22 13:00	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad (SW846 EPA 9060A)	1.9		1.0	0.51	mg/L			10/08/22 14:34	1

Client Sample ID: MW23 (091522)_40

Lab Sample ID: 180-144683-6

Date Collected: 09/15/22 09:00

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/23/22 09:47	1
1,2-Dichloroethane	11		1.0	0.57	ug/L			09/23/22 09:47	1
Chloroform	ND		1.0	0.60	ug/L			09/23/22 09:47	1
Chloroethane	2.0		1.0	0.90	ug/L			09/23/22 09:47	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/23/22 09:47	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/23/22 09:47	1
Trichloroethene	ND		1.0	0.69	ug/L			09/23/22 09:47	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/23/22 09:47	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/23/22 09:47	1
cis-1,2-Dichloroethene	0.86	J	1.0	0.71	ug/L			09/23/22 09:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		26 - 156		09/23/22 09:47	1
4-Bromofluorobenzene (Surr)	88		36 - 124		09/23/22 09:47	1
Dibromofluoromethane (Surr)	97		46 - 149		09/23/22 09:47	1
Toluene-d8 (Surr)	102		40 - 146		09/23/22 09:47	1

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	57		1.0	0.76	mg/L			09/20/22 19:35	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	10000		50	28	ug/L		09/26/22 11:10	10/04/22 18:36	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW23 (091522)_40

Lab Sample ID: 180-144683-6

Date Collected: 09/15/22 09:00

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		50	28	ug/L		10/06/22 16:00	10/14/22 13:03	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad (SW846 EPA 9060A)	0.96	J	1.0	0.51	mg/L			10/08/22 14:58	1

Client Sample ID: MW23 (091522)_47

Lab Sample ID: 180-144683-7

Date Collected: 09/15/22 09:10

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/23/22 11:13	1
1,2-Dichloroethane	9.5		1.0	0.57	ug/L			09/23/22 11:13	1
Chloroform	ND		1.0	0.60	ug/L			09/23/22 11:13	1
Chloroethane	3.0		1.0	0.90	ug/L			09/23/22 11:13	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/23/22 11:13	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/23/22 11:13	1
Trichloroethene	ND		1.0	0.69	ug/L			09/23/22 11:13	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/23/22 11:13	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/23/22 11:13	1
cis-1,2-Dichloroethene	0.89	J	1.0	0.71	ug/L			09/23/22 11:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		26 - 156		09/23/22 11:13	1
4-Bromofluorobenzene (Surr)	87		36 - 124		09/23/22 11:13	1
Dibromofluoromethane (Surr)	92		46 - 149		09/23/22 11:13	1
Toluene-d8 (Surr)	102		40 - 146		09/23/22 11:13	1

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	59		1.0	0.76	mg/L			09/20/22 19:50	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	12000		50	28	ug/L		09/26/22 11:10	10/04/22 18:39	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	47	J	50	28	ug/L		10/06/22 16:00	10/14/22 13:06	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad (SW846 EPA 9060A)	0.92	J	1.0	0.51	mg/L			10/08/22 15:22	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW19DI (091522)

Lab Sample ID: 180-144683-8

Date Collected: 09/15/22 09:30

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/23/22 14:47	1
Chloroform	ND		1.0	0.60	ug/L			09/23/22 14:47	1
Chloroethane	ND		1.0	0.90	ug/L			09/23/22 14:47	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/23/22 14:47	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/23/22 14:47	1
Trichloroethene	ND		1.0	0.69	ug/L			09/23/22 14:47	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/23/22 14:47	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/23/22 14:47	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/23/22 14:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		26 - 156					09/23/22 14:47	1
4-Bromofluorobenzene (Surr)	74		36 - 124					09/23/22 14:47	1
Dibromofluoromethane (Surr)	83		46 - 149					09/23/22 14:47	1
Toluene-d8 (Surr)	95		40 - 146					09/23/22 14:47	1

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane	52	D	5.0	2.9	ug/L			09/23/22 16:34	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		26 - 156					09/23/22 16:34	5
4-Bromofluorobenzene (Surr)	82		36 - 124					09/23/22 16:34	5
Dibromofluoromethane (Surr)	88		46 - 149					09/23/22 16:34	5
Toluene-d8 (Surr)	100		40 - 146					09/23/22 16:34	5

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	29		1.0	0.76	mg/L			09/20/22 20:34	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	22000		50	28	ug/L		09/29/22 12:30	10/04/22 14:31	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		50	28	ug/L		10/06/22 16:00	10/14/22 13:10	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad (SW846 EPA 9060A)	1.0		1.0	0.51	mg/L			10/08/22 15:46	1

Client Sample ID: MW20DI (091522)

Lab Sample ID: 180-144683-9

Date Collected: 09/15/22 09:50

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/23/22 12:17	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/23/22 12:17	1
Chloroform	ND		1.0	0.60	ug/L			09/23/22 12:17	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW20DI (091522)

Lab Sample ID: 180-144683-9

Date Collected: 09/15/22 09:50

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	ND		1.0	0.90	ug/L			09/23/22 12:17	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/23/22 12:17	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/23/22 12:17	1
Trichloroethene	ND		1.0	0.69	ug/L			09/23/22 12:17	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/23/22 12:17	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/23/22 12:17	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/23/22 12:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		26 - 156		09/23/22 12:17	1
4-Bromofluorobenzene (Surr)	89		36 - 124		09/23/22 12:17	1
Dibromofluoromethane (Surr)	94		46 - 149		09/23/22 12:17	1
Toluene-d8 (Surr)	101		40 - 146		09/23/22 12:17	1

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	17		1.0	0.76	mg/L			09/20/22 20:49	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	36000		50	28	ug/L		09/29/22 12:30	10/04/22 14:35	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		50	28	ug/L		10/06/22 16:00	10/14/22 13:13	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad (SW846 EPA 9060A)	0.99	J	1.0	0.51	mg/L			10/08/22 16:10	1

Client Sample ID: MW3 (091522)

Lab Sample ID: 180-144683-10

Date Collected: 09/15/22 10:45

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		10	4.5	ug/L			09/23/22 11:34	10
1,2-Dichloroethane	34		10	5.7	ug/L			09/23/22 11:34	10
Chloroform	ND		10	6.0	ug/L			09/23/22 11:34	10
Chloroethane	ND		10	9.0	ug/L			09/23/22 11:34	10
Methylene Chloride	27		10	8.9	ug/L			09/23/22 11:34	10
Tetrachloroethene	ND		10	4.7	ug/L			09/23/22 11:34	10
Trichloroethene	ND		10	6.9	ug/L			09/23/22 11:34	10
Vinyl chloride	91		10	4.1	ug/L			09/23/22 11:34	10
Carbon disulfide	ND		10	8.8	ug/L			09/23/22 11:34	10
cis-1,2-Dichloroethene	ND		10	7.1	ug/L			09/23/22 11:34	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		26 - 156		09/23/22 11:34	10
4-Bromofluorobenzene (Surr)	85		36 - 124		09/23/22 11:34	10
Dibromofluoromethane (Surr)	87		46 - 149		09/23/22 11:34	10

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW3 (091522)

Lab Sample ID: 180-144683-10

Date Collected: 09/15/22 10:45

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	106		40 - 146		09/23/22 11:34	10

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	2.1		1.0	0.76	mg/L			09/20/22 21:04	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	1900	J	50	28	ug/L		09/29/22 12:30	10/04/22 14:38	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		50	28	ug/L		10/06/22 16:00	10/14/22 13:16	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad (SW846 EPA 9060A)	0.94	J	1.0	0.51	mg/L			10/08/22 16:33	1

Client Sample ID: MW16 (091522)

Lab Sample ID: 180-144683-11

Date Collected: 09/15/22 12:00

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/23/22 11:56	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/23/22 11:56	1
Chloroform	ND		1.0	0.60	ug/L			09/23/22 11:56	1
Chloroethane	ND		1.0	0.90	ug/L			09/23/22 11:56	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/23/22 11:56	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/23/22 11:56	1
Trichloroethene	3.7		1.0	0.69	ug/L			09/23/22 11:56	1
Vinyl chloride	4.6		1.0	0.41	ug/L			09/23/22 11:56	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/23/22 11:56	1
cis-1,2-Dichloroethene	6.7		1.0	0.71	ug/L			09/23/22 11:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		26 - 156		09/23/22 11:56	1
4-Bromofluorobenzene (Surr)	89		36 - 124		09/23/22 11:56	1
Dibromofluoromethane (Surr)	96		46 - 149		09/23/22 11:56	1
Toluene-d8 (Surr)	99		40 - 146		09/23/22 11:56	1

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	6.8		1.0	0.76	mg/L			09/20/22 21:19	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	9900		50	28	ug/L		09/29/22 12:30	10/04/22 14:42	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytex Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW16 (091522)

Lab Sample ID: 180-144683-11

Date Collected: 09/15/22 12:00

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		50	28	ug/L		10/06/22 16:00	10/14/22 13:26	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad (SW846 EPA 9060A)	1.3		1.0	0.51	mg/L			10/08/22 18:39	1

Client Sample ID: DUP02 (091522)

Lab Sample ID: 180-144683-12

Date Collected: 09/15/22 12:00

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		5.0	2.3	ug/L			09/22/22 15:09	5
1,2-Dichloroethane	38		5.0	2.9	ug/L			09/22/22 15:09	5
Chloroform	ND		5.0	3.0	ug/L			09/22/22 15:09	5
Chloroethane	ND		5.0	4.5	ug/L			09/22/22 15:09	5
Methylene Chloride	31		5.0	4.4	ug/L			09/22/22 15:09	5
Tetrachloroethene	ND		5.0	2.3	ug/L			09/22/22 15:09	5
Trichloroethene	ND		5.0	3.4	ug/L			09/22/22 15:09	5
Vinyl chloride	100		5.0	2.0	ug/L			09/22/22 15:09	5
Carbon disulfide	ND		5.0	4.4	ug/L			09/22/22 15:09	5
cis-1,2-Dichloroethene	ND		5.0	3.5	ug/L			09/22/22 15:09	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		26 - 156		09/22/22 15:09	5
4-Bromofluorobenzene (Surr)	88		36 - 124		09/22/22 15:09	5
Dibromofluoromethane (Surr)	92		46 - 149		09/22/22 15:09	5
Toluene-d8 (Surr)	108		40 - 146		09/22/22 15:09	5

Method: SW846 EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	2.1		1.0	0.76	mg/L			09/20/22 21:34	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	4800	J	50	28	ug/L		09/27/22 13:15	10/05/22 18:58	1

Method: SW846 EPA 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		50	28	ug/L		10/06/22 16:00	10/14/22 13:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad (SW846 EPA 9060A)	0.91	J	1.0	0.51	mg/L			10/08/22 19:27	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW14(091422)

Lab Sample ID: 180-144683-13

Date Collected: 09/14/22 09:25

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 19:48	1
1,2-Dichloroethane	3.0		1.0	0.57	ug/L			09/22/22 19:48	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 19:48	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 19:48	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 19:48	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 19:48	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 19:48	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 19:48	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 19:48	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 19:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		26 - 156					09/22/22 19:48	1
4-Bromofluorobenzene (Surr)	87		36 - 124					09/22/22 19:48	1
Dibromofluoromethane (Surr)	85		46 - 149					09/22/22 19:48	1
Toluene-d8 (Surr)	103		40 - 146					09/22/22 19:48	1

Client Sample ID: MW22D(091422)

Lab Sample ID: 180-144683-14

Date Collected: 09/14/22 10:00

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/23/22 10:09	1
1,2-Dichloroethane	0.65	J	1.0	0.57	ug/L			09/23/22 10:09	1
Chloroform	ND		1.0	0.60	ug/L			09/23/22 10:09	1
Chloroethane	ND		1.0	0.90	ug/L			09/23/22 10:09	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/23/22 10:09	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/23/22 10:09	1
Trichloroethene	ND		1.0	0.69	ug/L			09/23/22 10:09	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/23/22 10:09	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/23/22 10:09	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/23/22 10:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		26 - 156					09/23/22 10:09	1
4-Bromofluorobenzene (Surr)	87		36 - 124					09/23/22 10:09	1
Dibromofluoromethane (Surr)	89		46 - 149					09/23/22 10:09	1
Toluene-d8 (Surr)	108		40 - 146					09/23/22 10:09	1

Client Sample ID: MW13D(091422)

Lab Sample ID: 180-144683-15

Date Collected: 09/14/22 10:55

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 16:35	1
1,2-Dichloroethane	22		1.0	0.57	ug/L			09/22/22 16:35	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 16:35	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 16:35	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 16:35	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW13D(091422)

Lab Sample ID: 180-144683-15

Date Collected: 09/14/22 10:55

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	0.79	J	1.0	0.47	ug/L			09/22/22 16:35	1
Trichloroethene	3.0		1.0	0.69	ug/L			09/22/22 16:35	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 16:35	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 16:35	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 16:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		26 - 156		09/22/22 16:35	1
4-Bromofluorobenzene (Surr)	85		36 - 124		09/22/22 16:35	1
Dibromofluoromethane (Surr)	85		46 - 149		09/22/22 16:35	1
Toluene-d8 (Surr)	98		40 - 146		09/22/22 16:35	1

Client Sample ID: MW12D(091422)

Lab Sample ID: 180-144683-16

Date Collected: 09/14/22 11:25

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 09:34	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/22/22 09:34	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 09:34	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 09:34	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 09:34	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 09:34	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 09:34	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 09:34	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 09:34	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 09:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		26 - 156		09/22/22 09:34	1
4-Bromofluorobenzene (Surr)	104		36 - 124		09/22/22 09:34	1
Dibromofluoromethane (Surr)	89		46 - 149		09/22/22 09:34	1
Toluene-d8 (Surr)	107		40 - 146		09/22/22 09:34	1

Client Sample ID: MW12S(091422)

Lab Sample ID: 180-144683-17

Date Collected: 09/14/22 11:15

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 16:56	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/22/22 16:56	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 16:56	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 16:56	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 16:56	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 16:56	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 16:56	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 16:56	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 16:56	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 16:56	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW12S(091422)

Date Collected: 09/14/22 11:15

Date Received: 09/17/22 08:55

Lab Sample ID: 180-144683-17

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		26 - 156		09/22/22 16:56	1
4-Bromofluorobenzene (Surr)	84		36 - 124		09/22/22 16:56	1
Dibromofluoromethane (Surr)	85		46 - 149		09/22/22 16:56	1
Toluene-d8 (Surr)	101		40 - 146		09/22/22 16:56	1

Client Sample ID: MW28D(091422)

Date Collected: 09/14/22 11:05

Date Received: 09/17/22 08:55

Lab Sample ID: 180-144683-18

Matrix: Water

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		50	23	ug/L			09/22/22 17:18	50
1,2-Dichloroethane	1600		50	29	ug/L			09/22/22 17:18	50
Chloroform	ND		50	30	ug/L			09/22/22 17:18	50
Chloroethane	ND		50	45	ug/L			09/22/22 17:18	50
Methylene Chloride	ND		50	44	ug/L			09/22/22 17:18	50
Tetrachloroethene	ND		50	23	ug/L			09/22/22 17:18	50
Trichloroethene	ND		50	34	ug/L			09/22/22 17:18	50
Vinyl chloride	ND		50	20	ug/L			09/22/22 17:18	50
Carbon disulfide	ND		50	44	ug/L			09/22/22 17:18	50
cis-1,2-Dichloroethene	ND		50	35	ug/L			09/22/22 17:18	50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		26 - 156		09/22/22 17:18	50
4-Bromofluorobenzene (Surr)	83		36 - 124		09/22/22 17:18	50
Dibromofluoromethane (Surr)	84		46 - 149		09/22/22 17:18	50
Toluene-d8 (Surr)	103		40 - 146		09/22/22 17:18	50

Client Sample ID: MW25I(091422)

Date Collected: 09/14/22 11:40

Date Received: 09/17/22 08:55

Lab Sample ID: 180-144683-19

Matrix: Water

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	0.61	J	1.0	0.45	ug/L			09/22/22 17:39	1
1,2-Dichloroethane	2.0		1.0	0.57	ug/L			09/22/22 17:39	1
Chloroform	0.76	J	1.0	0.60	ug/L			09/22/22 17:39	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 17:39	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 17:39	1
Tetrachloroethene	0.67	J	1.0	0.47	ug/L			09/22/22 17:39	1
Trichloroethene	6.1		1.0	0.69	ug/L			09/22/22 17:39	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 17:39	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 17:39	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 17:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		26 - 156		09/22/22 17:39	1
4-Bromofluorobenzene (Surr)	87		36 - 124		09/22/22 17:39	1
Dibromofluoromethane (Surr)	85		46 - 149		09/22/22 17:39	1
Toluene-d8 (Surr)	102		40 - 146		09/22/22 17:39	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW-4(091422)

Lab Sample ID: 180-144683-20

Date Collected: 09/14/22 11:50

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 18:01	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/22/22 18:01	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 18:01	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 18:01	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 18:01	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 18:01	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 18:01	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 18:01	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 18:01	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 18:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		26 - 156					09/22/22 18:01	1
4-Bromofluorobenzene (Surr)	89		36 - 124					09/22/22 18:01	1
Dibromofluoromethane (Surr)	89		46 - 149					09/22/22 18:01	1
Toluene-d8 (Surr)	95		40 - 146					09/22/22 18:01	1

Client Sample ID: MW-6I(091422)

Lab Sample ID: 180-144683-21

Date Collected: 09/14/22 12:00

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		5.0	2.3	ug/L			09/22/22 15:30	5
Chloroform	ND		5.0	3.0	ug/L			09/22/22 15:30	5
Chloroethane	ND		5.0	4.5	ug/L			09/22/22 15:30	5
Methylene Chloride	ND		5.0	4.4	ug/L			09/22/22 15:30	5
Tetrachloroethene	ND		5.0	2.3	ug/L			09/22/22 15:30	5
Trichloroethene	9.7		5.0	3.4	ug/L			09/22/22 15:30	5
Vinyl chloride	ND		5.0	2.0	ug/L			09/22/22 15:30	5
Carbon disulfide	ND		5.0	4.4	ug/L			09/22/22 15:30	5
cis-1,2-Dichloroethene	3.7	J	5.0	3.5	ug/L			09/22/22 15:30	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		26 - 156					09/22/22 15:30	5
4-Bromofluorobenzene (Surr)	87		36 - 124					09/22/22 15:30	5
Dibromofluoromethane (Surr)	93		46 - 149					09/22/22 15:30	5
Toluene-d8 (Surr)	94		40 - 146					09/22/22 15:30	5

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane	510	D	50	29	ug/L			09/22/22 20:31	50
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		26 - 156					09/22/22 20:31	50
4-Bromofluorobenzene (Surr)	91		36 - 124					09/22/22 20:31	50
Dibromofluoromethane (Surr)	89		46 - 149					09/22/22 20:31	50
Toluene-d8 (Surr)	107		40 - 146					09/22/22 20:31	50

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: MW8S(091422)

Lab Sample ID: 180-144683-22

Date Collected: 09/14/22 10:30

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 18:22	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/22/22 18:22	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 18:22	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 18:22	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 18:22	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 18:22	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 18:22	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 18:22	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 18:22	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 18:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		26 - 156					09/22/22 18:22	1
4-Bromofluorobenzene (Surr)	89		36 - 124					09/22/22 18:22	1
Dibromofluoromethane (Surr)	92		46 - 149					09/22/22 18:22	1
Toluene-d8 (Surr)	97		40 - 146					09/22/22 18:22	1

Client Sample ID: MW8D(091422)

Lab Sample ID: 180-144683-23

Date Collected: 09/14/22 10:40

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 18:43	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/22/22 18:43	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 18:43	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 18:43	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 18:43	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 18:43	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 18:43	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 18:43	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 18:43	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 18:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		26 - 156					09/22/22 18:43	1
4-Bromofluorobenzene (Surr)	91		36 - 124					09/22/22 18:43	1
Dibromofluoromethane (Surr)	89		46 - 149					09/22/22 18:43	1
Toluene-d8 (Surr)	103		40 - 146					09/22/22 18:43	1

Client Sample ID: TRIP BLANK

Lab Sample ID: 180-144683-24

Date Collected: 09/14/22 00:00

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 19:05	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/22/22 19:05	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 19:05	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 19:05	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 19:05	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Cytec Havre de Grace MD

Job ID: 180-144683-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 180-144683-24

Date Collected: 09/14/22 00:00

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 19:05	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 19:05	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 19:05	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 19:05	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 19:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		26 - 156		09/22/22 19:05	1
4-Bromofluorobenzene (Surr)	84		36 - 124		09/22/22 19:05	1
Dibromofluoromethane (Surr)	85		46 - 149		09/22/22 19:05	1
Toluene-d8 (Surr)	100		40 - 146		09/22/22 19:05	1

Client Sample ID: TRIP BLANK

Lab Sample ID: 180-144683-25

Date Collected: 09/14/22 00:00

Matrix: Water

Date Received: 09/17/22 08:55

Method: SW846 EPA 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.45	ug/L			09/22/22 19:26	1
1,2-Dichloroethane	ND		1.0	0.57	ug/L			09/22/22 19:26	1
Chloroform	ND		1.0	0.60	ug/L			09/22/22 19:26	1
Chloroethane	ND		1.0	0.90	ug/L			09/22/22 19:26	1
Methylene Chloride	ND		1.0	0.89	ug/L			09/22/22 19:26	1
Tetrachloroethene	ND		1.0	0.47	ug/L			09/22/22 19:26	1
Trichloroethene	ND		1.0	0.69	ug/L			09/22/22 19:26	1
Vinyl chloride	ND		1.0	0.41	ug/L			09/22/22 19:26	1
Carbon disulfide	ND		1.0	0.88	ug/L			09/22/22 19:26	1
cis-1,2-Dichloroethene	ND		1.0	0.71	ug/L			09/22/22 19:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		26 - 156		09/22/22 19:26	1
4-Bromofluorobenzene (Surr)	78		36 - 124		09/22/22 19:26	1
Dibromofluoromethane (Surr)	82		46 - 149		09/22/22 19:26	1
Toluene-d8 (Surr)	109		40 - 146		09/22/22 19:26	1

CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical[™]

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

Company: Arcadis

Address: 7550 Teague Rd.

Report To: shwetha Shridharan

Copy To:

Customer Project Name/Number: 30075892.02

State: MD County/City: Hanford Time Zone Collected: [] PT [] MT [] CT [] ET

Phone: _____ Site/Facility ID #: _____ Compliance Monitoring? Yes [] No

Collected By (print): Andy Feild Purchase Order #: _____ DW PWS ID #: _____

Collected By (signature): [Signature] Quote #: _____ DW Location Code: _____

Sample Disposal: [] Archive: _____ Turnaround Date Required: Standard Immediately Packed on Ice: Yes [] No

[] Hold: _____ Rush: [] Same Day [] Next Day [] 2 Day [] 3 Day [] 4 Day [] 5 Day (Expedite Charges Apply) Field Filtered (if applicable): [] Yes No

Analysis: _____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
MW18(091522)-24	GW	G	9/15	0810				3
MW18(091522)-31	GW	G	9/15	0820				3
MW27(091522)	GW	G	9/15	0745				3
MW14I(091522)	GW	G	9/15	0830				3
MW23(091522)-40	GW	G	9/15	0900				3
MW23(091522)-47	GW	G	9/15	0910				3
MW19D1(091522)	GW	G	9/15	0930				3
MW20D1(091522)	GW	G	9/15	0950				3
MW3(091522)	GW	G	9/15	1045				3
MW16(091522)	GW	G	9/15	1200				3

Customer Remarks / Special Conditions / Possible Hazards: DUP02(091522) at 1200

Type of Ice Used: Wet Blue Dry None

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Packing Material Used: 8/16 0001 6038

Lab Tracking #: 2812581

Radchem sample(s) screened (<500 cpm): Y N NA

Samples received via: FEDEX UPS Client Courier Pace Courier

Relinquished by/Company: (Signature) [Signature] Date/Time: 9/15/22 1450

Relinquished by/Company: (Signature) [Signature] Date/Time: 9/15/22

Relinquished by/Company: (Signature) _____ Date/Time: _____

Received by/Company: (Signature) _____ Date/Time: _____

Received by/Company: (Signature) [Signature] Date/Time: 9/15/22

Received by/Company: (Signature) _____ Date/Time: _____

LAB USE ONLY- Affix W

Client ID: **AGM-MD - Arcadis - Maryland**

SDG: **222091648**

PM: **RWe**



ALL SHA

Container Preservative

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Analyses	Lab Profile/Line:
	Custody Seals Present/Intact Y N NA
	Custody Signatures Present Y N NA
	Collector Signature Present Y N NA
	Bottles Intact Y N NA
	Correct Bottles Y N NA
	Sufficient Volume Y N NA
	Samples Received on Ice Y N NA
	VOA - Headspace Acceptable Y N NA
	USDA Regulated Soils Y N NA
	Samples in Holding Time Y N NA
	Residual Chlorine Present Y N NA
	Cl Strips: _____
	Sample pH Acceptable Y N NA
	pH Strips: _____
	Sulfide Present Y N NA
	Lead Acetate Strips: _____
	LAB USE ONLY:
	Lab Sample # / Comments:

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)	Composite End	Res Cl	# of Ctns
MW18(091522)-24	GW	G	9/15 0810			3
MW18(091522)-31	GW	G	9/15 0820			3
MW27(091522)	GW	G	9/15 0745			3
MW14I(091522)	GW	G	9/15 0830			3
MW23(091522)-40	GW	G	9/15 0900			3
MW23(091522)-47	GW	G	9/15 0910			3
MW19D1(091522)	GW	G	9/15 0930			3
MW20D1(091522)	GW	G	9/15 0950			3
MW3(091522)	GW	G	9/15 1045			3
MW16(091522)	GW	G	9/15 1200			3

Lab Sample Temperature Info:

Temp Blank Received: Y N NA

Therm ID#: _____

Cooler 1 Temp Upon Receipt: _____ oC

Cooler 1 Therm Corr. Factor: _____ oC

Cooler 1 Corrected Temp: _____ oC

Comments: E42 1.5

Trip Blank Received: Y N NA

HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: _____ of: _____

Sample Results

MW18(091522)-24	Collect Date	09/15/2022 08:10	Lab ID	22209164801
	Receive Date	09/16/2022 09:19	Matrix	Water

AM20GAX

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1	09/16/22 12:21	749912	LMB	NA

CAS#	Parameter	Result	DL	LOQ	Units
74-84-0	Ethane	0.17U	0.17	1.0	ug/L
74-85-1	Ethene	0.24U	0.24	1.0	ug/L
74-82-8	Methane	2.0U	2.0	5.0	ug/L

MW18(091522)-31	Collect Date	09/15/2022 08:22	Lab ID	22209164802
	Receive Date	09/16/2022 09:19	Matrix	Water

AM20GAX

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1	09/16/22 12:33	749912	LMB	NA

CAS#	Parameter	Result	DL	LOQ	Units
74-84-0	Ethane	0.17U	0.17	1.0	ug/L
74-85-1	Ethene	0.24U	0.24	1.0	ug/L
74-82-8	Methane	4.9J	2.0	5.0	ug/L

MW27(091522)	Collect Date	09/15/2022 07:45	Lab ID	22209164803
	Receive Date	09/16/2022 09:19	Matrix	Water

AM20GAX

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1	09/16/22 12:44	749912	LMB	NA

CAS#	Parameter	Result	DL	LOQ	Units
74-84-0	Ethane	0.85J	0.17	1.0	ug/L
74-85-1	Ethene	730	0.24	1.0	ug/L
74-82-8	Methane	78	2.0	5.0	ug/L

MW14I(091522)	Collect Date	09/15/2022 08:30	Lab ID	22209164804
	Receive Date	09/16/2022 09:19	Matrix	Water

AM20GAX

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1	09/16/22 12:55	749912	LMB	NA

CAS#	Parameter	Result	DL	LOQ	Units
74-84-0	Ethane	0.68J	0.17	1.0	ug/L
74-85-1	Ethene	0.42J	0.24	1.0	ug/L

Sample Results

MW14I(091522)	Collect Date	09/15/2022 08:30	Lab ID	22209164804
	Receive Date	09/16/2022 09:19	Matrix	Water

AM20GAX (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1	09/16/22 12:55	749912	LMB	NA

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	100	2.0	5.0	ug/L

MW23(091522)-40	Collect Date	09/15/2022 09:00	Lab ID	22209164805
	Receive Date	09/16/2022 09:19	Matrix	Water

AM20GAX

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1	09/16/22 13:06	749912	LMB	NA

CAS#	Parameter	Result	DL	LOQ	Units
74-84-0	Ethane	0.59J	0.17	1.0	ug/L
74-85-1	Ethene	0.30J	0.24	1.0	ug/L
74-82-8	Methane	11	2.0	5.0	ug/L

MW23(091522)-47	Collect Date	09/15/2022 09:10	Lab ID	22209164806
	Receive Date	09/16/2022 09:19	Matrix	Water

AM20GAX

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1	09/16/22 13:18	749912	LMB	NA

CAS#	Parameter	Result	DL	LOQ	Units
74-84-0	Ethane	1.0	0.17	1.0	ug/L
74-85-1	Ethene	0.24U	0.24	1.0	ug/L
74-82-8	Methane	15	2.0	5.0	ug/L

MW19D1(091522)	Collect Date	09/15/2022 09:30	Lab ID	22209164807
	Receive Date	09/16/2022 09:19	Matrix	Water

AM20GAX

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1	09/16/22 13:29	749912	LMB	NA

CAS#	Parameter	Result	DL	LOQ	Units
74-84-0	Ethane	3.8	0.17	1.0	ug/L
74-85-1	Ethene	0.24U	0.24	1.0	ug/L

Sample Results

MW19D1(091522)	Collect Date	09/15/2022 09:30	Lab ID	22209164807
	Receive Date	09/16/2022 09:19	Matrix	Water

AM20GAX (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1	09/16/22 13:29	749912	LMB	NA

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	150	2.0	5.0	ug/L

MW20D1(091522)	Collect Date	09/15/2022 09:50	Lab ID	22209164808
	Receive Date	09/16/2022 09:19	Matrix	Water

AM20GAX

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1	09/16/22 13:40	749912	LMB	NA

CAS#	Parameter	Result	DL	LOQ	Units
74-84-0	Ethane	0.17U	0.17	1.0	ug/L
74-85-1	Ethene	0.24U	0.24	1.0	ug/L
74-82-8	Methane	180	2.0	5.0	ug/L

MW3(091522)	Collect Date	09/15/2022 10:45	Lab ID	22209164809
	Receive Date	09/16/2022 09:19	Matrix	Water

AM20GAX

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1	09/16/22 13:51	749912	LMB	NA

CAS#	Parameter	Result	DL	LOQ	Units
74-84-0	Ethane	0.93J	0.17	1.0	ug/L
74-85-1	Ethene	10	0.24	1.0	ug/L
74-82-8	Methane	14	2.0	5.0	ug/L

MW16(091522)	Collect Date	09/15/2022 12:00	Lab ID	22209164810
	Receive Date	09/16/2022 09:19	Matrix	Water

AM20GAX

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1	09/16/22 14:03	749912	LMB	NA

CAS#	Parameter	Result	DL	LOQ	Units
74-84-0	Ethane	8.1	0.17	1.0	ug/L
74-85-1	Ethene	0.60J	0.24	1.0	ug/L

Sample Results

MW16(091522)	Collect Date	09/15/2022 12:00	Lab ID	22209164810
	Receive Date	09/16/2022 09:19	Matrix	Water

AM20GAX (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1	09/16/22 14:03	749912	LMB	NA

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	57	2.0	5.0	ug/L

DUP02(091522)	Collect Date	09/15/2022 12:00	Lab ID	22209164811
	Receive Date	09/16/2022 09:19	Matrix	Water

AM20GAX

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1	09/16/22 14:14	749912	LMB	NA

CAS#	Parameter	Result	DL	LOQ	Units
74-84-0	Ethane	1.0	0.17	1.0	ug/L
74-85-1	Ethene	11	0.24	1.0	ug/L
74-82-8	Methane	18	2.0	5.0	ug/L

FB(091522)	Collect Date	09/15/2022 00:01	Lab ID	22209164812
	Receive Date	09/16/2022 09:19	Matrix	Water

AM20GAX

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
NA	NA	NA	1	09/16/22 14:25	749912	LMB	NA

CAS#	Parameter	Result	DL	LOQ	Units
74-84-0	Ethane	0.17U	0.17	1.0	ug/L
74-85-1	Ethene	0.24U	0.24	1.0	ug/L
74-82-8	Methane	2.0U	2.0	5.0	ug/L

Appendix F

Groundwater Stabilization System Details

Extraction Well ID:		MW 10D (28 to 30 feet bgs)						EW 1 (40 to 45 feet bgs)						EW 2 (24 to 32 feet bgs)						Total Extracted Volume	Total Mass of 1,2 DCA Removed	Total Mass of MC Removed
Date ¹	Total Extracted Volume	Average Flow Rate	1,2 DCA		MC		Total Extracted Volume	Average Flow Rate	1,2 DCA		MC		Total Extracted Volume	Average Flow Rate	1,2 DCA		MC					
			Result ²	Mass Removed	Result ²	Mass Removed			Result ²	Mass Removed	Result ²	Mass Removed			Result ²	Mass Removed						
			gallons	gpm	µg/L	lbs			µg/L	lbs	gallons	gpm			µg/L	lbs	µg/L	lbs	gallons			
1st	1/1/2015	0	3.06	2	0.000	0	0	1.01	1,900	0.00	33	0.000	0	0.15	79,000	0.00	260,000	0.00	0	0.00	0.00	
Quarter	2/1/2015	136,727	5.47	2	0.002	0	45,307	0.43	1,900	0.72	33	0.012	6,660	0.25	79,000	4.38	260,000	14.43	188,694	5.10	14.44	
2015	3/1/2015	357,230	5.78	2	0.006	0	62,740	2.01	1,900	0.99	33	0.017	16,722	0.25	79,000	11.01	260,000	36.23	436,692	12.01	36.25	
2nd	4/3/2015	615,335	5.47	160	0.344	14	152,549	1.81	2,100	1.57	270	0.202	27,747	0.24	51,000	4.69	110,000	10.11	795,631	6.60	10.34	
Quarter	5/1/2015	851,672	5.97	160	0.32	14	230,645	1.98	2,100	1.37	270	0.176	38,277	0.28	51,000	4.48	110,000	9.65	1,120,594	6.16	9.86	
2015	6/1/2015	1,117,996	5.93	160	0.36	14	318,850	1.81	2,100	1.54	270	0.198	50,802	0.27	51,000	5.32	110,000	11.48	1,487,648	7.22	11.71	
3rd	7/1/2015	1,374,034	6.99	110	0.23	0	397,010	1.98	1,800	1.17	0	0	62,432	0.29	150,000	14.54	370,000	35.86	1,833,476	15.94	35.86	
Quarter	8/1/2015	1,685,951	6.41	110	0.29	0	485,408	1.86	1,800	1.33	0	0	75,481	0.60	150,000	16.31	370,000	40.24	2,246,840	17.92	40.24	
2015	9/1/2015	1,971,907	4.97	110	0.26	0	568,608	1.79	1,800	1.25	0	0	102,197	0.41	150,000	33.40	370,000	82.38	2,642,712	34.91	82.38	
4th	10/1/2015	2,186,543	5.75	38	0.07	0	645,776	1.72	1,400	0.90	31	0.020	120,082	0.32	43,000	6.41	82,000	12.22	2,952,401	7.38	12.24	
Quarter	11/1/2015	2,443,223	1.55	38	0.08	0	722,532	0.50	1,400	0.90	31	0.020	134,568	0.17	43,000	5.19	82,000	9.90	3,300,323	6.17	9.92	
2015	12/1/2015	2,510,237	7.01	38	0.02	0	744,186	1.99	1,400	0.25	31	0.006	141,946	0.62	43,000	2.64	82,000	5.04	3,396,369	2.92	5.05	
1st	1/1/2016	2,823,134	6.99	58	0.15	1.1	833,039	1.99	1,700	1.26	65	0.048	169,450	1.09	29,000	6.65	59,000	13.52	3,825,623	8.06	13.57	
Quarter	2/1/2016	3,135,138	6.63	58	0.15	1.1	921,659	1.88	1,700	1.26	65	0.048	218,030	1.00	29,000	11.74	59,000	23.89	4,274,827	13.15	23.94	
2016	3/1/2016	3,412,113	6.30	58	0.13	1.1	1,000,317	1.79	1,700	1.11	65	0.043	259,958	0.64	29,000	10.13	59,000	20.61	4,672,388	11.38	20.66	
2nd	4/1/2016	3,693,336	6.98	19	0.04	0	1,080,173	1.98	1,800	1.20	29	0.019	288,625	0.43	21,000	5.02	39,000	9.32	5,062,134	6.26	9.34	
Quarter	5/1/2016	3,994,872	7.00	19	0.05	0	1,165,725	1.98	1,800	1.28	29	0.021	307,201	0.38	21,000	3.25	39,000	6.04	5,467,798	4.58	6.06	
2016	6/1/2016	4,307,169	6.83	19	0.05	0	1,254,252	1.95	1,800	1.33	29	0.021	324,347	0.34	21,000	3.00	39,000	5.57	5,885,768	4.38	5.59	
3rd	7/1/2016	4,602,440	3.75	12	0.03	0	1,338,669	1.05	1,700	1.20	49	0.034	339,027	0.23	19,000	2.32	25,000	3.06	6,280,136	3.55	3.09	
Quarter	8/1/2016	4,769,782	6.33	12	0.02	0	1,385,380	1.81	1,700	0.66	49	0.019	349,219	0.21	19,000	1.61	25,000	2.12	6,504,381	2.29	2.14	
2016	9/1/2016	5,052,501	5.77	12	0.03	0	1,465,979	1.62	1,700	1.14	49	0.033	358,606	0.15	19,000	1.49	25,000	1.96	6,877,086	2.66	1.99	
4th	10/1/2016	5,301,578	6.89	62	0.13	0	1,535,780	1.84	1,400	0.81	0	0	364,962	0.21	33,000	1.75	76,000	4.03	7,202,320	2.69	4.03	
Quarter	11/1/2016	5,608,954	5.82	62	0.16	0	1,617,770	1.36	1,400	0.96	0	0	374,551	0.15	33,000	2.64	76,000	6.07	7,601,275	3.75	6.07	
2016	12/1/2016	5,860,409	2.39	62	0.13	0	1,676,316	0.57	1,400	0.68	0	0	380,827	0.04	33,000	1.73	76,000	3.97	7,917,552	2.54	3.97	
1st	1/1/2017	5,967,051	4.69	23	0.02	0	1,701,943	1.05	1,600	0.34	0	0	382,746	0.59	29,000	0.46	55,000	0.88	8,051,740	0.83	0.88	
Quarter	2/1/2017	6,176,352	6.34	23	0.04	0	1,749,033	1.35	1,600	0.63	0	0	408,971	1.67	29,000	6.34	55,000	12.02	8,334,356	7.01	12.02	
2017	3/1/2017	6,431,784	6.85	23	0.05	0	1,803,562	1.94	1,600	0.73	0	0	476,412	1.95	29,000	16.30	55,000	30.91	8,711,758	17.07	30.91	
2nd	4/1/2017	6,737,487	6.99	8.9	0.02	0	1,890,014	1.97	1,300	0.94	0	0	563,333	1.77	13,000	9.42	22,000	15.94	9,190,834	10.38	15.94	
Quarter	5/1/2017	7,039,278	5.52	8.9	0.02	0	1,975,277	1.41	1,300	0.92	0	0	639,629	0.15	13,000	8.27	22,000	13.99	9,654,184	9.21	13.99	
2017	6/1/2017	7,285,728	5.75	8.9	0.02	0	2,038,361	1.38	1,300	0.68	0	0	646,309	0.00	13,000	0.72	22,000	1.22	9,970,398	1.43	1.22	
3rd	7/1/2017	7,534,069	2.66	43	0.09	0	2,098,189	0.64	1,500	0.75	0	0	646,310	0.00	NS	0.00	NS	0.00	10,278,568	0.84	0.00	
Quarter	8/1/2017	7,652,980	6.31	43	0.04	0	2,126,815	1.52	1,500	0.36	0	0	646,310	0.00	NS	0.00	NS	0.00	10,426,105	0.40	0.00	
2017	9/1/2017	7,934,505	5.56	43	0.10	0	2,194,635	1.34	1,500	0.85	0	0	646,310	0.32	NS	0.00	NS	0.00	10,775,450	0.95	0.00	
4th	10/1/2017	8,174,670	6.13	3.6	0.01	0	2,252,530	1.86	1,100	0.53	19	0.009	660,009	2.75	43,000	4.91	110,000	12.56	11,087,209	5.45	12.57	
Quarter	11/1/2017	8,448,409	6.93	3.6	0.01	0	2,335,372	1.90	1,100	0.76	19	0.013	782,905	1.24	43,000	44.04	110,000	112.66	11,566,686	44.81	112.67	
2017	12/1/2017	8,747,857	6.73	3.6	0.01	0	2,417,470	1.79	1,100	0.75	19	0.013	836,553	1.31	43,000	19.22	110,000	49.18	12,001,880	19.99	49.19	
1st	1/1/2018	9,048,175	5.07	11	0.03	0	2,497,585	0.62	1,600	1.07	78	0	895,254	0.97	15,000	7.34	23,000	11.25	12,441,014	8.43	11.30	
Quarter	2/1/2018	9,274,446	5.41	11	0.02	0	2,525,387	0.46	1,600	0.37	78	0	938,695	1.08	15,000	5.43	23,000	8.33	12,738,528	5.82	8.34	
2018 ³	3/1/2018	9,492,572	5.57	11	0.02	0	2,544,050	0.02	1,600	0.25	78	0	982,090	0.83	15,000	5.42	23,000	8.32	13,018,712	5.69	8.33	
2nd	4/1/2018	9,741,020	6.22	11	0.02	0	2,544,980	0.00	1,600	0.01	78	0	1,018,959	0.65	15,000	4.61	23,000	7.07	13,304,959	4.64	7.07	
Quarter	5/1/2018	10,009,819	4.61	11	0.02	0	2,544,999	0.09	1,600	0.0003	78	0	1,046,910	0.77	15,000	3.49	23,000	5.36	13,601,728	3.52	5.36	
2018	6/1/2018	10,215,723	2.32	11	0.02	0	2,548,980	0.07	1,600	0.05	78	0	1,081,069	0.62	15,000	4.27	23,000	6.55	13,845,772	4.34	6.55	
3rd	7/1/2018	10,316,112	1.86	11	0.01	0	2,552,115	0.21	1,600	0.04	78	0	1,107,848	0.01	15,000	3.35	23,000	5.13	13,976,075	3.40	5.13	
Quarter	8/1/2018	10,399,332	3.12	11	0.01	0	2,561,534	0.00	1,600	0.13	78	0	1,108,423	0.48	15,000	0.07	23,000	0.11	14,069,289	0.21	0.12	
2018	9/1/2018	10,538,569	2.05	11	0.01	0	2,561,534	0.00	1,600	0	78	0	1,130,059	0.35	15,000	2.70	23,000	4.15	14,230,162	2.72	4.15	
4th	10/1/2018	10,626,996	3.82	5.7	0.004	0	2,561,534	1.30	580	0	0	0	1,145,179	0.62	18,000	2.27	49,000	6.17	14,333,709	2.27	6.17	
Quarter	11/1/2018	10,797,508	3.85	5.7	0.01	0	2,619,587	1.92	580	0.28	0	0	1,172,722	0.57	18,000	4.13	49,000	11.25	14,589,817	4.42	11.25	
2018 ³	12/1/2018	10,964,039	4.05	5.7	0.01	0	2,702,501	1.77	580	0.40	0	0	1,197,557	0.39	18,000	3.73	49,000	10.14	14,864,097	4.13	10.14	
1st	1/1/2019	11,144,776	2.74	1.5	0.002	0	2,781,647	1.26	940	0.62	0	0	1,214,818	0.31	12,000	1.73	22,000	3.16	15,141,241	2.35	3.16	
Quarter	2/1/2019	11,267,066	3.78	1.5	0.002	0	2,838,080	1.69	940	0.44	0	0	1,228,647	0.52	12,000	1.38	22,000	2.54	15,333,793	1.83	2.54	
2019	3/1/2019	11,419,645	1.04	1.5	0.002	0	2,906,339	1.32	940	0.53	0	0	1,249,766	0.44	12,000	2.11	22,000	3.87	15,575,750	2.65	3.87	
2nd	4/1/2019	11,466,144	7.86	1.4	0.001	0	2,965,250	2.00	900	0.44	0	0	1,269,291	0.44	13,000	2.12	12,000	1.95	15,700,685	2.56	1.95	
Quarter	5/1/2019	11,805,830	6.66	1.4	0.004	0	3,051,577	1.48	900	0.65	0	0</										

Extraction Well ID:		MW 10D (28 to 30 feet bgs)						EW 1 (40 to 45 feet bgs)						EW 2 (24 to 32 feet bgs)						Total Extracted Volume	Total Mass of 1,2 DCA Removed	Total Mass of MC Removed
Date ¹	Total Extracted Volume	Average Flow Rate	1,2 DCA		MC		Total Extracted Volume	Average Flow Rate	1,2 DCA		MC		Total Extracted Volume	Average Flow Rate	1,2 DCA		MC					
			Result ²	Mass Removed	Result ²	Mass Removed			Result ²	Mass Removed	Result ²	Mass Removed			Result ²	Mass Removed	Result ²	Mass Removed				
			gallons	gpm	µg/L	lbs			µg/L	lbs	gallons	gpm			µg/L	lbs	µg/L	lbs	gallons	gpm	µg/L	lbs
1st Quarter 2020	1/1/2020	13,930,446	6.02	6.6	0.007	0	0	3,445,778	0.90	790	0.13	0	0	1,729,535	2.32	19,000	6.79	34,000	12.15	19,105,759	6.93	12.15
	2/1/2020	14,199,192	6.43	6.6	0.01	0	0	3,485,899	1.01	790	0.26	0	0	1,832,945	2.49	19,000	16.37	34,000	29.30	19,518,036	16.65	29.30
	3/1/2020	14,467,584	6.50	6.6	0.01	0	0	3,528,124	0.88	790	0.28	0	0	1,936,882	3.96	19,000	16.46	34,000	29.45	19,932,590	16.75	29.45
2nd Quarter 2020	4/1/2020	14,757,940	5.44	3.7	0.01	0	0	3,567,497	0.83	270	0.09	0	0	2,113,602	3.14	4,900	7.22	3,000	4.42	20,439,039	7.31	4.42
	5/1/2020	14,993,041	7.52	3.7	0.01	0	0	3,603,281	1.18	270	0.08	0	0	2,249,331	3.61	4,900	5.54	3,000	3.39	20,845,653	5.63	3.39
	6/1/2020	15,328,622	7.13	3.7	0.01	0	0	3,655,924	1.06	270	0.12	0	0	2,410,444	1.74	4,900	6.58	3,000	4.03	21,394,990	6.71	4.03
3rd Quarter 2020	7/1/2020	15,636,607	5.86	4.6	0.01	0	0	3,701,753	0.88	550	0.21	0	0	2,485,722	0.67	--	--	--	--	21,824,082	0.22	0.00
	8/1/2020	15,898,145	3.49	4.6	0.01	0	0	3,740,899	0.65	550	0.18	0	0	2,515,510	2.27	--	--	--	--	22,154,554	0.19	0.00
	9/1/2020	16,054,155	3.86	4.6	0.01	0	0	3,769,762	0.72	500	0.12	0	0	2,616,679	1.44	--	--	--	--	22,440,596	0.13	0.00
4th Quarter 2020	10/1/2020	16,220,783	6.25	3.5	0.005	0	0	3,800,771	1.14	240	0.06	0	0	2,678,846	0.52	2,900	1.50	710	0.37	22,700,400	1.57	0.37
	11/1/2020	16,499,657	5.87	3.5	0.008	0	0	3,851,779	1.06	240	0.10	0	0	2,702,011	1.55	2,900	0.56	710	0.14	23,053,447	0.67	0.14
	12/1/2020	16,753,269	4.45	3.5	0.007	0	0	3,897,720	0.81	240	0.09	0	0	2,769,074	1.42	2,900	1.62	710	0.40	23,420,063	1.72	0.40
1st Quarter 2021	1/1/2021	16,951,756	6.46	2.4	0.004	0	0	3,934,054	1.18	820	0.25	0	0	2,832,342	0.82	9,000	4.75	13,000	6.85	23,718,152	5.00	6.85
	2/1/2021	17,239,930	3.18	2.4	0.01	0	0	3,986,730	0.54	820	0.36	0	0	2,868,965	0.90	9,000	2.75	13,000	3.97	24,095,625	3.11	3.97
	3/1/2021	17,372,603	5.10	2.4	0.00	0	0	4,009,277	0.86	820	0.15	0	0	2,906,484	1.39	9,000	2.81	13,000	4.06	24,288,364	2.97	4.06
2nd Quarter 2021	4/1/2021	17,600,157	6.44	83	0.16	110	0	4,047,549	1.07	1,100	0.35	500	0	2,968,418	1.67	17,000	8.77	10,000	5.16	24,616,124	9.28	5.53
	5/1/2021	17,878,323	6.55	83	0.19	110	0	4,093,768	1.12	1,100	0.42	500	0	3,040,676	1.48	17,000	10.24	10,000	6.02	25,012,767	10.85	6.47
	6/1/2021	18,170,555	3.73	83	0.20	110	0	4,143,873	0.63	1,100	0.46	500	0	3,106,950	1.27	17,000	9.39	10,000	5.52	25,421,378	10.05	6.00
3rd Quarter 2021	7/1/2021	18,331,696	1.43	1.0	0.00	0	0	4,171,167	0.27	130	0.03	0	0	3,161,794	0.52	1,800	0.82	3,200	1.46	25,664,657	0.85	1.46
	8/1/2021	18,395,419	2.99	1.0	0.00	0	0	4,183,051	0.56	130	0.01	0	0	3,184,818	1.16	1,800	0.35	3,200	0.61	25,763,288	0.36	0.61
	9/1/2021	18,528,778	5.02	1.0	0.00	0	0	4,208,262	0.95	130	0.03	0	0	3,236,498	0.92	1,800	0.78	3,200	1.38	25,973,538	0.80	1.38
4th Quarter 2021	10/1/2021	18,745,511	5.19	290	0.524	59	0	4,249,341	0.98	380	0.13	9.8	0	3,276,186	0.01	4,700	1.55	17,000	5.62	26,271,038	2.21	5.73
	11/1/2021	18,977,098	4.65	290	0.560	59	0	4,293,182	0.88	380	0.14	9.8	0	3,276,618	0.82	4,700	0.02	17,000	0.06	26,546,898	0.72	0.18
	12/1/2021	19,177,847	4.92	290	0.485	59	0	4,331,232	0.93	380	0.12	10	0	3,311,987	0.41	4,700	1.39	17,000	5.01	26,821,066	1.99	5.11
1st Quarter 2022	1/1/2022	19,232,448	0.78	2.1	0.001	0	0	4,339,747	0.12	350	0.02	56	0	3,331,637	0.34	47,000	7.70	140,000	22.93	26,903,832	7.72	22.93
	2/1/2022	19,267,250	2.14	2.1	0.00	0	0	4,344,997	0.41	350	0.02	56	0	3,346,987	0.86	47,000	6.01	140,000	17.91	26,959,234	6.03	17.91
	3/1/2022	19,356,806	4.91	2.1	0.00	0	0	4,361,978	0.93	350	0.05	56	0	3,382,883	0.56	47,000	14.06	140,000	41.88	27,101,667	14.11	41.89
2nd Quarter 2022	4/1/2022	19,575,921	4.80	0	0.00	0	0	4,403,539	0.91	670	0.23	0	0	3,407,871	0.01	--	--	--	--	27,387,331	0.23	0.00
	5/1/2022	19,783,428	5.23	0	0.00	0	0	4,442,928	0.99	670	0.22	0	0	3,408,166	0.00	--	--	--	--	27,634,522	0.22	0.00
	6/1/2022	20,017,019	5.45	0	0.00	0	0	4,487,299	1.03	670	0.25	0	0	3,408,166	0.00	--	--	--	--	27,912,484	0.25	0.00
3rd Quarter 2022	7/1/2022	20,252,606	2.75	0.73	0.00	0	0	4,531,884	0.52	790	0.29	0	0	3,408,166	0.00	--	--	--	--	28,192,656	0.29	0.00
	8/1/2022	20,375,334	5.00	0.73	0.00	0	0	4,555,179	0.95	790	0.15	0	0	3,408,198	0.00	--	--	--	--	28,338,711	0.15	0.00
	9/1/2022	20,598,606	6.22	0.73	0.00	0	0	4,597,600	1.18	790	0.28	0	0	3,408,198	0.00	--	--	--	--	28,604,404	0.28	0.00
4th Quarter 2022	10/1/2022	20,867,138	6.01	1.8	0.004	0	0	4,648,734	1.45	400	0.17	0	0	3,408,198	0.00	--	--	--	--	28,924,070	0.17	0.00
	11/1/2022	21,135,521	5.40	1.8	0.004	0	0	4,713,660	0.70	400	0.22	0	0	3,408,198	0.00	--	--	--	--	29,257,379	0.22	0.00
	12/1/2022	21,368,910	4.16	1.8	0.004	0	0	4,743,990	0.79	400	0.10	0	0	3,408,198	0.00	--	--	--	--	29,521,098	0.10	0.00
2015:	2,823,134	5.36	1.98	0.09	833,039	1.57	11.99	0.65	169,450	0.32	108	268	3,825,623	122	268							
2016:	3,143,917	5.97	1.07	0.01	868,904	1.65	12.89	0.29	213,296	0.41	51	100	4,226,117	65	100							
2017:	3,081,124	5.87	0.43	0.00	795,642	1.51	8.24	0.04	512,508	0.98	110	249	4,389,274	118	249							
2018:	2,096,601	4.00	0.18	0.00	284,062	0.54	2.60	0.09	319,564	0.61	47	84	2,700,227	50	84							
2019:	2,785,670	5.31	0.03	0.00	664,131	1.27	5.11	0.00	514,717	0.98	78.47	137.48	3,964,518	84	137							
2020:	3,021,310	5.73	0.11	0.00	488,276	0.93	1.73	0.00	1,102,807	2.09	62.64	83.64	4,612,393	64	84							
2021:	2,280,692	4.64	2.14	1.05	405,693	0.83	2.46	0.57	499,295	0.95	43.61	45.74	3,185,680	48	47							
2022:	2,322,114	4.41	0.02	0.00	439,505	0.83	2.00	0.01	76,561	0.15	27.77	82.71	2,838,180	30	83							
Cumulative Total⁴:	21,554,562	495.40	5.96	1.15	4,779,252	109.65	47.01	1.65	3,408,198	77.82	528.66	1050.44	29,742,012	582	1053							

Notes:
¹ Totalizer readings are collected at 8:00AM.
² Analytical data were collected quarterly at each extraction well beginning in second quarter 2015. 1,2-DCA and MC results presented for first quarter 2015 were collected on December 30, 2014. Data collected within the month corresponding to its row are bolded. Results are extrapolated for the entire quarter. Nondetects are presented as zeros.
³ Analytical data were collected semiannually in 2018.

Acronyms and Abbreviations:
 -- = not applicable
 µg/L = microgram per liter
 1,2-DCA = 1,2-dichloroethane
 bgs = below ground surface
 gpm = gallon per minute
 lb = pound
 MC = methylene chloride
 NS = not sampled

Appendix G

Historical Analytical Data

Location ID:		MW-12D	MW-12D	MW-12D	MW-12D	MW-12D	MW-12D	MW-12DDL	MW-12D-DL	MW-12S	MW-12S	MW-12S	MW-12S	MW-12S	MW-12S	MW-12S	MW-12S	MW-12S	MW-12S	MW-12S	MW-12S	MW-12S	MW-12S	MW-12S	MW-12S					
Sample Date:		10/03/17	11/20/18	09/20/19	10/08/20	9/14/2021	09/14/22	07/21/98	02/25/98	09/23/97	02/25/98	07/21/98	12/15/98	04/13/99	11/13/01	12/19/01	10/07/02	10/03/03	07/18/04	10/11/04	03/22/05	09/22/05	03/16/06	06/22/06	05/02/11	11/20/14	06/04/15			
Volatile Organics		CAO Goal ¹	Units																											
1,1,2-Trichloroethane	5	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	200 U	1,000 U	10 U	10 U	2.0 U	0.35 U	0.20 U	0.20 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	1.0 U	1.0 U	1.0 U	
1,2-Dichloroethane	5	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	6,000 D	6,200 D	10 U	10 U	2.0 U	0.21 U	0.20 U	0.20 U	0.40 U	0.30 U	0.30 U	0.40 U	0.40 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	1.0 U	1.0 U	0.22 J	
Chloroethane	---	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	2.0 U	NA	NA	NA	0.50 U	NA	0.40 U	0.40 U	0.20 U	0.20 U	NA	0.20 U	0.50 U	1.0 U	1.0 U	0.15 J	0.54 J	
Chloroform	0.19	ug/L	0.72 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	200 U	1,000 U	10 U	10 U	2.0 U	0.59 U	0.20 U	0.20 U	0.20 U	0.20 U	0.30 U	0.30 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	1.0 U	1.0 U	0.15 J	0.54 J
Methylene Chloride	5	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	500 U	1,000 U	10 U	10 U	5.0 U	5.0 U	1.1 U	1.0 U	1.0 U	0.80 U	0.80 U	0.90 U	0.90 U	0.50 U	0.50 U	0.50 U	0.50 U	1.0 U	1.0 U	1.0 U	1.0 U	
Tetrachloroethene	5	ug/L	NA	1.0 U	NA	1.0 U	1.0 U	1.0 U	200 U	1,000 U	10,000 U	10 U	2.0 U	0.20 U	0.62 U	0.30 U	0.20 U	0.30 U	0.30 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	5	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	200 U	1,000 U	10 U	10 U	2.0 U	0.44 U	0.30 U	0.30 U	0.10 U	0.20 U	0.20 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	---	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	2.0 U	NA	NA	NA	0.20 U	NA	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	1.0 U	1.0 U	1.0 U	1.0 U	
Vinyl Chloride	2	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	200 U	1,000 U	10 U	10 U	2.0 U	0.71 U	0.20 U	0.20 U	0.30 U	0.50 U	0.40 U	0.40 U	0.40 U	0.50 U	0.50 U	0.50 U	0.50 U	1.0 U	1.0 U	1.0 U	1.0 U	
Carbon Disulfide	1000	ug/L	NA	1.0 U	NA	NA	NA	1.0 U	200 U	1,000 U	10 U	10 U	2.0 U	0.56 U	0.20 U	0.20 U	0.30 U	0.20 U	0.20 U	0.20 U	0.20 U	0.30 U	0.30 U	0.30 U	0.30 U	1.0 U	1.0 U	1.0 U	1.0 U	

Location ID:		MW-13S	MW-13S	MW-13S	MW-13S	MW-13S	MW-13S	MW-13S	MW-13D	MW-13D	MW-13D	MW-13D	MW-13D	MW-13D	MW-13D	MW-13D	MW-13D	MW-13D	MW-13D	MW-13D	MW-13D	MW-13D	MW-13D	MW-13D	MW-13D	MW-13D	MW-13D
Sample Date:		11/16/15	10/04/16	10/03/17	11/20/18	09/20/19	10/08/20	09/14/21	09/14/22	09/23/97	02/25/98	07/21/98	12/15/98	04/13/99	11/13/01	12/19/01	10/07/02	10/03/03	07/18/04	10/11/04	03/22/05	09/22/05	03/16/06	06/22/06	05/02/11	11/20/14	06/04/15
Volatile Organics		CAO Goal ¹	Units																								
1,1,2-Trichloroethane	5	ug/L	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	190	64 J	110	100 U	120	35	27	7.0	13	82	25	34	18	0.30 U	12	8.6	3.5 J	0.94 J
1,2-Dichloroethane	5	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	9,800 D	3,900 E	3,200 E	8,400	12,000 D	2,000	2,000	760	960	4,300	1,500	2,000	1,000	0.30 U	640	420	270	190
Chloroethane	---	ug/L	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA	NA	4.8 U	12 U	NA	7.4 U	3.7 U	NA	1.2 U	1.2 U	12 U	1.0 U	
Chloroform	0.19	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	26	100 U	15	100 U	30 U	3.8 U	2.5 U	2.7	16	3.9	3.9	6.8 U	3.4 U	0.50 U	2.6 U	2.6 U	12 U	0.24 J
Methylene Chloride	5	ug/L	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	130	100 U	22	370	56 U	20 U	20 U	8.8 U	8.8 U	20 U	8.1 U	18 U	9.1 U	0.50 U	2.6 U	3.4	12 U	1.0 U
Tetrachloroethene	5	ug/L	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	8.0 J	100 U	5.0	100 U	31 U	5.6 U	5.6 U	2.4 U	2.5	7.8 U	3.2	7.2 U	3.6 U	0.40 U	3.3	2.5	12 U	0.98 J
Trichloroethene	5	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	500 U	120	84	100 U	110	36	83	38	36	74	34	19	26	0.40 U	32	27	14	6.6
cis-1,2-Dichloroethene	---	ug/L	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA	NA	7.6	24	NA	7.1	4.6	NA	5.9	5.2	12 U	0.56 J	
Vinyl Chloride	2	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	26	100 U	6.0	100 U	36 U	4.6 U	4.6 U	2.9 U	2.9 U	13 U	5.3 U	7.0 U	3.5 U	0.30 U	1.4 U	1.4 U	12 U	1.0 U
Carbon Disulfide	1000	ug/L	1.0 U	1.0 U	NA	1.0 U	NA	NA	1.0 U	100 U	100 U	2.0 U	100 U	28 U	5.0 U	5.0 U	3.0 U	3.0 U	6.0 U	2.4 U	5.0 U	2.5 U	0.30 U	1.7 U	1.7 U	12 U	1.0 U

*Notes are provided on the last page of the Appendix G table set.

Location ID:		MW-14	MW-14	MW-14	MW-14	MW-14	MW-14-DL	MW-14	MW-14	MW-14	MW-14	MW-14	MW-14	MW-14	MW-14	MW-14	MW-14	MW-14	MW-14	MW-14	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15				
Sample Date:		10/03/17	11/20/18	09/20/19	10/08/20	09/14/21	09/14/22	02/24/98	01/03/08	01/03/08	05/02/11	11/20/14	06/04/15	11/16/15	10/05/16	10/04/17	11/20/18	09/20/19	10/08/20	9/14/2021	09/15/22	10/21/97	02/24/98	07/23/98	12/15/98	04/13/99	03/18/04	10/12/04	03/22/05	09/22/05	
Volatile Organics	CAO Goal ¹	Units																													
1,1,2-Trichloroethane	5	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	500,000 U	0.20 U	0.40 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10,000 U	2.0 U	2.0 U	0.35 U	0.30 U	0.30 U	0.30 U	0.30 U		
1,2-Dichloroethane	5	ug/L	13	8.1	12	1.0 U	1.0 U	3.0	2,000,000 D	170	220	42	23	19	18	11	8.7	4.7	4.6	3.7	4.4	5.3	10 U	10,000 U	2.0 U	2.0 U	0.21 U	0.30 U	0.40 U	0.40 U	
Chloroethane	---	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	8.2	11	3.0	8.2	1.9	2.4	NA	8.3	1.0 U	0.99 J	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	0.30 U	0.40 U	0.40 U	0.20 U
Chloroform	0.19	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	500,000 U	0.20 U	0.40 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10,000 U	2.0 U	2.0 U	0.59 U	0.20 U	0.30 U	0.30 U	0.30 U	0.50 U	0.50 U	
Methylene Chloride	5	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	500,000 U	0.40 U	0.80 U	0.50 JB	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10,000 U	5.0 U	5.0 U	1.1 U	0.80 U	0.90 U	0.90 U	0.50 U	0.50 U		
Tetrachloroethene	5	ug/L	NA	1.0 U	NA	1.0 U	1.0 U	500,000 U	0.40 U	0.80 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	2.0 U	2.0 U	0.62 U	0.30 U	0.40 U	0.40 U	0.40 U	0.40 U		
Trichloroethene	5	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	500,000 U	0.40 U	0.70 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10,000 U	2.0 U	2.0 U	0.44 U	0.20 U	0.40 U	0.40 U	0.40 U	0.40 U		
cis-1,2-Dichloroethene	---	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	0.30 U	0.60 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10,000 U	2.0 U	2.0 U	0.71 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U		
Vinyl Chloride	2	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	500,000 U	0.20 U	0.50 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10,000 U	2.0 U	2.0 U	0.71 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U		
Carbon Disulfide	1000	ug/L	NA	1.0 U	NA	NA	NA	500,000 U	0.40 U	0.90 U	0.44 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10,000 U	2.0 U	2.0 U	0.56 U	0.20 U	0.20 U	0.20 U	0.30 U	0.30 U		

Location ID:		MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15				
Sample Date:		03/16/06	06/22/06	01/03/08	05/02/11	11/21/14	06/04/15	11/16/15	10/05/16	10/03/17	11/20/18	09/20/19	11/23/08	01/03/08	05/02/11	10/21/97	02/24/98	07/23/98	12/15/98	04/13/99	06/08/06	10/21/06	MW-16	MW-16	MW-16	MW-16	MW-16	MW-16	MW-16			
Volatile Organics	CAO Goal ¹	Units																														
1,1,2-Trichloroethane	5	ug/L	0.30 U	0.30 U	0.20 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	0.20 U	0.20 U	1.0 U	10 U	250,000 U	2.0 U	200 U	35 U	3.3 U	0.20 U	20 U	2.3	1.0 U	1.0 U	0.97 J	1.0 U	1.0 U	1.0 U	
1,2-Dichloroethane	5	ug/L	0.30 U	0.30 U	0.30 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.30 U	0.40 U	1.0 U	5,000 D	7,300 D	9,700 D	8,700	11,000	960	40	410	160	1.8	1.0	32	4.3	1.3	13	
Chloroethane	---	ug/L	NA	0.20 U	0.40 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	0.40 U	0.40 U	1.0 U	NA	NA	NA	NA	2.4 U	0.40 U	20 U	0.89 J	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U		
Chloroform	0.19	ug/L	0.50 U	0.50 U	0.20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.20 U	0.30 U	1.0 U	8.0 J	250 U	7.0	200 U	59 U	5.2 U	0.20 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
Methylene Chloride	5	ug/L	0.50 U	0.50 U	0.40 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	0.40 U	0.40 U	1.0 U	10 U	81 J	4.0 J	500 U	410	4.5 U	0.40 U	20 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U		
Tetrachloroethene	5	ug/L	0.40 U	0.40 U	0.40 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.40 U	0.40 U	1.0 U	10 U	250 U	7.0	200 U	62 U	4.5 U	0.80 U	20 U	0.38 J	0.33 J	0.28 J	1.0 U	NA	1.0 U	NA	
Trichloroethene	5	ug/L	0.40 U	0.40 U	0.40 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.40 U	0.40 U	1.0 U	59	250 U	57	200 U	44 U	9.2 U	9.9	5.9 J	7.7	4.7	5.1	7.7	6	3.7	9.8	
cis-1,2-Dichloroethene	---	ug/L	NA	0.40 U	0.30 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	0.30 U	0.30 U	1.0 U	NA	NA	NA	NA	9.1	7.8	20 U	5.3	5.2	5.7	NA	6.5	6.6	8.3		
Vinyl Chloride	2	ug/L	0.30 U	0.30 U	0.20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.20 U	0.20 U	1.0 U	240 JD	520	210	200 U	350	20	20	8.3 J	4.7	6.9	5.8	2.9	4.5	4.0	6.7	
Carbon Disulfide	1000	ug/L	0.30 U	0.30 U	0.40 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.40 U	0.40 U	1.0 U	10 U	250 U	2.0 U	200 U	56 U	3.4 U	0.40 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA

Location ID:		MW-16	MW-16	MW-16	MW-17	MW-17	MW-17	MW-17	MW-17	MW-17	MW-17	MW-17	MW-17	MW-17	MW-17	MW-17	MW-17	MW-17	MW-17	MW-17	MW-17	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	
Sample Date:		10/08/20	9/14/2021	09/15/22	10/22/97	02/24/98	07/22/98	12/14/98	04/13/99	03/16/06	12/07/06	05/02/11	10/22/97	02/24/98	12/14/98	04/13/99	11/16/01	10/07/02	03/03/03	10/09/03	03/18/04	10/11/04	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18	MW-18
Volatile Organics	CAO Goal ¹	Units																																					
1,1,2-Trichloroethane	5	ug/L	1.0 U	1.0 U	1.0 U	10 U	10 U	2.0 U	2.0 U	0.35 U	0.30 U	0.20 U	1.0 U	10 U	10 U	4.0 U	1.8 U	2.0 U	5.6 U	1.4 U	6.8 U	6.8 U	14 U	5.6 U	16 U	6.6 U	8.2 U	8.2 U	2.2 U	2.2 U									
1,2-Dichloroethane	5	ug/L	0.63 J	1.0 UJ	1.0 U	10 U	10 U	2.0 U	0.21 U	0.30 U	0.30 U	1.0 U	10 U	370 D	350 D	490 D	740	960	1,800	420	2,100	2,500	3,600	3,500	3,400	3,600	4,800	4,600	820	1,400									
Chloroethane	---	ug/L	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.4 U	0.40 U	20 U	0.89 J	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U									
Chloroform	0.19	ug/L	1.0 U	1.0 UJ	1.0 U	10 U	10 U	2.0 U	2.0 U	0.59 U	0.50 U	0.20 U	1.0 U	10 U	10 U	2.0 U	4.0 U	3.0 U	1.9 U	5.0 U	1.2 U	3.8 U	3.8 U	17 U	6.8 U	26 U	10 U	13 U	13 U	2.0 U	2.0 U								
Methylene Chloride	5	ug/L	1.0 U	1.0 UJ	1.0 U	10 U	10 U	5.0 U	5.0 U	1.1 U	0.50 U	0.40 U	1.0 U	10 U	10 U	5.0 U	10 U	5.6 U	10 U	4.4 U	16 U	16 U	46 U	16 U	46 U	18 U	13 U	13 U	4.0 U	4.0 U									
Tetrachloroethene	5	ug/L	1.0 U	NA	1.0 U	10 U	10 U	2.0 U	2.0 U	0.62 U	0.40 U	0.40 U	1.0 U	10 U	10 U	2.0 U	4.0 U	3.1 U	2.8 U	4.8 U	1.2 U	6.2 U	6.2 U	18 U	7.2 U	22 U	11 U	11 U	4.2 U	4.2 U									
Trichloroethene	5	ug/L	2.6	1.0 UJ	3.7	10 U	10 U	2.0 U	2.0 U	0.44 U	0.40 U	0.40 U	1.0 U	10 U	10 U	2.0 U	4.0 U	2.2 U	3.1 U	2.4 U	0.60 U	3.6 U	3.6 U	20 U	8.0 U	18 U	7.4 U	9.2 U	3.6 U	3.6 U									
cis-1,2-Dichloroethene	---	ug/L	4.2	1.0 U	6.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.6 U	4.8 U	NA	18 U	7.0 U	22 U	NA	11 U	2.8 U	2.8 U									
Vinyl Chloride	2	ug/L	2.4	1.0 U	4.6	10 U	10 U	2.0 U	2.0 U	0.71 U	0.30 U	0.20 U	1.0 U	10 U	10 U	2.0 U	4.0 U	3.6 U	2.3 U	5.8 U	1.4 U	11 U	11 U	18 U	7.0 U	14 U	5.6 U	14	3.8	7.4									
Carbon Disulfide	1000	ug/L	NA	NA	1.0 U	10 U	10 U	2.0 U	2.0 U	0.56 U	0.30 U	0.40 U	1.0 U	10 U	10 U	2.0 U	4.0 U	2.8 U	2.5 U	6.0 U	1.5 U	4.8 U	4.8 U	12 U	5.0 U	17 U	6.8 U	8.5 U	8.5 U	4.4 U	4.4 U								

Location ID:		MW-18	MW-18	MW-18 (7.67)	MW-18 (14.67)	MW-18 (7.67)	MW-18 (14.67)	MW-18 (7.67)	MW-18 (14.67)	MW-18 (7.67)	MW-18 (14.67)	MW-18 (7.67)	MW-18 (14.67)	MW-18 (7.67)	MW-18 (14.67)	MW-18 (7.67)	MW-18 (14.67)	MW-18 (24)	MW-18 (31)	MW-19D1	MW-19D1	MW-19D1	MW-19D1	MW-19D1	MW-19D1	MW-19D1	MW-19D1
Sample Date:		05/02/11	05/02/11	11/20/14																							

Appendix G
Historical Analytical Data
2021 Annual Groundwater Performance Monitoring Report
1300 Revolution Street
Havre de Grace, Maryland

Notes:

1. Values exceeding the numerical CAO goals are highlighted gray.
2. Duplicate sample results are provided in brackets adjacent to results presented for the parent sample location.
3. The reporting limit for TCE in 2021 was 10 ug/L, greater the CAO goal of 5 ug/L.

µg/L = microgram per liter

CAO = Corrective Action Objective

NA = not analyzed or measured

Laboratory Qualifiers:

B = Indicates the presence of the analyte in the blank in addition to the sample.

D = Compound quantitated using a secondary dilution.

E = Analyte exceeded calibration range.

J = Indicates an estimated value.

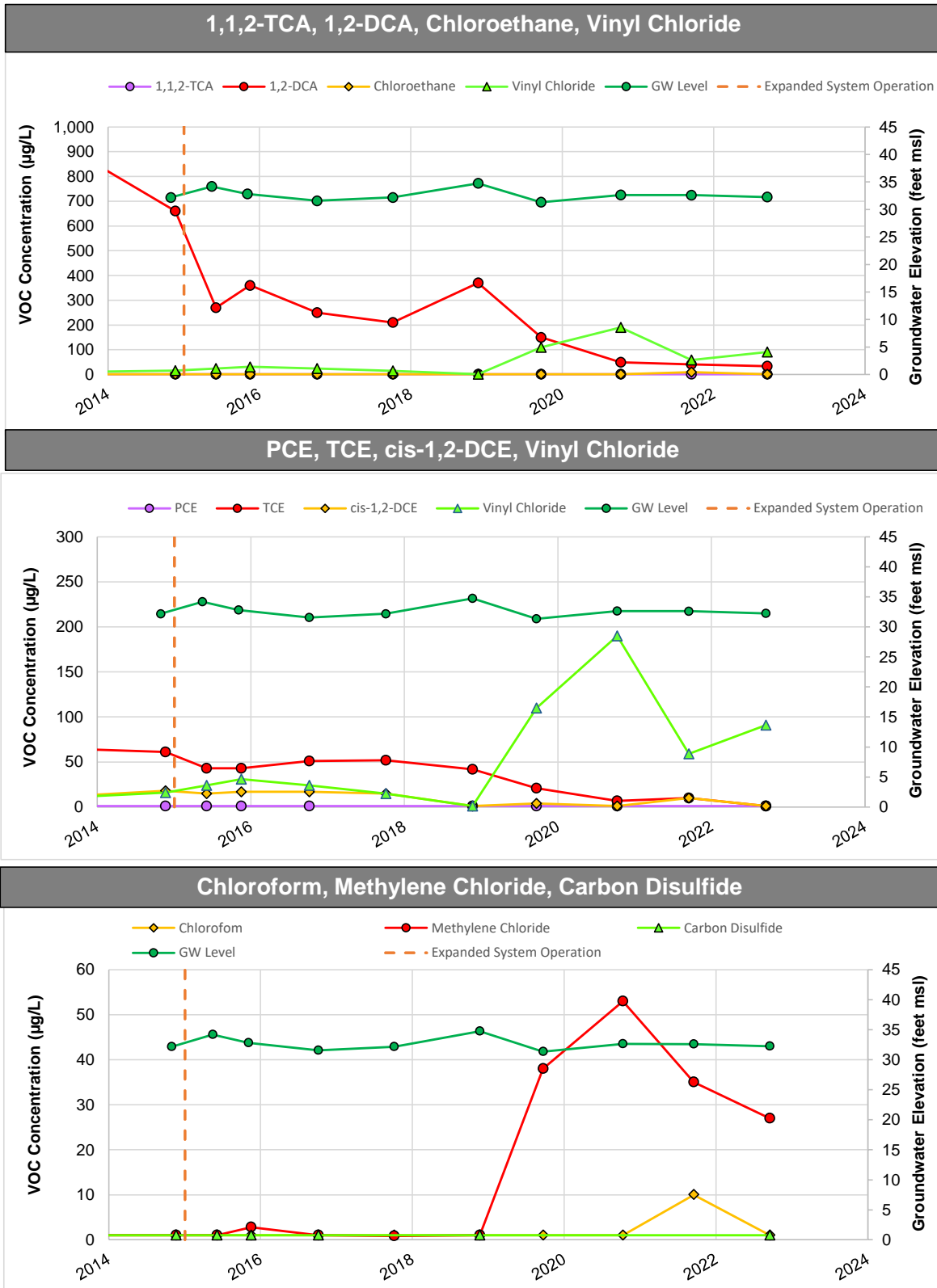
U = Indicates the analyte was analyzed but not detected above the detection limit.

UB = Compound considered non-detect at the listed value due to associated blank contamination.

Appendix H

Trend Plots

Figure H-1
POC Well MW-3, On Site, Deep Overburden



Notes:

Reporting limits varied through time. For graphing purposes, nondetect values are plotted as 1 µg/L. See historical results table for actual reporting limits.

µg/L = microgram per liter

cis-1,2-DCE = cis-1,2-dichloroethene

1,2-DCA = 1,2-dichloroethane

1,1,2-TCA = 1,1,2-trichloroethane

GW = groundwater

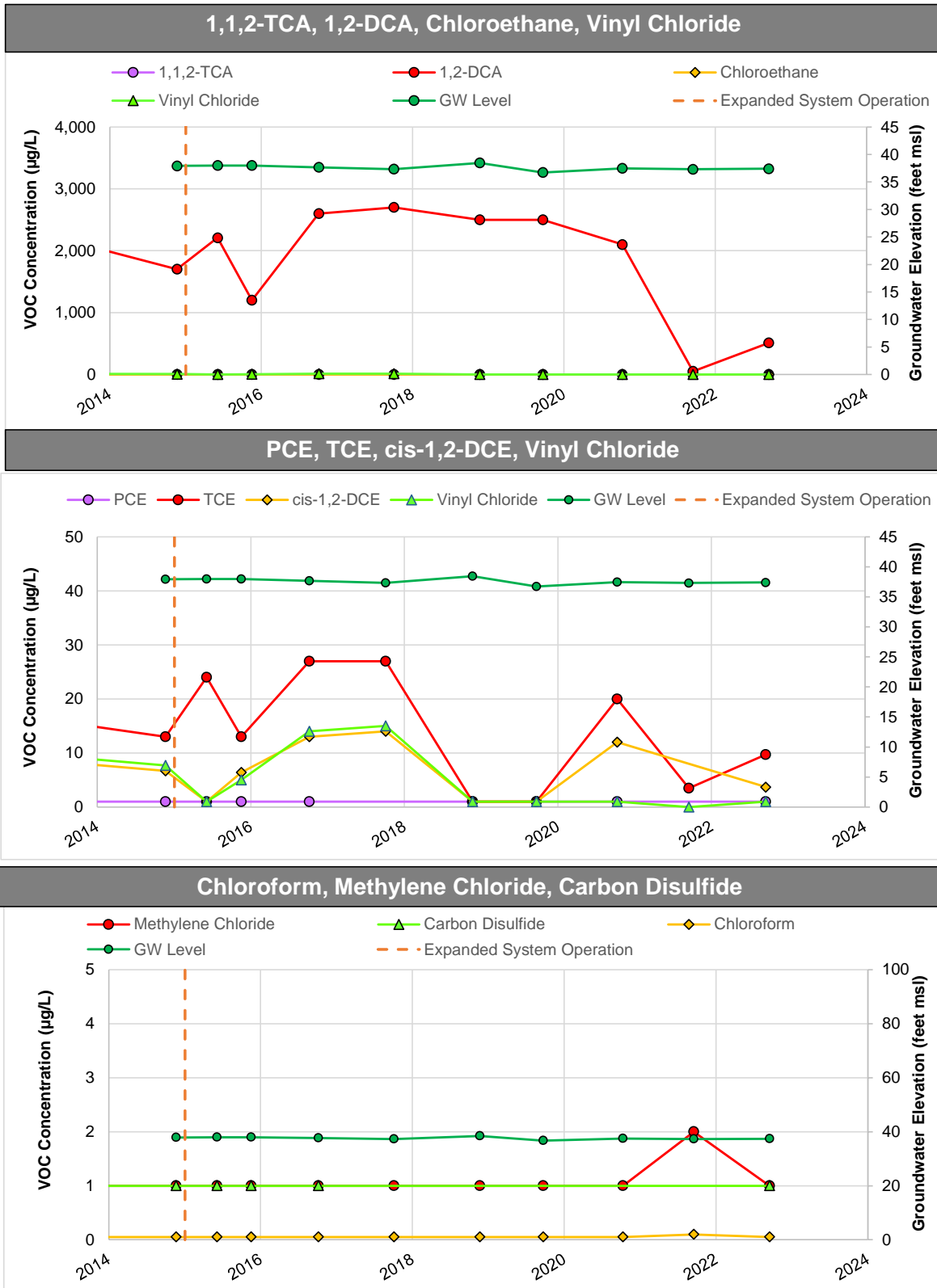
msl = mean sea level

PCE = tetrachloroethene

TCE = trichloroethene

VOC = volatile organic compound

Figure H-2
Well MW-6I, On Site, Intermediate Overburden



Notes:

Reporting limits varied through time. For graphing purposes, nondetect values are plotted as 1 µg/L. See historical results table for actual reporting limits.

µg/L = microgram per liter

cis-1,2-DCE = cis-1,2-dichloroethene

1,2-DCA = 1,2-dichloroethane

1,1,2-TCA = 1,1,2-trichloroethane

GW = groundwater

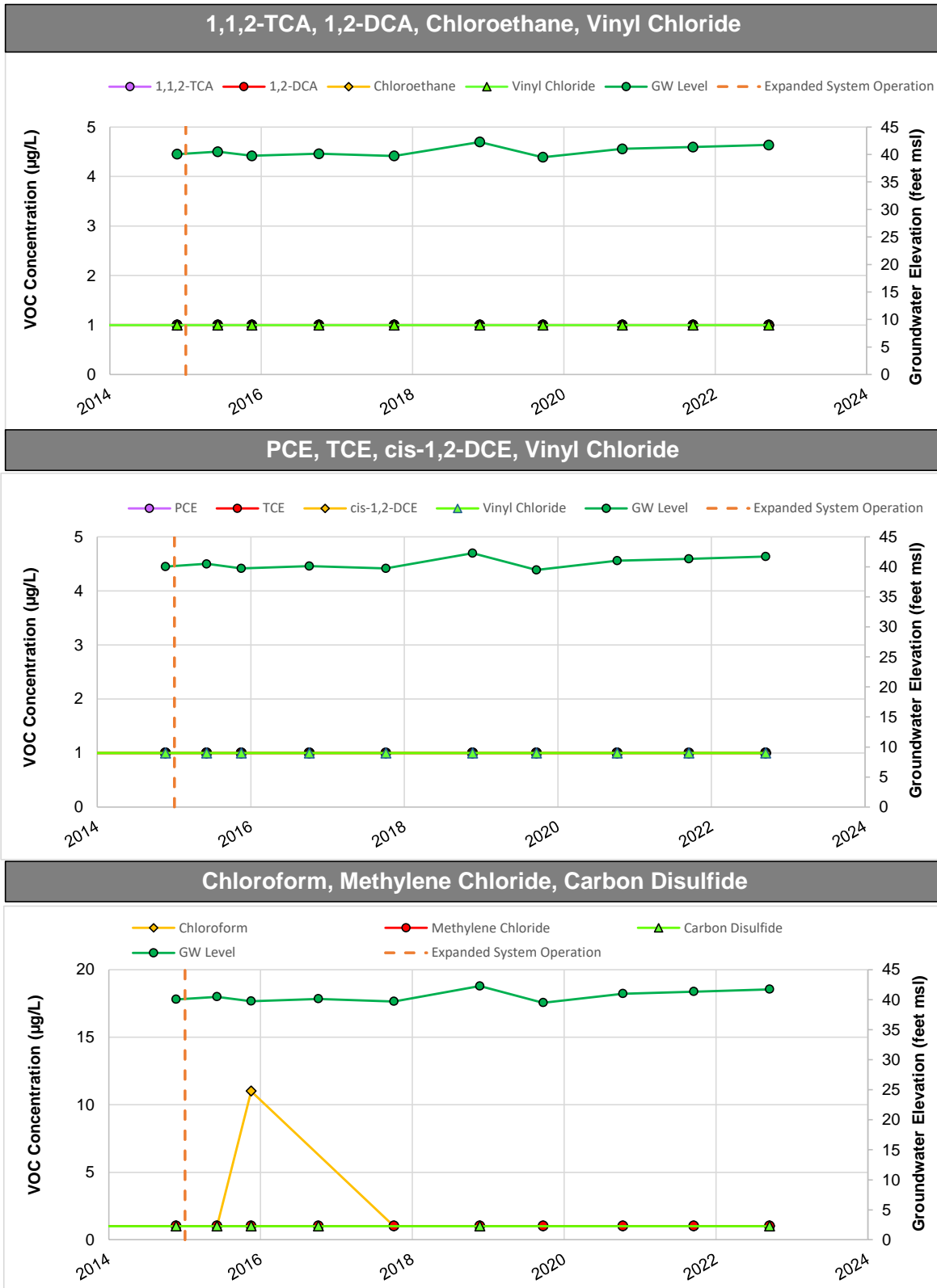
msl = mean sea level

PCE = tetrachloroethene

TCE = trichloroethene

VOC = volatile organic compound

Figure H-3
POC Well MW-12S, On Site, Intermediate Overburden



Notes:

Reporting limits varied through time. For graphing purposes, nondetect values are plotted as 1 µg/L. See historical results table for actual reporting limits.

µg/L = microgram per liter

cis-1,2-DCE = cis-1,2-dichloroethene

1,2-DCA = 1,2-dichloroethane

1,1,2-TCA = 1,1,2-trichloroethane

GW = groundwater

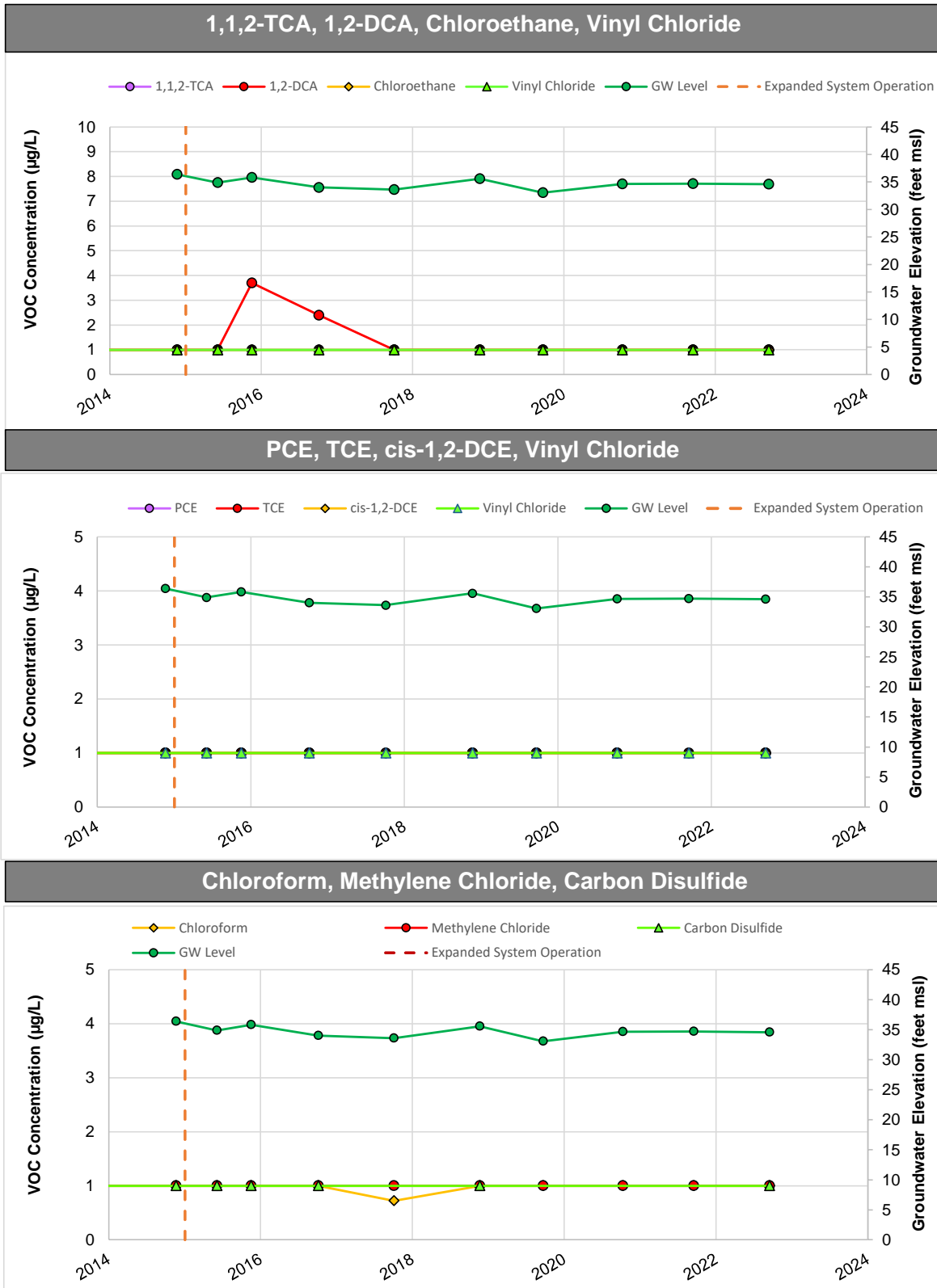
msl = mean sea level

PCE = tetrachloroethene

TCE = trichloroethene

VOC = volatile organic compound

Figure H-4
POC Well MW-12D, On Site, Deep Overburden



Notes:

Reporting limits varied through time. For graphing purposes, nondetect values are plotted as 1 µg/L. See historical results table for actual reporting limits.

µg/L = microgram per liter

cis-1,2-DCE = cis-1,2-dichloroethene

1,2-DCA = 1,2-dichloroethane

1,1,2-TCA = 1,1,2-trichloroethane

GW = groundwater

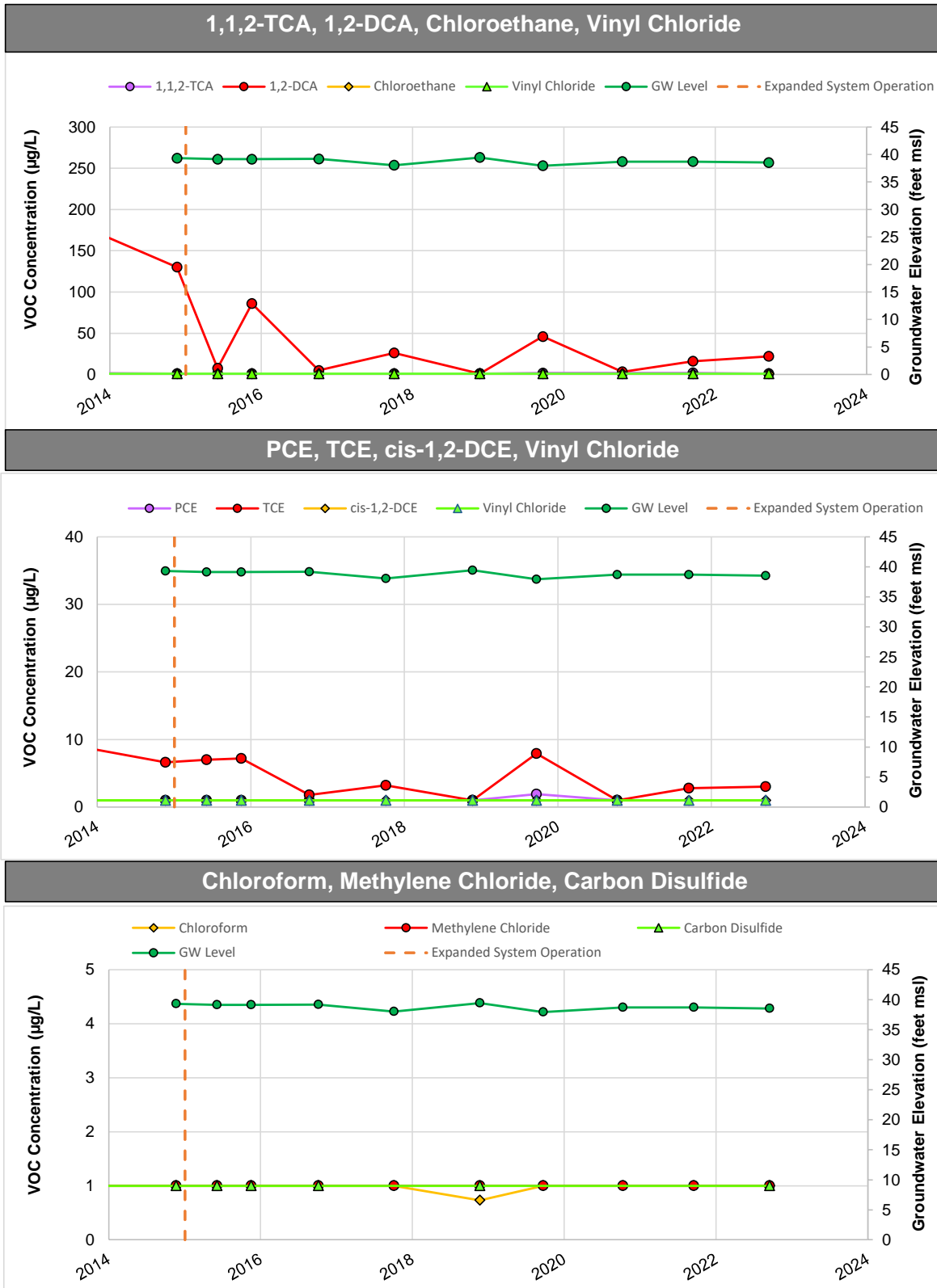
msl = mean sea level

PCE = tetrachloroethene

TCE = trichloroethene

VOC = volatile organic compound

Figure H-5
POC Well MW-13D, On Site, Intermediate Overburden



Notes:

Reporting limits varied through time. For graphing purposes, nondetect values are plotted as 1 µg/L. See historical results table for actual reporting limits.

µg/L = microgram per liter

cis-1,2-DCE = cis-1,2-dichloroethene

1,2-DCA = 1,2-dichloroethane

1,1,2-TCA = 1,1,2-trichloroethane

GW = groundwater

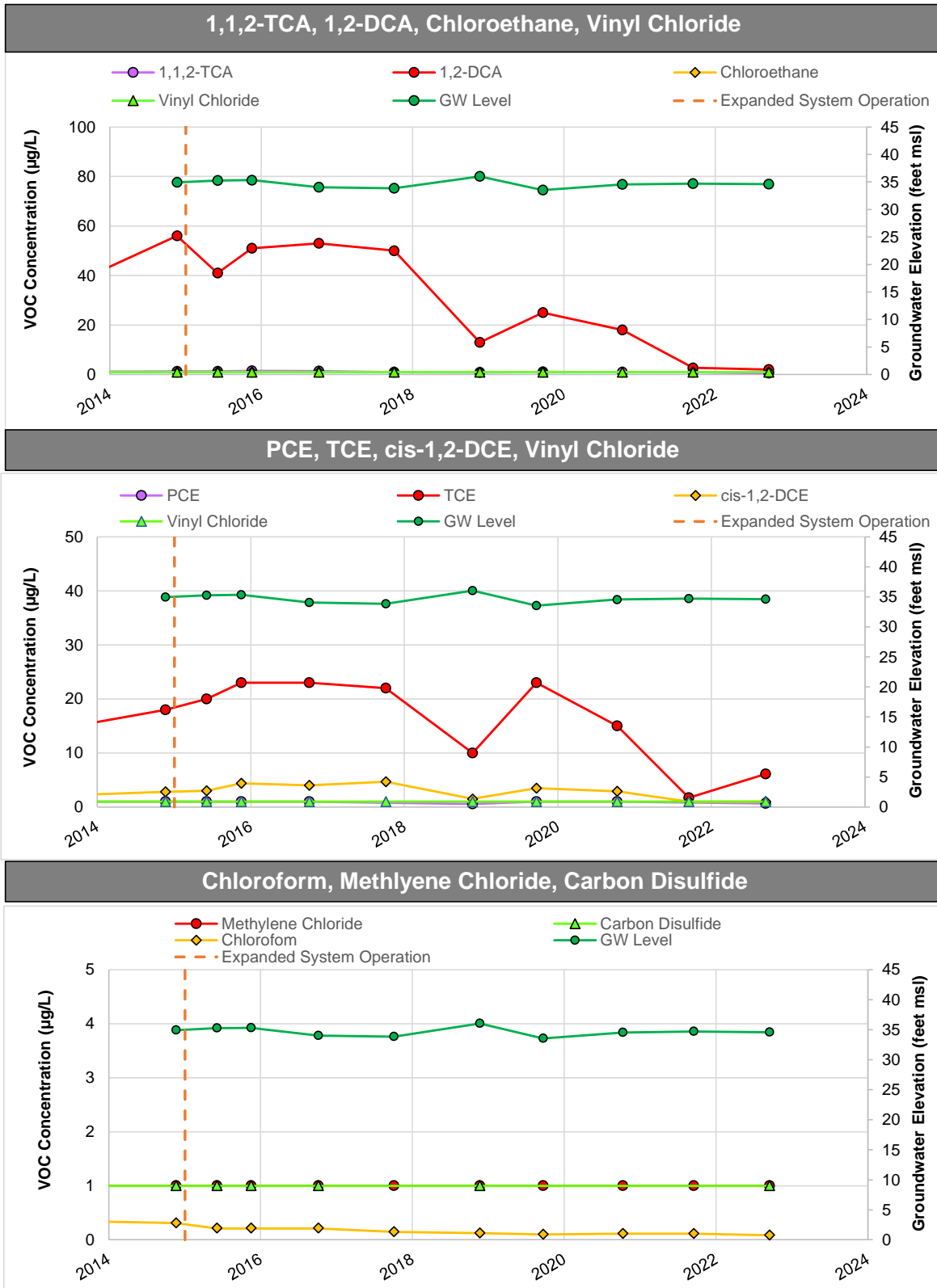
msl = mean sea level

PCE = tetrachloroethene

TCE = trichloroethene

VOC = volatile organic compound

Figure H-6
Well MW-25I, On Site, Intermediate Overburden



Notes:

Reporting limits varied through time. For graphing purposes, nondetect values are plotted as 1 µg/L. See historical results table for actual reporting limits.

µg/L = microgram per liter

cis-1,2-DCE = cis-1,2-dichloroethene

1,2-DCA = 1,2-dichloroethane

1,1,2-TCA = 1,1,2-trichloroethane

GW = groundwater

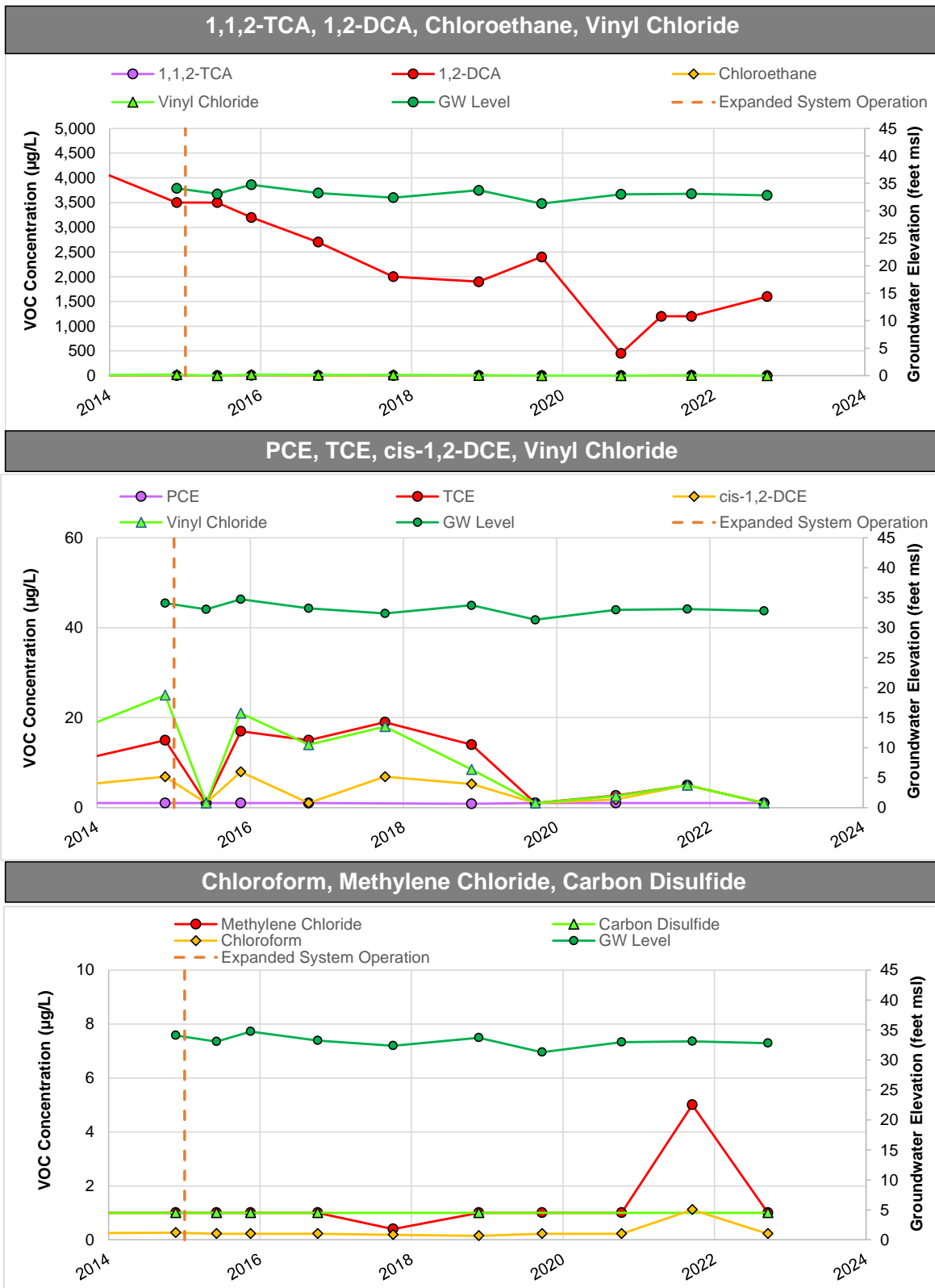
msl = mean sea level

PCE = tetrachloroethene

TCE = trichloroethene

VOC = volatile organic compound

Figure H-7
Well MW-28D, On Site, Deep Overburden



Notes:

Reporting limits varied through time. For graphing purposes, nondetect values are plotted as 1 µg/L. See historical results table for actual reporting limits.

µg/L = microgram per liter

cis-1,2-DCE = cis-1,2-dichloroethene

1,2-DCA = 1,2-dichloroethane

1,1,2-TCA = 1,1,2-trichloroethane

GW = groundwater

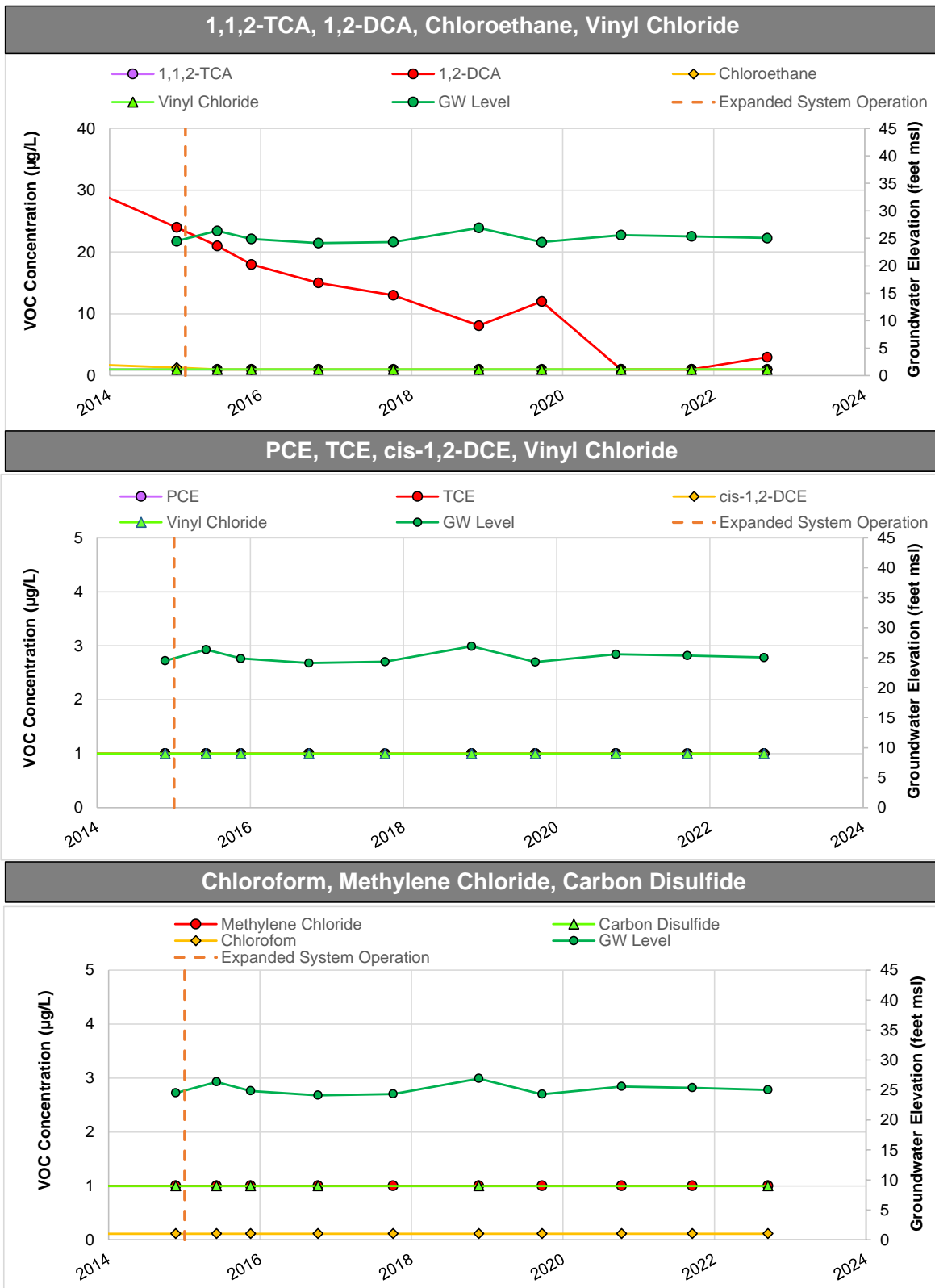
msl = mean sea level

PCE = tetrachloroethene

TCE = trichloroethene

VOC = volatile organic compound

Figure H-8
Well MW-14, Off Site, Deep Overburden



Notes:

Reporting limits varied through time. For graphing purposes, nondetect values are plotted as 1 µg/L. See historical results table for actual reporting limits.

µg/L = microgram per liter

cis-1,2-DCE = cis-1,2-dichloroethene

1,2-DCA = 1,2-dichloroethane

1,1,2-TCA = 1,1,2-trichloroethane

GW = groundwater

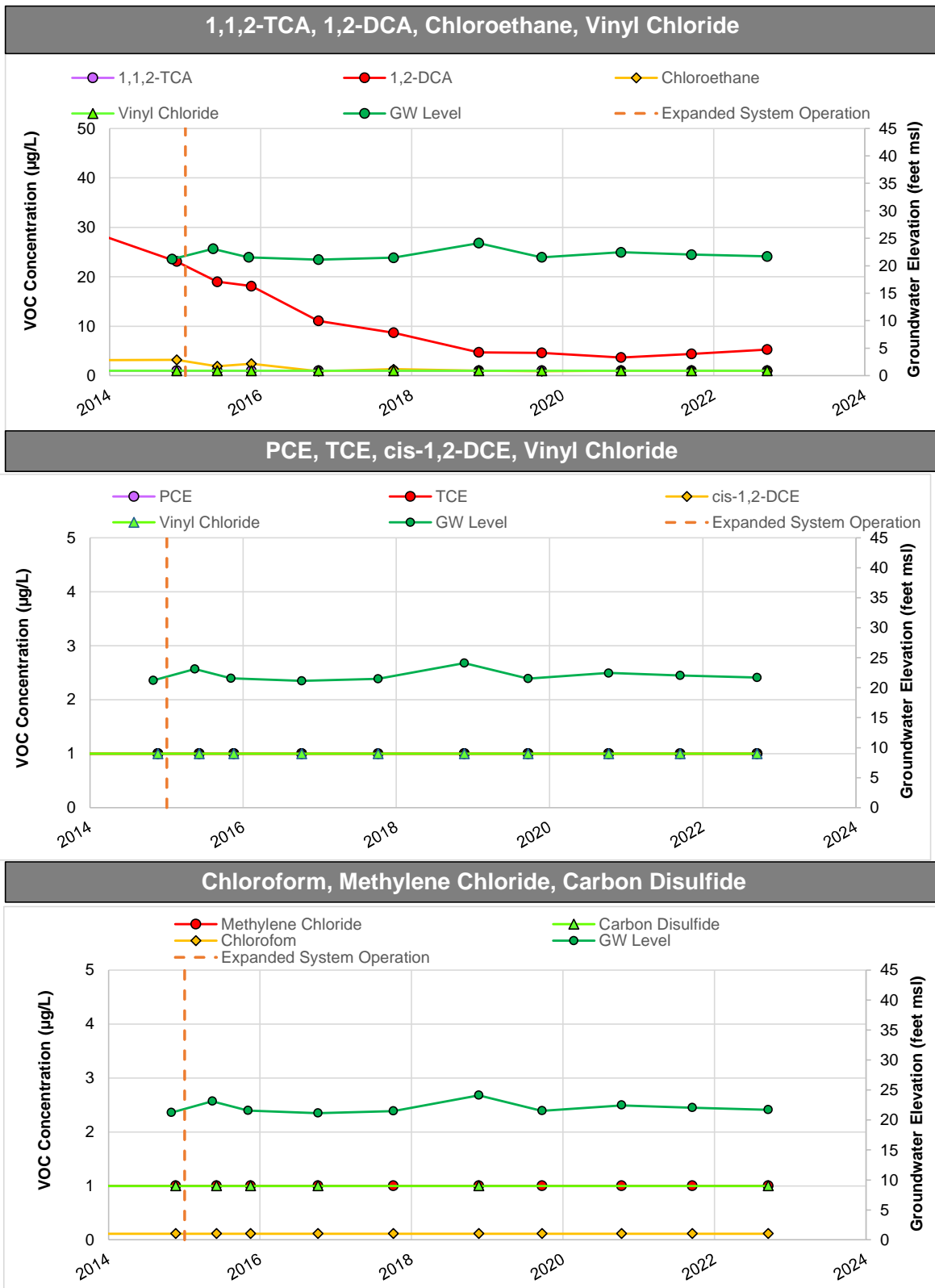
msl = mean sea level

PCE = tetrachloroethene

TCE = trichloroethene

VOC = volatile organic compound

Figure H-9
Well MW-14I, Off Site, Intermediate Overburden



Notes:

Reporting limits varied through time. For graphing purposes, nondetect values are plotted as 1 µg/L. See historical results table for actual reporting limits.

µg/L = microgram per liter

cis-1,2-DCE = cis-1,2-dichloroethene

1,2-DCA = 1,2-dichloroethane

1,1,2-TCA = 1,1,2-trichloroethane

GW = groundwater

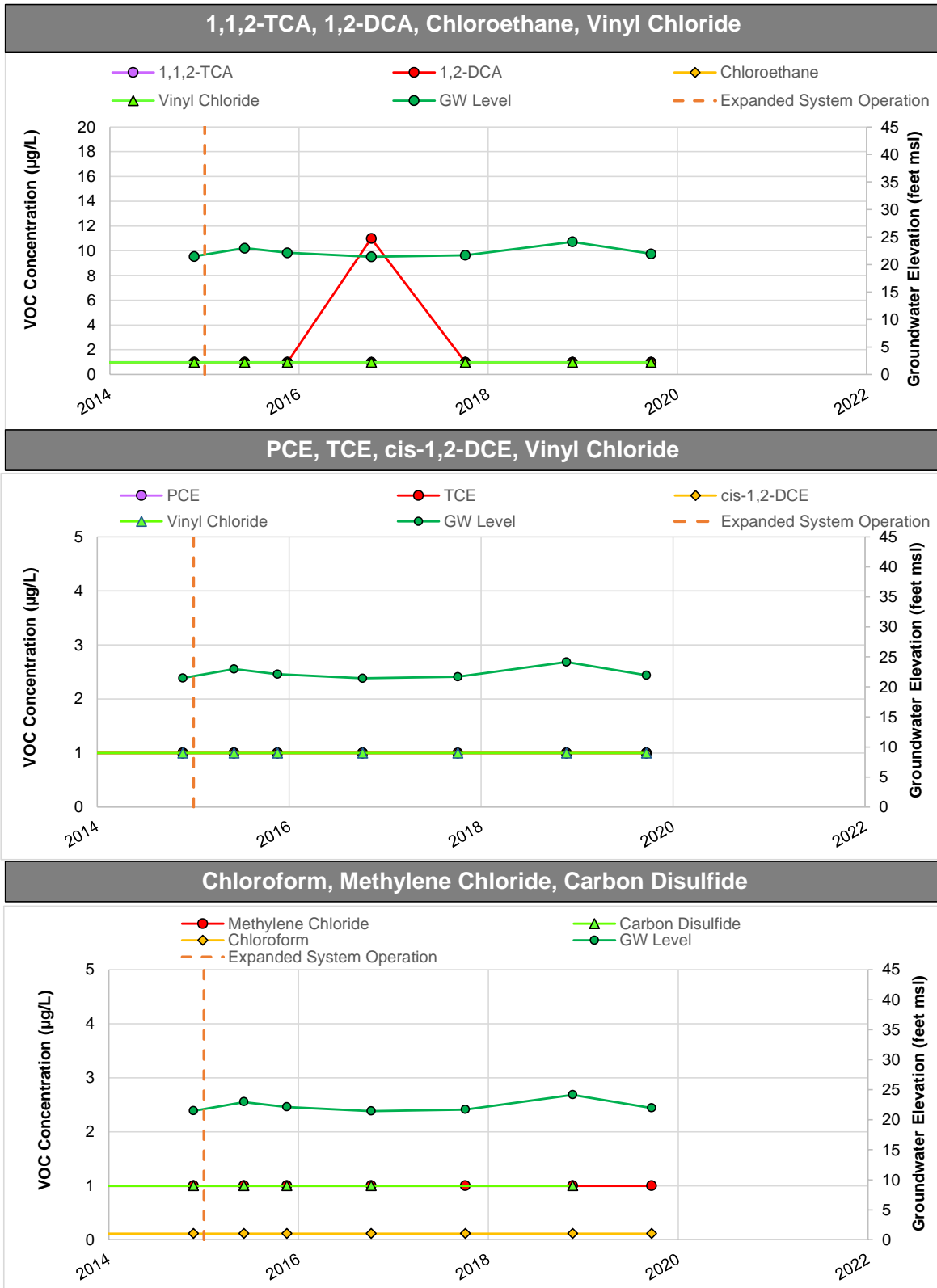
msl = mean sea level

PCE = tetrachloroethene

TCE = trichloroethene

VOC = volatile organic compound

Figure H-10
Well MW-15, Off Site, Deep Overburden



Notes:

Reporting limits varied through time. For graphing purposes, nondetect values are plotted as 1 µg/L. See historical results table for actual reporting limits.

µg/L = microgram per liter

cis-1,2-DCE = cis-1,2-dichloroethene

1,2-DCA = 1,2-dichloroethane

1,1,2-TCA = 1,1,2-trichloroethane

GW = groundwater

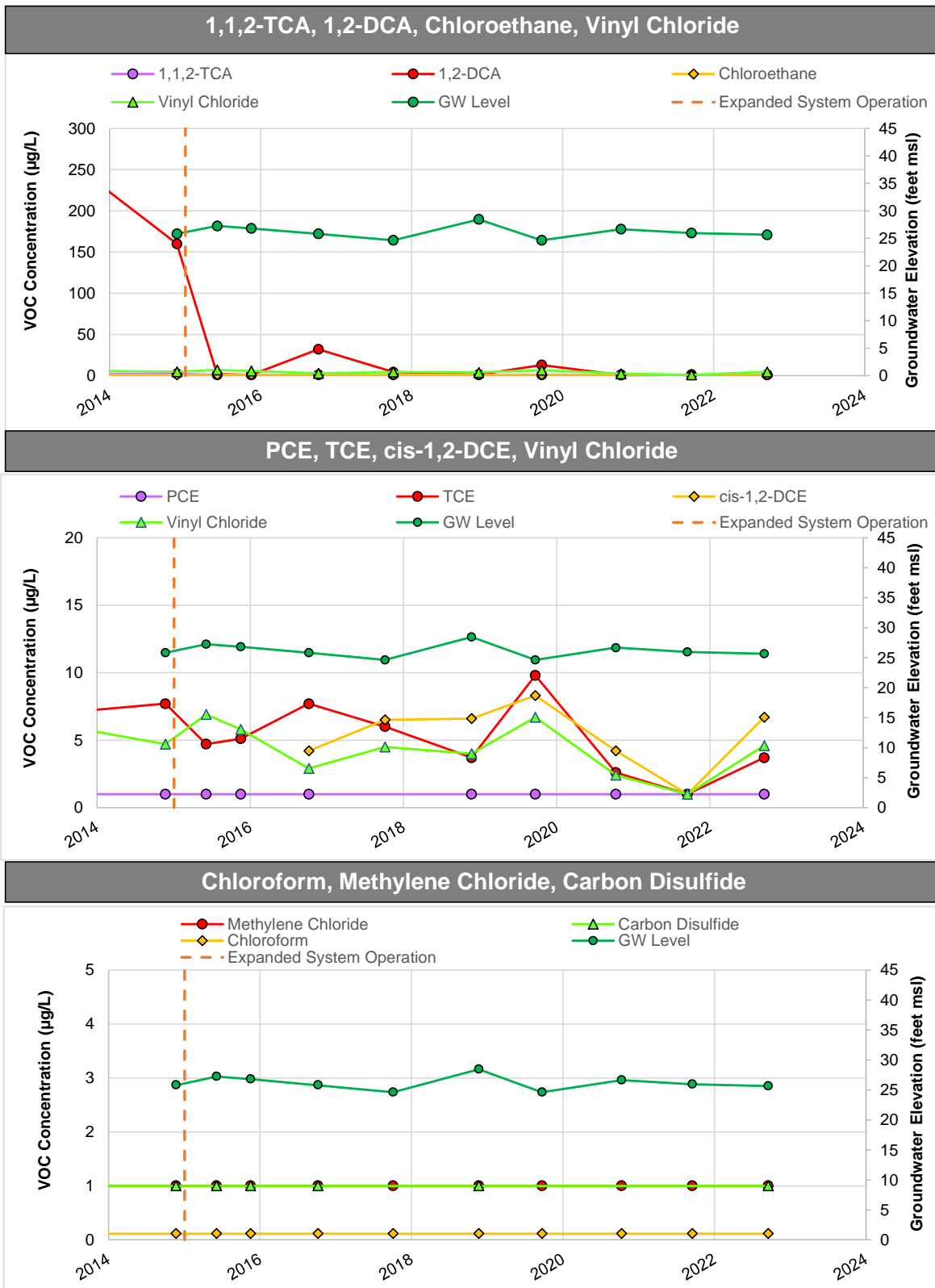
msl = mean sea level

PCE = tetrachloroethene

TCE = trichloroethene

VOC = volatile organic compound

Figure H-11
Well MW-16, Off Site, Deep Overburden



Notes:

Reporting limits varied through time. For graphing purposes, nondetect values are plotted as 1 µg/L. See historical results table for actual reporting limits.

µg/L = microgram per liter

cis-1,2-DCE = cis-1,2-dichloroethene

1,2-DCA = 1,2-dichloroethane

1,1,2-TCA = 1,1,2-trichloroethane

GW = groundwater

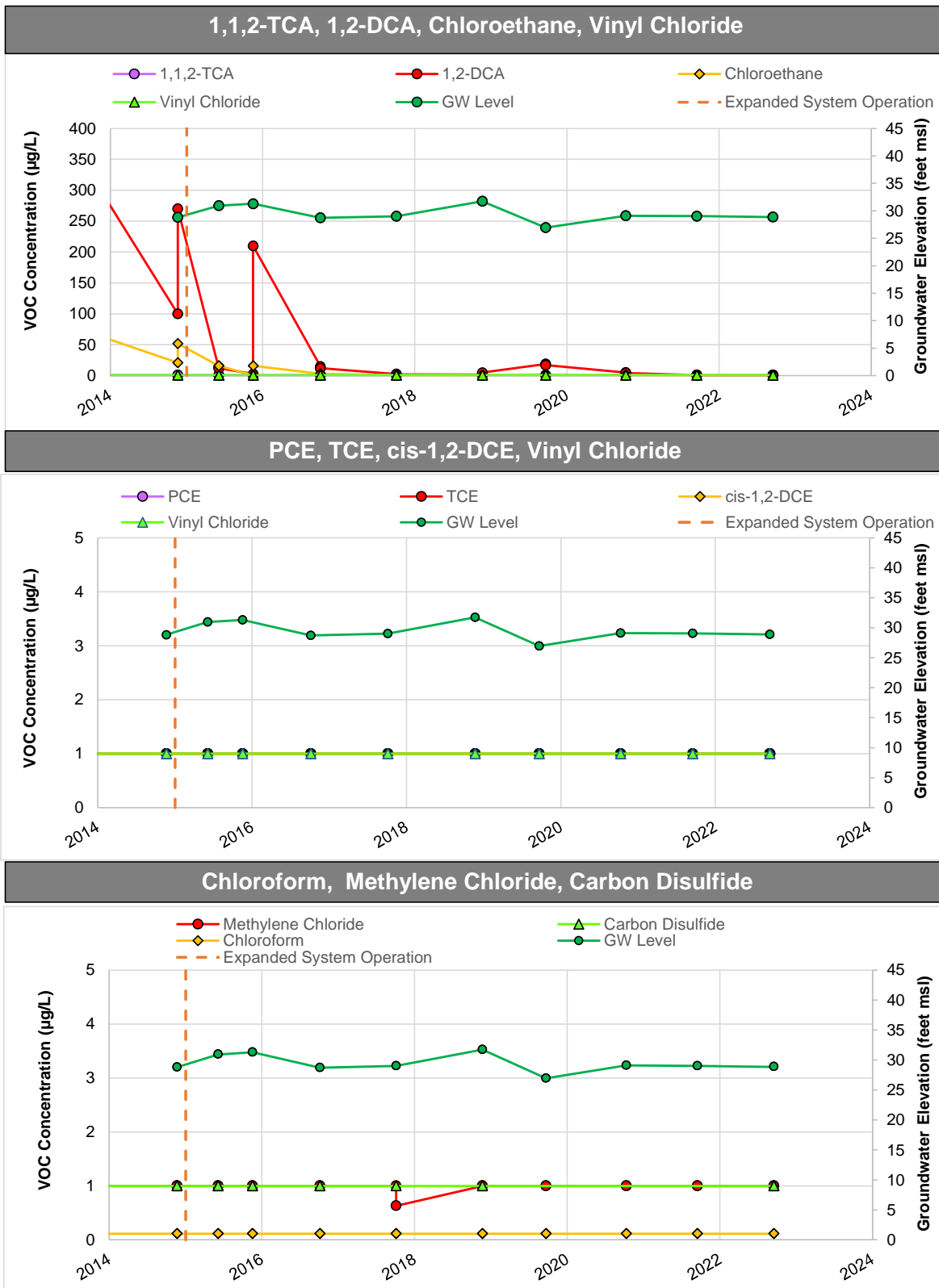
msl = mean sea level

PCE = tetrachloroethene

TCE = trichloroethene

VOC = volatile organic compound

Figure H-12
Well MW-18, Off Site, Deep Overburden



Notes:

Reporting limits varied through time. For graphing purposes, nondetect values are plotted as 1 µg/L. See historical results table for actual reporting limits.

µg/L = microgram per liter

cis-1,2-DCE = cis-1,2-dichloroethene

1,2-DCA = 1,2-dichloroethane

1,1,2-TCA = 1,1,2-trichloroethane

GW = groundwater

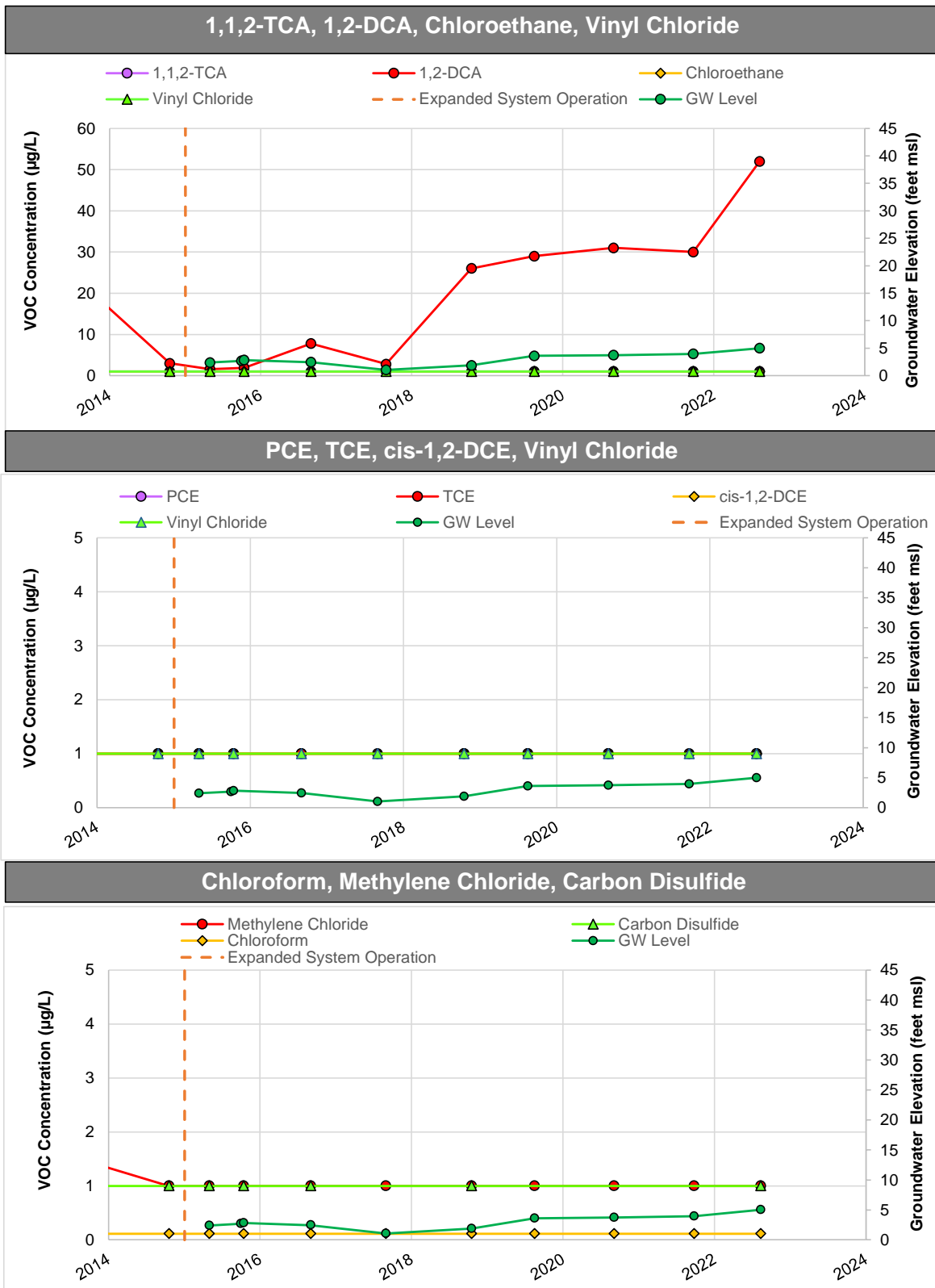
msl = mean sea level

PCE = tetrachloroethene

TCE = trichloroethene

VOC = volatile organic compound

Figure H-13
POC Well MW-19D1, Off Site, Deep Overburden



Notes:

Reporting limits varied through time. For graphing purposes, nondetect values are plotted as 1 µg/L. See historical results table for actual reporting limits.

µg/L = microgram per liter

cis-1,2-DCE = cis-1,2-dichloroethene

1,2-DCA = 1,2-dichloroethane

1,1,2-TCA = 1,1,2-trichloroethane

GW = groundwater

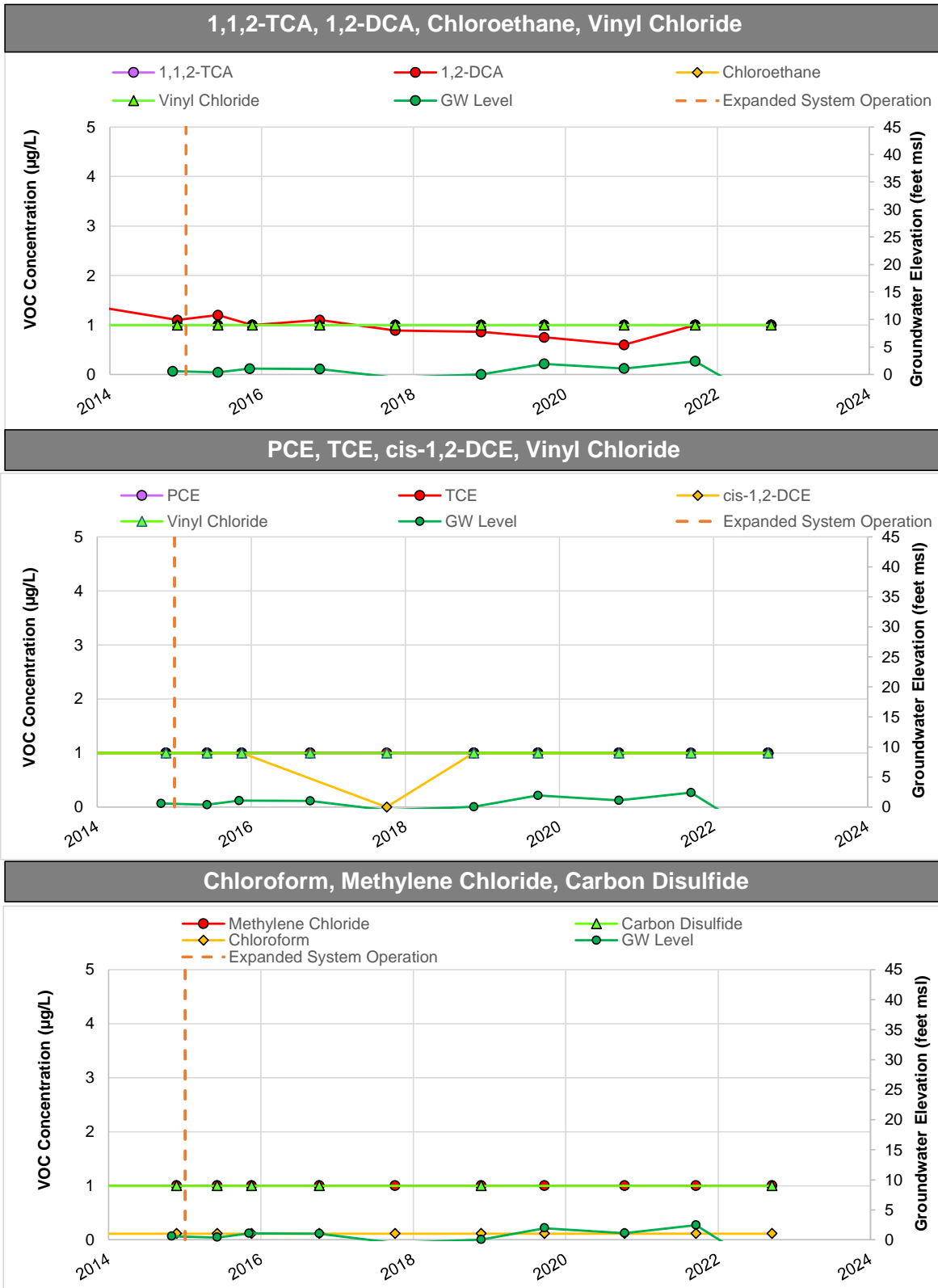
msl = mean sea level

PCE = tetrachloroethene

TCE = trichloroethene

VOC = volatile organic compound

Figure H-14
POC Well MW-20D1, Off Site, Deep Overburden



Notes:

Reporting limits varied through time. For graphing purposes, nondetect values are plotted as 1 µg/L. See historical results table for actual reporting limits.

µg/L = microgram per liter

cis-1,2-DCE = cis-1,2-dichloroethene

1,2-DCA = 1,2-dichloroethane

1,1,2-TCA = 1,1,2-trichloroethane

GW = groundwater

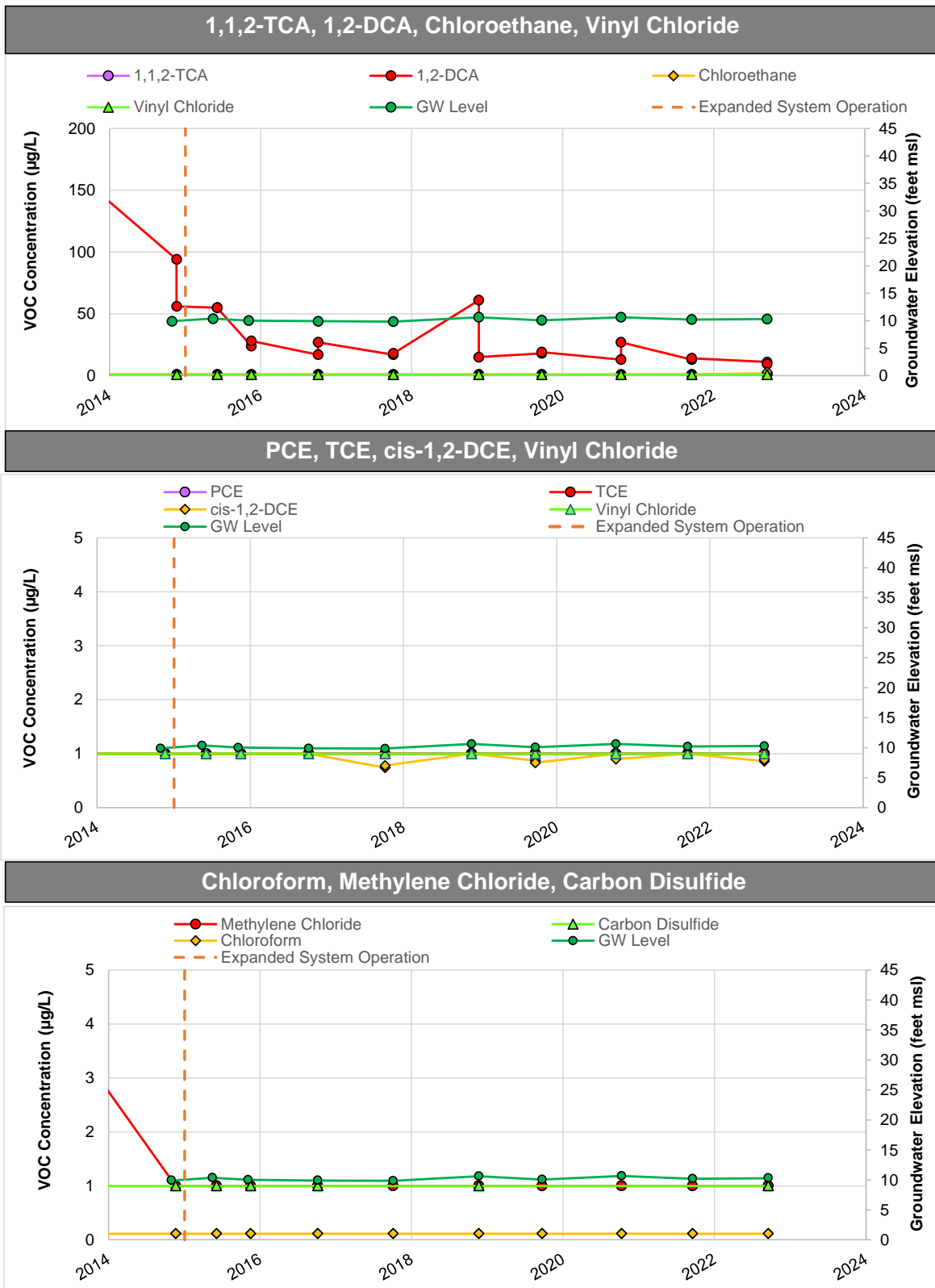
msl = mean sea level

PCE = tetrachloroethene

TCE = trichloroethene

VOC = volatile organic compound

Figure H-15
Well MW-23, Off Site, Deep Overburden



Notes:

Reporting limits varied through time. For graphing purposes, nondetect values are plotted as 1 µg/L. See historical results table for actual reporting limits.

µg/L = microgram per liter

cis-1,2-DCE = cis-1,2-dichloroethene

1,2-DCA = 1,2-dichloroethane

1,1,2-TCA = 1,1,2-trichloroethane

GW = groundwater

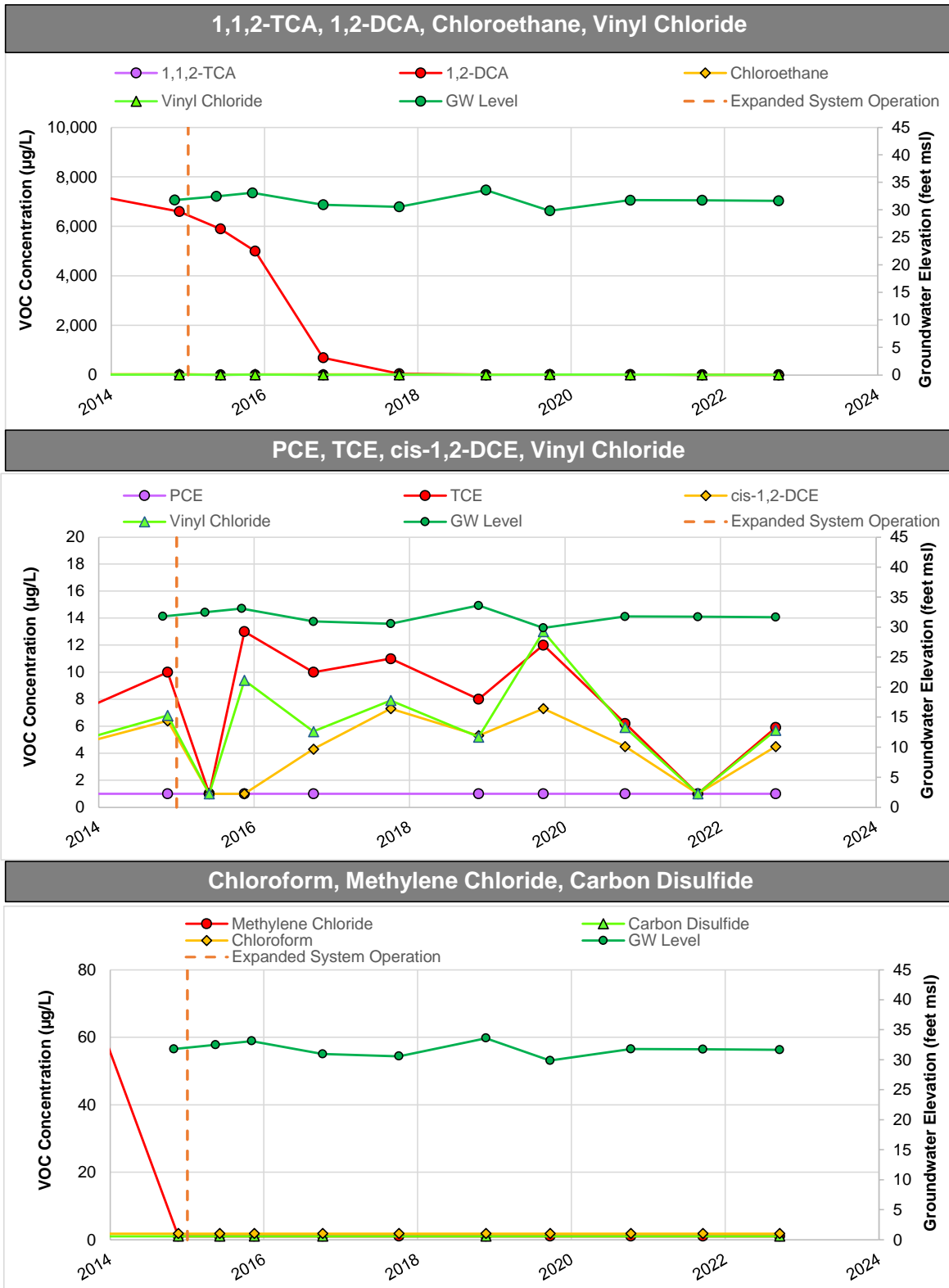
msl = mean sea level

PCE = tetrachloroethene

TCE = trichloroethene

VOC = volatile organic compound

Figure H-16
Well MW-27, Off Site, Deep Overburden



Notes:

Reporting limits varied through time. For graphing purposes, nondetect values are plotted as 1 µg/L. See historical results table for actual reporting limits.

µg/L = microgram per liter

cis-1,2-DCE = cis-1,2-dichloroethene

1,2-DCA = 1,2-dichloroethane

1,1,2-TCA = 1,1,2-trichloroethane

GW = groundwater

msl = mean sea level

PCE = tetrachloroethene

TCE = trichloroethene

VOC = volatile organic compound