

TRANSMITTAL LETTER



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Copies:

Date:
 December 9, 2021

Subject:
 Livonia Transmission Plant
 Utility Corridor Evaluation
 Report

Arcadis Project No.:
 30080642

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Ford Motor Company

UTILITY CORRIDOR EVALUATION REPORT

Livonia Transmission Plant

This document is a DRAFT document that has not received approval from the Michigan Department of Environmental, Great Lakes, and Energy (EGLE).

This document was prepared pursuant to a court Consent Decree. The opinions, findings, and conclusions expressed are those of the authors and not those of the EGLE.

December 9, 2021

UTILITY CORRIDOR EVALUATION REPORT

Livonia Transmission Plant
Area of Concern
Court Case: No. 2:1712372-GAD-RSW

December 9, 2021

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Acronyms and Abbreviations

ATNPC	Automatic Transmission New Product Center
BOR	Basis of Rehabilitation
CCTV	closed-circuit televised
CD	Consent Decree
cDCE	cis-1,2-dichloroethene
CIPPL	cured-in-place pipe lining
CIPPR	cured-in-place point repair
COC	constituent of concern
CSM	conceptual site model
1,1-DCE	1,1-dichloroethane
EDC	Eastern Diversion Chamber
GIS	geographic information system
GLWA	Great Lakes Water Authority
LTP	Livonia Transmission Plant
EGLE	Michigan Department of Environmental, Great Lakes, and Environment
PCE	tetrachloroethene
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
RCP	reinforced concrete pipe
RespAP	Response Activity Plan
RI	Remedial Investigation
SAMH	Sanitary Manhole
SL	sampling location
SSVIAC	Site-Specific Volatilization to Indoor Air Criteria
TCE	trichloroethene
tDCE	trans-1,2-dichloroethene
TDL	target detection limit
T/S	test and seal
USEPA	United States Environmental Protection Agency
VC	vinyl chloride
VCP	vertical clay pipe
WDC	Western Diversion Chamber

1 Introduction

Arcadis of Michigan, LLC (Arcadis) has prepared the following Utility Corridor Evaluation Report (Report) on behalf of Ford Motor Company (Ford) for the Livonia Transmission Plant (LTP) site (the site). The on-site and off-site layout of the utility corridor assessment completed to date is included on **Figure 1**. This document describes the Remedial Investigation (RI) activities conducted to comprehensively assess the potential exposure pathway via the utility corridors in accordance with the Consent Decree (CD) effective July 27, 2017 (No: 2:1712372-GAD-RSW) and satisfies the Section 6.7a requirement for a response activity plan for conducting an RI.

All work was performed under the guidance of the Michigan Department of Environment, Great Lakes, and Energy (EGLE) in compliance with the CD and in accordance with the following approved Response Activity Plans (RespAPs):

- RespAP – Utility Corridor Evaluation Revised, dated February 11, 2020;
- RespAP – Utility Corridor Evaluation Revised Addendum, dated December 4, 2020;
- RespAP – Utility Corridor Evaluation Revised Addendum #2, dated January 27, 2021.

The response activities completed to date address the comments provided by EGLE in the letters dated June 2, 2021 and November 9, 2021. This report shall serve to respond and satisfy the 30-day requirement in EGLE's November 9, 2021 letter. This report also supplements Ford's November 19, 2021 letter to EGLE. Ford and Arcadis have continued to meet with EGLE and progress the work based on the investigation results. The scope of work completed under the approved RespAPs systematically assesses the potential exposure pathway related to the utility corridors on-site and off-site. Additional phases of investigation may be required based on the activities completed and outlined in this Report.

This Report is organized to describe on-site and off-site RI activities and the rehabilitation of sanitary sewers on-site:

On-site RI activities completed include:

- Sanitary Sewer and Compliance Point Vapor and Liquid Sampling.

Off-site RI activities include:

- Off-site Sanitary Sewer and Compliance Point Vapor, Liquid, and Sediment Sampling.

Sanitary sewer rehabilitation included:

- On-site sanitary sewer cleaning, closed circuit televised, and rehabilitation.

The constituents of concern (COCs) for the site, as defined by the CD, include:

- Trichloroethene (TCE);
- Tetrachloroethene (PCE);
- 1,1-dichloroethene (DCE);
- Cis-1,2-dichloroethene (cDCE);
- Trans-1,2-dichloroethene (tDCE);
- Vinyl chloride (VC);
- 1,4-Dioxane.

The target detection limits (TDLs) for COCs in vapor are defined in the Site-Specific Volatilization to Indoor Air Criteria (SSVIAC) to evaluate vapor migration in preferential pathways provided by EGLE on September 11, 2020. TDLs for COCs in sediment and liquid samples collected in the sanitary sewer were not provided by EGLE for these media.

This document provides the results of the utility corridor RI activities. Investigation sampling, routine monitoring, and laboratory analysis methods employed during the RI are presented in two Quality Assurance Project Plans (QAPPs; Arcadis 2017b, 2017c), prepared and submitted to EGLE in August 2017. QAPP addenda may be prepared and submitted to EGLE for review and approval should an investigation method require additional description.

2 Utility Corridor Remedial Investigations

2.1 Utility Corridor Reconnaissance

On-site Reconnaissance

From December 14 through 16, 2021, Arcadis completed a preliminary review of the facilities (restrooms, fountains) that would be connected to the sanitary laterals within the plant property. Arcadis documented current conditions and informed the plant if there were any potential deficiencies in the p-traps, wax rings, and floor drains. Field notes are provided in **Appendix A**.

Off-site Reconnaissance

Between June 2020 and September 2021, Arcadis reviewed the sanitary sewer maps provided by the City of Livonia as well as the City of Livonia geographic information system (GIS) files. This information was used to generate most of the sanitary sewer layout shown on **Figure 1**. In addition, sanitary sewer locations were confirmed in the field to verify the City of Livonia records. The main findings of this review indicate the following:

- The sanitary sewer along Plymouth Road from sanitary location SAMH-1231 to SL-5 (located in Stark Road) does not connect to the sanitary sewer located east of Stark Road.
- The Belden Court sanitary sewer does not connect to the Plymouth Road sanitary sewer. The Belden Court sanitary sewer discharges through the Alden Village combined sewer system, which discharges to the Stark Road sanitary sewer.
- No businesses on Belden Court or residential properties within Alden Village are connected directly to the Plymouth Road sanitary sewer until the Stark Road and Plymouth Road intersection.
- The Stark Road sanitary sewer discharges to the sewer that runs east and west down Hathaway Road into the Farmington Road 4-foot-diameter sanitary sewer system.
- The Farmington Road sanitary system discharges into the Wayne County interceptor.

Based on investigations completed within these sewers and confirmation with the City of Livonia record, it is unlikely that storm sewers connect to the sanitary sewers, except for the combined sewer system within Alden Village. There is no evidence to date that indicates any other combined sewer system is present but has not been visually confirmed for Stark and Hathaway Roads.

The findings from the reconnaissance are presented on **Figure 2**.

2.2 Utility Corridor Sampling

2.2.1 On-site Sewer Sampling

Between December 2018 and December 2020, Arcadis surveyed manhole rims, inverts, and sumps on site in an effort to understand the relationship between depth of sanitary sewers and the elevation of impacted groundwater on site. The findings of the sanitary sewer survey indicate that most of the buried piped infrastructure is submerged and/or has the potential to be in contact with groundwater.

In order to evaluate if potential vapor is interacting with the on-site sanitary sewers and subsequently allowing vapors migrate to off-site sanitary sewers, Arcadis collected vapor samples from sanitary manholes (SAMH) SAMH-1231, SAMH-1233, SAMH-1234, SAMH-1244, SAMH-1245, SAMH-1248, SAMH-1252, SAMH-1255, SAMH-1256, SAMH-1258, SAMH-1259, SAMH-1261, SL-2, and the Eastern Diversion Chamber (EDC) and Western Diversion Chamber (WDC) as shown on **Figure 1**. Nine sampling events (June 2020, September 2020, December 2020, March 2021, June 2021, April 2021, July 2021, October 2021, and November 2021) have been conducted to date. Liquid samples were also collected from on-site locations SAMH-1231 and SL-2, which are shown on **Figure 1**, during three sampling events (April 2021, October 2021, and November 2021).

2.2.2 Off-site Sewer Sampling

Between December 2018 and December 2020, Arcadis surveyed storm and sanitary sewer system manholes located in and around the Alden Village Subdivision. The surveys were completed to determine the depths of manhole rims, inverts, sumps, and to determine flow direction. The surveys focused on the Alden Village Subdivision, Belden Court, Rosati Avenue, and Stark Road. Results from this survey indicate that the average depth to inverts is between 5 and 12 feet below ground surface. Based on these depths, the sewers off-site are potentially in contact with groundwater. Invert and sump elevations were also used to estimate the flow direction between sewer manholes. Estimated flow directions and piping configurations is provided on **Figure 1**.

In order to evaluate if off-site shallow groundwater impacted with VC was interacting with the off-site sewers in the Alden Village Subdivision, Belden Court, Rosati Avenue, and Stark Road, Arcadis collected vapor samples from sanitary manholes SAMH-1020, SAMH-1043, SAMH-1067, SAMH-1082, SAMH-1096, SAMH-1113, SAMH-1116, SAMH-1122, SAMH-1123, and SAMH-1181, as shown on **Figure 1**, during four sampling events (June 2020, September 2020, December 2020, and March 2021). Liquid samples were collected from SAMH-1020, SAMH-1043, SAMH-1067, SAMH-1082, SAMH-1096, and SAMH-1181, as shown on **Figure 1**, during four sampling events (June 2020, September 2020, December 2020, and March 2021). Sediment samples were collected from SAMH-1020 and SAMH-1122, shown on **Figure 1**, during two sampling events (June 2020 and December 2020).

Vapor and liquid samples were also collected along Plymouth Road and Stark Road at additional off-site sample locations (SLs) SL-3, SL-4, SL-5, SL-6, SL-7, SL-8, SL-9, SL-10, SL-11, SL-12, SL-13, SL-14, SL-15, SL-16, SL-17, and SL-18, as shown on **Figure 1**, during seven sampling events (December 2020, March 2021, June 2021, April 2021, July 2021, October 2021, and November 2021).

In addition, recent vapor and liquid samples were collected from the off-site locations SAMH-1231, SL-2, SL-3, SL-4, SL-5, SL-6, SL-7, SL-8, SL-9, SL-10, SL-11, SL-12, SL-13, SL-14, SL-15, SL-16, SL-17, SL-18, SL-19, SL-20, SL-21, and SL-22 on November 23 and 24, 2021.

Details regarding this additional sampling are provided in the utility corridor sampling results section below.

2.2.3 Sampling Methods

All samples were collected in accordance with the sampling methods detailed in the approved utility corridor RespAPs for all media sampled.

Grab vapor samples were collected from the sanitary sewers via tubing connected to a SUMMA® canister and analyzed for site-related COCs via United States Environmental Protection Agency (USEPA) Method TO-15. All samples were submitted to Test America (formerly Eurofins), located in Folsom, California.

Grab liquid and sediment samples were collected under base flow conditions and analyzed for site-related COCs via USEPA SW-846 Method 8260B, 8260B SIM, and 8260B MI. All samples were submitted to Test America, located in North Canton, Ohio.

Field notes generated during all sampling events described above are provided in **Appendix A**.

3 Utility Corridor Sampling Results

3.1 On-site, Plymouth Road, and Stark Road Results

On June 9, 2020 and September 15 and 16, 2020, Arcadis collected vapor samples from two locations on site (EDC and WDC) and two sanitary locations (SAMH-1231 and SL-2) located along Plymouth Road. The sample locations are shown on **Figure 1**. Results from the vapor samples collected were compared to the Restricted Non-residential 12-hour workday exposure SSVIAC (**Table 1**) and exhibited exceedances of the SSVIAC at two locations along Plymouth Road (SAMH-1231 and SL-2) (**Figure 3**). The results from these sampling events were initially presented during a meeting between EGLE and Arcadis on October 22, 2020 and were discussed in more detail in a subsequent meeting between EGLE and Arcadis on October 23, 2020.

On December 4, 2020, Arcadis submitted the RespAP – Utility Corridor Evaluation Revised Addendum to EGLE. The RespAP included five additional sampling locations on site (SAMH-1244, SAMH-1245, SAMH-1255, SAMH-1256, and SAMH-1258) and one additional sampling location on Plymouth Road (SL-3) in order to determine the extent of vapor impacts identified in the on-site and Plymouth Road sanitary sewer (**Figure 1**). Grab vapor samples were collected from all ten locations during the December 15 and 16, 2020 sampling event. The results from the vapor samples collected exhibited exceedances of the Non-residential 12-hour workday exposure SSVIAC from both on-site and Plymouth Road sampling locations (see **Table 1, 2, and Figure 3**).

On January 15, 2021, EGLE, Ford, and Arcadis held a meeting to discuss the results from the December 2020 vapor sampling event. During the meeting, EGLE requested sampling of additional locations in an effort to delineate the vapor impacts identified in the sanitary sewer on site and along Plymouth Road.

On January 27, 2021, Arcadis submitted the RespAP – Utility Corridor Evaluation Revised Addendum #2. The RespAP included two additional locations on site (SAMH-1248 and SAMH-1259) and two additional locations on Plymouth Road (SL-4 and SL-5; **Figure 1**), as well as proposed cleaning and closed-circuit televised (CCTV) inspection of the sanitary sewers on site and on Plymouth Road up to SL-2. From March 8 through 17, 2021, Arcadis oversaw Michels Corporation (Michels) as they cleaned and CCTV inspected the sanitary sewers and manholes on site and along Plymouth Road up to SL-2. A subsequent post-cleaning vapor sampling event was completed on March 22 through March 30, 2021 that included all 14 locations on site and along Plymouth Road. The results from the vapor samples collected exhibited exceedances of the Non-residential 12-hour workday

exposure SSVIAC from both on-site and Plymouth Road sampling locations as summarized in **Tables 1, 2, and 3** and on **Figure 3**.

On April 19 and 20, 2021, Arcadis collected vapor samples from all 14 locations on site and along Plymouth Road (**Figure 1**). Five liquid samples were also collected from the locations along Plymouth Road (MH-1231, SL-2, SL-3, SL-4, and SL-5; **Figure 1**). The results from the vapor samples collected during this event (see **Tables 1, 2, and 3 and Figure 3**) exhibited exceedances of the Non-residential 12-hour workday exposure SSVIAC from both on-site and Plymouth Road sampling locations. The results from the liquid samples collected from this event (**Table 4 and Figure 4**) were primarily used to compare concentrations of site-related COCs in liquid versus vapor.

On April 21, 2021, EGLE, Ford, and Arcadis discussed the results from the post-cleaning vapor sampling event completed in March 2021. On April 30, 2021, EGLE, Ford, and Arcadis discussed the results from the April 2021 sampling event.

On June 10, 2021, Arcadis collected vapor samples from four locations on site (MH-1233, MH-1234, MH-1252, and MH-1261) and five locations off-site along Stark Road (SL-5, SL-6, SL-7, SL-8, and SL-9; **Figure 1**) in order to determine the extent of vapor impacts identified in the on-site and Stark Road sanitary sewer. Five liquid samples were also collected from the locations along Stark Road (SL-5, SL-6, SL-7, SL-8, and SL-9).

Results from the vapor samples collected on site during the June 10, 2021 event were compared to the Restricted Non-residential 12-hour workday exposure SSVIAC (**Table 1 and Figure 3**). The results from the vapor samples collected exhibited an exceedance of the SSVIAC at one on-site location (MH-1233). Results from the vapor samples collected along Stark Road were compared to both the EGLE Unrestricted Residential SSVIAC and the Restricted Non-residential 12-hour workday exposure SSVIAC (**Table 3 and Figure 3**). The results from the vapor samples collected exhibited exceedances of SSVIAC in all samples collected. Results from the liquid samples collected are provided in **Table 4** and on **Figure 4**.

Following sanitary sewer rehabilitation (see Section 4 Utility Corridor Rehabilitation), a post-cleaning vapor and liquid sampling event was completed on July 13, 2021 that included 11 sample locations along Stark Road (SL-5 through 15; **Figure 2**). This sampling event was completed to determine the extent of vapor impacts identified in the on-site and Stark Road sanitary sewer.

Results from the vapor samples collected during the July 13, 2021 event were compared to both the EGLE Unrestricted Residential SSVIAC and the Restricted Non-residential 12-hour workday exposure SSVIAC (**Table 3 and Figure 3**). The results from the vapor samples collected exhibited exceedances of SSVIAC in all samples collected. Results from the liquid samples collected are provided in **Table 4** and on **Figure 4**.

On October 7, 2021, Arcadis collected liquid and vapor samples from four locations along Plymouth Road (SAMH-1231 and SL-2 through 4) and all 11 locations along Stark Road in order to confirm results following additional cleaning.

Results of the vapor samples collected during the October 7, 2021 event were compared to the EGLE Restricted Non-residential 12-hour workday exposure SSVIAC for Plymouth Road locations and both the Unrestricted Residential SSVIAC and the Restricted Non-residential 12-hour workday exposure SSVIAC for Stark Road locations (**Table 1, 2, 3, and Figure 3**). The results from the vapor samples collected exhibited exceedances of SSVIAC in all samples collected except for vapor samples collected from SL-13 through 15. Results from the liquid samples collected are provided in **Table 4** and on **Figure 4**.

On November 2, 2021, Arcadis collected liquid and vapor samples from the same locations sampled in the October 2021 event, with the addition of SL-16 through 18 located along Plymouth Road between SL-3 and SL-4. These locations were added to evaluate the potential for impacted vapors between SL-3 and SL-4.

Results from the vapor samples collected during the November 2, 2021 event were compared to the same SSVIAC used to evaluate the October 2021 results. The results from the vapor samples collected exhibited exceedances of SSVIAC in only samples collected from SAMH-1231, SL-12, and SL-17 (**Table 1, 2,3, and Figure 3**). Results from the liquid samples collected are provided in **Table 4** and on **Figure 4**. All data associated with the sampling above is included in **Appendix B**.

On November 23 and 24, 2021, Arcadis collected liquid and vapor samples from the same locations that were sampled on November 2, 2021. Only two sanitary locations (SAMH-1231 and SL-12) had exceedances of the SSVIAC. The data was communicated to EGLE during the December 7, 2021 meeting with Ford, EGLE, and Arcadis and the email to EGLE on December 8, 2021. The email correspondence and associated figures are included in **Appendix C**. The data is considered Draft until validation can be completed. The concentrations showed a significant decrease within the sanitary network on Plymouth and Stark Road. On December 7 and 8, 2021 Michels completed CCTV and cleaning of sanitary locations SL-3, SL-12, SL-16, SL-17 SL-19, SL-20, and SL-21 and associated piping. Additional vapor and liquid samples are scheduled to be collected on December 10, 2021, from the sanitary locations that have been cleaned. The data from this sampling event will be presented to EGLE during the currently scheduled January 4, 2022, meeting between Ford, EGLE, and Arcadis.

3.2 Off-site Belden Court and Alden Village Results

Arcadis sampled the off-site sanitary sewers located along Belden Court and in Alden Village in June 2020, September 2020, December 2020, and March 2021. A total of ten locations were sampled for vapor in all four sampling events (**Figure 1**).

Liquid and sediment samples were also collected at locations off-site, where present. Liquid was present and sampled in seven locations during the June 2020 event, five locations during the September 2020 event, and six locations during each of the December 2020 and March 2021 events (**Figure 4**). Sediment was present and sampled in one location during the June 2020 event and one location during the December 2020 event (**Figure 5**).

Results from the vapor samples collected were compared to the SSVIAC. Vapor sample results collected from locations along Belden Court were compared to the Restricted Non-residential 12-hour workday exposure SSVIAC, and vapor sample results collected from locations within Alden Village were compared to the Unrestricted Residential SSVIAC. Vapor sample results exhibited exceedances of the respective SSVIAC in vapor samples collected during the June 2020 sampling event (**Table 5 and Figure 3**). However, results above the SSVIAC in each event were determined to be unrelated to the vapor impacts identified along Plymouth Road due to the lines of evidence provided in the utility corridor reconnaissance section.

Results from the liquid and sediment samples collected are provided in **Table 4 and Table 6** and on **Figures 4 and 5**.

3.3 Commercial Property Inspections

In the letter dated June 2, 2021, EGLE requested that Ford evaluate and verify the lateral pipes for all structures located along impacted main sanitary sewers and to evaluate the lateral pipe point of entry into the structure. This

evaluation was to include the inspection of p-traps, wax rings, floor drains, and inline exterior vapor traps if are present.

On June 29, 2021, Ford and Arcadis prepared and sent out access agreements to seven commercial properties along Plymouth Road between the Site and Stark Road (**Figure 6**). Three commercial properties (34850 Plymouth, 34900 Plymouth, and 35000 Plymouth) granted access. On September 15, 2021, access agreements for the remaining four commercial properties (34450 Plymouth, 34500 Plymouth, 34706-34730 Plymouth, and 34800 Plymouth) were resent to the property owners. One of these access agreements is currently in negotiation. Arcadis is still pursuing access to the other three properties.

Inspections were completed at the three commercial properties where access was granted (34850 Plymouth, 34900 Plymouth, and 35000 Plymouth) on July 27, 2021, and details are provided below.

3.3.1 34850 Plymouth Road

The findings of the inspection completed at 34850 Plymouth Road outside of the building located on the property include the following:

- No evidence of lateral connections from the Plymouth Road sanitary sewer main to the building or inline exterior vapor traps were found.
- The nearest manhole in connection to the Plymouth Road sanitary sewer main is located at the intersection of Plymouth Road and Wayne Road. Arcadis observed west-to-east piping and flowing water to the east within this manhole.
- No roof vents were present.
- Two pipes located on the exterior of the building with connection to the interior are broken.

The findings of the inspection completed inside the building include the following:

- Two on-grade bathrooms with sink p-traps. Loose fittings and tape on exterior piping were observed on the p-traps. Neither p-trap was leaking or emitting odors. Caulk along the bases of the toilets was present but peeling. A floor drain was present in one of the bathrooms and did not emit an odor.
- Two additional sinks with p-traps were located near the bathrooms and in a storage room. Neither p-trap had signs of leakage or emitted odors. No floor drains were located near the sinks.
- Tubing connected to a two-way valve was found attached to a wall port. Arcadis could not determine its purpose.
- No drinking water fountains or sumps were located within the building.
- Tenant indicated that p-traps are wetted approximately 15 times a day, 4 days per week.
- Wax rings at the bases of toilets could not be inspected due to access restrictions.

3.3.2 34900 Plymouth Road

The findings of the inspection completed at 34900 Plymouth Road outside of the building located on the property include the following:

- No evidence of lateral connections from the Plymouth Road sanitary sewer main to the building or inline exterior vapor traps were found.

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- The nearest manhole in connection to the Plymouth Road sanitary sewer main is located at the intersection of Plymouth Road and Wayne Road. Arcadis observed west-to-east piping and flowing water to the east within this manhole.
- A manhole was located in front of the building on the property. The manhole was determined to be a storm sewer manhole when the location and piping orientation matched what was shown on the maps provided by the City of Livonia.
- A vent is located on the north end of the building. Arcadis was not able to determine where the vent originates.
- A polyvinyl chloride (PVC) pipe connected to the interior mechanical room exits at the north end of the building. It is unknown what the purpose of the pipe was used for.

The findings of the inspection completed inside the building include the following:

- Two kitchens each have a sink p-trap that did not emit any odors. No floor drains were present in either kitchen.
- One mechanical room with one floor drain did not emit odors. A pipe was identified in the northwest corner of the room that was determined to likely connect the floor drain to the exterior of the building.
- One on-grade women's bathroom with a sink p-trap, caulk present but peeling around the base of the toilet, and no floor drain present.
- One on-grade men's bathroom with a sink p-trap, a floor drain with a high-water level, and caulk present but peeling around the base of toilet and urinal.
- One second floor women's bathroom with a sink p-trap, two toilets with caulk around the base of each, and one floor drain. One of the two toilets was dry upon arrival. A strong odor emitted from the bathroom. Arcadis wetted the dry toilet's p-trap by flushing the toilet.
- One second floor men's bathroom with a sink p-trap and a urinal p-trap. The urinal p-trap showed signs of corrosion and material leakage. Caulk was present around the base of the toilet and the urinal. One floor drain was present that did not emit any odors.
- No drinking water fountains or sumps were located within the building.
- Tenant indicated that p-traps located in the bathrooms on the first floor are wetted 6 days per week, and p-traps located in the bathrooms on the second floor are wetted approximately once a month.
- Wax rings at the bases of toilets could not be inspected due to access restrictions from the property owner.

3.3.3 35000 Plymouth Road

The findings of the inspection completed at 35000 Plymouth Road outside of the building located on the property include the following:

- No evidence of lateral connections from the Plymouth Road sanitary sewer main to the building or inline exterior vapor traps were found.

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- The nearest manhole in connection to the Plymouth Road sanitary sewer main is located southeast of the property building on the sidewalk in the right-of-way. Arcadis observed west-to-east piping and flowing water to the east within this manhole.
- Two roof vents were found in connection to the two on-grade bathrooms.

The findings of the inspection completed inside the building include the following:

- One break room with a sink p-trap. Piping of the p-trap was observed to be tight with no leakage or odors emitted. Floor drains were not present in the break room.
- Two bathrooms located on-grade with sink p-traps. Piping of the p-traps was observed to be tight with no leakage or odors emitted. Caulk was present around the one urinal found but absent from the bases of the toilets. One floor drain was found in each bathroom and did not emit odors.
- One below-grade bathroom with a cleanout located along the wall, one drain without a cover, caulk absent around base of the toilet, and one sink p-trap. The exterior of the p-trap appeared wet and coated with a sludge around the fittings but did not emit odors.
- The shop floor has a manhole, two suspected trench drains, and two cleanouts. Based on the grated lid of the manhole, it is suspected to be a storm sewer. The proximity of the trench drains and cleanouts indicates that they are likely connected to the storm sewer. No odors were observed to be emitting from any of these structures.
- No drinking water fountains or sumps were located within the building.
- Tenant indicated that p-traps located within the break room and bathrooms are wetted daily except for weekends. The p-trap located in the women's bathroom is wetted less due to infrequent use.
- Wax rings at the bases of toilets could not be inspected due to access restrictions.

All notes collected during the inspection for all three properties are included in **Appendix A**.

4 Utility Corridor Rehabilitation

4.1 Sanitary Sewer Rehabilitation

From March 8 through March 17, 2021, Arcadis oversaw Michels clean and conditionally assess the sanitary sewer system on the Ford property and along Plymouth Road directly in front of the Ford property (MH-1231 to SL-2, refer to **Figure 1**). Arcadis oversaw CCTV inspection of approximately 8,300 linear feet of sanitary sewer piping, including 3,800 linear feet of sanitary sewers located west of the Automatic New Transmission New Product Center (ATNPC) building. The sanitary sewer system ranged in diameter from 6 to 24 inches and the pipe material consisted of polyvinyl chloride (PVC), vertical clay pipe (VCP), and reinforced concrete pipe (RCP). The CCTV data identified sanitary sewer pipes and sanitary sewer manholes that were visually leaking or had evidence of leakage due to groundwater infiltration along with structural defects. Therefore, a Basis of Rehabilitation (BOR) design was completed to address the infiltration and structural issues.

The following technologies were selected to rehabilitate the sanitary sewer pipes and sanitary sewer manholes on-site and along Plymouth Road (**Figure 7**):

- Cured-in-place pipe lining (CIPPL);

UTILITY CORRIDOR EVALUATION REPORT

- Cured-in-place point repair (CIPPR);
- Test and seal (T/S);
- Manhole epoxy lining.

The sanitary sewer network west of the Test Track was targeted for rehabilitation to reduce the infiltration of potentially impacted groundwater into the sanitary sewer system and subsequently compliance point SL-2. SL-2 then discharges to the Great Lakes Water Authority (GLWA) sanitary sewer system.

From June 16 through July 1, 2021, Arcadis oversaw Michels Corporation clean and CCTV the sanitary sewer system along Plymouth Road up to Stark Road. The CCTV inspection assisted in locating lateral pipes entering the Plymouth Road sanitary sewer system. Approximately 2,226 linear feet was CCTV and cleaned and 44 laterals were identified, between SL-2 and SL-5, refer to **Figure 1**

In July 2021, Arcadis and Michels Corporation returned to the site to begin rehabilitation of approximately 4,500 linear feet of the sanitary sewer system on the Ford property west of the Test Track.

The on-site pipe rehabilitation was conducted between July-November 2021. 21 pipe segments and 10 manholes were scheduled for rehabilitation due to active infiltration. Below details the progress to date.

Inspection/Rehabilitation Type	Length / Number
CCTV and Cleaning	10,579 linear feet
Test and Seal	680 joints Tested
	567 joints Sealed
CIPPL	1,455 liner feet
CIPPR	15 linear feet
Rehabilitation with Cementitious and Epoxy	8 Manholes

*Approximately 3,650 gallons of grout was used during Test and Seal

The remaining segment (600 linear feet) and manhole to be rehabilitated are located inside the plant and will require coordination of work during plant shutdown.

5 Closing

The goal of this Report is to document the activities completed to date to address the comments provided by EGLE in their November 9, 2021 letter. Progress updates will continue to be communicated during the bi-weekly meetings scheduled by EGLE.

6 References

Arcadis of Michigan LLC (Arcadis). 2017a. Conceptual Site Model. Livonia Transmission Plant. August.

Arcadis. 2017b. Quality Assurance Project Plan – On-site. Livonia Transmission Plant, Livonia, Michigan. August.

Arcadis. 2017c. Quality Assurance Project Plan – Off-site. Livonia Transmission Plant, Livonia, Michigan. August.

Tables

Table 1
 On-site Non-Residential Vapor Analytical Results
 Ford Livonia Transmission Plant
 36200 Plymouth Road
 Livonia, Michigan



Location:	EGLE Non-residential SSVIAC	MH-1231	MH-1231	MH-1231	MH-1231	MH-1231	MH-1231	MH-1231	MH-1231	MH-1233	MH-1234	MH-1244	MH-1244	MH-1244	MH-1245	MH-1245	MH-1245
Survey ID:	12-hour exposure	SAMH-1231	SAMH-1231	SAMH-1231	SAMH-1231	SAMH-1231	SAMH-1231	SAMH-1231	SAMH-1231	SAMH-1233	SAMH-1234	SAMH-1244	SAMH-1244	SAMH-1244	SAMH-1245	SAMH-1245	SAMH-1245
Sample Date:		6/9/2020	9/16/2020	12/15/2020	3/22/2021	4/19/2021	10/7/2021	11/2/2021	6/10/2021	6/10/2021	12/15/2020	3/22/2021	4/19/2021	12/15/2020	3/22/2021	4/19/2021	
Volatile Organic Compounds (VOCs)																	
1,1-Dichloroethene	610	< 37	240 J	100 J	190 J	67 J	< 16	12 J	< 1.3	< 1.2	< 0.66	14	87	< 0.63	< 1.4	< 0.63	
1,4-Dioxane	24	< 97	< 150	< 50	< 180	< 27	< 12	< 6.6	< 1.1	< 1.0	< 1.2	< 7.4	< 14	< 1.1	< 3.8	1.2 J	
cis-1,2-Dichloroethene	25	25,000	42,000	37,000	46,000	27,000	4,400	880	5.7	1.9 J	400	1,000	21,000	150	2.2 J	< 0.71	
Tetrachloroethene	82	< 52	< 97	< 36	< 96	< 19	< 13	7.3 J	< 1.0	< 0.93	< 0.85	< 4.0	< 10	< 0.81	< 2.0	< 0.81	
trans-1,2-Dichloroethene	250	270	440	260	400	180	53	13 J	< 1.0	1.9 J	3.7 J	20	180	2.6 J	< 0.85	< 1.0	
Trichloroethene	4.0	15,000	18,000	14,000	19,000	10,000	1,600	33	8.2	3.8 J	280	1,100	11,000	120	2.0 J	< 0.86	
Vinyl chloride	27	9,600	16,000	11,000	23,000	9,800	1,500	1,300	< 0.77	< 0.71	100	1,200	8,500	45	< 0.49	< 0.51	

Location:	EGLE Non-residential SSVIAC	MH-1248	MH-1248	MH-1252	MH-1255	MH-1255	MH-1255	MH-1256	MH-1256	MH-1256	MH-1258	MH-1258	MH-1258	MH-1259	MH-1259	MH-1261
Survey ID:	12-hour exposure	SAMH-1248	SAMH-1248	SAMH-1252	SAMH-1255	SAMH-1255	SAMH-1255	SAMH-1256	SAMH-1256	SAMH-1256	SAMH-1258	SAMH-1258	SAMH-1258	SAMH-1259	SAMH-1259	SAMH-1261
Sample Date:		3/22/2021	4/19/2021	6/10/2021	12/16/2020	3/23/2021	4/20/2021	12/16/2020	3/22/2021	4/19/2021	12/16/2020	3/22/2021	4/19/2021	3/23/2021	4/19/2021	6/10/2021
Volatile Organic Compounds (VOCs)																
1,1-Dichloroethene	610	< 1.4 [< 1.4]	< 0.66	< 1.1	32	37 J	4.3 J [3.2 J]	< 0.73	35	140	< 0.69	< 1.3	< 0.61	< 1.5	0.70 J	< 1.2
1,4-Dioxane	24	< 2.3 [< 2.3]	< 1.2	< 0.94	< 8.4	< 32	< 1.5 [< 2.1]	< 1.3	< 19	< 21	< 1.2	< 2.2	< 1.1	< 3.8	< 1.2	< 1.1
cis-1,2-Dichloroethene	25	6.0 [6.8]	5.8	2.8 J	510	810	260 [250]	150	7,400	30,000	860	43	260	< 1.1	5.4	2.0 J
Tetrachloroethene	82	< 1.2 [< 1.2]	< 0.86	< 0.88	< 6.0	< 16	< 1.1 [< 1.5]	< 0.94	< 9.6	< 15	< 0.89	< 1.1	2.2 J	< 2.1	< 0.85	< 0.99
trans-1,2-Dichloroethene	250	< 1.1 [< 1.1]	< 1.1	< 0.89	20 J	37 J	8.6 [6.9 J]	< 1.2	63	270	3.7 J	< 1.1	1.4 J	< 0.86	< 1.1	< 1.0
Trichloroethene	4.0	12 [10]	2.2 J	3.2 J	83	140	9.3 [9.1 J]	15	2,100	15,000	70	3.4 J	20	1.7 J	7.0	2.9 J
Vinyl chloride	27	< 0.71 [0.89 J]	3.0	0.88 J	5,600	7,800	1,200 [1,200]	10	3,100	14,000	100	5.8	32	0.56 J	7.0	< 0.76

Location:	EGLE Non-residential SSVIAC	EDC	EDC	EDC	EDC	EDC	WDC	WDC	WDC	WDC	WDC	SL-2	SL-2	SL-2	SL-2	SL-2	SL-2
Survey ID:	12-hour exposure	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sample Date:		6/9/2020	9/16/2020	12/15/2020	3/23/2021	4/20/2021	6/9/2020	9/16/2020	12/15/2020	3/23/2021	4/20/2021	6/9/2020	9/15/2020	12/15/2020	3/30/2021	4/20/2021	10/7/2021
Volatile Organic Compounds (VOCs)																	
1,1-Dichloroethene	610	< 1.9	< 5.6	< 0.66	< 1.4	< 0.60	< 1.8	< 1.2	< 0.72	< 1.3	< 0.59	9.5	16	14 J	< 1.4	6.0 J	< 2.2
1,4-Dioxane	24	< 4.9	< 12	< 1.2	< 3.6	< 1.1	< 4.6	< 2.8	< 1.3	< 3.5	< 1.0	< 5.1	< 8.5	< 6.3	< 2.2	< 2.1	< 1.6
cis-1,2-Dichloroethene	25	< 1.4	< 6.9	< 0.75	4.6	3.3 J	< 1.4	< 1.5	< 0.82	< 1.0	< 0.66	1,900	4,600	6,800	89	2,200	880
Tetrachloroethene	82	< 2.6	48 UB	< 0.85	< 1.9	< 0.78	< 2.5	< 1.8	< 0.94	< 1.9	2.1 J	< 2.7	< 5.5	< 4.6	< 1.2	< 1.5	< 1.8
trans-1,2-Dichloroethene	250	< 1.1	< 7.8	< 1.1	< 0.81	1.0 J	< 1	< 1.7	< 1.2	< 0.78	< 0.95	29	48	44	< 1.1	17	12
Trichloroethene	4.0	16	< 7.6	< 0.90	7.5	19	3.5 J	17	< 0.98	5.6	< 0.80	1,500	2,000	2,200	52	880	320
Vinyl chloride	27	< 0.64	< 3.6	< 0.54	0.58 J	< 0.49	< 0.6	< 0.81	< 0.59	< 0.45	< 0.48	520	1,700	1,700	34	640	250

See Notes on last page

Notes:

All results reported in $\mu\text{g}/\text{m}^3$.

Bold Result exceeds the EGLE site-specific volatilization to indoor air criteria (SSVIAC) to evaluate vapor migration in preferential pathways developed for restricted non-residential 12-hour workday exposure.

< Denotes not detected above method detection limit.

Abbreviations:

$\mu\text{g}/\text{m}^3$ micrograms per cubic meter

EDC eastern diversion chamber

WDC western diversion chamber

EGLE Michigan Department of Environment, Great Lakes, and Energy

ID identification

MH manhole

SAMH sanitary manhole

SL sample location

NA not available/not applicable

UB Analyte considered non-detect at the listed value due to associated blank contamination

J estimated result

Analytical Method:

United States Environmental Protection Agency (USEPA) Method TO-15

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Table 2
Off-site Non-Residential Vapor Analytical Results
Ford Livonia Transmission Plant
36200 Plymouth Road
Livonia, Michigan



Location: Survey ID: Sample Date:	EGLE Non-residential SSVIAC 12-hour exposure	MH-1020 SAMH-1020 6/16/2020	MH-1020 SAMH-1020 9/18/2020	MH-1020 SAMH-1020 12/17/2020	MH-1020 SAMH-1020 3/24/2021	MH-1043 SAMH-1043 6/16/2020	MH-1043 SAMH-1043 9/18/2020	MH-1043 SAMH-1043 12/17/2020	MH-1043 SAMH-1043 3/24/2021	MH-1067 SAMH-1067 6/16/2020	MH-1067 SAMH-1067 9/18/2020	MH-1067 SAMH-1067 12/17/2020	MH-1067 SAMH-1067 3/24/2021	MH-1082 SAMH-1082 6/15/2020	MH-1082 SAMH-1082 9/18/2020	MH-1082 SAMH-1082 12/17/2020	MH-1082 SAMH-1082 3/24/2021
Volatile Organic Compounds (VOCs)																	
1,1-Dichloroethene	610	< 1.9	< 1.2	< 1.6	< 1.5	< 1.9	< 0.73	< 1.7	< 1.5	< 1.8	< 1.1	< 1.6	< 1.5	< 1.8	< 0.68	< 1.6	< 1.4
1,4-Dioxane	24	< 4.9	< 0.89	< 2.6	< 3.9	< 4.9	< 1.3	< 2.7	< 2.4	< 4.6	< 0.79	< 2.7	< 2.5	< 4.6	< 1.2	< 2.6	< 2.4
cis-1,2-Dichloroethene	25	< 1.4	< 0.68	< 1.7	< 1.1	< 1.4	< 0.83	< 1.8	< 1.6	< 1.4	< 0.6	< 1.8	< 1.7	< 1.3	< 0.76	< 1.8	< 1.6
Tetrachloroethene	82	< 2.6	< 1	< 1.3	< 2.1	< 2.6	< 0.94	2.9 J	< 1.2	< 2.5	< 0.91	22	< 1.3	< 2.5	< 0.87	20	< 1.2
trans-1,2-Dichloroethene	250	< 1.1	< 1.1	< 1.2	< 0.88	< 1.1	< 1.2	< 1.3	< 1.2	< 1	< 0.97	< 1.3	< 1.2	< 1	< 1.1	< 1.3	< 1.1
Trichloroethene	4.0	< 1.8	< 0.55	< 0.94	< 1.4	< 1.8	< 0.99	< 1.0	< 0.88	97	< 0.49	< 0.98	< 0.91	3.7 J	< 0.92	2.5 J	< 0.86
Vinyl chloride	27	< 0.63	< 0.46	< 0.78	< 0.51	< 0.64	< 0.59	< 0.83	< 0.73	< 0.6	< 0.4	< 0.81	< 0.76	< 0.6	< 0.55	< 0.80	< 0.72

Location: Survey ID: Sample Date:	EGLE Non-residential SSVIAC 12-hour exposure	MH-1181 SAMH-1181 6/15/2020	MH-1181 SAMH-1181 9/18/2020	MH-1181 SAMH-1181 12/17/2020	MH-1181 SAMH-1181 3/23/2021	SL-3 NA 12/16/2020	SL-3 NA 3/22/2021	SL-3 NA 4/19/2021	SL-3 NA 10/7/2021	SL-3 NA 11/2/2021	SL-4 NA 3/22/2021	SL-4 NA 4/19/2021	SL-4 NA 10/7/2021	SL-4 NA 11/2/2021	SL-16 NA 11/2/2021	SL-17 NA 11/2/2021	SL-18 NA 11/2/2021
Volatile Organic Compounds (VOCs)																	
1,1-Dichloroethene	610	< 1.7	< 1.3	< 1.5	< 1.5	7.6 J	6.6 J	< 0.59 [< 2.3]	< 2.2	< 2.2	33	24 J	30	< 2.0	< 2.1	< 2.0	< 2.2
1,4-Dioxane	24	< 4.5	< 0.92	< 2.5	< 4.0	< 3.0	< 3.6	< 1.0 [< 4.2]	< 1.6	< 1.6	< 29	< 7.3	< 11	< 1.5	< 1.6	< 1.5	< 1.6
cis-1,2-Dichloroethene	25	< 1.3	< 0.7	< 1.7	< 1.2	4,300	1,700	37 [19]	120	< 1.7	7,200	7,900	8,200	5.0	< 1.7	< 1.6	< 1.8
Tetrachloroethene	82	< 2.4	< 1.1	1.4 J	< 2.1	< 2.1	< 1.9	< 0.76 [< 3.0]	< 1.8	3.9 J	< 15	< 5.3	< 12	13	< 1.7	< 1.6	< 1.8
trans-1,2-Dichloroethene	250	< 1	< 1.1	< 1.2	< 0.89	28	14	< 0.95 [< 3.8]	< 1.9	< 2.0	75	60	130	< 1.8	< 1.9	< 1.8	< 2.0
Trichloroethene	4.0	< 1.6	< 0.57	< 0.92	< 1.4	1,400	1,000	14 [7.7 J]	36	< 2.4	4,400	3,500	4,000	< 2.3	< 2.4	620	< 2.4
Vinyl chloride	27	< 0.59	< 0.47	< 0.77	< 0.52	1,100	650	6.6 [< 1.9]	18	< 1.9	3,100	2,400	2,800	3.2	< 1.8	< 1.7	< 1.9

Notes:

- All results reported in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).
- Bold** result exceeds the EGLE site-specific volatilization to indoor air criteria (SSVIAC) developed for restricted non-residential 12-hour workday exposure and provided by EGLE on September 11, 2020 to evaluate vapor migration in preferential pathways.
- All samples were analyzed via United States Environmental Protection Agency (USEPA) Method TO-15.

Abbreviations/Definitions:

[]	duplicate sample result
<	Denotes not detected above reporting limit or method detection limit.
EGLE	Michigan Department of Environment, Great Lakes, and Energy
ID	identification
MH	manhole
SAMH	sanitary manhole
SL	Sampling Location
NA	not available/not applicable
J	estimated result

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Table 3
Off-site Stark Road Vapor Analytical Results
Ford Livonia Transmission Plant
36200 Plymouth Road
Livonia, Michigan



Location: Survey ID: Sample Date:	EGLE Residential SSVIAC	EGLE Non-residential SSVIAC 12-hour exposure	SL-5 NA 3/23/2021	SL-5 NA 4/20/2021	SL-5 NA 6/10/2021	SL-5 NA 7/13/2021	SL-5 NA 10/7/2021	SL-5 NA 11/2/2021	SL-6 NA 6/10/2021	SL-6 NA 7/13/2021	SL-6 NA 10/7/2021	SL-6 NA 11/2/2021	SL-7 NA 6/10/2021	SL-7 NA 7/13/2021	SL-7 NA 10/7/2021	SL-7 NA 11/2/2021
Volatile Organic Compounds (VOCs)																
1,1-Dichloroethene	210	610	< 1.3	< 0.61	55 [64]	19 J [16]	< 2.0 [< 2.1]	< 2.0 [< 2.2]	< 3.4	8.9	< 12	< 2.1	< 4.7	3.6 J	< 11	< 2.1
1,4-Dioxane	5.1	24	< 3.4	< 1.1	< 9.7 [< 12]	< 10 [< 3.3]	< 1.5 [< 1.5]	< 1.5 [< 1.6]	< 2.9	2.9 J	< 8.6	< 1.6	< 4.0	< 0.98	< 8.2	< 1.6
cis-1,2-Dichloroethene	8.3	25	230	50	13,000 [17,000]	3,300 [3,600]	440 [390]	< 1.6 [< 1.8]	27	1,600	< 9.2	< 1.7	20	610	< 8.8	< 1.6
Tetrachloroethene	41	82	< 1.8	< 0.79	< 9.0 [< 11]	< 9.8 [< 3.1]	< 1.6 [< 1.7]	< 1.7 [< 1.8]	2.9 J	< 0.93	< 9.4	< 1.7	< 3.7	2.3 J	< 9.0	< 1.7
trans-1,2-Dichloroethene	83	250	3.5 J	< 0.99	140 [170]	36 J [39]	4.8 [5.6]	< 1.8 [< 2.0]	< 2.7	21	< 10	< 1.9	< 3.7	8.6	< 9.9	< 1.9
Trichloroethene	2.0	4.0	110	38	7,800 [9,700]	2,200 [2,300]	140 [110]	< 2.3 [< 2.4]	25	970	< 13	< 2.4	28	380	< 12	< 2.3
Vinyl chloride	1.6	27	71	6.3	6,500 [8,100]	1,600 [1,600]	97 [100]	< 1.8 [< 1.9]	5.6 J	890	< 10	< 1.8	12	420	< 9.6	< 1.8

Location: Survey ID: Sample Date:	EGLE Residential SSVIAC	EGLE Non-residential SSVIAC 12-hour exposure	SL-8 NA 6/10/2021	SL-8 NA 7/13/2021	SL-8 NA 10/7/2021	SL-8 NA 11/2/2021	SL-9 NA 6/10/2021	SL-9 NA 7/13/2021	SL-9 NA 10/7/2021	SL-9 NA 11/2/2021	SL-10 NA 7/13/2021	SL-10 NA 10/7/2021	SL-10 NA 11/2/2021	SL-11 NA 7/13/2021	SL-11 NA 10/7/2021	SL-11 NA 11/2/2021
Volatile Organic Compounds (VOCs)																
1,1-Dichloroethene	210	610	1.5 J	23	< 2.1	< 2.3	7.4	44	< 12	< 2.1	33	< 11	< 2.2	< 1.1	< 4.5	< 2.1
1,4-Dioxane	5.1	24	< 0.96	< 4.2	< 1.6	< 1.7	< 1.1	< 6.5	< 8.9	< 1.6	< 6.8	< 8.2	< 1.6	1.3 J	< 3.3	< 1.6
cis-1,2-Dichloroethene	8.3	25	550	4,100	390	< 1.8	1,400	7,300	930	< 1.7	6,900	1,800	< 1.8	32	2,100	< 1.6
Tetrachloroethene	41	82	< 0.89	< 3.9	< 1.7	< 1.8	< 1.0	< 6.1	< 9.7	< 1.7	< 6.4	< 9.0	< 1.8	2.2 J	< 3.6	< 1.7
trans-1,2-Dichloroethene	83	250	4.3	58	4.4	< 2.0	13	110	13 J	< 1.9	91	18 J	< 2.0	< 0.90	24	< 1.9
Trichloroethene	2.0	4.0	290	3,100	140	< 2.5	1,000	5,900	370	< 2.4	5,400	570	< 2.4	28	610	< 2.3
Vinyl chloride	1.6	27	210	2,400	93	< 2.0	310	4,100	260	< 1.8	3,400	360	< 1.9	19	390	< 1.8

Location: Survey ID: Sample Date:	EGLE Residential SSVIAC	EGLE Non-residential SSVIAC 12-hour exposure	SL-12 NA 7/13/2021	SL-12 NA 10/7/2021	SL-12 NA 11/2/2021	SL-13 NA 7/13/2021	SL-13 NA 10/7/2021	SL-13 NA 11/2/2021	SL-14 NA 7/13/2021	SL-14 NA 10/7/2021	SL-14 NA 11/2/2021	SL-15 NA 7/13/2021	SL-15 NA 10/7/2021	SL-15 NA 11/2/2021
Volatile Organic Compounds (VOCs)														
1,1-Dichloroethene	210	610	33	< 4.4	< 2.1	< 1.2	< 22	< 2.1	< 1.2	< 22	< 2.2	< 1.2	< 9.3	< 2.1
1,4-Dioxane	5.1	24	< 4.0	< 3.3	< 1.6	2.9 J	< 16	< 1.6	2.4 J	< 17	< 1.6	2.3 J	< 6.9	< 1.6
cis-1,2-Dichloroethene	8.3	25	4,200	1,500	10	7.1	< 17	< 1.6	1.5 J	< 18	< 1.8	< 1.4	< 7.4	< 1.7
Tetrachloroethene	41	82	< 3.7	< 3.6	< 1.7	2.9 J	< 18	< 1.7	< 0.93	< 18	< 1.8	< 0.93	< 7.6	< 1.7
trans-1,2-Dichloroethene	83	250	81	18	< 1.9	< 0.94	< 20	< 1.9	< 0.94	< 20	< 2.0	< 0.94	< 8.3	< 1.9
Trichloroethene	2.0	4.0	3,900	490	2.5 J	5.3 J	< 24	< 2.3	4.0 J	< 25	< 2.4	1.9 J	< 10	< 2.4
Vinyl chloride	1.6	27	3,100	320	14	3.1	< 19	< 1.8	9.1	< 20	< 1.9	1.8 J	< 8.1	< 1.8

See Notes on last page

Table 3
Off-site Stark Road Vapor Analytical Results
Ford Livonia Transmission Plant
36200 Plymouth Road
Livonia, Michigan

Notes:

1. All results reported in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).
2. **Bold** result exceeds the EGLE site-specific volatilization to indoor air criteria (SSVIAC) developed for unrestricted residential exposure and provided by EGLE on September 11, 2020 to evaluate vapor migration in preferential pathways.
3. **Bold** and shaded result exceeds the EGLE SSVIAC developed for unrestricted residential exposure and the EGLE SSVIAC developed for restricted non-residential 12-hour workday exposure and provided by EGLE on September 11, 2020 to evaluate vapor migration in preferential pathways.
4. All samples were analyzed via United States Environmental Protection Agency (USEPA) Method TO-15.

Abbreviations/Definitions:

[]	duplicate sample result
<	Denotes not detected above reporting limit or method detection limit.
EGLE	Michigan Department of Environment, Great Lakes, and Energy
ID	identification
MH	manhole
SAMH	sanitary manhole
STMH	storm manhole
SL	Sampling Location
NA	not available/not applicable
J	estimated result

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Table 4
On-site and Off-site Liquid Analytical Results
Ford Livonia Transmission Plant
36200 Plymouth Road
Livonia, Michigan



Location:	MH-1020	MH-1020	MH-1020	MH-1020	MH-1043	MH-1043	MH-1043	MH-1043	MH-1067	MH-1067	MH-1067	MH-1082	MH-1096
Survey ID:	SAMH-1020	SAMH-1020	SAMH-1020	SAMH-1020	SAMH-1043	SAMH-1043	SAMH-1043	SAMH-1043	SAMH-1067	SAMH-1067	SAMH-1067	SAMH-1082	SAMH-1096
Sample Date:	6/16/2020	9/18/2020	12/17/2020	3/24/2021	6/16/2020	9/18/2020	12/17/2020	3/24/2021	6/16/2020	12/17/2020	3/24/2021	6/15/2020	6/15/2020
Semi-Volatile Organic Compounds (SVOCs)													
1,4-Dioxane	< 4.3	< 4.3	< 0.86	< 2.6	1.2 J	< 0.86	< 0.86	2.8 J	< 0.86	< 0.86	< 0.86	1.2 J	< 0.86
Volatile Organic Compounds (VOCs)													
1,1-Dichloroethene	< 0.95	< 0.63	< 0.63	< 0.63	< 0.95	< 0.38	< 0.38	< 1.5	< 0.95	< 0.95	< 0.19	< 0.19	< 0.19
cis-1,2-Dichloroethene	< 0.80	< 0.53	< 0.53	< 0.53	< 0.80	< 0.32	< 0.32	< 1.3	< 0.80	< 0.80	< 0.16	< 0.16	< 0.16
Tetrachloroethene	< 0.75	< 0.50	< 0.50	< 0.50	< 0.75	< 0.30	< 0.30	< 1.2	< 0.75	< 0.75	< 0.15	< 0.15	< 0.15
trans-1,2-Dichloroethene	< 0.95	< 0.63	< 0.63	< 0.63	< 0.95	< 0.38	< 0.38	< 1.5	< 0.95	< 0.95	< 0.19	< 0.19	< 0.19
Trichloroethene	< 0.50	< 0.33	< 0.33	< 0.33	< 0.50	< 0.20	< 0.20	< 0.80	< 0.50	< 0.50	< 0.10	< 0.10	< 0.10
Vinyl chloride	< 1.0	< 0.67	< 0.67	< 0.67	< 1.0	< 0.40	< 0.40	< 1.6	< 1.0	< 1.0	< 0.20	< 0.20	< 0.20

Location:	MH-1096	MH-1096	MH-1096	MH-1181	MH-1181	MH-1181	MH-1181	MH-1231	MH-1231	MH-1231	SL-2	SL-2	SL-2
Survey ID:	SAMH-1096	SAMH-1096	SAMH-1096	SAMH-1181	SAMH-1181	SAMH-1181	SAMH-1181	SAMH-1231	SAMH-1231	SAMH-1231	NA	NA	NA
Sample Date:	9/18/2020	12/16/2020	3/22/2021	6/15/2020	9/18/2020	12/17/2020	3/23/2021	4/19/2021	10/7/2021	11/2/2021	4/20/2021	10/7/2021	11/2/2021
Semi-Volatile Organic Compounds (SVOCs)													
1,4-Dioxane	0.89 J	5.2 [5.2]	< 2.6 [< 0.86]	< 0.86	< 0.86	< 0.86	< 0.86	7.8 J [12 J]	11	8.1	5.5	7.4	< 0.86
Volatile Organic Compounds (VOCs)													
1,1-Dichloroethene	< 0.19	< 0.19 [< 0.19]	< 0.95 [< 0.95]	< 0.19	< 0.19	< 0.19	< 0.19	< 6.3 [< 6.3]	< 4.9	< 0.49	< 0.76	< 1.2	< 0.49
cis-1,2-Dichloroethene	< 0.16	< 0.16 [< 0.16]	< 0.80 [< 0.80]	< 0.16	< 0.16	< 0.16	0.42 J	560 [560]	260	12	53	91	0.46 J
Tetrachloroethene	< 0.15	< 0.15 [< 0.15]	< 0.75 [< 0.75]	< 0.15	< 0.15	< 0.15	< 0.15	< 5.0 [< 5.0]	< 4.4	< 0.44	< 0.60	< 1.1	< 0.44
trans-1,2-Dichloroethene	< 0.19	< 0.19 [< 0.19]	< 0.95 [< 0.95]	< 0.19	< 0.19	< 0.19	< 0.19	< 6.3 [< 6.3]	< 5.1	< 0.51	< 0.76	< 1.3	< 0.51
Trichloroethene	< 0.10	< 0.10 [< 0.10]	< 0.50 [< 0.50]	< 0.10	< 0.10	< 0.10	< 0.10	180 [170]	51	< 0.44	15	20	1.2
Vinyl chloride	< 0.20	< 0.20 [< 0.20]	< 1.0 [< 1.0]	< 0.20	< 0.20	< 0.20	< 0.20	110 [91]	38	12	8.8	14	< 0.45

See Notes on last page

Table 4
On-site and Off-site Liquid Analytical Results
Ford Livonia Transmission Plant
36200 Plymouth Road
Livonia, Michigan



Location:	SL-3	SL-3	SL-3	SL-4	SL-4	SL-4	SL-5	SL-5	SL-5	SL-5	SL-5	SL-6	SL-6
Survey ID:	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sample Date:	4/19/2021	10/7/2021	11/2/2021	4/19/2021	10/7/2021	11/2/2021	4/20/2021	6/10/2021	7/13/2021	10/7/2021	11/2/2021	6/10/2021	7/13/2021
Semi-Volatile Organic Compounds (SVOCs)													
1,4-Dioxane	7.0	8.3	4.4	6.6	6.7	3.6	5.8	4.7 [5.1]	0.91 J [1.6 J]	2.9 [3.0]	2.3 [1.6 J]	< 0.86	< 0.86
Volatile Organic Compounds (VOCs)													
1,1-Dichloroethene	< 2.7	< 2.5	< 0.49	< 1.9	< 1.2	< 0.49	< 0.95	< 2.5 [< 2.5]	< 2.5 [< 2.0]	< 0.98 [< 0.98]	< 0.98 [< 0.49]	< 0.49	< 0.49
cis-1,2-Dichloroethene	280	140	5.1	210	97	3.7	160	110 [140]	81 J [110 J]	44 J [40]	1.5 J [1.2]	1.3	5.2
Tetrachloroethene	< 2.1	< 2.2	< 0.44	< 1.5	< 1.1	< 0.44	< 0.75	< 2.2 [< 2.2]	< 2.2 [< 1.8]	< 0.88 [< 0.88]	< 0.88 [< 0.44]	< 0.44	< 0.44
trans-1,2-Dichloroethene	< 2.7	< 2.6	< 0.51	< 1.9	< 1.3	< 0.51	< 0.95	< 2.6 [< 2.6]	< 2.6 [< 2.0]	< 1.0 [< 1.0]	< 1.0 [< 0.51]	< 0.51	< 0.51
Trichloroethene	79	25	< 0.44	56	17	< 0.44	34	27 [33]	20 [26]	7.4 [7.2]	< 0.88 [< 0.44]	0.73 J	0.96 J
Vinyl chloride	44	17	4.4	26	11	2.6	14	14 [17]	10 [18]	4.1 [4.6]	< 0.90 [0.74 J]	< 0.45	0.80 J

Location:	SL-6	SL-6	SL-7	SL-7	SL-7	SL-7	SL-8	SL-8	SL-8	SL-8	SL-9	SL-9	SL-9
Survey ID:	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sample Date:	10/7/2021	11/2/2021	6/10/2021	7/13/2021	10/7/2021	11/2/2021	6/10/2021	7/13/2021	10/7/2021	11/2/2021	6/10/2021	7/13/2021	10/7/2021
Semi-Volatile Organic Compounds (SVOCs)													
1,4-Dioxane	0.92 J	< 0.86	< 0.86	< 0.86	0.95 J	< 0.86	5.4	< 0.86	4.8	2.2	2.8	1.1 J	< 0.86
Volatile Organic Compounds (VOCs)													
1,1-Dichloroethene	< 0.49	< 0.49	< 0.49	< 0.49	< 0.49	< 0.49	< 3.9	< 3.9	< 0.49	< 0.49	< 2.5	< 2.5	< 0.49
cis-1,2-Dichloroethene	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	180	63	38	1.9	110	48	18
Tetrachloroethene	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 3.5	< 3.5	< 0.44	< 0.44	< 2.2	< 2.2	< 0.44
trans-1,2-Dichloroethene	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 4.1	< 4.1	< 0.51	< 0.51	< 2.6	< 2.6	< 0.51
Trichloroethene	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	47	18	8.9	< 0.44	26	15	4.7
Vinyl chloride	< 0.45	< 0.45	< 0.45	< 0.45	< 0.45	< 0.45	26	8.8	8.8	1.4	12	6.7	2.1

See Notes on last page

Table 4
On-site and Off-site Liquid Analytical Results
Ford Livonia Transmission Plant
36200 Plymouth Road
Livonia, Michigan



Location:	SL-9	SL-10	SL-10	SL-10	SL-11	SL-11	SL-11	SL-12	SL-12	SL-12	SL-13	SL-13	SL-13
Survey ID:	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sample Date:	11/2/2021	7/13/2021	10/7/2021	11/2/2021	7/13/2021	10/7/2021	11/2/2021	7/13/2021	10/7/2021	11/2/2021	7/13/2021	10/7/2021	11/2/2021
Semi-Volatile Organic Compounds (SVOCs)													
1,4-Dioxane	2.2	< 0.86	2.7	2.0	< 0.86	3.1	1.5 J	< 0.86	1.7 J	< 0.86	< 0.86	1.1 J	< 0.86
Volatile Organic Compounds (VOCs)													
1,1-Dichloroethene	< 0.49	< 0.49	< 0.49	< 0.49	< 0.82	< 0.49	< 0.49	< 0.98	< 0.49	< 0.49	< 0.49	< 0.49	< 0.49
cis-1,2-Dichloroethene	2.1	35	34	1.8	28	31	1.1	26	19	1.0	< 0.46	< 0.46	< 0.46
Tetrachloroethene	< 0.44	< 0.44	< 0.44	< 0.44	< 0.73	< 0.44	< 0.44	< 0.88	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44
trans-1,2-Dichloroethene	< 0.51	< 0.51	< 0.51	< 0.51	< 0.85	< 0.51	< 0.51	< 1.0	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51
Trichloroethene	< 0.44	12	7.5	< 0.44	10	6.5	< 0.44	9.0	4.0	< 0.44	< 0.44	< 0.44	< 0.44
Vinyl chloride	1.3	6.0	4.6	1.4	4.0	4.2	1.1	3.9	2.3	0.50 J	1.2	< 0.45	< 0.45

Location:	SL-14	SL-14	SL-14	SL-15	SL-15	SL-15	SL-16	SL-17	SL-18
Survey ID:	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sample Date:	7/13/2021	10/7/2021	11/2/2021	7/13/2021	10/7/2021	11/2/2021	11/2/2021	11/2/2021	11/2/2021
Semi-Volatile Organic Compounds (SVOCs)									
1,4-Dioxane	< 0.86	< 0.86	< 0.86	1.7 J	1.3 J	< 0.86	4.2	1.9 J	3.3
Volatile Organic Compounds (VOCs)									
1,1-Dichloroethene	< 0.49	< 0.49	< 0.49	< 0.49	< 0.49	< 0.49	< 0.49	< 0.49	< 0.49
cis-1,2-Dichloroethene	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	5.0	4.5	4.5
Tetrachloroethene	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44
trans-1,2-Dichloroethene	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51
Trichloroethene	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44
Vinyl chloride	< 0.45	< 0.45	< 0.45	< 0.45	< 0.45	< 0.45	4.2	3.5	3.2

See Notes on last page

Table 4
On-site and Off-site Liquid Analytical Results
Ford Livonia Transmission Plant
36200 Plymouth Road
Livonia, Michigan

Notes:

1. All results are reported in micrograms per liter ($\mu\text{g/L}$).
2. All samples were analyzed via United States Environmental Protection Agency (USEPA) Method 8260B for VOCs and 8260B Selected Ion Monitoring (SIM) for SVOCs.

Abbreviations/Definition:

[] duplicate sample result

< Denotes not detected above method detection limit.

EGLE Michigan Department of Environment, Great Lakes, and Energy

ID identification

MH manhole

SAMH sanitary manhole

SL Sampling Location

NA not available/not applicable

J estimated result

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Table 5
Off-site Residential Vapor Analytical Results
Ford Livonia Transmission Plant
36200 Plymouth Road
Livonia, Michigan



Location:	EGLE Residential SSVIAC	MH-1096	MH-1096	MH-1096	MH-1096	MH-1113	MH-1113	MH-1113	MH-1113	MH-1116	MH-1116
Survey ID:		SAMH-1096	SAMH-1096	SAMH-1096	SAMH-1096	SAMH-1113	SAMH-1113	SAMH-1113	SAMH-1113	SAMH-1116	SAMH-1116
Sample Date:		6/15/2020	9/18/2020	12/16/2020	3/22/2021	6/15/2020	9/17/2020	12/16/2020	3/23/2021	6/15/2020	9/17/2020

Volatile Organic Compounds (VOCs)

1,1-Dichloroethene	210	< 1.9	< 1.3	< 0.68 [< 1.5]	< 1.5	< 2	< 1.3	< 0.71	< 1.4	< 1.7	< 1.4
1,4-Dioxane	5.1	< 5.1	< 0.91	< 1.2 [< 2.5]	< 4.0	< 5.2	< 2.8	< 1.3	< 3.6	< 4.4	< 3.2
cis-1,2-Dichloroethene	8.3	< 1.5	< 0.7	< 0.77 [< 1.7]	< 1.2	< 1.5	< 1.6	< 0.81	< 1.1	< 1.3	< 1.7
Tetrachloroethene	41	< 2.7	< 1	< 0.88 [2.4 J]	< 2.2	< 2.8	< 1.8	< 0.92	2.6 J	< 2.4	< 2.0
trans-1,2-Dichloroethene	83	< 1.1	< 1.1	< 1.1 [< 1.2]	< 0.90	< 1.2	< 1.8	< 1.2	< 0.82	< 0.99	< 2.0
Trichloroethene	2.0	< 1.8	< 0.56	< 0.93 [< 0.90]	< 1.5	< 1.9	< 1.7	< 0.97	< 1.3	44	< 1.9
Vinyl chloride	1.6	< 0.66	< 0.47	< 0.55 [< 0.75]	< 0.52	< 0.68	< 0.82	< 0.58	< 0.48	< 0.57	< 0.91

Location:	EGLE Residential SSVIAC	MH-1116	MH-1116	MH-1122	MH-1122	MH-1122	MH-1122	MH-1123	MH-1123	MH-1123	MH-1123
Survey ID:		SAMH-1116	SAMH-1116	SAMH-1122	SAMH-1122	SAMH-1122	SAMH-1122	SAMH-1123	SAMH-1123	SAMH-1123	SAMH-1123
Sample Date:		12/17/2020	3/23/2021	6/10/2020	9/16/2020	12/17/2020	3/24/2021	6/15/2020	9/17/2020	12/17/2020	3/23/2021

Volatile Organic Compounds (VOCs)

1,1-Dichloroethene	210	< 0.71	< 1.4	< 1.8	< 4.5	< 1.6	< 1.4	< 2	< 1.3	< 1.6	< 1.4
1,4-Dioxane	5.1	< 1.3	< 3.8	< 4.7	< 10	< 2.6	< 3.7	< 5.2	< 3.0	< 2.6	< 3.8
cis-1,2-Dichloroethene	8.3	< 0.81	< 1.1	6.4	< 5.5	< 1.8	< 1.1	< 1.5	< 1.6	< 1.8	< 1.1
Tetrachloroethene	41	1.2 J	< 2.0	9.4	< 6.5	< 1.4	< 2.0	< 2.8	< 8.8 UB	< 1.4	< 2.0
trans-1,2-Dichloroethene	83	< 1.2	< 0.84	5.1 J	< 6.2	< 1.3	< 0.84	< 1.2	< 1.8	< 1.3	< 0.85
Trichloroethene	2.0	< 0.97	< 1.4	25	< 6.1	< 0.96	< 1.4	< 1.9	< 7.0 UB	< 0.96	< 1.4
Vinyl chloride	1.6	< 0.58	< 0.49	< 0.61	< 2.9	< 0.80	< 0.49	< 0.68	< 0.86	< 0.80	< 0.49

See Notes on last page

Table 5
Off-site Residential Vapor Analytical Results
Ford Livonia Transmission Plant
36200 Plymouth Road
Livonia, Michigan

Notes:

1. All results reported in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).
2. **Bold** result exceeds the EGLE site-specific volatilization to indoor air criteria (SSVIAC) developed for unrestricted residential exposure and provided by EGLE on September 11, 2020 to evaluate vapor migration in preferential pathways.
3. All samples were analyzed via United States Environmental Protection Agency (USEPA) Method TO-15.

Abbreviations/Definitions:

- [] duplicate sample result
- < Denotes not detected above reporting limit or method detection limit.
- EGLE Michigan Department of Environment, Great Lakes, and Energy
- ID identification
- MH manhole
- SAMH sanitary manhole
- UB Analyte considered non-detect at the reporting limit due to associated blank contamination.
- J estimated result

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Table 6
Off-site Sediment Analytical Results
Ford Livonia Transmission Plant
36200 Plymouth Road
Livonia, Michigan



Location: Sample Name	MH-1020 MH-1020_061620	MH-1122 MH-1122_121720
Survey ID:	SAMH-1020	SAMH-1122
Sample Date:	6/16/2020	12/17/2020
Volatile Organic Compounds (VOCs)		
1,1-Dichloroethene	< 33	< 34
1,4-Dioxane	< 2,300	< 2,300
cis-1,2-Dichloroethene	< 19	< 19
Tetrachloroethene	< 37	< 39
trans-1,2-Dichloroethene	< 21	< 22
Trichloroethene	< 23	< 24
Vinyl chloride	< 25	< 26

Notes:

1. All results are reported in micrograms per kilogram ($\mu\text{g}/\text{kg}$).
2. All samples were analyzed via United States Environmental Protection Agency (USEPA) Method 8260B.

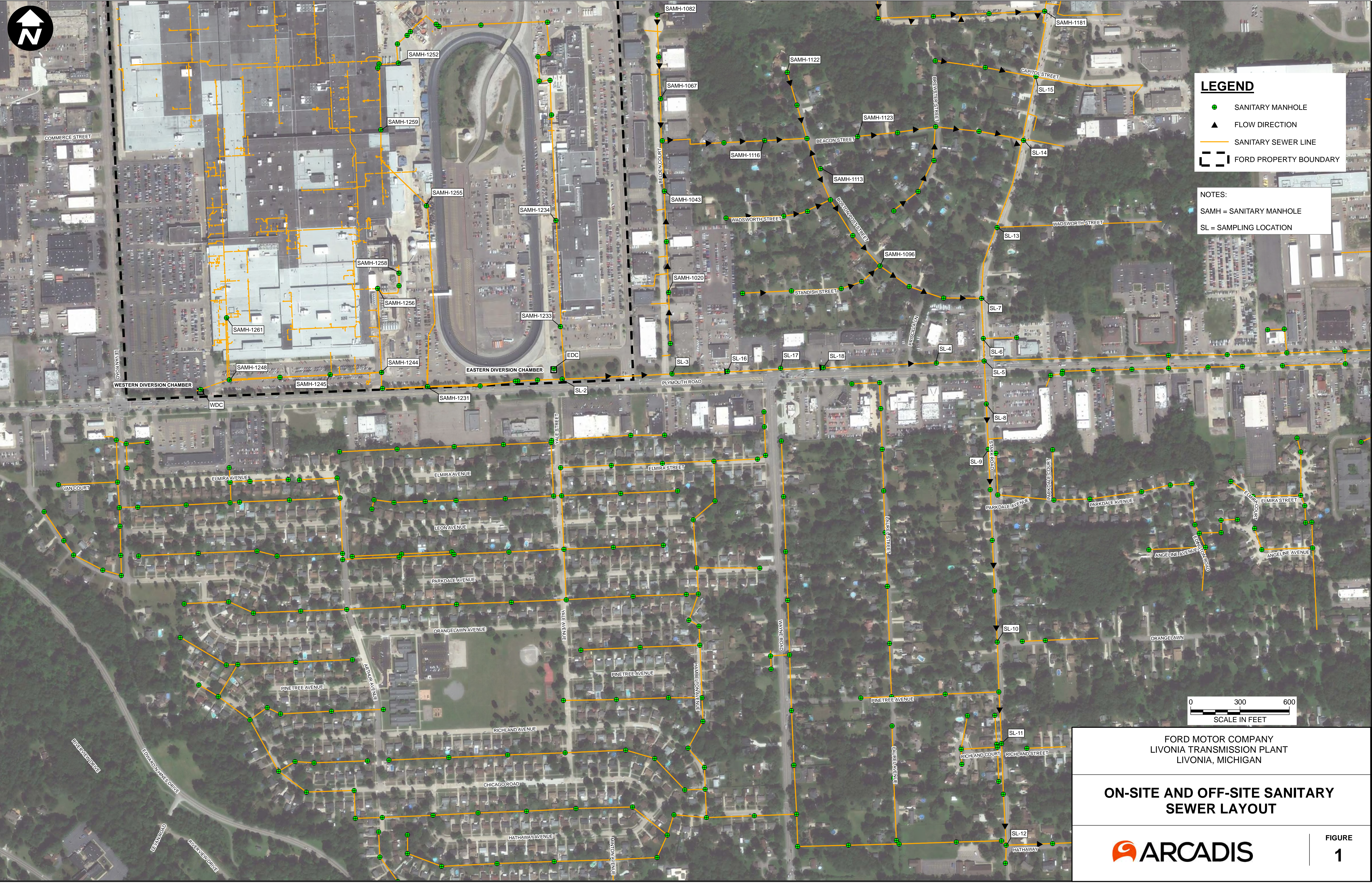
Abbreviations/Definitions:

- < Denotes not detected above method detection limit.
- EGLE Michigan Department of Environment, Great Lakes, and Energy
- ID identification
- MH manhole
- SAMH sanitary manhole

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Figures

CITY: Novi; DIV: ENV; DR: MG; PIC: R. ELLIS; PM: K. HINSKEY; PROJECT NUMBER: 30080642; COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl; T: ENV; File: LivoniaGIS\GIS\Docs\GEC30_2021\Utility_Corridor\EGLE_Report\Figure 2_On-site_and_Off-site_Sanitary_Sewer_Layout.mxd; PLOTTED: 12/7/2021 5:29:41 PM; BY: PSJ01045



LEGEND

- SANITARY MANHOLE
- ▲ FLOW DIRECTION
- SANITARY SEWER LINE
- FORD PROPERTY BOUNDARY

NOTES:

- SAMH = SANITARY MANHOLE
- SL = SAMPLING LOCATION

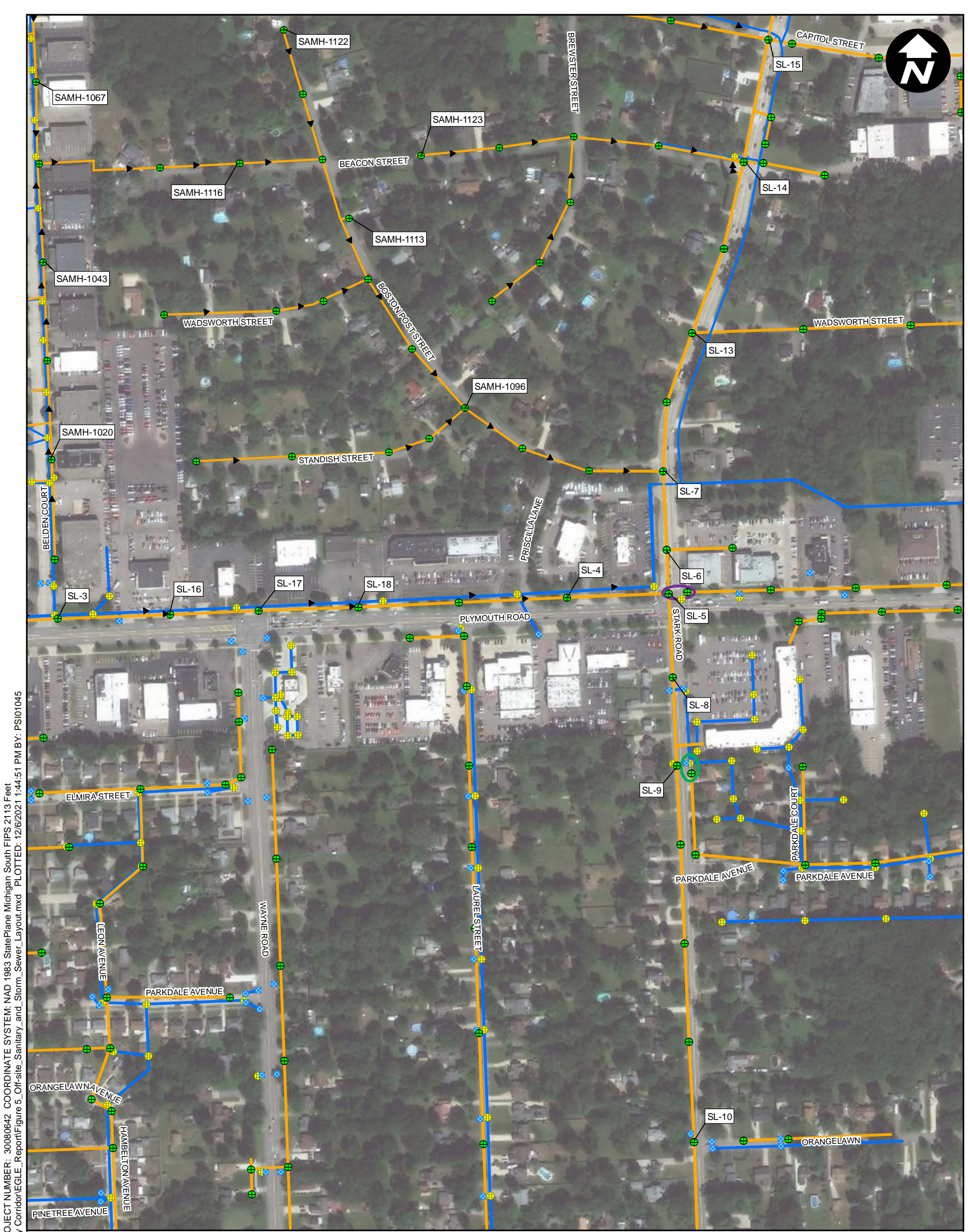


FORD MOTOR COMPANY
LIVONIA TRANSMISSION PLANT
LIVONIA, MICHIGAN

**ON-SITE AND OFF-SITE SANITARY
SEWER LAYOUT**

ARCADIS

FIGURE
1

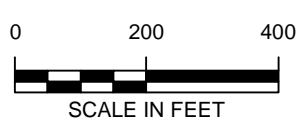


CITY: Novi DIV: ENV DB: MG PIC: R. ELLIS PM: K. HINSKEY PROJECT NUMBER: 30080642 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet
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LEGEND

- SANITARY MANHOLE
- STORM MANHOLE
- STORM INLET
- ▲ FLOW DIRECTION
- SANITARY SEWER LINE
- STORM WATER LINE
- CONFIRMED NO CONNECTION BETWEEN STORM AND SANITARY
- CONFIRMED NO CONNECTION BETWEEN SANITARY SEWERS

NOTES:
 SAMH = SANITARY MANHOLE
 SL = SAMPLING LOCATION



FORD MOTOR COMPANY
 LIVONIA TRANSMISSION PLANT
 LIVONIA, MICHIGAN

OFF-SITE SANITARY AND STORM SEWER LAYOUT

A
ARCADIS
FIGURE
2



This document is a DRAFT document that has not received approval from EGLE. This document was prepared pursuant to a Court Consent Decree. The opinions, findings, and conclusions expressed are those of the authors and not those of EGLE.

LEGEND

- SURVEY POINTS
- SANITARY MANHOLE
- ⊕ SANITARY MANHOLE / COULD NOT OPEN
- CHAMBER
- ▲ FLOW DIRECTION
- SANITARY SEWER LINE
- PROPERTY BOUNDARY
- FORD PROPERTY BOUNDARY
- TEXT RESULT EXCEEDS THE EGLE SSVIAC

NOTES:
 FIGURE SHOWS DATA FOR TRICHLOROETHENE AND VINYL CHLORIDE ONLY. FULL SET OF DATA CAN BE FOUND IN THE CORRESPONDING TABLE.

"ND", "<" - INDICATES THE VALUE IS BELOW THE LABORATORY REPORTING LIMIT OR METHOD DETECTION LIMIT SHOWN FOR THE ASSOCIATED SAMPLING EVENT

EGLE = DEPARTMENT OF ENVIRONMENT, GREAT LAKES & ENERGY

EDC = EASTERN DIVERSION CHAMBER

WDC = WESTERN DIVERSION CHAMBER

SAMH = SANITARY MANHOLE

STMH = STORM MANHOLE

SL = SAMPLING LOCATION

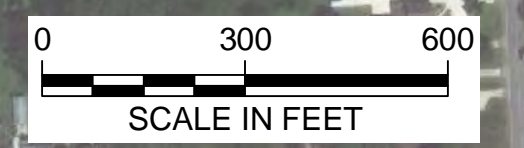
[] - DUPLICATE SAMPLE RESULT

J = ESTIMATED RESULT

UB = ANALYTE CONSIDERED NON-DETECT AT THE REPORTING LIMIT DUE TO ASSOCIATED BLANK CONTAMINATION.

VAPOR RESULTS REPORTED IN MICROGRAMS PER CUBIC METER (µg/m³). ANALYTICAL METHOD: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA) TO-15.

RESULTS FROM LOCATIONS ON-SITE, ALONG PLYMOUTH RD, BELDEN COURT, AND ROSATI AVENUE ARE COMPARED TO THE EGLE RESTRICTED NONRESIDENTIAL SITE-SPECIFIC VOLATILIZATION TO INDOOR AIR CRITERIA (SSVIAC) 12-HOUR WORKDAY EXPOSURE FOR TRICHLOROETHENE OF 4.0 µg/m³ AND FOR VINYL CHLORIDE OF 27 µg/m³. RESULTS FROM LOCATIONS WITHIN ALDEN VILLAGE ARE COMPARED TO THE EGLE UNRESTRICTED RESIDENTIAL SSVIAC FOR TRICHLOROETHENE OF 2.0 µg/m³ AND VINYL CHLORIDE OF 1.6 µg/m³. RESULTS FROM LOCATIONS ALONG STARK ROAD (INCLUDING SL-5) ARE COMPARED TO BOTH SETS OF CRITERIA.



FORD MOTOR COMPANY
 LIVONIA TRANSMISSION PLANT
 LIVONIA, MICHIGAN

ON-SITE AND OFF-SITE VAPOR RESULTS TRICHLOROETHENE AND VINYL CHLORIDE





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LEGEND

SURVEY POINTS

- SANITARY MANHOLE
- ▲ FLOW DIRECTION
- SANITARY SEWER LINE
- PROPERTY BOUNDARY
- FORD PROPERTY BOUNDARY

NOTES:

FIGURE SHOWS DATA FOR TRICHLOROETHENE AND VINYL CHLORIDE ONLY. FULL SET OF DATA CAN BE FOUND IN THE CORRESPONDING TABLE.

"ND", "<" – INDICATES THE VALUE IS BELOW THE LABORATORY METHOD DETECTION LIMIT SHOWN FOR THE ASSOCIATED SAMPLING EVENT

EGLE = DEPARTMENT OF ENVIRONMENT, GREAT LAKES & ENERGY

SAMH = SANITARY MANHOLE

SEDIMENT RESULTS REPORTED IN MICROGRAMS PER KILOGRAM (µg/kg). ANALYTICAL METHOD: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY 8260B FOR VOLATILE ORGANIC COMPOUNDS (VOCs).

SAMH-1122	
Trichloroethene (µg/kg)	
12/17/2020	ND (< 24)
Vinyl Chloride (µg/kg)	
12/17/2020	ND (< 26)

SAMH-1020	
Trichloroethene (µg/kg)	
6/16/2020	ND (< 23)
Vinyl Chloride (µg/kg)	
6/16/2020	ND (< 25)



FORD MOTOR COMPANY
LIVONIA TRANSMISSION PLANT
LIVONIA, MICHIGAN

**OFF-SITE SEDIMENT RESULTS
TRICHLOROETHENE AND VINYL CHLORIDE**

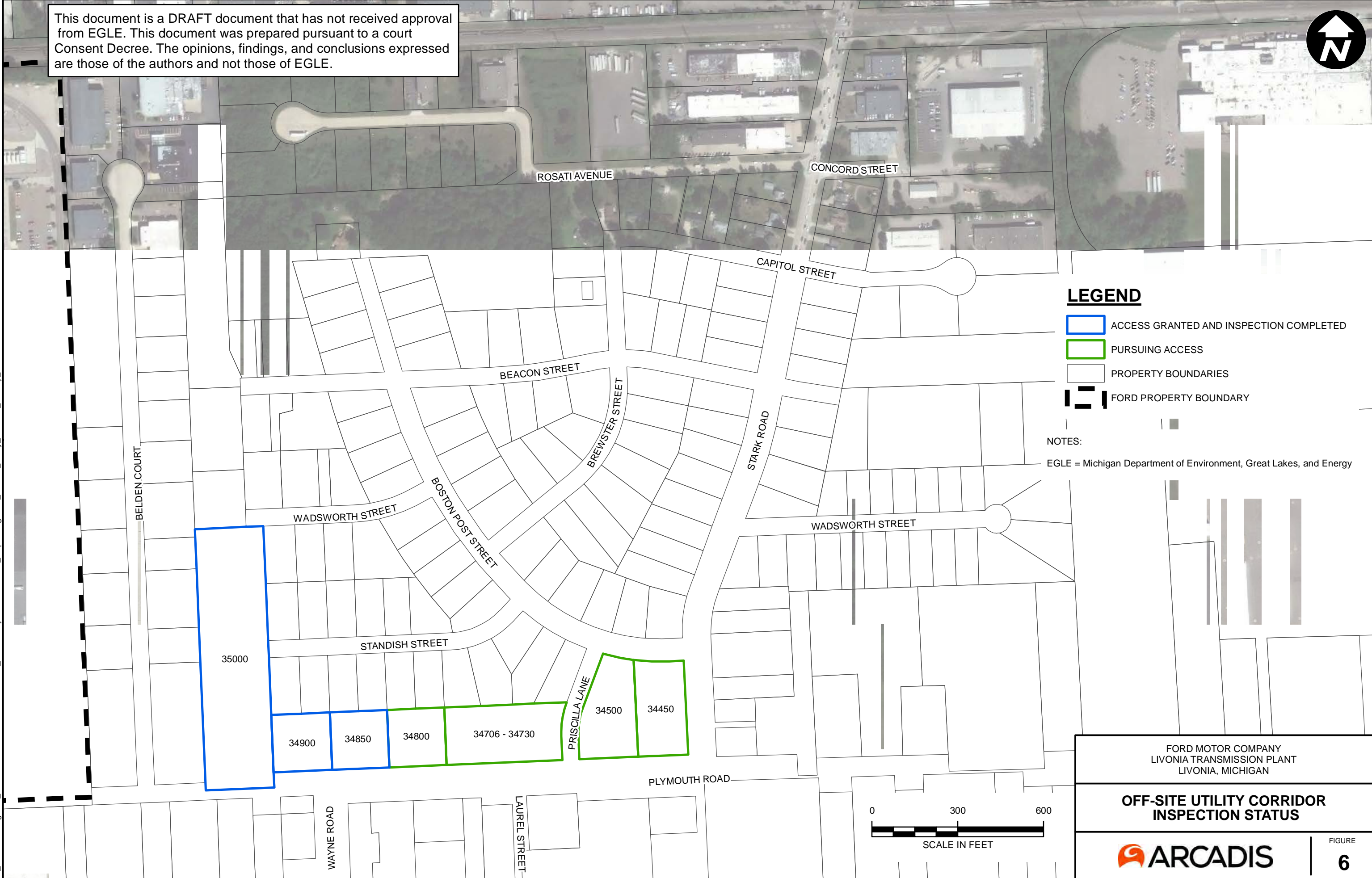


CITY: Novi; DIV: ENV; DE: MG; PIC: R. ELLIS; PM: K. HINSKEY; PROJECT NUMBER: 30090642; COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl; FILE: M:\Ford\Livonia\GIS\Docs\GEC30_2021\Utility Corridor\EGLE_Report\Figure 1_Off-site_Sediment_TCE_and_VC.mxd; PLOTTED: 12/03/2021 7:28:36 AM; BY: PSJ01045





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CITY: NOVI DIV: ENV DB: MG PIC: R. ELLIS PM: K. HINSKEY PROJECT NUMBER: 30080642 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet T:_ENV\NoviBrighton_MNFordLivonia\GIS\docs\GEC\3Q_2021\Utility Corridor_Report\Figure 6_Off-site_Utility_Corridor_PLOTTED: 12/3/2021 2:14:31 PM BY: PS101045



LEGEND

-  ACCESS GRANTED AND INSPECTION COMPLETED
-  PURSUING ACCESS
-  PROPERTY BOUNDARIES
-  FORD PROPERTY BOUNDARY

NOTES:
EGLE = Michigan Department of Environment, Great Lakes, and Energy

FORD MOTOR COMPANY
LIVONIA TRANSMISSION PLANT
LIVONIA, MICHIGAN

**OFF-SITE UTILITY CORRIDOR
INSPECTION STATUS**

 **ARCADIS** | FIGURE
6

Appendix A

Utility Corridor Evaluation Field Notes

ON-SITE RECONNAISSANCE

2020-12-14, Kara Donahue, Sewer line recon

Created	2020-12-14 14:00:07 UTC by Kara Donahue
Updated	2020-12-14 19:39:54 UTC by Kara Donahue
Location	42.3729126854263, -83.3919205237957

Basic Information

Project Name	Ford
Task	Sewer line recon
Project Number	30050315
Location	Livonia, MI
Date	2020-12-14
Completed By	Kara Donahue
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	32.00 degrees F and Cloudy
PPE	Level D
Are you using equipment?	No

Daily Log of Activities

08:00, H&S tailgate meeting.

Time	08:00
Description of Task	H&S tailgate meeting.

08:30, Purchasing manhole puller from Grainger.

Time	08:30
Description of Task	Purchasing manhole puller from Grainger.

08:55, Arrived on-site.

Time	08:55
Description of Task	Arrived on-site.

10:00, Signed in at plant gate entrance.

Time	10:00
Description of Task	Signed in at plant gate entrance.

10:05, Started checking manholes.

Time	10:05
Description of Task	Started checking manholes.

13:30, Reviewing manhole notes and photos at the Arcadis VI trailer with Allyson Hartz.

Time	13:30
Description of Task	Reviewing manhole notes and photos at the Arcadis VI trailer with Allyson Hartz.

14:45, Departed site.

Time	14:45
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Description of Task

Departed site.

Waste Management

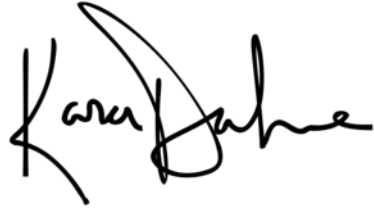
Are there any waste drums onsite?

No

Did you drum any waste today?

No

Signature

A handwritten signature in black ink, appearing to read "Kara Dabe". The signature is fluid and cursive, with a large loop at the end.

Signed 2020-12-14 19:15:03 UTC

2020-12-14, Allyson Hartz, Sanitary Line Assessment

Created	2020-12-14 14:05:01 UTC by Allyson Hartz
Updated	2020-12-14 19:07:15 UTC by Allyson Hartz
Location	42.3731428524874, -83.3919154946538

Basic Information

Project Name	Ford LTP
Task	Sanitary Line Assessment
Project Number	30050315.701.01
Location	Livonia, MI
Date	2020-12-14
Completed By	Allyson Hartz
Additional Personnel	Kara Donahue
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	32.00 degrees F and Cloudy
PPE	Level D
Are you using equipment?	No

Daily Log of Activities

07:45, Arrive onsite, H&S tailgate, prep for field work

Time	07:45
Description of Task	Arrive onsite, H&S tailgate, prep for field work

10:00, Begin recon of sanitary manholes

Time	10:00
Description of Task	Begin recon of sanitary manholes

10:10, Manhole 2 has NS piping, covered pipe

Time	10:10
Description of Task	Manhole 2 has NS piping, covered pipe

10:31, Manhole 1A has pipe entering from the east, no flow, full of sludge

Time	10:31
Description of Task	Manhole 1A has pipe entering from the east, no flow, full of sludge

10:32, Manhole 1B has pipe entering from the west with flow

Time	10:32
Description of Task	Manhole 1B has pipe entering from the west with flow

11:22, Manhole 3A, pipes enter N and S, still water and sludge, no flow

Time	11:22
Description of Task	Manhole 3A, pipes enter N and S, still water and sludge, no flow

11:23, Manhole 3B, large pipe enters from east, small pipe enters from west, still water with no flow

Time	11:23
Description of Task	Manhole 3B, large pipe enters from east, small pipe enters from west, still water with no flow

13:00, Finished recon of sanitary manholes

Time	13:00
Description of Task	Finished recon of sanitary manholes

13:30, Reviewed notes and figures

Time	13:30
Description of Task	Reviewed notes and figures

14:30, Arcadis offsite

Time	14:30
Description of Task	Arcadis offsite

Waste Management

Are there any waste drums onsite?	No
Did you drum any waste today?	No

Photos

Other Photos



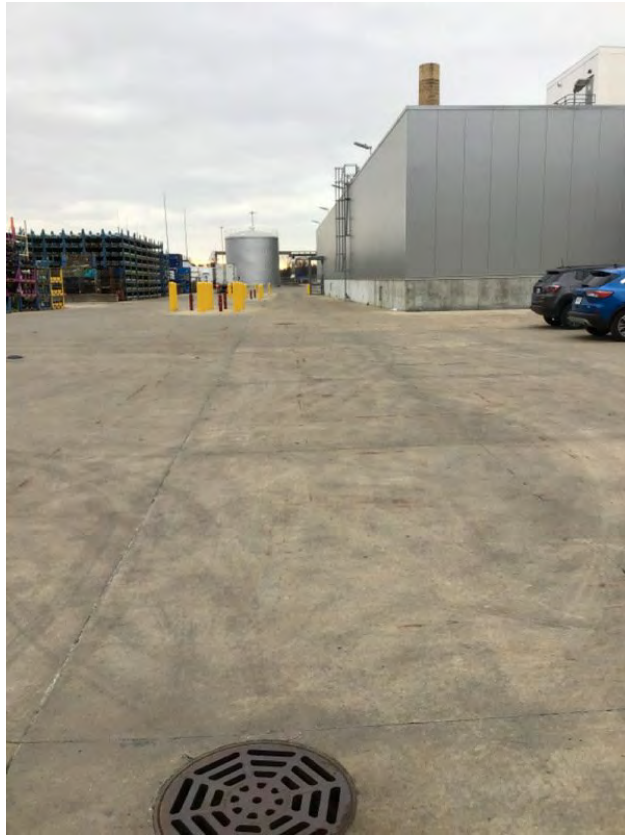
Manhole 2



Manhole 1A



Manhole 1B



East of plant, west of test track, NS line of six (6) storm manholes. Photo looking south



Manhole 3B



Manhole 3A



West of cylinder tanks 10-14, no manholes, photo looking south



Manholes 3A and 3B, photo looking south



Southeast corner of office/plant



Southwest corner of office/plant, unable to open manhole

Signature

CH

Signed 2020-12-14 14:07:59 UTC

2020-12-15, Kara Donahue, Utility Corridor Recon

Created	2020-12-15 13:08:15 UTC by Kara Donahue
Updated	2020-12-16 13:24:52 UTC by Kara Donahue
Location	42.372387830513, -83.3924820903432

Basic Information

Project Name	Ford
Task	Utility Corridor Recon
Project Number	30050315
Location	Livonia, MI
Date	2020-12-15
Completed By	Kara Donahue
Additional Personnel	Allyson Hartz
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	19.94 degrees F and Mostly Cloudy
PPE	Level D
Are you using equipment?	No

Daily Log of Activities

08:00, Arrived on-site.

Time	08:00
Description of Task	Arrived on-site.

08:10, H&S tailgate.

Time	08:10
Description of Task	H&S tailgate.

08:20, Plan is to check restrooms inside the plant today.

Time	08:20
Description of Task	Plan is to check restrooms inside the plant today.

08:25, Signed in at gate entrance.

Time	08:25
Description of Task	Signed in at gate entrance.

08:40, Restroom #1 one floor drain, one p-trap. SE corner of plant.

Time	08:40
Description of Task	Restroom #1 one floor drain, one p-trap. SE corner of plant.

08:46, Restroom #2 one floor drain, two p-traps. SE corner of plant.

Time	08:46
Description of Task	Restroom #2 one floor drain, two p-traps. SE corner of plant.

08:58, Restrooms #3 and #4 are located in administration wing. Doors are locked from inside plant.

Will try to access from outside entrance later.

Time	08:58
Description of Task	Restrooms #3 and #4 are located in administration wing. Doors are locked from inside plant. Will try to access from outside entrance later.

09:00, Restroom #5 one floor drain, one p-trap.

Time	09:00
Description of Task	Restroom #5 one floor drain, one p-trap.

09:11, Restroom #6 by column H38. Two floor drains, 5 p-traps.

Time	09:11
Description of Task	Restroom #6 by column H38. Two floor drains, 5 p-traps.

09:20, Restroom #7 by column H76. Two floor drains, one p-trap.

Time	09:20
Description of Task	Restroom #7 by column H76. Two floor drains, one p-trap.

09:42, Restroom #8 by column Q70. One floor drain, two p-traps.

Time	09:42
Description of Task	Restroom #8 by column Q70. One floor drain, two p-traps.

09:50, Restroom #9 is lifted off ground as a second level room by column R94. Two floor drains, 3 p-traps.

Time	09:50
Description of Task	Restroom #9 is lifted off ground as a second level room by column R94. Two floor drains, 3 p-traps.

10:02, Restroom #10 by column Z94. Two floor drains, one circular sink with unknown number of p-traps

Time	10:02
Description of Task	Restroom #10 by column Z94. Two floor drains, one circular sink with unknown number of p-traps

10:15, Restroom #11 by column H108 is lifted off ground as a second level room. Two floor drains, two p-traps.

Time	10:15
Description of Task	Restroom #11 by column H108 is lifted off ground as a second level room. Two floor drains, two p-traps.

10:25, Restroom #12 by column D90. One floor drain, two p-traps.

Time	10:25
Description of Task	Restroom #12 by column D90. One floor drain, two p-traps.

10:36, Restroom #13 not located or doesn't exist.

Time	10:36
Description of Task	Restroom #13 not located or doesn't exist.

10:40, Restroom #14 by column OD90. One floor drain, two p-traps.

Time	10:40
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Description of Task	Restroom #14 by column OD90. One floor drain, two p-traps.
10:50, Restroom #15 by column A56. One floor drain, 9 p-traps.	
Time	10:50
Description of Task	Restroom #15 by column A56. One floor drain, 9 p-traps.
10:55, Restroom #16 by column A42. One floor drain, two p-traps.	
Time	10:55
Description of Task	Restroom #16 by column A42. One floor drain, two p-traps.
11:10, Restroom #17 by column OG46. One floor drain, one p-trap.	
Time	11:10
Description of Task	Restroom #17 by column OG46. One floor drain, one p-trap.
12:30, Communicating with Ford contacts to gain access to ATO/admin restrooms.	
Time	12:30
Description of Task	Communicating with Ford contacts to gain access to ATO/admin restrooms.
12:53, Restroom #3 one floor drain, 3 p-traps. Unisex restroom one floor drain, one p-trap.	
Time	12:53
Description of Task	Restroom #3 one floor drain, 3 p-traps. Unisex restroom one floor drain, one p-trap.
13:02, Restroom #4 one floor drain, 4 p-traps.	
Time	13:02
Description of Task	Restroom #4 one floor drain, 4 p-traps.
13:08, Restroom #18 (second floor of ATO/Admin building) one floor drain, one p-trap.	
Time	13:08
Description of Task	Restroom #18 (second floor of ATO/Admin building) one floor drain, one p-trap.
13:12, Restroom #19 (second floor of ATO/Admin building) one floor drain, 3 p-traps. Unisex restroom one floor drain, one p-trap.	
Time	13:12
Description of Task	Restroom #19 (second floor of ATO/Admin building) one floor drain, 3 p-traps. Unisex restroom one floor drain, one p-trap.
13:18, Restroom #20 (second floor of ATO/Admin building) one floor drain, one p-trap.	
Time	13:18
Description of Task	Restroom #20 (second floor of ATO/Admin building) one floor drain, one p-trap.
13:45, Reviewing notes, maps, and photos at the Arcadis VI trailer.	
Time	13:45
Description of Task	Reviewing notes, maps, and photos at the Arcadis VI trailer.
14:45, Departed site.	
Time	14:45
Description of Task	Departed site.

Waste Management

Are there any waste drums onsite?

No

Did you drum any waste today?

No

Signature

A handwritten signature in black ink, appearing to be 'K. J. ...' with a stylized, cursive script.

Signed 2020-12-15 19:12:45 UTC

2020-12-15, Allyson Hartz, Sanitary Line Assessment

Created	2020-12-15 13:12:39 UTC by Allyson Hartz
Updated	2020-12-15 19:26:01 UTC by Allyson Hartz
Location	42.3729077820129, -83.3916919492962

Basic Information

Project Name	Ford LTP
Task	Sanitary Line Assessment
Project Number	30050315.701.01
Location	Livonia, MI
Date	2020-12-15
Completed By	Allyson Hartz
Additional Personnel	Kara Donahue
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	19.94 degrees F and Mostly Cloudy
PPE	Level D
Are you using equipment?	No

Daily Log of Activities

08:00, Arrive onsite, self assessment, H&S tailgate

Time	08:00
Description of Task	Arrive onsite, self assessment, H&S tailgate

08:15, Prep for sanitary line assessment and bathroom recon inside of plant

Time	08:15
Description of Task	Prep for sanitary line assessment and bathroom recon inside of plant

08:40, Enter plant, begin recon

Time	08:40
Description of Task	Enter plant, begin recon

08:40, Restroom 1 has 1 ptrap and 1 floor drain. Restroom is on the plant floor, not built into the building

Time	08:40
Description of Task	Restroom 1 has 1 ptrap and 1 floor drain. Restroom is on the plant floor, not built into the building

08:46, Restroom 2 has 2 ptraps and 1 floor drains, southeast corner of Plant/Offices

Time	08:46
Description of Task	Restroom 2 has 2 ptraps and 1 floor drains, southeast corner of Plant/Offices

08:58, Restroom 5 has 1 floor drain and 1 large sink with 1 ptrap

Time	08:58
Description of Task	Restroom 5 has 1 floor drain and 1 large sink with 1 ptrap

09:11, Restroom 6 (middle of plant, near column H38) has 5 ptraps and 2 floor drains

Time	09:11
Description of Task	Restroom 6 (middle of plant, near column H38) has 5 ptraps and 2 floor drains

09:19, Restroom 7 (on plant floor, near column H76) has 1 large sink with 1 ptrap and 2 floor drains

Time	09:19
Description of Task	Restroom 7 (on plant floor, near column H76) has 1 large sink with 1 ptrap and 2 floor drains

09:40, Restroom 8 (near column Q70) has 2 ptraps and 1 floor drains

Time	09:40
Description of Task	Restroom 8 (near column Q70) has 2 ptraps and 1 floor drains

09:49, Restroom 9 (lifted off of plant floor in 2nd story, near column R94) has 3 ptraps and 2 floor drains

Time	09:49
Description of Task	Restroom 9 (lifted off of plant floor in 2nd story, near column R94) has 3 ptraps and 2 floor drains

10:01, Restroom 10 (near column Z94) 2 floor drains and 1 large sink, unknown number of ptraps

Time	10:01
Description of Task	Restroom 10 (near column Z94) 2 floor drains and 1 large sink, unknown number of ptraps

10:13, Restroom 11 (lifted off of plant floor, near column H108) has 2 floor drains and 2 ptraps

Time	10:13
Description of Task	Restroom 11 (lifted off of plant floor, near column H108) has 2 floor drains and 2 ptraps

10:24, Restroom 12 (on plant floor, near column D90) has 1 floor drain and 2 ptraps

Time	10:24
Description of Task	Restroom 12 (on plant floor, near column D90) has 1 floor drain and 2 ptraps

10:36, Unable to locate Restroom 13

Time	10:36
Description of Task	Unable to locate Restroom 13

10:40, Restroom 14 has 2 ptraps and 1 floor drain, and a cap to something

Time	10:40
Description of Task	Restroom 14 has 2 ptraps and 1 floor drain, and a cap to something

10:49, Restroom 15 (near column A56) has 1 floor drain and 9 ptraps

Time	10:49
Description of Task	Restroom 15 (near column A56) has 1 floor drain and 9 ptraps

10:55, Restroom 16 has 2 ptraps and 1 floor drain, and a cover to something

Time	10:55
Description of Task	Restroom 16 has 2 ptraps and 1 floor drain, and a cover to something

11:10, Restroom 17 (near column OG46) has 1 floor drain and 1 ptrap

Time	
Description of Task	

Time	11:10
Description of Task	Restroom 17 (near column OG46) has 1 floor drain and 1 ptrap

11:25, Finish recon on plant floor, exit plant

Time	11:25
Description of Task	Finish recon on plant floor, exit plant

12:45, Gain access to admin office area

Time	12:45
Description of Task	Gain access to admin office area

12:52, Restroom 3 (women's and unisex): women's has 1 floor drain, 3 ptraps and unisex has 1 floor drains, 1 ptrap

Time	12:52
Description of Task	Restroom 3 (women's and unisex): women's has 1 floor drain, 3 ptraps and unisex has 1 floor drains, 1 ptrap

13:01, Restroom 4 has 1 floor drain, 4 ptraps

Time	13:01
Description of Task	Restroom 4 has 1 floor drain, 4 ptraps

13:07, Restroom 18 (second floor of admin) has 1 floor drain and 1 ptrap

Time	13:07
Description of Task	Restroom 18 (second floor of admin) has 1 floor drain and 1 ptrap

13:11, Restroom 19 (women's and unisex, second floor of admin): women's has 1 floor drain and 3 ptraps, unisex has 1 floor drain and 1 ptrap

Time	13:11
Description of Task	Restroom 19 (women's and unisex, second floor of admin): women's has 1 floor drain and 3 ptraps, unisex has 1 floor drain and 1 ptrap

13:18, Restroom 20 (second floor of admin) has 1 floor drain as 1 ptrap

Time	13:18
Description of Task	Restroom 20 (second floor of admin) has 1 floor drain as 1 ptrap

13:44, Finish recon inside of admin office area

Time	13:44
Description of Task	Finish recon inside of admin office area

15:00, Offsite

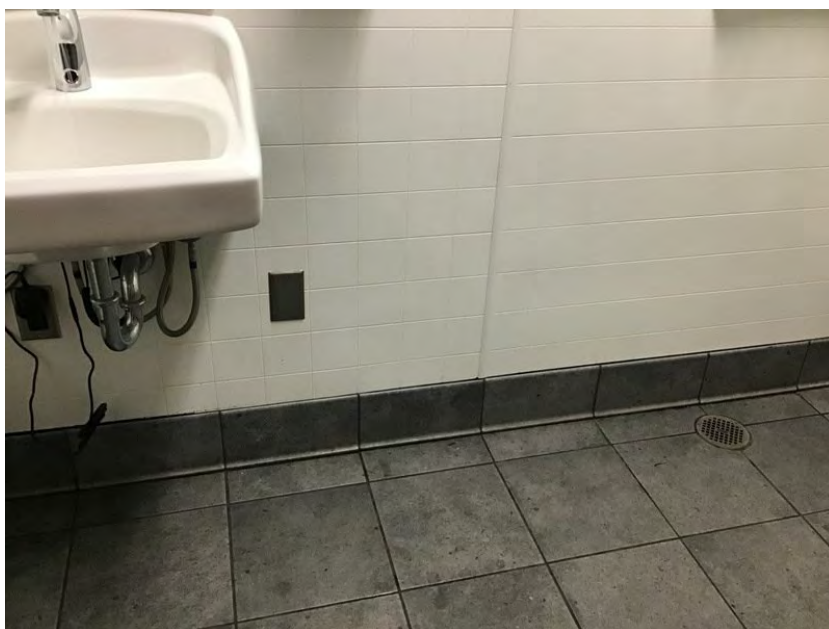
Time	15:00
Description of Task	Offsite

Waste Management

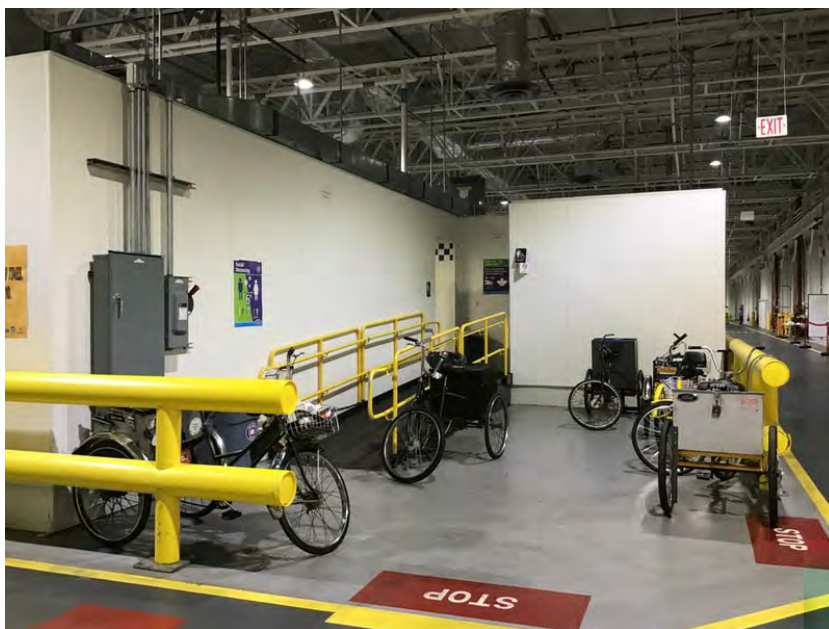
Are there any waste drums onsite?	No
Did you drum any waste today?	No

Photos

Other Photos



Restroom 1



Restroom 1



Restroom 2



Restroom 2



Restroom 5



Restroom 5



Restroom 6



Restroom 6



Restroom 6



Restroom 6



Restroom 7



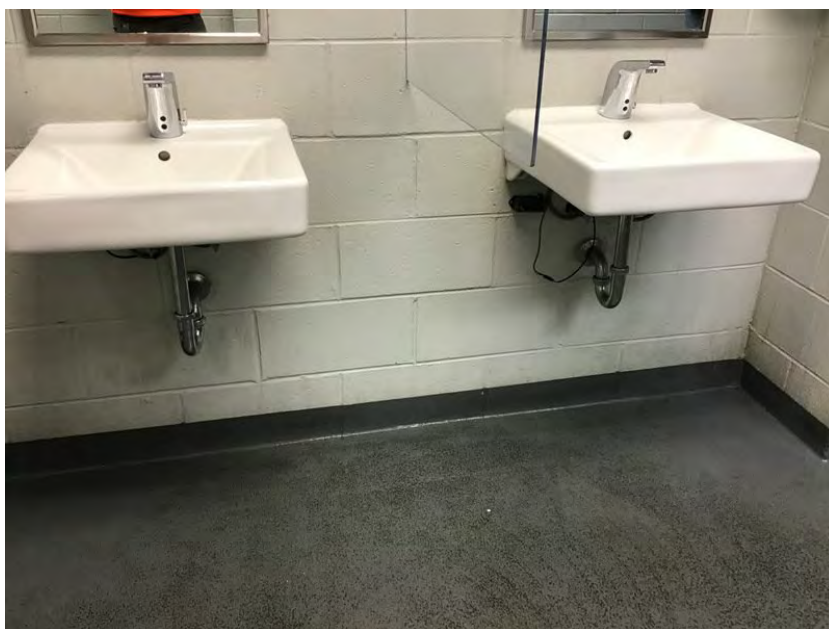
Restroom 7



Restroom 7



Restroom 8



Restroom 8



Restroom 9



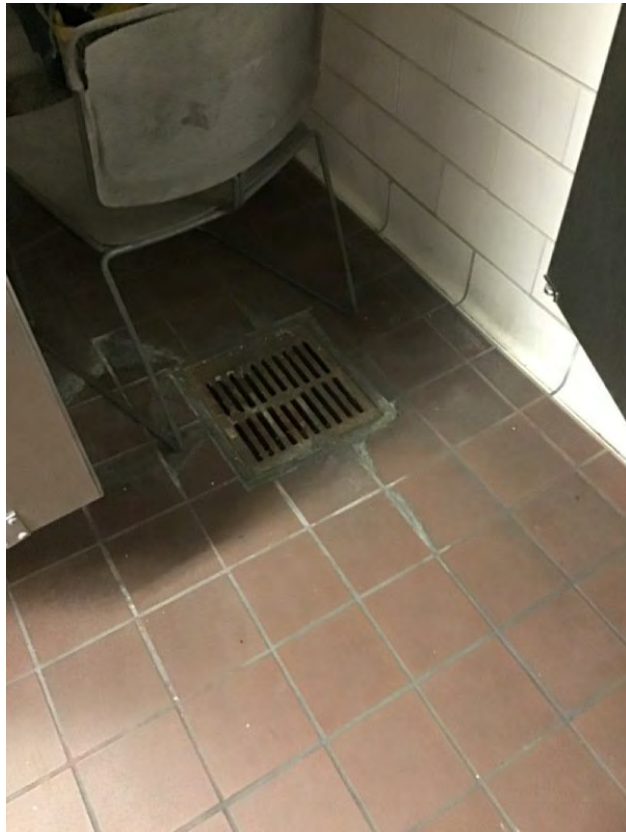
Restroom 9



Restroom 9



Restroom 10



Restroom 10



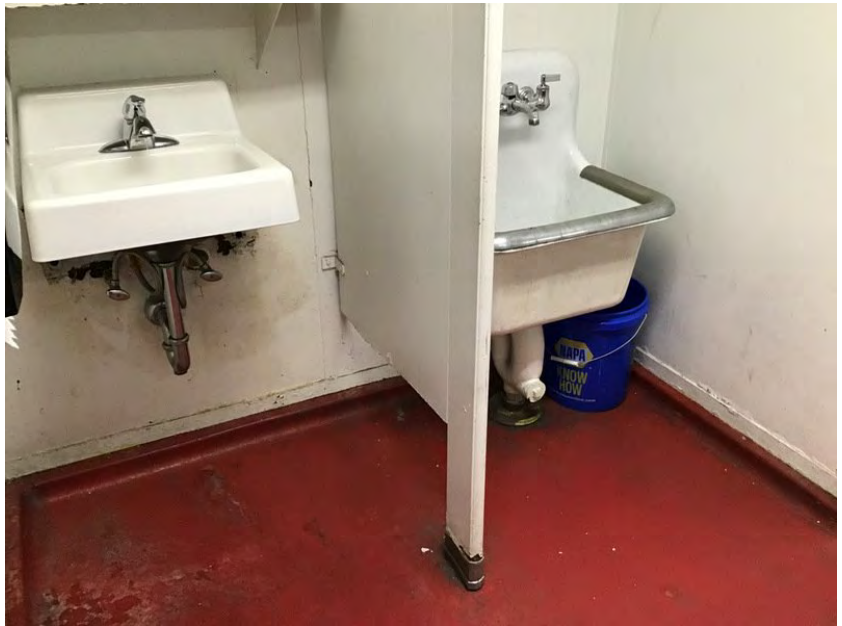
Restroom 10



Restroom 11



Restroom 11



Restroom 11



Restroom 12



Restroom 12



Restroom 14



Restroom 14



Restroom 15



Restroom 15



Restroom 16



Restroom 16



Restroom 17



Restroom 17



Restroom 17



Restroom 3 women's



Restroom 3 women's



Restroom 3 unisex



Restroom 3 unisex



Restroom 4



Restroom 4



Restroom 18



Restroom 18



Restroom 19 unisex



Restroom 19 unisex



Restroom 19 women's



Restroom 19 women's



Restroom 20



Restroom 20

Signature

A. Newtz

Signed 2020-12-15 13:13:53 UTC

2020-12-16, Kara Donahue, Utility Corridor Recon

Created	2020-12-16 13:19:28 UTC by Kara Donahue
Updated	2020-12-16 20:08:53 UTC by Kara Donahue
Location	42.3728795576695, -83.3921604305873

Basic Information

Project Name	Ford
Task	Utility Corridor Recon
Project Number	30050315
Location	Livonia, MI
Date	2020-12-16
Completed By	Kara Donahue
Additional Personnel	Allyson Hartz
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	26.06 degrees F and Cloudy
PPE	Level D
Are you using equipment?	No

Daily Log of Activities

08:15, Arrived on-site.

Time	08:15
Description of Task	Arrived on-site.

08:20, H&S tailgate meeting.

Time	08:20
Description of Task	H&S tailgate meeting.

08:50, Signed in at the security gate entrance.

Time	08:50
Description of Task	Signed in at the security gate entrance.

09:15, Manhole observed inside plant lateral to SAMH-1256. It is sealed.

Time	09:15
Description of Task	Manhole observed inside plant lateral to SAMH-1256. It is sealed.

09:25, Floor drain outside restroom #15.

Time	09:25
Description of Task	Floor drain outside restroom #15.

09:30, Unable to observe NE area with no sanitary manholes outside from inside the plant.

Time	09:30
Description of Task	Unable to observe NE area with no sanitary manholes outside from inside the plant.

09:34, Found sanitary manhole located at #2 on the map.

Time	09:34
Description of Task	Found sanitary manhole located at #2 on the map.

11:15, Several manholes observed throughout plant while following sanitary line map. See Allyson Hartz daily log for details and photos.

Time	11:15
Description of Task	Several manholes observed throughout plant while following sanitary line map. See Allyson Hartz daily log for details and photos.

11:50, Checking outside areas.

Time	11:50
Description of Task	Checking outside areas.

13:00, Reviewing notes and making map of manholes observed inside the plant.

Time	13:00
Description of Task	Reviewing notes and making map of manholes observed inside the plant.

15:15, Departed site.

Time	15:15
Description of Task	Departed site.

Waste Management

Are there any waste drums onsite?	No
Did you drum any waste today?	No

Signature

A handwritten signature in black ink, appearing to be 'K. Hartz', written in a cursive style.

Signed 2020-12-16 20:08:35 UTC

2020-12-16, Allyson Hartz, Sanitary Line Assessment

Created	2020-12-16 13:13:19 UTC by Allyson Hartz
Updated	2020-12-16 19:35:16 UTC by Allyson Hartz
Location	42.3729870329074, -83.3918164205583

Basic Information

Project Name	Ford LTP
Task	Sanitary Line Assessment
Project Number	30050315.701.01
Location	Livonia, MI
Date	2020-12-16
Completed By	Allyson Hartz
Additional Personnel	Kara Donahue
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	26.06 degrees F and Cloudy
PPE	Level D
Are you using equipment?	No

Daily Log of Activities

07:55, Arrive onsite, complete self assessment

Time	07:55
Description of Task	Arrive onsite, complete self assessment

08:30, H&S tailgate, review notes and maps

Time	08:30
Description of Task	H&S tailgate, review notes and maps

09:00, Begin recon, enter plant

Time	09:00
Description of Task	Begin recon, enter plant

09:16, Located Manhole 1, on the east wall of the plant, lateral with SAMH-1256, sealed shut

Time	09:16
Description of Task	Located Manhole 1, on the east wall of the plant, lateral with SAMH-1256, sealed shut

09:25, Located a floor drain outside of Restroom 15, unable to tell if it is sanitary

Time	09:25
Description of Task	Located a floor drain outside of Restroom 15, unable to tell if it is sanitary

09:26, Unable to observe northeast area along the plant wall, no pedestrian walkways in the plant and area is covered with palettes, forklift traffic (where we were unable to locate sanitary manholes outside on Monday)

Time	09:26
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Description of Task	Unable to observe northeast area along the plant wall, no pedestrian walkways in the plant and area is covered with pallettes, forklift traffic (where we were unable to locate sanitary manholes outside on Monday)
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09:31, Located Manhole 2

Time	09:31
Description of Task	Located Manhole 2

09:34, Located Manhole 3

Time	09:34
Description of Task	Located Manhole 3

09:38, Located Manhole 4

Time	09:38
Description of Task	Located Manhole 4

09:41, Located floor drain at B46, could see the end of a pipe with a clean out, unable to tell if it is sanitary

Time	09:41
Description of Task	Located floor drain at B46, could see the end of a pipe with a clean out, unable to tell if it is sanitary

09:43, Located Manhole 5

Time	09:43
Description of Task	Located Manhole 5

09:46, Located a floor drain with a clean out near F48, unable to tell if it is sanitary

Time	09:46
Description of Task	Located a floor drain with a clean out near F48, unable to tell if it is sanitary

09:51, Located Manhole 6

Time	09:51
Description of Task	Located Manhole 6

09:54, Located Manhole 7

Time	09:54
Description of Task	Located Manhole 7

09:57, Located floor drain with clean out at F42, unable to tell if it is sanitary

Time	09:57
Description of Task	Located floor drain with clean out at F42, unable to tell if it is sanitary

10:02, Located Manhole 8

Time	10:02
Description of Task	Located Manhole 8

10:04, Located Manhole 9 at J46

Time	10:04
Description of Task	Located Manhole 9 at J46

10:12, Located Manhole 11 at H32

Time	10:12
Description of Task	Located Manhole 11 at H32

10:20, Located Manhole 12

Time	10:20
Description of Task	Located Manhole 12

10:23, Located floor drain near K6, unable to tell if it is sanitary

Time	10:23
Description of Task	Located floor drain near K6, unable to tell if it is sanitary

10:29, Located Manhole 13 near R16

Time	10:29
Description of Task	Located Manhole 13 near R16

10:32, Located Manhole 14, near R36 in the traffic way

Time	10:32
Description of Task	Located Manhole 14, near R36 in the traffic way

10:38, Located Manholes 15 and 16, near R56

Time	10:38
Description of Task	Located Manholes 15 and 16, near R56

10:39, Located a clean out on west wall near R56, unable to tell if it is sanitary

Time	10:39
Description of Task	Located a clean out on west wall near R56, unable to tell if it is sanitary

10:42, Located a filled floor drain near R64, unable to tell if it is sanitary

Time	10:42
Description of Task	Located a filled floor drain near R64, unable to tell if it is sanitary

10:50, Located Manhole 17, in traffic way near S88

Time	10:50
Description of Task	Located Manhole 17, in traffic way near S88

10:55, Located Manhole 18, near Z88

Time	10:55
Description of Task	Located Manhole 18, near Z88

11:05, Located Manhole 19, near J92

Time	11:05
Description of Task	Located Manhole 19, near J92

11:11, Located Manhole 20, in traffic way near H104

Time	11:11
Description of Task	Located Manhole 20, in traffic way near H104

11:12, Located Manhole 21, in traffic way near H100

Time	11:12
Description of Task	Located Manhole 21, in traffic way near H100

11:14, Located Manhole 22, in traffic way near H96

Time	11:14
Description of Task	Located Manhole 22, in traffic way near H96

11:16, Located Manhole 23, in traffic way near H88

Time	11:16
Description of Task	Located Manhole 23, in traffic way near H88

11:18, Located Manhole 24, in traffic way near H82

Time	11:18
Description of Task	Located Manhole 24, in traffic way near H82

11:21, Located Manhole 25, in traffic way near H72

Time	11:21
Description of Task	Located Manhole 25, in traffic way near H72

11:26, Located Manhole 26, near B78

Time	11:26
Description of Task	Located Manhole 26, near B78

11:31, Located Manhole 27, near E100

Time	11:31
Description of Task	Located Manhole 27, near E100

11:45, Exit plant

Time	11:45
Description of Task	Exit plant

12:00, Locate and open Vaults 1 and 2, near southeast plant entrance. Both vaults had unidentifiable piping inside, Vault 2 had a strong odor and an open pipe coming in from the west

Time	12:00
Description of Task	Locate and open Vaults 1 and 2, near southeast plant entrance. Both vaults had unidentifiable piping inside, Vault 2 had a strong odor and an open pipe coming in from the west

12:05, Confirm no indication of anything related to sanitary lines on northeast side of plant (where we were unable to locate sanitary manholes outside on Monday)

Time	12:05
Description of Task	Confirm no indication of anything related to sanitary lines on northeast side of plant (where we were unable to locate sanitary manholes outside on Monday)

12:50, Confirm no indication of anything related to sanitary lines at the southwest and southeast corners of the admin building (where we were unable to locate sanitary manholes outside on Monday)

Time	12:50
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Description of Task Confirm no indication of anything related to sanitary lines at the southwest and southeast corners of the admin building (where we were unable to locate sanitary manholes outside on Monday)

12:57, Finish recon, return to trailer to review notes and figures

Time 12:57

Description of Task Finish recon, return to trailer to review notes and figures

15:30, Offsite

Time 15:30

Description of Task Offsite

Waste Management

Are there any waste drums onsite? No

Did you drum any waste today? No

Photos

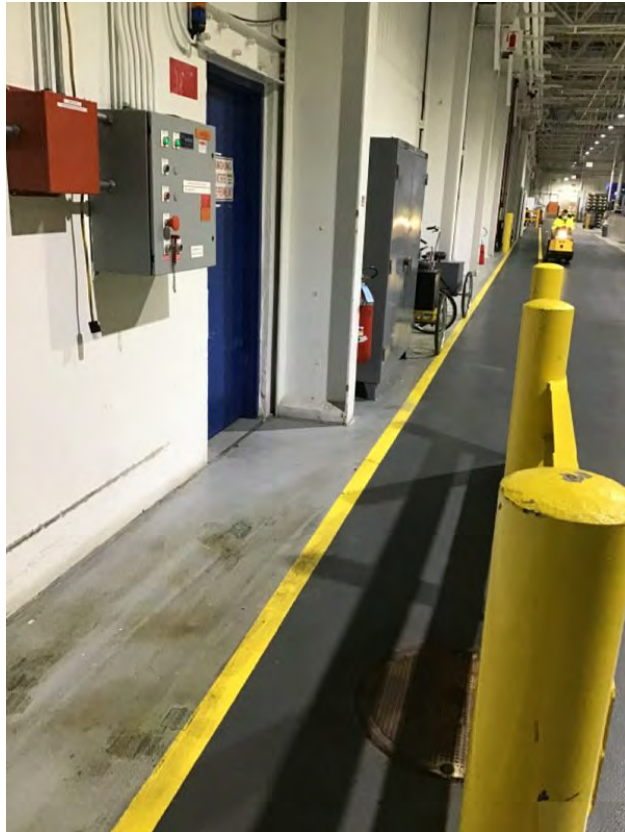
Other Photos



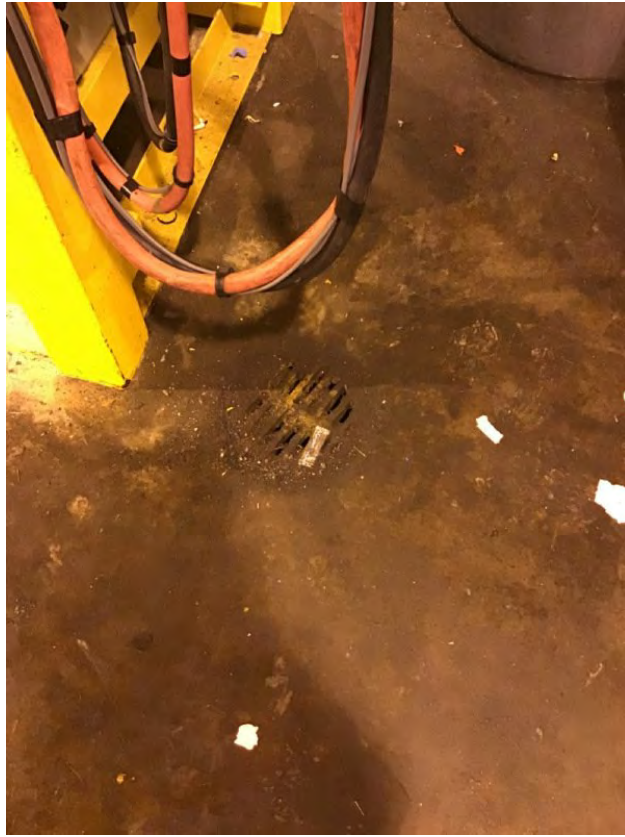
East wall manhole



East wall manhole



East wall manhole



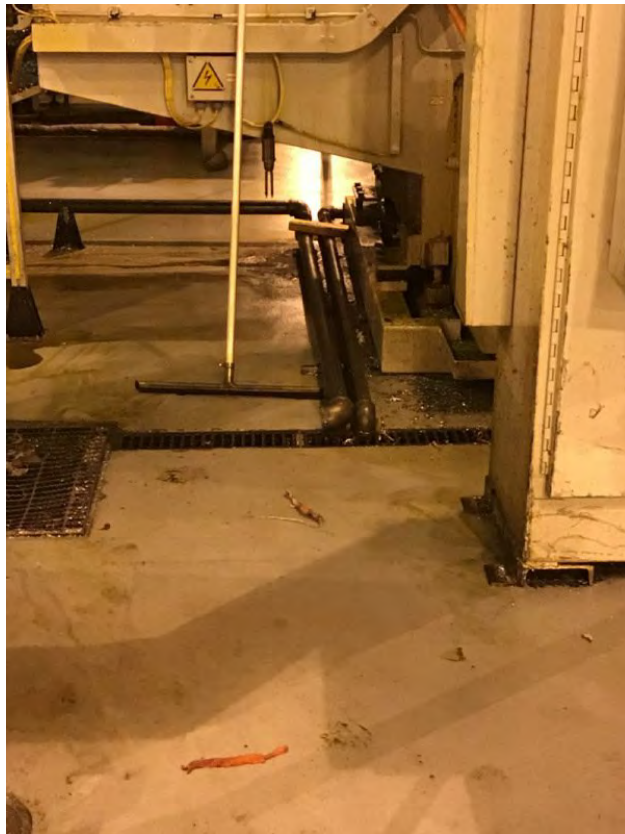
Floor drain outside of Restroom 15



Manhole 2, east side of plant



Manhole 3



Floor drains around machines



Floor drains around machines



Manhole 4



Manhole 4, with floor drain next to it



Floor drain at B46



Manhole 5



Floor drain with a clean out at F46



Manhole 6



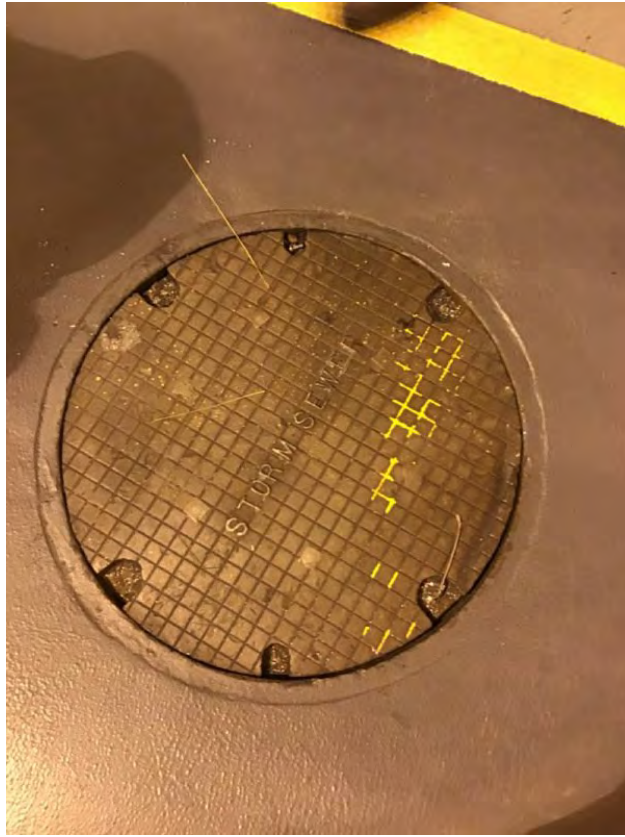
Manhole 7



Floor drain at F42



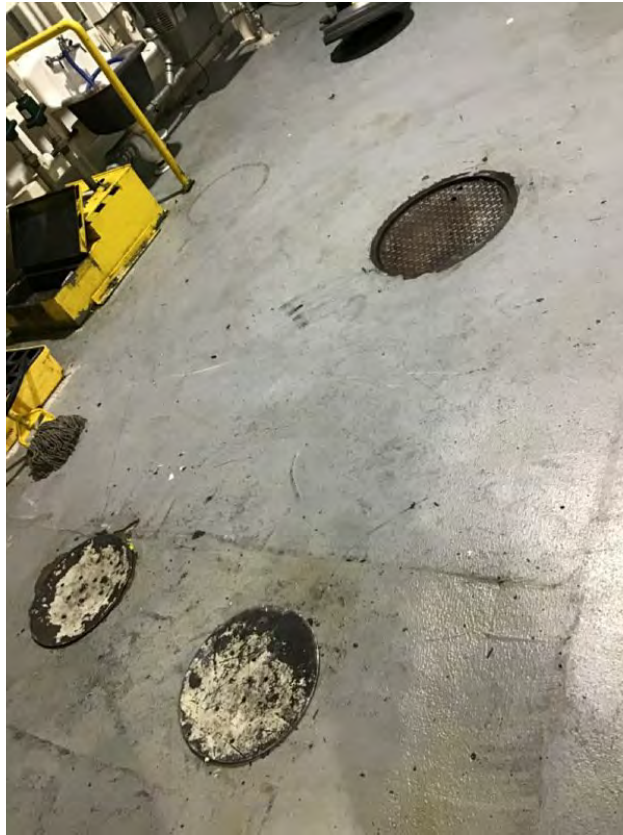
Manhole 8 at H48



Manhole 9



Manhole 10 next to restroom 6



Manhole 10 and 2 floor drains



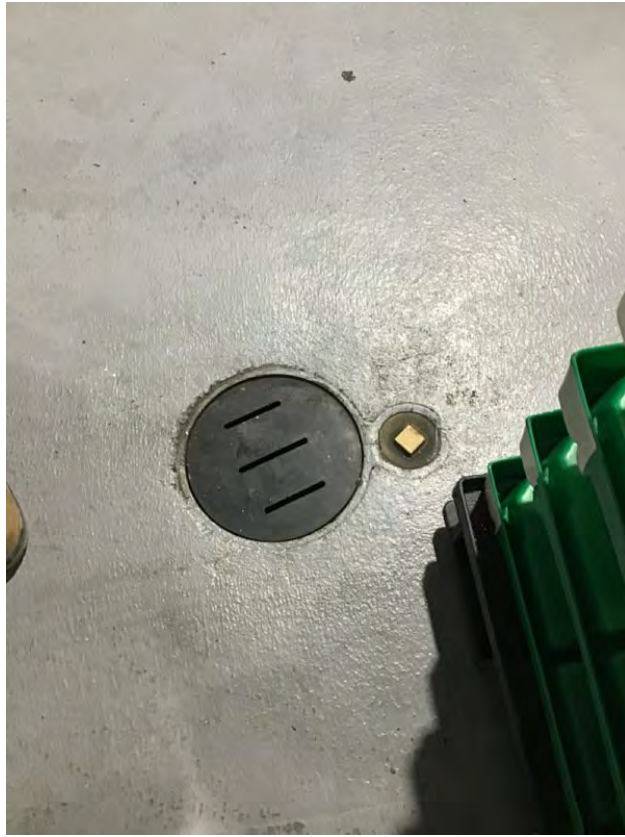
Manhole 10



Manhole 11



Manhole 12 near H6



Floor drain near K6



Manhole 13



Manhole 14, near R36



Manhole 15, near R56



Manhole 16, near R56



Clean out on west wall near R56



Filled floor drain near R64



Manhole 17, located in traffic way near S88



Manhole 18, near Z88



Manhole 19, near J92



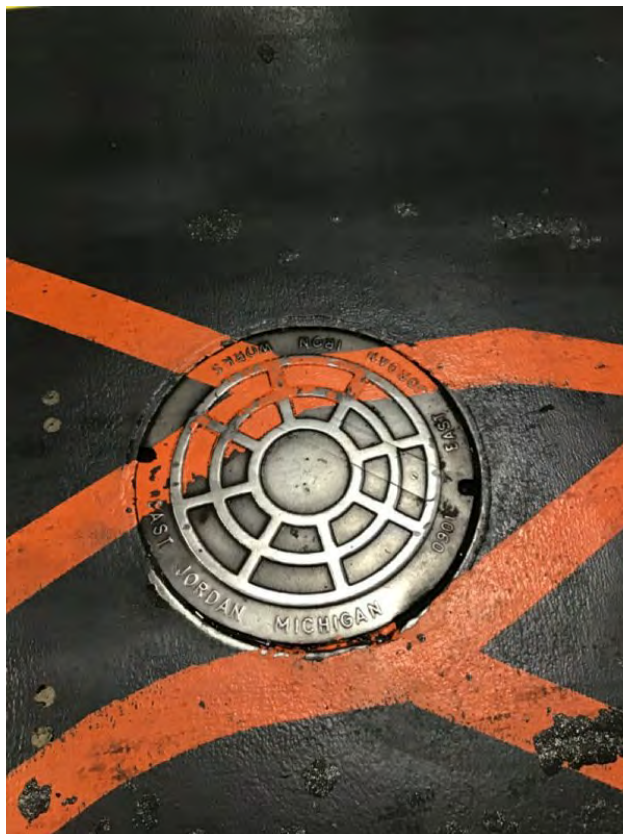
Manhole 20, in traffic way near H104



Manhole 21, in traffic way near H100



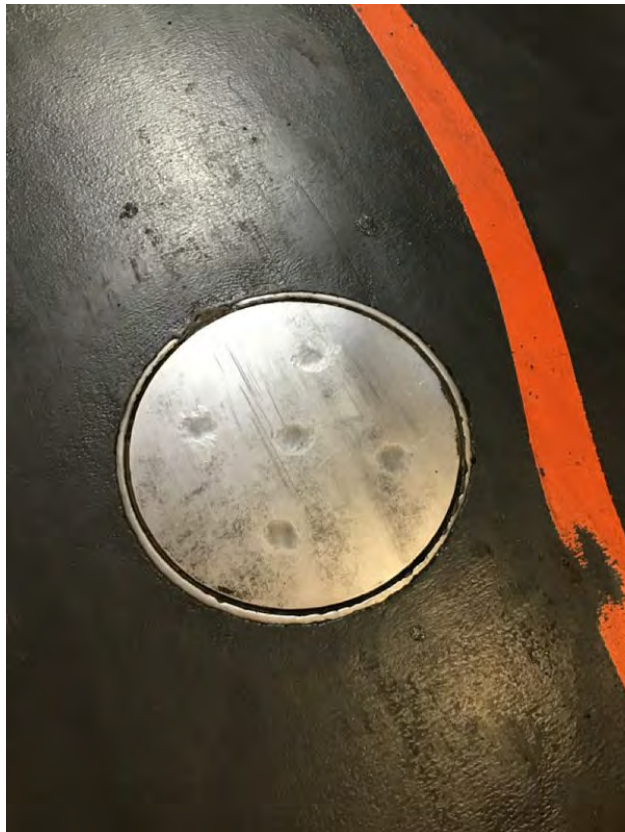
Manhole 22, in traffic way near H96



Manhole 23, in traffic way near H88



Manhole 24, in traffic way near H82



Manhole 25, in traffic way near H72



Manhole 26, near B78



Manhole 27, near E100



Inside of vVault 1 at southeast plant entrance



Vault 1 at southeast entrance to plant



Vault 2, open pipe coming in from the west



Vault 2, southeast plant entrance

Signature

A handwritten signature in black ink, appearing to read "A. Hantz". The letters are cursive and fluid, with a large loop at the end of the "z".

Signed 2020-12-16 13:17:19 UTC

2021-06-09, Emma Witherspoon, UC Recon

Created	2021-06-09 19:17:23 UTC by Emma Witherspoon
Updated	2021-06-09 20:34:20 UTC by Emma Witherspoon
Location	42.3987360299028, -83.2948038541556

Basic Information

Project Name	Ford LTP
Task	UC Recon
Project Number	30080642
Location	Livonia, MI
Date	2021-06-09
Completed By	Emma Witherspoon
Additional Personnel	Allyson Hartz, Andrew Banitt
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	84.02 degrees F and Mostly Cloudy
PPE	Level D
Are you using equipment?	No

Daily Log of Activities

10:30, Arcadis on-site; conduct H&S tailgate

Time	10:30
Description of Task	Arcadis on-site; conduct H&S tailgate

11:20, Arrive at MH east of SL-5; Cannot open, will return with a sledge hammer.

Time	11:20
Description of Task	Arrive at MH east of SL-5; Cannot open, will return with a sledge hammer.

12:00, Supply run

Time	12:00
Description of Task	Supply run

13:27, Arrive at MH1261; covered by equipment, Adam Richmond notified

Time	13:27
Description of Task	Arrive at MH1261; covered by equipment, Adam Richmond notified

13:37, Arrive at MH West of SAMH-1256, Stop Work used due to 1-2 dozen cockroaches on MH lid when opened. Adam Richmond Notified

Time	13:37
Description of Task	Arrive at MH West of SAMH-1256, Stop Work used due to 1-2 dozen cockroaches on MH lid when opened. Adam Richmond Notified

13:45, Arrive at SAMH 1252, confirmed that MH runs N and W

Time	13:45
Description of Task	Arrive at SAMH 1252, confirmed that MH runs N and W

14:05, Arrive at MH East of SL-5, confirmed that there is no connection to SL-5 and it is a dead end and only runs East

Time	14:05
Description of Task	Arrive at MH East of SL-5, confirmed that there is no connection to SL-5 and it is a dead end and only runs East

14:20, (A. Hartz & A. Banitt) conduct Mitigation visit

Time	14:20
Description of Task	(A. Hartz & A. Banitt) conduct Mitigation visit

14:30, (E. Witherspoon) conduct clean out recon as a possible substitute for the MH W of SAMH 1256

Time	14:30
Description of Task	(E. Witherspoon) conduct clean out recon as a possible substitute for the MH W of SAMH 1256

15:00, Arcadis off-site

Time	15:00
Description of Task	Arcadis off-site

Material Tracking

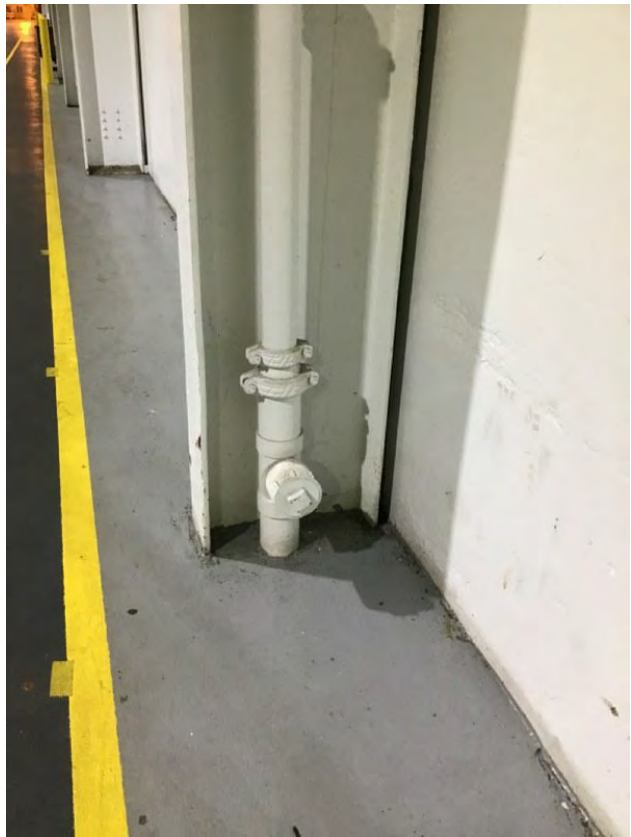
Are you using any materials onsite today?	No
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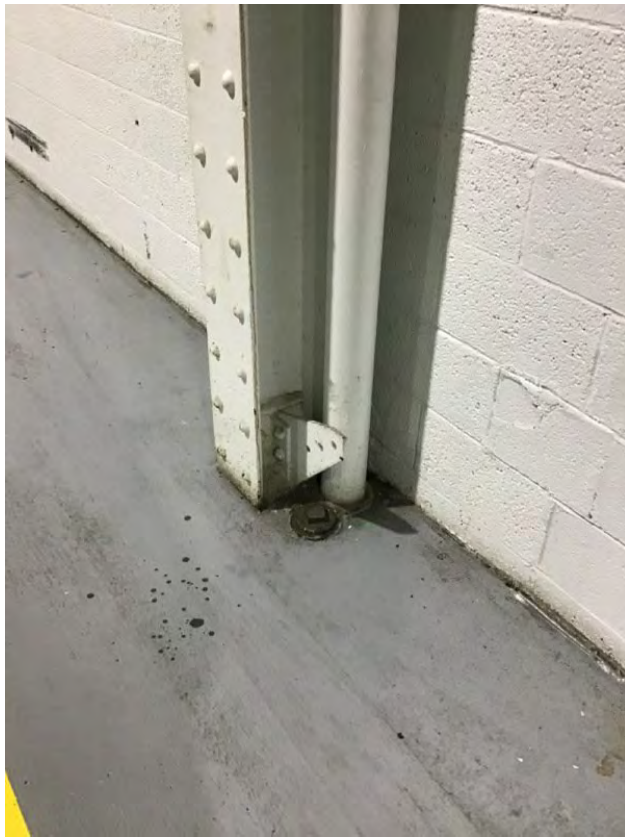
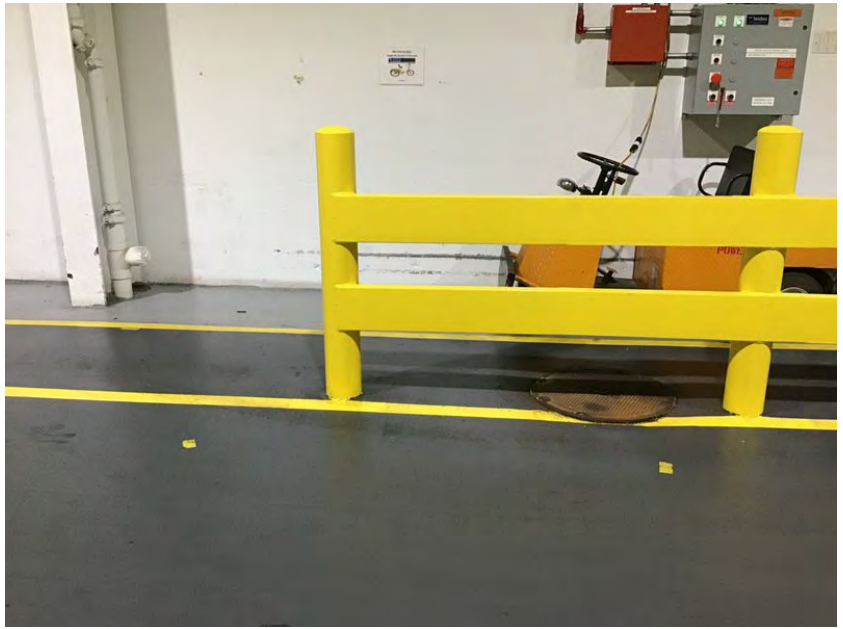
Waste Management

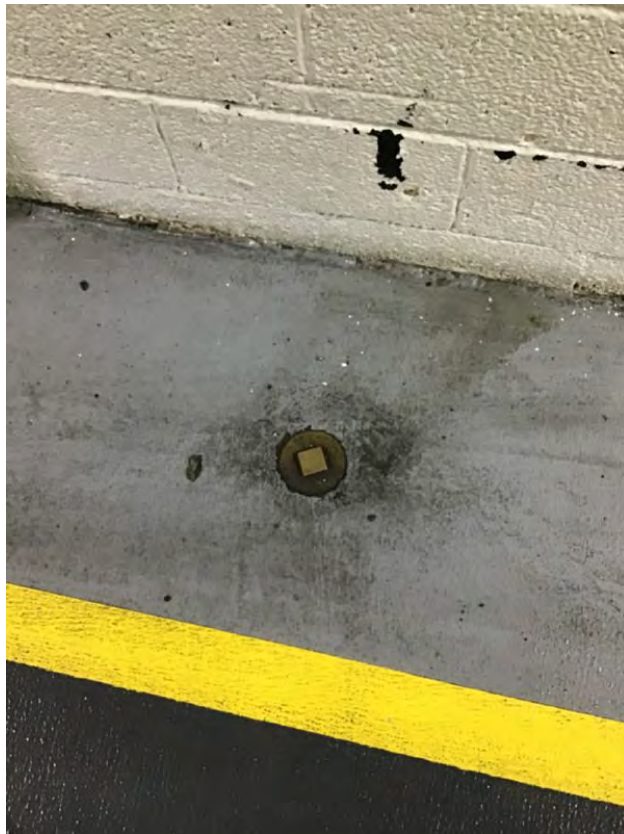
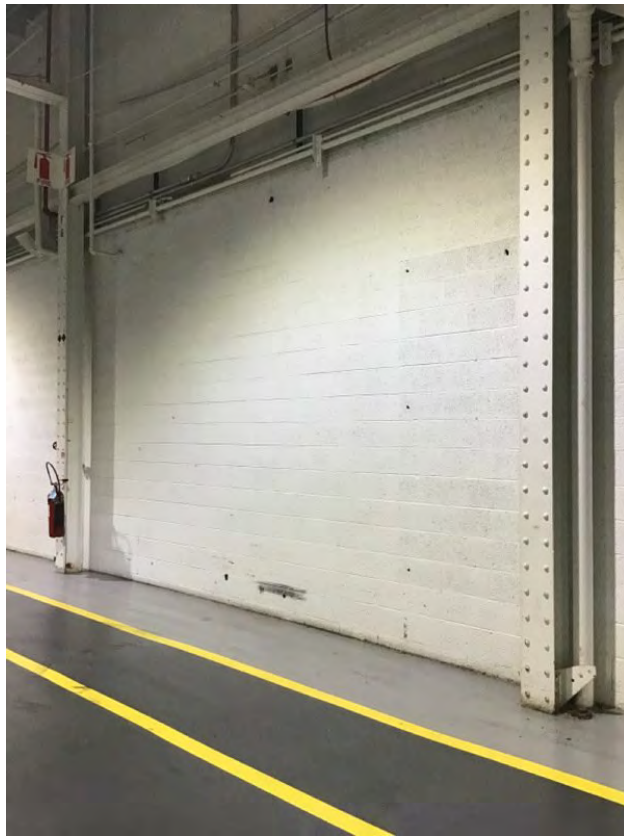
Are there any waste drums onsite?	No
Did you drum any waste today?	No

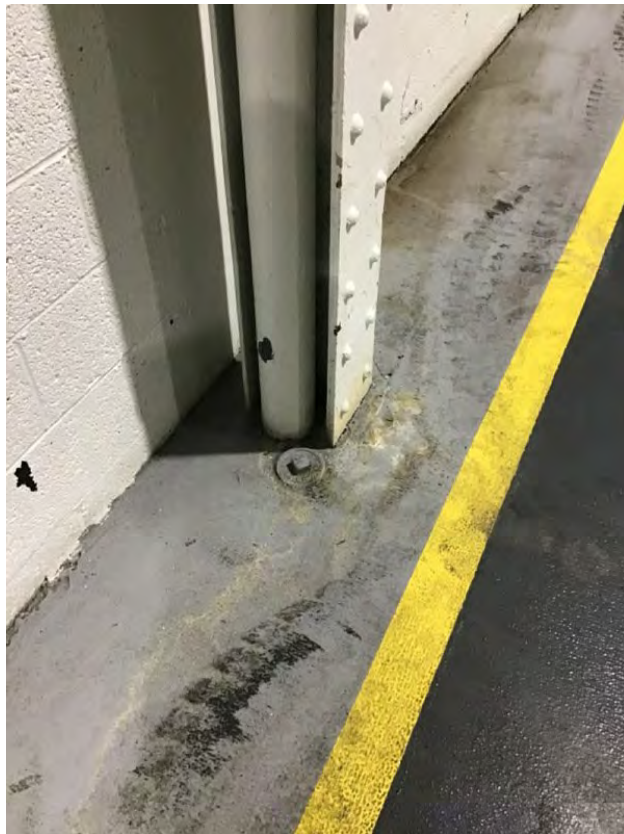
Photos

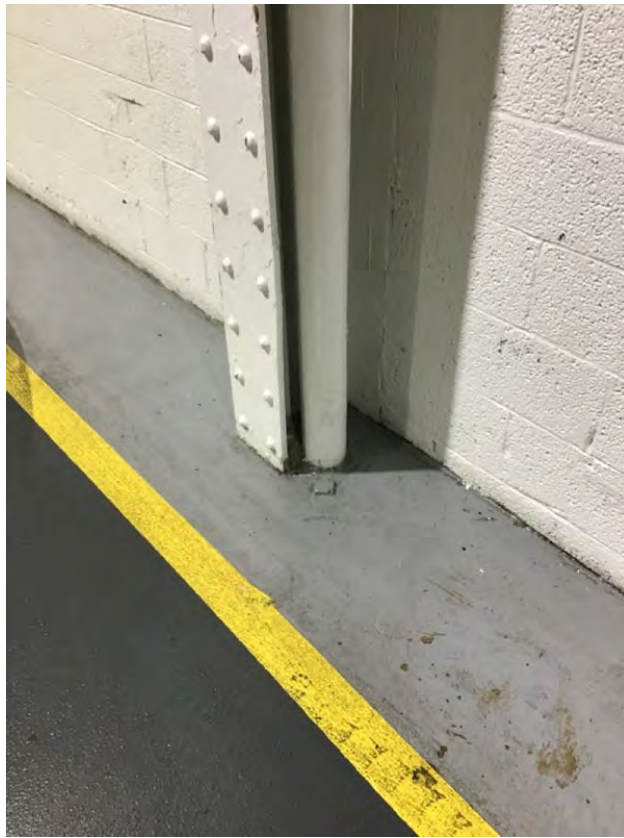
Other Photos

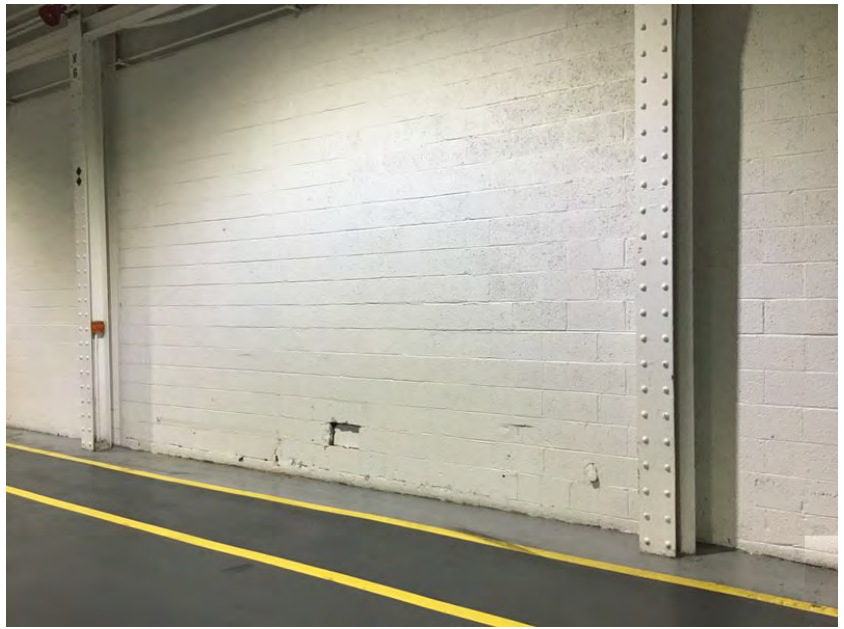














Signature

A handwritten signature in black ink, appearing to read 'E. Witherspoon'.

Signed 2021-06-09 19:34:55 UTC

OFF-SITE RECONNAISSANCE

2020-06-02, Julia McClafferty, Utility Corridor Recon

Created	2020-06-02 12:55:47 UTC by Julia McClafferty
Updated	2020-09-16 15:55:47 UTC by Julia McClafferty
Location	42.3680029857, -83.3997096501

Basic Information

Project Name	Ford
Task	Utility Corridor Recon
Location	Livonia, MI
Date	2020-06-02
Completed By	Julia McClafferty
Additional Personnel	Rachel Bielak
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	64.04 degrees F and Cloudy
PPE	Level D
Are you using equipment?	Yes

IP

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	IP
Model	100'
Pine/Geotech Number	1348
Calibrated?	No

Daily Log of Activities

08:35, Onsite

Time	08:35
Description of Task	Onsite

08:50, H&S tailgate

Time	08:50
Description of Task	H&S tailgate

09:00, Inspect manholes near intersection of Levan and Plymouth - did not find sanitary manhole

Time	09:00
Description of Task	Inspect manholes near intersection of Levan and Plymouth - did not find sanitary manhole

09:47, Arrive at SAMH 1228 - no TC needed, not grated but no bolts (4 small holes open on lid)

Time	09:47
Description of Task	Arrive at SAMH 1228 - no TC needed, not grated but no bolts (4 small holes open on lid)

09:50, Arrive at SL-2. TC needed, vapor barrier needed

Time	09:50
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Description of Task	Arrive at SL-2. TC needed, vapor barrier needed
09:55, Arrive at SAMH 1231. No TC needed, no grated lid	
Time	09:55
Description of Task	Arrive at SAMH 1231. No TC needed, no grated lid
10:17, Inspect manholes near stark and rosati intersection	
Time	10:17
Description of Task	Inspect manholes near stark and rosati intersection
10:21, SAMH 1181 flow input from East, output south. North storm drain flows from East to south. South storm drain flows from north to west.	
Time	10:21
Description of Task	SAMH 1181 flow input from East, output south. North storm drain flows from East to south. South storm drain flows from north to west.
10:57, Arrive at STMH 1001. TC not needed, grated lid - needs vapor barrier	
Time	10:57
Description of Task	Arrive at STMH 1001. TC not needed, grated lid - needs vapor barrier
11:08, Arrive at storm manhole adjacent to CB 1040. In the middle of Precision Broadband driveway. Grated - needs vapor barrier	
Time	11:08
Description of Task	Arrive at storm manhole adjacent to CB 1040. In the middle of Precision Broadband driveway. Grated - needs vapor barrier
11:17, Arrive at STMH 1066 and SAMH 1067. Both in driveways. Storm needs vapor barrier	
Time	11:17
Description of Task	Arrive at STMH 1066 and SAMH 1067. Both in driveways. Storm needs vapor barrier
11:23, Arrive at SAMH 1082 and STMH 1088. High traffic area need TC. Storm needs vapor barrier	
Time	11:23
Description of Task	Arrive at SAMH 1082 and STMH 1088. High traffic area need TC. Storm needs vapor barrier
11:29, Arrive at SAMH 1122. No TC needed but should notify resident. No vapor barrier needed	
Time	11:29
Description of Task	Arrive at SAMH 1122. No TC needed but should notify resident. No vapor barrier needed
11:32, Split up with Rachel to finish rest of recon in neighborhood	
Time	11:32
Description of Task	Split up with Rachel to finish rest of recon in neighborhood
11:39, Arrive at SAMH 1116. ROW In front of 34920 Beacon. Grass over grown. No vapor barrier needed	
Time	11:39
Description of Task	Arrive at SAMH 1116. ROW In front of 34920 Beacon. Grass over grown. No vapor barrier needed

11:46, Arrive at SAMH 1123. ROW in front of 34682 beacon. No vapor barrier needed

Time	11:46
Description of Task	Arrive at SAMH 1123. ROW in front of 34682 beacon. No vapor barrier needed

11:51, Arrive at STMH 1210. Needs vapor barrier

Time	11:51
Description of Task	Arrive at STMH 1210. Needs vapor barrier

12:00, Lunch break

Time	12:00
Description of Task	Lunch break

12:30, Inspect manholes bear Levan and Plymouth - see captions on photos

Time	12:30
Description of Task	Inspect manholes bear Levan and Plymouth - see captions on photos

13:24, Inspect manholes near intersection of Levan and Van Court. Southeast CB has piping from north, east and west. Northwest CB runs west/East. North CB has piping from north and then is too deep to see rest of piping

Time	13:24
Description of Task	Inspect manholes near intersection of Levan and Van Court. Southeast CB has piping from north, east and west. Northwest CB runs west/East. North CB has piping from north and then is too deep to see rest of piping

13:30, Communicate with Kris our findings at Levan and Van court

Time	13:30
Description of Task	Communicate with Kris our findings at Levan and Van court

13:37, Offsite

Time	13:37
Description of Task	Offsite

Waste Management

Are there any waste drums onsite?	No
Did you drum any waste today?	No

Photos

Other Photos



Intersection of Levan and Plymouth



Intersection of Levan and Plymouth



Intersection of Levan and Plymouth



SAMH 1228



SL-2



SAMH 1231



SAMH 1181



SAMH 1181



North storm drain on Rosati



South storm drain on Rosati



STMH 1001



CB 1002



Sanitary off of Plymouth and Belden



Sanitary in front of Instrumental Distribution



Storm adjacent to CB 1040 - (STMH 1041)



CB 1040



CB 1039



SAMH 1043 - in front of KONE



STMH 1066



SAMH 1067



SAMH 1082



STMH 1088



SAMH 1122



SAMH 1116



SAMH 1123



STMH 1210



Storm man hole north of Plymouth along Levan



Storm man hole north of Plymouth along Levan



Catch basin in Levan Wine Shoppe parking lot. Pipes running north and south. Catch basin of this one runs only south



Catch basin in Plymouth and Levan intersection. Runs west into storm manholes



STMH 1219



SAMH 1113



SAMH 1096

Signature

Signed 2020-06-02 20:38:43 UTC

2020-06-08, Julia McClafferty, Utility Corridor

Created	2020-06-08 14:04:35 UTC by Julia McClafferty
Updated	2020-09-16 13:46:55 UTC by Julia McClafferty
Location	42.3739275244, -83.3919535485

Basic Information

Project Name	Ford
Task	Utility Corridor
Project Number	30050315
Location	Livonia, MI
Date	2020-06-08
Completed By	Julia McClafferty
Additional Personnel	Rachel Bielak
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	64.04 degrees F and Partly Cloudy
PPE	Level D
Are you using equipment?	Yes

IP

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	IP
Model	100 ft
Pine/Geotech Number	1348
Calibrated?	No

Daily Log of Activities

09:35, Arrive onsite

Time	09:35
Description of Task	Arrive onsite

09:50, Call with Adam

Time	09:50
Description of Task	Call with Adam

10:10, H&S tailgate

Time	10:10
Description of Task	H&S tailgate

10:18, Arrive at SL-2; DTW: 15.5 ft; vapor barrier placed at 10:35 AM; left cone on top of manhole; observed flow in manhole

Time	10:18
Description of Task	Arrive at SL-2; DTW: 15.5 ft; vapor barrier placed at 10:35 AM; left cone on top of manhole; observed flow in manhole

10:57, Arrive at STMH 1088; observed minimal flow from north, pipes located north, south, east and west; not enough water to set WLM off - DTB: 7.95; vapor barrier placed at 11:15 AM; placed cone on top of manhole

Time	10:57
Description of Task	Arrive at STMH 1088; observed minimal flow from north, pipes located north, south, east and west; not enough water to set WLM off - DTB: 7.95; vapor barrier placed at 11:15 AM; placed cone on top of manhole

11:24, Arrive at STMH 1066; pipping from north, south and east; water is stagnant; DTW: 9.22 ft, orange rust-like particulates on WLM; vapor barrier placed at 11:30 AM; placed cone on top of manhole

Time	11:24
Description of Task	Arrive at STMH 1066; pipping from north, south and east; water is stagnant; DTW: 9.22 ft, orange rust-like particulates on WLM; vapor barrier placed at 11:30 AM; placed cone on top of manhole

11:37, Arrive at STMH 1041; observed flow from west; piping from north, south, west, and northeast; not enough water to set WLM off, DTB: 9.8 ft; vapor barrier placed 11:48 AM; placed cone on top of manhole

Time	11:37
Description of Task	Arrive at STMH 1041; observed flow from west; piping from north, south, west, and northeast; not enough water to set WLM off, DTB: 9.8 ft; vapor barrier placed 11:48 AM; placed cone on top of manhole

11:52, Arrive at STMH 1001 to verify north/south flow. Confirmed flow runs north/south.

Time	11:52
Description of Task	Arrive at STMH 1001 to verify north/south flow. Confirmed flow runs north/south.

12:04, Arrive at STMH 1171; flow from west to east; DTW: 15.55 ft; vapor barrier placed at 12:13 PM; placed cone on top of manhole

Time	12:04
Description of Task	Arrive at STMH 1171; flow from west to east; DTW: 15.55 ft; vapor barrier placed at 12:13 PM; placed cone on top of manhole

12:20, Offsite to office to gather sampling materials for tomorrow

Time	12:20
Description of Task	Offsite to office to gather sampling materials for tomorrow

Waste Management

Are there any waste drums onsite?	No
Did you drum any waste today?	No

Photos

Other Photos



SL-2 vapor barrier



Vapor barrier on STMH 1088



Sheen on top of stagnant water in STMH 1066



Vapor barrier on STMH 1066



Vapor barrier on STMH 1041



Vapor barrier on STMH 1171

Signature



Handwritten signature in black ink, appearing to read "Julian" followed by a stylized, illegible signature.

Signed 2020-06-08 18:06:46 UTC

2021-07-26, Andrew Banitt, Utility Corridor

Created	2021-07-26 23:30:08 UTC by Andrew Banitt
Updated	2021-07-26 23:33:25 UTC by Andrew Banitt
Location	42.5335808073571, -83.516305258128

Basic Information

Project Name	Ford LTP
Task	Utility Corridor
Location	Livonia, MI
Date	2021-07-26
Completed By	Andrew Banitt
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	87.98 degrees F and Mostly Clear
PPE	Level D
Are you using equipment?	No

Daily Log of Activities

12:00, Arcadis is on site. Arcadis recons south manhole on corner of parkdale and Stark. Water flow in from the north and exits to the east. Line does not connect with Stark road line.

Time	12:00
Description of Task	Arcadis is on site. Arcadis recons south manhole on corner of parkdale and Stark. Water flow in from the north and exits to the east. Line does not connect with Stark road line.

12:15, Recon of north manhole: dead end to the north and water flows south. Does not connect to Stark road line. Pictures attached. Arcadis is off site.

Time	12:15
Description of Task	Recon of north manhole: dead end to the north and water flows south. Does not connect to Stark road line. Pictures attached. Arcadis is off site.

Material Tracking

Are you using any materials onsite today?	No
---	----

Waste Management

Are there any waste drums onsite?	No
Did you drum any waste today?	No

Photos

Other Photos



Signature

A handwritten signature in black ink, consisting of several overlapping, curved strokes that form a stylized, abstract shape.

Signed 2021-07-26 23:33:24 UTC

2021-09-29, Andrew Banitt, Utility Corridor Recon

Created	2021-09-29 16:21:58 UTC by Andrew Banitt
Updated	2021-09-29 20:52:40 UTC by Andrew Banitt
Location	42.3728587836377, -83.3809376433843

Basic Information

Project Name	Ford LTP
Task	Utility Corridor Recon
Location	Livonia, MI
Date	2021-09-29
Completed By	Andrew Banitt
Additional Personnel	Allyson Hartz
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
PPE	Level D
Are you using equipment?	No

Daily Log of Activities

12:20, Recon at manholes at Capitol.

Time	12:20
Description of Task	Recon at manholes at Capitol.

12:43, Recon manholes at Beacon.

Time	12:43
Description of Task	Recon manholes at Beacon.

13:06, Recon manholes at Wadsworth.

Time	13:06
Description of Task	Recon manholes at Wadsworth.

13:33, Recon manholes on Stark south of Plymouth.

Time	13:33
Description of Task	Recon manholes on Stark south of Plymouth.

13:49, Recon manholes at Orangelawn.

Time	13:49
Description of Task	Recon manholes at Orangelawn.

14:00, Recon manholes at Pinetree.

Time	14:00
Description of Task	Recon manholes at Pinetree.

14:17, Recon manholes at Richland.

Time	14:17
Description of Task	Recon manholes at Richland.

14:56, Recon manholes at Hathaway

Time	14:56
Description of Task	Recon manholes at Hathaway

16:15, Arcadis returns to trailer.

Time	16:15
Description of Task	Arcadis returns to trailer.

Material Tracking

Are you using any materials onsite today?	No
---	----

Waste Management

Are there any waste drums onsite?	No
Did you drum any waste today?	No

Photos

Other Photos



Capitol 1E



Capitol 2E



Beacon 1E



Wadsworth 1E



Wadsworth 2E



Stark 1E Sidewalk



Stark Yard 2E



Orangelawn 1E



Pinetree 1W



Pinetree 2W



Richland 1W



Richland 2W



Richland 3W



Hathaway 1E



Hathaway 3E



Hathaway 4E



Hathaway 2E



Hathaway 1W



Hathaway 2W

Signature

A handwritten signature in black ink, consisting of several overlapping, curved strokes that form a stylized, abstract shape.

Signed 2021-09-29 17:05:59 UTC

2021-09-30, Andrew Banitt, Utility Corridor Recon

Created	2021-09-30 20:02:36 UTC by Andrew Banitt
Updated	2021-09-30 20:04:16 UTC by Andrew Banitt
Location	42.3619172163719, -83.3803538683237

Basic Information

Project Name	Ford LTP
Task	Utility Corridor Recon
Location	Livonia, MI
Date	2021-09-30
Completed By	Andrew Banitt
Additional Personnel	Allyson Hartz
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	69.98 degrees F and Mostly Cloudy
PPE	Level D
Are you using equipment?	No

Daily Log of Activities

16:00, Recon manholes at Richland.

Time	16:00
Description of Task	Recon manholes at Richland.

16:15, Return to trailer.

Time	16:15
Description of Task	Return to trailer.

Material Tracking

Are you using any materials onsite today?	No
---	----

Waste Management

Are there any waste drums onsite?	No
Did you drum any waste today?	No

Photos

Other Photos	<input type="checkbox"/>
	Richland 1E

Signature

A handwritten signature in black ink, consisting of a large, stylized letter 'R' with a loop at the top and a horizontal tail.

Signed 2021-09-30 20:04:03 UTC

ON-SITE SEWER SAMPLING

2020-12-15, Andrew Banitt, Utility Corridor Sampling

Created	2020-12-15 13:13:57 UTC by Andrew Banitt
Updated	2020-12-15 20:50:00 UTC by Andrew Banitt
Location	42.3730466622867, -83.3919670665778

Basic Information

Project Name	Ford LTP
Task	Utility Corridor Sampling
Location	Livonia, MI
Date	2020-12-15
Completed By	Andrew Banitt
Additional Personnel	Emma Whitherspoon
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	19.94 degrees F and Mostly Cloudy
PPE	Level D
Are you using equipment?	Yes

GEM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	GEM
Model	GEM 2000
Pine/Geotech Number	3782
Calibrated?	Yes
Calibration standard information	CO2 15.4/15 CH4 15.2/15

PID

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	PID
Model	MiniRAE 3000
Pine/Geotech Number	5813
Calibrated?	Yes
Calibration standard information	100 ppm balance C4H8

WLM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	WLM
Model	100'
Pine/Geotech Number	1367
Calibrated?	No

Daily Log of Activities

08:03, Arcadis is on site. Equipment is calibrated.

Time	08:03
------	-------

Description of Task	Arcadis is on site. Equipment is calibrated.
08:45, Vapor sample taken at EDC.	
Time	08:45
Description of Task	Vapor sample taken at EDC.
09:24, Vapor sample taken at WDC.	
Time	09:24
Description of Task	Vapor sample taken at WDC.
09:56, Vapor sample taken at SAMH-1245.	
Time	09:56
Description of Task	Vapor sample taken at SAMH-1245.
10:53, Vapor sample taken at SAMH-1244.	
Time	10:53
Description of Task	Vapor sample taken at SAMH-1244.
11:31, Vapor sample taken at SAMH-1231.	
Time	11:31
Description of Task	Vapor sample taken at SAMH-1231.
11:58, Vapor sample taken at SL2.	
Time	11:58
Description of Task	Vapor sample taken at SL2.
12:30, Vapor sample taken at STMH-1041.	
Time	12:30
Description of Task	Vapor sample taken at STMH-1041.
13:00, Water sample taken at STMH-1041. Sediment sample not available.	
Time	13:00
Description of Task	Water sample taken at STMH-1041. Sediment sample not available.
13:16, Vapor sample taken at STMH-1066.	
Time	13:16
Description of Task	Vapor sample taken at STMH-1066.
13:30, Water sample taken at STMH-1066. Sediment sample not available.	
Time	13:30
Description of Task	Water sample taken at STMH-1066. Sediment sample not available.
14:36, Vapor sample taken at STMH-1088. Water and sediment samples not available.	
Time	14:36
Description of Task	Vapor sample taken at STMH-1088. Water and sediment samples not available.
15:06, Vapor sample taken at STMH-1171.	
Time	15:06
Description of Task	Vapor sample taken at STMH-1171.

15:20, Water samples taken at STMH-1171. Sediment sample not available.

Time	15:20
Description of Task	Water samples taken at STMH-1171. Sediment sample not available.

Waste Management

Are there any waste drums onsite?	No
Did you drum any waste today?	No

Signature

A handwritten signature in black ink, appearing to be the initials 'AB' with a stylized flourish extending to the right.

Signed 2020-12-15 13:18:25 UTC

2020-12-16, Andrew Banitt, Utility Corridor Sampling

Created	2020-12-16 13:08:06 UTC by Andrew Banitt
Updated	2020-12-16 20:11:56 UTC by Andrew Banitt
Location	42.3730466622867, -83.3919670665778

Basic Information

Project Name	Ford LTP
Task	Utility Corridor Sampling
Location	Livonia, MI
Date	2020-12-16
Completed By	Andrew Banitt
Additional Personnel	Emma Whitherspoon
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	26.06 degrees F and Cloudy
PPE	Level D
Are you using equipment?	Yes

GEM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	GEM
Model	GEM 2000
Pine/Geotech Number	3782
Calibrated?	Yes
Calibration standard information	CO2 15.4/15 CH4 15.2/15

PID

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	PID
Model	MiniRAE 3000
Pine/Geotech Number	5813
Calibrated?	Yes
Calibration standard information	100 ppm balance C4H8

WLM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	WLM
Model	100'
Pine/Geotech Number	1367
Calibrated?	No

Daily Log of Activities

08:02, Arcadis is on site. Arcadis calibrates equipment.

Time	08:02
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Description of Task	Arcadis is on site. Arcadis calibrates equipment.
08:26, Vapor sample taken at STMH-1001.	
Time	08:26
Description of Task	Vapor sample taken at STMH-1001.
08:40, Water samples taken at STMH-1001. Sediment sample not available.	
Time	08:40
Description of Task	Water samples taken at STMH-1001. Sediment sample not available.
08:58, Vapor sample taken at STMH-1210.	
Time	08:58
Description of Task	Vapor sample taken at STMH-1210.
09:15, Water samples taken at STMH-1210. Sediment sample not available.	
Time	09:15
Description of Task	Water samples taken at STMH-1210. Sediment sample not available.
09:31, Vapor sample taken at STMH-1219.	
Time	09:31
Description of Task	Vapor sample taken at STMH-1219.
09:45, Water samples taken at STMH-1219. Sediment sample not available.	
Time	09:45
Description of Task	Water samples taken at STMH-1219. Sediment sample not available.
10:42, Vapor sample taken at SAMH-1258.	
Time	10:42
Description of Task	Vapor sample taken at SAMH-1258.
11:05, Vapor sample taken at SAMH-1256.	
Time	11:05
Description of Task	Vapor sample taken at SAMH-1256.
11:27, Vapor sample taken at SAMH-1255.	
Time	11:27
Description of Task	Vapor sample taken at SAMH-1255.
12:03, Vapor sample taken at SL3.	
Time	12:03
Description of Task	Vapor sample taken at SL3.
13:56, Vapor sample with duplicate taken at SAMH-1096.	
Time	13:56
Description of Task	Vapor sample with duplicate taken at SAMH-1096.
14:15, Water samples with duplicate taken at SAMH-1096.	
Time	14:15
Description of Task	Water samples with duplicate taken at SAMH-1096.

15:04, Vapor sample taken at SAMH-1113.

Time	15:04
Description of Task	Vapor sample taken at SAMH-1113.

Waste Management

Are there any waste drums onsite?	No
Did you drum any waste today?	No

Signature

A handwritten signature in black ink, consisting of several overlapping loops and a long horizontal stroke extending to the right.

Signed 2020-12-16 13:08:55 UTC

2021-04-19, Emma Witherspoon, UC sampling

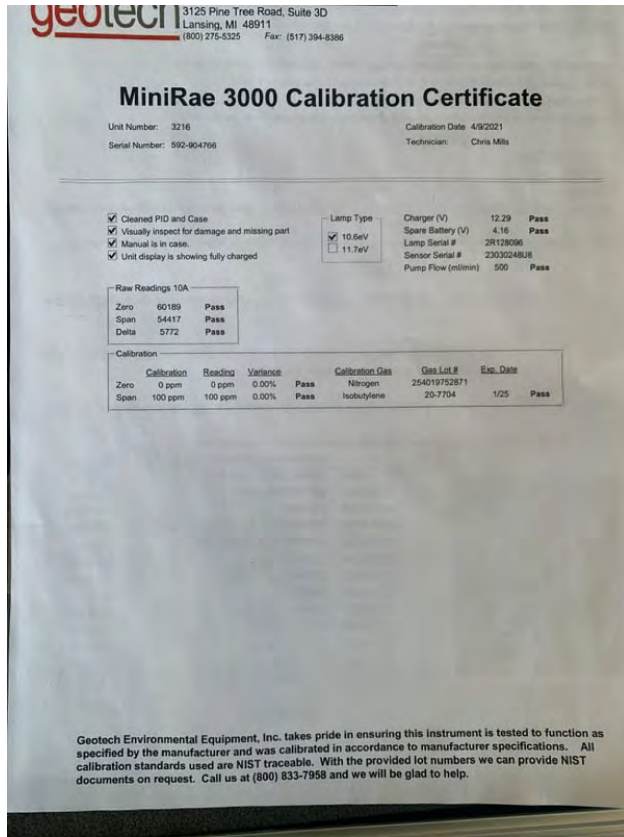
Created	2021-04-19 13:14:57 UTC by Emma Witherspoon
Updated	2021-04-19 20:13:45 UTC by Emma Witherspoon
Location	42.3728160059485, -83.3925836131799

Basic Information

Project Name	Ford LTP
Task	UC sampling
Location	Livonia, MI
Date	2021-04-19
Completed By	Emma Witherspoon
Additional Personnel	Andrew Banitt
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	51.08 degrees F and Mostly Clear
PPE	Level D
Are you using equipment?	Yes

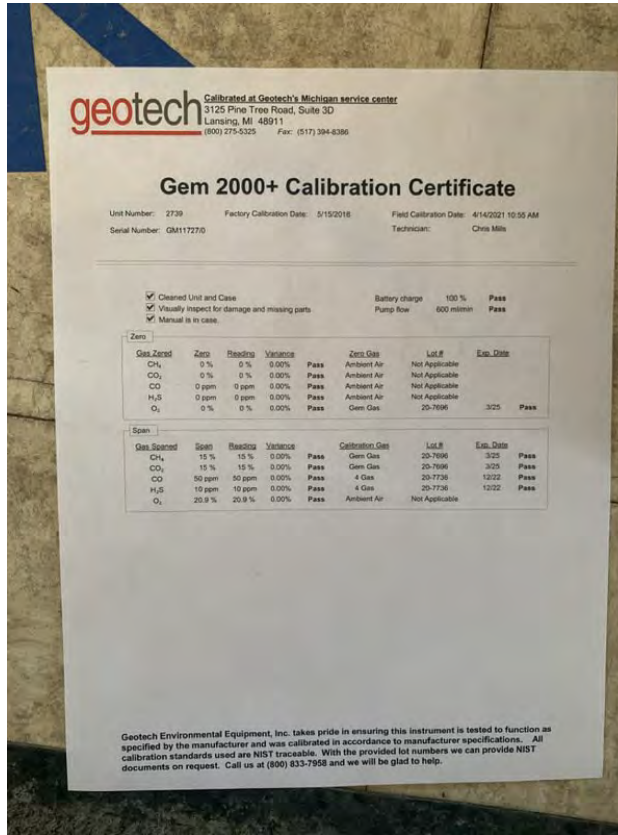
PID

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	PID
Model	MultiRae 3000
Pine/Geotech Number	3216
Calibrated?	Yes
Calibration standard information	101.8/100 ppm isobutylene



GEM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	GEM
Model	GEM 2000 +
Pine/Geotech Number	2739
Calibrated?	Yes
Calibration standard information	CH4- 15.5/15% CO2- 15.3/15%



WLM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	WLM
Model	200'
Pine/Geotech Number	2003
Calibrated?	No

Peristaltic pump

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	Peristaltic pump
Model	Geopump
Pine/Geotech Number	5039
Calibrated?	No

Daily Log of Activities

08:30, Arcadis on-site; begin sampling prep

Time	08:30
Description of Task	Arcadis on-site; begin sampling prep

09:00, Calibrate equipment

Time	09:00
Description of Task	Calibrate equipment

09:25, Conduct H&S tailgate

Time	09:25
Description of Task	Conduct H&S tailgate

10:11, Conduct vapor barrier installation

Time	10:11
Description of Task	Conduct vapor barrier installation

10:33, Conduct UC sampling

Time	10:33
Description of Task	Conduct UC sampling

11:32, Contacted J. McClafferty about broken MH cover at MH-1259

Time	11:32
Description of Task	Contacted J. McClafferty about broken MH cover at MH-1259

12:10, Arcadis off-site

Time	12:10
Description of Task	Arcadis off-site

13:00, Arcadis on-site; resume UC sampling

Time	13:00
Description of Task	Arcadis on-site; resume UC sampling

16:30, Arcadis off-site

Time	16:30
Description of Task	Arcadis off-site

17:00, Dropped samples off at Arcadis Cold Storage

Time	17:00
Description of Task	Dropped samples off at Arcadis Cold Storage

Material Tracking

Are you using any materials onsite today?	No
---	----

Waste Management

Are there any waste drums onsite?	No
Did you drum any waste today?	No

Photos

Other Photos	
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Signature

A handwritten signature consisting of the letters 'R' and 'W' in a cursive style. The 'R' has a long, sweeping flourish that extends upwards and to the left, ending in a small hook.

Signed 2021-04-19 20:04:20 UTC

2021-04-20, Emma Witherspoon, UC sampling

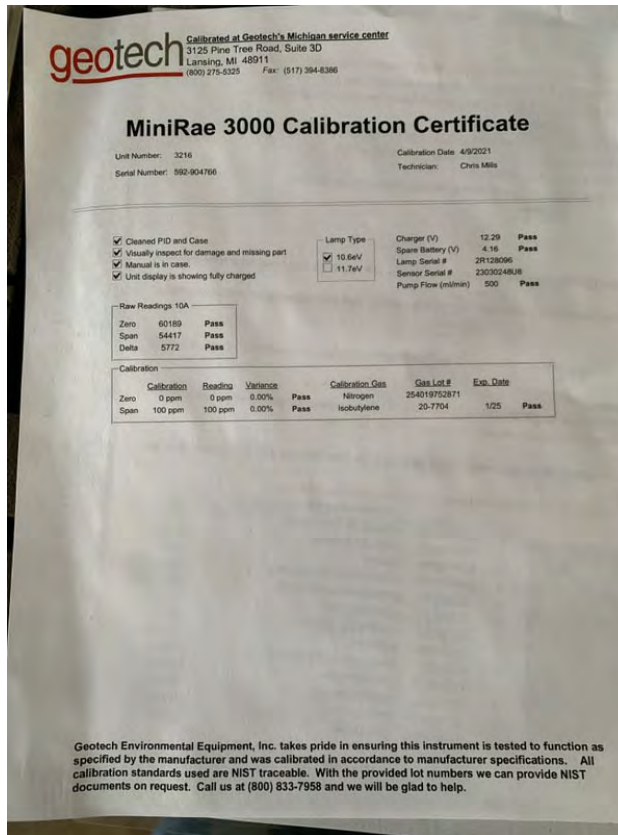
Created	2021-04-20 12:04:54 UTC by Emma Witherspoon
Updated	2021-04-20 18:53:03 UTC by Emma Witherspoon
Location	42.3728160059485, -83.3925836131799

Basic Information

Project Name	Ford LTP
Task	UC sampling
Location	Livonia, MI
Date	2021-04-20
Completed By	Emma Witherspoon
Additional Personnel	Andrew Banitt
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	51.08 degrees F and Mostly Clear
PPE	Level D
Are you using equipment?	Yes

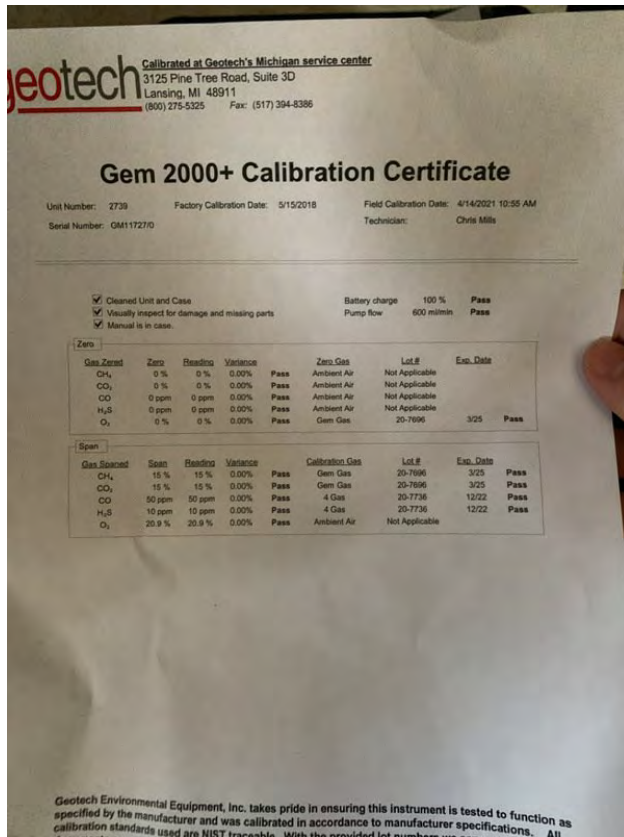
PID

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	PID
Model	MultiRae 3000
Pine/Geotech Number	3216
Calibrated?	Yes
Calibration standard information	104/100 ppm isobutylene



GEM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	GEM
Model	GEM 2000 +
Pine/Geotech Number	2739
Calibrated?	Yes
Calibration standard information	CH4- 15.6/15% CO2- 15.3/15%



WLM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	WLM
Model	200'
Pine/Geotech Number	2003
Calibrated?	No

Peristaltic pump

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	Peristaltic pump
Model	Geopump
Pine/Geotech Number	5039
Calibrated?	No

Daily Log of Activities

08:00, Arcadis on-site; conduct H&S tailgate

Time	08:00
Description of Task	Arcadis on-site; conduct H&S tailgate

08:15, Calibrate equipment

Time	08:15
Description of Task	Calibrate equipment

08:45, Conduct UC sampling

Time	08:45
Description of Task	Conduct UC sampling

12:00, Conduct sample QC

Time	12:00
Description of Task	Conduct sample QC

14:45, Arcadis off-site

Time	14:45
Description of Task	Arcadis off-site

15:00, Shipped out vapor samples

Time	15:00
Description of Task	Shipped out vapor samples

15:30, Liquid samples dropped off at Test America

Time	15:30
Description of Task	Liquid samples dropped off at Test America

Material Tracking

Are you using any materials onsite today?	No
---	----

Waste Management

Are there any waste drums onsite?	No
Did you drum any waste today?	No

Signature



Signed 2021-04-20 12:09:29 UTC

2021-06-10, Emma Witherspoon, UC Sampling

Created	2021-06-10 11:38:44 UTC by Emma Witherspoon
Updated	2021-06-10 22:27:33 UTC by Emma Witherspoon
Location	42.3987360299028, -83.2948038541556

Basic Information

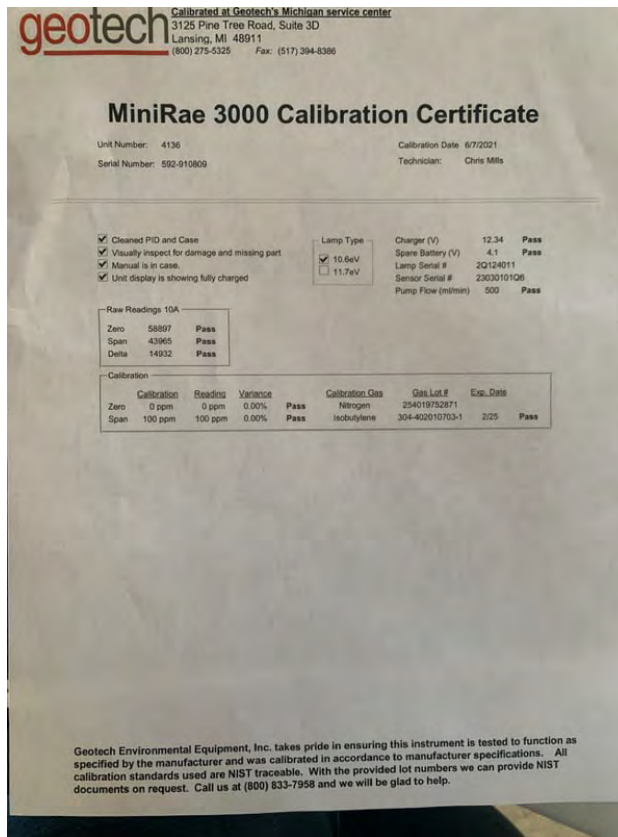
Project Name	Ford LTP
Task	UC Sampling
Project Number	30080642
Location	Livonia, MI
Date	2021-06-10
Completed By	Emma Witherspoon
Additional Personnel	Allyson Hartz, Andrew Banitt
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	69.98 degrees F and Fog and Fog/Mist
PPE	Level D
Are you using equipment?	Yes

Peristaltic pump

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	Peristaltic pump
Model	GeoPump 2
Pine/Geotech Number	6381
Calibrated?	No

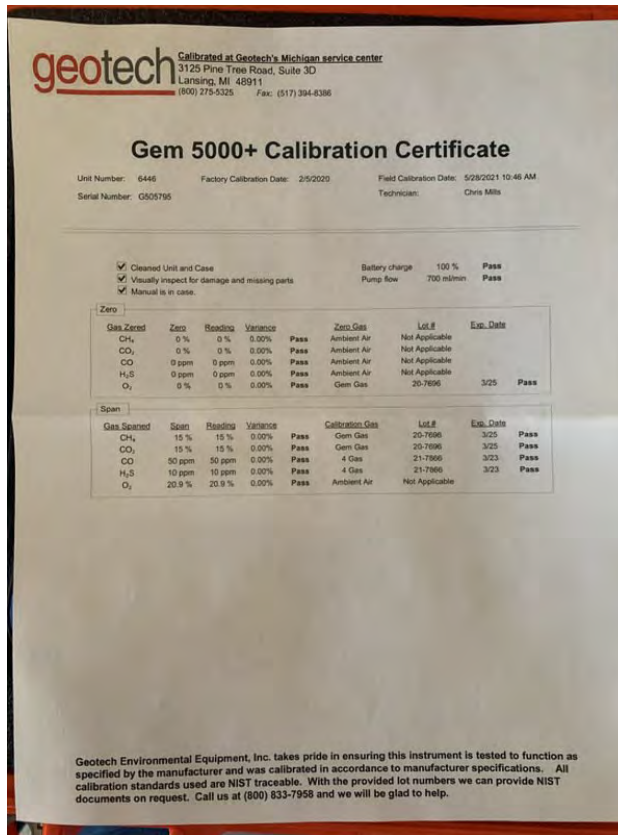
PID

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	PID
Model	MiniRae 3000
Pine/Geotech Number	4136
Calibrated?	Yes
Calibration standard information	Lot # ENJ-248-100-6 106/100 ppm isobutylene



GEM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	GEM
Model	GEM 5000+
Pine/Geotech Number	6446
Calibrated?	Yes
Calibration standard information	Lot #: 304-401743643-1 35.7/35 % CO2 51.4/50 % CH4



Daily Log of Activities

07:40, Arcadis on-site (A. Banitt & E. Witherspoon); conduct Equipment Calibration

Time	07:40
Description of Task	Arcadis on-site (A. Banitt & E. Witherspoon); conduct Equipment Calibration

08:00, Conduct H&S tailgate

Time	08:00
Description of Task	Conduct H&S tailgate

08:30, City of Livonia and Arcadis on-site; conduct UC sampling event

Time	08:30
Description of Task	City of Livonia and Arcadis on-site; conduct UC sampling event

12:00, Break for lunch

Time	12:00
Description of Task	Break for lunch

13:00, Arcadis on-site to resume UC sampling event (A. Hartz, E. Witherspoon, A. Banitt)

Time	13:00
Description of Task	Arcadis on-site to resume UC sampling event (A. Hartz, E. Witherspoon, A. Banitt)

14:32, MH north of 1261 is sealed with an epoxy; sample not collected.

Time	14:32
Description of Task	MH north of 1261 is sealed with an epoxy; sample not collected.

15:06, MH further north of SAMH 1261 is also sealed and covered by equipment

Time	15:06
Description of Task	MH further north of SAMH 1261 is also sealed and covered by equipment

15:15, Third MH north of SAMH 1261 accessible, let team know; sample not collected

Time	15:15
Description of Task	Third MH north of SAMH 1261 accessible, let team know; sample not collected

15:55, Conduct recon around SAMH 1252; A. Hartz off-site

Time	15:55
Description of Task	Conduct recon around SAMH 1252; A. Hartz off-site

17:14, Arcadis off-site

Time	17:14
Description of Task	Arcadis off-site

Material Tracking

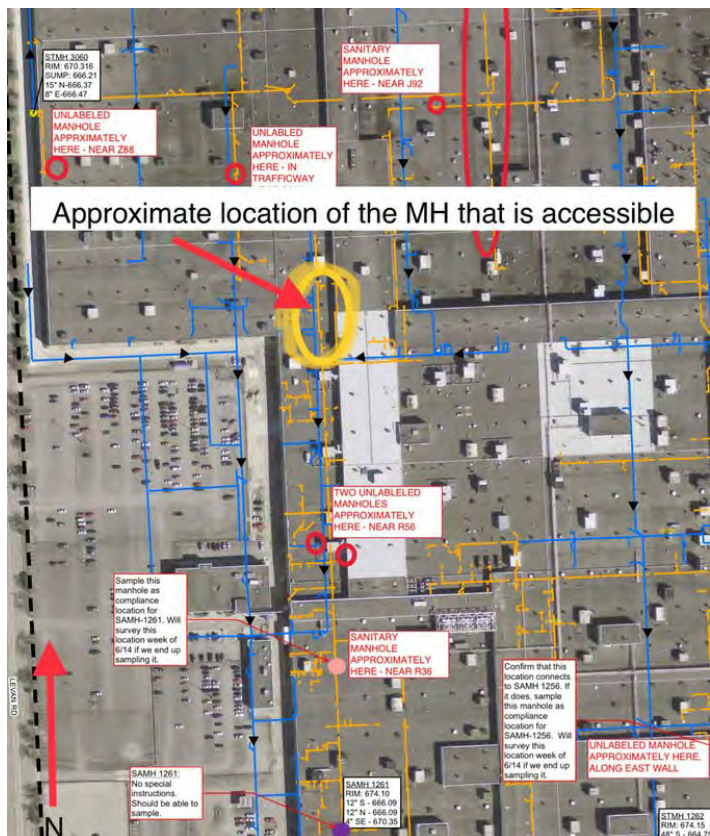
Are you using any materials onsite today?	No
---	----

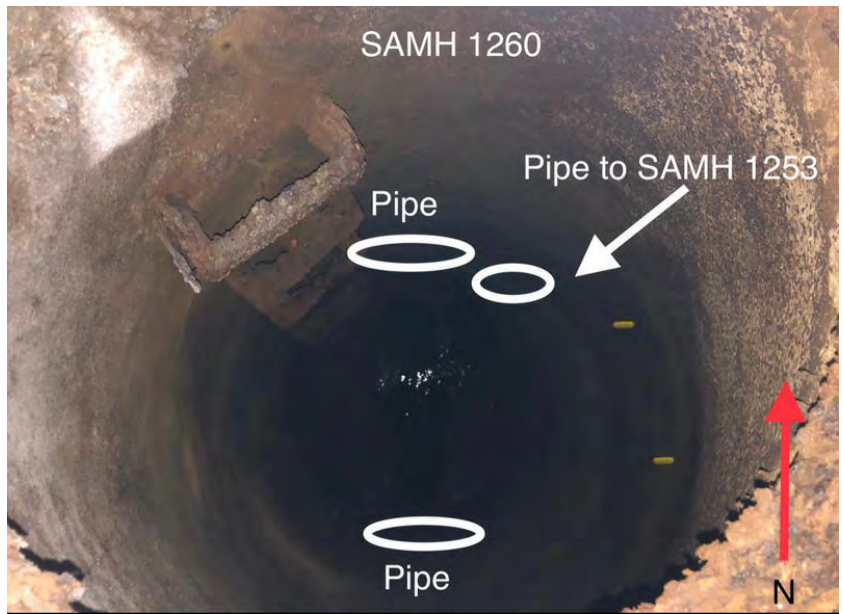
Waste Management

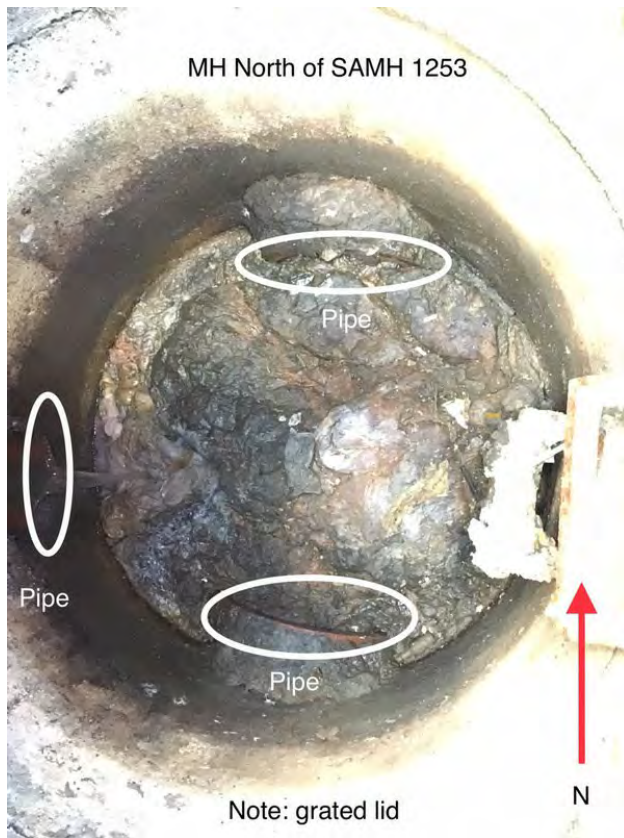
Are there any waste drums onsite?	No
Did you drum any waste today?	No

Photos

Other Photos









Signature

A handwritten signature in black ink, appearing to read "E. Walter Sorenson". The signature is written in a cursive style with a long horizontal stroke at the end.

Signed 2021-06-10 11:46:12 UTC

2021-06-11, Emma Witherspoon, UC Sampling

Created	2021-06-11 19:13:43 UTC by Emma Witherspoon
Updated	2021-06-11 19:25:23 UTC by Emma Witherspoon
Location	42.3987360299028, -83.2948038541556

Basic Information

Project Name	Ford LTP
Task	UC Sampling
Project Number	30080642
Location	Livonia, MI
Date	2021-06-11
Completed By	Emma Witherspoon
Additional Personnel	Andrew Banitt
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	86.00 degrees F and Mostly Clear
PPE	Level D
Are you using equipment?	No

Daily Log of Activities

09:00, Arcadis on-site

Time	09:00
Description of Task	Arcadis on-site

09:15, QC liquid and vapor samples

Time	09:15
Description of Task	QC liquid and vapor samples

11:00, Arcadis off-site

Time	11:00
Description of Task	Arcadis off-site

11:12, E. Witherspoon dropped vapor samples off at FedEx

Time	11:12
Description of Task	E. Witherspoon dropped vapor samples off at FedEx

11:25, A. Banitt dropped liquid samples off at Test America Lab

Time	11:25
Description of Task	A. Banitt dropped liquid samples off at Test America Lab

Material Tracking

Are you using any materials onsite today?	No
---	----

Waste Management

Are there any waste drums onsite?	No
-----------------------------------	----

Did you drum any waste today?

No

Signature

A handwritten signature in black ink, appearing to read "E. W. Thompson". The signature is written in a cursive style with a long horizontal stroke at the end.

Signed 2021-06-11 19:25:22 UTC

OFF-SITE SEWER SAMPLING

2020-06-09, Julia McClafferty, Utility Corridor flow meter installation/sampling

Created	2020-06-09 10:36:58 UTC by Julia McClafferty
Updated	2020-09-16 17:05:51 UTC by Julia McClafferty
Location	42.3727422813348, -83.3916696534337

Basic Information

Project Name	Ford
Task	Utility Corridor flow meter installation/sampling
Project Number	30050315
Location	Livonia, MI
Date	2020-06-09
Completed By	Julia McClafferty
Additional Personnel	Rachel Bielak; ADS crew
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	60.08 degrees F and Cloudy
PPE	Level D
Are you using equipment?	Yes

IP

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	IP
Model	100 ft
Pine/Geotech Number	1348
Calibrated?	No

GEM

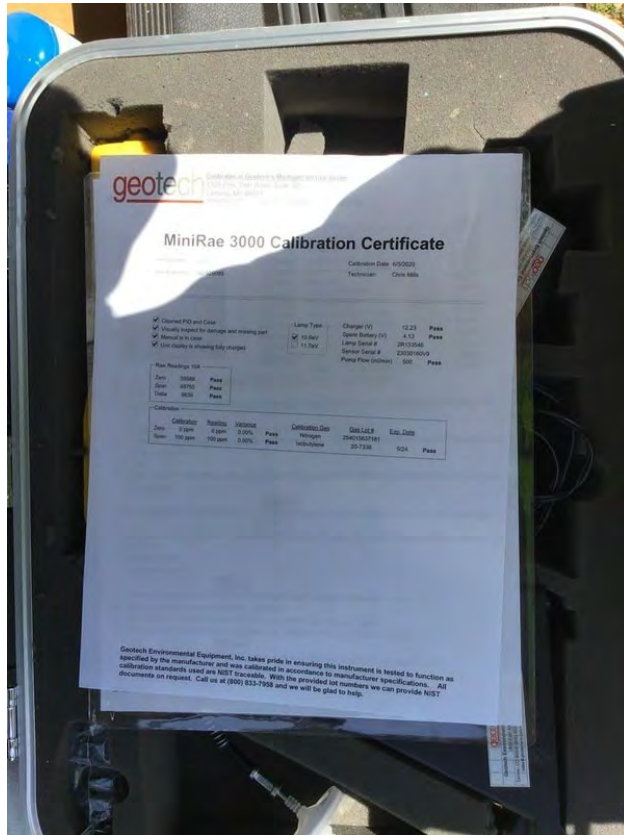
Supplier	Geotech
Type of Equipment (GEM, PID, etc)	GEM
Model	2000
Pine/Geotech Number	3639
Calibrated?	Yes
Calibration standard information	49.8/50 CH4; 33.7/35 CO2; 20.3/20.9 O2

Calibration Documents



PID

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	PID
Model	MiniRAE 3000
Pine/Geotech Number	6396
Calibrated?	Yes
Calibration standard information	10/10 ppm isobutylene



Peripump

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	Peripump
Model	Geopump
Pine/Geotech Number	5850
Calibrated?	No

Daily Log of Activities

06:30, Arcadis onsite

Time	06:30
Description of Task	Arcadis onsite

07:05, ADS onsite

Time	07:05
Description of Task	ADS onsite

07:10, H&S tailgate

Time	07:10
Description of Task	H&S tailgate

07:23, Arrive at STMH 1001

Time	07:23
Description of Task	Arrive at STMH 1001

07:39, ADS enters manhole

Time	07:39
Description of Task	ADS enters manhole

08:00, Begin to install flow meter in north 42" inlet

Time	08:00
Description of Task	Begin to install flow meter in north 42" inlet

08:14, Measure from bottom of invert to rim of manhole = 15.9'. DTW: 15.75'

Time	08:14
Description of Task	Measure from bottom of invert to rim of manhole = 15.9'. DTW: 15.75'

08:17, ADS exits manhole

Time	08:17
Description of Task	ADS exits manhole

08:46, Vapor barrier placed on STMH 1001

Time	08:46
Description of Task	Vapor barrier placed on STMH 1001

08:58, Arrive at STMH 1210

Time	08:58
Description of Task	Arrive at STMH 1210

09:06, ADS enters manhole

Time	09:06
Description of Task	ADS enters manhole

09:07, Begin to install flow meter in 8" inlet

Time	09:07
Description of Task	Begin to install flow meter in 8" inlet

09:23, Measure from bottom of invert to top of manhole rim = 9.1'. DTW: 9.5'

Time	09:23
Description of Task	Measure from bottom of invert to top of manhole rim = 9.1'. DTW: 9.5'

09:30, ADS exits manhole

Time	09:30
Description of Task	ADS exits manhole

09:53, Vapor barrier placed on STMH 1210

Time	09:53
Description of Task	Vapor barrier placed on STMH 1210

10:05, ADS offsite to fuel up

Time	10:05
Description of Task	ADS offsite to fuel up

10:18, Arrive at STMH 1219

Time	10:18
Description of Task	Arrive at STMH 1219

10:34, ADS enters manhole

Time	10:34
Description of Task	ADS enters manhole

10:40, North inlet is connected to PVC piping located north of manhole and doesn't seem to be connected to storm water line.

Time	10:40
Description of Task	North inlet is connected to PVC piping located north of manhole and doesn't seem to be connected to storm water line.

10:50, Communicate with Adam about findings

Time	10:50
Description of Task	Communicate with Adam about findings

11:11, Offsite to start on SAMH 1096 while we wait for an answer from the team about STMH 1219

Time	11:11
Description of Task	Offsite to start on SAMH 1096 while we wait for an answer from the team about STMH 1219

11:14, Arrive at SAMH 1096

Time	11:14
Description of Task	Arrive at SAMH 1096

11:23, ADS enters manhole

Time	11:23
Description of Task	ADS enters manhole

11:29, Measure from bottom of invert to top of manhole = 11.7'. DTW: 11.5'

Time	11:29
Description of Task	Measure from bottom of invert to top of manhole = 11.7'. DTW: 11.5'

12:40, ADS exits manhole

Time	12:40
Description of Task	ADS exits manhole

12:10, Complete work at SAMH 1096; ADS offsite

Time	12:10
Description of Task	Complete work at SAMH 1096; ADS offsite

12:18, Locate sanitary manhole in front of 34367 Capitol

Time	12:18
Description of Task	Locate sanitary manhole in front of 34367 Capitol

13:15, Arrive at WDC; DTW: 17.97; CH4: 0.00, PID: 0.0; Can # 1L3818, filter # 1938; initial vacuum digital: -29.8, initial vacuum analog (sampling): -15, final vacuum analog (sampling): -5, final vacuum digital - 5.7; sample time 13:57; locked WDC before leaving

Time	13:15
Description of Task	Arrive at WDC; DTW: 17.97; CH4: 0.00, PID: 0.0; Can # 1L3818, filter # 1938; initial vacuum digital: -29.8, initial vacuum analog (sampling): -15, final vacuum analog (sampling): -5, final vacuum digital -5.7; sample time 13:57; locked WDC before leaving

14:26, Arrive at SAMH 1231; DTW: 15.49; CH4: 0.00, PID: 0.0; Can #1L3840, filter #1910; initial vacuum -29.1, initial vacuum analog (sampling) -16, final vacuum analog (sampling) -7, final vacuum digital -6.0; sample time: 14:44

Time	14:26
Description of Task	Arrive at SAMH 1231; DTW: 15.49; CH4: 0.00, PID: 0.0; Can #1L3840, filter #1910; initial vacuum -29.1, initial vacuum analog (sampling) -16, final vacuum analog (sampling) -7, final vacuum digital -6.0; sample time: 14:44

15:00, Arrive at EDC; DTW: 16.5; can # 1L3938; filter # 2005; CH4: 0.0, PID: 0.0; initial vacuum digital: -29.2, initial vacuum analog: -29; initial vacuum analog (sampling): -17; final vacuum analog (sampling): -7, final vacuum digital: -6.8, sample time 15:32; locked EDC before leaving

Time	15:00
Description of Task	Arrive at EDC; DTW: 16.5; can # 1L3938; filter # 2005; CH4: 0.0, PID: 0.0; initial vacuum digital: -29.2, initial vacuum analog: -29; initial vacuum analog (sampling): -17; final vacuum analog (sampling): -7, final vacuum digital: -6.8, sample time 15:32; locked EDC before leaving

15:39, Arrive SL-2; DTW: 15.38; can #1L3391, filter # 1938; CH4: 0.0, PID: 0.0, initial vacuum digital: -29.2, initial vacuum analog: -30, initial vacuum analog (sampling): -17, final vacuum analog (sampling): -8, final vacuum digital: -7.6; sample time: 15:58

Time	15:39
Description of Task	Arrive SL-2; DTW: 15.38; can #1L3391, filter # 1938; CH4: 0.0, PID: 0.0, initial vacuum digital: -29.2, initial vacuum analog: -30, initial vacuum analog (sampling): -17, final vacuum analog (sampling): -8, final vacuum digital: -7.6; sample time: 15:58

16:12, Arrive at STMH 1088; DTW/DTB: 7.92; CH4: 0.0, PID: 0.0; can# 1L3930, filter #1938, initial vacuum digital: -29.2; initial vacuum analog: -30, initial vacuum analog (sampling): -17, final vacuum analog (sampling): -8, final vacuum digital: -7.3, sample time: 16:37

Time	16:12
Description of Task	Arrive at STMH 1088; DTW/DTB: 7.92; CH4: 0.0, PID: 0.0; can# 1L3930, filter #1938, initial vacuum digital: -29.2; initial vacuum analog: -30, initial vacuum analog (sampling): -17, final vacuum analog (sampling): -8, final vacuum digital: -7.3, sample time: 16:37

16:50, STMH-1088 water sample taken at 16:50

Time	16:50
Description of Task	STMH-1088 water sample taken at 16:50

17:02, Unable to collect any sediment sample at STMH-1088. Concrete bottom

Time	17:02
Description of Task	Unable to collect any sediment sample at STMH-1088. Concrete bottom

17:19, Arrive at STMH-1066; DTW: 9.22; CH4: 0.1, PID: 0.0; can # 1L3397, filter # 2005, initial vacuum digital -29.1, initial vacuum analog -29, initial vacuum analog (sampling) -15, final vacuum analog (sampling) -7, final vacuum digital -8.3, sample time: 17:37

Time	17:19
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Description of Task	Arrive at STMH-1066; DTW: 9.22; CH4: 0.1, PID: 0.0; can # 1L3397, filter # 2005, initial vacuum digital -29.1, initial vacuum analog -29, initial vacuum analog (sampling) -15, final vacuum analog (sampling) -7, final vacuum digital -8.3, sample time: 17:37
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17:47, STMH-1066 water sample taken at 17:47. Visible sheen on stagnant water

Time	17:47
Description of Task	STMH-1066 water sample taken at 17:47. Visible sheen on stagnant water

17:53, Unable to collect sediment at STMH-1066. Concrete bottom

Time	17:53
Description of Task	Unable to collect sediment at STMH-1066. Concrete bottom

17:58, Arrive at STMH-1041; DTW/DTB: 9.7; CH4: 0.1, PID: 0.0, can #1L3923, filter #1831; initial vacuum digital -29, initial vacuum analog: >-30, initial vacuum analog (sampling): -23, final vacuum analog (sampling): -9.5, final vacuum digital: -7.6; sample time: 18:16

Time	17:58
Description of Task	Arrive at STMH-1041; DTW/DTB: 9.7; CH4: 0.1, PID: 0.0, can #1L3923, filter #1831; initial vacuum digital -29, initial vacuum analog: >-30, initial vacuum analog (sampling): -23, final vacuum analog (sampling): -9.5, final vacuum digital: -7.6; sample time: 18:16

18:26, STMH-1041 water sample collected at 18:26

Time	18:26
Description of Task	STMH-1041 water sample collected at 18:26

18:35, Unable to collect sediment sample. Concrete bottom - see photo

Time	18:35
Description of Task	Unable to collect sediment sample. Concrete bottom - see photo

06:45, Drop off equipment/supplies at trailer

Time	06:45
Description of Task	Drop off equipment/supplies at trailer

19:03, Offsite

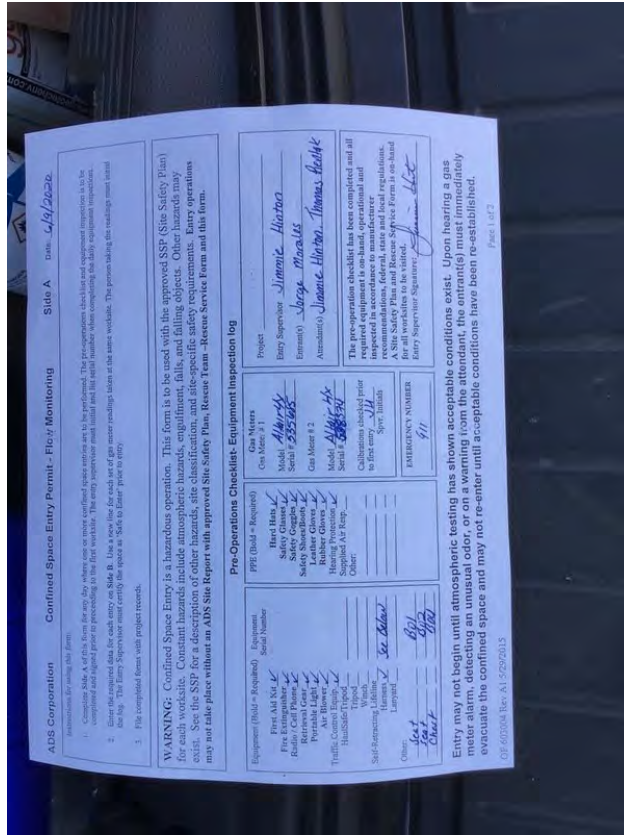
Time	19:03
Description of Task	Offsite

Waste Management

Are there any waste drums onsite?	No
Did you drum any waste today?	No

Photos

Other Photos



ADS confined space permit



STMH 1001



STMH 1210





STMH 1219 inlet piping to N 12"



Vapor barrier at SL-2 still intact (2 holes are from us poking holes to sample)



MH-1088 concrete bottom



STMH-1041

2020-06-10, Julia McClafferty, Utility Corridor sampling

Created	2020-06-10 13:33:38 UTC by Julia McClafferty
Updated	2020-09-08 12:45:38 UTC by Julia McClafferty
Location	42.3729910056184, -83.3919121242742

Basic Information

Project Name	Ford
Task	Utility Corridor sampling
Project Number	30050315
Location	Livonia, MI
Date	2020-06-10
Completed By	Julia McClafferty
Additional Personnel	Rachel Bielak
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	80.96 degrees F and Mostly Cloudy
PPE	Level D
Are you using equipment?	Yes

Peripump

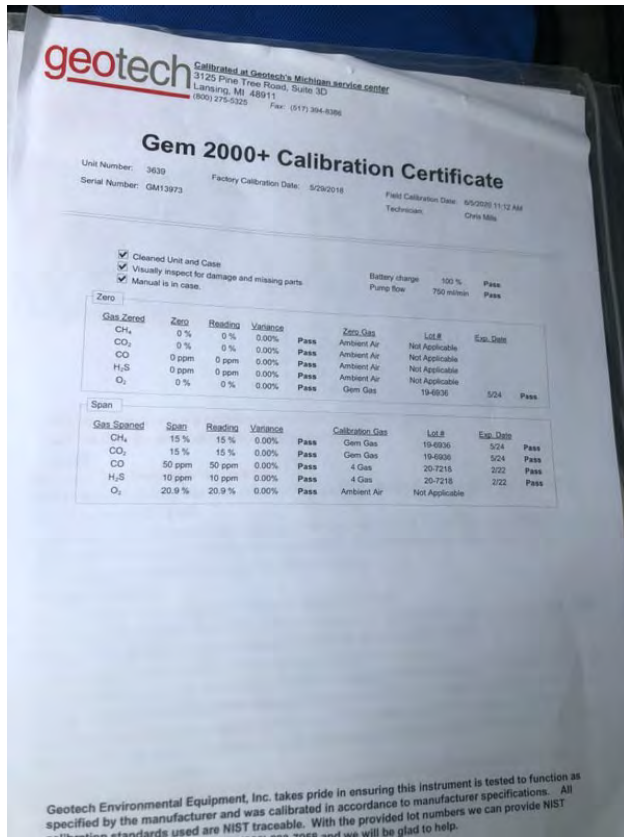
Supplier	Geotech
Type of Equipment (GEM, PID, etc)	Peripump
Model	Geopump
Pine/Geotech Number	5850
Calibrated?	No

IP

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	IP
Model	10 ft
Pine/Geotech Number	1348
Calibrated?	No

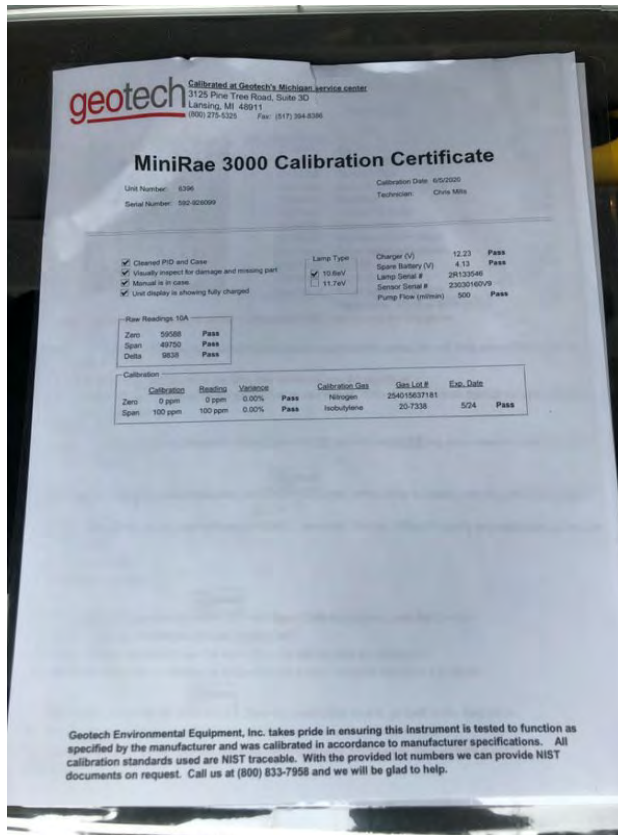
GEM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	GEM
Model	2000
Pine/Geotech Number	3639
Calibrated?	Yes
Calibration standard information	34.5/35 CO2, 50.6/50 CH4, 20.8/20.9 O2



PID

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	PID
Model	MiniRAE 3000
Pine/Geotech Number	6396
Calibrated?	Yes
Calibration standard information	10/10 ppm isobutylene



Daily Log of Activities

09:25, Arrive on-site

Time	09:25
Description of Task	Arrive on-site

09:30, H&S tailgate

Time	09:30
Description of Task	H&S tailgate

09:40, Calibrate equipment

Time	09:40
Description of Task	Calibrate equipment

09:53, Arrive at SAMH 1122, DTW/DTB: 8.3; can # 1L2625, filter # 1946; CH4: 0.1, PID: 0.0, initial vacuum digital -29.2, initial vacuum analog -26.5, initial vacuum analog (sampling) -14, final vacuum digital -5.8, final vacuum analog (sampling) -4.5, sample time: 10:12

Time	09:53
Description of Task	Arrive at SAMH 1122, DTW/DTB: 8.3; can # 1L2625, filter # 1946; CH4: 0.1, PID: 0.0, initial vacuum digital -29.2, initial vacuum analog -26.5, initial vacuum analog (sampling) -14, final vacuum digital -5.8, final vacuum analog (sampling) -4.5, sample time: 10:12

10:19, Unable to collect water or sediment sample at SAMH 1122. Dry.

Time	10:19
Description of Task	Unable to collect water or sediment sample at SAMH 1122. Dry.

10:26, Arrive at STMH 1171; DTW: 15.58; CH4: 0.1, PID: 0.0; can #1L3937, filter #1922; initial vacuum digital -29.1, initial vacuum analog -29, initial vacuum (sampling) -21.5, final vacuum analog (sampling) -7, final vacuum digital -7.2 , sample time 10:49

Time	10:26
Description of Task	Arrive at STMH 1171; DTW: 15.58; CH4: 0.1, PID: 0.0; can #1L3937, filter #1922; initial vacuum digital -29.1, initial vacuum analog -29, initial vacuum (sampling) -21.5, final vacuum analog (sampling) -7, final vacuum digital -7.2 , sample time 10:49

10:57, STMH 1171 water sample collected at 10:57

Time	10:57
Description of Task	STMH 1171 water sample collected at 10:57

11:07, Unable to collect any sediment after multiple tries. Sampling cup is only collecting water. Bottom was not soft. Communicated with Adam

Time	11:07
Description of Task	Unable to collect any sediment after multiple tries. Sampling cup is only collecting water. Bottom was not soft. Communicated with Adam

11:30, Arrive at STMH 1001; DTW: 15.65; can #1L3925, filter #1845; CH4: 0.1, PID: 0.0; initial vacuum digital -29.2, initial vacuum analog >-30, initial vacuum analog (sampling) -18.5, final vacuum analog (sampling) -8, final vacuum digital -8.4, sample time: 11:41

Time	11:30
Description of Task	Arrive at STMH 1001; DTW: 15.65; can #1L3925, filter #1845; CH4: 0.1, PID: 0.0; initial vacuum digital -29.2, initial vacuum analog >-30, initial vacuum analog (sampling) -18.5, final vacuum analog (sampling) -8, final vacuum digital -8.4, sample time: 11:41

12:00, STMH 1001 water sample collected at 12:00

Time	12:00
Description of Task	STMH 1001 water sample collected at 12:00

12:06, Unable to collect sediment sample. Concrete bottom. ADS confirmed yesterday there was no sediment observed in manhole

Time	12:06
Description of Task	Unable to collect sediment sample. Concrete bottom. ADS confirmed yesterday there was no sediment observed in manhole

12:21, Arrive at STMH 1210, DTW: 9.08, CH4: 0.1, PID: 0.0; can #1L2919, filter #1734, initial vacuum digital -29.1, initial vacuum analog -29, initial vacuum analog (sampling) -14.5, final vacuum analog (sampling) -7, final vacuum digital -7.8; sampling time: 12:31 DUP: can #1L1841, filter #1913, initial vacuum digital -29.2, initial vacuum analog -25.5, initial vacuum analog (sampling) -14, final vacuum analog (sampling) -4, final vacuum digital -4.6

Time	12:21
Description of Task	Arrive at STMH 1210, DTW: 9.08, CH4: 0.1, PID: 0.0; can #1L2919, filter #1734, initial vacuum digital -29.1, initial vacuum analog -29, initial vacuum analog (sampling) -14.5, final vacuum analog (sampling) -7, final vacuum digital -7.8; sampling time: 12:31 DUP: can #1L1841, filter #1913, initial vacuum digital -29.2, initial vacuum analog -25.5, initial vacuum analog (sampling) -14, final vacuum analog (sampling) -4, final vacuum digital -4.6

12:52, STMH 1210 sample collected at 12:52

Time	12:52
Description of Task	STMH 1210 sample collected at 12:52

13:05, Unable to collect sediment sample at STMH 1210. Concrete bottom

Time	13:05
Description of Task	Unable to collect sediment sample at STMH 1210. Concrete bottom

01:20, Communicate with adam about storm coming into Livonia. Head to trailer to drop off equipment and supplies

Time	01:20
Description of Task	Communicate with adam about storm coming into Livonia. Head to trailer to drop off equipment and supplies

13:46, Offsite

Time	13:46
Description of Task	Offsite

Waste Management

Are there any waste drums onsite?	No
Did you drum any waste today?	No

Photos

Other Photos



SAMH 1122



STMH 1001



STMH 1210

Signature

A handwritten signature in black ink, appearing to read "Julian" on the top line and "Muller" on the bottom line. The signature is written in a cursive, flowing style.

Signed 2020-06-10 21:44:50 UTC

2020-06-15, Emma Witherspoon, Utility Corridor

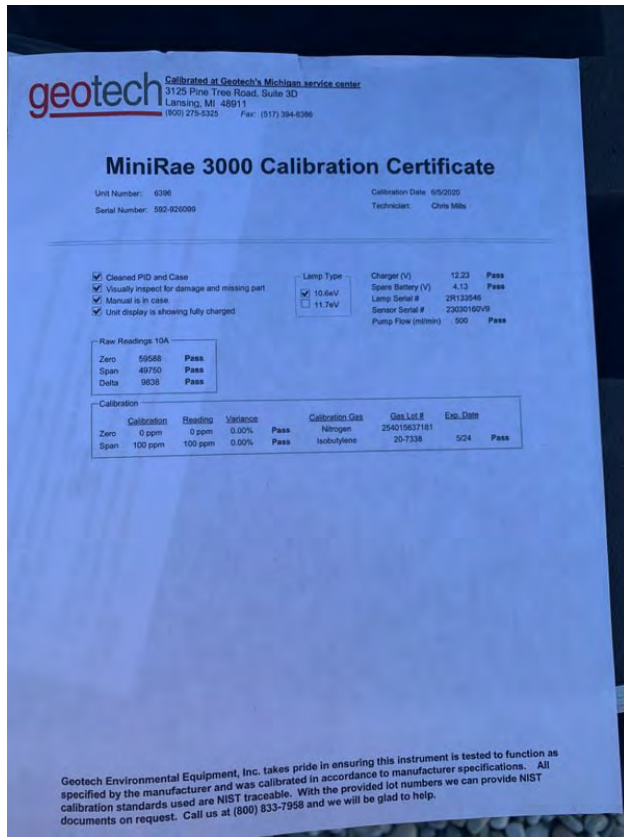
Created	2020-06-15 11:09:46 UTC by Emma Witherspoon
Updated	2020-09-17 17:06:50 UTC by Julia McClafferty
Location	42.3729049504785, -83.3918925659024

Basic Information

Project Name	Ford LTP
Task	Utility Corridor
Location	Livonia, MI
Date	2020-06-15
Completed By	Emma Witherspoon
Additional Personnel	Rachel Bielak Xenia Chan
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	50.00 degrees F and Mostly Clear
PPE	Level D
Are you using equipment?	Yes

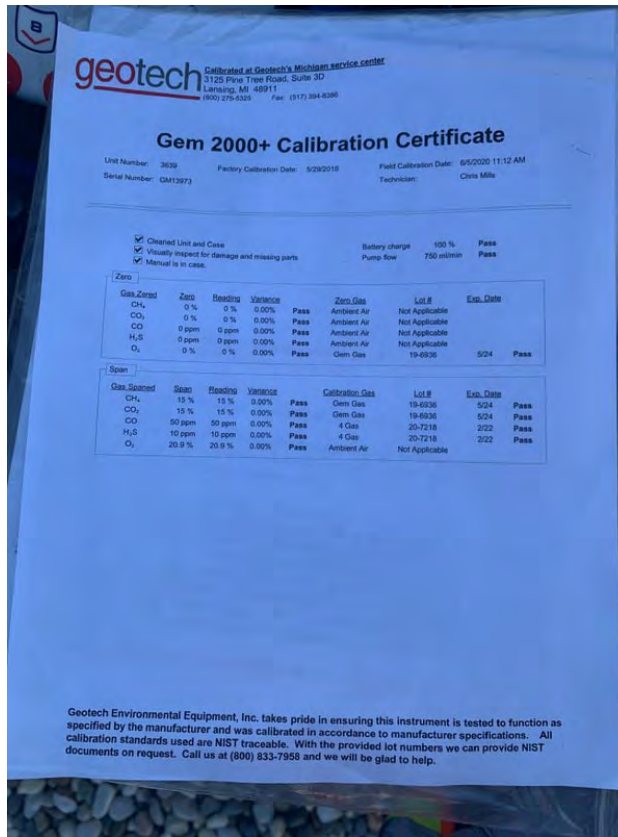
PID

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	PID
Model	3000
Pine/Geotech Number	6396
Calibrated?	Yes
Calibration standard information	10 ppm isobutylene expiration date: 5/30/2021 Lot number 18-6278 10.2/10



GEM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	GEM
Model	2000+
Pine/Geotech Number	3639
Calibrated?	Yes
Calibration standard information	Lot number: 605285 Expiration date: 2/2020 48.2/50 34.0/35.0



Daily Log of Activities

07:00, Health and safety tailgate and equipment calibrations

Time	07:00
Description of Task	Health and safety tailgate and equipment calibrations

07:40, Arcadis Onsite SAMH 1116 Rachel Bielak Xenia Chan Emma Witherspoon

Time	07:40
Description of Task	Arcadis Onsite SAMH 1116 Rachel Bielak Xenia Chan Emma Witherspoon

07:55, SAMH 1116 PID: 0ppm depth to water: 10.25 ft Initial Digital gauge Pressure: -28.2 Can #: 1L1517 Gauge #: 1913 Initial analog gauge Pressure: -30 Methane: 0.00% Sample start time: 8:05 Initial open analog pressure: -13.5 Final analog gauge pressure: -5 Final Digital gauge pressure: -5.5

Time	07:55
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Description of Task SAMH 1116
PID: 0ppm
depth to water: 10.25 ft
Initial Digital gauge Pressure: -28.2
Can #: 1L1517
Gauge #: 1913
Initial analog gauge Pressure: -30
Methane: 0.00%
Sample start time: 8:05
Initial open analog pressure: -13.5
Final analog gauge pressure: -5
Final Digital gauge pressure: -5.5

08:16, SAMH 1113 Depth to water: 12.27 ft Initial Digital Gauge Pressure: -27.4 Initial Analog gauge Pressure: -28.5 Canister #: 1L1868 Gauge number: 1922 Sample Start time: 8:29 Initial open Analog gauge Pressure -15 Final Analog gauge Pressure: -8 Final Digital Gauge Pressure: -9.9 GEM Methane: 0% PID: 0ppm

Time 08:16
Description of Task SAMH 1113
Depth to water: 12.27 ft
Initial Digital Gauge Pressure: -27.4
Initial Analog gauge Pressure: -28.5
Canister #: 1L1868
Gauge number: 1922
Sample Start time: 8:29
Initial open Analog gauge Pressure -15
Final Analog gauge Pressure: -8
Final Digital Gauge Pressure: -9.9
GEM Methane: 0%
PID: 0ppm

08:38, SAMH 1123 Depth to Bottom: 8.2 ft Canister #: 1L3948 Gauge #: N/A PID: 0.0 ppm GEM-Methane: 0.00 % Start Sample Time: 8:52 Initial Analog Gauge Pressure: -27.5 Initial Digital Gauge Pressure: -28.9 Initial Open Analog Gauge Pressure: -15.0 Final Analog Gauge Pressure: -7.0 Final Digital Gauge Pressure: -9.6

Time 08:38
Description of Task SAMH 1123
Depth to Bottom: 8.2 ft
Canister #: 1L3948
Gauge #: N/A
PID: 0.0 ppm
GEM- Methane: 0.00 %
Start Sample Time: 8:52
Initial Analog Gauge Pressure: -27.5
Initial Digital Gauge Pressure: -28.9
Initial Open Analog Gauge Pressure: -15.0
Final Analog Gauge Pressure: -7.0
Final Digital Gauge Pressure: -9.6

09:10, Arcadis Off-site Emma Witherspoon Xenia Chan Rachel Bielak

Time 09:10
Description of Task Arcadis Off-site
Emma Witherspoon
Xenia Chan
Rachel Bielak

09:22, Arcadis On-site Emma Witherspoon, Rachel Bielak inspection of STMH 1219

Time	09:22
Description of Task	Arcadis On-site Emma Witherspoon, Rachel Bielak inspection of STMH 1219

10:08, SAMH 1181 Depth to Bottom: 8.52 ft Canister #:1738 Analog Gauge #:1946 Initial digital gauge pressure:-29.3 Initial analog gauge pressure: -26 Sample start time:10:18 Initial open analog gauge pressure: -10.5 Final analog gauge pressure:-4 Final digital gauge pressure:-6.3 PID: 0ppm GEM-methane: 0.0%

Time	10:08
Description of Task	SAMH 1181 Depth to Bottom: 8.52 ft Canister #:1738 Analog Gauge #:1946 Initial digital gauge pressure:-29.3 Initial analog gauge pressure: -26 Sample start time:10:18 Initial open analog gauge pressure: -10.5 Final analog gauge pressure:-4 Final digital gauge pressure:-6.3 PID: 0ppm GEM- methane: 0.0%

10:30, Collect water sample at SAMH 1181

Time	10:30
Description of Task	Collect water sample at SAMH 1181

10:40, No sediment sample could be collected at SAMH 1181

Time	10:40
Description of Task	No sediment sample could be collected at SAMH 1181

11:08, Inspection of MH East of Stark on Capitol

Time	11:08
Description of Task	Inspection of MH East of Stark on Capitol

11:22, SAMH 1096 Depth to bottom: 10.85 ft Canister #: 1L2642 Gauge #: N/A Initial digital gauge pressure: -29.7 Initial analog gauge pressure: -29.5 Sample start time: 11:30 Initial open analog gauge pressure: -16 Final analog gauge pressure: -7 Final digital gauge pressure: -9.2 PID: 0.0ppm GEM - Methane: 0.0%

Time	11:22
Description of Task	SAMH 1096 Depth to bottom: 10.85 ft Canister #: 1L2642 Gauge #: N/A Initial digital gauge pressure: -29.7 Initial analog gauge pressure: -29.5 Sample start time: 11:30 Initial open analog gauge pressure: -16 Final analog gauge pressure: -7 Final digital gauge pressure: -9.2 PID: 0.0ppm GEM - Methane: 0.0%

11:42, Collect water sample at SAMH 1096

Time	11:42
Description of Task	Collect water sample at SAMH 1096

11:52, No sediment sample could be collected at SAMH 1096

Time	11:52
Description of Task	No sediment sample could be collected at SAMH 1096

12:00, SAMH 1082 Depth to bottom: 7.75 Canister #: 1L2845 Gauge #: 1912 Initial digital gauge pressure: -29.1 Initial analog gauge pressure: -28.5 Sample start time: 12:09 Initial open analog gauge pressure:-20 Final digital gauge pressure: -6.2 Final analog gauge pressure: -6 PID: 0ppm GEM-Methane: 0%

Time	12:00
Description of Task	SAMH 1082 Depth to bottom: 7.75 Canister #: 1L2845 Gauge #: 1912 Initial digital gauge pressure: -29.1 Initial analog gauge pressure: -28.5 Sample start time: 12:09 Initial open analog gauge pressure:-20 Final digital gauge pressure: -6.2 Final analog gauge pressure: -6 PID: 0ppm GEM- Methane: 0%

12:20, Collect water sample at SAMH 1082

Time	12:20
Description of Task	Collect water sample at SAMH 1082

12:31, No sediment sample could be collected at SAMH 1082

Time	12:31
Description of Task	No sediment sample could be collected at SAMH 1082

12:36, Arcadis off-site

Time	12:36
Description of Task	Arcadis off-site

13:00, Arcadis and ADS onsite STMH 1219

Time	13:00
Description of Task	Arcadis and ADS onsite STMH 1219

13:04, ADS entered STMH 1219 3 12" pipes found Debris cleared from MH

Time	13:04
Description of Task	ADS entered STMH 1219 3 12" pipes found Debris cleared from MH

13:10, ADS exited STMH 1219 Vapor barrier placed

Time	13:10
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Description of Task	ADS exited STMH 1219 Vapor barrier placed
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13:26, ADS and Arcadis arrive at STMH 1171

Time	13:26
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Description of Task	ADS and Arcadis arrive at STMH 1171
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13:39, ADS entered STMH 1171 to install flow meter in the 24" West pipe Depth to water: 18.5 ft

Time	13:39
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Description of Task	ADS entered STMH 1171 to install flow meter in the 24" West pipe Depth to water: 18.5 ft
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14:25, ADS and Arcadis offsite

Time	14:25
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Description of Task	ADS and Arcadis offsite
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Waste Management

Are there any waste drums onsite?	No
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Did you drum any waste today?	No
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General waste comments	Small waste water contained in a 5 gallon bucket
------------------------	--

Photos

Other Photos



SAMH 1116



SAMH 1113



SAMH 1123



SAMH 1181



SAMH 1096



SAMH 1082

Signature

Signed 2020-06-15 18:38:22 UTC

2020-06-16, Emma Witherspoon, Utility Corridor sampling

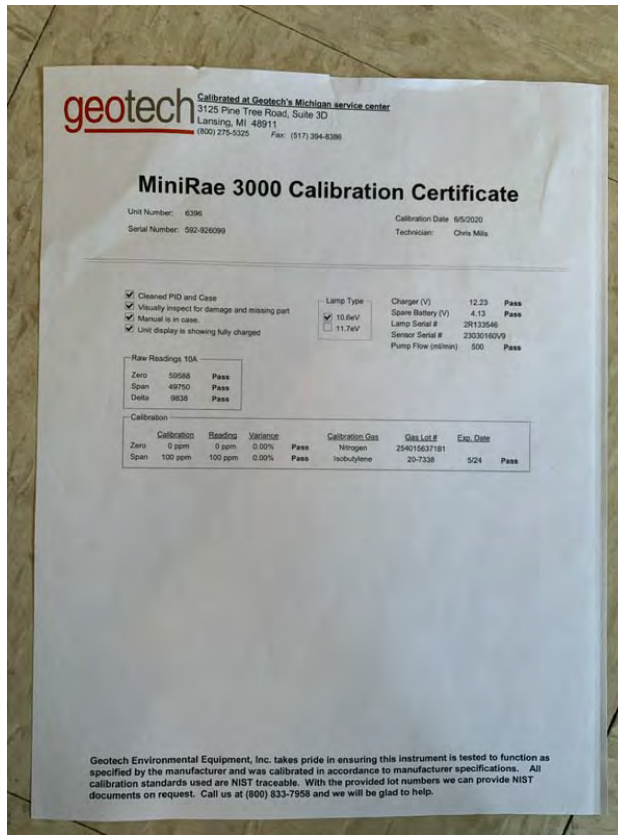
Created	2020-06-16 11:25:48 UTC by Emma Witherspoon
Updated	2020-09-17 17:06:03 UTC by Julia McClafferty
Location	42.3729622740521, -83.3913349047911

Basic Information

Project Name	Ford LTP
Task	Utility Corridor sampling
Location	Livonia, MI
Date	2020-06-16
Completed By	Emma Witherspoon
Additional Personnel	Rachel Bielak
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	57.92 degrees F and Mostly Clear
PPE	Level D
Are you using equipment?	Yes

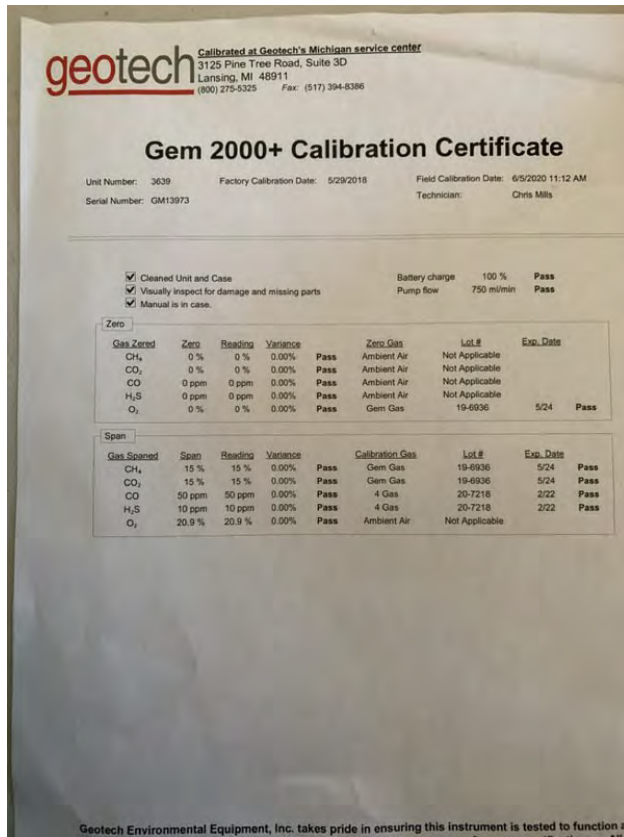
PID

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	PID
Model	3000
Pine/Geotech Number	6396
Calibrated?	Yes
Calibration standard information	10 ppm isobutylene expiration date: 5/30/2021 Lot number 18-6278 10.1/10



GEM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	GEM
Model	2000plus
Pine/Geotech Number	3639
Calibrated?	Yes
Calibration standard information	Lot number: 605285 Expiration date: 2/2020 49.5/50 34.6/35.0



Daily Log of Activities

07:30, H&S tailgate and equipment calibrations

Time	07:30
Description of Task	H&S tailgate and equipment calibrations

08:05, Arcadis On-site Rachel Bielak & Emma Witherspoon

Time	08:05
Description of Task	Arcadis On-site Rachel Bielak & Emma Witherspoon

08:08, SAMH 1043 Depth to bottom: 8.5 ft Canister #: 1L1508 Gauge #: 1946 Initial digital gauge pressure: -29.3 Initial analog gauge pressure: -30 Sample start time: 8:18 Initial open analog gauge pressure: -14 Final analog gauge pressure:-8 Final digital gauge pressure: -8.7 PID: 0ppm GEM- Methane: 0.0% Water flowing north

Time	08:08
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Description of Task	SAMH 1043 Depth to bottom: 8.5 ft Canister #: 1L1508 Gauge #: 1946 Initial digital gauge pressure: -29.3 Initial analog gauge pressure: -30 Sample start time: 8:18 Initial open analog gauge pressure: -14 Final analog gauge pressure: -8 Final digital gauge pressure: -8.7 PID: 0ppm GEM- Methane: 0.0% Water flowing north
---------------------	---

08:30, Conducted water sampling at SAMH 1043

Time	08:30
Description of Task	Conducted water sampling at SAMH 1043

08:35, Sediment Sample could not be collected at SAMH 1043

Time	08:35
Description of Task	Sediment Sample could not be collected at SAMH 1043

08:42, SAMH 1067 Depth to bottom: 8.6 ft Canister #: 1L3248 Gauge #: 1910 Initial digital gauge pressure: -29.3 Initial analog gauge pressure: -28 Sample start time: 8:50 Initial open analog gauge pressure: -15.5 Final analog gauge pressure: -6 Final digital gauge pressure: -5.6 PID: 0ppm GEM-Methane: 0.00% Water flowing south

Time	08:42
Description of Task	SAMH 1067 Depth to bottom: 8.6 ft Canister #: 1L3248 Gauge #: 1910 Initial digital gauge pressure: -29.3 Initial analog gauge pressure: -28 Sample start time: 8:50 Initial open analog gauge pressure: -15.5 Final analog gauge pressure: -6 Final digital gauge pressure: -5.6 PID: 0ppm GEM- Methane: 0.00% Water flowing south

09:00, Conducted water sampling at SAMH 1067

Time	09:00
Description of Task	Conducted water sampling at SAMH 1067

09:15, Sediment sample could not be collected at SAMH 1067

Time	09:15
Description of Task	Sediment sample could not be collected at SAMH 1067

09:21, SAMH 1020 Depth to bottom: 6.4 ft Canister #: 1L3944 Gauge #: 1910 Initial digital gauge pressure: -29.2 Initial analog gauge pressure: -29 Sample start time: 9:28 Initial open analog gauge pressure: -14 Final analog gauge pressure: -7 Final digital gauge pressure: -8.2 PID: 0ppm GEM-methane: 0.00% Water flowing north

Time	09:21
Description of Task	SAMH 1020 Depth to bottom: 6.4 ft Canister #: 1L3944 Gauge #: 1910 Initial digital gauge pressure:-29.2 Initial analog gauge pressure:-29 Sample start time: 9:28 Initial open analog gauge pressure: -14 Final analog gauge pressure: -7 Final digital gauge pressure: -8.2 PID: 0ppm GEM- methane: 0.00% Water flowing north

09:38, Conduct water sampling at SAMH 1020

Time	09:38
Description of Task	Conduct water sampling at SAMH 1020

09:45, Collected sediment sample from SAMH 1020 Sediment was collected above water channel underneath the ladder

Time	09:45
Description of Task	Collected sediment sample from SAMH 1020 Sediment was collected above water channel underneath the ladder

10:00, Arcadis off site

Time	10:00
Description of Task	Arcadis off site

10:05, Start COC and QC process for air canisters

Time	10:05
Description of Task	Start COC and QC process for air canisters

11:40, Start COC and QC process for water and sediment samples

Time	11:40
Description of Task	Start COC and QC process for water and sediment samples

13:57, Arcadis on site Rachel Bielak, Emma Witherspoon

Time	13:57
Description of Task	Arcadis on site Rachel Bielak, Emma Witherspoon

13:57, STMH 1219 Depth to bottom: 14.7 ft Canister #: 1L1765 Gauge #: 1912 Initial digital gauge pressure: -29.3 Initial analog gauge pressure: -29.5 Sample start time: 14:08 Initial open analog gauge pressure: -14 Final digital gauge pressure: -7.4 Final analog gauge pressure: -7 PID: 0ppm GEM-Methane: 0.00%

Time	13:57
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Description of Task	STMH 1219 Depth to bottom: 14.7 ft Canister #: 1L1765 Gauge #: 1912 Initial digital gauge pressure: -29.3 Initial analog gauge pressure: -29.5 Sample start time: 14:08 Initial open analog gauge pressure: -14 Final digital gauge pressure: -7.4 Final analog gauge pressure: -7 PID: 0ppm GEM- Methane: 0.00%
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14:22, Conduct water sampling at STMH 1219

Time	14:22
Description of Task	Conduct water sampling at STMH 1219

15:07, Sediment sample could not be collected at STMH 1219

Time	15:07
Description of Task	Sediment sample could not be collected at STMH 1219

15:15, Arcadis offsite

Time	15:15
Description of Task	Arcadis offsite

15:15, Samples shipped out

Time	15:15
Description of Task	Samples shipped out

Waste Management

Are there any waste drums onsite?	No
Did you drum any waste today?	No
General waste comments	Purge water run through HCS system

Photos

Other Photos



SAMH 1043



SAMH 1067



SAMH 1020

WEST PRINCETON & GRAPHICS, INC. #18 104-800

curofins Air Toxics
 180 Bala Bypass Rd., Suite B, Edison, NJ 08839
 Phone: (800) 985-8555 Fax: (800) 391-6272
 Project Name: **ARCADIS**
 Project Manager: **WOLFE LINKLATER**
 Designer: **ROBERT WELSH**
 Client Name: **STAN LIT**

Analysis Request/Canister Chain of Custody

Site: **ARCADIS** Project # **STANLIT-701**
 Location: **ARCADIS**
 Date: **6/16/20**

Lab ID	Field Sample Identification (Location)	Can #	Flow #	Field Sampling Information		Regr. Sampling Information		Transportation (Must accompany each sample)	
				Date	Time	Date	Time	Ship/Recd	Lab Use Only
MH-103	06/06/20	1-3149	N/A	6/6/20	10:18	6/6/20	10:18		
MH-104	06/06/20	1-3150	N/A	6/6/20	10:18	6/6/20	10:18		
MH-105	06/06/20	1-3151	N/A	6/6/20	10:18	6/6/20	10:18		
MH-106	06/06/20	1-3152	N/A	6/6/20	10:18	6/6/20	10:18		
MH-107	06/06/20	1-3153	N/A	6/6/20	10:18	6/6/20	10:18		
MH-108	06/06/20	1-3154	N/A	6/6/20	10:18	6/6/20	10:18		
MH-109	06/06/20	1-3155	N/A	6/6/20	10:18	6/6/20	10:18		
MH-110	06/06/20	1-3156	N/A	6/6/20	10:18	6/6/20	10:18		
MH-111	06/06/20	1-3157	N/A	6/6/20	10:18	6/6/20	10:18		
MH-112	06/06/20	1-3158	N/A	6/6/20	10:18	6/6/20	10:18		
MH-113	06/06/20	1-3159	N/A	6/6/20	10:18	6/6/20	10:18		
MH-114	06/06/20	1-3160	N/A	6/6/20	10:18	6/6/20	10:18		
MH-115	06/06/20	1-3161	N/A	6/6/20	10:18	6/6/20	10:18		
MH-116	06/06/20	1-3162	N/A	6/6/20	10:18	6/6/20	10:18		
MH-117	06/06/20	1-3163	N/A	6/6/20	10:18	6/6/20	10:18		
MH-118	06/06/20	1-3164	N/A	6/6/20	10:18	6/6/20	10:18		
MH-119	06/06/20	1-3165	N/A	6/6/20	10:18	6/6/20	10:18		
MH-120	06/06/20	1-3166	N/A	6/6/20	10:18	6/6/20	10:18		
MH-121	06/06/20	1-3167	N/A	6/6/20	10:18	6/6/20	10:18		
MH-122	06/06/20	1-3168	N/A	6/6/20	10:18	6/6/20	10:18		
MH-123	06/06/20	1-3169	N/A	6/6/20	10:18	6/6/20	10:18		
MH-124	06/06/20	1-3170	N/A	6/6/20	10:18	6/6/20	10:18		
MH-125	06/06/20	1-3171	N/A	6/6/20	10:18	6/6/20	10:18		
MH-126	06/06/20	1-3172	N/A	6/6/20	10:18	6/6/20	10:18		
MH-127	06/06/20	1-3173	N/A	6/6/20	10:18	6/6/20	10:18		
MH-128	06/06/20	1-3174	N/A	6/6/20	10:18	6/6/20	10:18		
MH-129	06/06/20	1-3175	N/A	6/6/20	10:18	6/6/20	10:18		
MH-130	06/06/20	1-3176	N/A	6/6/20	10:18	6/6/20	10:18		
MH-131	06/06/20	1-3177	N/A	6/6/20	10:18	6/6/20	10:18		
MH-132	06/06/20	1-3178	N/A	6/6/20	10:18	6/6/20	10:18		
MH-133	06/06/20	1-3179	N/A	6/6/20	10:18	6/6/20	10:18		
MH-134	06/06/20	1-3180	N/A	6/6/20	10:18	6/6/20	10:18		
MH-135	06/06/20	1-3181	N/A	6/6/20	10:18	6/6/20	10:18		
MH-136	06/06/20	1-3182	N/A	6/6/20	10:18	6/6/20	10:18		
MH-137	06/06/20	1-3183	N/A	6/6/20	10:18	6/6/20	10:18		
MH-138	06/06/20	1-3184	N/A	6/6/20	10:18	6/6/20	10:18		
MH-139	06/06/20	1-3185	N/A	6/6/20	10:18	6/6/20	10:18		
MH-140	06/06/20	1-3186	N/A	6/6/20	10:18	6/6/20	10:18		
MH-141	06/06/20	1-3187	N/A	6/6/20	10:18	6/6/20	10:18		
MH-142	06/06/20	1-3188	N/A	6/6/20	10:18	6/6/20	10:18		
MH-143	06/06/20	1-3189	N/A	6/6/20	10:18	6/6/20	10:18		
MH-144	06/06/20	1-3190	N/A	6/6/20	10:18	6/6/20	10:18		
MH-145	06/06/20	1-3191	N/A	6/6/20	10:18	6/6/20	10:18		
MH-146	06/06/20	1-3192	N/A	6/6/20	10:18	6/6/20	10:18		
MH-147	06/06/20	1-3193	N/A	6/6/20	10:18	6/6/20	10:18		
MH-148	06/06/20	1-3194	N/A	6/6/20	10:18	6/6/20	10:18		
MH-149	06/06/20	1-3195	N/A	6/6/20	10:18	6/6/20	10:18		
MH-150	06/06/20	1-3196	N/A	6/6/20	10:18	6/6/20	10:18		
MH-151	06/06/20	1-3197	N/A	6/6/20	10:18	6/6/20	10:18		
MH-152	06/06/20	1-3198	N/A	6/6/20	10:18	6/6/20	10:18		
MH-153	06/06/20	1-3199	N/A	6/6/20	10:18	6/6/20	10:18		
MH-154	06/06/20	1-3200	N/A	6/6/20	10:18	6/6/20	10:18		

Prepared by: **ARCADIS** Date: **6/16/20**
 Reviewed by: **ARCADIS** Date: **6/16/20**
 Approved by: **ARCADIS** Date: **6/16/20**

Signature: _____ Date: **6/16/20**
 Title: **SCD**

Canister COC



STMH 1219

Signature

A handwritten signature in black ink, appearing to read 'E. H. H. 19/5/20'.

Signed 2020-06-16 19:16:52 UTC

2020-09-14, Julia McClafferty, Utility Corridor Sampling

Created	2020-09-14 12:30:51 UTC by Julia McClafferty
Updated	2020-09-15 15:21:10 UTC by Julia McClafferty
Location	42.3746227518442, -83.3907293232654

Basic Information

Project Name	Ford
Task	Utility Corridor Sampling
Project Number	30050315
Location	Livonia, MI
Date	2020-09-14
Completed By	Julia McClafferty
Additional Personnel	Christina Weaver
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	64.94 degrees F and Cloudy
PPE	Level D
Are you using equipment?	Yes

WLM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	WLM
Model	100 ft
Pine/Geotech Number	6512
Calibrated?	No

Daily Log of Activities

07:50, Arrive on-site

Time	07:50
Description of Task	Arrive on-site

08:00, H&S tailgate

Time	08:00
Description of Task	H&S tailgate

08:20, Attempt to open SL#2. Cannot open manhole with our tool.

Time	08:20
Description of Task	Attempt to open SL#2. Cannot open manhole with our tool.

08:45, Leave site to check warehouse again for manhole tool

Time	08:45
Description of Task	Leave site to check warehouse again for manhole tool

09:27, Apply vapor barrier at SL-2

Time	09:27
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Description of Task	Apply vapor barrier at SL-2
09:50, Apply vapor barrier at STMH-1001	
Time	09:50
Description of Task	Apply vapor barrier at STMH-1001
10:15, Apply vapor barrier at STMH-1041	
Time	10:15
Description of Task	Apply vapor barrier at STMH-1041
10:22, Spoke with Reemco worker. Asked us if we knew anything about the trees on Belden that are dying	
Time	10:22
Description of Task	Spoke with Reemco worker. Asked us if we knew anything about the trees on Belden that are dying
10:35, Apply vapor barrier at STMH-1066	
Time	10:35
Description of Task	Apply vapor barrier at STMH-1066
10:59, Apply vapor barrier at STMH-1088	
Time	10:59
Description of Task	Apply vapor barrier at STMH-1088
11:15, Apply vapor barrier at STMH-1171	
Time	11:15
Description of Task	Apply vapor barrier at STMH-1171
11:24, Apply vapor barrier at STMH-1219	
Time	11:24
Description of Task	Apply vapor barrier at STMH-1219
11:40, Apply vapor barrier at STMH-1210	
Time	11:40
Description of Task	Apply vapor barrier at STMH-1210
11:50, Head back to trailer to return supplies and prep for tomorrow	
Time	11:50
Description of Task	Head back to trailer to return supplies and prep for tomorrow
12:15, Offsite	
Time	12:15
Description of Task	Offsite
Waste Management	
Are there any waste drums onsite?	No
Did you drum any waste today?	No

Signature

A handwritten signature in black ink, consisting of several overlapping loops and strokes, positioned centrally on the page.

Signed 2020-09-14 17:23:56 UTC

2020-09-15, Julia McClafferty, Utility Corridor Sampling

Created	2020-09-15 15:21:15 UTC by Julia McClafferty
Updated	2020-09-21 13:17:47 UTC by Julia McClafferty
Location	42.3746227518, -83.3907293233

Basic Information

Project Name	Ford
Task	Utility Corridor Sampling
Project Number	30050315
Location	Livonia, MI
Date	2020-09-15
Completed By	Julia McClafferty
Additional Personnel	Christina Weaver
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	64.94 degrees F and Cloudy
PPE	Level D
Are you using equipment?	Yes

WLM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	WLM
Model	100 ft
Pine/Geotech Number	6512
Calibrated?	No

GEM

Supplier	Pine
Type of Equipment (GEM, PID, etc)	GEM
Model	2000
Pine/Geotech Number	7225
Calibrated?	Yes
Calibration standard information	CH4: 15.5/15 CO2: 15.4/15 O2: 20.3/20.9

PID

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	PID
Model	MiniRAE 3000
Pine/Geotech Number	3943
Calibrated?	Yes
Calibration standard information	Bump check passed

Calibration Documents



Peripump

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	Peripump
Model	Geopump
Pine/Geotech Number	3693
Calibrated?	No

Daily Log of Activities

11:20, Arrive on-site

Time	11:20
Description of Task	Arrive on-site

11:23, Calibrate equipment

Time	11:23
Description of Task	Calibrate equipment

11:30, H&S tailgate

Time	11:30
Description of Task	H&S tailgate

11:48, Go to SSDS to grab digital gauge

Time	11:48
Description of Task	Go to SSDS to grab digital gauge

12:15, Arrive at SL-2

Time	12:15
Description of Task	Arrive at SL-2

13:15, Complete sampling at SL-2. Took extra time to decon due to sewage exposure on tubing and equipment

Time	13:15
Description of Task	Complete sampling at SL-2. Took extra time to decon due to sewage exposure on tubing and equipment

13:20, Dispose of tubing and vapor barrier

Time	13:20
Description of Task	Dispose of tubing and vapor barrier

13:30, Arrive at MH-1001

Time	13:30
Description of Task	Arrive at MH-1001

14:15, Complete sampling at MH-1001

Time	14:15
Description of Task	Complete sampling at MH-1001

14:22, Arrive at MH-1041

Time	14:22
Description of Task	Arrive at MH-1041

14:53, Contact Adam about sprinkler maintenance that is allowing water to flow into MH-1041. Manhole was dry yesterday and now has enough water to collect a sample due to the sprinkler runoff. Confirmed that we should not collect water sample at this location since it would not be representative.

Time	14:53
Description of Task	Contact Adam about sprinkler maintenance that is allowing water to flow into MH-1041. Manhole was dry yesterday and now has enough water to collect a sample due to the sprinkler runoff. Confirmed that we should not collect water sample at this location since it would not be representative.

15:17, Confirm no sediment can be sampled at MH-1041

Time	15:17
Description of Task	Confirm no sediment can be sampled at MH-1041

15:30, Arrive back to trailer to store equipment and air samples

Time	15:30
Description of Task	Arrive back to trailer to store equipment and air samples

16:05, Relinquish liquid sample (MW-1041) to Christina.

Time	16:05
Description of Task	Relinquish liquid sample (MW-1041) to Christina.

16:15, Offsite

Time	16:15
Description of Task	Offsite

Waste Management

Are there any waste drums onsite?	No
Did you drum any waste today?	No

Signature

A handwritten signature in black ink, appearing to be 'M. [unclear]', written in a cursive style.

Signed 2020-09-16 00:08:43 UTC

2020-09-16, Julia McClafferty, Utility Corridor Sampling

Created	2020-09-16 11:57:33 UTC by Julia McClafferty
Updated	2020-09-21 13:15:12 UTC by Julia McClafferty
Location	42.3746227518, -83.3907293233

Basic Information

Project Name	Ford
Task	Utility Corridor Sampling
Project Number	30050315
Location	Livonia, MI
Date	2020-09-16
Completed By	Julia McClafferty
Additional Personnel	Christina Weaver
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	51.98 degrees F and Mostly Cloudy
PPE	Level D
Are you using equipment?	Yes

WLM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	WLM
Model	100 ft
Pine/Geotech Number	6512
Calibrated?	No

GEM

Supplier	Pine
Type of Equipment (GEM, PID, etc)	GEM
Model	2000
Pine/Geotech Number	7225
Calibrated?	Yes
Calibration standard information	Bump Check: CH4: 15.6/15 CO2: 15.9/15 O2: 20.3/20.9

PID

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	PID
Model	MiniRAE 3000
Pine/Geotech Number	3943
Calibrated?	Yes
Calibration standard information	Bump check passed

Peripump

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	Peripump
Model	Geopump
Pine/Geotech Number	3693
Calibrated?	No

Daily Log of Activities

07:45, Arrive on-site

Time	07:45
Description of Task	Arrive on-site

07:55, Calibrate equipment

Time	07:55
Description of Task	Calibrate equipment

08:05, H&S tailgate

Time	08:05
Description of Task	H&S tailgate

08:20, Arrive at MH-1122

Time	08:20
Description of Task	Arrive at MH-1122

08:49, Complete sampling at MH-1122

Time	08:49
Description of Task	Complete sampling at MH-1122

08:54, Arrive at MH-1066

Time	08:54
Description of Task	Arrive at MH-1066

09:25, Complete sampling at MH-1066

Time	09:25
Description of Task	Complete sampling at MH-1066

09:27, Arrive at MH-1088

Time	09:27
Description of Task	Arrive at MH-1088

09:50, PID reading at MH-1088 opening is 5.8 ppm. Breathing zone is 0.0 ppm. Communicated with Adam about concerns when removing the vapor barrier. Determined to crack the lid and let vapors air out then measure breathing zone to see if it is safe to collect water and sediment samples

Time	09:50
Description of Task	PID reading at MH-1088 opening is 5.8 ppm. Breathing zone is 0.0 ppm. Communicated with Adam about concerns when removing the vapor barrier. Determined to crack the lid and let vapors air out then measure breathing zone to see if it is safe to collect water and sediment samples

09:59, PID reading after opening manhole is ranging from 0-5 ppm (measures directly at the opening). Breathing zone is blow 0.4 ppm. No liquid or sediment available to collect a sample. Closed MH lid at 10:02

Time	09:59
Description of Task	PID reading after opening manhole is ranging from 0-5 ppm (measures directly at the opening). Breathing zone is blow 0.4 ppm. No liquid or sediment available to collect a sample. Closed MH lid at 10:02

10:05, Head back to trailer to drop of traffic cones, and recalibrate PID

Time	10:05
Description of Task	Head back to trailer to drop of traffic cones, and recalibrate PID

10:34, Arrive at MH-1171

Time	10:34
Description of Task	Arrive at MH-1171

11:14, Complete sampling at MH-1171. Hard bottom was not able to collect sediment sample

Time	11:14
Description of Task	Complete sampling at MH-1171. Hard bottom was not able to collect sediment sample

11:16, Arrive at MH-1219

Time	11:16
Description of Task	Arrive at MH-1219

12:00, Complete sampling at MH-1219. Hard bottom - could not collect sediment sample

Time	12:00
Description of Task	Complete sampling at MH-1219. Hard bottom - could not collect sediment sample

12:09, Arrive at MH-1210

Time	12:09
Description of Task	Arrive at MH-1210

12:38, Complete sampling at MH-1210. Could only collect 2.5 VOAs for liquid sample. Disposed of VOAs in purge bucket. Hard bottom - could not collect sediment sample

Time	12:38
Description of Task	Complete sampling at MH-1210. Could only collect 2.5 VOAs for liquid sample. Disposed of VOAs in purge bucket. Hard bottom - could not collect sediment sample

12:47, Arrive at EDC

Time	12:47
Description of Task	Arrive at EDC

13:19, Complete sampling at EDC

Time	13:19
Description of Task	Complete sampling at EDC

13:33, Communicate with Adam about concerns with sampling sanitary sewers.

Time	13:33
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Description of Task	Communicate with Adam about concerns with sampling sanitary sewers.
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14:13, Arrive at WDC

Time	14:13
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Description of Task	Arrive at WDC
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14:38, Complete sampling at WDC

Time	14:38
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Description of Task	Complete sampling at WDC
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14:45, Arrive at MH-1231

Time	14:45
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Description of Task	Arrive at MH-1231
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15:23, Complete sampling at MH-1231

Time	15:23
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Description of Task	Complete sampling at MH-1231
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15:35, Arrive back to trailer to store vapor samples, write up COCs, and send out update and stop work email to team

Time	15:35
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Description of Task	Arrive back to trailer to store vapor samples, write up COCs, and send out update and stop work email to team
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17:03, Offsite

Time	17:03
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Description of Task	Offsite
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Waste Management

Are there any waste drums onsite?	No
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Did you drum any waste today?	No
-------------------------------	----

Signature

A handwritten signature in black ink, appearing to be 'John' followed by a stylized, cursive name.

Signed 2020-09-16 16:50:03 UTC

2020-09-17, Julia McClafferty, Utility Corridor Sampling

Created	2020-09-17 14:39:22 UTC by Julia McClafferty
Updated	2020-09-21 13:18:25 UTC by Julia McClafferty
Location	42.3746227518, -83.3907293233

Basic Information

Project Name	Ford
Task	Utility Corridor Sampling
Project Number	30050315
Location	Livonia, MI
Date	2020-09-17
Completed By	Julia McClafferty
Additional Personnel	Christina Weaver
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	51.98 degrees F and Mostly Cloudy
PPE	Level D
Are you using equipment?	Yes

WLM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	WLM
Model	100 ft
Pine/Geotech Number	6512
Calibrated?	No

GEM

Supplier	Pine
Type of Equipment (GEM, PID, etc)	GEM
Model	2000
Pine/Geotech Number	7225
Calibrated?	Yes
Calibration standard information	Bump check: CH4: 15.6/15 CO2: 15.9/15 O2: 20.2/20.9

PID

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	PID
Model	MiniRAE 3000
Pine/Geotech Number	3943
Calibrated?	Yes
Calibration standard information	Bump check passed

Daily Log of Activities

10:15, Arrive on-site

Time	10:15
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Description of Task	Arrive on-site
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10:22, Calibrate equipment

Time	10:22
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Description of Task	Calibrate equipment
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10:30, H&S tailgate

Time	10:30
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Description of Task	H&S tailgate
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10:40, Arrive at MH-1113

Time	10:40
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Description of Task	Arrive at MH-1113
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10:54, Complete sampling at MH-1113

Time	10:54
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Description of Task	Complete sampling at MH-1113
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10:56, Arrive at MH-1123

Time	10:56
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Description of Task	Arrive at MH-1123
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11:13, Complete sampling at MH-1123

Time	11:13
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Description of Task	Complete sampling at MH-1123
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11:16, Arrive at MH-1116

Time	11:16
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Description of Task	Arrive at MH-1116
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11:34, Complete sampling at MH-1116

Time	11:34
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Description of Task	Complete sampling at MH-1116
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Waste Management

Are there any waste drums onsite?	No
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Did you drum any waste today?	No
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Signature

A handwritten signature in black ink, consisting of a large, stylized 'Q' followed by a vertical line and a series of connected loops and curves.

Signed 2020-09-18 14:53:35 UTC

2020-09-18, Julia McClafferty, Utility Corridor Sampling

Created	2020-09-18 11:04:08 UTC by Julia McClafferty
Updated	2020-09-21 13:19:20 UTC by Julia McClafferty
Location	42.3746227518, -83.3907293233

Basic Information

Project Name	Ford
Task	Utility Corridor Sampling
Project Number	30050315
Location	Livonia, MI
Date	2020-09-18
Completed By	Julia McClafferty
Additional Personnel	Rachel Bielak
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	46.94 degrees F and Mostly Clear
PPE	Level D
Are you using equipment?	Yes

WLM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	WLM
Model	100 ft
Pine/Geotech Number	6512
Calibrated?	No

GEM

Supplier	Pine
Type of Equipment (GEM, PID, etc)	GEM
Model	2000
Pine/Geotech Number	7225
Calibrated?	Yes
Calibration standard information	Bump Check: CH4: 15.8/15 CO2: 16.2/15 O2: 19.8/20.9

PID

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	PID
Model	MiniRAE 3000
Pine/Geotech Number	3943
Calibrated?	Yes
Calibration standard information	Bump check passed.

Peripump

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	Peripump
Model	Geopump
Pine/Geotech Number	3693
Calibrated?	No

Daily Log of Activities

06:53, Arrive on-site

Time	06:53
Description of Task	Arrive on-site

06:56, Calibrate equipment, gather PPE and sampling supplies

Time	06:56
Description of Task	Calibrate equipment, gather PPE and sampling supplies

07:35, H&S tailgate

Time	07:35
Description of Task	H&S tailgate

07:41, Arrive at MH-1020

Time	07:41
Description of Task	Arrive at MH-1020

08:07, Sprinklers turned on while we were about to collect the vapor sample. Had to move to next location

Time	08:07
Description of Task	Sprinklers turned on while we were about to collect the vapor sample. Had to move to next location

08:10, Arrive at MH-1043

Time	08:10
Description of Task	Arrive at MH-1043

09:06, Complete sampling at MH-1043

Time	09:06
Description of Task	Complete sampling at MH-1043

09:08, Arrive at MH-1067

Time	09:08
Description of Task	Arrive at MH-1067

09:33, Complete sampling at MH-1067

Time	09:33
Description of Task	Complete sampling at MH-1067

09:35, Arrive at MH-1082

Time	09:35
Description of Task	Arrive at MH-1082
09:52, Complete sampling at MH-1082	
Time	09:52
Description of Task	Complete sampling at MH-1082
09:56, Arrive at MH-1020	
Time	09:56
Description of Task	Arrive at MH-1020
10:23, Complete sampling at MH-1020	
Time	10:23
Description of Task	Complete sampling at MH-1020
10:25, Head back to trailer to grab more supplies	
Time	10:25
Description of Task	Head back to trailer to grab more supplies
10:41, Arrive at MH-1181	
Time	10:41
Description of Task	Arrive at MH-1181
11:10, Complete sampling at MH-1181	
Time	11:10
Description of Task	Complete sampling at MH-1181
11:13, Arrive at MH-1096	
Time	11:13
Description of Task	Arrive at MH-1096
11:45, Complete sampling at MH-1096	
Time	11:45
Description of Task	Complete sampling at MH-1096
12:03, Dispose of tubing and PPE in a drum at the HCS. Labeled with pending analysis	
Time	12:03
Description of Task	Dispose of tubing and PPE in a drum at the HCS. Labeled with pending analysis
12:09, Clean up supplies and equipment at trailer, write up COCs	
Time	12:09
Description of Task	Clean up supplies and equipment at trailer, write up COCs
13:13, Drop off GEM and digital manometer at SSDS	
Time	13:13
Description of Task	Drop off GEM and digital manometer at SSDS
13:16, Offsite	
Time	13:16

Christina Weaver, Julia McClafferty, 2020-09-14, 2020-09-18

Created	2020-09-14 13:23:49 UTC by Christina Weaver
Updated	2020-09-22 14:36:48 UTC by Julia McClafferty
Location	42.3680250944, -83.3916629812
Field Staff	Christina Weaver, Julia McClafferty
Project Number	30050315.701
Start Date	2020-09-14
End Date	2020-09-18

SL-2_091520, 12:55

samplers	Christina Weaver, Julia McClafferty
Location	SL-2

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2020-09-14
Time Vapor Barrier Installed	09:27
DTW (ft below rim) During Vapor Barrier Install	15.39
Flow Notes During Vapor Barrier Install	Flow coming from West and North it is heading East
Vapor Barrier Install Notes	Cone placed on top of manhole

Sampling Information

Date Sampled	2020-09-15
DTW (ft below rim) During Sampling	15.1
Flow Notes During Sampling	Flow headed east
Sampling Notes	CO2:0% O2:19.3% CH4 LEL:3%

Vapor Sampling

Sample ID	SL-2_091520
Canister Number	1L2786
Filter Number	2028
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0.2
LEL in breathing zone is >10%, stop work and contact project team.	
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	12:55
Digital Start Pressure	-29.5
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-15
Suggested Analog Stop Pressure	-6.5
Analog Stop Pressure	-6.5
Sample End Time	12:56
Digital Stop Pressure	-6.5

Was a Vapor DUP collected?

No

Photos



MH-1001_091520, 13:49, 14:05

samplers	Christina Weaver, Julia McClafferty
Location	STMH-1001

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2020-09-14
Time Vapor Barrier Installed	09:50
DTW (ft below rim) During Vapor Barrier Install	15.58
DTB (ft below rim) During Vapor Barrier Install	15.6
Flow Notes During Vapor Barrier Install	Slow flow moving from North to South. Inflow pipe is NW
Vapor Barrier Install Notes	Warmth coming out of manhole

Sampling Information

Date Sampled	2020-09-15
DTW (ft below rim) During Sampling	15.58
Flow Notes During Sampling	Flow moving south
DTB (ft below rim) During Sampling	15.6
Sampling Notes	A few inches of water sitting on top of vapor barrier. No recent rain. May be from sprinkler

Vapor Sampling

Sample ID	MH-1001_091520
Canister Number	1L2631
Filter Number	1902
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	13:49
Digital Start Pressure	-30
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-17.5
Suggested Analog Stop Pressure	-6
Analog Stop Pressure	-6
Sample End Time	13:50
Digital Stop Pressure	-6
Vapor Sampling Notes	CO2: 0% O2: 20% CH4 LEL: 0
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1001_091520
Liquid Sample Time	14:05

Liquid Sampling Notes

Hard bottom no soil

Was a liquid DUP collected?

No

Able to collect sediment sample?

No

Photos





MH-1041_091520, 14:43

samplers	Christina Weaver, Julia McClafferty
Location	STMH-1041

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2020-09-14
Time Vapor Barrier Installed	10:15
DTW (ft below rim) During Vapor Barrier Install	9.98
DTB (ft below rim) During Vapor Barrier Install	9.98
Flow Notes During Vapor Barrier Install	Inflow pipes are from NE and NW. Almost dry. Slight trickle headed south

Sampling Information

Date Sampled	2020-09-15
DTW (ft below rim) During Sampling	9.98
Flow Notes During Sampling	See note below
DTB (ft below rim) During Sampling	9.98
Sampling Notes	CO2: 0 O2: 20.4 LEL: 0. Water is flowing into nearby grate connected to this manhole. Grate is west of manhole water. Water is running down street on surface from the North. Work being completed on sprinkler to the North. Adam Richmond approved no ground water sampling. Hard bottom no soil to sample.

Vapor Sampling

Sample ID	MH-1041_091520
Canister Number	1L2748

Filter Number	1910
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	14:43
Digital Start Pressure	-29.5
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-18
Suggested Analog Stop Pressure	-6.5
Analog Stop Pressure	-6.5
Sample End Time	14:44
Digital Stop Pressure	-6.5
Was a Vapor DUP collected?	Yes

Vapor Duplicate Information

Vapor DUP ID	DUP-01
DUP Canister Number	1L3207
DUP Filter Number	2005
DUP Digital Start Pressure	-29.5
DUP Analog Start Pressure (before opening can)	-27.5
DUP Analog Start Pressure (at start of sample)	-15
DUP Suggested Analog Stop Pressure	-3
DUP Analog Stop Pressure	-3
DUP Digital Stop Pressure	-4
Able to collect liquid sample?	No
Able to collect sediment sample?	No

Photos











MH-1066_091620, 09:04, 09:15

samplers

Christina Weaver, Julia McClafferty

Location STMH-1066

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2020-09-14
Time Vapor Barrier Installed	10:35
DTW (ft below rim) During Vapor Barrier Install	9.27
DTB (ft below rim) During Vapor Barrier Install	9.27
Flow Notes During Vapor Barrier Install	Inflow pipe from E main flow is Running south. Water has oil sheen

Sampling Information

Date Sampled	2020-09-16
DTW (ft below rim) During Sampling	9.24
Flow Notes During Sampling	Flow moving south
DTB (ft below rim) During Sampling	9.27
Sampling Notes	CO2: 0.1% O2: 20% LEL: 0%. Hard bottom no soils

Vapor Sampling

Sample ID	MH-1066_091620
Canister Number	1L2470
Filter Number	2028
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	09:04
Digital Start Pressure	-29.5
Analog Start Pressure (before opening can)	-28
Analog Start Pressure (at start of sample)	18
Suggested Analog Stop Pressure	-5.5
Analog Stop Pressure	-5.5
Sample End Time	09:05
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1066_091620
Liquid Sample Time	09:15
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

Photos





MH-1088_091620, 09:40

samplers	Christina Weaver, Julia McClafferty
Location	STMH-1088

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2020-09-14
Time Vapor Barrier Installed	10:59
DTW (ft below rim) During Vapor Barrier Install	8.14
DTB (ft below rim) During Vapor Barrier Install	8.14
Flow Notes During Vapor Barrier Install	Small amount of water from SW inlet. inlets from SE and SW. main flow is South. Dry.

Sampling Information

Date Sampled	2020-09-16
DTW (ft below rim) During Sampling	8.14
Flow Notes During Sampling	No flow. Dry
DTB (ft below rim) During Sampling	8.14
Sampling Notes	CO2: 0.1% O2: 20% LEL: 0%

Vapor Sampling

Sample ID	MH-1088_091620
Canister Number	1L3116
Filter Number	2028
PID (ppm)	5.8

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%) 0

LEL in breathing zone is >10%, stop work and contact project team.

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time 09:40

Digital Start Pressure -29.5

Analog Start Pressure (before opening can) -29

Analog Start Pressure (at start of sample) 15.5

Suggested Analog Stop Pressure -6.5

Analog Stop Pressure -6.5

Sample End Time 09:41

Digital Stop Pressure -6.5

Vapor Sampling Notes Elevated PID reading near hole where we poked a hole in barrier. 0 ppm in breathing zone and around manhole. Removed barrier elevated PID near lip of manhole and in manhole. 0 ppm in breathing zone. No water. Hard bottom

Was a Vapor DUP collected? No

Able to collect liquid sample? No

Able to collect sediment sample? No

Photos





MH-1171_091620, 10:45, 10:57

samplers

Christina Weaver, Julia McClafferty

Location STMH-1171

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2020-09-14
Time Vapor Barrier Installed	11:15
DTW (ft below rim) During Vapor Barrier Install	15.52
Flow Notes During Vapor Barrier Install	Inflow pipes are E and W. Main flow goes East. Flow is too high to take DTB here

Sampling Information

Date Sampled	2020-09-16
DTW (ft below rim) During Sampling	15.53
Flow Notes During Sampling	Flow too fast to take DTB measurement
Sampling Notes	CO2: 0% O2: 20% LEL: 0% Hard bottom/ fast flow. No sediment to sample

Vapor Sampling

Sample ID	MH-1171_091620
Canister Number	1L3086
Filter Number	2028
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	10:45
Digital Start Pressure	-29.5
Analog Start Pressure (before opening can)	-28.5
Analog Start Pressure (at start of sample)	-16
Suggested Analog Stop Pressure	-6
Analog Stop Pressure	-6
Sample End Time	10:46
Digital Stop Pressure	-7
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1171_091620
Liquid Sample Time	10:57
Liquid Sampling Notes	Flow coming from west moving east
Was a liquid DUP collected?	Yes

Liquid DUP Information

Liquid DUP ID	DUP-01
Able to collect sediment sample?	No

Photos





MH-1219_091620, 11:28, 11:40

samplers	Christina Weaver, Julia McClafferty
Location	STMH-1219

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2020-09-14
Time Vapor Barrier Installed	11:24
DTW (ft below rim) During Vapor Barrier Install	14.7
DTB (ft below rim) During Vapor Barrier Install	14.7
Flow Notes During Vapor Barrier Install	Inlet south main flow is NE

Sampling Information

Date Sampled	2020-09-16
DTW (ft below rim) During Sampling	14.7
Flow Notes During Sampling	Flow is NE
DTB (ft below rim) During Sampling	14.7
Sampling Notes	CO2: 0% O2: 20% LEL: 0%

Vapor Sampling

Sample ID	MH-1219_091620
Canister Number	000001352
Filter Number	2020
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%) 0

LEL in breathing zone is >10%, stop work and contact project team.

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time 11:28

Digital Start Pressure -30

Analog Start Pressure (before opening can) -28

Analog Start Pressure (at start of sample) -15

Suggested Analog Stop Pressure -5

Analog Stop Pressure -5

Sample End Time 11:29

Digital Stop Pressure -6

Was a Vapor DUP collected? No

Able to collect liquid sample? Yes

Liquid Sampling

Sample ID MH-1219_091620

Liquid Sample Time 11:40

Was a liquid DUP collected? No

Able to collect sediment sample? No

Photos



MH-1210_091620, 12:22

samplers

Christina Weaver, Julia McClafferty

Location STMH-1210

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2020-09-14
Time Vapor Barrier Installed	11:40
DTW (ft below rim) During Vapor Barrier Install	9.1
DTB (ft below rim) During Vapor Barrier Install	9.1
Flow Notes During Vapor Barrier Install	Inflow pipes NE SW. one outflow west

Sampling Information

Date Sampled	2020-09-16
DTW (ft below rim) During Sampling	9.1
Flow Notes During Sampling	Outflow west
DTB (ft below rim) During Sampling	9.1
Sampling Notes	CO2: 0.1% O2: 19.8% LEL: 0%

Vapor Sampling

Sample ID	MH-1210_091620
Canister Number	1L2870
Filter Number	2028
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	12:22
Digital Start Pressure	-29.5
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-17
Suggested Analog Stop Pressure	-6.5
Analog Stop Pressure	-6.5
Sample End Time	12:23
Digital Stop Pressure	-5.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

Photos





MH-1122_091620, 08:37

samplers	Christina Weaver, Julia McClafferty
Location	SAMH-1122

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-09-16
DTW (ft below rim) During Sampling	8.59
Flow Notes During Sampling	No flow. Only outlet pipe heading south. Hard bottom, no water
DTB (ft below rim) During Sampling	8.59
Sampling Notes	CO2: 0.1% O2: 19.9% LEL: 0%. CO2 did not zero outside of manhole

Vapor Sampling

Sample ID	MH-1122_091620
Canister Number	1L2482
Filter Number	1912
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	08:37
Digital Start Pressure	-29.5
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	17
Suggested Analog Stop Pressure	-7.5
Analog Stop Pressure	-7.5
Sample End Time	08:38
Digital Stop Pressure	-8
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

EDC_091620, 13:12

samplers	Christina Weaver, Julia McClafferty
Location	EDC

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-09-16
DTW (ft below rim) During Sampling	16.9
Flow Notes During Sampling	Did not measure DTB grate in way where WLM could get stuck
Sampling Notes	CO2: 0% O2: 0% LEL: 0%

Vapor Sampling

Sample ID	EDC_091620
Canister Number	1L2711
Filter Number	1938
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	13:12
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-18
Suggested Analog Stop Pressure	-8
Analog Stop Pressure	-8
Sample End Time	13:13
Digital Stop Pressure	-8
Was a Vapor DUP collected?	No

WDC_091620, 14:33

samplers	Christina Weaver, Julia McClafferty
Location	WDC

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-09-16
DTW (ft below rim) During Sampling	17.8
Flow Notes During Sampling	Cannot observe flow. Grate on bottom cannot take a total depth
Sampling Notes	CO2: 0% O2: 0% LEL: 0%

Vapor Sampling

Sample ID	WDC_091620
Canister Number	1L1990
Filter Number	1902
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	14:33
Digital Start Pressure	-30
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-15
Suggested Analog Stop Pressure	-6
Analog Stop Pressure	-6
Sample End Time	14:34
Digital Stop Pressure	-5.5
Was a Vapor DUP collected?	No

MH-1231_091620, 15:14

samplers	Christina Weaver, Julia McClafferty
Location	SAMH-1231

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-09-16
DTW (ft below rim) During Sampling	15.3
Flow Notes During Sampling	Flow moving East
Sampling Notes	CO2: 0% O2: 19.8% LEL:0%

Vapor Sampling

Sample ID	MH-1231_091620
Canister Number	1L3256
Filter Number	2014
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	15:14
Digital Start Pressure	-29.5
Analog Start Pressure (before opening can)	-28
Analog Start Pressure (at start of sample)	-21
Suggested Analog Stop Pressure	-5.5
Analog Stop Pressure	5.51
Sample End Time	15:15
Digital Stop Pressure	-7
Was a Vapor DUP collected?	No

MH-1113_091720, 10:50

samplers	Christina Weaver, Julia McClafferty
Location	SAMH-1113

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-09-17
DTW (ft below rim) During Sampling	11.5
Flow Notes During Sampling	No flow
DTB (ft below rim) During Sampling	11.5
Sampling Notes	CO2: 0 O2: 0.1 LEL: 0

Vapor Sampling

Sample ID	MH-1113_091720
Canister Number	1L3830
Filter Number	2005
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	

Sample Start Time	10:50
Digital Start Pressure	-30
Analog Start Pressure (before opening can)	-27
Analog Start Pressure (at start of sample)	-14.5
Suggested Analog Stop Pressure	-4
Analog Stop Pressure	-4
Sample End Time	10:51
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No

MH-1123_091720, 11:09

samplers	Christina Weaver, Julia McClafferty
Location	SAMH-1123

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-09-17
DTW (ft below rim) During Sampling	8.32
Flow Notes During Sampling	No flow, dry
DTB (ft below rim) During Sampling	8.32
Sampling Notes	CO2: 0% O2: 19.4% LEL: 0%

Vapor Sampling

Sample ID	MH-1123_091720
Canister Number	1L3203
Filter Number	1922
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	11:09
Digital Start Pressure	-30
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-17
Suggested Analog Stop Pressure	-7
Analog Stop Pressure	-7
Sample End Time	11:10
Digital Stop Pressure	-7
Was a Vapor DUP collected?	No

MH-1116_091720, 11:28

samplers	Christina Weaver, Julia McClafferty
Location	SAMH-1116

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-09-17
DTW (ft below rim) During Sampling	10.25
Flow Notes During Sampling	Slight wet, no flow
DTB (ft below rim) During Sampling	10.25
Sampling Notes	CO2: 0 O2: 19.6 LEL: 0

Vapor Sampling

Sample ID	MH-1116_091720
Canister Number	1L2481
Filter Number	2014
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	11:28
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-20
Suggested Analog Stop Pressure	-8
Analog Stop Pressure	-8
Sample End Time	11:29
Digital Stop Pressure	-8
Was a Vapor DUP collected?	No

MH-1020_091820, 09:59, 10:05

samplers	Christina Weaver, Julia McClafferty
Location	SAMH-1020

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-09-18
Flow Notes During Sampling	Very slight flow from south to north

Vapor Sampling

Sample ID	MH-1020_091820
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Canister Number	1L2609
Filter Number	2005
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0.1
LEL in breathing zone is >10%, stop work and contact project team.	
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	09:59
Digital Start Pressure	-30
Analog Start Pressure (before opening can)	-28
Analog Start Pressure (at start of sample)	-14.5
Suggested Analog Stop Pressure	-5
Analog Stop Pressure	-5
Sample End Time	10:00
Digital Stop Pressure	-7
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1020_091820
Liquid Sample Time	10:05
Liquid Sampling Notes	Was only able to collect 3 VOAs worth
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

MH-1043_091820, 08:26, 08:32

samplers	Christina Weaver, Julia McClafferty
Location	SAMH-1043

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-09-18
Flow Notes During Sampling	Slight flow from north to south

Vapor Sampling

Sample ID	MH-1043_091820
Canister Number	1L3897
Filter Number	2020
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	

CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	08:26
Digital Start Pressure	-30
Analog Start Pressure (before opening can)	-29.5
Analog Start Pressure (at start of sample)	-13
Suggested Analog Stop Pressure	-6.5
Analog Stop Pressure	-6.5
Sample End Time	08:26
Digital Stop Pressure	-8
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1043_091820
Liquid Sample Time	08:32
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

MH-1067_091820, 09:18

samplers	Christina Weaver, Julia McClafferty
Location	SAMH-1067

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-09-18
Flow Notes During Sampling	Stagnant
Sampling Notes	Not enough liquid to collect sample

Vapor Sampling

Sample ID	MH-1067_091820
Canister Number	1L1527
Filter Number	2014
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	09:18
Digital Start Pressure	-30
Analog Start Pressure (before opening can)	-27

Analog Start Pressure (at start of sample)	-14.5
Suggested Analog Stop Pressure	-4
Analog Stop Pressure	-4
Sample End Time	09:19
Digital Stop Pressure	-4
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

MH-1082_091820, 09:46

samplers	Christina Weaver, Julia McClafferty
Location	SAMH-1082

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-09-18
Flow Notes During Sampling	Stagnant.
Sampling Notes	Not enough sediment or liquid to collect samples

Vapor Sampling

Sample ID	MH-1082_091820
Canister Number	1L1865
Filter Number	1946
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	09:46
Digital Start Pressure	-30
Analog Start Pressure (before opening can)	-26
Analog Start Pressure (at start of sample)	-17.5
Suggested Analog Stop Pressure	-3
Analog Stop Pressure	-5
Sample End Time	09:47
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

MH-1181_091820, 10:50, 11:00

samplers	Christina Weaver, Julia McClafferty
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Location SAMH-1181

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled 2020-09-18

Flow Notes During Sampling Slight flow from north and east to south

Vapor Sampling

Sample ID MH-1181_091820

Canister Number 1L3042

Filter Number 2014

PID (ppm) 0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%) 0

LEL in breathing zone is >10%, stop work and contact project team.

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time 10:50

Digital Start Pressure -30

Analog Start Pressure (before opening can) -28.5

Analog Start Pressure (at start of sample) -14

Suggested Analog Stop Pressure -5.5

Analog Stop Pressure -5.5

Sample End Time 10:51

Digital Stop Pressure -7

Was a Vapor DUP collected? No

Able to collect liquid sample? Yes

Liquid Sampling

Sample ID MH-1181_091820

Liquid Sample Time 11:00

Was a liquid DUP collected? No

Able to collect sediment sample? No

MH-1096_091820, 11:22, 11:30

samplers Christina Weaver, Julia McClafferty

Location SAMH-1096

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled 2020-09-18

Vapor Sampling

Sample ID	MH-1096_091820
Canister Number	1L1803
Filter Number	2014
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	11:22
Digital Start Pressure	-30
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-15
Suggested Analog Stop Pressure	-6
Analog Stop Pressure	-6
Sample End Time	11:23
Digital Stop Pressure	-8
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1096_091820
Liquid Sample Time	11:30
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

2020-12-14, Andrew Banitt, Utility corridor sampling

Created	2020-12-14 15:10:58 UTC by Andrew Banitt
Updated	2020-12-15 19:07:39 UTC by Emma Witherspoon
Location	42.3679724264366, -83.3916486225818

Basic Information

Project Name	Ford LTP
Task	Utility corridor sampling
Location	Livonia, MI
Date	2020-12-14
Completed By	Andrew Banitt
Additional Personnel	Emma Whitherspoon
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	30.02 degrees F and Cloudy
PPE	Level D
Are you using equipment?	Yes

WLM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	WLM
Model	100'
Pine/Geotech Number	1367
Calibrated?	No

Daily Log of Activities

08:03, HS tailgate meeting

Time	08:03
Description of Task	HS tailgate meeting

10:13, Arrive at SL-2

Time	10:13
Description of Task	Arrive at SL-2

10:35, Arrive at SL-3

Time	10:35
Description of Task	Arrive at SL-3

10:45, Arrive at STMH-1041

Time	10:45
Description of Task	Arrive at STMH-1041

10:56, Arrive at STMH-1066

Time	10:56
Description of Task	Arrive at STMH-1066

11:03, Arrive at STMH-1088

Time	11:03
Description of Task	Arrive at STMH-1088

11:13, Arrive at STMH-1001

Time	11:13
Description of Task	Arrive at STMH-1001

11:25, Arrive at STMH-1210

Time	11:25
Description of Task	Arrive at STMH-1210

11:35, Arrive at STMH-1219

Time	11:35
Description of Task	Arrive at STMH-1219

11:55, Arrive at STMH-1171

Time	11:55
Description of Task	Arrive at STMH-1171

12:14, Arrive at SAMH-1244

Time	12:14
Description of Task	Arrive at SAMH-1244

12:25, Arrive at SAMH-1245

Time	12:25
Description of Task	Arrive at SAMH-1245

12:56, Arrive at SAMH-1258

Time	12:56
Description of Task	Arrive at SAMH-1258

13:08, Arrive at SAMH-1256

Time	13:08
Description of Task	Arrive at SAMH-1256

13:19, Arrive at SAMH-1255

Time	13:19
Description of Task	Arrive at SAMH-1255

10:31, Arrive at SL3.

Time	10:31
Description of Task	Arrive at SL3.

Waste Management

Are there any waste drums onsite?	No
Did you drum any waste today?	No

Signature

A handwritten signature in black ink, consisting of a large, stylized letter 'R' followed by a smaller, more complex character that resembles a '2' or a similar symbol.

Signed 2020-12-14 15:13:42 UTC

Signature

A handwritten signature in black ink, appearing to read "A. Hantz". The letters are cursive and fluid, with a large loop at the end of the "z".

Signed 2020-12-16 13:17:19 UTC

2020-12-17, Andrew Banitt, Utility Corridor Sampling

Created	2020-12-17 13:42:45 UTC by Andrew Banitt
Updated	2020-12-17 20:46:00 UTC by Andrew Banitt
Location	42.3730466622867, -83.3919670665778

Basic Information

Project Name	Ford LTP
Task	Utility Corridor Sampling
Location	Livonia, MI
Date	2020-12-17
Completed By	Andrew Banitt
Additional Personnel	Emma Whitherspoon
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	28.04 degrees F and Light Snow and Fog/Mist
PPE	Level D
Are you using equipment?	Yes

GEM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	GEM
Model	GEM 2000
Pine/Geotech Number	3782
Calibrated?	Yes
Calibration standard information	CO2 15.4/15 CH4 15.2/15

PID

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	PID
Model	MiniRAE 3000
Pine/Geotech Number	5813
Calibrated?	Yes
Calibration standard information	100 ppm balance C4H8

WLM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	WLM
Model	100'
Pine/Geotech Number	1367
Calibrated?	No

Daily Log of Activities

08:34, Arcadis is on site. Arcadis calibrates equipment.

Time	08:34
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Description of Task	Arcadis is on site. Arcadis calibrates equipment.
09:09, Vapor sample taken at SAMH-1116.	
Time	09:09
Description of Task	Vapor sample taken at SAMH-1116.
09:33, Vapor sample taken at at SAMH-1122.	
Time	09:33
Description of Task	Vapor sample taken at at SAMH-1122.
09:46, Sediment sample taken at SAMH-1122. No water sample available.	
Time	09:46
Description of Task	Sediment sample taken at SAMH-1122. No water sample available.
10:15, Vapor sample taken at SAMH-1123.	
Time	10:15
Description of Task	Vapor sample taken at SAMH-1123.
10:40, Vapor sample taken at SAMH-1181.	
Time	10:40
Description of Task	Vapor sample taken at SAMH-1181.
11:00, Water samples taken at SAMH-1181. No sediment sample available.	
Time	11:00
Description of Task	Water samples taken at SAMH-1181. No sediment sample available.
11:22, Vapor sample taken at SAMH-1020.	
Time	11:22
Description of Task	Vapor sample taken at SAMH-1020.
11:35, Water samples taken at SAMH-1020. No sediment sample available.	
Time	11:35
Description of Task	Water samples taken at SAMH-1020. No sediment sample available.
12:04, Vapor sample taken at SAMH-1043.	
Time	12:04
Description of Task	Vapor sample taken at SAMH-1043.
12:20, Water samples taken at SAMH-1043. No sediment sample available.	
Time	12:20
Description of Task	Water samples taken at SAMH-1043. No sediment sample available.
13:49, Vapor sample taken at SAMH-1067.	
Time	13:49
Description of Task	Vapor sample taken at SAMH-1067.
14:05, Water samples taken at SAMH-1067. No sediment sample available.	
Time	14:05
Description of Task	Water samples taken at SAMH-1067. No sediment sample available.

14:19, Vapor sample taken at SAMH-1082. No water or sediment sample available.

Time	14:19
Description of Task	Vapor sample taken at SAMH-1082. No water or sediment sample available.

Material Tracking

Are you using any materials onsite today?	No
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Waste Management

Are there any waste drums onsite?	No
Did you drum any waste today?	No

Signature

A handwritten signature in black ink, consisting of several overlapping loops and a long horizontal stroke extending to the right.

Signed 2020-12-17 13:43:39 UTC

Emma Witherspoon, Andrew Banitt, 2020-12-14, 2020-12-17

Created	2020-12-14 14:22:20 UTC by Emma Witherspoon
Updated	2020-12-18 17:28:57 UTC by Emma Witherspoon
Location	42.3728157652186, -83.3920847998967
Field Staff	Emma Witherspoon, Andrew Banitt
Project Number	30050315.701
Start Date	2020-12-14
End Date	2020-12-17

SL-2_121520, 11:58

Location	SL-2
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Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2020-12-14
Time Vapor Barrier Installed	10:09
DTW (ft below rim) During Vapor Barrier Install	15.3
DTB (ft below rim) During Vapor Barrier Install	16
Flow Notes During Vapor Barrier Install	Flowing from N and W towards the E

Sampling Information

Date Sampled	2020-12-15
DTW (ft below rim) During Sampling	15.3

Vapor Sampling

Sample ID	SL-2_121520
Canister Number	1L1540
Filter Number	23628
PID (ppm)	1
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	21.3
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	11:58
Digital Start Pressure	-29.5
Analog Start Pressure (before opening can)	-28.5
Analog Start Pressure (at start of sample)	-28
Suggested Analog Stop Pressure	-6
Analog Stop Pressure	-6
Sample End Time	12:10
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No

Photos



SL-3_121620, 12:03

samplers	Emma Witherspoon, Andrew Banitt
Location	SL-3

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-12-16
DTW (ft below rim) During Sampling	17.1
Flow Notes During Sampling	Flow from W towards E

Vapor Sampling

Sample ID	SL-3_121620
Canister Number	1L3078
Filter Number	24544
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.7
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	12:03
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-28
Analog Start Pressure (at start of sample)	-28
Suggested Analog Stop Pressure	-6
Analog Stop Pressure	-6
Sample End Time	12:16
Digital Stop Pressure	-5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

MH-1041_121520, 12:30, 13:00

samplers	Emma Witherspoon, Andrew Banditt
Location	STMH-1041

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2020-12-14
Time Vapor Barrier Installed	10:44
DTW (ft below rim) During Vapor Barrier Install	9.95
DTB (ft below rim) During Vapor Barrier Install	10.05
Flow Notes During Vapor Barrier Install	Flow from N towards S

Sampling Information

Date Sampled	2020-12-15
DTW (ft below rim) During Sampling	9.95

Vapor Sampling

Sample ID	MH-1041_121520
Canister Number	1L2908
Filter Number	23530
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.6
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	12:30
Digital Start Pressure	-29.5
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-29
Suggested Analog Stop Pressure	-6.5
Analog Stop Pressure	-6.5

Sample End Time	12:42
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1041_121520
Liquid Sample Time	13:00
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

Photos



MH-1066_121520, 13:16, 13:30

samplers	Emma Witherspoon, Andrew Banitt
Location	STMH-1066

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2020-12-14
Time Vapor Barrier Installed	10:55
DTW (ft below rim) During Vapor Barrier Install	9.3
DTB (ft below rim) During Vapor Barrier Install	9.3
Flow Notes During Vapor Barrier Install	Flow from N towards S

Sampling Information

Date Sampled	2020-12-15
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DTW (ft below rim) During Sampling	9.3
Flow Notes During Sampling	Flow from N towards S

Vapor Sampling

Sample ID	MH-1066_121520
Canister Number	1L2786
Filter Number	24208
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.7
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	13:16
Digital Start Pressure	-28.5
Analog Start Pressure (before opening can)	-28.5
Analog Start Pressure (at start of sample)	-28
Suggested Analog Stop Pressure	-7
Analog Stop Pressure	-7
Sample End Time	13:28
Digital Stop Pressure	-7
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1066_121520
Liquid Sample Time	13:30
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

Photos



MH-1088_121520, 14:36

samplers	Emma Witherspoon, Andrew Banditt
Location	STMH-1088

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2020-12-14
Time Vapor Barrier Installed	11:03
DTW (ft below rim) During Vapor Barrier Install	8.15
DTB (ft below rim) During Vapor Barrier Install	8.15
Flow Notes During Vapor Barrier Install	Well dry

Sampling Information

Date Sampled	2020-12-15
DTW (ft below rim) During Sampling	8.15
Flow Notes During Sampling	Well is dry

Vapor Sampling

Sample ID	MH-1088_121520
Canister Number	1L2362
Filter Number	24557
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%) 0

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone 20.6

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time 14:36

Digital Start Pressure -29

Analog Start Pressure (before opening can) -28

Analog Start Pressure (at start of sample) -28

Suggested Analog Stop Pressure -6

Analog Stop Pressure -6

Sample End Time 14:47

Digital Stop Pressure -5.5

Was a Vapor DUP collected? No

Able to collect liquid sample? No

Able to collect sediment sample? No

Photos



MH-1001_121620, 08:26, 08:40

samplers Emma Witherspoon, Andrew Banitt

Location STMH-1001

Vapor Barrier Information

Vapor barrier installed? Yes

Date Vapor Barrier Installed 2020-12-14

Time Vapor Barrier Installed	11:13
DTW (ft below rim) During Vapor Barrier Install	15.6
DTB (ft below rim) During Vapor Barrier Install	16.6
Flow Notes During Vapor Barrier Install	Flow from N towards S

Sampling Information

Date Sampled	2020-12-16
DTW (ft below rim) During Sampling	15.6
Flow Notes During Sampling	Flow from N towards S

Vapor Sampling

Sample ID	MH-1001_121620
Canister Number	1L3267
Filter Number	23451
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.7
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	08:26
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-28
Analog Start Pressure (at start of sample)	-27.5
Suggested Analog Stop Pressure	-6
Analog Stop Pressure	-6
Sample End Time	08:36
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1001_121620
Liquid Sample Time	08:40
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

Photos



MH-1210_121620, 08:58, 09:15

samplers	Emma Witherspoon, Andrew Banditt
Location	STMH-1210

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2020-12-14
Time Vapor Barrier Installed	11:23
DTW (ft below rim) During Vapor Barrier Install	9
DTB (ft below rim) During Vapor Barrier Install	9
Flow Notes During Vapor Barrier Install	No flow

Sampling Information

Date Sampled	2020-12-16
DTW (ft below rim) During Sampling	9
Flow Notes During Sampling	No flow

Vapor Sampling

Sample ID	MH-1210_121620
Canister Number	1L3308
Filter Number	24548
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	21.7
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	08:58
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Digital Start Pressure	-29
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Analog Start Pressure (before opening can)	-28.5
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Analog Start Pressure (at start of sample)	-28
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Suggested Analog Stop Pressure	-6.5
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Analog Stop Pressure	-6.5
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Sample End Time	09:08
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Digital Stop Pressure	-7
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Was a Vapor DUP collected?	No
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Able to collect liquid sample?	Yes
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Liquid Sampling

Sample ID	MH-1210_121620
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Liquid Sample Time	09:15
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Was a liquid DUP collected?	No
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Able to collect sediment sample?	No
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MH-1219_121620, 09:31, 09:45

samplers	Emma Witherspoon, Andrew Banditt
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Location	STMH-1219
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Vapor Barrier Information

Vapor barrier installed?	Yes
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Date Vapor Barrier Installed	2020-12-14
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Time Vapor Barrier Installed	11:34
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DTW (ft below rim) During Vapor Barrier Install	14.6
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DTB (ft below rim) During Vapor Barrier Install	14.8
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Flow Notes During Vapor Barrier Install	Flow from S towards NE
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Sampling Information

Date Sampled	2020-12-16
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DTW (ft below rim) During Sampling	14.6
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Vapor Sampling

Sample ID	MH-1219_121620
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Canister Number	1L1549
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Filter Number	23405
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PID (ppm)	0
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The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	21.5
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	09:31
Digital Start Pressure	-28.5
Analog Start Pressure (before opening can)	-27
Analog Start Pressure (at start of sample)	-27
Suggested Analog Stop Pressure	-5.5
Analog Stop Pressure	-5.5
Sample End Time	09:44
Digital Stop Pressure	-5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1219_121620
Liquid Sample Time	09:45
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

Photos



MH-1171_121520, 15:06, 15:20

samplers	Emma Witherspoon, Andrew Banitt
Location	STMH-1171

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2020-12-14
Time Vapor Barrier Installed	11:54
DTW (ft below rim) During Vapor Barrier Install	15.3
DTB (ft below rim) During Vapor Barrier Install	17.6
Flow Notes During Vapor Barrier Install	Flow from W towards E

Sampling Information

Date Sampled	2020-12-15
DTW (ft below rim) During Sampling	15.3
Flow Notes During Sampling	Flow from W towards E

Vapor Sampling

Sample ID	MH-1171_121520
Canister Number	1L1752
Filter Number	25176
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	21.2
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	15:06
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-28.5
Suggested Analog Stop Pressure	-7
Analog Stop Pressure	-6
Sample End Time	15:17
Digital Stop Pressure	-5.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1171_121520
Liquid Sample Time	15:20
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

Photos



MH-1244_121520, 10:53

samplers	Emma Witherspoon, Andrew Banditt
Location	SAMH-1244

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-12-15
DTW (ft below rim) During Sampling	12.2
Flow Notes During Sampling	Water flowing from the W and N towards the S

Vapor Sampling

Sample ID	MH-1244_121520
Canister Number	1L3864
Filter Number	23155
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.3
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	10:53
Digital Start Pressure	-29.5
Analog Start Pressure (before opening can)	-28
Analog Start Pressure (at start of sample)	-28
Suggested Analog Stop Pressure	-5.5
Analog Stop Pressure	-5.5
Sample End Time	11:05
Digital Stop Pressure	-4.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

Photos





MH-1245_121520, 09:56

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1245

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-12-15
DTW (ft below rim) During Sampling	8.95
Flow Notes During Sampling	Flow from W towards E

Vapor Sampling

Sample ID	MH-1245_121520
Canister Number	1L2836
Filter Number	23527
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	21.3
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	09:56
Digital Start Pressure	-29.5
Analog Start Pressure (before opening can)	-25.5
Analog Start Pressure (at start of sample)	-25.5
Suggested Analog Stop Pressure	-3
Analog Stop Pressure	-3
Sample End Time	10:10
Digital Stop Pressure	-3.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

Photos





MH-1258_121620, 10:41

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1258

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-12-16
DTW (ft below rim) During Sampling	4.7
Flow Notes During Sampling	Water is not flowing; trickle from NE pipe

Vapor Sampling

Sample ID	MH-1258_121620
Canister Number	1L1711
Filter Number	24891
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.7
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	10:41
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-28.5
Suggested Analog Stop Pressure	-7
Analog Stop Pressure	-6
Sample End Time	10:53
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

Photos





MH-1256_121620, 11:05

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1256

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-12-16
DTW (ft below rim) During Sampling	8.7
Flow Notes During Sampling	Flow from SE upper and W towards SE lower

Vapor Sampling

Sample ID	MH-1256_121620
Canister Number	1L1929
Filter Number	24859
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	21.4
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	11:05
Digital Start Pressure	-28.5
Analog Start Pressure (before opening can)	-28
Analog Start Pressure (at start of sample)	-27
Suggested Analog Stop Pressure	-6.5
Analog Stop Pressure	-7
Sample End Time	11:15
Digital Stop Pressure	-7
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

Photos





MH-1255_121620, 11:27

samplers

Emma Witherspoon, Andrew Banitt

Location SAMH-1255

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2020-12-14
Time Vapor Barrier Installed	13:22
DTW (ft below rim) During Vapor Barrier Install	9
DTB (ft below rim) During Vapor Barrier Install	9.1
Flow Notes During Vapor Barrier Install	Flow from NW towards S

Sampling Information

Date Sampled	2020-12-16
DTW (ft below rim) During Sampling	9

Vapor Sampling

Sample ID	MH-1255_121620
Canister Number	1L2395
Filter Number	24843
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0.4
---------	-----

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.8
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	11:27
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-28
Suggested Analog Stop Pressure	-7
Analog Stop Pressure	-6.5
Sample End Time	11:38
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

Photos



EDC_121520, 08:45

Location

EDC

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-12-15
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DTW (ft below rim) During Sampling	17.34
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Flow Notes During Sampling	No flow
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Vapor Sampling

Sample ID	EDC_121520
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Canister Number	1L2651
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Filter Number	23497
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PID (ppm)	0
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The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.7
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	08:45
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Digital Start Pressure	-29.5
------------------------	-------

Analog Start Pressure (before opening can)	-28.5
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Analog Start Pressure (at start of sample)	-27.5
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Suggested Analog Stop Pressure	-6
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Analog Stop Pressure	-6
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Sample End Time	08:58
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Digital Stop Pressure	-5
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Was a Vapor DUP collected?	No
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WDC_121520, 09:24

Location	WDC
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Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-12-15
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DTW (ft below rim) During Sampling	18.05
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Flow Notes During Sampling	No flow
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Vapor Sampling

Sample ID	WDC_121520
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Canister Number	1L2503
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Filter Number	23576
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PID (ppm)	0
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The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%) 0

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone 21.7

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time 09:24

Digital Start Pressure -29

Analog Start Pressure (before opening can) -29.5

Analog Start Pressure (at start of sample) -28

Suggested Analog Stop Pressure -7.5

Analog Stop Pressure -7.5

Sample End Time 09:34

Digital Stop Pressure -7.5

Was a Vapor DUP collected? No

MH-1231_121520, 11:31

samplers Emma Witherspoon, Andrew Banditt

Location SAMH-1231

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled 2020-12-15

DTW (ft below rim) During Sampling 15.35

Flow Notes During Sampling Flow towards E

Vapor Sampling

Sample ID MH-1231_121520

Canister Number 1L3297

Filter Number 24914

PID (ppm) 11.7

PID (ppm) in breathing zone 0.3

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%) 0

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone 20.6

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time 11:31

Digital Start Pressure -29.5

Analog Start Pressure (before opening can) -28.5

Analog Start Pressure (at start of sample) -28

Suggested Analog Stop Pressure	-6
Analog Stop Pressure	-6
Sample End Time	11:43
Digital Stop Pressure	-5
Was a Vapor DUP collected?	No

MH-1096_121620, 13:56, 14:15

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1096

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-12-16
DTW (ft below rim) During Sampling	11.6
Flow Notes During Sampling	Flow from W and N towards E

Vapor Sampling

Sample ID	MH-1096_121620
Canister Number	1L2967
Filter Number	23582
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.6
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	13:56
Digital Start Pressure	-28.5
Analog Start Pressure (before opening can)	-28
Analog Start Pressure (at start of sample)	-28
Suggested Analog Stop Pressure	-6.5
Analog Stop Pressure	-5
Sample End Time	14:09
Digital Stop Pressure	-5.5
Was a Vapor DUP collected?	Yes

Vapor Duplicate Information

Vapor DUP ID	DUP-01_121620
DUP Canister Number	1L1899
DUP Filter Number	25315
DUP Digital Start Pressure	-28.5
DUP Analog Start Pressure (before opening can)	-28.5

DUP Analog Start Pressure (at start of sample)	-28
DUP Suggested Analog Stop Pressure	-5
DUP Analog Stop Pressure	-5.5
DUP Digital Stop Pressure	-5.5
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1096_121620
Liquid Sample Time	14:15
Was a liquid DUP collected?	No

Liquid DUP Information

Liquid DUP ID	DUP-01_121620
Able to collect sediment sample?	No

MH-1113_121620, 15:04

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1113

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-12-16
DTW (ft below rim) During Sampling	13.2
Sampling Notes	Flow from N towards S

Vapor Sampling

Sample ID	MH-1113_121620
Canister Number	1L2993
Filter Number	24323
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.5
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	15:04
Digital Start Pressure	-28.5
Analog Start Pressure (before opening can)	-28
Analog Start Pressure (at start of sample)	-27.5
Suggested Analog Stop Pressure	-6.5
Analog Stop Pressure	-6.5
Sample End Time	15:15
Digital Stop Pressure	-6.5

Was a Vapor DUP collected? No

MH-1116_121720, 09:09

samplers Emma Witherspoon, Andrew Banitt

Location SAMH-1116

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled 2020-12-17

DTW (ft below rim) During Sampling 10.2

Flow Notes During Sampling Flow from W towards E

Vapor Sampling

Sample ID MH-1116_121720

Canister Number 1L2630

Filter Number 23190

PID (ppm) 0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%) 0

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone 21

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time 09:09

Digital Start Pressure -29

Analog Start Pressure (before opening can) -30

Analog Start Pressure (at start of sample) -29.5

Suggested Analog Stop Pressure -8

Analog Stop Pressure -8

Sample End Time 09:21

Digital Stop Pressure -7

Was a Vapor DUP collected? No

MH-1122_121720, 09:33, 09:46

samplers Emma Witherspoon, Andrew Banitt

Location SAMH-1122

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled 2020-12-17

Flow Notes During Sampling Well is dry

DTB (ft below rim) During Sampling 8.7

Vapor Sampling

Sample ID	MH-1122_121720
Canister Number	1L2054
Filter Number	25250
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	21.2
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	09:33
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-28.5
Suggested Analog Stop Pressure	-7
Analog Stop Pressure	-7
Sample End Time	09:43
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	Yes

Sediment Sampling

Depth of Sediment (in.)	0.5
Sample ID	MH-1122_121720
Sediment Sample Time	09:46
Was a sediment DUP collected?	No

MH-1123_121720, 10:15

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1123

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-12-17
Flow Notes During Sampling	Well is dry
DTB (ft below rim) During Sampling	8.7

Vapor Sampling

Sample ID	MH-1123_121720
Canister Number	1L2595
Filter Number	24145

PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	21.5
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	10:15
Digital Start Pressure	-28.5
Analog Start Pressure (before opening can)	-28.5
Analog Start Pressure (at start of sample)	-28
Suggested Analog Stop Pressure	-7
Analog Stop Pressure	-7
Sample End Time	10:27
Digital Stop Pressure	-6.5
Was a Vapor DUP collected?	No

MH-1181_121720, 10:40

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1181

Vapor Barrier Information

Vapor barrier installed?	No
--------------------------	----

Sampling Information

Date Sampled	2020-12-17
DTW (ft below rim) During Sampling	9
Flow Notes During Sampling	Flow from N and W towards S

Vapor Sampling

Sample ID	MH-1181_121720
Canister Number	40885
Filter Number	25251
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	21.4
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	10:40
Digital Start Pressure	-28.5
Analog Start Pressure (before opening can)	-28.5
Analog Start Pressure (at start of sample)	-28.5

Suggested Analog Stop Pressure	-7
Analog Stop Pressure	-6
Sample End Time	10:52
Digital Stop Pressure	-5.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1181_121720
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

MH-1020_121720, 11:22, 11:35

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1020

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-12-17
DTW (ft below rim) During Sampling	6.9
Flow Notes During Sampling	Flow S towards N

Vapor Sampling

Sample ID	MH-1020_121720
Canister Number	1L1913
Filter Number	23563
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	21
--------------------------	----

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	11:22
Digital Start Pressure	-28.5
Analog Start Pressure (before opening can)	-28
Analog Start Pressure (at start of sample)	-28
Suggested Analog Stop Pressure	-6.5
Analog Stop Pressure	-6.5
Sample End Time	11:33
Digital Stop Pressure	-6.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1020_121720
Liquid Sample Time	11:35
Was a liquid DUP collected?	No

MH-1043_121720, 12:04, 12:20

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1043

Vapor Barrier Information

Vapor barrier installed?	No
--------------------------	----

Sampling Information

Date Sampled	2020-12-17
DTW (ft below rim) During Sampling	8.2
Flow Notes During Sampling	Flow from S towards N

Vapor Sampling

Sample ID	MH-1043_121720
Canister Number	1L2658
Filter Number	24108
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.9
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	12:04
Digital Start Pressure	-28.5
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-28.5
Suggested Analog Stop Pressure	-7.5
Analog Stop Pressure	-7.5
Sample End Time	12:15
Digital Stop Pressure	-7
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1043_121720
Liquid Sample Time	12:20
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

MH-1067_121720, 13:49, 14:05

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1067

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-12-17
DTW (ft below rim) During Sampling	8.5
Flow Notes During Sampling	Flow from N towards S

Vapor Sampling

Sample ID	MH-1067_121720
Canister Number	1L2840
Filter Number	24729
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.2
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	13:49
Digital Start Pressure	-28.5
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-28
Suggested Analog Stop Pressure	-7.5
Analog Stop Pressure	-7.5
Sample End Time	14:01
Digital Stop Pressure	-7
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1067_121720
Liquid Sample Time	14:05
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

MH-1082_121720, 02:19

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1082

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2020-12-17
DTW (ft below rim) During Sampling	7.8
Flow Notes During Sampling	Well is dry

Vapor Sampling

Sample ID	MH-1082_121720
Canister Number	1L2719
Filter Number	23587
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.8
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	02:19
Digital Start Pressure	-28.5
Analog Start Pressure (before opening can)	-27.5
Analog Start Pressure (at start of sample)	-26
Suggested Analog Stop Pressure	-6
Analog Stop Pressure	-6
Sample End Time	14:29
Digital Stop Pressure	-7
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

2021-03-22, Emma Witherspoon, UC Sampling

Created	2021-03-22 16:47:27 UTC by Emma Witherspoon
Updated	2021-03-31 14:05:30 UTC by Julia McClafferty
Location	42.3681082454, -83.398981292

Basic Information

Project Name	Ford LTP
Task	UC Sampling
Project Number	30080642
Location	Livonia, MI
Date	2021-03-22
Completed By	Emma Witherspoon
Additional Personnel	Andrew Banitt
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	62.96 degrees F and Partly Cloudy
PPE	Level D
Are you using equipment?	Yes

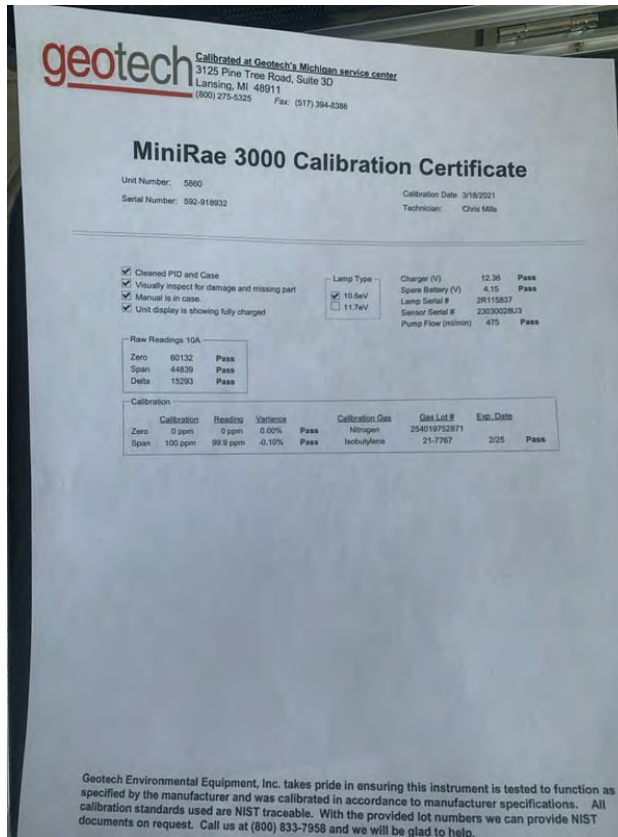
Peristaltic pump

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	Peristaltic pump
Model	Geopump
Pine/Geotech Number	7017
Calibrated?	No

PID

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	PID
Model	MiniRae 300
Pine/Geotech Number	5860
Calibrated?	Yes
Calibration standard information	Isobutylene 10.5/10 ppm

Calibration Documents



WLM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	WLM
Model	100'
Pine/Geotech Number	7069
Calibrated?	No

GEM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	GEM
Model	2000+
Pine/Geotech Number	3481
Calibrated?	Yes
Calibration standard information	CO2- 14.7/15% CH4-15.5/15% N2-Balance

Calibration Documents



Daily Log of Activities

08:30, Arcadis on-site; conduct H&S tailgate

Time	08:30
Description of Task	Arcadis on-site; conduct H&S tailgate

09:07, Conduct vapor barrier installation

Time	09:07
Description of Task	Conduct vapor barrier installation

13:15, Conduct UC sampling

Time	13:15
Description of Task	Conduct UC sampling

17:10, Arcadis off-site

Time	17:10
Description of Task	Arcadis off-site

Material Tracking

Are you using any materials onsite today? No

Waste Management

Are there any waste drums onsite? No

Did you drum any waste today? No

Signature

ERW

Signed 2021-03-23 01:25:46 UTC

2021-03-23, Emma Witherspoon, UC Sampling

Created	2021-03-23 12:23:35 UTC by Emma Witherspoon
Updated	2021-03-31 14:07:30 UTC by Julia McClafferty
Location	42.3681082454, -83.398981292

Basic Information

Project Name	Ford LTP
Task	UC Sampling
Project Number	30080642
Location	Livonia, MI
Date	2021-03-23
Completed By	Emma Witherspoon
Additional Personnel	Andrew Banitt
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	46.94 degrees F and Cloudy
PPE	Level D
Are you using equipment?	Yes

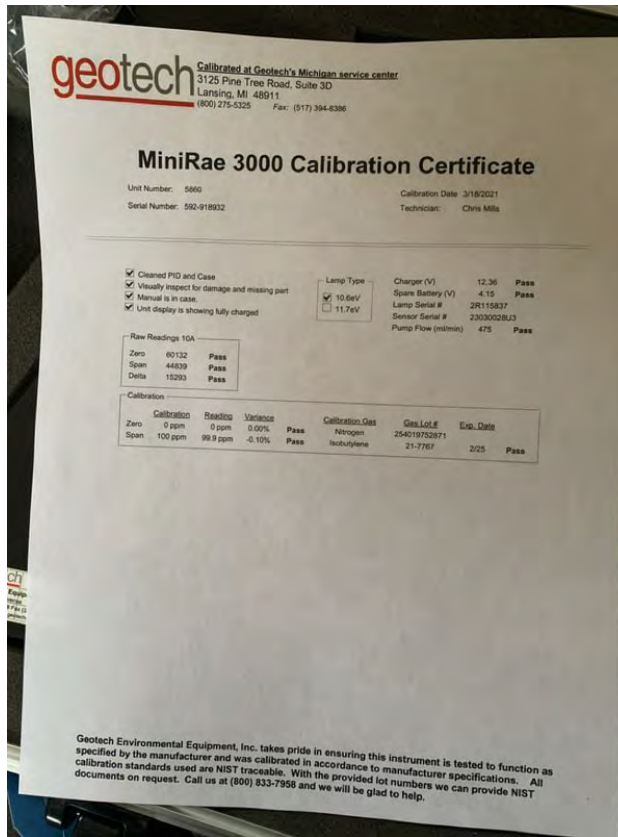
Peristaltic pump

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	Peristaltic pump
Model	Geopump
Pine/Geotech Number	7017
Calibrated?	No

PID

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	PID
Model	MiniRae 300
Pine/Geotech Number	5860
Calibrated?	Yes
Calibration standard information	Isobutylene 10.8/10 ppm

Calibration Documents

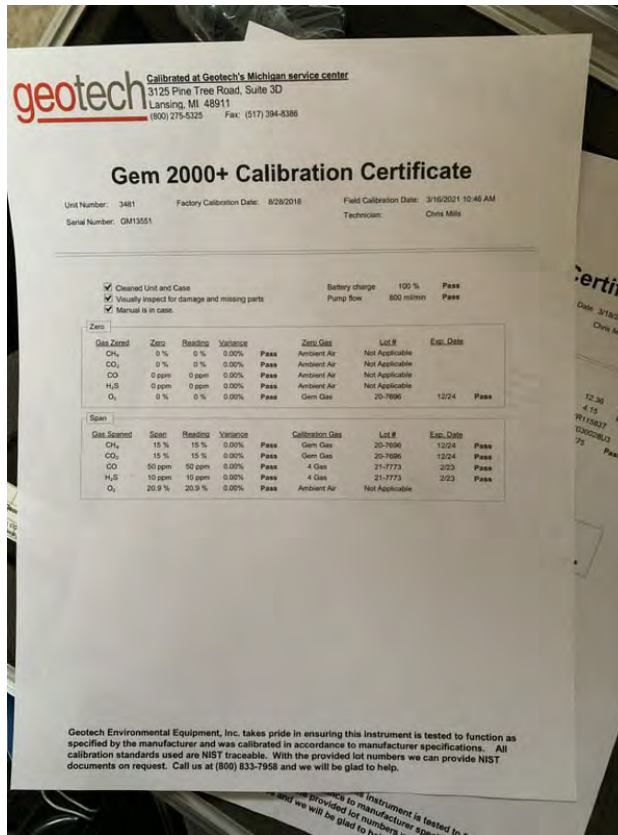


WLM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	WLM
Model	100'
Pine/Geotech Number	7069
Calibrated?	No

GEM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	GEM
Model	2000+
Pine/Geotech Number	3481
Calibrated?	Yes
Calibration standard information	CO2- 14.5/15% CH4-15.6/15% N2-Balance



Daily Log of Activities

08:00, Arcadis on-site; conduct H&S tailgate

Time	08:00
Description of Task	Arcadis on-site; conduct H&S tailgate

08:50, Conduct UC sampling

Time	08:50
Description of Task	Conduct UC sampling

09:27, SL-2 vapor barrier was moved when a ISCO device was placed (pictures attached). Notified J. McClafferty. Vapor Barrier was removed and SL-2 was not sampled.

Time	09:27
Description of Task	SL-2 vapor barrier was moved when a ISCO device was placed (pictures attached). Notified J. McClafferty. Vapor Barrier was removed and SL-2 was not sampled.

18:00, Arcadis off-site

Time	18:00
Description of Task	Arcadis off-site

18:30, Dropped liquid samples off at Arcadis Cold Storage

Time	18:30
Description of Task	Dropped liquid samples off at Arcadis Cold Storage

Material Tracking

Are you using any materials onsite today? No

Waste Management

Are there any waste drums onsite? No

Did you drum any waste today? No

Photos

Other Photos



Signature

A handwritten signature consisting of the letters 'E', 'R', and 'W' in a cursive, connected style.

Signed 2021-03-23 16:27:04 UTC

2021-03-24, Emma Witherspoon, UC Sampling

Created	2021-03-24 12:06:05 UTC by Emma Witherspoon
Updated	2021-03-31 14:09:13 UTC by Julia McClafferty
Location	42.3681082454, -83.398981292

Basic Information

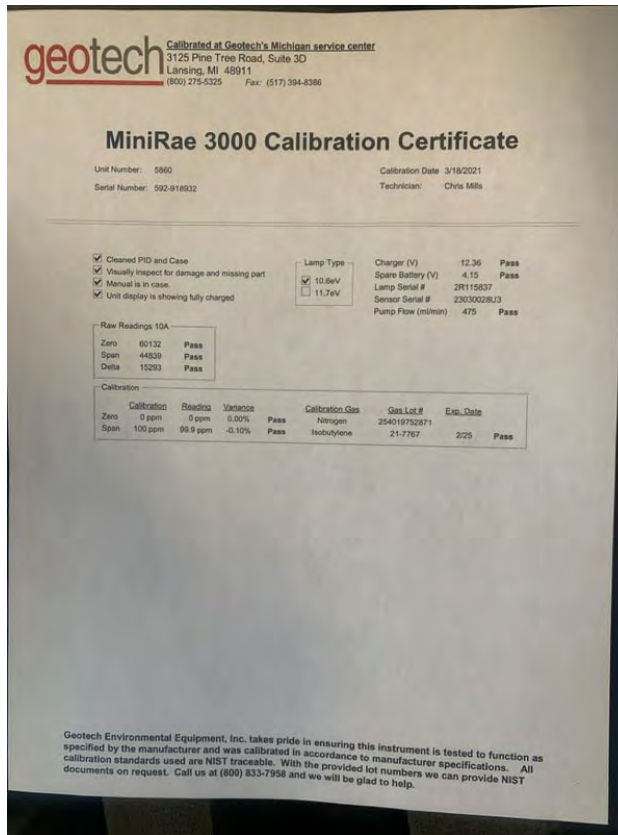
Project Name	Ford LTP
Task	UC Sampling
Project Number	30080642
Location	Livonia, MI
Date	2021-03-24
Completed By	Emma Witherspoon
Additional Personnel	Andrew Banitt
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	55.94 degrees F and Cloudy
PPE	Level D
Are you using equipment?	Yes

Peristaltic pump

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	Peristaltic pump
Model	Geopump
Pine/Geotech Number	7017
Calibrated?	No

PID

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	PID
Model	MiniRae 300
Pine/Geotech Number	5860
Calibrated?	Yes
Calibration standard information	Isobutylene 10.9/10 ppm



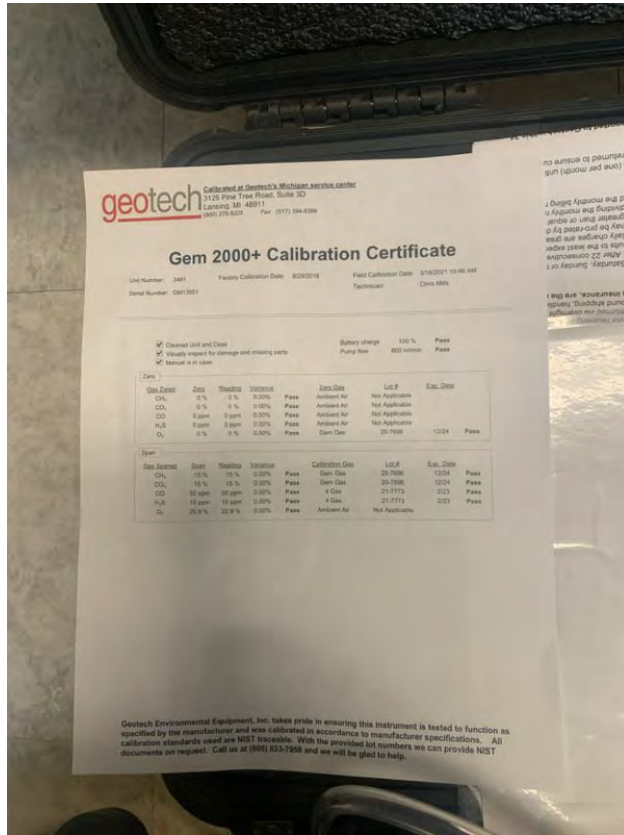
WLM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	WLM
Model	100'
Pine/Geotech Number	7069
Calibrated?	No

GEM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	GEM
Model	2000+
Pine/Geotech Number	3481
Calibrated?	Yes
Calibration standard information	CO2- 14.6/15% CH4-15.6/15% N2-Balance

Calibration Documents



Daily Log of Activities

08:00, Arcadis on-site; conduct H&S tailgate

Time	08:00
Description of Task	Arcadis on-site; conduct H&S tailgate

08:45, Conduct UC sampling

Time	08:45
Description of Task	Conduct UC sampling

11:00, Conduct Canister QC

Time	11:00
Description of Task	Conduct Canister QC

16:00, Arcadis off-site; mob to dump sampling waste

Time	16:00
Description of Task	Arcadis off-site; mob to dump sampling waste

17:00, Dropped liquid samples off at Arcadis Cold Storage; dropped off equipment at Arcadis warehouse

Time	17:00
Description of Task	Dropped liquid samples off at Arcadis Cold Storage; dropped off equipment at Arcadis warehouse

Material Tracking

Are you using any materials onsite today? No

Waste Management

Are there any waste drums onsite? No

Did you drum any waste today? No

Signature

A handwritten signature in black ink, consisting of the letters 'ERW' in a stylized, cursive font.

Signed 2021-03-24 16:07:41 UTC

Emma Witherspoon, Andrew Banitt, 2021-03-22, 2021-03-30

Created	2021-03-22 13:04:23 UTC by Emma Witherspoon
Updated	2021-03-30 19:09:42 UTC by Emma Witherspoon
Location	42.3684818742, -83.3891679826
Field Staff	Emma Witherspoon, Andrew Banitt
Project Number	30050315.701
Start Date	2021-03-22
End Date	2021-03-30

MH-1001_032321, 10:46, 10:55

samplers	Emma Witherspoon, Andrew Banitt
Location	STMH-1001

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2021-03-22
Time Vapor Barrier Installed	09:07
DTW (ft below rim) During Vapor Barrier Install	16.41
DTB (ft below rim) During Vapor Barrier Install	16.5
Flow Notes During Vapor Barrier Install	No flow

Sampling Information

Date Sampled	2021-03-23
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Vapor Sampling

Sample ID	MH-1001_032321
Canister Number	1L1753
Filter Number	1922
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.6
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	10:46
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-29.5
Analog Start Pressure (at start of sample)	-21
Suggested Analog Stop Pressure	-7.5
Analog Stop Pressure	-7
Sample End Time	10:48
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1001_032321
Liquid Sample Time	10:55
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

Photos



MH-1041_032321, 11:18, 11:30

samplers	Emma Witherspoon, Andrew Banitt
Location	STMH-1041

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2021-03-22
Time Vapor Barrier Installed	09:15
DTW (ft below rim) During Vapor Barrier Install	9.62
DTB (ft below rim) During Vapor Barrier Install	9.69
Flow Notes During Vapor Barrier Install	No flow

Sampling Information

Date Sampled	2021-03-23
DTW (ft below rim) During Sampling	9.62

Vapor Sampling

Sample ID	MH-1041_032321
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Canister Number	1L1691
Filter Number	2028
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.7
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	11:18
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-18
Suggested Analog Stop Pressure	-8
Analog Stop Pressure	-8
Sample End Time	11:19
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1041_032321
Liquid Sample Time	11:30
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

Photos



MH-1066_032321, 11:47, 12:00

samplers	Emma Witherspoon, Andrew Banitt
Location	STMH-1066

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2021-03-22
Time Vapor Barrier Installed	09:23
DTW (ft below rim) During Vapor Barrier Install	9.03
DTB (ft below rim) During Vapor Barrier Install	9.07
Flow Notes During Vapor Barrier Install	No flow

Sampling Information

Date Sampled	2021-03-23
DTW (ft below rim) During Sampling	9.02

Vapor Sampling

Sample ID	MH-1066_032321
Canister Number	34000742
Filter Number	2005
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.7
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	11:47
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-28.5
Analog Start Pressure (at start of sample)	-15
Suggested Analog Stop Pressure	-6.5
Analog Stop Pressure	-6
Sample End Time	11:48
Digital Stop Pressure	-5.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1066_032321
Liquid Sample Time	12:00
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

Photos



MH-1088_032321, 12:11

samplers	Emma Witherspoon, Andrew Banitt
Location	STMH-1088

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2021-03-22
Time Vapor Barrier Installed	09:28
DTW (ft below rim) During Vapor Barrier Install	8.01
DTB (ft below rim) During Vapor Barrier Install	8.01
Flow Notes During Vapor Barrier Install	Dry

Sampling Information

Date Sampled	2021-03-23
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Vapor Sampling

Sample ID	MH-1088_032321
Canister Number	1L1861
Filter Number	1920
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.7
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	12:11
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-25
Analog Start Pressure (at start of sample)	-16
Suggested Analog Stop Pressure	-3
Analog Stop Pressure	-6
Sample End Time	12:12
Digital Stop Pressure	-4
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

Photos



MH-1210_032321, 13:20, 13:30

samplers	Emma Witherspoon, Andrew Banitt
Location	STMH-1210

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2021-03-22
Time Vapor Barrier Installed	09:35
DTW (ft below rim) During Vapor Barrier Install	8.83
DTB (ft below rim) During Vapor Barrier Install	8.86
Flow Notes During Vapor Barrier Install	No flow

Sampling Information

Date Sampled	2021-03-23
DTW (ft below rim) During Sampling	8.83

Vapor Sampling

Sample ID	MH-1210_032321
Canister Number	1L2737
Filter Number	1913
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.5
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	13:20
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-16
Suggested Analog Stop Pressure	-8
Analog Stop Pressure	-5
Sample End Time	13:21
Digital Stop Pressure	-4.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1210_032321
Liquid Sample Time	13:30
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

Photos



MH-1219_032321, 14:27, 14:30

samplers	Emma Witherspoon, Andrew Banitt
Location	STMH-1219

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2021-03-22
Time Vapor Barrier Installed	09:42
DTW (ft below rim) During Vapor Barrier Install	14.62
DTB (ft below rim) During Vapor Barrier Install	14.65
Flow Notes During Vapor Barrier Install	Trickle from S to N

Sampling Information

Date Sampled	2021-03-23
DTW (ft below rim) During Sampling	14.62

Vapor Sampling

Sample ID	MH-1219_032321
Canister Number	1L3050
Filter Number	2011
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.6
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	14:27
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-28.5
Analog Start Pressure (at start of sample)	-19
Suggested Analog Stop Pressure	-6.5
Analog Stop Pressure	-6.5
Sample End Time	14:28
Digital Stop Pressure	-6.5
Was a Vapor DUP collected?	Yes

Vapor Duplicate Information

Vapor DUP ID	DUP-02
DUP Canister Number	1L2201
DUP Filter Number	1922
DUP Digital Start Pressure	-28.5
DUP Analog Start Pressure (before opening can)	-30
DUP Analog Start Pressure (at start of sample)	-15
DUP Suggested Analog Stop Pressure	-6.5
DUP Analog Stop Pressure	-6.5
DUP Digital Stop Pressure	-5
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1219_032321
Liquid Sample Time	14:30
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

Photos



MH-1171_032321, 14:55, 15:00

samplers	Emma Witherspoon, Andrew Banitt
Location	STMH-1171

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2021-03-22
Time Vapor Barrier Installed	09:50
DTW (ft below rim) During Vapor Barrier Install	15.38
DTB (ft below rim) During Vapor Barrier Install	17.65
Flow Notes During Vapor Barrier Install	Strong flow from W to E

Sampling Information

Date Sampled	2021-03-23
DTW (ft below rim) During Sampling	15.37

Vapor Sampling

Sample ID	MH-1171_032321
Canister Number	1L2471

Filter Number	1922
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.8
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	14:55
Digital Start Pressure	-29.5
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-17
Suggested Analog Stop Pressure	-7.5
Analog Stop Pressure	-6
Sample End Time	14:56
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1171_032321
Liquid Sample Time	15:00
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

Photos



MH-1255_032321, 16:37

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1255

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2021-03-22
Time Vapor Barrier Installed	10:21
DTW (ft below rim) During Vapor Barrier Install	8.92
DTB (ft below rim) During Vapor Barrier Install	8.96
Flow Notes During Vapor Barrier Install	Moderate flow from NW to S

Sampling Information

Date Sampled	2021-03-23
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Vapor Sampling

Sample ID	MH-1255_032321
Canister Number	1L1594
Filter Number	1928
PID (ppm)	0.7

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0.6
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LEL in breathing zone (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.9
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	16:37
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Digital Start Pressure	-29
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Analog Start Pressure (before opening can)	-29.5
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Analog Start Pressure (at start of sample)	-17
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Suggested Analog Stop Pressure	-7.5
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Analog Stop Pressure	-7.5
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Sample End Time	16:38
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Digital Stop Pressure	-6.5
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Was a Vapor DUP collected?	No
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Able to collect liquid sample?	No
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Able to collect sediment sample?	No
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Photos



MH-1248_032221, 13:15

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1248

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-03-22
DTW (ft below rim) During Sampling	7.95
Flow Notes During Sampling	Moderate flow from W and NW towards E
DTB (ft below rim) During Sampling	8.11

Vapor Sampling

Sample ID	MH-1248_032221
Canister Number	1L2107
Filter Number	2005
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.3
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	13:15
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-29
Suggested Analog Stop Pressure	-7
Analog Stop Pressure	-6
Sample End Time	13:17
Digital Stop Pressure	-6
Was a Vapor DUP collected?	Yes

Vapor Duplicate Information

Vapor DUP ID	DUP-01
DUP Canister Number	1L3952
DUP Filter Number	1910
DUP Digital Start Pressure	-29
DUP Analog Start Pressure (before opening can)	-29
DUP Analog Start Pressure (at start of sample)	-26
DUP Suggested Analog Stop Pressure	-5
DUP Analog Stop Pressure	-7
DUP Digital Stop Pressure	-6.5
Able to collect liquid sample?	No
Able to collect sediment sample?	No

MH-1245_032221, 13:34

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1245

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-03-22
DTW (ft below rim) During Sampling	9.37
Flow Notes During Sampling	Moderate flow from W to E
DTB (ft below rim) During Sampling	9.6

Vapor Sampling

Sample ID	MH-1245_032221
Canister Number	1L2943
Filter Number	2028
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.3
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	13:34
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Digital Start Pressure	-29
------------------------	-----

Analog Start Pressure (before opening can)	-29
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Analog Start Pressure (at start of sample)	-16
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Suggested Analog Stop Pressure	-7
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Analog Stop Pressure	-7
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Sample End Time	13:35
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Digital Stop Pressure	-5.5
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Was a Vapor DUP collected?	No
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Able to collect liquid sample?	No
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Able to collect sediment sample?	No
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MH-1244_032221, 13:47

samplers	Emma Witherspoon, Andrew Banitt
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Location	SAMH-1244
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Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-03-22
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DTW (ft below rim) During Sampling	11.6
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Flow Notes During Sampling	Moderate flow from W, trickle from N, towards S
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DTB (ft below rim) During Sampling	11.66
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Vapor Sampling

Sample ID	MH-1244_032221
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Canister Number	1L3272
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Filter Number	1946
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PID (ppm)	0
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The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.5
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	13:47
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Digital Start Pressure	-29
------------------------	-----

Analog Start Pressure (before opening can)	-27
--	-----

Analog Start Pressure (at start of sample)	-16
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Suggested Analog Stop Pressure	-5
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Analog Stop Pressure	-5
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Sample End Time	13:48
Digital Stop Pressure	-5.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

MH-1231_032221, 14:04

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1231

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-03-22
DTW (ft below rim) During Sampling	15.25
Flow Notes During Sampling	Strong flow from N, moderate flow from W towards E
DTB (ft below rim) During Sampling	15.91

Vapor Sampling

Sample ID	MH-1231_032221
Canister Number	34002498
Filter Number	1946
PID (ppm)	50.4
PID (ppm) in breathing zone	0.3

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.5
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	14:04
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-18
Suggested Analog Stop Pressure	-8
Analog Stop Pressure	-8
Sample End Time	14:05
Digital Stop Pressure	-4
Was a Vapor DUP collected?	No

MH-1258_032221, 14:29

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1258

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled 2021-03-22
DTW (ft below rim) During Sampling 4.82
Flow Notes During Sampling No flow
DTB (ft below rim) During Sampling 6.99

Vapor Sampling

Sample ID MH-1258_032221
Canister Number 1L2380
Filter Number 1946
PID (ppm) 0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%) 0

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone 20.6

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time 14:29

Digital Start Pressure -29

Analog Start Pressure (before opening can) -29

Analog Start Pressure (at start of sample) -18

Suggested Analog Stop Pressure -7

Analog Stop Pressure -7

Sample End Time 14:30

Digital Stop Pressure -4.5

Was a Vapor DUP collected? No

Able to collect liquid sample? No

Able to collect sediment sample? No

MH-1256_032221, 14:40

samplers Emma Witherspoon, Andrew Banitt

Location SAMH-1256

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled 2021-03-22
DTW (ft below rim) During Sampling 8.9
Flow Notes During Sampling Trickle from W towards S
DTB (ft below rim) During Sampling 8.94

Vapor Sampling

Sample ID MH-1256_032221

Canister Number	1L3342
Filter Number	2020
PID (ppm)	4
PID (ppm) in breathing zone	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.6
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	14:40
Digital Start Pressure	-28.5
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-16.5
Suggested Analog Stop Pressure	-8.5
Analog Stop Pressure	-6
Sample End Time	14:42
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

SL-3_032221, 15:48

samplers	Emma Witherspoon, Andrew Banitt
Location	SL-3

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-03-22
Flow Notes During Sampling	Moderate flow from W towards E

Vapor Sampling

Sample ID	SL-3_032221
Canister Number	1L2533
Filter Number	01938
PID (ppm)	0.9
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.7
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	

Sample Start Time	15:48
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-28
Analog Start Pressure (at start of sample)	-15.5
Suggested Analog Stop Pressure	-6
Analog Stop Pressure	-6
Sample End Time	15:49
Digital Stop Pressure	-5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

SL-4_032221, 16:10

samplers	Emma Witherspoon, Andrew Banitt
Location	SL-4

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-03-22
Flow Notes During Sampling	Moderate flow from W towards E

Vapor Sampling

Sample ID	SL-4_032221
Canister Number	1L1941
Filter Number	1910
PID (ppm)	1.1

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.8
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	16:10
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-20
Suggested Analog Stop Pressure	-8
Analog Stop Pressure	-8
Sample End Time	16:11
Digital Stop Pressure	-4
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

MH-1096_032221, 16:25, 16:30

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1096

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-03-22
Flow Notes During Sampling	Moderate flow from NW and SW towards SE

Vapor Sampling

Sample ID	MH-1096_032221
Canister Number	1L1788
Filter Number	1910
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.8
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	16:25
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-28
Analog Start Pressure (at start of sample)	-14
Suggested Analog Stop Pressure	-6
Analog Stop Pressure	-6
Sample End Time	16:26
Digital Stop Pressure	-6.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1096_032221
Liquid Sample Time	16:30
Was a liquid DUP collected?	Yes

Liquid DUP Information

Liquid DUP ID	DUP-01
Able to collect sediment sample?	No

SL-5_032321, 09:14

samplers	Emma Witherspoon, Andrew Banitt
Location	SL-5

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-03-23
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Vapor Sampling

Sample ID	SL-5_032321
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Canister Number	1L3233
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Filter Number	2046
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PID (ppm)	0.4
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The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.6
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	09:14
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Digital Start Pressure	-29
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Analog Start Pressure (before opening can)	-29
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Analog Start Pressure (at start of sample)	-12
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Suggested Analog Stop Pressure	-7
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Analog Stop Pressure	-5
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Sample End Time	09:15
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Digital Stop Pressure	-4
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Was a Vapor DUP collected?	No
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Able to collect liquid sample?	No
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Able to collect sediment sample?	No
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WDC_032321, 09:55

samplers	Emma Witherspoon, Andrew Banitt
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Location	WDC
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Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-03-23
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DTW (ft below rim) During Sampling	16.95
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Vapor Sampling

Sample ID	WDC_032321
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Canister Number	1L3287
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Filter Number	1913
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PID (ppm)	0
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The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%) 0

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone 20.8

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time 09:55

Digital Start Pressure -28.5

Analog Start Pressure (before opening can) -30

Analog Start Pressure (at start of sample) -16

Suggested Analog Stop Pressure -8.5

Analog Stop Pressure -5

Sample End Time 09:56

Digital Stop Pressure -4.5

Was a Vapor DUP collected? No

EDC_032321, 10:15

samplers Emma Witherspoon, Andrew Banitt

Location EDC

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled 2021-03-23

Vapor Sampling

Sample ID EDC_032321

Canister Number 1L2839

Filter Number 1845

PID (ppm) 0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%) 0

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone 20.7

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time 10:15

Digital Start Pressure -29

Analog Start Pressure (before opening can) -28

Analog Start Pressure (at start of sample) -15.5

Suggested Analog Stop Pressure -6

Analog Stop Pressure -6

Sample End Time 10:16

Digital Stop Pressure	-5
Was a Vapor DUP collected?	No

MH-1181_032321, 15:20, 15:30

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1181

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-03-23
Flow Notes During Sampling	Trickle from W and N towards S

Vapor Sampling

Sample ID	MH-1181_032321
Canister Number	1L2651
Filter Number	2035
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.7
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	15:20
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-25.5
Analog Start Pressure (at start of sample)	-5
Suggested Analog Stop Pressure	-3.5
Analog Stop Pressure	-1
Sample End Time	15:22
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1181_032321
Liquid Sample Time	15:30
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

MH-1123_032321, 15:47

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1123

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled 2021-03-23

Flow Notes During Sampling Dry

Vapor Sampling

Sample ID MH-1123_032321

Canister Number 1L2641

Filter Number 1922

PID (ppm) 0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%) 0

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone 20.9

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time 15:47

Digital Start Pressure -29.5

Analog Start Pressure (before opening can) -29

Analog Start Pressure (at start of sample) -17

Suggested Analog Stop Pressure -6.5

Analog Stop Pressure -5

Sample End Time 15:48

Digital Stop Pressure -6

Was a Vapor DUP collected? No

MH-1116_032321, 15:58

samplers Emma Witherspoon, Andrew Banitt

Location SAMH-1116

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled 2021-03-23

Flow Notes During Sampling Moderate flow from W to E

Vapor Sampling

Sample ID MH-1116_032321

Canister Number 1L3222

Filter Number 2028

PID (ppm) 0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.6
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	15:58
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-22
Analog Start Pressure (at start of sample)	-13
Suggested Analog Stop Pressure	0
Analog Stop Pressure	-6
Sample End Time	15:59
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No

MH-1113_032321, 16:12

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1113

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-03-23
Flow Notes During Sampling	Moderate flow from N to S

Vapor Sampling

Sample ID	MH-1113_032321
Canister Number	1L2879
Filter Number	1910
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.8
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	16:12
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-18
Suggested Analog Stop Pressure	-7
Analog Stop Pressure	-7
Sample End Time	16:13
Digital Stop Pressure	-4.5

Was a Vapor DUP collected? No

MH-1259_032321, 17:10

samplers Emma Witherspoon, Andrew Banitt

Location SAMH-1259

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled 2021-03-23

Flow Notes During Sampling Dry

Vapor Sampling

Sample ID MH-1259_032321

Canister Number 1L3216

Filter Number 19380

PID (ppm) 0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%) 0.1

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone 20.7

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time 17:10

Digital Start Pressure -29

Analog Start Pressure (before opening can) -30

Analog Start Pressure (at start of sample) -19

Suggested Analog Stop Pressure -8

Analog Stop Pressure -8

Sample End Time 17:11

Digital Stop Pressure -6

Was a Vapor DUP collected? No

Able to collect liquid sample? No

Able to collect sediment sample? No

MH-1122_032421, 08:46

samplers Emma Witherspoon, Andrew Banitt

Location SAMH-1122

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled 2021-03-24

Flow Notes During Sampling Dry

Vapor Sampling

Sample ID	MH-1122_032421
Canister Number	1L1612
Filter Number	1913
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.6
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	08:46
Digital Start Pressure	-28.5
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-16
Suggested Analog Stop Pressure	-8.5
Analog Stop Pressure	-7
Sample End Time	08:47
Digital Stop Pressure	-5.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

MH-1020_032421, 09:08, 09:15

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1020

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-03-24
Flow Notes During Sampling	Moderate flow from S towards N

Vapor Sampling

Sample ID	MH-1020_032421
Canister Number	1L2620
Filter Number	1922
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.8

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	09:08
Digital Start Pressure	-28.5
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-18
Suggested Analog Stop Pressure	-8.5
Analog Stop Pressure	-8.5
Sample End Time	09:09
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1020_032421
Liquid Sample Time	09:15
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

MH-1043_032421, 09:47, 09:50

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1043

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-03-24
Flow Notes During Sampling	Moderate flow from S towards N

Vapor Sampling

Sample ID	MH-1043_032421
Canister Number	1L2566
Filter Number	1824
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.9
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	09:47
Digital Start Pressure	-28.5
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-16
Suggested Analog Stop Pressure	-7.5

Analog Stop Pressure	-7.5
Sample End Time	09:48
Digital Stop Pressure	-6.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1043_032421
Liquid Sample Time	09:50
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

MH-1067_032421, 10:26, 10:30

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1067

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-03-24
Flow Notes During Sampling	Trickle from N towards S

Vapor Sampling

Sample ID	MH-1067_032421
Canister Number	1L2677
Filter Number	1910
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.7
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	10:26
Digital Start Pressure	-28.5
Analog Start Pressure (before opening can)	-28
Analog Start Pressure (at start of sample)	-13
Suggested Analog Stop Pressure	-6.5
Analog Stop Pressure	-6.5
Sample End Time	10:27
Digital Stop Pressure	-7
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	MH-1067_032421
Liquid Sample Time	10:30
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

MH-1082_032421, 10:49

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1082

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-03-24
Flow Notes During Sampling	Dry

Vapor Sampling

Sample ID	MH-1082_032421
Canister Number	1L2058
Filter Number	1938
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.6
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	10:49
Digital Start Pressure	-28.5
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-18
Suggested Analog Stop Pressure	-8.5
Analog Stop Pressure	-7
Sample End Time	10:50
Digital Stop Pressure	-5.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

SL-2_033021, 14:49

samplers	Emma Witherspoon, Andrew Banitt
Location	SL-2

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2021-03-29

Time Vapor Barrier Installed 12:33

Sampling Information

Date Sampled 2021-03-30

Vapor Sampling

Sample ID SL-2_033021

Canister Number 1L2416

Filter Number 2005

PID (ppm) 0.3

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%) 0

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone 20.7

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time 14:49

Digital Start Pressure -29

Analog Start Pressure (before opening can) -27

Analog Start Pressure (at start of sample) -16

Suggested Analog Stop Pressure -5

Analog Stop Pressure -5

Sample End Time 14:50

Digital Stop Pressure -4

Was a Vapor DUP collected? No

Photos



Emma Witherspoon, Andrew Banitt, 2021-04-19, 2021-04-20

Created	2021-04-19 14:09:38 UTC by Emma Witherspoon
Updated	2021-07-08 16:11:34 UTC by Julia McClafferty
Location	42.3681404474, -83.3915898653
Field Staff	Emma Witherspoon, Andrew Banitt
Project Number	30050315.701
Start Date	2021-04-19
End Date	2021-04-20

SL-2_042021, 10:43

samplers	Emma Witherspoon, Andrew Banitt
Location	SL-2

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2021-04-19
Time Vapor Barrier Installed	10:11

Sampling Information

Date Sampled	2021-04-20
DTW (ft below rim) During Sampling	15.1

Vapor Sampling

Sample ID	SL-2_042021
Canister Number	40868
Filter Number	2005
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	21.7
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	10:43
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-28
Analog Start Pressure (at start of sample)	-15
Suggested Analog Stop Pressure	-6
Analog Stop Pressure	-5.5
Sample End Time	10:44
Digital Stop Pressure	-6.5
Vapor Sampling Notes	Liquid sampling SL-2_042021 Time: 1050

Was a Vapor DUP collected?	No
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Photos



MH-1255_042021, 11:12

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1255

Vapor Barrier Information

Vapor barrier installed?	Yes
Date Vapor Barrier Installed	2021-04-19
Time Vapor Barrier Installed	10:25

Sampling Information

Date Sampled	2021-04-20
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Vapor Sampling

Sample ID	MH-1255_042021
Canister Number	1L1641
Filter Number	2005
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0.1
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	21.3
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	11:12
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-27
Analog Start Pressure (at start of sample)	-14
Suggested Analog Stop Pressure	-5
Analog Stop Pressure	-5
Sample End Time	11:13
Digital Stop Pressure	-6
Was a Vapor DUP collected?	Yes

Vapor Duplicate Information

Vapor DUP ID	DUP-02
DUP Canister Number	1L2406
DUP Filter Number	1938
DUP Digital Start Pressure	-29
DUP Analog Start Pressure (before opening can)	-28.5
DUP Analog Start Pressure (at start of sample)	-12
DUP Suggested Analog Stop Pressure	-4.5
DUP Analog Stop Pressure	-5
DUP Digital Stop Pressure	-6.5
Able to collect liquid sample?	No
Able to collect sediment sample?	No

MH-1258_041921, 10:39

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1258

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-04-19
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Vapor Sampling

Sample ID	MH-1258_041921
Canister Number	LC630
Filter Number	1912
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.9
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	10:39

Digital Start Pressure	-28.5
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-17
Suggested Analog Stop Pressure	-8.5
Analog Stop Pressure	-7
Sample End Time	10:40
Digital Stop Pressure	-5.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

MH-1256_041921, 10:53

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1256

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-04-19
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Vapor Sampling

Sample ID	MH-1256_041921
Canister Number	1L3173
Filter Number	2005
PID (ppm)	14.6
PID (ppm) in breathing zone	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0.1
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.6
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	10:53
Digital Start Pressure	-28
Analog Start Pressure (before opening can)	-28.5
Analog Start Pressure (at start of sample)	-15
Suggested Analog Stop Pressure	-7.5
Analog Stop Pressure	-6
Sample End Time	10:54
Digital Stop Pressure	-3.5
Vapor Sampling Notes	Strong smell when MH was opened
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

MH-1259_041921, 11:22

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1259

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-04-19
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Vapor Sampling

Sample ID	MH-1259_041921
Canister Number	1L2746
Filter Number	1928
PID (ppm)	0.5

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	1.6
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LEL in breathing zone (%)	1
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.8
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	11:22
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Digital Start Pressure	-28
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Analog Start Pressure (before opening can)	-29
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Analog Start Pressure (at start of sample)	-15
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Suggested Analog Stop Pressure	-8
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Analog Stop Pressure	-7
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Sample End Time	11:23
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Digital Stop Pressure	-6.5
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Was a Vapor DUP collected?	No
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Able to collect liquid sample?	No
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Able to collect sediment sample?	No
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MH-1248_041921, 13:46

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1248

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-04-19
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Vapor Sampling

Sample ID	MH-1248_041921
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Canister Number	1L2323
Filter Number	1938
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.8
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	13:46
Digital Start Pressure	-28
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-17
Suggested Analog Stop Pressure	-9
Analog Stop Pressure	-9
Sample End Time	13:47
Digital Stop Pressure	-7.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

MH-1245_041921, 13:55

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1245

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-04-19
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Vapor Sampling

Sample ID	MH-1245_041921
Canister Number	000003004
Filter Number	2028
PID (ppm)	0.2
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.8
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	13:55
Digital Start Pressure	-29

Analog Start Pressure (before opening can)	-27.5
Analog Start Pressure (at start of sample)	-15
Suggested Analog Stop Pressure	-5.5
Analog Stop Pressure	-6
Sample End Time	13:56
Digital Stop Pressure	-7
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

MH-1244_041921, 14:07

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1244

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-04-19
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Vapor Sampling

Sample ID	MH-1244_041921
Canister Number	1L3011
Filter Number	1910
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0.1
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.7
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	14:07
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-15
Suggested Analog Stop Pressure	-7
Analog Stop Pressure	-7
Sample End Time	14:08
Digital Stop Pressure	-6.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

MH-1231_041921, 14:31

samplers	Emma Witherspoon, Andrew Banitt
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Location SAMH-1231

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled 2021-04-19

Vapor Sampling

Sample ID MH-1231_041921

Canister Number 1L2538

Filter Number 1824

PID (ppm) 10

PID (ppm) in breathing zone 0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%) 0.1

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone 20.8

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time 14:31

Digital Start Pressure -29

Analog Start Pressure (before opening can) -29.5

Analog Start Pressure (at start of sample) -15

Suggested Analog Stop Pressure -7.5

Analog Stop Pressure -6.5

Sample End Time 14:32

Digital Stop Pressure -7

Vapor Sampling Notes
Liquid sampling
DTW:15.25 ft
Sample taken at 1435. MH-1231_041921
DUP-01 taken.

Was a Vapor DUP collected? No

SL-3_041921, 15:09, 15:15

samplers Emma Witherspoon, Andrew Banitt

Location SL-3

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled 2021-04-19

DTW (ft below rim) During Sampling 17.06

Vapor Sampling

Sample ID SL-3_041921

Canister Number	1L2580
Filter Number	2005
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.1
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	15:09
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-28
Analog Start Pressure (at start of sample)	-14.5
Suggested Analog Stop Pressure	-6
Analog Stop Pressure	-7
Sample End Time	15:10
Digital Stop Pressure	-5.5
Was a Vapor DUP collected?	Yes

Vapor Duplicate Information

Vapor DUP ID	DUP-01
DUP Canister Number	1L1508
DUP Filter Number	1938
DUP Digital Start Pressure	-28.5
DUP Analog Start Pressure (before opening can)	-29
DUP Analog Start Pressure (at start of sample)	-14.5
DUP Suggested Analog Stop Pressure	-5.5
DUP Analog Stop Pressure	-6
DUP Digital Stop Pressure	-5.5
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-3_041921
Liquid Sample Time	15:15
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

SL-4_041921, 15:42, 15:45

samplers	Emma Witherspoon, Andrew Banitt
Location	SL-4

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-04-19
DTW (ft below rim) During Sampling	15.02

Vapor Sampling

Sample ID	SL-4_041921
Canister Number	1L2753
Filter Number	1938
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0.1
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	21.2
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	15:42
Digital Start Pressure	-28.5
Analog Start Pressure (before opening can)	-29.5
Analog Start Pressure (at start of sample)	-16
Suggested Analog Stop Pressure	-8
Analog Stop Pressure	-7
Sample End Time	15:43
Digital Stop Pressure	-7
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-4_041921
Liquid Sample Time	15:45
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

SL-5_042021, 08:45, 08:50

samplers	Emma Witherspoon, Andrew Banitt
Location	SL-5

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-04-20
DTW (ft below rim) During Sampling	15.09

Vapor Sampling

Sample ID	SL-5_042021
Canister Number	1L2532
Filter Number	1910

PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0.1
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	21.4
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	08:45
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-28
Analog Start Pressure (at start of sample)	-15
Suggested Analog Stop Pressure	-6
Analog Stop Pressure	-7
Sample End Time	08:46
Digital Stop Pressure	-7
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-5_042021
Liquid Sample Time	08:50
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

WDC_042021, 09:15

samplers	Emma Witherspoon, Andrew Banitt
Location	WDC

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-04-20
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Vapor Sampling

Sample ID	WDC_042021
Canister Number	1L1624
Filter Number	1922
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0.1
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	21.6

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	09:15
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-17
Suggested Analog Stop Pressure	-8
Analog Stop Pressure	-7
Sample End Time	09:16
Digital Stop Pressure	-6.5
Was a Vapor DUP collected?	No

EDC_042021, 09:28

samplers	Emma Witherspoon, Andrew Banitt
Location	EDC

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-04-20
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Vapor Sampling

Sample ID	EDC_042021
Canister Number	1L3264
Filter Number	1922
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0.1
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	21.6
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	09:28
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-20
Suggested Analog Stop Pressure	-8
Analog Stop Pressure	-8
Sample End Time	09:29
Digital Stop Pressure	-7.5
Was a Vapor DUP collected?	No

Emma Witherspoon, Andrew Banitt, 2021-06-10

Created	2021-06-10 12:53:42 UTC by Emma Witherspoon
Updated	2021-06-11 13:36:18 UTC by Emma Witherspoon
Location	42.3692339016006, -83.3821134139145
Field Staff	Emma Witherspoon, Andrew Banitt
Project Number	30050315.701
Start Date	2021-06-10

SL-7_061021, 08:58, 09:05

samplers	Emma Witherspoon, Andrew Banitt
Location	SL-7

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-06-10
Flow Notes During Sampling	Strong flow from W

Vapor Sampling

Sample ID	SL-7_061021
Canister Number	1L2029
Filter Number	1920
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0.1
---------	-----

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.1
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	08:58
Digital Start Pressure	-29.5
Analog Start Pressure (before opening can)	-27.5
Analog Start Pressure (at start of sample)	-24
Suggested Analog Stop Pressure	-5
Analog Stop Pressure	-6
Sample End Time	09:00
Digital Stop Pressure	-5.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-7_061021
Liquid Sample Time	09:05
Was a liquid DUP collected?	No

Able to collect sediment sample? No

SL-6_061021, 09:29, 09:35

samplers Emma Witherspoon, Andrew Banitt

Location SL-6

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled 2021-06-10

Flow Notes During Sampling Trickle from E, flow from N to S

Vapor Sampling

Sample ID SL-6_061021

Canister Number 1L2144

Filter Number 2103

PID (ppm) 0.4

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%) 0.1

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone 20.2

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time 09:29

Digital Start Pressure -29.5

Analog Start Pressure (before opening can) -29

Analog Start Pressure (at start of sample) -16

Suggested Analog Stop Pressure -6.5

Analog Stop Pressure -6.5

Sample End Time 09:30

Digital Stop Pressure -5.5

Was a Vapor DUP collected? No

Able to collect liquid sample? Yes

Liquid Sampling

Sample ID SL-6_061021

Liquid Sample Time 09:35

Was a liquid DUP collected? No

Able to collect sediment sample? No

SL-5_061021, 09:53, 10:00

samplers Emma Witherspoon, Andrew Banitt

Location SL-5

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled 2021-06-10

Flow Notes During Sampling Strong flow from W and N towards S

Vapor Sampling

Sample ID SL-5_061021

Canister Number 1L1987

Filter Number 2035

PID (ppm) 7

PID (ppm) in breathing zone 0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%) 0

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone 19.9

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time 09:53

Digital Start Pressure -29.5

Analog Start Pressure (before opening can) -30

Analog Start Pressure (at start of sample) -17.5

Suggested Analog Stop Pressure -7.5

Analog Stop Pressure -6

Sample End Time 09:55

Digital Stop Pressure -4.5

Was a Vapor DUP collected? Yes

Vapor Duplicate Information

Vapor DUP ID DUP-01

DUP Canister Number 1L2254

DUP Filter Number 2005

DUP Digital Start Pressure -29.5

DUP Analog Start Pressure (before opening can) -29.5

DUP Analog Start Pressure (at start of sample) -20

DUP Suggested Analog Stop Pressure -5

DUP Analog Stop Pressure -9

DUP Digital Stop Pressure -3.5

Able to collect liquid sample? Yes

Liquid Sampling

Sample ID SL-5_061021

Liquid Sample Time 10:00

Was a liquid DUP collected? No

Liquid DUP Information

Liquid DUP ID	DUP-01
Able to collect sediment sample?	No

SL-8_061021, 10:22, 10:25

samplers	Emma Witherspoon, Andrew Banitt
Location	SL-8

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-06-10
Flow Notes During Sampling	Moderate flow from N to S

Vapor Sampling

Sample ID	SL-8_061021
Canister Number	1L2187
Filter Number	2050
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	19.7
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	10:22
Digital Start Pressure	-29.5
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-19
Suggested Analog Stop Pressure	-7.5
Analog Stop Pressure	-5
Sample End Time	10:23
Digital Stop Pressure	-4.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-8_061021
Liquid Sample Time	10:25
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

SL-9_061021, 10:41, 10:45

samplers	Emma Witherspoon, Andrew Banitt
Location	SL-9

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-06-10
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Flow Notes During Sampling	Flow from N towards S
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Vapor Sampling

Sample ID	SL-9_061021
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Canister Number	1L2180
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Filter Number	1824
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PID (ppm)	0
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The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	10:41
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Digital Start Pressure	-29.5
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Analog Start Pressure (before opening can)	-30
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Analog Start Pressure (at start of sample)	-18
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Suggested Analog Stop Pressure	-7.5
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Analog Stop Pressure	-7.5
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Sample End Time	10:43
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Digital Stop Pressure	-6.5
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Was a Vapor DUP collected?	No
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Able to collect liquid sample?	Yes
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Liquid Sampling

Sample ID	SL-9_061021
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Liquid Sample Time	10:45
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Was a liquid DUP collected?	No
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MH-1234_061021, 13:24

samplers	Emma Witherspoon, Andrew Banitt
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Location	SAMH-1234
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Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-06-10
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Flow Notes During Sampling	Flow from N towards S
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Vapor Sampling

Sample ID	MH-1234_061021
Canister Number	1L1974
Filter Number	1831
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.5
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	13:24
Digital Start Pressure	-29.5
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	22.5
Suggested Analog Stop Pressure	-7.5
Analog Stop Pressure	-7.5
Sample End Time	13:26
Digital Stop Pressure	-5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

MH-1233_061021, 13:48

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1233

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-06-10
Flow Notes During Sampling	Moderate flow from N to S

Vapor Sampling

Sample ID	MH-1233_061021
Canister Number	1L1962
Filter Number	1913
PID (ppm)	0.5
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.4

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	13:48
Digital Start Pressure	-29.5
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-17
Suggested Analog Stop Pressure	-7.5
Analog Stop Pressure	-7
Sample End Time	13:49
Digital Stop Pressure	-7
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

MH-1252_061021, 14:08

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1252

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-06-10
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Vapor Sampling

Sample ID	MH-1252_061021
Canister Number	1L2243
Filter Number	1938
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.5
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	14:08
Digital Start Pressure	-29.5
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-17
Suggested Analog Stop Pressure	-7.5
Analog Stop Pressure	-7.5
Sample End Time	14:09
Digital Stop Pressure	-7
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

MH-1261_061021, 14:42

samplers	Emma Witherspoon, Andrew Banitt
Location	SAMH-1261

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-06-10
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Vapor Sampling

Sample ID	MH-1261_061021
Canister Number	1L2292
Filter Number	2005
PID (ppm)	0.1

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.9
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	14:42
Digital Start Pressure	-29.5
Analog Start Pressure (before opening can)	-26
Analog Start Pressure (at start of sample)	-17
Suggested Analog Stop Pressure	-3.5
Analog Stop Pressure	-7
Sample End Time	14:43
Digital Stop Pressure	-7.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	No
Able to collect sediment sample?	No

2021-07-13, Andrew Banitt, Utility Corridor Sampling

Created	2021-07-13 12:08:38 UTC by Andrew Banitt
Updated	2021-07-14 14:47:07 UTC by Andrew Banitt
Location	42.3728260314606, -83.3914166005625

Basic Information

Project Name	Ford LTP
Task	Utility Corridor Sampling
Project Number	30080642.701
Location	Livonia, MI
Date	2021-07-13
Completed By	Andrew Banitt
Additional Personnel	Korey Pearson
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	71.06 degrees F and Light Rain and Fog/Mist
PPE	Level D
Are you using equipment?	Yes

PID

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	PID
Model	MiniRAE 3000
Pine/Geotech Number	4136
Calibrated?	Yes
Calibration standard information	Bump test 101/100 ppm.

GEM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	GEM
Model	GEM 5000
Pine/Geotech Number	6446
Calibrated?	Yes
Calibration standard information	CO2 34.5/35 CH4 51.2/50 O2 20.9/20.9

Peri Pump

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	Peri Pump
Model	Geopump
Pine/Geotech Number	6381
Calibrated?	No

Daily Log of Activities

08:00, On site. H&S tailgate.

Time	08:00
Description of Task	On site. H&S tailgate.

08:45, Meet with city. Begin sampling.

Time	08:45
Description of Task	Meet with city. Begin sampling.

14:45, Sampling complete.

Time	14:45
Description of Task	Sampling complete.

16:30, Off site.

Time	16:30
Description of Task	Off site.

Material Tracking

Are you using any materials onsite today?	No
---	----

Waste Management

Are there any waste drums onsite?	No
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Did you drum any waste today?	No
-------------------------------	----

Signature

A handwritten signature in black ink, consisting of a large, stylized letter 'R' with a long, sweeping tail that curves upwards and to the right.

Signed 2021-07-13 12:09:37 UTC

Time	08:00
Description of Task	On site. H&S tailgate.

08:45, Meet with city. Begin sampling.

Time	08:45
Description of Task	Meet with city. Begin sampling.

14:45, Sampling complete.

Time	14:45
Description of Task	Sampling complete.

16:30, Off site.

Time	16:30
Description of Task	Off site.

Material Tracking

Are you using any materials onsite today?	No
---	----

Waste Management

Are there any waste drums onsite?	No
-----------------------------------	----

Did you drum any waste today?	No
-------------------------------	----

Signature

A handwritten signature in black ink, consisting of a large, stylized letter 'R' with a long, sweeping tail that curves upwards and to the right.

Signed 2021-07-13 12:09:37 UTC

Andrew Banitt, Korey Pearson, 2021-07-13

Created	2021-07-13 13:00:16 UTC by Andrew Banitt
Updated	2021-07-14 14:00:42 UTC by Andrew Banitt
Location	42.3730547824054, -83.3808046349087
Field Staff	Andrew Banitt, Korey Pearson
Project Number	30050315.701
Start Date	2021-07-13

SL-15_071321, 09:06, 09:10

samplers	Andrew Banitt, Korey Pearson
Location	SL-15

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-07-13
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Vapor Sampling

Sample ID	SL-15_071321
Canister Number	34000980
Filter Number	2014
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.1
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	09:06
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-17
Suggested Analog Stop Pressure	-8
Analog Stop Pressure	-6
Sample End Time	09:08
Digital Stop Pressure	-5.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-15_071321
Liquid Sample Time	09:10
Was a liquid DUP collected?	No

SL-14_071321, 09:38, 09:40

samplers	Andrew Banitt, Korey Pearson
Location	SL-14

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-07-13
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Vapor Sampling

Sample ID	SL-14_071321
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Canister Number	8976
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Filter Number	1902
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PID (ppm)	0
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The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.2
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	09:38
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Digital Start Pressure	-29
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Analog Start Pressure (before opening can)	-29
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Analog Start Pressure (at start of sample)	-17
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Suggested Analog Stop Pressure	-7
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Analog Stop Pressure	-6.5
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Sample End Time	09:39
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Digital Stop Pressure	-6.5
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Was a Vapor DUP collected?	No
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Able to collect liquid sample?	Yes
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Liquid Sampling

Sample ID	SL-14_071321
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Liquid Sample Time	09:40
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Was a liquid DUP collected?	No
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SL-13_071321, 10:01, 10:05

samplers	Andrew Banitt, Korey Pearson
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Location	SL-13
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Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-07-13
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Vapor Sampling

Sample ID	SL-13_071321
Canister Number	8518
Filter Number	2046
PID (ppm)	0.4
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.1
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	10:01
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-28
Analog Start Pressure (at start of sample)	-18
Suggested Analog Stop Pressure	-6
Analog Stop Pressure	-6
Sample End Time	10:03
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-13_071321
Liquid Sample Time	10:05
Was a liquid DUP collected?	No

SL-7_071321, 10:26, 10:30

samplers	Andrew Banitt, Korey Pearson
Location	SL-7

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-07-13
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Vapor Sampling

Sample ID	SL-7_071321
Canister Number	09641
Filter Number	2103
PID (ppm)	0.8
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	

CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.3
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	10:26
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-6
Suggested Analog Stop Pressure	-7
Analog Stop Pressure	-7
Sample End Time	10:27
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-7_071321
Liquid Sample Time	10:30
Was a liquid DUP collected?	No

SL-6_071321, 10:50, 10:55

samplers	Andrew Banitt, Korey Pearson
Location	SL-6

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-07-13
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Vapor Sampling

Sample ID	SL-6_071321
Canister Number	1L2670
Filter Number	1922
PID (ppm)	12.3
PID (ppm) in breathing zone	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.4
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	10:50
Digital Start Pressure	-29.5
Analog Start Pressure (before opening can)	-30

Analog Start Pressure (at start of sample)	-16
Suggested Analog Stop Pressure	-7.5
Analog Stop Pressure	-6
Sample End Time	10:51
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-6_071321
Liquid Sample Time	10:55
Was a liquid DUP collected?	No

SL-5_071321, 12:13, 12:10

samplers	Andrew Banitt, Korey Pearson
Location	SL-5

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-07-13
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Vapor Sampling

Sample ID	SL-5_071321
Canister Number	1L3071
Filter Number	1831
PID (ppm)	10
PID (ppm) in breathing zone	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.3
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	12:13
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-27
Analog Start Pressure (at start of sample)	-16
Suggested Analog Stop Pressure	-5
Analog Stop Pressure	-5
Sample End Time	12:15
Digital Stop Pressure	-6.5
Was a Vapor DUP collected?	Yes

Vapor Duplicate Information

Vapor DUP ID	DUP-01
DUP Canister Number	1L2821
DUP Filter Number	1922
DUP Digital Start Pressure	-29
DUP Analog Start Pressure (before opening can)	-29
DUP Analog Start Pressure (at start of sample)	-16
DUP Suggested Analog Stop Pressure	-5
DUP Analog Stop Pressure	-5
DUP Digital Stop Pressure	-6
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-5_071321
Liquid Sample Time	12:10
Liquid Sampling Notes	Visible sheen
Was a liquid DUP collected?	Yes

Liquid DUP Information

Liquid DUP ID	DUP-01
Able to collect sediment sample?	No

SL-8_071321, 12:39, 12:40

samplers	Andrew Banitt, Korey Pearson
Location	SL-8

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-07-13
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Vapor Sampling

Sample ID	SL-8_071321
Canister Number	1L3895
Filter Number	2103
PID (ppm)	9.8
PID (ppm) in breathing zone	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.2
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	12:39
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-28

Analog Start Pressure (at start of sample)	-15
Suggested Analog Stop Pressure	-6
Analog Stop Pressure	-6
Sample End Time	12:41
Digital Stop Pressure	-7
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-8_071321
Liquid Sample Time	12:40
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

SL-9_071321, 13:03, 13:00

samplers	Andrew Banitt, Korey Pearson
Location	SL-9

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-07-13
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Vapor Sampling

Sample ID	SL-9_071321
Canister Number	34000335
Filter Number	2046
PID (ppm)	11.2
PID (ppm) in breathing zone	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.2
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	13:03
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-19
Suggested Analog Stop Pressure	-7
Analog Stop Pressure	-7
Sample End Time	13:04
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No

Able to collect liquid sample? Yes

Liquid Sampling

Sample ID SL-9_071321

Liquid Sample Time 13:00

Was a liquid DUP collected? No

Able to collect sediment sample? No

SL-10_071321, 13:30, 13:30

samplers Andrew Banitt, Korey Pearson

Location SL-10

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled 2021-07-13

Vapor Sampling

Sample ID SL-10_071321

Canister Number 1L1556

Filter Number 2005

PID (ppm) 5

PID (ppm) in breathing zone 0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%) 0

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone 20.5

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time 13:30

Digital Start Pressure -29

Analog Start Pressure (before opening can) -28

Analog Start Pressure (at start of sample) -13

Suggested Analog Stop Pressure -6

Analog Stop Pressure -5

Sample End Time 13:31

Digital Stop Pressure -6.5

Was a Vapor DUP collected? No

Able to collect liquid sample? Yes

Liquid Sampling

Sample ID SL-10_071321

Liquid Sample Time 13:30

Was a liquid DUP collected? No

Able to collect sediment sample? No

SL-11_071321, 13:51, 13:50

samplers	Andrew Banitt, Korey Pearson
Location	SL-11

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-07-13
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Vapor Sampling

Sample ID	SL-11_071321
Canister Number	LC296
Filter Number	1910
PID (ppm)	1.1

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.8
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	13:51
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-29.5
Analog Start Pressure (at start of sample)	-16
Suggested Analog Stop Pressure	-7.5
Analog Stop Pressure	-5
Sample End Time	13:52
Digital Stop Pressure	-5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-11_071321
Liquid Sample Time	13:50
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

SL-12_071321, 14:15, 14:05

samplers	Andrew Banitt, Korey Pearson
Location	SL-12

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-07-13
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Vapor Sampling

Sample ID	SL-12_071321
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Canister Number	1L3179
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Filter Number	2028
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PID (ppm)	9
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PID (ppm) in breathing zone	0.5
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The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.7
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	14:15
-------------------	-------

Digital Start Pressure	-29
------------------------	-----

Analog Start Pressure (before opening can)	-30
--	-----

Analog Start Pressure (at start of sample)	-17
--	-----

Suggested Analog Stop Pressure	-8
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Analog Stop Pressure	-5
----------------------	----

Sample End Time	14:16
-----------------	-------

Digital Stop Pressure	-6
-----------------------	----

Was a Vapor DUP collected?	No
----------------------------	----

Able to collect liquid sample?	Yes
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Liquid Sampling

Sample ID	SL-12_071321
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Liquid Sample Time	14:05
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Was a liquid DUP collected?	No
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Able to collect sediment sample?	No
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2021-10-07, Andrew Banitt, Utility Corridor Sampling

Created	2021-10-07 12:05:59 UTC by Andrew Banitt
Updated	2021-10-07 20:50:19 UTC by Andrew Banitt
Location	42.3685510377131, -83.3823170599229

Basic Information

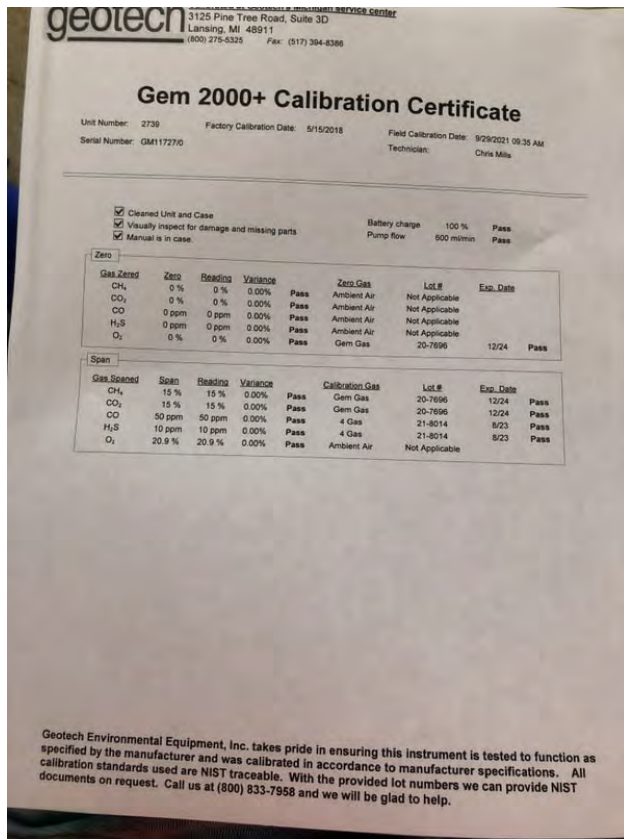
Project Name	Ford LTP
Task	Utility Corridor Sampling
Location	Livonia, MI
Date	2021-10-07
Completed By	Andrew Banitt
Additional Personnel	Korey Pearson
Are you connected to the internet (WiFi or data plan)?	No
Get weather data from the National Weather Service website for your current location?	N/A
Weather	65 degrees F cloudy
PPE	Level D
Are you using equipment?	Yes

Peristaltic pump

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	Peristaltic pump
Model	Geopump
Pine/Geotech Number	4171
Calibrated?	No

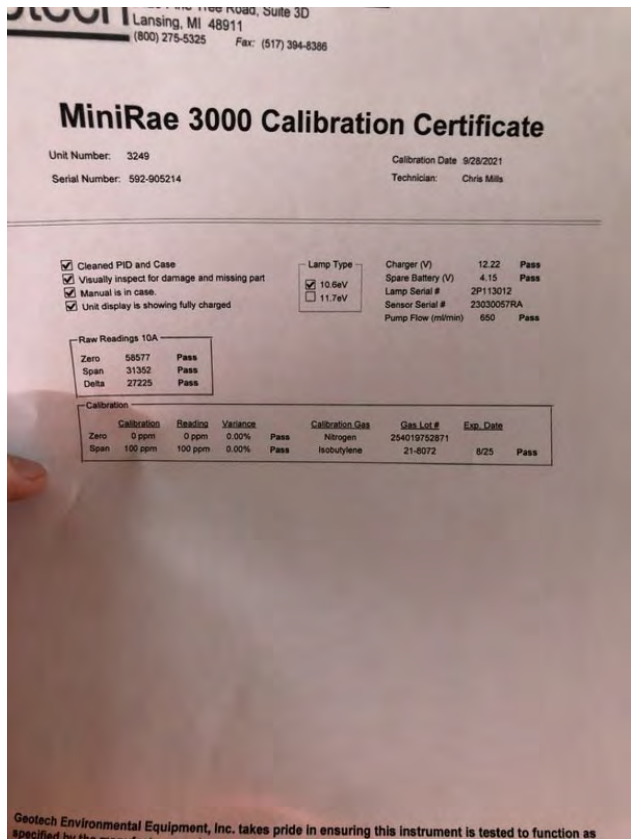
GEM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	GEM
Model	GEM2000
Pine/Geotech Number	2739
Calibrated?	Yes
Calibration standard information	CH4 15/15 CO2 15/15



PID

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	PID
Model	MiniRae 3000
Pine/Geotech Number	3249
Calibrated?	Yes
Calibration standard information	100/100 ppm



Daily Log of Activities

08:05, Arcadis on site meeting city of Livonia at Wendy's parking lot. H&S tailgate.

Time	08:05
Description of Task	Arcadis on site meeting city of Livonia at Wendy's parking lot. H&S tailgate.

08:45, Arcadis begins utility corridor sampling along Stark road.

Time	08:45
Description of Task	Arcadis begins utility corridor sampling along Stark road.

16:20, Sampling completed.

Time	16:20
Description of Task	Sampling completed.

17:00, Arcadis is off site.

Time	17:00
Description of Task	Arcadis is off site.

Material Tracking

Are you using any materials onsite today?	No
---	----

Waste Management

Are there any waste drums onsite?	No
Did you drum any waste today?	No

Signature

A handwritten signature in black ink, consisting of several overlapping loops and a long horizontal stroke at the bottom.

Signed 2021-10-07 12:08:31 UTC

Andrew Banitt, Korey Pearson, 2021-10-07, 2021-10-07

Created	2021-10-07 13:44:26 UTC by Andrew Banitt
Updated	2021-10-07 20:27:32 UTC by Andrew Banitt
Location	42.3729851096449, -83.3808249245667
Field Staff	Andrew Banitt, Korey Pearson
Project Number	30050315.701
Start Date	2021-10-07
End Date	2021-10-07

SL-15_100721, 09:52, 09:55

samplers	Andrew Banitt, Korey Pearson
Location	SL-15

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-10-07
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Vapor Sampling

Sample ID	SL-15_100721
Canister Number	1L3258
Filter Number	1922
PID (ppm)	0.7

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0.1
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.6
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	09:52
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-16
Suggested Analog Stop Pressure	-8
Analog Stop Pressure	-5
Sample End Time	09:53
Digital Stop Pressure	-6.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-15_100721
Liquid Sample Time	09:55
Was a liquid DUP collected?	No

Able to collect sediment sample? No

SL-14_100721, 10:13, 10:10

samplers Andrew Banitt, Korey Pearson

Location SL-14

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled 2021-10-07

Vapor Sampling

Sample ID SL-14_100721

Canister Number 1L2190

Filter Number 1922

PID (ppm) 0.2

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%) 0

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone 20.6

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time 10:13

Digital Start Pressure -29

Analog Start Pressure (before opening can) -28.5

Analog Start Pressure (at start of sample) -16

Suggested Analog Stop Pressure -6.5

Analog Stop Pressure -5

Sample End Time 10:14

Digital Stop Pressure -6

Was a Vapor DUP collected? No

Able to collect liquid sample? Yes

Liquid Sampling

Sample ID SL-14_100721

Liquid Sample Time 10:10

Was a liquid DUP collected? No

Able to collect sediment sample? No

SL-13_100721, 10:32, 10:30

samplers Andrew Banitt, Korey Pearson

Location SL-13

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled	2021-10-07
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Vapor Sampling

Sample ID	SL-13_100721
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Canister Number	1L2176
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Filter Number	1912
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PID (ppm)	0
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The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.7
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	10:32
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Digital Start Pressure	-29
------------------------	-----

Analog Start Pressure (before opening can)	-28
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Analog Start Pressure (at start of sample)	-15
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Suggested Analog Stop Pressure	-6
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Analog Stop Pressure	-5
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Sample End Time	10:33
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Digital Stop Pressure	-5
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Was a Vapor DUP collected?	No
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Able to collect liquid sample?	Yes
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Liquid Sampling

Sample ID	SL-13_100721
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Liquid Sample Time	10:30
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Was a liquid DUP collected?	No
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Able to collect sediment sample?	No
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SL-7_100721, 10:51, 10:50

samplers	Andrew Banitt, Korey Pearson
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Location	SL-7
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Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-10-07
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Vapor Sampling

Sample ID	SL-7_100721
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Canister Number	1L3353
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Filter Number	1922
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PID (ppm)	0.1
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.7
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	10:51
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-15
Suggested Analog Stop Pressure	-8
Analog Stop Pressure	-8
Sample End Time	10:53
Digital Stop Pressure	-5.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-7_100721
Liquid Sample Time	10:50
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

SL-6_100721, 11:09, 11:05

samplers	Andrew Banitt, Korey Pearson
Location	SL-6

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-10-07
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Vapor Sampling

Sample ID	SL-6_100721
Canister Number	1L3075
Filter Number	2016
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.7

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	11:09
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-27
Analog Start Pressure (at start of sample)	-16
Suggested Analog Stop Pressure	-5
Analog Stop Pressure	-5
Sample End Time	11:10
Digital Stop Pressure	-6.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-6_100721
Liquid Sample Time	11:05
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

SL-5_100721, 12:24, 12:15

samplers	Andrew Banitt, Korey Pearson
Location	SL-5

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-10-07
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Vapor Sampling

Sample ID	SL-5_100721
Canister Number	1L3191
Filter Number	2046
PID (ppm)	0.5

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.5
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	12:24
Digital Start Pressure	-29.5
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-18
Suggested Analog Stop Pressure	-7.5
Analog Stop Pressure	-5

Sample End Time	12:25
Digital Stop Pressure	-3.5
Was a Vapor DUP collected?	Yes

Vapor Duplicate Information

Vapor DUP ID	DUP-01
DUP Canister Number	1L2904
DUP Filter Number	2005
DUP Digital Start Pressure	-29.5
DUP Analog Start Pressure (before opening can)	-29
DUP Analog Start Pressure (at start of sample)	-16
DUP Suggested Analog Stop Pressure	-4.5
DUP Analog Stop Pressure	-5
DUP Digital Stop Pressure	-3.5
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-5_100721
Liquid Sample Time	12:15
Was a liquid DUP collected?	Yes

Liquid DUP Information

Liquid DUP ID	DUP-01
Able to collect sediment sample?	No

SL-8_100721, 12:46, 12:45

samplers	Andrew Banitt, Korey Pearson
Location	SL-8

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-10-07
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Vapor Sampling

Sample ID	SL-8_100721
Canister Number	1L2465
Filter Number	1922
PID (ppm)	3.7
PID (ppm) in breathing zone	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.5

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	12:46
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-25
Analog Start Pressure (at start of sample)	-15
Suggested Analog Stop Pressure	-3
Analog Stop Pressure	-3
Sample End Time	12:47
Digital Stop Pressure	-5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-8_100721
Liquid Sample Time	12:45
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

SL-9_100721, 13:10, 13:00

samplers	Andrew Banitt, Korey Pearson
Location	SL-9

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-10-07
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Vapor Sampling

Sample ID	SL-9_100721
Canister Number	1L2792
Filter Number	1913
PID (ppm)	3.7
PID (ppm) in breathing zone	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0.1
---------	-----

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.5
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	13:10
Digital Start Pressure	-29.5
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-25
Suggested Analog Stop Pressure	-7.5

Analog Stop Pressure	-7.5
Sample End Time	13:11
Digital Stop Pressure	-7
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-9_100721
Liquid Sample Time	13:00
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

SL-10_100721, 13:26, 13:25

samplers	Andrew Banitt, Korey Pearson
Location	SL-10

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-10-07
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Vapor Sampling

Sample ID	SL-10_100721
Canister Number	1L2478
Filter Number	1912
PID (ppm)	3.5
PID (ppm) in breathing zone	0.4

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0.1
---------	-----

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.5
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	13:26
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-27.5
Analog Start Pressure (at start of sample)	-18
Suggested Analog Stop Pressure	-5.5
Analog Stop Pressure	-5.5
Sample End Time	13:27
Digital Stop Pressure	-5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-10_100721
Liquid Sample Time	13:25
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

SL-11_100721, 13:50, 13:45

samplers	Andrew Banitt, Korey Pearson
Location	SL-11

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-10-07
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Vapor Sampling

Sample ID	SL-11_100721
Canister Number	1L2819
Filter Number	1824
PID (ppm)	3.8
PID (ppm) in breathing zone	0.4

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0.1
---------	-----

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.5
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	13:50
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-18
Suggested Analog Stop Pressure	-8
Analog Stop Pressure	-8
Sample End Time	13:51
Digital Stop Pressure	-5.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-11_100721
Liquid Sample Time	13:45
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

SL-12_100721, 14:09, 14:05

samplers	Andrew Banitt, Korey Pearson
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Location SL-12

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled 2021-10-07

Vapor Sampling

Sample ID SL-12_100721

Canister Number 1L1857

Filter Number 1938

PID (ppm) 1

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%) 0

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone 20.5

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time 14:09

Digital Start Pressure -29

Analog Start Pressure (before opening can) -30

Analog Start Pressure (at start of sample) -19

Suggested Analog Stop Pressure -8

Analog Stop Pressure -8

Sample End Time 14:11

Digital Stop Pressure -5

Was a Vapor DUP collected? No

Able to collect liquid sample? Yes

Liquid Sampling

Sample ID SL-12_100721

Liquid Sample Time 14:05

Was a liquid DUP collected? No

Able to collect sediment sample? No

MH-1231_100721, 14:45

samplers Andrew Banitt, Korey Pearson

Location SAMH-1231

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled 2021-10-07

Vapor Sampling

Sample ID	MH-1231_100721
Canister Number	1L2688
Filter Number	1938
PID (ppm)	2.1
PID (ppm) in breathing zone	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.4
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	14:45
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-29.5
Analog Start Pressure (at start of sample)	-16
Suggested Analog Stop Pressure	-7.5
Analog Stop Pressure	-7.5
Sample End Time	14:46
Digital Stop Pressure	-7
Vapor Sampling Notes	Water sample taken. MH-1231 1445
Was a Vapor DUP collected?	No

SL-2_100721, 15:21

samplers	Andrew Banitt, Korey Pearson
Location	SL-2

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-10-07
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Vapor Sampling

Sample ID	SL-2_100721
Canister Number	LC305
Filter Number	2005
PID (ppm)	0.8
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0.1
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	20.5
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	

Sample Start Time	15:21
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-27
Analog Start Pressure (at start of sample)	-15
Suggested Analog Stop Pressure	-5
Analog Stop Pressure	-5
Sample End Time	15:22
Digital Stop Pressure	-5
Vapor Sampling Notes	Water sample taken. SL-2_100721 1515
Was a Vapor DUP collected?	No

SL-3_100721, 15:40, 15:45

samplers	Andrew Banitt, Korey Pearson
Location	SL-3

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-10-07
--------------	------------

Vapor Sampling

Sample ID	SL-3_100721
Canister Number	1L1529
Filter Number	2005
PID (ppm)	1.3

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0.1
---------	-----

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.5
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	15:40
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-27
Analog Start Pressure (at start of sample)	-18
Suggested Analog Stop Pressure	-5
Analog Stop Pressure	-5
Sample End Time	15:42
Digital Stop Pressure	-4.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-3_100721
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Liquid Sample Time	15:45
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

SL-4_100721, 16:14, 16:15

samplers	Andrew Banitt, Korey Pearson
Location	SL-4

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-10-07
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Vapor Sampling

Sample ID	SL-4_100721
Canister Number	1L2875
Filter Number	2005
PID (ppm)	14.9
PID (ppm) in breathing zone	1.3

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0.1
---------	-----

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.4
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	16:14
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-29.5
Analog Start Pressure (at start of sample)	-18
Suggested Analog Stop Pressure	-7.5
Analog Stop Pressure	-7.5
Sample End Time	16:16
Digital Stop Pressure	-5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-4_100721
Liquid Sample Time	16:15
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

2021-11-02, Andrew Banitt, Utility Corridor Sampling

Created	2021-11-02 21:24:15 UTC by Andrew Banitt
Updated	2021-11-02 21:30:13 UTC by Andrew Banitt
Location	42.3726658682296, -83.3919809544206

Basic Information

Project Name	Ford LTP
Task	Utility Corridor Sampling
Location	Livonia, MI
Date	2021-11-02
Completed By	Andrew Banitt
Additional Personnel	Sommer Guy
Are you connected to the internet (WiFi or data plan)?	No
Get weather data from the National Weather Service website for your current location?	N/A
Weather	40 degrees F partly cloudy
PPE	Level D
Are you using equipment?	Yes

PID

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	PID
Model	MiniRAE
Pine/Geotech Number	3249
Calibrated?	Yes
Calibration standard information	Bump check 99/100 ppm

GEM

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	GEM
Model	GEM2000
Pine/Geotech Number	3481
Calibrated?	Yes
Calibration standard information	CO2 34.5/35 CH4 51/50

Peri Pump

Supplier	Geotech
Type of Equipment (GEM, PID, etc)	Peri Pump
Model	GeoPump
Pine/Geotech Number	4171
Calibrated?	No

Daily Log of Activities

07:30, Arrive on site. H&S tailgate. Calibrate equipment.

Time	07:30
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Description of Task Arrive on site. H&S tailgate. Calibrate equipment.

08:00, Meet with city. Begin sampling.

Time 08:00

Description of Task Meet with city. Begin sampling.

17:00, Sampling completed. Offload equipment.

Time 17:00

Description of Task Sampling completed. Offload equipment.

17:45, Arcadis off site.

Time 17:45

Description of Task Arcadis off site.

Material Tracking

Are you using any materials onsite today? No

Waste Management

Are there any waste drums onsite? No

Did you drum any waste today? No

General waste comments Waste taken to HCS dumpster. Purge water poured back into manhole.

Signature



Signed 2021-11-02 21:28:35 UTC

Andrew Banitt, Sommer Guy, 2021-11-02

Created	2021-11-02 12:26:50 UTC by Andrew Banitt
Updated	2021-11-03 18:13:52 UTC by Julia McClafferty
Location	42.3731047919402, -83.3809740395589
Field Staff	Andrew Banitt, Sommer Guy
Project Number	30050315.701
Start Date	2021-11-02

SL-15_110221, 08:37, 08:30

samplers	Andrew Banitt, Sommer Guy
Location	SL-15

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-11-02
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Vapor Sampling

Sample ID	SL-15_110221
Canister Number	1L3267
Filter Number	1912
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20.9
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	08:37
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-17
Suggested Analog Stop Pressure	-8
Analog Stop Pressure	-8
Sample End Time	08:39
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-15_110221
Liquid Sample Time	08:30
Was a liquid DUP collected?	No

SL-14_110221, 09:00, 08:55

samplers	Andrew Banitt, Sommer Guy
Location	SL-14

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-11-02
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Vapor Sampling

Sample ID	SL-14_110221
Canister Number	1L2800
Filter Number	1845
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	1
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LEL in breathing zone (%)	1
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	21.3
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	09:00
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Digital Start Pressure	-29
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Analog Start Pressure (before opening can)	-30
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Analog Start Pressure (at start of sample)	-15
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Suggested Analog Stop Pressure	-8
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Analog Stop Pressure	-8
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Sample End Time	09:02
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Digital Stop Pressure	-8
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Was a Vapor DUP collected?	No
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Able to collect liquid sample?	Yes
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Liquid Sampling

Sample ID	SL-14_110221
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Liquid Sample Time	08:55
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Was a liquid DUP collected?	No
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SL-13_110221, 09:23, 09:15

samplers	Andrew Banitt, Sommer Guy
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Location	SL-13
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Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-11-02
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Vapor Sampling

Sample ID	SL-13_110221
Canister Number	1L3982
Filter Number	2108
PID (ppm)	0.3
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	21.4
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	09:23
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-25.5
Analog Start Pressure (at start of sample)	-17
Suggested Analog Stop Pressure	-3.5
Analog Stop Pressure	-3.5
Sample End Time	09:24
Digital Stop Pressure	-5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-13_110221
Liquid Sample Time	09:15
Was a liquid DUP collected?	No

SL-7_110221, 09:45, 09:40

samplers	Andrew Banitt, Sommer Guy
Location	SL-7

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-11-02
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Vapor Sampling

Sample ID	SL-7_110221
Canister Number	1L2068
Filter Number	1938
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	

CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	21.3
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	09:45
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-17
Suggested Analog Stop Pressure	-7
Analog Stop Pressure	-7
Sample End Time	09:46
Digital Stop Pressure	-5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-7_110221
Liquid Sample Time	09:40
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

SL-6_110221, 10:05, 10:00

samplers	Andrew Banitt, Sommer Guy
Location	SL-6

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-11-02
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Vapor Sampling

Sample ID	SL-6_110221
Canister Number	1L3061
Filter Number	2035

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	21.3
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	10:05
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-15

Suggested Analog Stop Pressure	-7
Analog Stop Pressure	-7
Sample End Time	10:06
Digital Stop Pressure	-5.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-6_110221
Liquid Sample Time	10:00
Was a liquid DUP collected?	No

SL-5_110221, 10:47, 10:40

samplers	Andrew Banitt, Sommer Guy
Location	SL-5

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-11-02
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Vapor Sampling

Sample ID	SL-5_110221
Canister Number	1L2663
Filter Number	1824
PID (ppm)	0.5

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	21.1
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	10:47
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-17
Suggested Analog Stop Pressure	-8
Analog Stop Pressure	-8
Sample End Time	10:48
Digital Stop Pressure	-4.5
Was a Vapor DUP collected?	Yes

Vapor Duplicate Information

Vapor DUP ID	DUP-01
DUP Canister Number	1L3395

DUP Filter Number	1920
DUP Digital Start Pressure	-29
DUP Analog Start Pressure (before opening can)	-27
DUP Analog Start Pressure (at start of sample)	-17
DUP Suggested Analog Stop Pressure	-3
DUP Analog Stop Pressure	-3
DUP Digital Stop Pressure	-6
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-5_110221
Liquid Sample Time	10:40
Was a liquid DUP collected?	No

Liquid DUP Information

Liquid DUP ID	DUP-01
Able to collect sediment sample?	No

SL-8_110221, 11:09, 11:05

samplers	Andrew Banitt, Sommer Guy
Location	SL-8

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-11-02
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Vapor Sampling

Sample ID	SL-8_110221
Canister Number	1L2273
Filter Number	2050
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
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LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	21.2
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	11:09
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-27
Analog Start Pressure (at start of sample)	-16
Suggested Analog Stop Pressure	-5
Analog Stop Pressure	-5
Sample End Time	11:11

Digital Stop Pressure	-7
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-8_110221
Liquid Sample Time	11:05
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

SL-9_110221, 12:27, 12:25

samplers	Andrew Banitt, Sommer Guy
Location	SL-9

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-11-02
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Vapor Sampling

Sample ID	SL-9_110221
Canister Number	1L3372
Filter Number	2103
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	20
--------------------------	----

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	12:27
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-24
Suggested Analog Stop Pressure	-8
Analog Stop Pressure	-8
Sample End Time	12:29
Digital Stop Pressure	-5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-9_110221
Liquid Sample Time	12:25
Was a liquid DUP collected?	No

Able to collect sediment sample? No

SL-10_110221, 12:48, 12:40

samplers Andrew Banitt, Sommer Guy

Location SL-10

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled 2021-11-02

Vapor Sampling

Sample ID SL-10_110221

Canister Number 1L2817

Filter Number 1910

PID (ppm) 0.2

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%) 0

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone 21

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time 12:48

Digital Start Pressure -29

Analog Start Pressure (before opening can) -29

Analog Start Pressure (at start of sample) -16

Suggested Analog Stop Pressure -7

Analog Stop Pressure -7

Sample End Time 12:49

Digital Stop Pressure -6.5

Was a Vapor DUP collected? No

Able to collect liquid sample? Yes

Liquid Sampling

Sample ID SL-10_110221

Liquid Sample Time 12:40

Was a liquid DUP collected? No

Able to collect sediment sample? No

SL-11_110221, 13:08, 13:05

samplers Andrew Banitt, Sommer Guy

Location SL-11

Vapor Barrier Information

Vapor barrier installed? No

Sampling Information

Date Sampled	2021-11-02
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Vapor Sampling

Sample ID	SL-11_110221
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Canister Number	1L3387
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Filter Number	1922
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PID (ppm)	0
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The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	21.2
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	13:08
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Digital Start Pressure	-29
------------------------	-----

Analog Start Pressure (before opening can)	-30
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Analog Start Pressure (at start of sample)	-18
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Suggested Analog Stop Pressure	-8
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Analog Stop Pressure	-8
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Sample End Time	13:10
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Digital Stop Pressure	-5
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Was a Vapor DUP collected?	No
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Able to collect liquid sample?	Yes
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Liquid Sampling

Sample ID	SL-11_110221
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Liquid Sample Time	13:05
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Was a liquid DUP collected?	No
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Able to collect sediment sample?	No
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SL-12_110221, 13:31, 15:25

samplers	Andrew Banitt, Sommer Guy
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Location	SL-12
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Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-11-02
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Vapor Sampling

Sample ID	SL-12_110221
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Canister Number	1L2297
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Filter Number	1922
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PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	21.3
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	13:31
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-19
Suggested Analog Stop Pressure	-8
Analog Stop Pressure	-8
Sample End Time	13:32
Digital Stop Pressure	-5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-12_110221
Liquid Sample Time	15:25
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

MH-1231_110221, 14:19

samplers	Andrew Banitt, Sommer Guy
Location	SAMH-1231

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-11-02
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Vapor Sampling

Sample ID	MH-1231_110221
Canister Number	1L1533
Filter Number	2103
PID (ppm)	0.2
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	21.1

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	14:19
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-15
Suggested Analog Stop Pressure	-7
Analog Stop Pressure	-7
Sample End Time	14:20
Digital Stop Pressure	-6.5
Vapor Sampling Notes	Water sample at 1415
Was a Vapor DUP collected?	No

SL-2_110221, 14:44

samplers	Andrew Banitt, Sommer Guy
Location	SL-2

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-11-02
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Vapor Sampling

Sample ID	SL-2_110221
Canister Number	1L2306
Filter Number	2121
PID (ppm)	0.2

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	21
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	14:44
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-21
Suggested Analog Stop Pressure	-8
Analog Stop Pressure	-8
Sample End Time	14:46
Digital Stop Pressure	-6.5
Vapor Sampling Notes	Water sample at 1440.
Was a Vapor DUP collected?	No

SL-3_110221, 15:08, 15:05

samplers	Andrew Banitt, Sommer Guy
Location	SL-3

Vapor Barrier Information

Vapor barrier installed?	No
--------------------------	----

Sampling Information

Date Sampled	2021-11-02
--------------	------------

Vapor Sampling

Sample ID	SL-3_110221
Canister Number	1L3058
Filter Number	2103
PID (ppm)	0

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	21.1
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The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	15:08
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Digital Start Pressure	-29
------------------------	-----

Analog Start Pressure (before opening can)	-22
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Analog Start Pressure (at start of sample)	-11
--	-----

Suggested Analog Stop Pressure	0
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Analog Stop Pressure	0
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Sample End Time	15:09
-----------------	-------

Digital Stop Pressure	-6.5
-----------------------	------

Was a Vapor DUP collected?	No
----------------------------	----

Able to collect liquid sample?	Yes
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Liquid Sampling

Sample ID	SL-3_110221
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Liquid Sample Time	15:05
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Was a liquid DUP collected?	No
-----------------------------	----

Able to collect sediment sample?	No
----------------------------------	----

SL-16_110221, 15:39, 15:30

samplers	Andrew Banitt, Sommer Guy
Location	SL-16

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-11-02
--------------	------------

Vapor Sampling

Sample ID	SL-16_110221
Canister Number	1L3218
Filter Number	1946
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	
The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.	
CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	21.1
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	15:39
Digital Start Pressure	-29.5
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-15
Suggested Analog Stop Pressure	-6.5
Analog Stop Pressure	-6.5
Sample End Time	15:40
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-16_110221
Liquid Sample Time	15:30
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

SL-17_110221, 16:09, 16:00

samplers	Andrew Banitt, Sommer Guy
Location	SL-17

Vapor Barrier Information

Vapor barrier installed?	No
--------------------------	----

Sampling Information

Date Sampled	2021-11-02
--------------	------------

Vapor Sampling

Sample ID	SL-17_110221
Canister Number	1L2224
Filter Number	1922
PID (ppm)	0
The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.	

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	1
LEL in breathing zone (%)	1
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	21
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	16:09
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-5
Suggested Analog Stop Pressure	-8
Analog Stop Pressure	0
Sample End Time	16:10
Digital Stop Pressure	-3.5
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-17_110221
Liquid Sample Time	16:00
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

SL-18_110221, 16:30, 16:25

samplers	Andrew Banitt, Sommer Guy
Location	SL-18

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-11-02
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Vapor Sampling

Sample ID	SL-18_110221
Canister Number	34002414
Filter Number	2105
PID (ppm)	0.2

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
LEL in breathing zone is >10%, stop work and contact project team.	
O2 (%) in breathing zone	21.1
The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.	
Sample Start Time	16:30

Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-30
Analog Start Pressure (at start of sample)	-14
Suggested Analog Stop Pressure	-8
Analog Stop Pressure	-8
Sample End Time	16:31
Digital Stop Pressure	-6
Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-18_110221
Liquid Sample Time	16:25
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

SL-4_110221, 16:54, 16:50

samplers	Andrew Banitt, Sommer Guy
Location	SL-4

Vapor Barrier Information

Vapor barrier installed?	No
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Sampling Information

Date Sampled	2021-11-02
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Vapor Sampling

Sample ID	SL-4_110221
Canister Number	1L2471
Filter Number	1922
PID (ppm)	1.8

The PID in the breathing zone is between 2.087 and 4.174 . If it is sustained for >5 min continuous monitor, review engineering controls and PPE, proceed with caution.

The PID in the breathing zone is above 4.174, if it is sustained for >5 min stop work and contact SSO.

CH4 (%)	0
---------	---

LEL in breathing zone is >10%, stop work and contact project team.

O2 (%) in breathing zone	21.1
--------------------------	------

The oxygen in the breathing zone is less than 19.5%, stop work, and contact the project team.

Sample Start Time	16:54
Digital Start Pressure	-29
Analog Start Pressure (before opening can)	-29
Analog Start Pressure (at start of sample)	-16
Suggested Analog Stop Pressure	-7
Analog Stop Pressure	-7
Sample End Time	16:55
Digital Stop Pressure	-4.5

Was a Vapor DUP collected?	No
Able to collect liquid sample?	Yes

Liquid Sampling

Sample ID	SL-4_110221
Liquid Sample Time	16:50
Was a liquid DUP collected?	No
Able to collect sediment sample?	No

Appendix B

Laboratory Reports

6/25/2020

Mr. Jim Tomalia
Arcadis U.S., Inc.
28550 Cabot Dr.
Suite 500
Novi MI 48377

Project Name: Ford LTP
Project #: 30050315.701
Workorder #: 2006536

Dear Mr. Jim Tomalia

The following report includes the data for the above referenced project for sample(s) received on 6/18/2020 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Ausha Scott at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Ausha Scott
Project Manager

WORK ORDER #: 2006536

Work Order Summary

CLIENT:	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	517-819-0356	P.O. #	30042006
FAX:		PROJECT #	30050315.701 Ford LTP
DATE RECEIVED:	06/18/2020	CONTACT:	Ausha Scott
DATE COMPLETED:	06/25/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	MH-1067_061620	TO-15	6.1 "Hg	16.1 psi
02A	MH-1043_061620	TO-15	7.8 "Hg	15.6 psi
03A	MH-1020_061620	TO-15	7.8 "Hg	15.3 psi
04A	MH-1123_061520	TO-15	9.2 "Hg	15.3 psi
05A	MH-1082_061520	TO-15	6.3 "Hg	15.6 psi
06A	DUP-01	TO-15	6.1 "Hg	15.9 psi
07A	MH-1210_061020	TO-15	9 "Hg	16.3 psi
08A	MH-1113_061520	TO-15	9.6 "Hg	14.9 psi
09A	MH-1116_061520	TO-15	4.5 "Hg	16.4 psi
10A	MH-1181_061520	TO-15	5.9 "Hg	15.4 psi
11A	MH-1096_061520	TO-15	9 "Hg	14.9 psi
12A	MH-1171_061020	TO-15	7.8 "Hg	15.7 psi
13A	MH-1122_061020	TO-15	6.3 "Hg	16.2 psi
14A	MH-1001_061020	TO-15	9 "Hg	15.5 psi
15A	MH-1088_060920	TO-15	8.6 "Hg	15.6 psi
16A	MH-1041_060920	TO-15	8.6 "Hg	15.6 psi
17A	MH-1066_060920	TO-15	9.4 "Hg	15.1 psi
18A	MH-1231_060920	TO-15	7.1 "Hg	16.1 psi
19A	EDC_060920	TO-15	7.8 "Hg	15.7 psi
20A	WDC_060920	TO-15	6.1 "Hg	16.1 psi
21A	SL-2_060920	TO-15	8.6 "Hg	15.6 psi
22A	MH-1219_061620	TO-15	7.1 "Hg	15.2 psi
23A	Lab Blank	TO-15	NA	NA

Continued on next page

WORK ORDER #: 2006536

Work Order Summary

CLIENT:	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	517-819-0356	P.O. #	30042006
FAX:		PROJECT #	30050315.701 Ford LTP
DATE RECEIVED:	06/18/2020	CONTACT:	Ausha Scott
DATE COMPLETED:	06/25/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
23B	Lab Blank	TO-15	NA	NA
24A	CCV	TO-15	NA	NA
24B	CCV	TO-15	NA	NA
25A	LCS	TO-15	NA	NA
25AA	LCSD	TO-15	NA	NA
25B	LCS	TO-15	NA	NA
25BB	LCSD	TO-15	NA	NA

CERTIFIED BY: 

 Technical Director

DATE: 06/25/20

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935
 Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
 Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
 (916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
Arcadis U.S., Inc.
Workorder# 2006536

Twenty-two 1 Liter Summa Canister (100% Certified) samples were received on June 18, 2020. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Dilution was performed on sample MH-1231_060920 due to the presence of high level target species.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1067_061620	Date/Time Analyzed:	6/24/20 03:14 PM
Lab ID:	2006536-01A	Dilution Factor:	2.63
Date/Time Collected:	6/16/20 08:50 AM	Instrument/Filename:	msdj.i / j062412
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.8	3.1	5.2	Not Detected
1,4-Dioxane	123-91-1	4.6	6.6	19	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.4	3.1	5.2	Not Detected
Tetrachloroethene	127-18-4	2.5	5.4	8.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	3.1	5.2	Not Detected
Trichloroethene	79-01-6	1.7	4.2	7.1	97
Vinyl Chloride	75-01-4	0.60	2.0	3.4	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	88
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1043_061620	Date/Time Analyzed:	6/24/20 03:40 PM
Lab ID:	2006536-02A	Dilution Factor:	2.78
Date/Time Collected:	6/16/20 08:18 AM	Instrument/Filename:	msdj.i / j062413
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.9	3.3	5.5	Not Detected
1,4-Dioxane	123-91-1	4.9	7.0	20	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.4	3.3	5.5	Not Detected
Tetrachloroethene	127-18-4	2.6	5.6	9.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	3.3	5.5	Not Detected
Trichloroethene	79-01-6	1.8	4.5	7.5	Not Detected
Vinyl Chloride	75-01-4	0.64	2.1	3.6	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	84
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1020_061620	Date/Time Analyzed:	6/24/20 04:07 PM
Lab ID:	2006536-03A	Dilution Factor:	2.76
Date/Time Collected:	6/16/20 09:28 AM	Instrument/Filename:	msdj.i / j062414
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.9	3.3	5.5	Not Detected
1,4-Dioxane	123-91-1	4.9	7.0	20	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.4	3.3	5.5	Not Detected
Tetrachloroethene	127-18-4	2.6	5.6	9.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	3.3	5.5	Not Detected
Trichloroethene	79-01-6	1.8	4.4	7.4	Not Detected
Vinyl Chloride	75-01-4	0.63	2.1	3.5	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	86
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1123_061520	Date/Time Analyzed:	6/24/20 04:33 PM
Lab ID:	2006536-04A	Dilution Factor:	2.94
Date/Time Collected:	6/15/20 08:52 AM	Instrument/Filename:	msdj.i / j062415
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.0	3.5	5.8	Not Detected
1,4-Dioxane	123-91-1	5.2	7.4	21	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	3.5	5.8	Not Detected
Tetrachloroethene	127-18-4	2.8	6.0	10	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	3.5	5.8	Not Detected
Trichloroethene	79-01-6	1.9	4.7	7.9	Not Detected
Vinyl Chloride	75-01-4	0.68	2.2	3.8	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	89
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1082_061520	Date/Time Analyzed:	6/24/20 05:00 PM
Lab ID:	2006536-05A	Dilution Factor:	2.61
Date/Time Collected:	6/15/20 12:09 PM	Instrument/Filename:	msdj.i / j062416
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.8	3.1	5.2	Not Detected
1,4-Dioxane	123-91-1	4.6	6.6	19	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.3	3.1	5.2	Not Detected
Tetrachloroethene	127-18-4	2.5	5.3	8.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	3.1	5.2	Not Detected
Trichloroethene	79-01-6	1.7	4.2	7.0	3.7 J
Vinyl Chloride	75-01-4	0.60	2.0	3.3	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	89
Toluene-d8	2037-26-5	70-130	103

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	DUP-01	Date/Time Analyzed:	6/24/20 05:26 PM
Lab ID:	2006536-06A	Dilution Factor:	2.61
Date/Time Collected:	6/10/20 12:00 AM	Instrument/Filename:	msdj.i / j062417
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.8	3.1	5.2	Not Detected
1,4-Dioxane	123-91-1	4.6	6.6	19	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.3	3.1	5.2	Not Detected
Tetrachloroethene	127-18-4	2.5	5.3	8.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	3.1	5.2	Not Detected
Trichloroethene	79-01-6	1.7	4.2	7.0	4.6 J
Vinyl Chloride	75-01-4	0.60	2.0	3.3	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	105
4-Bromofluorobenzene	460-00-4	70-130	100
Toluene-d8	2037-26-5	70-130	94

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1210_061020	Date/Time Analyzed:	6/23/20 07:55 PM
Lab ID:	2006536-07A	Dilution Factor:	3.01
Date/Time Collected:	6/10/20 12:31 PM	Instrument/Filename:	msdj.i / j062321
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.0	3.6	6.0	Not Detected
1,4-Dioxane	123-91-1	5.3	7.6	22	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	3.6	6.0	Not Detected
Tetrachloroethene	127-18-4	2.8	6.1	10	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	3.6	6.0	Not Detected
Trichloroethene	79-01-6	1.9	4.8	8.1	6.7 J
Vinyl Chloride	75-01-4	0.69	2.3	3.8	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	114
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1113_061520	Date/Time Analyzed:	6/24/20 03:31 AM
Lab ID:	2006536-08A	Dilution Factor:	2.96
Date/Time Collected:	6/15/20 08:29 AM	Instrument/Filename:	msdj.i / j062332
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.0	3.5	5.9	Not Detected
1,4-Dioxane	123-91-1	5.2	7.5	21	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	3.5	5.9	Not Detected
Tetrachloroethene	127-18-4	2.8	6.0	10	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	3.5	5.9	Not Detected
Trichloroethene	79-01-6	1.9	4.8	8.0	Not Detected
Vinyl Chloride	75-01-4	0.68	2.3	3.8	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	91
Toluene-d8	2037-26-5	70-130	94

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1116_061520	Date/Time Analyzed:	6/24/20 03:58 AM
Lab ID:	2006536-09A	Dilution Factor:	2.49
Date/Time Collected:	6/15/20 08:05 AM	Instrument/Filename:	msdj.i / j062333
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.7	3.0	4.9	Not Detected
1,4-Dioxane	123-91-1	4.4	6.3	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.3	3.0	4.9	Not Detected
Tetrachloroethene	127-18-4	2.4	5.1	8.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.99	3.0	4.9	Not Detected
Trichloroethene	79-01-6	1.6	4.0	6.7	44
Vinyl Chloride	75-01-4	0.57	1.9	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	92
Toluene-d8	2037-26-5	70-130	95

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1181_061520	Date/Time Analyzed:	6/24/20 07:37 PM
Lab ID:	2006536-10A	Dilution Factor:	2.55
Date/Time Collected:	6/15/20 10:18 AM	Instrument/Filename:	msdj.i / j062420
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.7	3.0	5.0	Not Detected
1,4-Dioxane	123-91-1	4.5	6.4	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.3	3.0	5.0	Not Detected
Tetrachloroethene	127-18-4	2.4	5.2	8.6	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	3.0	5.0	Not Detected
Trichloroethene	79-01-6	1.6	4.1	6.8	Not Detected
Vinyl Chloride	75-01-4	0.59	2.0	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	104
4-Bromofluorobenzene	460-00-4	70-130	91
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1096_061520	Date/Time Analyzed:	6/24/20 06:18 PM
Lab ID:	2006536-11A	Dilution Factor:	2.88
Date/Time Collected:	6/15/20 11:30 AM	Instrument/Filename:	msdj.i / j062419
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.9	3.4	5.7	Not Detected
1,4-Dioxane	123-91-1	5.1	7.3	21	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	3.4	5.7	Not Detected
Tetrachloroethene	127-18-4	2.7	5.9	9.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	3.4	5.7	Not Detected
Trichloroethene	79-01-6	1.8	4.6	7.7	Not Detected
Vinyl Chloride	75-01-4	0.66	2.2	3.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	103
4-Bromofluorobenzene	460-00-4	70-130	92
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1171_061020	Date/Time Analyzed:	6/24/20 10:19 PM
Lab ID:	2006536-12A	Dilution Factor:	2.79
Date/Time Collected:	6/10/20 10:49 AM	Instrument/Filename:	msdj.i / j062421
Media:	1 Liter Summa Canister (100% Certified C)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.9	3.3	5.5	Not Detected
1,4-Dioxane	123-91-1	4.9	7.0	20	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.4	3.3	5.5	79
Tetrachloroethene	127-18-4	2.6	5.7	9.5	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	3.3	5.5	Not Detected
Trichloroethene	79-01-6	1.8	4.5	7.5	67
Vinyl Chloride	75-01-4	0.64	2.1	3.6	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	96
4-Bromofluorobenzene	460-00-4	70-130	89
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1122_061020	Date/Time Analyzed:	6/24/20 10:45 PM
Lab ID:	2006536-13A	Dilution Factor:	2.66
Date/Time Collected:	6/10/20 10:12 AM	Instrument/Filename:	msdj.i / j062422
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.8	3.2	5.3	Not Detected
1,4-Dioxane	123-91-1	4.7	6.7	19	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.4	3.2	5.3	6.4
Tetrachloroethene	127-18-4	2.5	5.4	9.0	9.4
trans-1,2-Dichloroethene	156-60-5	1.0	3.2	5.3	5.1 J
Trichloroethene	79-01-6	1.7	4.3	7.1	25
Vinyl Chloride	75-01-4	0.61	2.0	3.4	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	85
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1001_061020	Date/Time Analyzed:	6/24/20 11:12 PM
Lab ID:	2006536-14A	Dilution Factor:	2.93
Date/Time Collected:	6/10/20 11:41 AM	Instrument/Filename:	msdj.i / j062423
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.0	3.5	5.8	Not Detected
1,4-Dioxane	123-91-1	5.2	7.4	21	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	3.5	5.8	Not Detected
Tetrachloroethene	127-18-4	2.8	6.0	9.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	3.5	5.8	Not Detected
Trichloroethene	79-01-6	1.9	4.7	7.9	26
Vinyl Chloride	75-01-4	0.67	2.2	3.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	102

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1088_060920	Date/Time Analyzed:	6/24/20 11:38 PM
Lab ID:	2006536-15A	Dilution Factor:	2.89
Date/Time Collected:	6/9/20 04:37 PM	Instrument/Filename:	msdj.i / j062424
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.9	3.4	5.7	Not Detected
1,4-Dioxane	123-91-1	5.1	7.3	21	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	3.4	5.7	Not Detected
Tetrachloroethene	127-18-4	2.7	5.9	9.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	3.4	5.7	Not Detected
Trichloroethene	79-01-6	1.9	4.6	7.8	Not Detected
Vinyl Chloride	75-01-4	0.66	2.2	3.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	96
4-Bromofluorobenzene	460-00-4	70-130	91
Toluene-d8	2037-26-5	70-130	107

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1041_060920	Date/Time Analyzed:	6/24/20 02:47 PM
Lab ID:	2006536-16A	Dilution Factor:	2.89
Date/Time Collected:	6/9/20 06:16 PM	Instrument/Filename:	msdj.i / j062411
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.9	3.4	5.7	Not Detected
1,4-Dioxane	123-91-1	5.1	7.3	21	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	3.4	5.7	Not Detected
Tetrachloroethene	127-18-4	2.7	5.9	9.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	3.4	5.7	Not Detected
Trichloroethene	79-01-6	1.9	4.6	7.8	47
Vinyl Chloride	75-01-4	0.66	2.2	3.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	88
Toluene-d8	2037-26-5	70-130	95

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1066_060920	Date/Time Analyzed:	6/25/20 12:05 AM
Lab ID:	2006536-17A	Dilution Factor:	2.95
Date/Time Collected:	6/9/20 05:37 PM	Instrument/Filename:	msdj.i / j062425
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.0	3.5	5.8	Not Detected
1,4-Dioxane	123-91-1	5.2	7.4	21	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	3.5	5.8	Not Detected
Tetrachloroethene	127-18-4	2.8	6.0	10	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	3.5	5.8	Not Detected
Trichloroethene	79-01-6	1.9	4.8	7.9	Not Detected
Vinyl Chloride	75-01-4	0.68	2.3	3.8	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	86
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1231_060920	Date/Time Analyzed:	6/25/20 02:13 AM
Lab ID:	2006536-18A	Dilution Factor:	54.9
Date/Time Collected:	6/9/20 02:44 PM	Instrument/Filename:	msdj.i / j062430
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	37	65	110	Not Detected
1,4-Dioxane	123-91-1	97	140	400	Not Detected
cis-1,2-Dichloroethene	156-59-2	28	65	110	25000
Tetrachloroethene	127-18-4	52	110	190	Not Detected
trans-1,2-Dichloroethene	156-60-5	22	65	110	270
Trichloroethene	79-01-6	35	88	150	15000
Vinyl Chloride	75-01-4	13	42	70	9600

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	88
Toluene-d8	2037-26-5	70-130	107

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	EDC_060920	Date/Time Analyzed:	6/25/20 12:31 AM
Lab ID:	2006536-19A	Dilution Factor:	2.79
Date/Time Collected:	6/9/20 03:32 PM	Instrument/Filename:	msdj.i / j062426
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.9	3.3	5.5	Not Detected
1,4-Dioxane	123-91-1	4.9	7.0	20	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.4	3.3	5.5	Not Detected
Tetrachloroethene	127-18-4	2.6	5.7	9.5	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	3.3	5.5	Not Detected
Trichloroethene	79-01-6	1.8	4.5	7.5	16
Vinyl Chloride	75-01-4	0.64	2.1	3.6	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	87
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	WDC_060920	Date/Time Analyzed:	6/25/20 12:57 AM
Lab ID:	2006536-20A	Dilution Factor:	2.63
Date/Time Collected:	6/9/20 01:57 PM	Instrument/Filename:	msdj.i / j062427
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.8	3.1	5.2	Not Detected
1,4-Dioxane	123-91-1	4.6	6.6	19	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.4	3.1	5.2	Not Detected
Tetrachloroethene	127-18-4	2.5	5.4	8.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	3.1	5.2	Not Detected
Trichloroethene	79-01-6	1.7	4.2	7.1	3.5 J
Vinyl Chloride	75-01-4	0.60	2.0	3.4	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	107
4-Bromofluorobenzene	460-00-4	70-130	100
Toluene-d8	2037-26-5	70-130	105

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-2_060920	Date/Time Analyzed:	6/25/20 06:42 AM
Lab ID:	2006536-21A	Dilution Factor:	2.89
Date/Time Collected:	6/9/20 03:58 PM	Instrument/Filename:	msdj.i / j062432
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.9	3.4	5.7	9.5
1,4-Dioxane	123-91-1	5.1	7.3	21	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	3.4	5.7	1900
Tetrachloroethene	127-18-4	2.7	5.9	9.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	3.4	5.7	29
Trichloroethene	79-01-6	1.9	4.6	7.8	1500
Vinyl Chloride	75-01-4	0.66	2.2	3.7	520

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	88
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1219_061620	Date/Time Analyzed:	6/25/20 01:49 AM
Lab ID:	2006536-22A	Dilution Factor:	2.66
Date/Time Collected:	6/16/20 02:08 PM	Instrument/Filename:	msdj.i / j062429
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.8	3.2	5.3	Not Detected
1,4-Dioxane	123-91-1	4.7	6.7	19	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.4	3.2	5.3	31
Tetrachloroethene	127-18-4	2.5	5.4	9.0	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	3.2	5.3	Not Detected
Trichloroethene	79-01-6	1.7	4.3	7.1	Not Detected
Vinyl Chloride	75-01-4	0.61	2.0	3.4	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	88
Toluene-d8	2037-26-5	70-130	102

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Lab Blank	Date/Time Analyzed:	6/23/20 01:42 PM
Lab ID:	2006536-23A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j062309d
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.67	1.2	2.0	Not Detected
1,4-Dioxane	123-91-1	1.8	2.5	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.52	1.2	2.0	Not Detected
Tetrachloroethene	127-18-4	0.95	2.0	3.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.40	1.2	2.0	Not Detected
Trichloroethene	79-01-6	0.64	1.6	2.7	Not Detected
Vinyl Chloride	75-01-4	0.23	0.77	1.3	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	93
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Lab Blank	Date/Time Analyzed:	6/24/20 12:49 PM
Lab ID:	2006536-23B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j062408a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.67	1.2	2.0	Not Detected
1,4-Dioxane	123-91-1	1.8	2.5	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.52	1.2	2.0	Not Detected
Tetrachloroethene	127-18-4	0.95	2.0	3.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.40	1.2	2.0	Not Detected
Trichloroethene	79-01-6	0.64	1.6	2.7	Not Detected
Vinyl Chloride	75-01-4	0.23	0.77	1.3	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	89
Toluene-d8	2037-26-5	70-130	102

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	CCV	Date/Time Analyzed:	6/23/20 10:14 AM
Lab ID:	2006536-24A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j062302
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	96
1,4-Dioxane	123-91-1	107
cis-1,2-Dichloroethene	156-59-2	96
Tetrachloroethene	127-18-4	96
trans-1,2-Dichloroethene	156-60-5	99
Trichloroethene	79-01-6	101
Vinyl Chloride	75-01-4	97

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	93
4-Bromofluorobenzene	460-00-4	70-130	101
Toluene-d8	2037-26-5	70-130	103

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	CCV	Date/Time Analyzed:	6/24/20 09:54 AM
Lab ID:	2006536-24B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j062403
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	97
1,4-Dioxane	123-91-1	105
cis-1,2-Dichloroethene	156-59-2	96
Tetrachloroethene	127-18-4	101
trans-1,2-Dichloroethene	156-60-5	101
Trichloroethene	79-01-6	98
Vinyl Chloride	75-01-4	102

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCS	Date/Time Analyzed:	6/23/20 10:39 AM
Lab ID:	2006536-25A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j062303
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	98
1,4-Dioxane	123-91-1	108
cis-1,2-Dichloroethene	156-59-2	94
Tetrachloroethene	127-18-4	94
trans-1,2-Dichloroethene	156-60-5	111
Trichloroethene	79-01-6	95
Vinyl Chloride	75-01-4	103

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	100
Toluene-d8	2037-26-5	70-130	97

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCSD	Date/Time Analyzed:	6/23/20 11:04 AM
Lab ID:	2006536-25AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j062304
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	97
1,4-Dioxane	123-91-1	114
cis-1,2-Dichloroethene	156-59-2	92
Tetrachloroethene	127-18-4	98
trans-1,2-Dichloroethene	156-60-5	115
Trichloroethene	79-01-6	100
Vinyl Chloride	75-01-4	97

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	96
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	102

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCS	Date/Time Analyzed:	6/24/20 10:19 AM
Lab ID:	2006536-25B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j062404
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	88
1,4-Dioxane	123-91-1	108
cis-1,2-Dichloroethene	156-59-2	87
Tetrachloroethene	127-18-4	100
trans-1,2-Dichloroethene	156-60-5	106
Trichloroethene	79-01-6	98
Vinyl Chloride	75-01-4	99

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	99

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCSD	Date/Time Analyzed:	6/24/20 10:43 AM
Lab ID:	2006536-25BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j062405
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	89
1,4-Dioxane	123-91-1	110
cis-1,2-Dichloroethene	156-59-2	89
Tetrachloroethene	127-18-4	103
trans-1,2-Dichloroethene	156-60-5	109
Trichloroethene	79-01-6	103
Vinyl Chloride	75-01-4	99

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	102

* % Recovery is calculated using unrounded analytical results.



June 26, 2020

Angela Paulson
Arcadis Inc
10559 Citation Ave
Suite 100 Brighton,
MI 48116

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2020 Utility Corridor Evaluation Vapor Testing
Project number: 30050315.701.04
Client project scopereference: Sample COC only was used to define project analytical requirements.
Laboratory: Eurofins - Folsom
Laboratory submittal: 2006536
Sample date:2020-06-18
Report received byCADENA: 2020-06-25
Initial DataVerification completed: 2020-06-26

22 Soil vapor samples were analyzed for TO-15 parameters.

No data qualifications or sample integrity issues were observed.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) TO-15 Analysis

SDG #2006536

CADENA Verification Report: 2020-06-26

Analyses Performed By:
Eurofins Air Toxics
Folsom, California

Report #37450R
Review Level: Tier III
Project: 30050315.701.02

DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 2006536 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						TO-15 (Full Scan)	TO-15 (SIM)	MISC
2006536	MH-1067_061620_AIR	2006536-01A	Air	6/16/2020		X		
	MH-1043_061620_AIR	2006536-02A	Air	6/16/2020		X		
	MH-1020_061620_AIR	2006536-03A	Air	6/16/2020		X		
	MH-1123_061520_AIR	2006536-04A	Air	6/15/2020		X		
	MH-1082_061520_AIR	2006536-05A	Air	6/15/2020		X		
	DUP-01_061520_AIR	2006536-06A	Air	6/10/2020	MH-1210_061020_AIR	X		
	MH-1210_061020_AIR	2006536-07A	Air	6/10/2020		X		
	MH-1113_061520_AIR	2006536-08A	Air	6/15/2020		X		
	MH-1116_061520_AIR	2006536-09A	Air	6/15/2020		X		
	MH-1181_061520_AIR	2006536-10A	Air	6/15/2020		X		
	MH-1096_061520_AIR	2006536-11A	Air	6/15/2020		X		
	MH-1171_061020_AIR	2006536-12A	Air	6/10/2020		X		
	MH-1122_061020_AIR	2006536-13A	Air	6/10/2020		X		

DATA REVIEW

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						TO-15 (Full Scan)	TO-15 (SIM)	MISC
	MH-1001_061020_AIR	2006536-14A	Air	6/10/2020		X		
	MH-1088_060920_AIR	2006536-15A	Air	6/9/2020		X		
	MH-1041_060920_AIR	2006536-16A	Air	6/9/2020		X		
	MH-1066_060920_AIR	2006536-17A	Air	6/9/2020		X		
	MH-1231_060920_AIR	2006536-18A	Air	6/9/2020		X		
	EDC_060920	2006536-19A	Air	6/9/2020		X		
	WDC_060920	2006536-20A	Air	6/9/2020		X		
	SL-2_060920	2006536-21A	Air	6/9/2020		X		
	MH-1219_061620_AIR	2006536-22A	Air	6/16/2020		X		

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Method TO-15 (Full Scan). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation	Return Canister Pressure
USEPA TO-15	Air	30 days from collection to analysis (Canister)	Ambient Temperature	< -2" Hg

All samples were analyzed within the specified holding time and canister return pressure / vacuum criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (30%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (30%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than 140% or less than 60% of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

5. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra. All identified compounds met the specified criteria.

6. Field Duplicate Sample Analysis

The field duplicate analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 35% for air 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 not greater than five times the RL, a control limit of three times the RL is applied to the difference between the duplicate sample results.

Results (in $\mu\text{g}/\text{m}^3$) for the field duplicate samples are summarized in the following table.

Sample ID / Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MH-1210_061020_AIR / DUP-01_061520_AIR	Trichloroethene	6.7 J	4.7 J	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

Note: Dilution was performed on sample MH-1231_060920 (Lab ID 2006536-18A) due to the presence of high level target species.

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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: TO-15 (Full Scan)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Canister return pressure (<-2"Hg)		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Field Duplicate Sample RPD		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

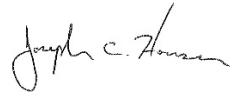
%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Joseph C. Houser

SIGNATURE:



DATE: July 6, 2020

PEER REVIEW: Dennis Capria

DATE: July 14, 2020



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



**NO CORRECTIONS/QUALIFIERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**



EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1067_061620	Date/Time Analyzed:	6/24/20 03:14 PM
Lab ID:	2006536-01A	Dilution Factor:	2.63
Date/Time Collected:	6/16/20 08:50 AM	Instrument/Filename:	msdj.i / j062412
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.8	3.1	5.2	Not Detected
1,4-Dioxane	123-91-1	4.6	6.6	19	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.4	3.1	5.2	Not Detected
Tetrachloroethene	127-18-4	2.5	5.4	8.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	3.1	5.2	Not Detected
Trichloroethene	79-01-6	1.7	4.2	7.1	97
Vinyl Chloride	75-01-4	0.60	2.0	3.4	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	88
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1043_061620	Date/Time Analyzed:	6/24/20 03:40 PM
Lab ID:	2006536-02A	Dilution Factor:	2.78
Date/Time Collected:	6/16/20 08:18 AM	Instrument/Filename:	msdj.i / j062413
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.9	3.3	5.5	Not Detected
1,4-Dioxane	123-91-1	4.9	7.0	20	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.4	3.3	5.5	Not Detected
Tetrachloroethene	127-18-4	2.6	5.6	9.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	3.3	5.5	Not Detected
Trichloroethene	79-01-6	1.8	4.5	7.5	Not Detected
Vinyl Chloride	75-01-4	0.64	2.1	3.6	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	84
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1020_061620	Date/Time Analyzed:	6/24/20 04:07 PM
Lab ID:	2006536-03A	Dilution Factor:	2.76
Date/Time Collected:	6/16/20 09:28 AM	Instrument/Filename:	msdj.i / j062414
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.9	3.3	5.5	Not Detected
1,4-Dioxane	123-91-1	4.9	7.0	20	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.4	3.3	5.5	Not Detected
Tetrachloroethene	127-18-4	2.6	5.6	9.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	3.3	5.5	Not Detected
Trichloroethene	79-01-6	1.8	4.4	7.4	Not Detected
Vinyl Chloride	75-01-4	0.63	2.1	3.5	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	86
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1123_061520	Date/Time Analyzed:	6/24/20 04:33 PM
Lab ID:	2006536-04A	Dilution Factor:	2.94
Date/Time Collected:	6/15/20 08:52 AM	Instrument/Filename:	msdj.i / j062415
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.0	3.5	5.8	Not Detected
1,4-Dioxane	123-91-1	5.2	7.4	21	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	3.5	5.8	Not Detected
Tetrachloroethene	127-18-4	2.8	6.0	10	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	3.5	5.8	Not Detected
Trichloroethene	79-01-6	1.9	4.7	7.9	Not Detected
Vinyl Chloride	75-01-4	0.68	2.2	3.8	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	89
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1082_061520	Date/Time Analyzed:	6/24/20 05:00 PM
Lab ID:	2006536-05A	Dilution Factor:	2.61
Date/Time Collected:	6/15/20 12:09 PM	Instrument/Filename:	msdj.i / j062416
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.8	3.1	5.2	Not Detected
1,4-Dioxane	123-91-1	4.6	6.6	19	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.3	3.1	5.2	Not Detected
Tetrachloroethene	127-18-4	2.5	5.3	8.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	3.1	5.2	Not Detected
Trichloroethene	79-01-6	1.7	4.2	7.0	3.7 J
Vinyl Chloride	75-01-4	0.60	2.0	3.3	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	89
Toluene-d8	2037-26-5	70-130	103

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	DUP-01	Date/Time Analyzed:	6/24/20 05:26 PM
Lab ID:	2006536-06A	Dilution Factor:	2.61
Date/Time Collected:	6/10/20 12:00 AM	Instrument/Filename:	msdj.i / j062417
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.8	3.1	5.2	Not Detected
1,4-Dioxane	123-91-1	4.6	6.6	19	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.3	3.1	5.2	Not Detected
Tetrachloroethene	127-18-4	2.5	5.3	8.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	3.1	5.2	Not Detected
Trichloroethene	79-01-6	1.7	4.2	7.0	4.6 J
Vinyl Chloride	75-01-4	0.60	2.0	3.3	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	105
4-Bromofluorobenzene	460-00-4	70-130	100
Toluene-d8	2037-26-5	70-130	94

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1210_061020	Date/Time Analyzed:	6/23/20 07:55 PM
Lab ID:	2006536-07A	Dilution Factor:	3.01
Date/Time Collected:	6/10/20 12:31 PM	Instrument/Filename:	msdj.i / j062321
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.0	3.6	6.0	Not Detected
1,4-Dioxane	123-91-1	5.3	7.6	22	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	3.6	6.0	Not Detected
Tetrachloroethene	127-18-4	2.8	6.1	10	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	3.6	6.0	Not Detected
Trichloroethene	79-01-6	1.9	4.8	8.1	6.7 J
Vinyl Chloride	75-01-4	0.69	2.3	3.8	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	114
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1113_061520	Date/Time Analyzed:	6/24/20 03:31 AM
Lab ID:	2006536-08A	Dilution Factor:	2.96
Date/Time Collected:	6/15/20 08:29 AM	Instrument/Filename:	msdj.i / j062332
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.0	3.5	5.9	Not Detected
1,4-Dioxane	123-91-1	5.2	7.5	21	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	3.5	5.9	Not Detected
Tetrachloroethene	127-18-4	2.8	6.0	10	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	3.5	5.9	Not Detected
Trichloroethene	79-01-6	1.9	4.8	8.0	Not Detected
Vinyl Chloride	75-01-4	0.68	2.3	3.8	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	91
Toluene-d8	2037-26-5	70-130	94

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1116_061520	Date/Time Analyzed:	6/24/20 03:58 AM
Lab ID:	2006536-09A	Dilution Factor:	2.49
Date/Time Collected:	6/15/20 08:05 AM	Instrument/Filename:	msdj.i / j062333
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.7	3.0	4.9	Not Detected
1,4-Dioxane	123-91-1	4.4	6.3	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.3	3.0	4.9	Not Detected
Tetrachloroethene	127-18-4	2.4	5.1	8.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.99	3.0	4.9	Not Detected
Trichloroethene	79-01-6	1.6	4.0	6.7	44
Vinyl Chloride	75-01-4	0.57	1.9	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	92
Toluene-d8	2037-26-5	70-130	95

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1181_061520	Date/Time Analyzed:	6/24/20 07:37 PM
Lab ID:	2006536-10A	Dilution Factor:	2.55
Date/Time Collected:	6/15/20 10:18 AM	Instrument/Filename:	msdj.i / j062420
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.7	3.0	5.0	Not Detected
1,4-Dioxane	123-91-1	4.5	6.4	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.3	3.0	5.0	Not Detected
Tetrachloroethene	127-18-4	2.4	5.2	8.6	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	3.0	5.0	Not Detected
Trichloroethene	79-01-6	1.6	4.1	6.8	Not Detected
Vinyl Chloride	75-01-4	0.59	2.0	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	104
4-Bromofluorobenzene	460-00-4	70-130	91
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1096_061520	Date/Time Analyzed:	6/24/20 06:18 PM
Lab ID:	2006536-11A	Dilution Factor:	2.88
Date/Time Collected:	6/15/20 11:30 AM	Instrument/Filename:	msdj.i / j062419
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.9	3.4	5.7	Not Detected
1,4-Dioxane	123-91-1	5.1	7.3	21	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	3.4	5.7	Not Detected
Tetrachloroethene	127-18-4	2.7	5.9	9.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	3.4	5.7	Not Detected
Trichloroethene	79-01-6	1.8	4.6	7.7	Not Detected
Vinyl Chloride	75-01-4	0.66	2.2	3.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	103
4-Bromofluorobenzene	460-00-4	70-130	92
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1171_061020	Date/Time Analyzed:	6/24/20 10:19 PM
Lab ID:	2006536-12A	Dilution Factor:	2.79
Date/Time Collected:	6/10/20 10:49 AM	Instrument/Filename:	msdj.i / j062421
Media:	1 Liter Summa Canister (100% Certified C)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.9	3.3	5.5	Not Detected
1,4-Dioxane	123-91-1	4.9	7.0	20	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.4	3.3	5.5	79
Tetrachloroethene	127-18-4	2.6	5.7	9.5	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	3.3	5.5	Not Detected
Trichloroethene	79-01-6	1.8	4.5	7.5	67
Vinyl Chloride	75-01-4	0.64	2.1	3.6	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	96
4-Bromofluorobenzene	460-00-4	70-130	89
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1122_061020	Date/Time Analyzed:	6/24/20 10:45 PM
Lab ID:	2006536-13A	Dilution Factor:	2.66
Date/Time Collected:	6/10/20 10:12 AM	Instrument/Filename:	msdj.i / j062422
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.8	3.2	5.3	Not Detected
1,4-Dioxane	123-91-1	4.7	6.7	19	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.4	3.2	5.3	6.4
Tetrachloroethene	127-18-4	2.5	5.4	9.0	9.4
trans-1,2-Dichloroethene	156-60-5	1.0	3.2	5.3	5.1 J
Trichloroethene	79-01-6	1.7	4.3	7.1	25
Vinyl Chloride	75-01-4	0.61	2.0	3.4	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	85
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1001_061020	Date/Time Analyzed:	6/24/20 11:12 PM
Lab ID:	2006536-14A	Dilution Factor:	2.93
Date/Time Collected:	6/10/20 11:41 AM	Instrument/Filename:	msdj.i / j062423
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.0	3.5	5.8	Not Detected
1,4-Dioxane	123-91-1	5.2	7.4	21	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	3.5	5.8	Not Detected
Tetrachloroethene	127-18-4	2.8	6.0	9.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	3.5	5.8	Not Detected
Trichloroethene	79-01-6	1.9	4.7	7.9	26
Vinyl Chloride	75-01-4	0.67	2.2	3.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	102

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1088_060920	Date/Time Analyzed:	6/24/20 11:38 PM
Lab ID:	2006536-15A	Dilution Factor:	2.89
Date/Time Collected:	6/9/20 04:37 PM	Instrument/Filename:	msdj.i / j062424
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.9	3.4	5.7	Not Detected
1,4-Dioxane	123-91-1	5.1	7.3	21	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	3.4	5.7	Not Detected
Tetrachloroethene	127-18-4	2.7	5.9	9.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	3.4	5.7	Not Detected
Trichloroethene	79-01-6	1.9	4.6	7.8	Not Detected
Vinyl Chloride	75-01-4	0.66	2.2	3.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	96
4-Bromofluorobenzene	460-00-4	70-130	91
Toluene-d8	2037-26-5	70-130	107

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1041_060920	Date/Time Analyzed:	6/24/20 02:47 PM
Lab ID:	2006536-16A	Dilution Factor:	2.89
Date/Time Collected:	6/9/20 06:16 PM	Instrument/Filename:	msdj.i / j062411
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.9	3.4	5.7	Not Detected
1,4-Dioxane	123-91-1	5.1	7.3	21	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	3.4	5.7	Not Detected
Tetrachloroethene	127-18-4	2.7	5.9	9.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	3.4	5.7	Not Detected
Trichloroethene	79-01-6	1.9	4.6	7.8	47
Vinyl Chloride	75-01-4	0.66	2.2	3.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	88
Toluene-d8	2037-26-5	70-130	95

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1066_060920	Date/Time Analyzed:	6/25/20 12:05 AM
Lab ID:	2006536-17A	Dilution Factor:	2.95
Date/Time Collected:	6/9/20 05:37 PM	Instrument/Filename:	msdj.i / j062425
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.0	3.5	5.8	Not Detected
1,4-Dioxane	123-91-1	5.2	7.4	21	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	3.5	5.8	Not Detected
Tetrachloroethene	127-18-4	2.8	6.0	10	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	3.5	5.8	Not Detected
Trichloroethene	79-01-6	1.9	4.8	7.9	Not Detected
Vinyl Chloride	75-01-4	0.68	2.3	3.8	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	86
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1231_060920	Date/Time Analyzed:	6/25/20 02:13 AM
Lab ID:	2006536-18A	Dilution Factor:	54.9
Date/Time Collected:	6/9/20 02:44 PM	Instrument/Filename:	msdj.i / j062430
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	37	65	110	Not Detected
1,4-Dioxane	123-91-1	97	140	400	Not Detected
cis-1,2-Dichloroethene	156-59-2	28	65	110	25000
Tetrachloroethene	127-18-4	52	110	190	Not Detected
trans-1,2-Dichloroethene	156-60-5	22	65	110	270
Trichloroethene	79-01-6	35	88	150	15000
Vinyl Chloride	75-01-4	13	42	70	9600

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	88
Toluene-d8	2037-26-5	70-130	107

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	EDC_060920	Date/Time Analyzed:	6/25/20 12:31 AM
Lab ID:	2006536-19A	Dilution Factor:	2.79
Date/Time Collected:	6/9/20 03:32 PM	Instrument/Filename:	msdj.i / j062426
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.9	3.3	5.5	Not Detected
1,4-Dioxane	123-91-1	4.9	7.0	20	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.4	3.3	5.5	Not Detected
Tetrachloroethene	127-18-4	2.6	5.7	9.5	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	3.3	5.5	Not Detected
Trichloroethene	79-01-6	1.8	4.5	7.5	16
Vinyl Chloride	75-01-4	0.64	2.1	3.6	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	87
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	WDC_060920	Date/Time Analyzed:	6/25/20 12:57 AM
Lab ID:	2006536-20A	Dilution Factor:	2.63
Date/Time Collected:	6/9/20 01:57 PM	Instrument/Filename:	msdj.i / j062427
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.8	3.1	5.2	Not Detected
1,4-Dioxane	123-91-1	4.6	6.6	19	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.4	3.1	5.2	Not Detected
Tetrachloroethene	127-18-4	2.5	5.4	8.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	3.1	5.2	Not Detected
Trichloroethene	79-01-6	1.7	4.2	7.1	3.5 J
Vinyl Chloride	75-01-4	0.60	2.0	3.4	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	107
4-Bromofluorobenzene	460-00-4	70-130	100
Toluene-d8	2037-26-5	70-130	105

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-2_060920	Date/Time Analyzed:	6/25/20 06:42 AM
Lab ID:	2006536-21A	Dilution Factor:	2.89
Date/Time Collected:	6/9/20 03:58 PM	Instrument/Filename:	msdj.i / j062432
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.9	3.4	5.7	9.5
1,4-Dioxane	123-91-1	5.1	7.3	21	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	3.4	5.7	1900
Tetrachloroethene	127-18-4	2.7	5.9	9.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	3.4	5.7	29
Trichloroethene	79-01-6	1.9	4.6	7.8	1500
Vinyl Chloride	75-01-4	0.66	2.2	3.7	520

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	88
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1219_061620	Date/Time Analyzed:	6/25/20 01:49 AM
Lab ID:	2006536-22A	Dilution Factor:	2.66
Date/Time Collected:	6/16/20 02:08 PM	Instrument/Filename:	msdj.i / j062429
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.8	3.2	5.3	Not Detected
1,4-Dioxane	123-91-1	4.7	6.7	19	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.4	3.2	5.3	31
Tetrachloroethene	127-18-4	2.5	5.4	9.0	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	3.2	5.3	Not Detected
Trichloroethene	79-01-6	1.7	4.3	7.1	Not Detected
Vinyl Chloride	75-01-4	0.61	2.0	3.4	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	88
Toluene-d8	2037-26-5	70-130	102



Air Toxics

Analysis Request / Canister Chain of Custody

For Laboratory Use Only

PID: _____

Workorder #: _____

2006536

180 Blue Ravine Rd. Suite B, Folsom, CA 95630

Phone (800) 985-5955; Fax (916) 351-8279

page--of --- 2

Client: <u>ARCADIS</u>	Special Instructions/Notes:	Turnaround Time (Rush surcharges may apply)		
Project Name: <u>FORD LTP</u>		Standard <input checked="" type="checkbox"/>	Rush _____ (specify)	
Project Manager: <u>KRIS HINZLEY</u> Project # <u>30950315.701</u>		Canister Vacuum/Pressure		Requested Analyses
Sampler: <u>RACHEL ZIFAR / JACIA McCLAFFERTY</u>		Initial (in Hg)	Final (in Hg)	Lab Use Only
Site Name: <u>FORD LTP</u>	Receipt	Final (psig) Gas: N ₂ / He	TO-15	

Lab ID	Field Sample Identification (Location)	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Initial (in Hg)	Final (in Hg)	Receipt	Final (psig) Gas: N ₂ / He	TO-15
				Date	Time	Date	Time					
01A	MH-1067_061620	1L3248	N/A	6/16/20	0850	---	---	-29.3	-5.6			
02A	MH-1043_061620	1L1508	N/A	6/16/20	0818	---	---	-29.3	-8.7			
03A	MH-1020_061620	1L3944	N/A	6/16/20	0928	---	---	-29.2	-8.2			
04A	MH-1123_061520	1L3948	N/A	6/15/20	0852	---	---	-28.9	-9.6			
05A	MH-1082_061520	1L2945	N/A	6/15/20	1209	---	---	-29.1	-6.2			
06A	DUP -01	1L1841	N/A	6/10/20		---	---	-29.2	-4.6			
07A	MH-1210_061020	1L2919	N/A	6/10/20	1231	---	---	-29.1	-7.8			
08A	MH-1113_061520	1L1868	N/A	6/15/20	0829	---	---	-29.4	-9.9			
09A	MH-1116_061520	1L1517	N/A	6/15/20	0805	---	---	-28.2	-5.5			
10A	MH-1181_061520	1L1738	N/A	6/15/20	1018	---	---	-29.3	-6.3			
11A	MH-1096_061520	1L2642	N/A	6/15/20	1130	---	---	-29.7	-9.2			
12A	MH-1171_061020	1L3937	N/A	6/10/20	1049	---	---	-29.1	-7.2			
13A	MH-1122_061020	1L2625	N/A	6/10/20	1012	---	---	-29.2	-5.8			
14A	MH-1001_061020	1L3925	N/A	6/10/20	1141	---	---	-29.2	-8.4			
15A	MH-1088_060920	1L3930	N/A	6/9/20	1637	---	---	-29.2	-7.3			
16A	MH-1041_060920	1L3923	N/A	6/9/20	1816	---	---	-29.0	-7.6			

Relinquished by: (Signature/Affiliation) <u>[Signature] / ARCADIS</u>	Date <u>6/16/20</u>	Time <u>1500</u>	Received by: (Signature/Affiliation) <u>FEDEX</u>	Date <u>6/16/20</u>	Time <u>1500</u>
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation) <u>[Signature] / SATL</u>	Date <u>6/18/20</u>	Time <u>0952</u>
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only

Shipper Name: fedex Custody Seals Intact? Yes No None

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-131807-1
Client Project/Site: Ford LTP

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey



Authorized for release by:
6/26/2020 3:37:53 PM

Michael DelMonico, Project Manager I
(330)497-9396
michael.delmonico@testamericainc.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.



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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

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

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

Job ID: 240-131807-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP

Report Number: 240-131807-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 6/12/2020 11:10 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.5 C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples TRIP BLANK (240-131807-1), MH-1171_061020 (240-131807-2), MH-1001_060920 (240-131807-3), MH-1210_060920 (240-131807-4) and DUP-01 (240-131807-5) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 06/22/2020.

Vinyl chloride failed the recovery criteria high for LCS 240-439410/4. Refer to the QC report for details.

The laboratory control sample (LCS) for analytical batch 240-439410 recovered outside control limits for the following analyte: Vinyl chloride. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data has been reported: TRIP BLANK (240-131807-1), MH-1171_061020 (240-131807-2), MH-1001_060920 (240-131807-3), MH-1210_060920 (240-131807-4), DUP-01 (240-131807-5) and (LCS 240-439410/4).

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

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Samples MH-1171_061020 (240-131807-2), MH-1001_060920 (240-131807-3), MH-1210_060920 (240-131807-4) and DUP-01

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

Job ID: 240-131807-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

(240-131807-5) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 06/16/2020.

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

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Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396



Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-131807-1	TRIP BLANK	Water	06/10/20 00:00	06/12/20 11:10	
240-131807-2	MH-1171_061020	Water	06/10/20 10:57	06/12/20 11:10	
240-131807-3	MH-1001_060920	Water	06/10/20 12:00	06/12/20 11:10	
240-131807-4	MH-1210_060920	Water	06/10/20 12:52	06/12/20 11:10	
240-131807-5	DUP-01	Water	06/10/20 00:00	06/12/20 11:10	

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Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-131807-1

No Detections.

Client Sample ID: MH-1171_061020

Lab Sample ID: 240-131807-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.22	J	1.0	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: MH-1001_060920

Lab Sample ID: 240-131807-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.1	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA

Client Sample ID: MH-1210_060920

Lab Sample ID: 240-131807-4

No Detections.

Client Sample ID: DUP-01

Lab Sample ID: 240-131807-5

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-131807-1

Date Collected: 06/10/20 00:00

Matrix: Water

Date Received: 06/12/20 11:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/20 19:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/22/20 19:32	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/22/20 19:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/20 19:32	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/22/20 19:32	1
Vinyl chloride	1.0	U *	1.0	0.20	ug/L			06/22/20 19:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		75 - 130		06/22/20 19:32	1
4-Bromofluorobenzene (Surr)	97		47 - 134		06/22/20 19:32	1
Toluene-d8 (Surr)	90		69 - 122		06/22/20 19:32	1
Dibromofluoromethane (Surr)	100		78 - 129		06/22/20 19:32	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

Client Sample ID: MH-1171_061020

Lab Sample ID: 240-131807-2

Date Collected: 06/10/20 10:57

Matrix: Water

Date Received: 06/12/20 11:10

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L	-		06/16/20 18:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		70 - 133		06/16/20 18:19	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		06/22/20 19:57	1
cis-1,2-Dichloroethene	0.22	J	1.0	0.16	ug/L	-		06/22/20 19:57	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L	-		06/22/20 19:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		06/22/20 19:57	1
Trichloroethene	1.0	U	1.0	0.10	ug/L	-		06/22/20 19:57	1
Vinyl chloride	1.0	U *	1.0	0.20	ug/L	-		06/22/20 19:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		75 - 130		06/22/20 19:57	1
4-Bromofluorobenzene (Surr)	109		47 - 134		06/22/20 19:57	1
Toluene-d8 (Surr)	92		69 - 122		06/22/20 19:57	1
Dibromofluoromethane (Surr)	100		78 - 129		06/22/20 19:57	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

Client Sample ID: MH-1001_060920

Lab Sample ID: 240-131807-3

Date Collected: 06/10/20 12:00

Matrix: Water

Date Received: 06/12/20 11:10

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.1	J	2.0	0.86	ug/L			06/16/20 18:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		70 - 133		06/16/20 18:44	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/20 20:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/22/20 20:22	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/22/20 20:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/20 20:22	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/22/20 20:22	1
Vinyl chloride	1.0	U *	1.0	0.20	ug/L			06/22/20 20:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		75 - 130		06/22/20 20:22	1
4-Bromofluorobenzene (Surr)	104		47 - 134		06/22/20 20:22	1
Toluene-d8 (Surr)	92		69 - 122		06/22/20 20:22	1
Dibromofluoromethane (Surr)	96		78 - 129		06/22/20 20:22	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

Client Sample ID: MH-1210_060920

Lab Sample ID: 240-131807-4

Date Collected: 06/10/20 12:52

Matrix: Water

Date Received: 06/12/20 11:10

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/16/20 19:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		70 - 133		06/16/20 19:10	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/20 20:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/22/20 20:47	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/22/20 20:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/20 20:47	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/22/20 20:47	1
Vinyl chloride	1.0	U *	1.0	0.20	ug/L			06/22/20 20:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		75 - 130		06/22/20 20:47	1
4-Bromofluorobenzene (Surr)	93		47 - 134		06/22/20 20:47	1
Toluene-d8 (Surr)	88		69 - 122		06/22/20 20:47	1
Dibromofluoromethane (Surr)	103		78 - 129		06/22/20 20:47	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

Client Sample ID: DUP-01

Lab Sample ID: 240-131807-5

Date Collected: 06/10/20 00:00

Matrix: Water

Date Received: 06/12/20 11:10

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/16/20 19:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		70 - 133					06/16/20 19:36	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/20 21:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/22/20 21:12	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/22/20 21:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/20 21:12	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/22/20 21:12	1
Vinyl chloride	1.0	U *	1.0	0.20	ug/L			06/22/20 21:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		75 - 130					06/22/20 21:12	1
4-Bromofluorobenzene (Surr)	98		47 - 134					06/22/20 21:12	1
Toluene-d8 (Surr)	94		69 - 122					06/22/20 21:12	1
Dibromofluoromethane (Surr)	100		78 - 129					06/22/20 21:12	1

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (75-130)	BFB (47-134)	TOL (69-122)	DBFM (78-129)
240-131807-1	TRIP BLANK	90	97	90	100
240-131807-2	MH-1171_061020	93	109	92	100
240-131807-3	MH-1001_060920	93	104	92	96
240-131807-4	MH-1210_060920	93	93	88	103
240-131807-5	DUP-01	93	98	94	100
240-131839-E-1 MS	Matrix Spike	98	97	92	98
240-131839-F-1 MSD	Matrix Spike Duplicate	92	102	91	103
LCS 240-439410/4	Lab Control Sample	95	105	93	102
MB 240-439410/7	Method Blank	99	95	91	104

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA
		(70-133)
240-131782-A-6 MS	Matrix Spike	96
240-131782-A-6 MSD	Matrix Spike Duplicate	98
240-131807-2	MH-1171_061020	96
240-131807-3	MH-1001_060920	98
240-131807-4	MH-1210_060920	96
240-131807-5	DUP-01	96
LCS 240-438565/4	Lab Control Sample	92
MB 240-438565/5	Method Blank	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-439410/7
Matrix: Water
Analysis Batch: 439410

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/20 16:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/22/20 16:09	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/22/20 16:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/20 16:09	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/22/20 16:09	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/22/20 16:09	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		75 - 130		06/22/20 16:09	1
4-Bromofluorobenzene (Surr)	95		47 - 134		06/22/20 16:09	1
Toluene-d8 (Surr)	91		69 - 122		06/22/20 16:09	1
Dibromofluoromethane (Surr)	104		78 - 129		06/22/20 16:09	1

Lab Sample ID: LCS 240-439410/4
Matrix: Water
Analysis Batch: 439410

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	10.8		ug/L		108	73 - 129
cis-1,2-Dichloroethene	10.0	9.53		ug/L		95	75 - 124
Tetrachloroethene	10.0	11.6		ug/L		116	70 - 125
trans-1,2-Dichloroethene	10.0	10.1		ug/L		101	74 - 130
Trichloroethene	10.0	9.77		ug/L		98	71 - 121
Vinyl chloride	10.0	14.1	*	ug/L		141	61 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		75 - 130
4-Bromofluorobenzene (Surr)	105		47 - 134
Toluene-d8 (Surr)	93		69 - 122
Dibromofluoromethane (Surr)	102		78 - 129

Lab Sample ID: 240-131839-E-1 MS
Matrix: Water
Analysis Batch: 439410

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	3.0		10.0	13.5		ug/L		105	64 - 132
cis-1,2-Dichloroethene	1.0	U	10.0	10.4		ug/L		104	68 - 121
Tetrachloroethene	8.7		10.0	19.2		ug/L		104	52 - 129
trans-1,2-Dichloroethene	1.0	U	10.0	10.1		ug/L		101	69 - 126
Trichloroethene	12		10.0	20.8		ug/L		91	56 - 124
Vinyl chloride	1.0	U *	10.0	12.5		ug/L		125	49 - 136

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		75 - 130
4-Bromofluorobenzene (Surr)	97		47 - 134
Toluene-d8 (Surr)	92		69 - 122

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-131839-E-1 MS
Matrix: Water
Analysis Batch: 439410

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
Dibromofluoromethane (Surr)	98		78 - 129

Lab Sample ID: 240-131839-F-1 MSD
Matrix: Water
Analysis Batch: 439410

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier				Limits		Limit
1,1-Dichloroethene	3.0		10.0	14.2		ug/L		112	64 - 132	5	35
cis-1,2-Dichloroethene	1.0	U	10.0	10.4		ug/L		104	68 - 121	0	35
Tetrachloroethene	8.7		10.0	20.2		ug/L		115	52 - 129	5	35
trans-1,2-Dichloroethene	1.0	U	10.0	10.4		ug/L		104	69 - 126	3	35
Trichloroethene	12		10.0	21.9		ug/L		102	56 - 124	5	35
Vinyl chloride	1.0	U *	10.0	12.9		ug/L		129	49 - 136	3	35

Surrogate	MSD MSD		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	92		75 - 130
4-Bromofluorobenzene (Surr)	102		47 - 134
Toluene-d8 (Surr)	91		69 - 122
Dibromofluoromethane (Surr)	103		78 - 129

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-438565/5
Matrix: Water
Analysis Batch: 438565

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/16/20 12:18	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	92		70 - 133		06/16/20 12:18	1

Lab Sample ID: LCS 240-438565/4
Matrix: Water
Analysis Batch: 438565

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
							Limits
1,4-Dioxane	10.0	11.0		ug/L		110	80 - 135

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	92		70 - 133

Lab Sample ID: 240-131782-A-6 MS
Matrix: Water
Analysis Batch: 438565

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.
	Result	Qualifier	Added	Result	Qualifier				Limits
1,4-Dioxane	49		10.0	55.6	4	ug/L		65	46 - 170

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

<i>Surrogate</i>	<i>%Recovery</i>	<i>MS MS Qualifier</i>	<i>Limits</i>
1,2-Dichloroethane-d4 (Surr)	96		70 - 133

Lab Sample ID: 240-131782-A-6 MSD
Matrix: Water
Analysis Batch: 438565

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MSD Result</i>	<i>MSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
1,4-Dioxane	49		10.0	54.7	4	ug/L		55	46 - 170	2	26

<i>Surrogate</i>	<i>%Recovery</i>	<i>MSD MSD Qualifier</i>	<i>Limits</i>
1,2-Dichloroethane-d4 (Surr)	98		70 - 133



QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

GC/MS VOA

Analysis Batch: 438565

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-131807-2	MH-1171_061020	Total/NA	Water	8260B SIM	
240-131807-3	MH-1001_060920	Total/NA	Water	8260B SIM	
240-131807-4	MH-1210_060920	Total/NA	Water	8260B SIM	
240-131807-5	DUP-01	Total/NA	Water	8260B SIM	
MB 240-438565/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-438565/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-131782-A-6 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-131782-A-6 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 439410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-131807-1	TRIP BLANK	Total/NA	Water	8260B	
240-131807-2	MH-1171_061020	Total/NA	Water	8260B	
240-131807-3	MH-1001_060920	Total/NA	Water	8260B	
240-131807-4	MH-1210_060920	Total/NA	Water	8260B	
240-131807-5	DUP-01	Total/NA	Water	8260B	
MB 240-439410/7	Method Blank	Total/NA	Water	8260B	
LCS 240-439410/4	Lab Control Sample	Total/NA	Water	8260B	
240-131839-E-1 MS	Matrix Spike	Total/NA	Water	8260B	
240-131839-F-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-131807-1

Date Collected: 06/10/20 00:00

Matrix: Water

Date Received: 06/12/20 11:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	439410	06/22/20 19:32	LRW	TAL CAN

Client Sample ID: MH-1171_061020

Lab Sample ID: 240-131807-2

Date Collected: 06/10/20 10:57

Matrix: Water

Date Received: 06/12/20 11:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	439410	06/22/20 19:57	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	438565	06/16/20 18:19	SAM	TAL CAN

Client Sample ID: MH-1001_060920

Lab Sample ID: 240-131807-3

Date Collected: 06/10/20 12:00

Matrix: Water

Date Received: 06/12/20 11:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	439410	06/22/20 20:22	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	438565	06/16/20 18:44	SAM	TAL CAN

Client Sample ID: MH-1210_060920

Lab Sample ID: 240-131807-4

Date Collected: 06/10/20 12:52

Matrix: Water

Date Received: 06/12/20 11:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	439410	06/22/20 20:47	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	438565	06/16/20 19:10	SAM	TAL CAN

Client Sample ID: DUP-01

Lab Sample ID: 240-131807-5

Date Collected: 06/10/20 00:00

Matrix: Water

Date Received: 06/12/20 11:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	439410	06/22/20 21:12	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	438565	06/16/20 19:36	SAM	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-20
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-20
Texas	NELAP	T104704517-18-10	08-31-20
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-20
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20

TestAmerica Laboratory location: Brighton -- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

Client Contact: Arcadis
Address: 28550 Cabot Drive, Suite 500
City/State/Zip: Novi, MI, 48377
Phone: 248-994-2240

Client Project Manager: Kris Hinskey
Telephone: 248-994-2240
Email: kris@hinskey.com

Site Contact: Julia McClafferty
Telephone: 734-644-5131

Lab Contact: Mike DelMonico
Telephone: 330-497-9396

Company Name: Arcadis
Address: 28550 Cabot Drive, Suite 500
City/State/Zip: Novi, MI, 48377
Phone: 248-994-2240

Project Name: Ford LTP
Project Number: 30050315-402-04
PO # 30050315-402-04

Sampler Name: RACHEL BIELAK / JULIA MCCLAFFERTY
Method of Shipment/Carrier:
Shipping/Tracking No:

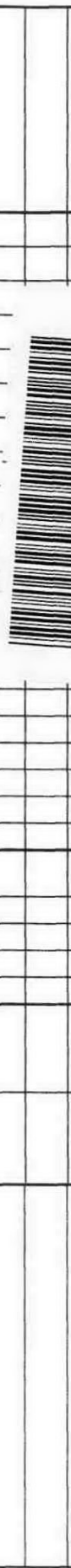
Analysis Turnaround Time
TAT if different from below:
10 day 3 weeks 2 weeks 1 week 2 days 1 day

Containers & Preservatives
HCl HNO3 H2SO4 ZnAc NaOH Other:

Matrix
Aqueous Solid Sediment Other:

Sample Date	Sample Time	Sample Identification	Filtered Sample (Y/N)	Composite C/Grab-G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Analyses
		TRIP BLANK										
6/10/20	1057	MH-1171-061020	N	G	X	X	X	X	X	X	X	
6/10/20	1200	MH-1001-061020	N	G	X	X	X	X	X	X	X	
6/10/20	1252	MH-1210-061020	N	G	X	X	X	X	X	X	X	
6/10/20		DUP-D1	N	G	X	X	X	X	X	X	X	

Sample Specific Notes / Special Instructions:
1 TEL BLANK
3 Vials for 8260B
3 Vials for 8260B SIM



Possible Hazard Identification
 Non-Hazard Irritant in Irritant Toxic Corrosive Flammable Poison B Unknown

Special Instructions/QC Requirements & Comments:
Sample Disposal (A fee may be assessed if samples are returned):
 Return to Client Disposal By Lab Archive For _____ Months

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by: RACHEL BIELAK
Relinquished by: [Signature]
Relinquished by: [Signature]

Company: Arcadis
Date/Time: 6/10/20 1420
Company: Arcadis
Date/Time: 6/11/20 1425
Company: ETA
Date/Time: 6-11-20 1428

Received by: NADVI GOLD STOFFAGE
Received by: [Signature]
Received in Laboratory by: [Signature]

Company: Arcadis
Date/Time: 6/10/20 1420
Company: ETA
Date/Time: 6-11-20 1427
Company: ETA
Date/Time: 6/12/20 1110



Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 131807

Client Arcadis

Site Name _____

Cooler unpacked by:

Cooler Received on 6/12/20

Opened on 6/12/20

Amant

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____

Storage Location _____

TestAmerica Cooler # CANTON Foam Box Client Cooler Box Other _____
 Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
 COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt See Multiple Cooler Form
 IR GUN# IR-10 (CF +0.7°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 IR GUN #IR-11 (CF +0.9°C) Observed Cooler Temp. 1.6 °C Corrected Cooler Temp. 2.5 °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No NA
 -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC902937
13. Were VOAs on the COC? Yes No NA
14. Were air bubbles >6 mm in any VOA vials? Yes No NA ● ← Larger than this.
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0117701E Yes No
16. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:

 VOAs
 Oil and Grease
 TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

Amant

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container.
 Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
 Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT



June 27, 2020

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30050315.0402.04 off site
Event Specific Scope of Work References: Sample COC
Laboratory: TestAmerica - North Canton
Laboratory submittal: 131807-1
Sample date: 2020-06-10
Report received by CADENA: 2020-06-27
Initial Data Verification completed by CADENA: 2020-06-27
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC

Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch 439410 LCS recovery was outlying biased high for the following analyte: VINYL CHLORIDE. Associated client sample results were non-detect so qualification was not required based on this high bias QC outlier.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

Reportable Results Only

CADENA Project ID: E203631

Laboratory: TestAmerica - North Canton

Laboratory Submittal: 131807-1

Sample Name:	TRIP BLANK	MH-1171_061020	MH-1001_060920	MH-1210_060920	DUP-01
Lab Sample ID:	2401318071	2401318072	2401318073	2401318074	2401318075
Sample Date:	6/10/2020	6/10/2020	6/10/2020	6/10/2020	6/10/2020

Analyte	Cas No.	Sample 1				Sample 2				Sample 3				Sample 4							
		Result	Limit	Units	Valid	Result	Limit	Units	Valid	Result	Limit	Units	Valid	Result	Limit	Units	Valid				
GC/MS VOC																					
<u>OSW-8260B</u>																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	0.22	1.0	ug/l	J	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
<u>OSW-8260BBSim</u>																					
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	1.1	2.0	ug/l	J	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-131807-1

CADENA Verification Report: 2020-06-27

Analyses Performed By:
TestAmerica
Edison, New Jersey

Report #37483R
Review Level: Tier III
Project: 30050315.402.02



DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-131807-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						VOC (Full Scan)	VOC (SIM)	MISC
240-131807-1	TRIP BLANK	240-131807-1	Water	6/10/2020		X		
	MH-1171_061020	240-131807-2	Water	6/10/2020		X	X	
	MH-1001_060920	240-131807-3	Water	6/10/2020		X	X	
	MH-1210_060920	240-131807-4	Water	6/10/2020		X	X	
	DUP-01	240-131807-5	Water	6/10/2020	MH-1210_060920	X	X	

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260B and 8260B SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) 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 8260B/8260B-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample Locations	Initial/Continuing	Compound	Criteria
TRIP BLANK MH-1171_061020 MH-1001_060920 MH-1210_060920 DUP-01	CCV %D	Tetrachloroethene	+29.9%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

DATA REVIEW

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01 ¹	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01 ¹	Non-detect	No Action
		Detect	
Initial Calibration	%RSD > 15% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD >90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D >90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

¹ RRF of 0.01 only applies to compounds which are typically poor responding compounds (i.e., ketones, 1,4-dioxane, etc.)

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within 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 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.

DATA REVIEW

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MH-1210_060920/ DUP-01	All compounds	U	U	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. 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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260B/8260B-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X	X		
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:



DATE: July 14, 2020

PEER REVIEW: Dennis Capria

DATE: July 22, 2020



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



**NO CORRECTIONS/QUALIFIERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**



Client Contact Company Name: Arcadis Address: 28550 Cabot Drive, Suite 500 City/State/Zip: Novi, MI, 48377 Phone: 248-994-2240		Site Contact: Julia McClafferty Telephone: 734-644-5131		Lab Contact: Mike DelMonico Telephone: 330-497-9396		TestAmerica Laboratories, Inc. COC No: _____ of _____ COCs	
Project Name: Ford LTP 000804 Project Number: 30050315-402-04-761 PO # 30050315-402-04-761		Email: kristoffer.hinskey@arcadis.com		Analysis Turnaround Time TAT if different from below: 10 day <input checked="" type="checkbox"/> 3 weeks 1 week <input type="checkbox"/> 2 weeks 2 days <input type="checkbox"/> 1 day		Analyses Walk-in client Lab sampling Job/SDG No: _____	
Sampler Name: RACHEL BIELAK / JULIA MCCLAFFERTY Method of Shipment/Carrier: Shipping/Tracking No:		Containers & Preservatives H2SO4 HNO3 HCl NaOH ZnAc NaOH Other:		Filtered Sample (Y/N) Composite C/Grab-G		Sample Specific Notes / Special Instructions: 1 TELP BLANK 3 Vials for 8260 B 3 Vials for 8260 SIM	
Sample Identification		Matrix Air Aqueous Sediment Solid Other:		1,1-DCE 8260B cis-1,2-DCE 8260B Trans-1,2-DCE 8260B PCE 8260B TCE 8260B Vinyl Chloride 8260B 1,4-Dioxane 8260B SIM			
Sample Date		Sample Time		240-131807 Chain of Custody			
TRIP BLANK				Sample Disposal (A fee may be assessed if samples are returned) <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months			
MH-1171-061020		6/10/20 1057		Received by: NAMI GOLD STOPPAGE		Date/Time: 6/10/20 1420	
MH-1001-061020		6/10/20 1200		Received by: [Signature]		Date/Time: 6-11-20 1427	
MH-1210-061020		6/10/20 1252		Received in Laboratory by: [Signature]		Date/Time: 6/12/20 1110	
DUP-D1		6/10/20					
Possible Hazard Identification <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown		Special Instructions/QC Requirements & Comments: Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631 Level IV Reporting requested.		Company: Arcadis		Company: Arcadis	
Relinquished by: RACHEL BIELAK for print		Date/Time: 6/10/20 1420		Company: Arcadis		Date/Time: 6-11-20 1427	
Relinquished by: [Signature]		Date/Time: 6/10/20 1425		Company: ETA		Date/Time: 6/12/20 1110	
Relinquished by: [Signature]		Date/Time: 6-11-20 1428		Company: ETA		Date/Time: 6/12/20 1110	

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-131807-1

Date Collected: 06/10/20 00:00

Matrix: Water

Date Received: 06/12/20 11:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/20 19:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/22/20 19:32	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/22/20 19:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/20 19:32	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/22/20 19:32	1
Vinyl chloride	1.0	U *	1.0	0.20	ug/L			06/22/20 19:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		75 - 130		06/22/20 19:32	1
4-Bromofluorobenzene (Surr)	97		47 - 134		06/22/20 19:32	1
Toluene-d8 (Surr)	90		69 - 122		06/22/20 19:32	1
Dibromofluoromethane (Surr)	100		78 - 129		06/22/20 19:32	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

Client Sample ID: MH-1171_061020

Lab Sample ID: 240-131807-2

Date Collected: 06/10/20 10:57

Matrix: Water

Date Received: 06/12/20 11:10

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L	-		06/16/20 18:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		70 - 133		06/16/20 18:19	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		06/22/20 19:57	1
cis-1,2-Dichloroethene	0.22	J	1.0	0.16	ug/L	-		06/22/20 19:57	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L	-		06/22/20 19:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		06/22/20 19:57	1
Trichloroethene	1.0	U	1.0	0.10	ug/L	-		06/22/20 19:57	1
Vinyl chloride	1.0	U *	1.0	0.20	ug/L	-		06/22/20 19:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		75 - 130		06/22/20 19:57	1
4-Bromofluorobenzene (Surr)	109		47 - 134		06/22/20 19:57	1
Toluene-d8 (Surr)	92		69 - 122		06/22/20 19:57	1
Dibromofluoromethane (Surr)	100		78 - 129		06/22/20 19:57	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

Client Sample ID: MH-1001_060920

Lab Sample ID: 240-131807-3

Date Collected: 06/10/20 12:00

Matrix: Water

Date Received: 06/12/20 11:10

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.1	J	2.0	0.86	ug/L			06/16/20 18:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		70 - 133		06/16/20 18:44	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/20 20:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/22/20 20:22	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/22/20 20:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/20 20:22	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/22/20 20:22	1
Vinyl chloride	1.0	U *	1.0	0.20	ug/L			06/22/20 20:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		75 - 130		06/22/20 20:22	1
4-Bromofluorobenzene (Surr)	104		47 - 134		06/22/20 20:22	1
Toluene-d8 (Surr)	92		69 - 122		06/22/20 20:22	1
Dibromofluoromethane (Surr)	96		78 - 129		06/22/20 20:22	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

Client Sample ID: MH-1210_060920

Lab Sample ID: 240-131807-4

Date Collected: 06/10/20 12:52

Matrix: Water

Date Received: 06/12/20 11:10

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L	-		06/16/20 19:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		70 - 133		06/16/20 19:10	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		06/22/20 20:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L	-		06/22/20 20:47	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L	-		06/22/20 20:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		06/22/20 20:47	1
Trichloroethene	1.0	U	1.0	0.10	ug/L	-		06/22/20 20:47	1
Vinyl chloride	1.0	U *	1.0	0.20	ug/L	-		06/22/20 20:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		75 - 130		06/22/20 20:47	1
4-Bromofluorobenzene (Surr)	93		47 - 134		06/22/20 20:47	1
Toluene-d8 (Surr)	88		69 - 122		06/22/20 20:47	1
Dibromofluoromethane (Surr)	103		78 - 129		06/22/20 20:47	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131807-1

Client Sample ID: DUP-01

Lab Sample ID: 240-131807-5

Date Collected: 06/10/20 00:00

Matrix: Water

Date Received: 06/12/20 11:10

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/16/20 19:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		70 - 133					06/16/20 19:36	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/20 21:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/22/20 21:12	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/22/20 21:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/20 21:12	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/22/20 21:12	1
Vinyl chloride	1.0	U *	1.0	0.20	ug/L			06/22/20 21:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		75 - 130					06/22/20 21:12	1
4-Bromofluorobenzene (Surr)	98		47 - 134					06/22/20 21:12	1
Toluene-d8 (Surr)	94		69 - 122					06/22/20 21:12	1
Dibromofluoromethane (Surr)	100		78 - 129					06/22/20 21:12	1

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-132011-1
Client Project/Site: Ford LTP

For:
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Authorized for release by:
6/30/2020 11:46:17 AM

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

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132011-1

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.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
⌘	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

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132011-1

Job ID: 240-132011-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP

Report Number: 240-132011-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 6/17/2020 9:30 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.1° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples MH-1181_061520 (240-132011-1), MH-1096_061520 (240-132011-2), MH-1082_061520 (240-132011-3) and TRIP BLANK (240-132011-4) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 06/25/2020.

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

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Samples MH-1181_061520 (240-132011-1), MH-1096_061520 (240-132011-2) and MH-1082_061520 (240-132011-3) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 06/26/2020.

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

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132011-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396



Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132011-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-132011-1	MH-1181_061520	Water	06/15/20 10:30	06/17/20 09:30	
240-132011-2	MH-1096_061520	Water	06/15/20 11:42	06/17/20 09:30	
240-132011-3	MH-1082_061520	Water	06/15/20 12:20	06/17/20 09:30	
240-132011-4	TRIP BLANK	Water	06/15/20 00:00	06/17/20 09:30	

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- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132011-1

Client Sample ID: MH-1181_061520

Lab Sample ID: 240-132011-1

No Detections.

Client Sample ID: MH-1096_061520

Lab Sample ID: 240-132011-2

No Detections.

Client Sample ID: MH-1082_061520

Lab Sample ID: 240-132011-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.2	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-132011-4

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

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14

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132011-1

Client Sample ID: MH-1181_061520

Lab Sample ID: 240-132011-1

Date Collected: 06/15/20 10:30

Matrix: Water

Date Received: 06/17/20 09:30

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/26/20 08:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		70 - 133		06/26/20 08:35	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 02:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/25/20 02:39	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/25/20 02:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 02:39	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/25/20 02:39	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/25/20 02:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		75 - 130		06/25/20 02:39	1
4-Bromofluorobenzene (Surr)	73		47 - 134		06/25/20 02:39	1
Toluene-d8 (Surr)	86		69 - 122		06/25/20 02:39	1
Dibromofluoromethane (Surr)	99		78 - 129		06/25/20 02:39	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132011-1

Client Sample ID: MH-1096_061520

Lab Sample ID: 240-132011-2

Date Collected: 06/15/20 11:42

Matrix: Water

Date Received: 06/17/20 09:30

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/26/20 09:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		70 - 133		06/26/20 09:01	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 03:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/25/20 03:03	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/25/20 03:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 03:03	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/25/20 03:03	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/25/20 03:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		75 - 130		06/25/20 03:03	1
4-Bromofluorobenzene (Surr)	76		47 - 134		06/25/20 03:03	1
Toluene-d8 (Surr)	85		69 - 122		06/25/20 03:03	1
Dibromofluoromethane (Surr)	97		78 - 129		06/25/20 03:03	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132011-1

Client Sample ID: MH-1082_061520

Lab Sample ID: 240-132011-3

Date Collected: 06/15/20 12:20

Matrix: Water

Date Received: 06/17/20 09:30

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.2	J	2.0	0.86	ug/L			06/26/20 09:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		70 - 133		06/26/20 09:27	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 03:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/25/20 03:26	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/25/20 03:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 03:26	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/25/20 03:26	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/25/20 03:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		75 - 130		06/25/20 03:26	1
4-Bromofluorobenzene (Surr)	77		47 - 134		06/25/20 03:26	1
Toluene-d8 (Surr)	86		69 - 122		06/25/20 03:26	1
Dibromofluoromethane (Surr)	98		78 - 129		06/25/20 03:26	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132011-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-132011-4

Date Collected: 06/15/20 00:00

Matrix: Water

Date Received: 06/17/20 09:30

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 03:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/25/20 03:49	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/25/20 03:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 03:49	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/25/20 03:49	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/25/20 03:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		75 - 130		06/25/20 03:49	1
4-Bromofluorobenzene (Surr)	89		47 - 134		06/25/20 03:49	1
Toluene-d8 (Surr)	83		69 - 122		06/25/20 03:49	1
Dibromofluoromethane (Surr)	94		78 - 129		06/25/20 03:49	1

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132011-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (75-130)	BFB (47-134)	TOL (69-122)	DBFM (78-129)
240-132011-1	MH-1181_061520	92	73	86	99
240-132011-2	MH-1096_061520	89	76	85	97
240-132011-3	MH-1082_061520	88	77	86	98
240-132011-4	TRIP BLANK	89	89	83	94
240-132049-E-1 MS	Matrix Spike	79	89	92	91
240-132049-F-1 MSD	Matrix Spike Duplicate	80	87	91	91
LCS 240-439903/4	Lab Control Sample	80	87	91	92
MB 240-439903/7	Method Blank	87	77	88	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

TOL = Toluene-d8 (Surr)

DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (70-133)
240-132011-1	MH-1181_061520	94
240-132011-2	MH-1096_061520	94
240-132011-3	MH-1082_061520	100
240-132112-A-9 MS	Matrix Spike	101
240-132112-A-9 MSD	Matrix Spike Duplicate	102
LCS 240-440164/4	Lab Control Sample	96
MB 240-440164/5	Method Blank	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132011-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-439903/7
Matrix: Water
Analysis Batch: 439903

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 01:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/25/20 01:53	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/25/20 01:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 01:53	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/25/20 01:53	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/25/20 01:53	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		75 - 130		06/25/20 01:53	1
4-Bromofluorobenzene (Surr)	77		47 - 134		06/25/20 01:53	1
Toluene-d8 (Surr)	88		69 - 122		06/25/20 01:53	1
Dibromofluoromethane (Surr)	96		78 - 129		06/25/20 01:53	1

Lab Sample ID: LCS 240-439903/4
Matrix: Water
Analysis Batch: 439903

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	9.29		ug/L		93	73 - 129
cis-1,2-Dichloroethene	10.0	9.83		ug/L		98	75 - 124
Tetrachloroethene	10.0	11.0		ug/L		110	70 - 125
trans-1,2-Dichloroethene	10.0	9.50		ug/L		95	74 - 130
Trichloroethene	10.0	10.1		ug/L		101	71 - 121
Vinyl chloride	10.0	9.48		ug/L		95	61 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	80		75 - 130
4-Bromofluorobenzene (Surr)	87		47 - 134
Toluene-d8 (Surr)	91		69 - 122
Dibromofluoromethane (Surr)	92		78 - 129

Lab Sample ID: 240-132049-E-1 MS
Matrix: Water
Analysis Batch: 439903

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	0.83	J	10.0	9.22		ug/L		84	64 - 132
cis-1,2-Dichloroethene	1.0	U	10.0	9.31		ug/L		93	68 - 121
Tetrachloroethene	1.0	U	10.0	9.71		ug/L		97	52 - 129
trans-1,2-Dichloroethene	1.0	U	10.0	8.98		ug/L		90	69 - 126
Trichloroethene	1.0	U	10.0	8.81		ug/L		88	56 - 124
Vinyl chloride	0.86	J	10.0	8.90		ug/L		80	49 - 136

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	79		75 - 130
4-Bromofluorobenzene (Surr)	89		47 - 134
Toluene-d8 (Surr)	92		69 - 122

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132011-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-132049-E-1 MS
Matrix: Water
Analysis Batch: 439903

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	91		78 - 129

Lab Sample ID: 240-132049-F-1 MSD
Matrix: Water
Analysis Batch: 439903

Client Sample ID: Matrix Spike Duplicate
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-Dichloroethene	0.83	J	10.0	9.96		ug/L		91	64 - 132	8	35
cis-1,2-Dichloroethene	1.0	U	10.0	9.60		ug/L		96	68 - 121	3	35
Tetrachloroethene	1.0	U	10.0	10.5		ug/L		105	52 - 129	8	35
trans-1,2-Dichloroethene	1.0	U	10.0	9.47		ug/L		95	69 - 126	5	35
Trichloroethene	1.0	U	10.0	9.53		ug/L		95	56 - 124	8	35
Vinyl chloride	0.86	J	10.0	9.55		ug/L		87	49 - 136	7	35

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	80		75 - 130
4-Bromofluorobenzene (Surr)	87		47 - 134
Toluene-d8 (Surr)	91		69 - 122
Dibromofluoromethane (Surr)	91		78 - 129

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-440164/5
Matrix: Water
Analysis Batch: 440164

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/26/20 07:43	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		70 - 133		06/26/20 07:43	1

Lab Sample ID: LCS 240-440164/4
Matrix: Water
Analysis Batch: 440164

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	9.95		ug/L		99	80 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	96		70 - 133

Lab Sample ID: 240-132112-A-9 MS
Matrix: Water
Analysis Batch: 440164

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	2.0	U	10.0	9.11		ug/L		91	46 - 170

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132011-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

<i>Surrogate</i>	<i>%Recovery</i>	<i>MS MS Qualifier</i>	<i>Limits</i>
1,2-Dichloroethane-d4 (Surr)	101		70 - 133

Lab Sample ID: 240-132112-A-9 MSD
Matrix: Water
Analysis Batch: 440164

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MSD Result</i>	<i>MSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	46 - 170	13	26

<i>Surrogate</i>	<i>%Recovery</i>	<i>MSD MSD Qualifier</i>	<i>Limits</i>
1,2-Dichloroethane-d4 (Surr)	102		70 - 133



QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132011-1

GC/MS VOA

Analysis Batch: 439903

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-132011-1	MH-1181_061520	Total/NA	Water	8260B	
240-132011-2	MH-1096_061520	Total/NA	Water	8260B	
240-132011-3	MH-1082_061520	Total/NA	Water	8260B	
240-132011-4	TRIP BLANK	Total/NA	Water	8260B	
MB 240-439903/7	Method Blank	Total/NA	Water	8260B	
LCS 240-439903/4	Lab Control Sample	Total/NA	Water	8260B	
240-132049-E-1 MS	Matrix Spike	Total/NA	Water	8260B	
240-132049-F-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 440164

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-132011-1	MH-1181_061520	Total/NA	Water	8260B SIM	
240-132011-2	MH-1096_061520	Total/NA	Water	8260B SIM	
240-132011-3	MH-1082_061520	Total/NA	Water	8260B SIM	
MB 240-440164/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-440164/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-132112-A-9 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-132112-A-9 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132011-1

Client Sample ID: MH-1181_061520

Lab Sample ID: 240-132011-1

Date Collected: 06/15/20 10:30

Matrix: Water

Date Received: 06/17/20 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	439903	06/25/20 02:39	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	440164	06/26/20 08:35	TJL2	TAL CAN

Client Sample ID: MH-1096_061520

Lab Sample ID: 240-132011-2

Date Collected: 06/15/20 11:42

Matrix: Water

Date Received: 06/17/20 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	439903	06/25/20 03:03	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	440164	06/26/20 09:01	TJL2	TAL CAN

Client Sample ID: MH-1082_061520

Lab Sample ID: 240-132011-3

Date Collected: 06/15/20 12:20

Matrix: Water

Date Received: 06/17/20 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	439903	06/25/20 03:26	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	440164	06/26/20 09:27	TJL2	TAL CAN

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-132011-4

Date Collected: 06/15/20 00:00

Matrix: Water

Date Received: 06/17/20 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	439903	06/25/20 03:49	LRW	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132011-1

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-20
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-20
Texas	NELAP	T104704517-18-10	08-31-20
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-20
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20



Address:

TAL-9210

Regulatory Program: DW NPDES RCRA Other:

Client Contact Company Name: ARCADIS Address: 98550 CABOT DR. #500 City/State/Zip: NOVI, MI 48377 Phone: 248-994-2240 Fax: Project Name: FORD LTP Site: FORD LTP PO# 30050315.701		Project Manager: KRIS HUSKEY Tel/Email: 248-994-2240 Analysis Turnaround Time <input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Site Contact: RACHEL BIEBAK Date: 6/15/20 Lab Contact: MIKE DELANICO Carrier:		COC No: 361220 of COCs Sampler: RACHEL BIEBAK/EMMA WI For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:											
Sample Identification MH-1181-061520 MH-1096-061520 MH-1082-061520 TRIP BLANK		Sample Date 6/15/20 6/15/20 6/15/20 -		Sample Time 1030 1142 1220 -		Sample Type (C=Comp, G=Grab) G G G -		Matrix W W W W		# of Cont. 6 6 6 1		Filtered Sample (Y/N) N N N N		Perform MS / MSD (Y/N) N N N N		Sample Specific Notes: 300AS for B260B 300AS for B260B BSMY TRIP BLANK	
240-132011 Chain of Custody																	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other 1, 2 Possible Hazard Identification: Please List any EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample. <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown																	
Special Instructions/QC Requirements & Comments: Custody Seal No.: Company: ARCADIS Date/Time: 6/15/20 1520 Relinquished by: RACHEL BIEBAK Relinquished by: RACHEL BIEBAK Relinquished by: JEFF HALE																	
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months Cooler Temp. (°C): Obs'd: _____ Company: ARCADIS Date/Time: 6/15/20 1520 Company: ARCADIS Date/Time: 6/16/20 1629 Company: ETA Date/Time: 6/17/20 0930																	



Canton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Amant

Cooler Received on 6/17/20 Opened on 6/17/20

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # CANTDN Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt See Multiple Cooler Form
 IR GUN# IR-10 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 IR GUN #IR-11 (CF +0.9 °C) Observed Cooler Temp. 3.2 °C Corrected Cooler Temp. 4.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
 -Were tamper/custody seals intact and uncompromised? Yes No NA

3. Shippers' packing slip attached to the cooler(s)? Yes No

4. Did custody papers accompany the sample(s)? Yes No

5. Were the custody papers relinquished & signed in the appropriate place? Yes No

6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No

7. Did all bottles arrive in good condition (Unbroken)? Yes No

8. Could all bottle labels be reconciled with the COC? Yes No

9. Were correct bottle(s) used for the test(s) indicated? Yes No

10. Sufficient quantity received to perform indicated analyses? Yes No

11. Are these work share samples? Yes No

If yes, Questions 12-16 have been checked at the originating laboratory.

12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC902937

13. Were VOAs on the COC? Yes No

14. Were air bubbles >6 mm in any VOA vials? Yes No NA ● ← Larger than this.

15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0117701E Yes No

16. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:
 VOAs
 Oil and Grease
 TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by: _____

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT



June 30, 2020

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30050315.0402.04 off site
Event Specific Scope of Work References: Sample COC
Laboratory: TestAmerica - North Canton
Laboratory submittal: 132011-1
Sample date: 2020-06-15
Report received by CADENA: 2020-06-30
Initial Data Verification completed by CADENA: 2020-06-30
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC

Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

Reportable Results Only

CADENA Project ID: E203631

Laboratory: TestAmerica - North Canton

Laboratory Submittal: 132011-1

Analyte	Cas No.	Sample Name: MH-1181_061520				Sample Name: MH-1096_061520				Sample Name: MH-1082_061520				Sample Name: TRIP BLANK			
		Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier
		2401320111				2401320112				2401320113				2401320114			
		6/15/2020				6/15/2020				6/15/2020				6/15/2020			

GC/MS VOC

OSW-8260B

1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---

OSW-8260BBSim

1,4-Dioxane	123-91-1	ND	2.0	ug/l	---	ND	2.0	ug/l	---	1.2	2.0	ug/l	J				
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Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-132011-1

CADENA Verification Report: 2020-06-30

Analyses Performed By:

TestAmerica

Edison, New Jersey

Report #37484R

Review Level: Tier III

Project: 30050315.402.02

DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-132011-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						VOC (Full Scan)	VOC (SIM)	MISC
240-132011-1	MH-1181_061520	240-132011-1	Water	6/10/2020		X	X	
	MH-1096_061520	240-132011-2	Water	6/10/2020		X	X	
	MH-1082_061520	240-132011-3	Water	6/10/2020		X	X	
	TRIP BLANK	240-132011-4	Water	6/10/2020		X		

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260B and 8260B SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) 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 8260B/8260B-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

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 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.

A field duplicate analysis was not performed on a sample within this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. 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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260B/8260B-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:



DATE: July 14, 2020

PEER REVIEW: Dennis Capria

DATE: July 22, 2020



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



**NO CORRECTIONS/QUALIFIERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**






Address:

TAL-9210

Regulatory Program: DW NPDES RCRA Other:

Client Contact Company Name: ARCADIS Address: 98550 CABOT DR. #500 City/State/Zip: NOVI, MI 48377 Phone: 248-994-2240 Fax: Project Name: FORD LTP Site: FORD LTP PO# 30050315.701		Project Manager: KRIS HUSKEY Tel/Email: 248-994-2240 Analysis Turnaround Time <input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below <input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Site Contact: RACHEL BIEAK Date: 6/15/20 Lab Contact: MIKE DELANICO Carrier:		COC No: 361220 of COCs Sampler: RACHEL BIEAK/EMMA WI For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:											
Sample Identification MH-1181-061520 MH-1096-061520 MH-1082-061520 TRIP BLANK		Sample Date 6/15/20 6/15/20 6/15/20 -		Sample Time 1030 1142 1220 -		Sample Type (C=Comp, G=Grab) G G G -		Matrix W W W W		# of Cont. 6 6 6 1		Filtered Sample (Y/N) N N N N		Perform MS / MSD (Y/N) N N N N		Sample Specific Notes: 300AS for B260B 300AS for B260B BSMY TRIP BLANK	
 240-132011 Chain of Custody																	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other 1, 2																	
Possible Hazard Identification: Please List any EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.																	
Special Instructions/QC Requirements & Comments:																	
Custody Seal No.: Company: ARCADIS Company: ARCADIS Company: ETA				Date/Time: 6/15/20 1520 6/16/20 1605 6/16/20 1629				Received by: Rachel Bieak Rachel Bieak Jenni Hare				Date/Time: 6/15/20 1920 6/16/20 1620 6/17/20 0930					
Relinquished by: RACHEL BIEAK RACHEL BIEAK Jenni Hare				Relinquished by: Jenni Hare Jenni Hare Jenni Hare				Relinquished by: Jenni Hare Jenni Hare Jenni Hare				Relinquished by: Jenni Hare Jenni Hare Jenni Hare					



Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132011-1

Client Sample ID: MH-1181_061520

Lab Sample ID: 240-132011-1

Date Collected: 06/15/20 10:30

Matrix: Water

Date Received: 06/17/20 09:30

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/26/20 08:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		70 - 133		06/26/20 08:35	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 02:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/25/20 02:39	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/25/20 02:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 02:39	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/25/20 02:39	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/25/20 02:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		75 - 130		06/25/20 02:39	1
4-Bromofluorobenzene (Surr)	73		47 - 134		06/25/20 02:39	1
Toluene-d8 (Surr)	86		69 - 122		06/25/20 02:39	1
Dibromofluoromethane (Surr)	99		78 - 129		06/25/20 02:39	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132011-1

Client Sample ID: MH-1096_061520

Lab Sample ID: 240-132011-2

Date Collected: 06/15/20 11:42

Matrix: Water

Date Received: 06/17/20 09:30

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/26/20 09:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		70 - 133		06/26/20 09:01	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 03:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/25/20 03:03	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/25/20 03:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 03:03	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/25/20 03:03	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/25/20 03:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		75 - 130		06/25/20 03:03	1
4-Bromofluorobenzene (Surr)	76		47 - 134		06/25/20 03:03	1
Toluene-d8 (Surr)	85		69 - 122		06/25/20 03:03	1
Dibromofluoromethane (Surr)	97		78 - 129		06/25/20 03:03	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132011-1

Client Sample ID: MH-1082_061520

Lab Sample ID: 240-132011-3

Date Collected: 06/15/20 12:20

Matrix: Water

Date Received: 06/17/20 09:30

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.2	J	2.0	0.86	ug/L			06/26/20 09:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		70 - 133		06/26/20 09:27	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 03:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/25/20 03:26	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/25/20 03:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 03:26	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/25/20 03:26	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/25/20 03:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		75 - 130		06/25/20 03:26	1
4-Bromofluorobenzene (Surr)	77		47 - 134		06/25/20 03:26	1
Toluene-d8 (Surr)	86		69 - 122		06/25/20 03:26	1
Dibromofluoromethane (Surr)	98		78 - 129		06/25/20 03:26	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132011-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-132011-4

Date Collected: 06/15/20 00:00

Matrix: Water

Date Received: 06/17/20 09:30

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 03:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/25/20 03:49	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/25/20 03:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 03:49	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/25/20 03:49	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/25/20 03:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		75 - 130		06/25/20 03:49	1
4-Bromofluorobenzene (Surr)	89		47 - 134		06/25/20 03:49	1
Toluene-d8 (Surr)	83		69 - 122		06/25/20 03:49	1
Dibromofluoromethane (Surr)	94		78 - 129		06/25/20 03:49	1

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-132013-1
Client Project/Site: Ford LTP

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey



Authorized for release by:
6/30/2020 11:58:51 AM

Michael DelMonico, Project Manager I
(330)497-9396
michael.delmonico@testamericainc.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.



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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

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.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	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

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Job ID: 240-132013-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP

Report Number: 240-132013-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 6/17/2020 9:30 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.1° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples TRIP BLANK (240-132013-1), MH-1043_061620 (240-132013-2), MH-1067_061620 (240-132013-3), MH-1020_061620 (240-132013-4) and MH-1219_061620 (240-132013-6) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 06/25/2020.

Samples MH-1043_061620 (240-132013-2)[5X], MH-1067_061620 (240-132013-3)[5X] and MH-1020_061620 (240-132013-4)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The following volatiles samples were diluted due to foaming at the time of purging during the original sample analysis: MH-1043_061620 (240-132013-2), MH-1067_061620 (240-132013-3) and MH-1020_061620 (240-132013-4). Elevated reporting limits (RLs) are provided.

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

VOLATILE ORGANIC COMPOUNDS

Sample MH-1020_061620 (240-132013-7) was analyzed for volatile organic compounds in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 06/26/2020.

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Job ID: 240-132013-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

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

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Samples MH-1043_061620 (240-132013-2), MH-1067_061620 (240-132013-3), MH-1020_061620 (240-132013-4) and MH-1219_061620 (240-132013-6) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 06/26/2020.

Sample MH-1020_061620 (240-132013-4)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The following volatiles sample was diluted due to foaming at the time of purging during the original sample analysis: MH-1020_061620 (240-132013-4). Elevated reporting limits (RLs) are provided.

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

PERCENT SOLIDS

Sample MH-1020_061620 (240-132013-7) was analyzed for percent solids in accordance with ASTM Method D2216-80. The samples were analyzed on 06/23/2020.

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



Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B MI	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
Moisture	Percent Moisture	EPA	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396



Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-132013-1	TRIP BLANK	Water	06/16/20 00:00	06/17/20 09:30	
240-132013-2	MH-1043_061620	Water	06/16/20 08:30	06/17/20 09:30	
240-132013-3	MH-1067_061620	Water	06/16/20 09:00	06/17/20 09:30	
240-132013-4	MH-1020_061620	Water	06/16/20 09:38	06/17/20 09:30	
240-132013-6	MH-1219_061620	Water	06/16/20 14:22	06/17/20 09:30	
240-132013-7	MH-1020_061620	Solid	06/16/20 09:45	06/17/20 09:30	

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-132013-1

No Detections.

Client Sample ID: MH-1043_061620

Lab Sample ID: 240-132013-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.2	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA

Client Sample ID: MH-1067_061620

Lab Sample ID: 240-132013-3

No Detections.

Client Sample ID: MH-1020_061620

Lab Sample ID: 240-132013-4

No Detections.

Client Sample ID: MH-1219_061620

Lab Sample ID: 240-132013-6

No Detections.

Client Sample ID: MH-1020_061620

Lab Sample ID: 240-132013-7

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton



Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-132013-1

Date Collected: 06/16/20 00:00

Matrix: Water

Date Received: 06/17/20 09:30

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 04:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/25/20 04:12	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/25/20 04:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 04:12	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/25/20 04:12	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/25/20 04:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		75 - 130		06/25/20 04:12	1
4-Bromofluorobenzene (Surr)	84		47 - 134		06/25/20 04:12	1
Toluene-d8 (Surr)	87		69 - 122		06/25/20 04:12	1
Dibromofluoromethane (Surr)	95		78 - 129		06/25/20 04:12	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Client Sample ID: MH-1043_061620

Lab Sample ID: 240-132013-2

Date Collected: 06/16/20 08:30

Matrix: Water

Date Received: 06/17/20 09:30

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.2	J	2.0	0.86	ug/L			06/26/20 12:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		70 - 133		06/26/20 12:57	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	0.95	ug/L			06/25/20 04:35	5
cis-1,2-Dichloroethene	5.0	U	5.0	0.80	ug/L			06/25/20 04:35	5
Tetrachloroethene	5.0	U	5.0	0.75	ug/L			06/25/20 04:35	5
trans-1,2-Dichloroethene	5.0	U	5.0	0.95	ug/L			06/25/20 04:35	5
Trichloroethene	5.0	U	5.0	0.50	ug/L			06/25/20 04:35	5
Vinyl chloride	5.0	U	5.0	1.0	ug/L			06/25/20 04:35	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		75 - 130		06/25/20 04:35	5
4-Bromofluorobenzene (Surr)	78		47 - 134		06/25/20 04:35	5
Toluene-d8 (Surr)	86		69 - 122		06/25/20 04:35	5
Dibromofluoromethane (Surr)	95		78 - 129		06/25/20 04:35	5

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Client Sample ID: MH-1067_061620

Lab Sample ID: 240-132013-3

Date Collected: 06/16/20 09:00

Matrix: Water

Date Received: 06/17/20 09:30

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L	-		06/26/20 13:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		70 - 133		06/26/20 13:23	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	0.95	ug/L	-		06/25/20 04:58	5
cis-1,2-Dichloroethene	5.0	U	5.0	0.80	ug/L	-		06/25/20 04:58	5
Tetrachloroethene	5.0	U	5.0	0.75	ug/L	-		06/25/20 04:58	5
trans-1,2-Dichloroethene	5.0	U	5.0	0.95	ug/L	-		06/25/20 04:58	5
Trichloroethene	5.0	U	5.0	0.50	ug/L	-		06/25/20 04:58	5
Vinyl chloride	5.0	U	5.0	1.0	ug/L	-		06/25/20 04:58	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		75 - 130		06/25/20 04:58	5
4-Bromofluorobenzene (Surr)	80		47 - 134		06/25/20 04:58	5
Toluene-d8 (Surr)	88		69 - 122		06/25/20 04:58	5
Dibromofluoromethane (Surr)	96		78 - 129		06/25/20 04:58	5

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Client Sample ID: MH-1020_061620

Lab Sample ID: 240-132013-4

Date Collected: 06/16/20 09:38

Matrix: Water

Date Received: 06/17/20 09:30

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	10	U	10	4.3	ug/L	-		06/26/20 13:50	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		70 - 133		06/26/20 13:50	5

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	0.95	ug/L	-		06/25/20 05:21	5
cis-1,2-Dichloroethene	5.0	U	5.0	0.80	ug/L	-		06/25/20 05:21	5
Tetrachloroethene	5.0	U	5.0	0.75	ug/L	-		06/25/20 05:21	5
trans-1,2-Dichloroethene	5.0	U	5.0	0.95	ug/L	-		06/25/20 05:21	5
Trichloroethene	5.0	U	5.0	0.50	ug/L	-		06/25/20 05:21	5
Vinyl chloride	5.0	U	5.0	1.0	ug/L	-		06/25/20 05:21	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		75 - 130		06/25/20 05:21	5
4-Bromofluorobenzene (Surr)	80		47 - 134		06/25/20 05:21	5
Toluene-d8 (Surr)	87		69 - 122		06/25/20 05:21	5
Dibromofluoromethane (Surr)	95		78 - 129		06/25/20 05:21	5

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Client Sample ID: MH-1219_061620

Lab Sample ID: 240-132013-6

Date Collected: 06/16/20 14:22

Matrix: Water

Date Received: 06/17/20 09:30

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L	-		06/26/20 14:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		70 - 133		06/26/20 14:16	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		06/25/20 05:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L	-		06/25/20 05:45	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L	-		06/25/20 05:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		06/25/20 05:45	1
Trichloroethene	1.0	U	1.0	0.10	ug/L	-		06/25/20 05:45	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L	-		06/25/20 05:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		75 - 130		06/25/20 05:45	1
4-Bromofluorobenzene (Surr)	78		47 - 134		06/25/20 05:45	1
Toluene-d8 (Surr)	86		69 - 122		06/25/20 05:45	1
Dibromofluoromethane (Surr)	97		78 - 129		06/25/20 05:45	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Client Sample ID: MH-1020_061620

Lab Sample ID: 240-132013-7

Date Collected: 06/16/20 09:45

Matrix: Solid

Date Received: 06/17/20 09:30

Percent Solids: 63.9

Method: 8260B MI - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	83	U	83	33	ug/Kg	☼	06/22/20 21:58	06/26/20 19:47	1
1,4-Dioxane	26000	U	26000	2300	ug/Kg	☼	06/22/20 21:58	06/26/20 19:47	1
cis-1,2-Dichloroethene	83	U	83	19	ug/Kg	☼	06/22/20 21:58	06/26/20 19:47	1
Tetrachloroethene	83	U	83	37	ug/Kg	☼	06/22/20 21:58	06/26/20 19:47	1
trans-1,2-Dichloroethene	83	U	83	21	ug/Kg	☼	06/22/20 21:58	06/26/20 19:47	1
Trichloroethene	83	U	83	23	ug/Kg	☼	06/22/20 21:58	06/26/20 19:47	1
Vinyl chloride	66	U	66	25	ug/Kg	☼	06/22/20 21:58	06/26/20 19:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		47 - 136	06/22/20 21:58	06/26/20 19:47	1
4-Bromofluorobenzene (Surr)	83		51 - 124	06/22/20 21:58	06/26/20 19:47	1
Dibromofluoromethane (Surr)	86		49 - 122	06/22/20 21:58	06/26/20 19:47	1
Toluene-d8 (Surr)	91		55 - 123	06/22/20 21:58	06/26/20 19:47	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	63.9		0.1	0.1	%			06/23/20 15:14	1
Percent Moisture	36.1		0.1	0.1	%			06/23/20 15:14	1

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (75-130)	BFB (47-134)	TOL (69-122)	DBFM (78-129)
240-132013-1	TRIP BLANK	88	84	87	95
240-132013-2	MH-1043_061620	87	78	86	95
240-132013-3	MH-1067_061620	89	80	88	96
240-132013-4	MH-1020_061620	87	80	87	95
240-132013-6	MH-1219_061620	89	78	86	97
240-132049-E-1 MS	Matrix Spike	79	89	92	91
240-132049-F-1 MSD	Matrix Spike Duplicate	80	87	91	91
LCS 240-439903/4	Lab Control Sample	80	87	91	92
MB 240-439903/7	Method Blank	87	77	88	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B MI - Volatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (47-136)	BFB (51-124)	DBFM (49-122)	TOL (55-123)
240-132013-7	MH-1020_061620	103	83	86	91
240-132013-7 MS	MH-1020_061620	99	83	89	88
240-132013-7 MSD	MH-1020_061620	97	82	87	87
LCS 240-439507/2-A	Lab Control Sample	97	83	89	89
MB 240-439507/1-A	Method Blank	95	79	81	87

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		DCA (70-133)
240-132013-2	MH-1043_061620	98
240-132013-3	MH-1067_061620	97
240-132013-4	MH-1020_061620	94
240-132013-6	MH-1219_061620	98
240-132112-A-9 MS	Matrix Spike	101
240-132112-A-9 MSD	Matrix Spike Duplicate	102
LCS 240-440164/4	Lab Control Sample	96
MB 240-440164/5	Method Blank	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-439903/7
Matrix: Water
Analysis Batch: 439903

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 01:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/25/20 01:53	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/25/20 01:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 01:53	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/25/20 01:53	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/25/20 01:53	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		75 - 130		06/25/20 01:53	1
4-Bromofluorobenzene (Surr)	77		47 - 134		06/25/20 01:53	1
Toluene-d8 (Surr)	88		69 - 122		06/25/20 01:53	1
Dibromofluoromethane (Surr)	96		78 - 129		06/25/20 01:53	1

Lab Sample ID: LCS 240-439903/4
Matrix: Water
Analysis Batch: 439903

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	9.29		ug/L		93	73 - 129
cis-1,2-Dichloroethene	10.0	9.83		ug/L		98	75 - 124
Tetrachloroethene	10.0	11.0		ug/L		110	70 - 125
trans-1,2-Dichloroethene	10.0	9.50		ug/L		95	74 - 130
Trichloroethene	10.0	10.1		ug/L		101	71 - 121
Vinyl chloride	10.0	9.48		ug/L		95	61 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	80		75 - 130
4-Bromofluorobenzene (Surr)	87		47 - 134
Toluene-d8 (Surr)	91		69 - 122
Dibromofluoromethane (Surr)	92		78 - 129

Lab Sample ID: 240-132049-E-1 MS
Matrix: Water
Analysis Batch: 439903

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	0.83	J	10.0	9.22		ug/L		84	64 - 132
cis-1,2-Dichloroethene	1.0	U	10.0	9.31		ug/L		93	68 - 121
Tetrachloroethene	1.0	U	10.0	9.71		ug/L		97	52 - 129
trans-1,2-Dichloroethene	1.0	U	10.0	8.98		ug/L		90	69 - 126
Trichloroethene	1.0	U	10.0	8.81		ug/L		88	56 - 124
Vinyl chloride	0.86	J	10.0	8.90		ug/L		80	49 - 136

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	79		75 - 130
4-Bromofluorobenzene (Surr)	89		47 - 134
Toluene-d8 (Surr)	92		69 - 122

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-132049-E-1 MS
Matrix: Water
Analysis Batch: 439903

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	91		78 - 129

Lab Sample ID: 240-132049-F-1 MSD
Matrix: Water
Analysis Batch: 439903

Client Sample ID: Matrix Spike Duplicate
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-Dichloroethene	0.83	J	10.0	9.96		ug/L		91	64 - 132	8	35
cis-1,2-Dichloroethene	1.0	U	10.0	9.60		ug/L		96	68 - 121	3	35
Tetrachloroethene	1.0	U	10.0	10.5		ug/L		105	52 - 129	8	35
trans-1,2-Dichloroethene	1.0	U	10.0	9.47		ug/L		95	69 - 126	5	35
Trichloroethene	1.0	U	10.0	9.53		ug/L		95	56 - 124	8	35
Vinyl chloride	0.86	J	10.0	9.55		ug/L		87	49 - 136	7	35

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	80		75 - 130
4-Bromofluorobenzene (Surr)	87		47 - 134
Toluene-d8 (Surr)	91		69 - 122
Dibromofluoromethane (Surr)	91		78 - 129

Method: 8260B MI - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-439507/1-A
Matrix: Solid
Analysis Batch: 440287

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 439507

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	40	U	40	16	ug/Kg		06/22/20 21:58	06/26/20 18:39	1
1,4-Dioxane	13000	U	13000	1100	ug/Kg		06/22/20 21:58	06/26/20 18:39	1
cis-1,2-Dichloroethene	40	U	40	9.0	ug/Kg		06/22/20 21:58	06/26/20 18:39	1
Tetrachloroethene	40	U	40	18	ug/Kg		06/22/20 21:58	06/26/20 18:39	1
trans-1,2-Dichloroethene	40	U	40	10	ug/Kg		06/22/20 21:58	06/26/20 18:39	1
Trichloroethene	40	U	40	11	ug/Kg		06/22/20 21:58	06/26/20 18:39	1
Vinyl chloride	32	U	32	12	ug/Kg		06/22/20 21:58	06/26/20 18:39	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		47 - 136	06/22/20 21:58	06/26/20 18:39	1
4-Bromofluorobenzene (Surr)	79		51 - 124	06/22/20 21:58	06/26/20 18:39	1
Dibromofluoromethane (Surr)	81		49 - 122	06/22/20 21:58	06/26/20 18:39	1
Toluene-d8 (Surr)	87		55 - 123	06/22/20 21:58	06/26/20 18:39	1

Lab Sample ID: LCS 240-439507/2-A
Matrix: Solid
Analysis Batch: 440287

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 439507

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	1000	1190		ug/Kg		119	48 - 140
1,4-Dioxane	20000	21800		ug/Kg		109	44 - 154

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Method: 8260B MI - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-439507/2-A
Matrix: Solid
Analysis Batch: 440287

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 439507

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	1000	964		ug/Kg		96	76 - 120
Tetrachloroethene	1000	970		ug/Kg		97	75 - 124
trans-1,2-Dichloroethene	1000	1050		ug/Kg		105	74 - 125
Trichloroethene	1000	976		ug/Kg		98	75 - 123
Vinyl chloride	1000	880		ug/Kg		88	39 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		47 - 136
4-Bromofluorobenzene (Surr)	83		51 - 124
Dibromofluoromethane (Surr)	89		49 - 122
Toluene-d8 (Surr)	89		55 - 123

Lab Sample ID: 240-132013-7 MS
Matrix: Solid
Analysis Batch: 440287

Client Sample ID: MH-1020_061620
Prep Type: Total/NA
Prep Batch: 439507

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	83	U	1540	1670		ug/Kg	☼	108	20 - 150
1,4-Dioxane	26000	U	30700	32800		ug/Kg	☼	107	48 - 149
cis-1,2-Dichloroethene	83	U	1540	1470		ug/Kg	☼	95	35 - 130
Tetrachloroethene	83	U	1540	1370		ug/Kg	☼	89	13 - 144
trans-1,2-Dichloroethene	83	U	1540	1510		ug/Kg	☼	99	31 - 138
Trichloroethene	83	U	1540	1420		ug/Kg	☼	93	10 - 162
Vinyl chloride	66	U	1540	1240		ug/Kg	☼	81	15 - 150

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	99		47 - 136
4-Bromofluorobenzene (Surr)	83		51 - 124
Dibromofluoromethane (Surr)	89		49 - 122
Toluene-d8 (Surr)	88		55 - 123

Lab Sample ID: 240-132013-7 MSD
Matrix: Solid
Analysis Batch: 440287

Client Sample ID: MH-1020_061620
Prep Type: Total/NA
Prep Batch: 439507

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	83	U	1500	1590		ug/Kg	☼	106	20 - 150	5	40
1,4-Dioxane	26000	U	29900	32400		ug/Kg	☼	108	48 - 149	1	40
cis-1,2-Dichloroethene	83	U	1500	1420		ug/Kg	☼	95	35 - 130	3	40
Tetrachloroethene	83	U	1500	1370		ug/Kg	☼	92	13 - 144	0	40
trans-1,2-Dichloroethene	83	U	1500	1470		ug/Kg	☼	99	31 - 138	3	40
Trichloroethene	83	U	1500	1380		ug/Kg	☼	92	10 - 162	3	40
Vinyl chloride	66	U	1500	1210		ug/Kg	☼	81	15 - 150	2	40

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		47 - 136
4-Bromofluorobenzene (Surr)	82		51 - 124
Dibromofluoromethane (Surr)	87		49 - 122

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Method: 8260B MI - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-132013-7 MSD
Matrix: Solid
Analysis Batch: 440287

Client Sample ID: MH-1020_061620
Prep Type: Total/NA
Prep Batch: 439507

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Toluene-d8 (Surr)	87		55 - 123

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-440164/5
Matrix: Water
Analysis Batch: 440164

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/26/20 07:43	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		70 - 133		06/26/20 07:43	1

Lab Sample ID: LCS 240-440164/4
Matrix: Water
Analysis Batch: 440164

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	9.95		ug/L		99	80 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	96		70 - 133

Lab Sample ID: 240-132112-A-9 MS
Matrix: Water
Analysis Batch: 440164

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	2.0	U	10.0	9.11		ug/L		91	46 - 170

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	101		70 - 133

Lab Sample ID: 240-132112-A-9 MSD
Matrix: Water
Analysis Batch: 440164

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	46 - 170	13	26

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	102		70 - 133

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Method: Moisture - Percent Moisture

Lab Sample ID: 240-132218-A-3 DU

Matrix: Solid

Analysis Batch: 439665

Client Sample ID: Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Percent Solids	97.3		97.4		%		0.2	20
Percent Moisture	2.7		2.6		%		6	20

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

GC/MS VOA

Prep Batch: 439507

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-132013-7	MH-1020_061620	Total/NA	Solid	5030B	
MB 240-439507/1-A	Method Blank	Total/NA	Solid	5030B	
LCS 240-439507/2-A	Lab Control Sample	Total/NA	Solid	5030B	
240-132013-7 MS	MH-1020_061620	Total/NA	Solid	5030B	
240-132013-7 MSD	MH-1020_061620	Total/NA	Solid	5030B	

Analysis Batch: 439903

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-132013-1	TRIP BLANK	Total/NA	Water	8260B	
240-132013-2	MH-1043_061620	Total/NA	Water	8260B	
240-132013-3	MH-1067_061620	Total/NA	Water	8260B	
240-132013-4	MH-1020_061620	Total/NA	Water	8260B	
240-132013-6	MH-1219_061620	Total/NA	Water	8260B	
MB 240-439903/7	Method Blank	Total/NA	Water	8260B	
LCS 240-439903/4	Lab Control Sample	Total/NA	Water	8260B	
240-132049-E-1 MS	Matrix Spike	Total/NA	Water	8260B	
240-132049-F-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 440164

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-132013-2	MH-1043_061620	Total/NA	Water	8260B SIM	
240-132013-3	MH-1067_061620	Total/NA	Water	8260B SIM	
240-132013-4	MH-1020_061620	Total/NA	Water	8260B SIM	
240-132013-6	MH-1219_061620	Total/NA	Water	8260B SIM	
MB 240-440164/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-440164/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-132112-A-9 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-132112-A-9 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 440287

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-132013-7	MH-1020_061620	Total/NA	Solid	8260B MI	439507
MB 240-439507/1-A	Method Blank	Total/NA	Solid	8260B MI	439507
LCS 240-439507/2-A	Lab Control Sample	Total/NA	Solid	8260B MI	439507
240-132013-7 MS	MH-1020_061620	Total/NA	Solid	8260B MI	439507
240-132013-7 MSD	MH-1020_061620	Total/NA	Solid	8260B MI	439507

General Chemistry

Analysis Batch: 439665

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-132013-7	MH-1020_061620	Total/NA	Solid	Moisture	
240-132218-A-3 DU	Duplicate	Total/NA	Solid	Moisture	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-132013-1

Date Collected: 06/16/20 00:00

Matrix: Water

Date Received: 06/17/20 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	439903	06/25/20 04:12	LRW	TAL CAN

Client Sample ID: MH-1043_061620

Lab Sample ID: 240-132013-2

Date Collected: 06/16/20 08:30

Matrix: Water

Date Received: 06/17/20 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	439903	06/25/20 04:35	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	440164	06/26/20 12:57	TJL2	TAL CAN

Client Sample ID: MH-1067_061620

Lab Sample ID: 240-132013-3

Date Collected: 06/16/20 09:00

Matrix: Water

Date Received: 06/17/20 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	439903	06/25/20 04:58	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	440164	06/26/20 13:23	TJL2	TAL CAN

Client Sample ID: MH-1020_061620

Lab Sample ID: 240-132013-4

Date Collected: 06/16/20 09:38

Matrix: Water

Date Received: 06/17/20 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	439903	06/25/20 05:21	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		5	440164	06/26/20 13:50	TJL2	TAL CAN

Client Sample ID: MH-1219_061620

Lab Sample ID: 240-132013-6

Date Collected: 06/16/20 14:22

Matrix: Water

Date Received: 06/17/20 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	439903	06/25/20 05:45	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	440164	06/26/20 14:16	TJL2	TAL CAN

Client Sample ID: MH-1020_061620

Lab Sample ID: 240-132013-7

Date Collected: 06/16/20 09:45

Matrix: Solid

Date Received: 06/17/20 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	439665	06/23/20 15:14	BLW	TAL CAN

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Client Sample ID: MH-1020_061620

Lab Sample ID: 240-132013-7

Date Collected: 06/16/20 09:45

Matrix: Solid

Date Received: 06/17/20 09:30

Percent Solids: 63.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			439507	06/22/20 21:58	LAM	TAL CAN
Total/NA	Analysis	8260B MI		1	440287	06/26/20 19:47	TJL1	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

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Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-20
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-20
Texas	NELAP	T104704517-18-10	08-31-20
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-20
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20

3.2/4.1

MICHIGAN
190

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Client Contact Company Name: Arcadis Address: 28550 Cabot Drive, Suite 500 City/State/Zip: Novi, MI, 48377 Phone: 248-994-2240 Project Name: Ford LTP-045-044 Project Number: 30050315-402-761 PO # 30050315-402-761		Regulatory program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other	
Client Project Manager: Kris Hinskey Telephone: 248-994-2240 Email: krisstoffer.hinskey@arcadis.com		Site Contact: Julia McClafferty Telephone: 734-644-5131	
Lab Contact: Mike DelMonte Telephone: 330-497-9396		COCs: _____ of _____ For lab use only	
Sampler Name: RACHEL BIELAK / EMMA WITHEGROON Method of Shipment/Carrier: Shipping/Tracking No:		Analysis Turnaround Time TAT if different from below: <input type="checkbox"/> 3 weeks <input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day	
Sample Identification		Analyses	
Sample Date Sample Time	Matrix <input type="checkbox"/> Air <input type="checkbox"/> Aqueous <input type="checkbox"/> Sediment <input type="checkbox"/> Solid <input type="checkbox"/> Other:	Containers & Preservatives <input type="checkbox"/> H2SO4 <input type="checkbox"/> HNO3 <input type="checkbox"/> HCl <input type="checkbox"/> NaOH <input type="checkbox"/> ZnAc <input type="checkbox"/> Mohr <input type="checkbox"/> Other:	
		Filtered Sample (Y/N) Composite=C/Grab=C 1,1-DCE 8260B cis-1,2-DCE 8260B Trans-1,2-DCE 8260B PCE 8260B TCE 8260B Vinyl Chloride 8260B 1,4-Dioxane 8260B SIM	
TRIP BLANK	1	1 TRIP BLANK 3 VOLS for 8260B 3 VOLS for 8260B SIM	
MH-1043 - 06/16/20	6/16/20 0830	X X X X X X X X X X	
MH-1067 - 06/16/20	6/16/20 0900	X X X X X X X X X X	
MH-1020 - 06/16/20	6/16/20 0938	X X X X X X X X X X	
MH-1020 - 06/16/20	6/16/20 0945	X X X X X X X X X X	
MH-1219 - 06/16/20	6/16/20 1422	X X X X X X X X X X	
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		Barcode: 240-132013 Chain of Custody	
Possible Hazard Identification <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Irritant <input type="checkbox"/> Unknown		Special Instructions/OC Requirements & Comments: Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631 Level IV Reporting requested.	
Relinquished by: RACHEL BIELAK / Paul Finkels	Company: ARCADIS	Date/Time: 6/16/20 11025	Received by: <i>Jan Hord</i>
Relinquished by: <i>Jan Hord</i>	Company: ETA	Date/Time: 6/16/20 1629	Received by: <i>Jan Hord</i>
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:

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Eurofins TestAmerica Canton Sample Receipt Form/Narrative

Login # : 132013

Canton Facility

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 6/17/20 Opened on 6/17/20

Amant

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # CANTON Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

- 1. Cooler temperature upon receipt... IR GUN# IR-10 (CF +0.7°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C... IR GUN #IR-11 (CF +0.9°C) Observed Cooler Temp. 3.2 °C Corrected Cooler Temp. 4.1 °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No...
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC902937
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0117701E Yes No
16. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving: VOAs Oil and Grease TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

18. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):
VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT



June 30, 2020

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30050315.0402.04 off site
Event Specific Scope of Work References: Sample COC
Laboratory: TestAmerica - North Canton
Laboratory submittal: 132013-1
Sample date: 2020-06-16
Report received by CADENA: 2020-06-30
Initial Data Verification completed by CADENA: 2020-06-30
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC

Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

Reportable Results Only

CADENA Project ID: E203631

Laboratory: TestAmerica - North Canton

Laboratory Submittal: 132013-1

Analyte	Cas No.	Sample Name: TRIP BLANK				MH-1043_061620				MH-1067_061620				MH-1020_061620				MH-1219_061620				MH-1020_061620			
		Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier
GC/MS VOC																									
<u>OSW-8260B</u>																									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	5.0	ug/l	---	ND	5.0	ug/l	---	ND	1.0	ug/l	---	ND	83	ug/kg	---
1,4-Dioxane	123-91-1																					ND	26000	ug/kg	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	5.0	ug/l	---	ND	5.0	ug/l	---	ND	1.0	ug/l	---	ND	83	ug/kg	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	5.0	ug/l	---	ND	5.0	ug/l	---	ND	1.0	ug/l	---	ND	83	ug/kg	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	5.0	ug/l	---	ND	5.0	ug/l	---	ND	1.0	ug/l	---	ND	83	ug/kg	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	5.0	ug/l	---	ND	5.0	ug/l	---	ND	1.0	ug/l	---	ND	83	ug/kg	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	5.0	ug/l	---	ND	5.0	ug/l	---	ND	1.0	ug/l	---	ND	66	ug/kg	---
<u>OSW-8260BBSim</u>																									
1,4-Dioxane	123-91-1					1.2	2.0	ug/l	J	ND	2.0	ug/l	---	ND	10	ug/l	---	ND	2.0	ug/l	---				

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-132013-1

CADENA Verification Report: 2020-06-30

Analyses Performed By:

TestAmerica

Edison, New Jersey

Report #37485R

Review Level: Tier III

Project: 30050315.402.02

DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-132013-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						VOC (Full Scan)	VOC (SIM)	MISC
240-132013-1	TRIP BLANK	240-132013-1	Water	6/16/2020		X		
	MH-1043_061620	240-132013-2	Water	6/16/2020		X	X	
	MH-1067_061620	240-132013-3	Water	6/16/2020		X	X	
	MH-1020_061620	240-132013-4	Water	6/16/2020		X	X	
	MH-1219_061620	240-132013-6	Water	6/16/2020		X	X	
	MH-1020_061620	240-132013-7	Solid	6/16/2020		X	X	

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260B and 8260B SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) 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 8260B/8260B-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl
	Soil	48 hours from collection to extraction and 14 days from extraction to analysis	Cool to <6 °C.

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

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 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.

A field duplicate analysis was not performed on a sample within this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. 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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260B/8260B-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:



DATE: July 15, 2020

PEER REVIEW: Dennis Capria

DATE: July 22, 2020



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



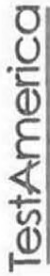
**NO CORRECTIONS/QUALIFIERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**



3.2/4.1

MICHIGAN 190

Chain of Custody Record



THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Client Contact Company Name: Arcadis Address: 28550 Cabot Drive, Suite 500 City/State/Zip: Novi, MI, 48377 Phone: 248-994-2240 Project Name: Ford LTP-045-044 Project Number: 30050315-402-761 PO # 30050315-402-761		Regulatory program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other	
Client Project Manager: Kris Hinskey Telephone: 248-994-2240 Email: krisstoffer.hinskey@arcadis.com		Site Contact: Julia McClafferty Telephone: 734-644-5131	
Lab Contact: Mike DelMontico Telephone: 330-497-9396		TestAmerica Laboratories, Inc. COC No: _____ of _____ COCs For lab use only	
Sampler Name: RACHEL BIELAK / EMMA WITHEBROOK Method of Shipment/Carrier: Shipping/Tracking No:		Analysis Turnaround Time TAT if different from below 10 day <input type="checkbox"/> 3 weeks <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day <input type="checkbox"/>	
Sample Identification		Analyses	
Sample Date Sample Time	Matrix Air Aqueous Sediment Solid Other:	Containers & Preservatives H2SO4 HNO3 HCl NaOH ZnAc NH4OH Other:	
		Filtered Sample (Y / N) Composite = C / Grab = G	
TRIP BLANK	1	X	X
MH-1043 - 06/16/20	b	X	X
MH-1067 - 06/16/20	b	X	X
MH-1020 - 06/16/20	b	X	X
MH-1020 - 06/16/20	b	X	X
MH-1219 - 06/16/20	b	X	X
Sample Specific Notes / Special Instructions: 1 TRIP BLANK 3 VOLS for 8240 B 3 VOLS for 8240 B SIM 2 vols, 1 vol 8240 B 1 vol 8240 B SIM 3 VOLS for 8240 B 3 VOLS for 8240 B SIM		1-1-DCE 8260B cis-1,2-DCE 8260B Trans-1,2-DCE 8260B PCE 8260B TCE 8260B Vinyl Chloride 8260B 1,4-Dioxane 8260B SIM	
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		240-132013 Chain of Custody	
Relinquished by: RACHEL BIELAK / Paul Finkels		Received by: Jean Hord	
Relinquished by: J. Hord		Received by: [Signature]	
Company: ARCADIS Date/Time: 6/16/20 1629		Company: ETA Date/Time: 6/17/20 0930	

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-132013-1

Date Collected: 06/16/20 00:00

Matrix: Water

Date Received: 06/17/20 09:30

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 04:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/25/20 04:12	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/25/20 04:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 04:12	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/25/20 04:12	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/25/20 04:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		75 - 130		06/25/20 04:12	1
4-Bromofluorobenzene (Surr)	84		47 - 134		06/25/20 04:12	1
Toluene-d8 (Surr)	87		69 - 122		06/25/20 04:12	1
Dibromofluoromethane (Surr)	95		78 - 129		06/25/20 04:12	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Client Sample ID: MH-1043_061620

Lab Sample ID: 240-132013-2

Date Collected: 06/16/20 08:30

Matrix: Water

Date Received: 06/17/20 09:30

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.2	J	2.0	0.86	ug/L			06/26/20 12:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		70 - 133		06/26/20 12:57	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	0.95	ug/L			06/25/20 04:35	5
cis-1,2-Dichloroethene	5.0	U	5.0	0.80	ug/L			06/25/20 04:35	5
Tetrachloroethene	5.0	U	5.0	0.75	ug/L			06/25/20 04:35	5
trans-1,2-Dichloroethene	5.0	U	5.0	0.95	ug/L			06/25/20 04:35	5
Trichloroethene	5.0	U	5.0	0.50	ug/L			06/25/20 04:35	5
Vinyl chloride	5.0	U	5.0	1.0	ug/L			06/25/20 04:35	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		75 - 130		06/25/20 04:35	5
4-Bromofluorobenzene (Surr)	78		47 - 134		06/25/20 04:35	5
Toluene-d8 (Surr)	86		69 - 122		06/25/20 04:35	5
Dibromofluoromethane (Surr)	95		78 - 129		06/25/20 04:35	5

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Client Sample ID: MH-1067_061620

Lab Sample ID: 240-132013-3

Date Collected: 06/16/20 09:00

Matrix: Water

Date Received: 06/17/20 09:30

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L	-		06/26/20 13:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		70 - 133		06/26/20 13:23	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	0.95	ug/L	-		06/25/20 04:58	5
cis-1,2-Dichloroethene	5.0	U	5.0	0.80	ug/L	-		06/25/20 04:58	5
Tetrachloroethene	5.0	U	5.0	0.75	ug/L	-		06/25/20 04:58	5
trans-1,2-Dichloroethene	5.0	U	5.0	0.95	ug/L	-		06/25/20 04:58	5
Trichloroethene	5.0	U	5.0	0.50	ug/L	-		06/25/20 04:58	5
Vinyl chloride	5.0	U	5.0	1.0	ug/L	-		06/25/20 04:58	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		75 - 130		06/25/20 04:58	5
4-Bromofluorobenzene (Surr)	80		47 - 134		06/25/20 04:58	5
Toluene-d8 (Surr)	88		69 - 122		06/25/20 04:58	5
Dibromofluoromethane (Surr)	96		78 - 129		06/25/20 04:58	5

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Client Sample ID: MH-1020_061620

Lab Sample ID: 240-132013-4

Date Collected: 06/16/20 09:38

Matrix: Water

Date Received: 06/17/20 09:30

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	10	U	10	4.3	ug/L			06/26/20 13:50	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		70 - 133		06/26/20 13:50	5

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	0.95	ug/L			06/25/20 05:21	5
cis-1,2-Dichloroethene	5.0	U	5.0	0.80	ug/L			06/25/20 05:21	5
Tetrachloroethene	5.0	U	5.0	0.75	ug/L			06/25/20 05:21	5
trans-1,2-Dichloroethene	5.0	U	5.0	0.95	ug/L			06/25/20 05:21	5
Trichloroethene	5.0	U	5.0	0.50	ug/L			06/25/20 05:21	5
Vinyl chloride	5.0	U	5.0	1.0	ug/L			06/25/20 05:21	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		75 - 130		06/25/20 05:21	5
4-Bromofluorobenzene (Surr)	80		47 - 134		06/25/20 05:21	5
Toluene-d8 (Surr)	87		69 - 122		06/25/20 05:21	5
Dibromofluoromethane (Surr)	95		78 - 129		06/25/20 05:21	5

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Client Sample ID: MH-1219_061620

Lab Sample ID: 240-132013-6

Date Collected: 06/16/20 14:22

Matrix: Water

Date Received: 06/17/20 09:30

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/26/20 14:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		70 - 133		06/26/20 14:16	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 05:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/25/20 05:45	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/25/20 05:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/20 05:45	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/25/20 05:45	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/25/20 05:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		75 - 130		06/25/20 05:45	1
4-Bromofluorobenzene (Surr)	78		47 - 134		06/25/20 05:45	1
Toluene-d8 (Surr)	86		69 - 122		06/25/20 05:45	1
Dibromofluoromethane (Surr)	97		78 - 129		06/25/20 05:45	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-132013-1

Client Sample ID: MH-1020_061620

Lab Sample ID: 240-132013-7

Date Collected: 06/16/20 09:45

Matrix: Solid

Date Received: 06/17/20 09:30

Percent Solids: 63.9

Method: 8260B MI - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	83	U	83	33	ug/Kg	☼	06/22/20 21:58	06/26/20 19:47	1
1,4-Dioxane	26000	U	26000	2300	ug/Kg	☼	06/22/20 21:58	06/26/20 19:47	1
cis-1,2-Dichloroethene	83	U	83	19	ug/Kg	☼	06/22/20 21:58	06/26/20 19:47	1
Tetrachloroethene	83	U	83	37	ug/Kg	☼	06/22/20 21:58	06/26/20 19:47	1
trans-1,2-Dichloroethene	83	U	83	21	ug/Kg	☼	06/22/20 21:58	06/26/20 19:47	1
Trichloroethene	83	U	83	23	ug/Kg	☼	06/22/20 21:58	06/26/20 19:47	1
Vinyl chloride	66	U	66	25	ug/Kg	☼	06/22/20 21:58	06/26/20 19:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		47 - 136	06/22/20 21:58	06/26/20 19:47	1
4-Bromofluorobenzene (Surr)	83		51 - 124	06/22/20 21:58	06/26/20 19:47	1
Dibromofluoromethane (Surr)	86		49 - 122	06/22/20 21:58	06/26/20 19:47	1
Toluene-d8 (Surr)	91		55 - 123	06/22/20 21:58	06/26/20 19:47	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	63.9		0.1	0.1	%			06/23/20 15:14	1
Percent Moisture	36.1		0.1	0.1	%			06/23/20 15:14	1

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-131805-1
Client Project/Site: Ford LTP

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey



Authorized for release by:
6/26/2020 3:36:22 PM

Michael DelMonico, Project Manager I
(330)497-9396
michael.delmonico@testamericainc.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.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131805-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

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

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131805-1

Job ID: 240-131805-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP

Report Number: 240-131805-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 6/12/2020 11:10 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.5° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples TRIP BLANK (240-131805-1), MH-1088_060920 (240-131805-2), MH-1066_060920 (240-131805-3) and MH-1041_060920 (240-131805-4) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 06/19/2020 and 06/20/2020.

The matrix spike/matrix spike duplicate (MS/MSD) for samples TRIP BLANK (240-131805-1), MH-1088_060920 (240-131805-2), MH-1066_060920 (240-131805-3) and MH-1041_060920 (240-131805-4) was not reported, because the analyte list for these samples did not match the analyte list for the MS/MSD parent sample.

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

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Samples MH-1088_060920 (240-131805-2), MH-1066_060920 (240-131805-3) and MH-1041_060920 (240-131805-4) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 06/16/2020.

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

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131805-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396



Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131805-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-131805-1	TRIP BLANK	Water	06/09/20 00:00	06/12/20 11:10	
240-131805-2	MH-1088_060920	Water	06/09/20 16:50	06/12/20 11:10	
240-131805-3	MH-1066_060920	Water	06/09/20 17:47	06/12/20 11:10	
240-131805-4	MH-1041_060920	Water	06/09/20 18:26	06/12/20 11:10	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131805-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-131805-1

No Detections.

Client Sample ID: MH-1088_060920

Lab Sample ID: 240-131805-2

No Detections.

Client Sample ID: MH-1066_060920

Lab Sample ID: 240-131805-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.34	J	1.0	0.16	ug/L	1		8260B	Total/NA
Vinyl chloride	0.73	J	1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: MH-1041_060920

Lab Sample ID: 240-131805-4

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131805-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-131805-1

Date Collected: 06/09/20 00:00

Matrix: Water

Date Received: 06/12/20 11:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/19/20 23:44	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/19/20 23:44	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/19/20 23:44	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/19/20 23:44	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/19/20 23:44	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/19/20 23:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		75 - 130		06/19/20 23:44	1
4-Bromofluorobenzene (Surr)	94		47 - 134		06/19/20 23:44	1
Toluene-d8 (Surr)	91		69 - 122		06/19/20 23:44	1
Dibromofluoromethane (Surr)	98		78 - 129		06/19/20 23:44	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131805-1

Client Sample ID: MH-1088_060920

Lab Sample ID: 240-131805-2

Date Collected: 06/09/20 16:50

Matrix: Water

Date Received: 06/12/20 11:10

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/16/20 17:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		70 - 133		06/16/20 17:01	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/20/20 00:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/20/20 00:09	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/20/20 00:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/20/20 00:09	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/20/20 00:09	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/20/20 00:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		75 - 130		06/20/20 00:09	1
4-Bromofluorobenzene (Surr)	98		47 - 134		06/20/20 00:09	1
Toluene-d8 (Surr)	88		69 - 122		06/20/20 00:09	1
Dibromofluoromethane (Surr)	99		78 - 129		06/20/20 00:09	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131805-1

Client Sample ID: MH-1066_060920

Lab Sample ID: 240-131805-3

Date Collected: 06/09/20 17:47

Matrix: Water

Date Received: 06/12/20 11:10

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L	-		06/16/20 17:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		70 - 133		06/16/20 17:27	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		06/20/20 00:34	1
cis-1,2-Dichloroethene	0.34	J	1.0	0.16	ug/L	-		06/20/20 00:34	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L	-		06/20/20 00:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		06/20/20 00:34	1
Trichloroethene	1.0	U	1.0	0.10	ug/L	-		06/20/20 00:34	1
Vinyl chloride	0.73	J	1.0	0.20	ug/L	-		06/20/20 00:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		75 - 130		06/20/20 00:34	1
4-Bromofluorobenzene (Surr)	98		47 - 134		06/20/20 00:34	1
Toluene-d8 (Surr)	91		69 - 122		06/20/20 00:34	1
Dibromofluoromethane (Surr)	94		78 - 129		06/20/20 00:34	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131805-1

Client Sample ID: MH-1041_060920

Lab Sample ID: 240-131805-4

Date Collected: 06/09/20 18:26

Matrix: Water

Date Received: 06/12/20 11:10

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/16/20 17:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		70 - 133		06/16/20 17:53	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/20/20 00:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/20/20 00:59	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/20/20 00:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/20/20 00:59	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/20/20 00:59	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/20/20 00:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		75 - 130		06/20/20 00:59	1
4-Bromofluorobenzene (Surr)	99		47 - 134		06/20/20 00:59	1
Toluene-d8 (Surr)	91		69 - 122		06/20/20 00:59	1
Dibromofluoromethane (Surr)	100		78 - 129		06/20/20 00:59	1

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131805-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (75-130)	BFB (47-134)	TOL (69-122)	DBFM (78-129)
240-131805-1	TRIP BLANK	89	94	91	98
240-131805-2	MH-1088_060920	90	98	88	99
240-131805-3	MH-1066_060920	92	98	91	94
240-131805-4	MH-1041_060920	83	99	91	100
LCS 240-439180/4	Lab Control Sample	87	104	93	97
MB 240-439180/7	Method Blank	92	95	91	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

TOL = Toluene-d8 (Surr)

DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		DCA (70-133)
240-131782-A-6 MS	Matrix Spike	96
240-131782-A-6 MSD	Matrix Spike Duplicate	98
240-131805-2	MH-1088_060920	97
240-131805-3	MH-1066_060920	99
240-131805-4	MH-1041_060920	97
LCS 240-438565/4	Lab Control Sample	92
MB 240-438565/5	Method Blank	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131805-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-439180/7
Matrix: Water
Analysis Batch: 439180

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/19/20 15:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/19/20 15:49	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/19/20 15:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/19/20 15:49	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/19/20 15:49	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/19/20 15:49	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	92		75 - 130		06/19/20 15:49	1
4-Bromofluorobenzene (Surr)	95		47 - 134		06/19/20 15:49	1
Toluene-d8 (Surr)	91		69 - 122		06/19/20 15:49	1
Dibromofluoromethane (Surr)	97		78 - 129		06/19/20 15:49	1

Lab Sample ID: LCS 240-439180/4
Matrix: Water
Analysis Batch: 439180

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

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
1,1-Dichloroethene	10.0	10.9		ug/L		109	73 - 129
cis-1,2-Dichloroethene	10.0	9.81		ug/L		98	75 - 124
Tetrachloroethene	10.0	12.4		ug/L		124	70 - 125
trans-1,2-Dichloroethene	10.0	10.4		ug/L		104	74 - 130
Trichloroethene	10.0	9.97		ug/L		100	71 - 121
Vinyl chloride	10.0	12.9		ug/L		129	61 - 134

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	87		75 - 130
4-Bromofluorobenzene (Surr)	104		47 - 134
Toluene-d8 (Surr)	93		69 - 122
Dibromofluoromethane (Surr)	97		78 - 129

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-438565/5
Matrix: Water
Analysis Batch: 438565

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/16/20 12:18	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	92		70 - 133		06/16/20 12:18	1

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131805-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-438565/4
Matrix: Water
Analysis Batch: 438565

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	11.0		ug/L	-	110	80 - 135
LCS LCS							
Surrogate	%Recovery	Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	92		70 - 133				

Lab Sample ID: 240-131782-A-6 MS
Matrix: Water
Analysis Batch: 438565

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	49		10.0	55.6	4	ug/L	-	65	46 - 170
MS MS									
Surrogate	%Recovery	Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	96		70 - 133						

Lab Sample ID: 240-131782-A-6 MSD
Matrix: Water
Analysis Batch: 438565

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	49		10.0	54.7	4	ug/L	-	55	46 - 170	2	26
MSD MSD											
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	98		70 - 133								

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131805-1

GC/MS VOA

Analysis Batch: 438565

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-131805-2	MH-1088_060920	Total/NA	Water	8260B SIM	
240-131805-3	MH-1066_060920	Total/NA	Water	8260B SIM	
240-131805-4	MH-1041_060920	Total/NA	Water	8260B SIM	
MB 240-438565/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-438565/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-131782-A-6 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-131782-A-6 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 439180

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-131805-1	TRIP BLANK	Total/NA	Water	8260B	
240-131805-2	MH-1088_060920	Total/NA	Water	8260B	
240-131805-3	MH-1066_060920	Total/NA	Water	8260B	
240-131805-4	MH-1041_060920	Total/NA	Water	8260B	
MB 240-439180/7	Method Blank	Total/NA	Water	8260B	
LCS 240-439180/4	Lab Control Sample	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131805-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-131805-1

Date Collected: 06/09/20 00:00

Matrix: Water

Date Received: 06/12/20 11:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	439180	06/19/20 23:44	LRW	TAL CAN

Client Sample ID: MH-1088_060920

Lab Sample ID: 240-131805-2

Date Collected: 06/09/20 16:50

Matrix: Water

Date Received: 06/12/20 11:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	439180	06/20/20 00:09	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	438565	06/16/20 17:01	SAM	TAL CAN

Client Sample ID: MH-1066_060920

Lab Sample ID: 240-131805-3

Date Collected: 06/09/20 17:47

Matrix: Water

Date Received: 06/12/20 11:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	439180	06/20/20 00:34	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	438565	06/16/20 17:27	SAM	TAL CAN

Client Sample ID: MH-1041_060920

Lab Sample ID: 240-131805-4

Date Collected: 06/09/20 18:26

Matrix: Water

Date Received: 06/12/20 11:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	439180	06/20/20 00:59	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	438565	06/16/20 17:53	SAM	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131805-1

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-20
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-20
Texas	NELAP	T104704517-18-10	08-31-20
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-20
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

Client Contact Company Name: Arcadis Address: 28550 Cabot Drive, Suite 500 City/State/Zip: Novi, MI, 48377 Phone: 248-994-2240 Project Name: Ford LTP #100000 Project Number: 30050315-400000 PO # 30050315-400000-701		Client Project Manager: Kris Hinskey Telephone: 248-994-2240 Email: kristoffer.hinskey@arcadis.com Sampler Name: RACHEL BIEVAL / JULIA MCCAFFEY Method of Shipment/Carrier: Shipping/Tracking No:		Site Contact: Julia McClafferty Telephone: 734-644-5131 Analysis Turnaround Time: 10 day TAT if different from below: <input type="checkbox"/> 3 weeks <input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Lab Contact: Mike DeMonico Telephone: 330-497-9396 Filtered Sample (Y/N) Composite=C / Grab=G 1,1-DCE 8260B cis-1,2-DCE 8260B Trans-1,2-DCE 8260B PCE 8260B Vinyl Chloride 8260B 1,4-Dioxane 8260B SIM		TestAmerica Laboratories, Inc. COC No: For lab use only Walk-in client Lab sampling Job/SDG No: Sample Specific Notes / Special Instructions:				
Sample Date	Sample Time	Matrix	Containers & Preservatives	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK		Aqueous	HS04 HNO3 HCl NaOH ZnAc NaOH Other:	N	G	X	X	X	X	X	X	1 TRIP B-A-N-K 2 VOA'S FOR 8260 B 3 VOA'S FOR 8260B SIM
MH-1088-060920	6/19/20 1650	Sediment	HS04 HNO3 HCl NaOH ZnAc NaOH Other:	N	G	X	X	X	X	X	X	
MH-1066-060920	6/19/20 1747	Aqueous	HS04 HNO3 HCl NaOH ZnAc NaOH Other:	N	G	X	X	X	X	X	X	
MH-1041-060920	6/19/20 1826	Aqueous	HS04 HNO3 HCl NaOH ZnAc NaOH Other:	N	G	X	X	X	X	X	X	

240-131805 Chain of Custody

Return to Client Disposal By Lab Avenue For _____ Months

Possible Hazard Identification
 Non-Hazard
 Irritant
 Flammable
 Poison B
 Unknown

Special Instructions/QC Requirements & Comments:
 Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
 Level IV Reporting requested.

Relinquished by: RACHEL BIEVAL and Julia	Date/Time: 6/19/20 1930	Received by: NOVI COLD STORAGE	Date/Time: 6/19/20 1425	Company: ARCADIS
Relinquished by: Julia McCafferty	Date/Time: 6/19/20 1930	Received by: [Signature]	Date/Time: 6/19/20 1427	Company: Arcadis
Relinquished by: [Signature]	Date/Time: 6/19/20 1930	Received in Laboratory by: [Signature]	Date/Time: 6/19/20 1427	Company: ETA


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Client Arcadis Site Name _____ Cooler unpacked by: Asmant
 Cooler Received on 6/12/20 Opened on 6/12/20
 FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # CANTON Foam Box _____ Client Cooler _____ Box _____ Other _____
 Packing material used: Bubble Wrap Foam Plastic Bag _____ None _____ Other _____
 COOLANT: Wet Ice Blue Ice _____ Dry Ice _____ Water _____ None _____

1. Cooler temperature upon receipt See Multiple Cooler Form
 IR GUN# IR-10 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 IR GUN #IR-11 (CF +0.9°C) Observed Cooler Temp. 1.6 °C Corrected Cooler Temp. 2.5 °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No NA
 -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
12. If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC902937
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? Yes No NA  ← Larger than this.
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0117701E Yes No
16. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:
 VOAs
 Oil and Grease
 TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____
 Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by: ANM

18. SAMPLE CONDITION
 Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container.
 Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION
 Sample(s) _____ were further preserved in the laboratory.
 Time preserved: _____ Preservative(s) added/Lot number(s): _____
 VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT



June 26, 2020

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728

Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil

Project number: 30050315.401.03 - onsite groundwater

Event Specific Scope of Work References: Sample COC

Laboratory: TestAmerica - North Canton

Laboratory submittal: 131805-1

Sample date: 2020-06-09

Report received by CADENA: 2020-06-26

Initial Data Verification completed by CADENA: 2020-06-26

Number of Samples:4

Sample Matrices:Water

Test Categories:GCMS VOC

Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

Reportable Results Only

CADENA Project ID: E203728

Laboratory: TestAmerica - North Canton

Laboratory Submittal: 131805-1

Analyte	Cas No.	Sample Name: TRIP BLANK				MH-1088_060920				MH-1066_060920				MH-1041_060920			
		Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier
		2401318051				2401318052				2401318053				2401318054			
		6/9/2020				6/9/2020				6/9/2020				6/9/2020			

GC/MS VOC

OSW-8260B

1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.34	1.0	ug/l	J	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.73	1.0	ug/l	J	ND	1.0	ug/l	---

OSW-8260BBSim

1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---
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Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-131805-1

CADENA Verification Report: 2020-06-26

Analyses Performed By:

TestAmerica

Edison, New Jersey

Report #37486R

Review Level: Tier III

Project: 30050315.402.02

DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-131805-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						VOC (Full Scan)	VOC (SIM)	MISC
240-131805-1	TRIP BLANK	240-131805-1	Water	6/9/2020		X		
	MH-1088_060920	240-131805-2	Water	6/9/2020		X	X	
	MH-1066_060920	240-131805-3	Water	6/9/2020		X	X	
	MH-1041_060920	240-131805-4	Water	6/9/2020		X	X	

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260B and 8260B SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) 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 8260B/8260B-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

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 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.

A field duplicate analysis was not performed on a sample within this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. 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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260B/8260B-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:



DATE: July 15, 2020

PEER REVIEW: Dennis Capria

DATE: July 22, 2020



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



**NO CORRECTIONS/QUALIFIERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**



Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131805-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-131805-1

Date Collected: 06/09/20 00:00

Matrix: Water

Date Received: 06/12/20 11:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/19/20 23:44	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/19/20 23:44	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/19/20 23:44	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/19/20 23:44	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/19/20 23:44	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/19/20 23:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		75 - 130		06/19/20 23:44	1
4-Bromofluorobenzene (Surr)	94		47 - 134		06/19/20 23:44	1
Toluene-d8 (Surr)	91		69 - 122		06/19/20 23:44	1
Dibromofluoromethane (Surr)	98		78 - 129		06/19/20 23:44	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131805-1

Client Sample ID: MH-1088_060920

Lab Sample ID: 240-131805-2

Date Collected: 06/09/20 16:50

Matrix: Water

Date Received: 06/12/20 11:10

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/16/20 17:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		70 - 133		06/16/20 17:01	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/20/20 00:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/20/20 00:09	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/20/20 00:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/20/20 00:09	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/20/20 00:09	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/20/20 00:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		75 - 130		06/20/20 00:09	1
4-Bromofluorobenzene (Surr)	98		47 - 134		06/20/20 00:09	1
Toluene-d8 (Surr)	88		69 - 122		06/20/20 00:09	1
Dibromofluoromethane (Surr)	99		78 - 129		06/20/20 00:09	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131805-1

Client Sample ID: MH-1066_060920

Lab Sample ID: 240-131805-3

Date Collected: 06/09/20 17:47

Matrix: Water

Date Received: 06/12/20 11:10

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/16/20 17:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		70 - 133		06/16/20 17:27	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/20/20 00:34	1
cis-1,2-Dichloroethene	0.34	J	1.0	0.16	ug/L			06/20/20 00:34	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/20/20 00:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/20/20 00:34	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/20/20 00:34	1
Vinyl chloride	0.73	J	1.0	0.20	ug/L			06/20/20 00:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		75 - 130		06/20/20 00:34	1
4-Bromofluorobenzene (Surr)	98		47 - 134		06/20/20 00:34	1
Toluene-d8 (Surr)	91		69 - 122		06/20/20 00:34	1
Dibromofluoromethane (Surr)	94		78 - 129		06/20/20 00:34	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-131805-1

Client Sample ID: MH-1041_060920

Lab Sample ID: 240-131805-4

Date Collected: 06/09/20 18:26

Matrix: Water

Date Received: 06/12/20 11:10

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L	-		06/16/20 17:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		70 - 133		06/16/20 17:53	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		06/20/20 00:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L	-		06/20/20 00:59	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L	-		06/20/20 00:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		06/20/20 00:59	1
Trichloroethene	1.0	U	1.0	0.10	ug/L	-		06/20/20 00:59	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L	-		06/20/20 00:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		75 - 130		06/20/20 00:59	1
4-Bromofluorobenzene (Surr)	99		47 - 134		06/20/20 00:59	1
Toluene-d8 (Surr)	91		69 - 122		06/20/20 00:59	1
Dibromofluoromethane (Surr)	100		78 - 129		06/20/20 00:59	1

9/30/2020

Mr. Jim Tomalia
Arcadis U.S., Inc.
28550 Cabot Dr.
Suite 500
Novi MI 48377

Project Name: Ford LTP
Project #: 30050315.701.01
Workorder #: 2009644

Dear Mr. Jim Tomalia

The following report includes the data for the above referenced project for sample(s) received on 9/23/2020 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Ausha Scott at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Ausha Scott
Project Manager

WORK ORDER #: 2009644

Work Order Summary

CLIENT:	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	517-819-0356	P.O. #	30050315.0302.04
FAX:		PROJECT #	30050315.701.01 Ford LTP
DATE RECEIVED:	09/23/2020	CONTACT:	Ausha Scott
DATE COMPLETED:	09/30/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SL-2_091520	TO-15	6.7 "Hg	14.9 psi
02A	MH-1001_091520	TO-15	6.1 "Hg	15 psi
03A	MH-1041_091520	TO-15	6.3 "Hg	14.9 psi
04A	MH-1066_091620	TO-15	5.1 "Hg	14.8 psi
05A	MH-1088_091620	TO-15	5.7 "Hg	15.2 psi
06A	MH-1171_091620	TO-15	6.5 "Hg	14.8 psi
07A	MH-1219_091620	TO-15	5.5 "Hg	14.8 psi
08A	MH-1210_091620	TO-15	5.9 "Hg	15.1 psi
09A	MH-1122_091620	TO-15	7.1 "Hg	14.6 psi
10A	EDC_091620	TO-15	8 "Hg	14.8 psi
11A	WDC_091620	TO-15	5.1 "Hg	14.9 psi
12A	MH-1231_091620	TO-15	6.7 "Hg	14.9 psi
13A	MH-1123_091720	TO-15	6.7 "Hg	14.9 psi
14A	MH-1116_091720	TO-15	8.2 "Hg	14.7 psi
15A	MH-1113_091720	TO-15	5.5 "Hg	15 psi
16A	DUP-01	TO-15	3.9 "Hg	14.9 psi
17A	Lab Blank	TO-15	NA	NA
17B	Lab Blank	TO-15	NA	NA
18A	CCV	TO-15	NA	NA
18B	CCV	TO-15	NA	NA
19A	LCS	TO-15	NA	NA
19AA	LCSD	TO-15	NA	NA
19B	LCS	TO-15	NA	NA

Continued on next page

WORK ORDER #: 2009644

Work Order Summary

CLIENT:	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	517-819-0356	P.O. #	30050315.0302.04
FAX:		PROJECT #	30050315.701.01 Ford LTP
DATE RECEIVED:	09/23/2020	CONTACT:	Ausha Scott
DATE COMPLETED:	09/30/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
19BB	LCSD	TO-15	NA	NA

CERTIFIED BY: 
 Technical Director

DATE: 09/30/20

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209219, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-19-14, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935
 Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
 Accreditation number: CA300005-013, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
EPA Method TO-15
Arcadis U.S., Inc.
Workorder# 2009644

Sixteen 1 Liter Summa Canister (100% Certified) samples were received on September 23, 2020. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Dilution was performed on samples SL-2_091520 and MH-1231_091620 due to the presence of high level target species.

Dilution was performed on samples MH-1219_091620 and EDC_091620 due to the presence of high level non-target species.

Dilution was performed on samples MH-1122_091620 due to matrix interference.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-2_091520	Date/Time Analyzed:	9/29/20 10:41 PM
Lab ID:	2009644-01A	Dilution Factor:	7.41
Date/Time Collected:	9/15/20 12:56 PM	Instrument/Filename:	msda.i / a092917
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	3.8	8.8	15	16
1,4-Dioxane	123-91-1	8.5	27	53	Not Detected
cis-1,2-Dichloroethene	156-59-2	4.7	8.8	15	4600
Tetrachloroethene	127-18-4	5.5	15	25	Not Detected
trans-1,2-Dichloroethene	156-60-5	5.3	8.8	15	48
Trichloroethene	79-01-6	5.2	12	20	2000
Vinyl Chloride	75-01-4	2.5	5.7	9.5	1700

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	107
Toluene-d8	2037-26-5	70-130	104

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1001_091520	Date/Time Analyzed:	9/29/20 04:39 PM
Lab ID:	2009644-02A	Dilution Factor:	2.54
Date/Time Collected:	9/15/20 01:50 PM	Instrument/Filename:	msda.i / a092908
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	3.0	5.0	Not Detected
1,4-Dioxane	123-91-1	2.9	9.2	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	3.0	5.0	Not Detected
Tetrachloroethene	127-18-4	1.9	5.2	8.6	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.8	3.0	5.0	2.1 J
Trichloroethene	79-01-6	1.8	4.1	6.8	Not Detected
Vinyl Chloride	75-01-4	0.84	1.9	3.2	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	108
Toluene-d8	2037-26-5	70-130	107

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1041_091520	Date/Time Analyzed:	9/29/20 05:06 PM
Lab ID:	2009644-03A	Dilution Factor:	2.55
Date/Time Collected:	9/15/20 02:44 PM	Instrument/Filename:	msda.i / a092909
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	3.0	5.0	Not Detected
1,4-Dioxane	123-91-1	2.9	9.2	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	3.0	5.0	Not Detected
Tetrachloroethene	127-18-4	1.9	5.2	8.6	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.8	3.0	5.0	Not Detected
Trichloroethene	79-01-6	1.8	4.1	6.8	Not Detected
Vinyl Chloride	75-01-4	0.85	2.0	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	109
Toluene-d8	2037-26-5	70-130	105

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1066_091620	Date/Time Analyzed:	9/29/20 11:07 PM
Lab ID:	2009644-04A	Dilution Factor:	2.42
Date/Time Collected:	9/16/20 09:05 AM	Instrument/Filename:	msda.i / a092918
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	2.9	4.8	Not Detected
1,4-Dioxane	123-91-1	2.8	8.7	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.9	4.8	Not Detected
Tetrachloroethene	127-18-4	1.8	4.9	8.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.7	2.9	4.8	Not Detected
Trichloroethene	79-01-6	1.7	3.9	6.5	Not Detected
Vinyl Chloride	75-01-4	0.80	1.8	3.1	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	108

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1088_091620	Date/Time Analyzed:	9/29/20 05:57 PM
Lab ID:	2009644-05A	Dilution Factor:	2.51
Date/Time Collected:	9/16/20 09:41 AM	Instrument/Filename:	msda.i / a092911
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	3.0	5.0	Not Detected
1,4-Dioxane	123-91-1	2.9	9.0	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	3.0	5.0	Not Detected
Tetrachloroethene	127-18-4	1.9	5.1	8.5	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.8	3.0	5.0	Not Detected
Trichloroethene	79-01-6	1.8	4.0	6.7	Not Detected
Vinyl Chloride	75-01-4	0.83	1.9	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	108

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1171_091620	Date/Time Analyzed:	9/29/20 06:23 PM
Lab ID:	2009644-06A	Dilution Factor:	2.56
Date/Time Collected:	9/16/20 10:46 AM	Instrument/Filename:	msda.i / a092912
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	3.0	5.1	Not Detected
1,4-Dioxane	123-91-1	3.0	9.2	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	3.0	5.1	6.1
Tetrachloroethene	127-18-4	1.9	5.2	8.7	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.8	3.0	5.1	Not Detected
Trichloroethene	79-01-6	1.8	4.1	6.9	Not Detected
Vinyl Chloride	75-01-4	0.85	2.0	3.3	3.3

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	108

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1219_091620	Date/Time Analyzed:	9/30/20 02:34 PM
Lab ID:	2009644-07A	Dilution Factor:	32.8
Date/Time Collected:	9/16/20 11:29 AM	Instrument/Filename:	msda.i / a093006
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	17	39	65	Not Detected
1,4-Dioxane	123-91-1	38	120	240	41 J
cis-1,2-Dichloroethene	156-59-2	21	39	65	Not Detected
Tetrachloroethene	127-18-4	24	67	110	Not Detected
trans-1,2-Dichloroethene	156-60-5	23	39	65	Not Detected
Trichloroethene	79-01-6	23	53	88	Not Detected
Vinyl Chloride	75-01-4	11	25	42	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	107

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1210_091620	Date/Time Analyzed:	9/29/20 07:14 PM
Lab ID:	2009644-08A	Dilution Factor:	2.52
Date/Time Collected:	9/16/20 12:23 PM	Instrument/Filename:	msda.i / a092914
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	3.0	5.0	Not Detected
1,4-Dioxane	123-91-1	2.9	9.1	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	3.0	5.0	4.0 J
Tetrachloroethene	127-18-4	1.9	5.1	8.5	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.8	3.0	5.0	Not Detected
Trichloroethene	79-01-6	1.8	4.1	6.8	Not Detected
Vinyl Chloride	75-01-4	0.84	1.9	3.2	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	107

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1122_091620	Date/Time Analyzed:	9/30/20 07:04 PM
Lab ID:	2009644-09A	Dilution Factor:	8.70
Date/Time Collected:	9/16/20 08:38 AM	Instrument/Filename:	msda.i / a093016
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	4.5	10	17	Not Detected
1,4-Dioxane	123-91-1	10	31	63	Not Detected
cis-1,2-Dichloroethene	156-59-2	5.5	10	17	Not Detected
Tetrachloroethene	127-18-4	6.5	18	30	Not Detected
trans-1,2-Dichloroethene	156-60-5	6.2	10	17	Not Detected
Trichloroethene	79-01-6	6.1	14	23	Not Detected
Vinyl Chloride	75-01-4	2.9	6.7	11	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	106
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	109

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	EDC_091620	Date/Time Analyzed:	9/30/20 06:27 PM
Lab ID:	2009644-10A	Dilution Factor:	10.9
Date/Time Collected:	9/16/20 01:13 PM	Instrument/Filename:	msda.i / a093015
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	5.6	13	22	Not Detected
1,4-Dioxane	123-91-1	12	39	78	Not Detected
cis-1,2-Dichloroethene	156-59-2	6.9	13	22	Not Detected
Tetrachloroethene	127-18-4	8.1	22	37	48
trans-1,2-Dichloroethene	156-60-5	7.8	13	22	Not Detected
Trichloroethene	79-01-6	7.6	18	29	Not Detected
Vinyl Chloride	75-01-4	3.6	8.4	14	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	106

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	WDC_091620	Date/Time Analyzed:	9/30/20 03:01 PM
Lab ID:	2009644-11A	Dilution Factor:	2.43
Date/Time Collected:	9/16/20 02:34 PM	Instrument/Filename:	msda.i / a093007
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	2.9	4.8	Not Detected
1,4-Dioxane	123-91-1	2.8	8.8	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.9	4.8	Not Detected
Tetrachloroethene	127-18-4	1.8	4.9	8.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.7	2.9	4.8	Not Detected
Trichloroethene	79-01-6	1.7	3.9	6.5	17
Vinyl Chloride	75-01-4	0.81	1.9	3.1	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	109
Toluene-d8	2037-26-5	70-130	104

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1231_091620	Date/Time Analyzed:	9/30/20 03:25 PM
Lab ID:	2009644-12A	Dilution Factor:	130
Date/Time Collected:	9/16/20 03:15 PM	Instrument/Filename:	msda.i / a093008
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	67	150	260	240 J
1,4-Dioxane	123-91-1	150	470	940	Not Detected
cis-1,2-Dichloroethene	156-59-2	82	150	260	42000
Tetrachloroethene	127-18-4	97	260	440	Not Detected
trans-1,2-Dichloroethene	156-60-5	93	150	260	440
Trichloroethene	79-01-6	91	210	350	18000
Vinyl Chloride	75-01-4	43	100	170	16000

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	109
Toluene-d8	2037-26-5	70-130	105

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1123_091720	Date/Time Analyzed:	9/30/20 04:18 PM
Lab ID:	2009644-13A	Dilution Factor:	2.59
Date/Time Collected:	9/17/20 11:10 AM	Instrument/Filename:	msda.i / a093010
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	3.1	5.1	Not Detected
1,4-Dioxane	123-91-1	3.0	9.3	19	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	3.1	5.1	Not Detected
Tetrachloroethene	127-18-4	1.9	5.3	8.8	7.0 J
trans-1,2-Dichloroethene	156-60-5	1.8	3.1	5.1	Not Detected
Trichloroethene	79-01-6	1.8	4.2	7.0	2.2 J
Vinyl Chloride	75-01-4	0.86	2.0	3.3	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	106

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1116_091720	Date/Time Analyzed:	9/30/20 04:44 PM
Lab ID:	2009644-14A	Dilution Factor:	2.75
Date/Time Collected:	9/17/20 11:29 AM	Instrument/Filename:	msda.i / a093011
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	3.3	5.4	Not Detected
1,4-Dioxane	123-91-1	3.2	9.9	20	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	3.3	5.4	Not Detected
Tetrachloroethene	127-18-4	2.0	5.6	9.3	Not Detected
trans-1,2-Dichloroethene	156-60-5	2.0	3.3	5.4	Not Detected
Trichloroethene	79-01-6	1.9	4.4	7.4	Not Detected
Vinyl Chloride	75-01-4	0.91	2.1	3.5	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	105

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1113_091720	Date/Time Analyzed:	9/30/20 07:30 PM
Lab ID:	2009644-15A	Dilution Factor:	2.47
Date/Time Collected:	9/17/20 10:51 AM	Instrument/Filename:	msda.i / a093017
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	2.9	4.9	Not Detected
1,4-Dioxane	123-91-1	2.8	8.9	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.9	4.9	Not Detected
Tetrachloroethene	127-18-4	1.8	5.0	8.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.8	2.9	4.9	Not Detected
Trichloroethene	79-01-6	1.7	4.0	6.6	Not Detected
Vinyl Chloride	75-01-4	0.82	1.9	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	106

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	DUP-01	Date/Time Analyzed:	9/30/20 05:11 PM
Lab ID:	2009644-16A	Dilution Factor:	2.31
Date/Time Collected:	9/15/20 12:00 AM	Instrument/Filename:	msda.i / a093012
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	2.7	4.6	Not Detected
1,4-Dioxane	123-91-1	2.7	8.3	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.7	4.6	Not Detected
Tetrachloroethene	127-18-4	1.7	4.7	7.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.6	2.7	4.6	Not Detected
Trichloroethene	79-01-6	1.6	3.7	6.2	Not Detected
Vinyl Chloride	75-01-4	0.77	1.8	3.0	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	105

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Lab Blank	Date/Time Analyzed:	9/29/20 02:46 PM
Lab ID:	2009644-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msda.i / a092906a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.52	1.2	2.0	Not Detected
1,4-Dioxane	123-91-1	1.2	3.6	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.63	1.2	2.0	Not Detected
Tetrachloroethene	127-18-4	0.75	2.0	3.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.71	1.2	2.0	Not Detected
Trichloroethene	79-01-6	0.70	1.6	2.7	Not Detected
Vinyl Chloride	75-01-4	0.33	0.77	1.3	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	106

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Lab Blank	Date/Time Analyzed:	9/30/20 01:31 PM
Lab ID:	2009644-17B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msda.i / a093005a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.52	1.2	2.0	Not Detected
1,4-Dioxane	123-91-1	1.2	3.6	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.63	1.2	2.0	Not Detected
Tetrachloroethene	127-18-4	0.75	2.0	3.4	1.6 J
trans-1,2-Dichloroethene	156-60-5	0.71	1.2	2.0	Not Detected
Trichloroethene	79-01-6	0.70	1.6	2.7	0.77 J
Vinyl Chloride	75-01-4	0.33	0.77	1.3	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	107

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	CCV	Date/Time Analyzed:	9/29/20 12:21 PM
Lab ID:	2009644-18A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msda.i / a092902
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	89
1,4-Dioxane	123-91-1	89
cis-1,2-Dichloroethene	156-59-2	86
Tetrachloroethene	127-18-4	91
trans-1,2-Dichloroethene	156-60-5	95
Trichloroethene	79-01-6	90
Vinyl Chloride	75-01-4	88

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	110
Toluene-d8	2037-26-5	70-130	106

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	CCV	Date/Time Analyzed:	9/30/20 11:39 AM
Lab ID:	2009644-18B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msda.i / a093002
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	96
1,4-Dioxane	123-91-1	93
cis-1,2-Dichloroethene	156-59-2	92
Tetrachloroethene	127-18-4	96
trans-1,2-Dichloroethene	156-60-5	103
Trichloroethene	79-01-6	94
Vinyl Chloride	75-01-4	92

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	110
Toluene-d8	2037-26-5	70-130	104

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCS	Date/Time Analyzed:	9/29/20 12:46 PM
Lab ID:	2009644-19A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msda.i / a092903
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	98
1,4-Dioxane	123-91-1	95
cis-1,2-Dichloroethene	156-59-2	95
Tetrachloroethene	127-18-4	101
trans-1,2-Dichloroethene	156-60-5	104
Trichloroethene	79-01-6	96
Vinyl Chloride	75-01-4	96

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	112
Toluene-d8	2037-26-5	70-130	104

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCSD	Date/Time Analyzed:	9/29/20 01:11 PM
Lab ID:	2009644-19AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msda.i / a092904
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	97
1,4-Dioxane	123-91-1	96
cis-1,2-Dichloroethene	156-59-2	90
Tetrachloroethene	127-18-4	99
trans-1,2-Dichloroethene	156-60-5	103
Trichloroethene	79-01-6	97
Vinyl Chloride	75-01-4	94

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	111
Toluene-d8	2037-26-5	70-130	106

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCS	Date/Time Analyzed:	9/30/20 12:15 PM
Lab ID:	2009644-19B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msda.i / a093003
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	98
1,4-Dioxane	123-91-1	92
cis-1,2-Dichloroethene	156-59-2	93
Tetrachloroethene	127-18-4	96
trans-1,2-Dichloroethene	156-60-5	102
Trichloroethene	79-01-6	92
Vinyl Chloride	75-01-4	93

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	104
4-Bromofluorobenzene	460-00-4	70-130	114
Toluene-d8	2037-26-5	70-130	104

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCSD	Date/Time Analyzed:	9/30/20 12:40 PM
Lab ID:	2009644-19BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msda.i / a093004
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	102
1,4-Dioxane	123-91-1	95
cis-1,2-Dichloroethene	156-59-2	96
Tetrachloroethene	127-18-4	102
trans-1,2-Dichloroethene	156-60-5	109
Trichloroethene	79-01-6	97
Vinyl Chloride	75-01-4	99

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	103
4-Bromofluorobenzene	460-00-4	70-130	111
Toluene-d8	2037-26-5	70-130	103

* % Recovery is calculated using unrounded analytical results.



October 1, 2020

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2020 Utility Corridor Evaluation Vapor Testing
Project number: 30050315.0701.01
Client project scopereference: Sample COC only was used to define project analytical requirements.
Laboratory: Eurofins Air ToxicFølsom
Laboratorysubmittal: 2009644
Sample date: 2020-09-15, 2020-09-16, 2020-09-17
Report received byCADENA: 2020-10-01
Initial DataVerification completed: 2020-10-01

16 Air samples were analyzed for TO-15 parameters.

MBK - METHOD BLANKS had detections BELOW the Reporting Limit (RL) for these analytes. The listed client sample results had concentrations LESS than 5X the method blank levels so client sample results reported below the RL are considered non-detect at the RL and qualified with UB flags and results greater than the RL are non-detect at the sample concentration reported and qualified with B flags : TO-15 - QC batch dated 9/30/2020 - TETRACHLOROETHYLENE - B flag sample -010, UB flag sample -013. TRICHLOROETHYLENE - UB flag - sample -013.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia
Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) TO-15 Analysis

SDG #2009644

CADENA Verification Report: 2020-10-01

Analyses Performed By:
Eurofins Air Toxics
Folsom, California

Report #38663R
Review Level: Tier III
Project: 30050315.701.02



DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 2009644 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						TO-15 (Full Scan)	TO-15 (SIM)	MISC
2009644	SL-2_091520	2009644-01A	Air	9/15/2020		X		
	MH-1001_091520_AIR	2009644-02A	Air	9/15/2020		X		
	MH-1041_091520	2009644-03A	Air	9/15/2020		X		
	MH-1066_091620_AIR	2009644-04A	Air	9/16/2020		X		
	MH-1088_091620	2009644-05A	Air	9/16/2020		X		
	MH-1171_091620_AIR	2009644-06A	Air	9/16/2020		X		
	MH-1219_091620_AIR	2009644-07A	Air	9/16/2020		X		
	MH-1210_091620	2009644-08A	Air	9/16/2020		X		
	MH-1122_091620	2009644-09A	Air	9/16/2020		X		
	EDC_091620	2009644-10A	Air	9/16/2020		X		
	WDC_091620	2009644-11A	Air	9/16/2020		X		
	MH-1231_091620	2009644-12A	Air	9/16/2020		X		
	MH-1123_091720	2009644-13A	Air	9/17/2020		X		
	MH-1116_091720	2009644-14A	Air	9/17/2020		X		
	MH-1113_091720	2009644-15A	Air	9/17/2020		X		
	DUP-01_091520	2009644-16A	Air	9/15/2020	MH-1041_091520	X		

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Method TO-15 (Full Scan). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation	Return Canister Pressure
USEPA TO-15	Air	30 days from collection to analysis (Canister)	Ambient Temperature	< -2" Hg

All samples were analyzed within the specified holding time and canister return pressure / vacuum criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (30%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (30%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than 140% or less than 60% of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

5. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra. All identified compounds met the specified criteria.

6. Field Duplicate Sample Analysis

The field duplicate analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 35% for air 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 not greater than five times the RL, a control limit of three times the RL is applied to the difference between the duplicate sample results.

Results (in $\mu\text{g}/\text{m}^3$) for the field duplicate samples are summarized in the following table.

Sample ID / Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MH-1041_091520/ DUP-01_091520	All compounds	U	U	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

Note: The compound Tetrachloroethene was detected in the associated Method Blank. The Cadena evaluation omitted the qualifications of the samples in the following table:

Sample Locations	Analytes	Sample Result	Qualification
EDC_091620	Tetrachloroethene	Detected sample results >RL and <BAL	"UB" at detected sample concentration

Note:

RL Reporting limit

Note: Dilution was performed on samples SL-2_091520 and MH-1231_091620 due to the presence of high-level target species.

Dilution was performed on samples MH-1219_091620 and EDC_091620 due to the presence of high-level non-target species.

Dilution was performed on samples MH-1122_091620 due to matrix interference.

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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: TO-15 (Full Scan)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Canister return pressure (<-2"Hg)		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Field Duplicate Sample RPD		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

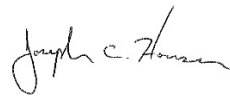
%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Joseph C. Houser

SIGNATURE:



DATE: October 13, 2020

PEER REVIEW: Dennis Capria

DATE: October 14, 2020



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-2_091520	Date/Time Analyzed:	9/29/20 10:41 PM
Lab ID:	2009644-01A	Dilution Factor:	7.41
Date/Time Collected:	9/15/20 12:56 PM	Instrument/Filename:	msda.i / a092917
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	3.8	8.8	15	16
1,4-Dioxane	123-91-1	8.5	27	53	Not Detected
cis-1,2-Dichloroethene	156-59-2	4.7	8.8	15	4600
Tetrachloroethene	127-18-4	5.5	15	25	Not Detected
trans-1,2-Dichloroethene	156-60-5	5.3	8.8	15	48
Trichloroethene	79-01-6	5.2	12	20	2000
Vinyl Chloride	75-01-4	2.5	5.7	9.5	1700

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	107
Toluene-d8	2037-26-5	70-130	104

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1001_091520	Date/Time Analyzed:	9/29/20 04:39 PM
Lab ID:	2009644-02A	Dilution Factor:	2.54
Date/Time Collected:	9/15/20 01:50 PM	Instrument/Filename:	msda.i / a092908
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	3.0	5.0	Not Detected
1,4-Dioxane	123-91-1	2.9	9.2	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	3.0	5.0	Not Detected
Tetrachloroethene	127-18-4	1.9	5.2	8.6	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.8	3.0	5.0	2.1 J
Trichloroethene	79-01-6	1.8	4.1	6.8	Not Detected
Vinyl Chloride	75-01-4	0.84	1.9	3.2	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	108
Toluene-d8	2037-26-5	70-130	107

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1041_091520	Date/Time Analyzed:	9/29/20 05:06 PM
Lab ID:	2009644-03A	Dilution Factor:	2.55
Date/Time Collected:	9/15/20 02:44 PM	Instrument/Filename:	msda.i / a092909
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	3.0	5.0	Not Detected
1,4-Dioxane	123-91-1	2.9	9.2	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	3.0	5.0	Not Detected
Tetrachloroethene	127-18-4	1.9	5.2	8.6	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.8	3.0	5.0	Not Detected
Trichloroethene	79-01-6	1.8	4.1	6.8	Not Detected
Vinyl Chloride	75-01-4	0.85	2.0	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	109
Toluene-d8	2037-26-5	70-130	105

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1066_091620	Date/Time Analyzed:	9/29/20 11:07 PM
Lab ID:	2009644-04A	Dilution Factor:	2.42
Date/Time Collected:	9/16/20 09:05 AM	Instrument/Filename:	msda.i / a092918
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	2.9	4.8	Not Detected
1,4-Dioxane	123-91-1	2.8	8.7	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.9	4.8	Not Detected
Tetrachloroethene	127-18-4	1.8	4.9	8.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.7	2.9	4.8	Not Detected
Trichloroethene	79-01-6	1.7	3.9	6.5	Not Detected
Vinyl Chloride	75-01-4	0.80	1.8	3.1	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	108

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1088_091620	Date/Time Analyzed:	9/29/20 05:57 PM
Lab ID:	2009644-05A	Dilution Factor:	2.51
Date/Time Collected:	9/16/20 09:41 AM	Instrument/Filename:	msda.i / a092911
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	3.0	5.0	Not Detected
1,4-Dioxane	123-91-1	2.9	9.0	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	3.0	5.0	Not Detected
Tetrachloroethene	127-18-4	1.9	5.1	8.5	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.8	3.0	5.0	Not Detected
Trichloroethene	79-01-6	1.8	4.0	6.7	Not Detected
Vinyl Chloride	75-01-4	0.83	1.9	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	108

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1171_091620	Date/Time Analyzed:	9/29/20 06:23 PM
Lab ID:	2009644-06A	Dilution Factor:	2.56
Date/Time Collected:	9/16/20 10:46 AM	Instrument/Filename:	msda.i / a092912
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	3.0	5.1	Not Detected
1,4-Dioxane	123-91-1	3.0	9.2	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	3.0	5.1	6.1
Tetrachloroethene	127-18-4	1.9	5.2	8.7	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.8	3.0	5.1	Not Detected
Trichloroethene	79-01-6	1.8	4.1	6.9	Not Detected
Vinyl Chloride	75-01-4	0.85	2.0	3.3	3.3

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	108

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1219_091620	Date/Time Analyzed:	9/30/20 02:34 PM
Lab ID:	2009644-07A	Dilution Factor:	32.8
Date/Time Collected:	9/16/20 11:29 AM	Instrument/Filename:	msda.i / a093006
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	17	39	65	Not Detected
1,4-Dioxane	123-91-1	38	120	240	41 J
cis-1,2-Dichloroethene	156-59-2	21	39	65	Not Detected
Tetrachloroethene	127-18-4	24	67	110	Not Detected
trans-1,2-Dichloroethene	156-60-5	23	39	65	Not Detected
Trichloroethene	79-01-6	23	53	88	Not Detected
Vinyl Chloride	75-01-4	11	25	42	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	107

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1210_091620	Date/Time Analyzed:	9/29/20 07:14 PM
Lab ID:	2009644-08A	Dilution Factor:	2.52
Date/Time Collected:	9/16/20 12:23 PM	Instrument/Filename:	msda.i / a092914
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	3.0	5.0	Not Detected
1,4-Dioxane	123-91-1	2.9	9.1	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	3.0	5.0	4.0 J
Tetrachloroethene	127-18-4	1.9	5.1	8.5	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.8	3.0	5.0	Not Detected
Trichloroethene	79-01-6	1.8	4.1	6.8	Not Detected
Vinyl Chloride	75-01-4	0.84	1.9	3.2	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	107

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1122_091620	Date/Time Analyzed:	9/30/20 07:04 PM
Lab ID:	2009644-09A	Dilution Factor:	8.70
Date/Time Collected:	9/16/20 08:38 AM	Instrument/Filename:	msda.i / a093016
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	4.5	10	17	Not Detected
1,4-Dioxane	123-91-1	10	31	63	Not Detected
cis-1,2-Dichloroethene	156-59-2	5.5	10	17	Not Detected
Tetrachloroethene	127-18-4	6.5	18	30	Not Detected
trans-1,2-Dichloroethene	156-60-5	6.2	10	17	Not Detected
Trichloroethene	79-01-6	6.1	14	23	Not Detected
Vinyl Chloride	75-01-4	2.9	6.7	11	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	106
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	109

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	EDC_091620	Date/Time Analyzed:	9/30/20 06:27 PM
Lab ID:	2009644-10A	Dilution Factor:	10.9
Date/Time Collected:	9/16/20 01:13 PM	Instrument/Filename:	msda.i / a093015
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	5.6	13	22	Not Detected
1,4-Dioxane	123-91-1	12	39	78	Not Detected
cis-1,2-Dichloroethene	156-59-2	6.9	13	22	Not Detected
Tetrachloroethene	127-18-4	8.1	22	37	48 UB
trans-1,2-Dichloroethene	156-60-5	7.8	13	22	Not Detected
Trichloroethene	79-01-6	7.6	18	29	Not Detected
Vinyl Chloride	75-01-4	3.6	8.4	14	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	106

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	WDC_091620	Date/Time Analyzed:	9/30/20 03:01 PM
Lab ID:	2009644-11A	Dilution Factor:	2.43
Date/Time Collected:	9/16/20 02:34 PM	Instrument/Filename:	msda.i / a093007
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	2.9	4.8	Not Detected
1,4-Dioxane	123-91-1	2.8	8.8	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.9	4.8	Not Detected
Tetrachloroethene	127-18-4	1.8	4.9	8.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.7	2.9	4.8	Not Detected
Trichloroethene	79-01-6	1.7	3.9	6.5	17
Vinyl Chloride	75-01-4	0.81	1.9	3.1	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	109
Toluene-d8	2037-26-5	70-130	104

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1231_091620	Date/Time Analyzed:	9/30/20 03:25 PM
Lab ID:	2009644-12A	Dilution Factor:	130
Date/Time Collected:	9/16/20 03:15 PM	Instrument/Filename:	msda.i / a093008
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	67	150	260	240 J
1,4-Dioxane	123-91-1	150	470	940	Not Detected
cis-1,2-Dichloroethene	156-59-2	82	150	260	42000
Tetrachloroethene	127-18-4	97	260	440	Not Detected
trans-1,2-Dichloroethene	156-60-5	93	150	260	440
Trichloroethene	79-01-6	91	210	350	18000
Vinyl Chloride	75-01-4	43	100	170	16000

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	109
Toluene-d8	2037-26-5	70-130	105

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1123_091720	Date/Time Analyzed:	9/30/20 04:18 PM
Lab ID:	2009644-13A	Dilution Factor:	2.59
Date/Time Collected:	9/17/20 11:10 AM	Instrument/Filename:	msda.i / a093010
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	3.1	5.1	Not Detected
1,4-Dioxane	123-91-1	3.0	9.3	19	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	3.1	5.1	Not Detected
Tetrachloroethene	127-18-4	1.9	5.3	8.8	7.0 J 8.8 UB
trans-1,2-Dichloroethene	156-60-5	1.8	3.1	5.1	Not Detected
Trichloroethene	79-01-6	1.8	4.2	7.0	2.2 J 7.0 UB
Vinyl Chloride	75-01-4	0.86	2.0	3.3	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	106

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1116_091720	Date/Time Analyzed:	9/30/20 04:44 PM
Lab ID:	2009644-14A	Dilution Factor:	2.75
Date/Time Collected:	9/17/20 11:29 AM	Instrument/Filename:	msda.i / a093011
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	3.3	5.4	Not Detected
1,4-Dioxane	123-91-1	3.2	9.9	20	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	3.3	5.4	Not Detected
Tetrachloroethene	127-18-4	2.0	5.6	9.3	Not Detected
trans-1,2-Dichloroethene	156-60-5	2.0	3.3	5.4	Not Detected
Trichloroethene	79-01-6	1.9	4.4	7.4	Not Detected
Vinyl Chloride	75-01-4	0.91	2.1	3.5	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	105

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1113_091720	Date/Time Analyzed:	9/30/20 07:30 PM
Lab ID:	2009644-15A	Dilution Factor:	2.47
Date/Time Collected:	9/17/20 10:51 AM	Instrument/Filename:	msda.i / a093017
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	2.9	4.9	Not Detected
1,4-Dioxane	123-91-1	2.8	8.9	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.9	4.9	Not Detected
Tetrachloroethene	127-18-4	1.8	5.0	8.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.8	2.9	4.9	Not Detected
Trichloroethene	79-01-6	1.7	4.0	6.6	Not Detected
Vinyl Chloride	75-01-4	0.82	1.9	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	106

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	DUP-01	Date/Time Analyzed:	9/30/20 05:11 PM
Lab ID:	2009644-16A	Dilution Factor:	2.31
Date/Time Collected:	9/15/20 12:00 AM	Instrument/Filename:	msda.i / a093012
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	2.7	4.6	Not Detected
1,4-Dioxane	123-91-1	2.7	8.3	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.7	4.6	Not Detected
Tetrachloroethene	127-18-4	1.7	4.7	7.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.6	2.7	4.6	Not Detected
Trichloroethene	79-01-6	1.6	3.7	6.2	Not Detected
Vinyl Chloride	75-01-4	0.77	1.8	3.0	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	105

Analysis Request / Canister Chain of Custody

For Laboratory Use Only

180 Blue Ravine Rd. Suite B, Folsom, CA 95630

Phone (800) 985-5955; Fax (916) 351-8279

PID: _____ Workorder #: 2009644

page 1 of 1

Client: <u>ARCADES</u>	Special Instructions/Notes: REPORT ONLY: 1,1-DCE; cis-1,2-DCE; trans-1,2-DCE; 1,4-Dioxane; PCE; TCE; and VC. Submit results through Cadena at sim.torres@cadenac.com #E205162 Level IV reporting	Turnaround Time (Rush surcharges may apply)
Project Name: <u>FORD LTP</u>		Standard <input checked="" type="checkbox"/> 10-Day Rush _____ (specify)
Project Manager: <u>K. HUSKEY</u> Project # <u>30050315</u>		Canister Vacuum/Pressure Requested Analyses
Sampler: <u>C. WEAVER, J. McCLAFFERTY</u>		Lab Use Only
Site Name: <u>LIVONIA FORD</u>		Receipt Final (psig) Gas: N ₂ / He TO-15 (SEE SPECIAL INST.)

Lab ID	Field Sample Identification (Location)	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Initial (in Hg)	Final (in Hg)	Receipt	Final (psig) Gas: N ₂ / He	TO-15 (SEE SPECIAL INST.)	Requested Analyses		
				Date	Time	Date	Time								
01A	SL-2-091520	1L2786	2028	9/15/20	1255	9/15/20	1256	-29.5	-6.5			X			
02A	MH-1001-091520	1L2631	1902	9/15/20	1349	9/15/20	1350	-30	-6			X			
03A	MH-1041-091520	1L2748	1910	9/15/20	1443	9/15/20	1444	-29.5	-6.5			X			
04A	MH-1066-091620	1L2470	2028	9/16/20	0904	9/16/20	0905	-29.5	-6			X			
05A	MH-1088-091620	1L3116	2028	9/16/20	0940	9/16/20	0941	-29.5	-6.5			X			
06A	MH-1171-091620	1L3086	2028	9/16/20	1045	9/16/20	1046	-29.5	-7			X			
07A	MH-1219-091620	000001352	2020	9/16/20	1128	9/16/20	1129	-30	-6			X			
08A	MH-1210-091620	1L2870	2028	9/16/20	1222	9/16/20	1223	-29.5	-5.5			X			
09A	MH-1122-091620	1L2482	1912	9/16/20	0837	9/16/20	0838	-29.5	-8			X			
10A	EDC-091620	1L2711	1938	9/16/20	1312	9/16/20	1313	-29	-8			X			
11A	WDC-091620	1L1990	1902	9/16/20	1433	9/16/20	1434	-30	-5.5			X			
12A	MH-1231-091620	1L3256	2014	9/16/20	1514	9/16/20	1515	-29.5	-7			X			
13A	MH-1123-091720	1L3203	1922	9/17/20	1109	9/17/20	1110	-30	-7			X			
14A	MH-1116-091720	1L2481	2014	9/17/20	1128	9/17/20	1129	-29	-8			X			
15A	MH-1113-091720	1L3830	2005	9/17/20	1050	9/17/20	1051	-30	-6			X			
16A	DUP-01	1L3207	2005	9/15/20	—	9/15/20	—	-29.5	-4			X			

Relinquished by: (Signature/Affiliation) <u>Julie McClafferty / ARCADES</u>	Date <u>9/21/2020</u>	Time <u>1350</u>	Received by: (Signature/Affiliation) <u>[Signature]</u>	Date <u>9-23-2020</u>	Time <u>1052</u>
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only

Shipper Name: Reddy Custody Seals Intact? Yes No None

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T Hotline (800) 467-4922

9/30/2020

Mr. Jim Tomalia
Arcadis U.S., Inc.
28550 Cabot Dr.
Suite 500
Novi MI 48377

Project Name: Ford LTP
Project #: 30050315.701.01
Workorder #: 2009645

Dear Mr. Jim Tomalia

The following report includes the data for the above referenced project for sample(s) received on 9/23/2020 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Ausha Scott at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Ausha Scott
Project Manager

WORK ORDER #: 2009645

Work Order Summary

CLIENT:	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	517-819-0356	P.O. #	30050315.0302.04
FAX:		PROJECT #	30050315.701.01 Ford LTP
DATE RECEIVED:	09/23/2020	CONTACT:	Ausha Scott
DATE COMPLETED:	09/30/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	MH-1181_091820	TO-15	6.1 "Hg	14.9 psi
02A	MH-1096_091820	TO-15	5.9 "Hg	15 psi
03A	MH-1020_091820	TO-15	5.5 "Hg	14.8 psi
04A	MH-1067_091820	TO-15	2.2 "Hg	14.9 psi
05A	MH-1082_091820	TO-15	4.3 "Hg	14.9 psi
06A	MH-1043_091820	TO-15	6.1 "Hg	15.1 psi
07A	Lab Blank	TO-15	NA	NA
07B	Lab Blank	TO-15	NA	NA
08A	CCV	TO-15	NA	NA
08B	CCV	TO-15	NA	NA
09A	LCS	TO-15	NA	NA
09AA	LCSD	TO-15	NA	NA
09B	LCS	TO-15	NA	NA
09BB	LCSD	TO-15	NA	NA

CERTIFIED BY: 

 Technical Director

DATE: 09/30/20

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209219, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-19-14, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-013, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
 (916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
Arcadis U.S., Inc.
Workorder# 2009645

Six 1 Liter Summa Canister (100% Certified) samples were received on September 23, 2020. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1181_091820	Date/Time Analyzed:	9/28/20 10:54 PM
Lab ID:	2009645-01A	Dilution Factor:	2.53
Date/Time Collected:	9/18/20 10:51 AM	Instrument/Filename:	msdp.i / p092824
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	2.5	5.0	Not Detected
1,4-Dioxane	123-91-1	0.92	4.6	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.70	2.5	5.0	Not Detected
Tetrachloroethene	127-18-4	1.1	4.3	8.6	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.5	5.0	Not Detected
Trichloroethene	79-01-6	0.57	3.4	6.8	Not Detected
Vinyl Chloride	75-01-4	0.47	1.6	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	108
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1096_091820	Date/Time Analyzed:	9/28/20 11:20 PM
Lab ID:	2009645-02A	Dilution Factor:	2.52
Date/Time Collected:	9/18/20 11:23 AM	Instrument/Filename:	msdp.i / p092825
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	2.5	5.0	Not Detected
1,4-Dioxane	123-91-1	0.91	4.5	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.70	2.5	5.0	Not Detected
Tetrachloroethene	127-18-4	1.0	4.3	8.5	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.5	5.0	Not Detected
Trichloroethene	79-01-6	0.56	3.4	6.8	Not Detected
Vinyl Chloride	75-01-4	0.47	1.6	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	108
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1020_091820	Date/Time Analyzed:	9/28/20 11:47 PM
Lab ID:	2009645-03A	Dilution Factor:	2.46
Date/Time Collected:	9/18/20 10:00 AM	Instrument/Filename:	msdp.i / p092826
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	2.4	4.9	Not Detected
1,4-Dioxane	123-91-1	0.89	4.4	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.68	2.4	4.9	Not Detected
Tetrachloroethene	127-18-4	1.0	4.2	8.3	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.4	4.9	Not Detected
Trichloroethene	79-01-6	0.55	3.3	6.6	Not Detected
Vinyl Chloride	75-01-4	0.46	1.6	3.1	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	105
4-Bromofluorobenzene	460-00-4	70-130	111
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1067_091820	Date/Time Analyzed:	9/29/20 12:13 AM
Lab ID:	2009645-04A	Dilution Factor:	2.17
Date/Time Collected:	9/18/20 09:19 AM	Instrument/Filename:	msdp.i / p092827
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.1	2.2	4.3	Not Detected
1,4-Dioxane	123-91-1	0.79	3.9	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.60	2.2	4.3	Not Detected
Tetrachloroethene	127-18-4	0.91	3.7	7.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.97	2.2	4.3	Not Detected
Trichloroethene	79-01-6	0.49	2.9	5.8	Not Detected
Vinyl Chloride	75-01-4	0.40	1.4	2.8	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	111
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	104

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1082_091820	Date/Time Analyzed:	9/29/20 07:45 PM
Lab ID:	2009645-05A	Dilution Factor:	2.35
Date/Time Collected:	9/18/20 09:47 AM	Instrument/Filename:	msd3.i / 3092918
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.68	2.3	4.6	Not Detected
1,4-Dioxane	123-91-1	1.2	5.3	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.76	2.3	4.6	Not Detected
Tetrachloroethene	127-18-4	0.87	4.0	8.0	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.3	4.6	Not Detected
Trichloroethene	79-01-6	0.92	3.2	6.3	Not Detected
Vinyl Chloride	75-01-4	0.55	1.5	3.0	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	88
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1043_091820	Date/Time Analyzed:	9/29/20 08:15 PM
Lab ID:	2009645-06A	Dilution Factor:	2.54
Date/Time Collected:	9/18/20 08:26 AM	Instrument/Filename:	msd3.i / 3092919
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.73	2.5	5.0	Not Detected
1,4-Dioxane	123-91-1	1.3	5.7	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.83	2.5	5.0	Not Detected
Tetrachloroethene	127-18-4	0.94	4.3	8.6	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	2.5	5.0	Not Detected
Trichloroethene	79-01-6	0.99	3.4	6.8	Not Detected
Vinyl Chloride	75-01-4	0.59	1.6	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	91
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Lab Blank	Date/Time Analyzed:	9/28/20 12:06 PM
Lab ID:	2009645-07A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p092807d
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.50	0.99	2.0	Not Detected
1,4-Dioxane	123-91-1	0.36	1.8	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.28	0.99	2.0	Not Detected
Tetrachloroethene	127-18-4	0.42	1.7	3.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.45	0.99	2.0	Not Detected
Trichloroethene	79-01-6	0.22	1.3	2.7	Not Detected
Vinyl Chloride	75-01-4	0.19	0.64	1.3	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	108
4-Bromofluorobenzene	460-00-4	70-130	107
Toluene-d8	2037-26-5	70-130	103

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Lab Blank	Date/Time Analyzed:	9/29/20 01:10 PM
Lab ID:	2009645-07B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3092907d
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.29	0.99	2.0	Not Detected
1,4-Dioxane	123-91-1	0.52	2.2	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.32	0.99	2.0	Not Detected
Tetrachloroethene	127-18-4	0.37	1.7	3.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.47	0.99	2.0	Not Detected
Trichloroethene	79-01-6	0.39	1.3	2.7	Not Detected
Vinyl Chloride	75-01-4	0.23	0.64	1.3	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	87
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	CCV	Date/Time Analyzed:	9/28/20 09:40 AM
Lab ID:	2009645-08A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p092802
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	88
1,4-Dioxane	123-91-1	100
cis-1,2-Dichloroethene	156-59-2	97
Tetrachloroethene	127-18-4	111
trans-1,2-Dichloroethene	156-60-5	96
Trichloroethene	79-01-6	103
Vinyl Chloride	75-01-4	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	114
4-Bromofluorobenzene	460-00-4	70-130	109
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	CCV	Date/Time Analyzed:	9/29/20 10:39 AM
Lab ID:	2009645-08B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3092902
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	93
1,4-Dioxane	123-91-1	100
cis-1,2-Dichloroethene	156-59-2	99
Tetrachloroethene	127-18-4	99
trans-1,2-Dichloroethene	156-60-5	100
Trichloroethene	79-01-6	98
Vinyl Chloride	75-01-4	75

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	95
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	102

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCS	Date/Time Analyzed:	9/28/20 10:48 AM
Lab ID:	2009645-09A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p092804
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	89
1,4-Dioxane	123-91-1	95
cis-1,2-Dichloroethene	156-59-2	94
Tetrachloroethene	127-18-4	107
trans-1,2-Dichloroethene	156-60-5	92
Trichloroethene	79-01-6	100
Vinyl Chloride	75-01-4	97

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	111
4-Bromofluorobenzene	460-00-4	70-130	112
Toluene-d8	2037-26-5	70-130	101

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCSD	Date/Time Analyzed:	9/28/20 11:13 AM
Lab ID:	2009645-09AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p092805
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	92
1,4-Dioxane	123-91-1	94
cis-1,2-Dichloroethene	156-59-2	97
Tetrachloroethene	127-18-4	108
trans-1,2-Dichloroethene	156-60-5	94
Trichloroethene	79-01-6	101
Vinyl Chloride	75-01-4	99

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	111
4-Bromofluorobenzene	460-00-4	70-130	112
Toluene-d8	2037-26-5	70-130	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCS	Date/Time Analyzed:	9/29/20 11:43 AM
Lab ID:	2009645-09B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3092904
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	94
1,4-Dioxane	123-91-1	100
cis-1,2-Dichloroethene	156-59-2	97
Tetrachloroethene	127-18-4	99
trans-1,2-Dichloroethene	156-60-5	97
Trichloroethene	79-01-6	98
Vinyl Chloride	75-01-4	71

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	94
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	101

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCSD	Date/Time Analyzed:	9/29/20 12:40 PM
Lab ID:	2009645-09BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3092906
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	97
1,4-Dioxane	123-91-1	98
cis-1,2-Dichloroethene	156-59-2	100
Tetrachloroethene	127-18-4	98
trans-1,2-Dichloroethene	156-60-5	98
Trichloroethene	79-01-6	97
Vinyl Chloride	75-01-4	75

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	95
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	98

* % Recovery is calculated using unrounded analytical results.



September 30, 2020

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2020 Utility Corridor Evaluation Vapor Testing
Project number: 30050315.0701.01
Client project scopereference: Sample COC only was used to define project analytical requirements.
Laboratory: Eurofins Air Toxics -Folsom
Laboratory submittal: 2009645
Sample date: 2020-09-18
Report received by CADENA: 2020-09-30
Initial Data Verification completed: 2020-09-30
6 Air samples were analyzed for TO-15 parameters.

No data qualifications or sample integrity issues were observed.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) TO-15 Analysis

SDG #2009645

CADENA Verification Report: 2020-09-30

Analyses Performed By:
Eurofins Air Toxics
Folsom, California

Report #38664R
Review Level: Tier III
Project: 30050315.701.02

DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 2009645 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						TO-15 (Full Scan)	TO-15 (SIM)	MIS C
2009645	MH-1181_091820_AIR	2009645-01A	Air	9/18/2020		X		
	MH-1096_091820_AIR	2009645-02A	Air	9/18/2020		X		
	MH-1020_091820_AIR	2009645-03A	Air	9/18/2020		X		
	MH-1067_091820	2009645-04A	Air	9/18/2020		X		
	MH-1082_091820	2009645-05A	Air	9/18/2020		X		
	MH-1043_091820_AIR	2009645-06A	Air	9/18/2020		X		

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Method TO-15 (Full Scan). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation	Return Canister Pressure
USEPA TO-15	Air	30 days from collection to analysis (Canister)	Ambient Temperature	< -2" Hg

All samples were analyzed within the specified holding time and canister return pressure / vacuum criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (30%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (30%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than 140% or less than 60% of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

5. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra. All identified compounds met the specified criteria.

6. Field Duplicate Sample Analysis

The field duplicate analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 35% for air 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 not greater than five times the RL, a control limit of three times the RL is applied to the difference between the duplicate sample results.

A field duplicate was not performed on a sample location within this SDG.

7. 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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: TO-15 (Full Scan)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Canister return pressure (<-2"Hg)		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Field Duplicate Sample RPD	X				X
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

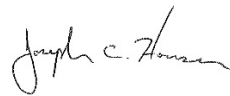
%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Joseph C. Houser

SIGNATURE:



DATE: October 13, 2020

PEER REVIEW: Dennis Capria

DATE: October 14, 2020



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



**NO CORRECTIONS/QUALIFIERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**



EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1181_091820	Date/Time Analyzed:	9/28/20 10:54 PM
Lab ID:	2009645-01A	Dilution Factor:	2.53
Date/Time Collected:	9/18/20 10:51 AM	Instrument/Filename:	msdp.i / p092824
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	2.5	5.0	Not Detected
1,4-Dioxane	123-91-1	0.92	4.6	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.70	2.5	5.0	Not Detected
Tetrachloroethene	127-18-4	1.1	4.3	8.6	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.5	5.0	Not Detected
Trichloroethene	79-01-6	0.57	3.4	6.8	Not Detected
Vinyl Chloride	75-01-4	0.47	1.6	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	108
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1096_091820	Date/Time Analyzed:	9/28/20 11:20 PM
Lab ID:	2009645-02A	Dilution Factor:	2.52
Date/Time Collected:	9/18/20 11:23 AM	Instrument/Filename:	msdp.i / p092825
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	2.5	5.0	Not Detected
1,4-Dioxane	123-91-1	0.91	4.5	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.70	2.5	5.0	Not Detected
Tetrachloroethene	127-18-4	1.0	4.3	8.5	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.5	5.0	Not Detected
Trichloroethene	79-01-6	0.56	3.4	6.8	Not Detected
Vinyl Chloride	75-01-4	0.47	1.6	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	108
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1020_091820	Date/Time Analyzed:	9/28/20 11:47 PM
Lab ID:	2009645-03A	Dilution Factor:	2.46
Date/Time Collected:	9/18/20 10:00 AM	Instrument/Filename:	msdp.i / p092826
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	2.4	4.9	Not Detected
1,4-Dioxane	123-91-1	0.89	4.4	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.68	2.4	4.9	Not Detected
Tetrachloroethene	127-18-4	1.0	4.2	8.3	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.4	4.9	Not Detected
Trichloroethene	79-01-6	0.55	3.3	6.6	Not Detected
Vinyl Chloride	75-01-4	0.46	1.6	3.1	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	105
4-Bromofluorobenzene	460-00-4	70-130	111
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1067_091820	Date/Time Analyzed:	9/29/20 12:13 AM
Lab ID:	2009645-04A	Dilution Factor:	2.17
Date/Time Collected:	9/18/20 09:19 AM	Instrument/Filename:	msdp.i / p092827
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.1	2.2	4.3	Not Detected
1,4-Dioxane	123-91-1	0.79	3.9	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.60	2.2	4.3	Not Detected
Tetrachloroethene	127-18-4	0.91	3.7	7.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.97	2.2	4.3	Not Detected
Trichloroethene	79-01-6	0.49	2.9	5.8	Not Detected
Vinyl Chloride	75-01-4	0.40	1.4	2.8	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	111
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	104

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1082_091820	Date/Time Analyzed:	9/29/20 07:45 PM
Lab ID:	2009645-05A	Dilution Factor:	2.35
Date/Time Collected:	9/18/20 09:47 AM	Instrument/Filename:	msd3.i / 3092918
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.68	2.3	4.6	Not Detected
1,4-Dioxane	123-91-1	1.2	5.3	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.76	2.3	4.6	Not Detected
Tetrachloroethene	127-18-4	0.87	4.0	8.0	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.3	4.6	Not Detected
Trichloroethene	79-01-6	0.92	3.2	6.3	Not Detected
Vinyl Chloride	75-01-4	0.55	1.5	3.0	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	88
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1043_091820	Date/Time Analyzed:	9/29/20 08:15 PM
Lab ID:	2009645-06A	Dilution Factor:	2.54
Date/Time Collected:	9/18/20 08:26 AM	Instrument/Filename:	msd3.i / 3092919
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.73	2.5	5.0	Not Detected
1,4-Dioxane	123-91-1	1.3	5.7	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.83	2.5	5.0	Not Detected
Tetrachloroethene	127-18-4	0.94	4.3	8.6	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	2.5	5.0	Not Detected
Trichloroethene	79-01-6	0.99	3.4	6.8	Not Detected
Vinyl Chloride	75-01-4	0.59	1.6	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	91
Toluene-d8	2037-26-5	70-130	96



Air Toxics

Analysis Request / Canister Chain of Custody

For Laboratory Use Only

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
Phone (800) 985-5955; Fax (916) 351-8279

PID: _____ Workorder #: 2009645

page 1 of 1

Client: <u>Arcadis</u>	Special Instructions/Notes: Report only: 1,1-DCE; cis-1,2-DCE; trans-1,2-DCE 1,4-Dioxane; PCE; TCE; 8 VC Submit results through Cadena at Level IV jim.tornalia@cadenacorp.com #E205162 Reporting	Turnaround Time (Rush surcharges may apply)	
Project Name: <u>Ford LTP</u>		Standard <input checked="" type="checkbox"/> 10-day	Rush _____ (specify)
Project Manager: <u>K. Hingkey</u> Project # <u>30050315</u>		Canister Vacuum/Pressure	
Sampler: <u>H. B. Stak</u> <u>C. Weaver</u> <u>S. McClafferty</u> .701.01		Requested Analyses	
Site Name: <u>Livonia Ford</u>		Lab Use Only	

Lab ID	Field Sample Identification (Location)	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Initial (in Hg)	Final (in Hg)	Receipt	Final (psig) Gas: N ₂ / He	TD-15 (sec)	Special (inst.)
				Date	Time	Date	Time						
01A	MH-1181-091820	1L3042	2014	9/18/20	1050	9/18/20	1051	-30	-7				
02A	MH-1096-091820	1L1803	2014	9/18/20	1122	9/18/20	1123	-30	-8				
03A	MH-1020-091820	1L2609	2005	9/18/20	0959	9/18/20	1000	-30	-7				
04A	MH-1067-091820	1L1527	2014	9/18/20	0918	9/18/20	0919	-30	-4				
05A	MH-1082-091820	1L1865	1946	9/18/20	0946	9/18/20	0947	-30	-6				
06A	MH-1043-091820	1L3897	2020	9/18/20	0826	9/18/20	0826	-30	-8				

Relinquished by: (Signature/Affiliation) <u>Julia McClafferty / Arcadis</u>	Date <u>9/21/2020</u>	Time <u>1350</u>	Received by: (Signature/Affiliation) <u>R. G. D. C.</u>	Date <u>9-23-20</u>	Time <u>1052</u>
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only

Shipper Name: FLTA Custody Seals Intact? Yes No None

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-136902-1
Client Project/Site: Ford LTP

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey



Authorized for release by:
10/5/2020 3:48:40 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@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.



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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136902-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

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

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136902-1

Job ID: 240-136902-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP

Report Number: 240-136902-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 9/22/2020 9:20 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.9° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples MH-1001_091520 (240-136902-1) and TRIP BLANK (240-136902-2) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 09/29/2020.

The matrix spike/matrix spike duplicate (MS/MSD) for samples MH-1001_091520 (240-136902-1) and TRIP BLANK (240-136902-2) was not reported, because the analyte list for these samples did not match the analyte list for the MS/MSD parent sample.

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

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Sample MH-1001_091520 (240-136902-1) was analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The sample was analyzed on 09/28/2020.

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

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136902-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396



Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136902-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-136902-1	MH-1001_091520	Water	09/15/20 14:05	09/22/20 09:20	
240-136902-2	TRIP BLANK	Water	09/15/20 00:00	09/22/20 09:20	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136902-1

Client Sample ID: MH-1001_091520

Lab Sample ID: 240-136902-1

No Detections.

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-136902-2

No Detections.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136902-1

Client Sample ID: MH-1001_091520

Lab Sample ID: 240-136902-1

Date Collected: 09/15/20 14:05

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			09/28/20 14:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		70 - 133		09/28/20 14:52	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 12:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			09/29/20 12:10	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			09/29/20 12:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 12:10	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			09/29/20 12:10	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			09/29/20 12:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		75 - 130		09/29/20 12:10	1
4-Bromofluorobenzene (Surr)	85		47 - 134		09/29/20 12:10	1
Toluene-d8 (Surr)	83		69 - 122		09/29/20 12:10	1
Dibromofluoromethane (Surr)	90		78 - 129		09/29/20 12:10	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136902-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-136902-2

Date Collected: 09/15/20 00:00

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 12:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			09/29/20 12:33	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			09/29/20 12:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 12:33	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			09/29/20 12:33	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			09/29/20 12:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		75 - 130		09/29/20 12:33	1
4-Bromofluorobenzene (Surr)	93		47 - 134		09/29/20 12:33	1
Toluene-d8 (Surr)	92		69 - 122		09/29/20 12:33	1
Dibromofluoromethane (Surr)	98		78 - 129		09/29/20 12:33	1

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136902-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (75-130)	BFB (47-134)	TOL (69-122)	DBFM (78-129)
240-136902-1	MH-1001_091520	91	85	83	90
240-136902-2	TRIP BLANK	101	93	92	98
LCS 240-453474/5	Lab Control Sample	106	97	96	106
MB 240-453474/8	Method Blank	106	99	97	105

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

TOL = Toluene-d8 (Surr)

DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (70-133)
240-136765-C-5 MS	Matrix Spike	87
240-136765-C-5 MSD	Matrix Spike Duplicate	89
240-136902-1	MH-1001_091520	87
LCS 240-453310/4	Lab Control Sample	85
MB 240-453310/5	Method Blank	84

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136902-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-453474/8
Matrix: Water
Analysis Batch: 453474

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 11:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			09/29/20 11:23	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			09/29/20 11:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 11:23	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			09/29/20 11:23	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			09/29/20 11:23	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	106		75 - 130		09/29/20 11:23	1
4-Bromofluorobenzene (Surr)	99		47 - 134		09/29/20 11:23	1
Toluene-d8 (Surr)	97		69 - 122		09/29/20 11:23	1
Dibromofluoromethane (Surr)	105		78 - 129		09/29/20 11:23	1

Lab Sample ID: LCS 240-453474/5
Matrix: Water
Analysis Batch: 453474

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	20.0	20.2		ug/L		101	75 - 124
Tetrachloroethene	20.0	19.0		ug/L		95	70 - 125
trans-1,2-Dichloroethene	20.0	21.2		ug/L		106	74 - 130
Trichloroethene	20.0	20.4		ug/L		102	71 - 121
Vinyl chloride	20.0	22.6		ug/L		113	61 - 134

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	106		75 - 130
4-Bromofluorobenzene (Surr)	97		47 - 134
Toluene-d8 (Surr)	96		69 - 122
Dibromofluoromethane (Surr)	106		78 - 129

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-453310/5
Matrix: Water
Analysis Batch: 453310

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			09/28/20 13:37	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	84		70 - 133		09/28/20 13:37	1

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136902-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-453310/4
Matrix: Water
Analysis Batch: 453310

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	10.6		ug/L		106	80 - 135
Surrogate							
	%Recovery	LCS Qualifier	LCS Limits				
1,2-Dichloroethane-d4 (Surr)	85		70 - 133				

Lab Sample ID: 240-136765-C-5 MS
Matrix: Water
Analysis Batch: 453310

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	4.1		10.0	13.9		ug/L		97	46 - 170
Surrogate									
	%Recovery	MS Qualifier	MS Limits						
1,2-Dichloroethane-d4 (Surr)	87		70 - 133						

Lab Sample ID: 240-136765-C-5 MSD
Matrix: Water
Analysis Batch: 453310

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	4.1		10.0	14.3		ug/L		101	46 - 170	3	26
Surrogate											
	%Recovery	MSD Qualifier	MSD Limits								
1,2-Dichloroethane-d4 (Surr)	89		70 - 133								

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136902-1

GC/MS VOA

Analysis Batch: 453310

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-136902-1	MH-1001_091520	Total/NA	Water	8260B SIM	
MB 240-453310/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-453310/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-136765-C-5 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-136765-C-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 453474

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-136902-1	MH-1001_091520	Total/NA	Water	8260B	
240-136902-2	TRIP BLANK	Total/NA	Water	8260B	
MB 240-453474/8	Method Blank	Total/NA	Water	8260B	
LCS 240-453474/5	Lab Control Sample	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136902-1

Client Sample ID: MH-1001_091520

Lab Sample ID: 240-136902-1

Date Collected: 09/15/20 14:05

Matrix: Water

Date Received: 09/22/20 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	453474	09/29/20 12:10	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	453310	09/28/20 14:52	SAM	TAL CAN

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-136902-2

Date Collected: 09/15/20 00:00

Matrix: Water

Date Received: 09/22/20 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	453474	09/29/20 12:33	HMB	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396



Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP

Job ID: 240-136902-1

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-20 *
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20

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



MICHIGAN 190

Chain of Custody Record 491411



Environment Testing
TestAmerica

Address:

TAL-8210

Regulatory Program: DW NPDES RCRA Other:

Client Contact
Company Name: Arcadis
Address: 28550 Cabot Dr. Suite 500
City/State/Zip: Novi, MI 48377
Phone: 248-994-2240
Fax: 248-994-2241
Project Name: Ford LTP
Site: Ford LTP
PO# 30050315, 201, 01

Project Manager: Kris Hinsky
Tell/Email: _____
Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
TAT if different from Below
 10 day 2 weeks 1 week 2 days 1 day

Site Contact: Julia McLafferty Date: 9/15/20
Lab Contact: Mike DelMonico Carrier: _____
COC No: _____ of _____ COCs
Sampler: Julia McLafferty
For Lab Use Only:
Walk-in Client:
Lab Sampling:
Job / SDG No.:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Sample Specific Notes:
MA-1001_091520	9/15/20	1405	G	GW	6	N	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
TRIP BLANK	9/15/20	---	G	GW	1	N	X	1 TRIP BLANK



Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification: Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
 Non-Hazard Flammable Skin Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments: Submit all results through cadena at jim.tomalini@cadena.com, cadena # E205162

Level IV Reporting

Custody Seals Intact: Yes No

Received by: Julia McLafferty
Relinquished by: _____
Relinquished by: _____

Company: Arcadis
Date/Time: 9/15/20 1605
Company: ARCADIS
Date/Time: 9/15/20 1700
Company: Arcadis
Date/Time: 9/21/20 1550

Company: Eurofins
Date/Time: 9-22-20 920

Received by: Christoph Wuu
Received by: NOVA COLD STORAGE
Received in Laboratory by: _____

Company: ARCADIS
Company: Eurofins
Company: FETA

Cooler Temp. (°C): Obs'd: _____
Custody Seal No.: _____
Therm ID No.: _____

Return to Client Disposal by Lab Archive for _____ Months



Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login #: 136902

Client Arcadis Site Name _____
 Cooler Received on 9-22-20 Opened on 9-22-20
 FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Cooler unpacked by:
Matt Snyder

Receipt After-hours: Drop-off Date/Time _____ **Storage Location** _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____
 Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other _____
 COOLANT: Wet Ice Blue Ice Dry Ice Water None


1. Cooler temperature upon receipt See Multiple Cooler Form
 IR GUN# IR-10 (CF +0.7°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 IR GUN #IR-11 (CF +0.9°C) Observed Cooler Temp. 1.0 °C Corrected Cooler Temp. 1.9 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No NA
 -Were tamper/custody seals intact and uncompromised? Yes No NA

Tests that are not checked for pH by Receiving:
 VOAs
 Oil and Grease
 TOC

3. Shippers' packing slip attached to the cooler(s)? Yes No
 4. Did custody papers accompany the sample(s)? Yes No
 5. Were the custody papers relinquished & signed in the appropriate place? Yes No
 6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
 7. Did all bottles arrive in good condition (Unbroken)? Yes No
 8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
 9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? Yes No
 10. Were correct bottle(s) used for the test(s) indicated? Yes No
 11. Sufficient quantity received to perform indicated analyses? Yes No
 12. Are these work share samples and all listed on the COC? Yes No

If yes, Questions 13-17 have been checked at the originating laboratory.

13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC907861
 14. Were VOAs on the COC? Yes No NA
 15. Were air bubbles >6 mm in any VOA vials? Yes No NA  ← Larger than this.
 16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
 17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page

Samples processed by: _____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container.
 Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
 Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____



DATA VERIFICATION REPORT

October 06, 2020

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2020 Utility Corridor Evaluation Vapor Testing
Project number: 30050315.701.01
Event Specific Scope of Work References: Sample COC
Laboratory: TestAmerica - North Canton
Laboratory submittal: 136902-1
Sample date: 2020-09-15
Report received by CADENA: 2020-10-05
Initial Data Verification completed by CADENA: 2020-10-06
Number of Samples: 1 Water and 1 trip blank
Sample Matrices: Water
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E205162

Laboratory: TestAmerica - North Canton

Laboratory Submittal: 136902-1

Sample Name: MH-1001_091520 TRIP BLANK
 Lab Sample ID: 2401369021 2401369022
 Sample Date: 9/15/2020 9/15/2020

Analyte	Cas No.	Report		Units	Valid		Report		Valid	
		Result	Limit		Qualifier	Result	Limit	Units	Qualifier	
GC/MS VOC										
<u>OSW-8260B</u>										
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	
<u>OSW-8260BBSim</u>										
1,4-Dioxane	123-91-1	ND	2.0	ug/l	---					

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

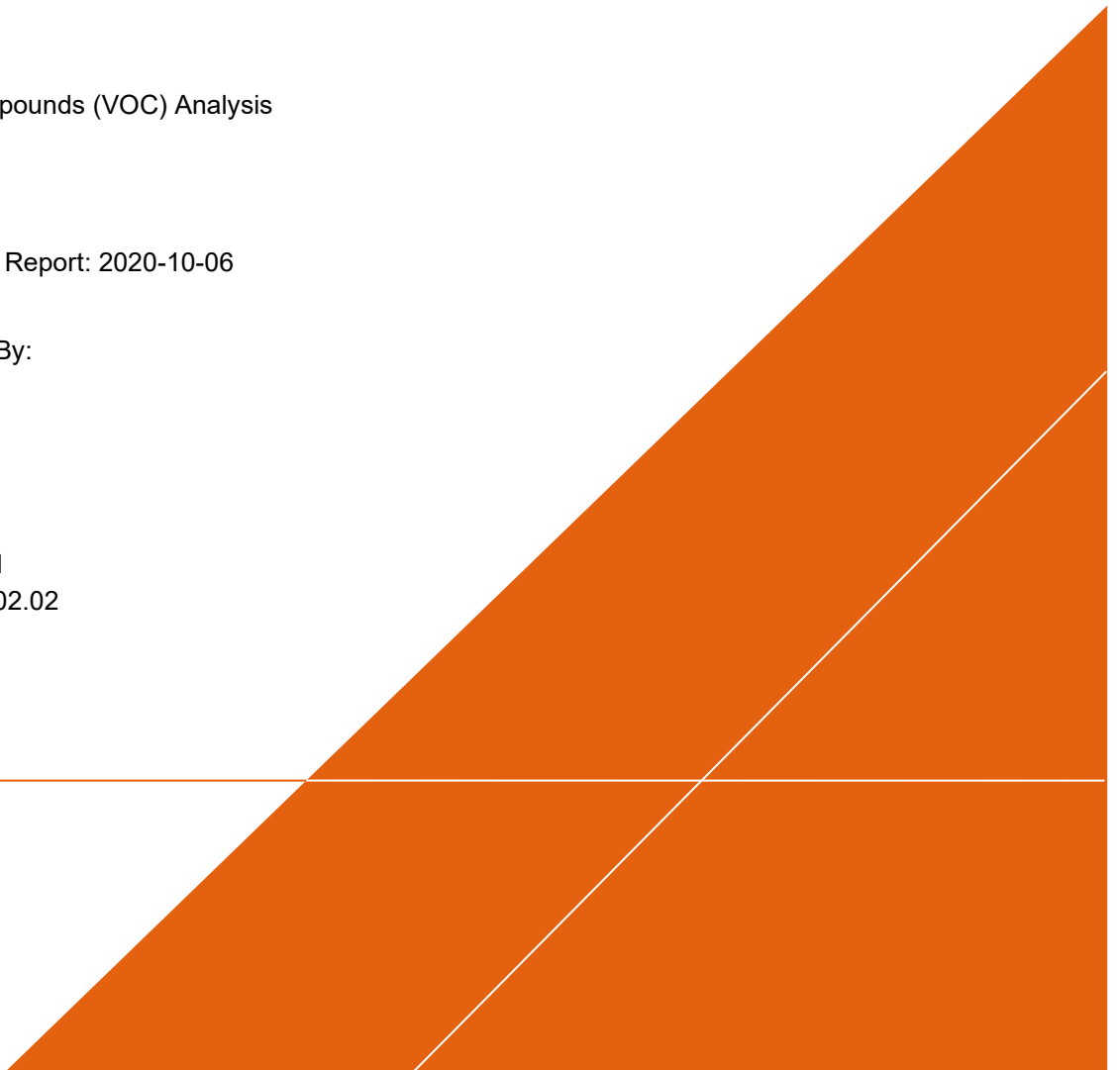
Volatile Organic Compounds (VOC) Analysis

SDG # 240-136902-1

CADENA Verification Report: 2020-10-06

Analyses Performed By:
TestAmerica
Edison, New Jersey

Report #38679R
Review Level: Tier III
Project: 30050315.402.02



DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-136902-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						VOC (Full Scan)	VOC (SIM)	MISC
240-136902-1	MH-1001_091520	240-136902-1	Water	9/15/2020		X	X	
	TRIP BLANK	240-136902-2	Water	9/15/2020		X		

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260B and 8260B SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) 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 8260B/8260B-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

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 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.

A field duplicate was not performed on a sample within this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. 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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260B/8260B-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:



DATE: October 15, 2020

PEER REVIEW: Joseph C. Houser

DATE: October 16, 2020



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136902-1

Client Sample ID: MH-1001_091520

Lab Sample ID: 240-136902-1

Date Collected: 09/15/20 14:05

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			09/28/20 14:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		70 - 133		09/28/20 14:52	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 12:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			09/29/20 12:10	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			09/29/20 12:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 12:10	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			09/29/20 12:10	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			09/29/20 12:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		75 - 130		09/29/20 12:10	1
4-Bromofluorobenzene (Surr)	85		47 - 134		09/29/20 12:10	1
Toluene-d8 (Surr)	83		69 - 122		09/29/20 12:10	1
Dibromofluoromethane (Surr)	90		78 - 129		09/29/20 12:10	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136902-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-136902-2

Date Collected: 09/15/20 00:00

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 12:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			09/29/20 12:33	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			09/29/20 12:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 12:33	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			09/29/20 12:33	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			09/29/20 12:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		75 - 130		09/29/20 12:33	1
4-Bromofluorobenzene (Surr)	93		47 - 134		09/29/20 12:33	1
Toluene-d8 (Surr)	92		69 - 122		09/29/20 12:33	1
Dibromofluoromethane (Surr)	98		78 - 129		09/29/20 12:33	1

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-136903-1
Client Project/Site: Ford LTP

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey



Authorized for release by:
10/5/2020 3:52:15 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.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.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

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.
U	Indicates the analyte was analyzed for but not detected.

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

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Job ID: 240-136903-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP

Report Number: 240-136903-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 9/22/2020 9:20 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.9° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples MH-1066_091620 (240-136903-1), MH-1171_091620 (240-136903-2), MH-1219_091620 (240-136903-3), TRIP BLANK (240-136903-4) and DUP-01 (240-136903-5) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 09/29/2020 and 09/30/2020.

Sample MH-1219_091620 (240-136903-3)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The following sample was diluted due to the nature of the sample matrix: MH-1219_091620 (240-136903-3). Elevated reporting limits (RLs) are provided.

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

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Samples MH-1066_091620 (240-136903-1), MH-1171_091620 (240-136903-2), MH-1219_091620 (240-136903-3) and DUP-01 (240-136903-5) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 09/28/2020 and 09/29/2020.

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Job ID: 240-136903-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

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

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Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396



Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-136903-1	MH-1066_091620	Water	09/16/20 09:15	09/22/20 09:20	
240-136903-2	MH-1171_091620	Water	09/16/20 10:57	09/22/20 09:20	
240-136903-3	MH-1219_091620	Water	09/16/20 11:40	09/22/20 09:20	
240-136903-4	TRIP BLANK	Water	09/16/20 00:00	09/22/20 09:20	
240-136903-5	DUP-01	Water	09/16/20 00:00	09/22/20 09:20	

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Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Client Sample ID: MH-1066_091620

Lab Sample ID: 240-136903-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.17	J	1.0	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: MH-1171_091620

Lab Sample ID: 240-136903-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.89	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA

Client Sample ID: MH-1219_091620

Lab Sample ID: 240-136903-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.92	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-136903-4

No Detections.

Client Sample ID: DUP-01

Lab Sample ID: 240-136903-5

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Client Sample ID: MH-1066_091620

Lab Sample ID: 240-136903-1

Date Collected: 09/16/20 09:15

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			09/29/20 18:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		70 - 133		09/29/20 18:06	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 19:12	1
cis-1,2-Dichloroethene	0.17	J	1.0	0.16	ug/L			09/29/20 19:12	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			09/29/20 19:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 19:12	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			09/29/20 19:12	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			09/29/20 19:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	119		75 - 130		09/29/20 19:12	1
4-Bromofluorobenzene (Surr)	66		47 - 134		09/29/20 19:12	1
Toluene-d8 (Surr)	92		69 - 122		09/29/20 19:12	1
Dibromofluoromethane (Surr)	111		78 - 129		09/29/20 19:12	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Client Sample ID: MH-1171_091620

Lab Sample ID: 240-136903-2

Date Collected: 09/16/20 10:57

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.89	J	2.0	0.86	ug/L			09/28/20 22:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		70 - 133					09/28/20 22:47	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 19:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			09/29/20 19:36	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			09/29/20 19:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 19:36	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			09/29/20 19:36	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			09/29/20 19:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		75 - 130					09/29/20 19:36	1
4-Bromofluorobenzene (Surr)	69		47 - 134					09/29/20 19:36	1
Toluene-d8 (Surr)	94		69 - 122					09/29/20 19:36	1
Dibromofluoromethane (Surr)	109		78 - 129					09/29/20 19:36	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Client Sample ID: MH-1219_091620

Lab Sample ID: 240-136903-3

Date Collected: 09/16/20 11:40

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.92	J	2.0	0.86	ug/L			09/28/20 23:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		70 - 133					09/28/20 23:12	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	0.95	ug/L			09/30/20 15:47	5
cis-1,2-Dichloroethene	5.0	U	5.0	0.80	ug/L			09/30/20 15:47	5
Tetrachloroethene	5.0	U	5.0	0.75	ug/L			09/30/20 15:47	5
trans-1,2-Dichloroethene	5.0	U	5.0	0.95	ug/L			09/30/20 15:47	5
Trichloroethene	5.0	U	5.0	0.50	ug/L			09/30/20 15:47	5
Vinyl chloride	5.0	U	5.0	1.0	ug/L			09/30/20 15:47	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	115		75 - 130					09/30/20 15:47	5
4-Bromofluorobenzene (Surr)	69		47 - 134					09/30/20 15:47	5
Toluene-d8 (Surr)	89		69 - 122					09/30/20 15:47	5
Dibromofluoromethane (Surr)	107		78 - 129					09/30/20 15:47	5

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-136903-4

Date Collected: 09/16/20 00:00

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 19:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			09/29/20 19:59	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			09/29/20 19:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 19:59	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			09/29/20 19:59	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			09/29/20 19:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	117		75 - 130		09/29/20 19:59	1
4-Bromofluorobenzene (Surr)	65		47 - 134		09/29/20 19:59	1
Toluene-d8 (Surr)	87		69 - 122		09/29/20 19:59	1
Dibromofluoromethane (Surr)	107		78 - 129		09/29/20 19:59	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Client Sample ID: DUP-01

Lab Sample ID: 240-136903-5

Date Collected: 09/16/20 00:00

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			09/29/20 12:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		70 - 133		09/29/20 12:20	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/30/20 16:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			09/30/20 16:10	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			09/30/20 16:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/30/20 16:10	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			09/30/20 16:10	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			09/30/20 16:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	115		75 - 130		09/30/20 16:10	1
4-Bromofluorobenzene (Surr)	69		47 - 134		09/30/20 16:10	1
Toluene-d8 (Surr)	91		69 - 122		09/30/20 16:10	1
Dibromofluoromethane (Surr)	107		78 - 129		09/30/20 16:10	1

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (75-130)	BFB (47-134)	TOL (69-122)	DBFM (78-129)
240-136708-B-14 MS	Matrix Spike	95	91	102	89
240-136708-B-14 MSD	Matrix Spike Duplicate	94	93	103	92
240-136903-1	MH-1066_091620	119	66	92	111
240-136903-2	MH-1171_091620	120	69	94	109
240-136903-3	MH-1219_091620	115	69	89	107
240-136903-4	TRIP BLANK	117	65	87	107
240-136903-5	DUP-01	115	69	91	107
240-137084-D-1 MS	Matrix Spike	96	94	102	90
240-137084-E-1 MSD	Matrix Spike Duplicate	93	90	98	89
LCS 240-453514/4	Lab Control Sample	91	92	99	90
LCS 240-453691/4	Lab Control Sample	89	94	98	88
MB 240-453514/7	Method Blank	112	64	89	103
MB 240-453691/7	Method Blank	110	69	89	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA
		(70-133)
240-136765-C-5 MS	Matrix Spike	87
240-136765-C-5 MSD	Matrix Spike Duplicate	89
240-136837-A-2 MS	Matrix Spike	95
240-136837-A-2 MSD	Matrix Spike Duplicate	93
240-136903-1	MH-1066_091620	91
240-136903-2	MH-1171_091620	90
240-136903-3	MH-1219_091620	90
240-136903-5	DUP-01	89
LCS 240-453310/4	Lab Control Sample	85
LCS 240-453472/4	Lab Control Sample	86
MB 240-453310/5	Method Blank	84
MB 240-453472/5	Method Blank	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-453514/7
Matrix: Water
Analysis Batch: 453514

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 13:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			09/29/20 13:38	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			09/29/20 13:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 13:38	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			09/29/20 13:38	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			09/29/20 13:38	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	112		75 - 130		09/29/20 13:38	1
4-Bromofluorobenzene (Surr)	64		47 - 134		09/29/20 13:38	1
Toluene-d8 (Surr)	89		69 - 122		09/29/20 13:38	1
Dibromofluoromethane (Surr)	103		78 - 129		09/29/20 13:38	1

Lab Sample ID: LCS 240-453514/4
Matrix: Water
Analysis Batch: 453514

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	9.32		ug/L		93	73 - 129
cis-1,2-Dichloroethene	10.0	9.41		ug/L		94	75 - 124
Tetrachloroethene	10.0	10.2		ug/L		102	70 - 125
trans-1,2-Dichloroethene	10.0	9.90		ug/L		99	74 - 130
Trichloroethene	10.0	8.72		ug/L		87	71 - 121
Vinyl chloride	10.0	9.10		ug/L		91	61 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	91		75 - 130
4-Bromofluorobenzene (Surr)	92		47 - 134
Toluene-d8 (Surr)	99		69 - 122
Dibromofluoromethane (Surr)	90		78 - 129

Lab Sample ID: 240-136708-B-14 MS
Matrix: Water
Analysis Batch: 453514

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	270		667	875		ug/L		90	64 - 132
cis-1,2-Dichloroethene	240		667	892		ug/L		98	68 - 121
Tetrachloroethene	330		667	1030		ug/L		105	52 - 129
Trichloroethene	280		667	887		ug/L		92	56 - 124
Vinyl chloride	67	U	667	612		ug/L		92	49 - 136

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		75 - 130
4-Bromofluorobenzene (Surr)	91		47 - 134
Toluene-d8 (Surr)	102		69 - 122
Dibromofluoromethane (Surr)	89		78 - 129

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-136708-B-14 MSD

Matrix: Water
Analysis Batch: 453514

Client Sample ID: Matrix Spike Duplicate
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-Dichloroethene	270		667	864		ug/L		89	64 - 132	1	35
cis-1,2-Dichloroethene	240		667	887		ug/L		97	68 - 121	1	35
Tetrachloroethene	330		667	1050		ug/L		108	52 - 129	2	35
Trichloroethene	280		667	882		ug/L		91	56 - 124	1	35
Vinyl chloride	67	U	667	604		ug/L		91	49 - 136	1	35

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	94		75 - 130
4-Bromofluorobenzene (Surr)	93		47 - 134
Toluene-d8 (Surr)	103		69 - 122
Dibromofluoromethane (Surr)	92		78 - 129

Lab Sample ID: MB 240-453691/7

Matrix: Water
Analysis Batch: 453691

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/30/20 14:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			09/30/20 14:59	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			09/30/20 14:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/30/20 14:59	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			09/30/20 14:59	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			09/30/20 14:59	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		75 - 130		09/30/20 14:59	1
4-Bromofluorobenzene (Surr)	69		47 - 134		09/30/20 14:59	1
Toluene-d8 (Surr)	89		69 - 122		09/30/20 14:59	1
Dibromofluoromethane (Surr)	99		78 - 129		09/30/20 14:59	1

Lab Sample ID: LCS 240-453691/4

Matrix: Water
Analysis Batch: 453691

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	9.90		ug/L		99	73 - 129
cis-1,2-Dichloroethene	10.0	9.58		ug/L		96	75 - 124
Tetrachloroethene	10.0	11.0		ug/L		110	70 - 125
trans-1,2-Dichloroethene	10.0	10.4		ug/L		104	74 - 130
Trichloroethene	10.0	9.48		ug/L		95	71 - 121
Vinyl chloride	10.0	9.91		ug/L		99	61 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	89		75 - 130
4-Bromofluorobenzene (Surr)	94		47 - 134
Toluene-d8 (Surr)	98		69 - 122
Dibromofluoromethane (Surr)	88		78 - 129

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-137084-D-1 MS

Matrix: Water

Analysis Batch: 453691

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	1.1		10.0	10.5		ug/L		94	64 - 132
cis-1,2-Dichloroethene	0.29	J	10.0	9.92		ug/L		96	68 - 121
Tetrachloroethene	1.1		10.0	11.4		ug/L		103	52 - 129
trans-1,2-Dichloroethene	1.0	U	10.0	10.4		ug/L		104	69 - 126
Trichloroethene	0.79	J	10.0	9.57		ug/L		88	56 - 124
Vinyl chloride	1.0	U	10.0	9.34		ug/L		93	49 - 136

Surrogate	MS %Recovery	MS Qualifier	MS Limits
1,2-Dichloroethane-d4 (Surr)	96		75 - 130
4-Bromofluorobenzene (Surr)	94		47 - 134
Toluene-d8 (Surr)	102		69 - 122
Dibromofluoromethane (Surr)	90		78 - 129

Lab Sample ID: 240-137084-E-1 MSD

Matrix: Water

Analysis Batch: 453691

Client Sample ID: Matrix Spike Duplicate

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-Dichloroethene	1.1		10.0	10.8		ug/L		97	64 - 132	3	35
cis-1,2-Dichloroethene	0.29	J	10.0	9.82		ug/L		95	68 - 121	1	35
Tetrachloroethene	1.1		10.0	11.2		ug/L		101	52 - 129	1	35
trans-1,2-Dichloroethene	1.0	U	10.0	10.4		ug/L		104	69 - 126	1	35
Trichloroethene	0.79	J	10.0	9.45		ug/L		87	56 - 124	1	35
Vinyl chloride	1.0	U	10.0	9.00		ug/L		90	49 - 136	4	35

Surrogate	MSD %Recovery	MSD Qualifier	MSD Limits
1,2-Dichloroethane-d4 (Surr)	93		75 - 130
4-Bromofluorobenzene (Surr)	90		47 - 134
Toluene-d8 (Surr)	98		69 - 122
Dibromofluoromethane (Surr)	89		78 - 129

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-453310/5

Matrix: Water

Analysis Batch: 453310

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			09/28/20 13:37	1

Surrogate	MB %Recovery	MB Qualifier	MB Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		70 - 133		09/28/20 13:37	1

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-453310/4
Matrix: Water
Analysis Batch: 453310

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	10.6		ug/L		106	80 - 135
Surrogate	%Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	85		70 - 133				

Lab Sample ID: 240-136765-C-5 MS
Matrix: Water
Analysis Batch: 453310

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	4.1		10.0	13.9		ug/L		97	46 - 170
Surrogate	%Recovery	MS Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	87		70 - 133						

Lab Sample ID: 240-136765-C-5 MSD
Matrix: Water
Analysis Batch: 453310

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
1,4-Dioxane	4.1		10.0	14.3		ug/L		101	46 - 170	3	26
Surrogate	%Recovery	MSD Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	89		70 - 133								

Lab Sample ID: MB 240-453472/5
Matrix: Water
Analysis Batch: 453472

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			09/29/20 11:06	1	
Surrogate	%Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac				
1,2-Dichloroethane-d4 (Surr)	86		70 - 133		09/29/20 11:06	1				

Lab Sample ID: LCS 240-453472/4
Matrix: Water
Analysis Batch: 453472

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	10.0		ug/L		100	80 - 135
Surrogate	%Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	86		70 - 133				

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-136837-A-2 MS
Matrix: Water
Analysis Batch: 453472

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	13		10.0	23.9		ug/L		110	46 - 170
Surrogate									
	<i>MS</i>	<i>MS</i>							
1,2-Dichloroethane-d4 (Surr)	95	Qualifier	Limits						

Lab Sample ID: 240-136837-A-2 MSD
Matrix: Water
Analysis Batch: 453472

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	13		10.0	22.5		ug/L		97	46 - 170	6	26
Surrogate											
	<i>MSD</i>	<i>MSD</i>									
1,2-Dichloroethane-d4 (Surr)	93	Qualifier	Limits								



QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

GC/MS VOA

Analysis Batch: 453310

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-136903-2	MH-1171_091620	Total/NA	Water	8260B SIM	
240-136903-3	MH-1219_091620	Total/NA	Water	8260B SIM	
MB 240-453310/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-453310/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-136765-C-5 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-136765-C-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 453472

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-136903-1	MH-1066_091620	Total/NA	Water	8260B SIM	
240-136903-5	DUP-01	Total/NA	Water	8260B SIM	
MB 240-453472/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-453472/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-136837-A-2 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-136837-A-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 453514

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-136903-1	MH-1066_091620	Total/NA	Water	8260B	
240-136903-2	MH-1171_091620	Total/NA	Water	8260B	
240-136903-4	TRIP BLANK	Total/NA	Water	8260B	
MB 240-453514/7	Method Blank	Total/NA	Water	8260B	
LCS 240-453514/4	Lab Control Sample	Total/NA	Water	8260B	
240-136708-B-14 MS	Matrix Spike	Total/NA	Water	8260B	
240-136708-B-14 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 453691

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-136903-3	MH-1219_091620	Total/NA	Water	8260B	
240-136903-5	DUP-01	Total/NA	Water	8260B	
MB 240-453691/7	Method Blank	Total/NA	Water	8260B	
LCS 240-453691/4	Lab Control Sample	Total/NA	Water	8260B	
240-137084-D-1 MS	Matrix Spike	Total/NA	Water	8260B	
240-137084-E-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Client Sample ID: MH-1066_091620

Lab Sample ID: 240-136903-1

Date Collected: 09/16/20 09:15

Matrix: Water

Date Received: 09/22/20 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	453514	09/29/20 19:12	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	453472	09/29/20 18:06	SAM	TAL CAN

Client Sample ID: MH-1171_091620

Lab Sample ID: 240-136903-2

Date Collected: 09/16/20 10:57

Matrix: Water

Date Received: 09/22/20 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	453514	09/29/20 19:36	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	453310	09/28/20 22:47	SAM	TAL CAN

Client Sample ID: MH-1219_091620

Lab Sample ID: 240-136903-3

Date Collected: 09/16/20 11:40

Matrix: Water

Date Received: 09/22/20 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	453691	09/30/20 15:47	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	453310	09/28/20 23:12	SAM	TAL CAN

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-136903-4

Date Collected: 09/16/20 00:00

Matrix: Water

Date Received: 09/22/20 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	453514	09/29/20 19:59	LRW	TAL CAN

Client Sample ID: DUP-01

Lab Sample ID: 240-136903-5

Date Collected: 09/16/20 00:00

Matrix: Water

Date Received: 09/22/20 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	453691	09/30/20 16:10	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	453472	09/29/20 12:20	SAM	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-20 *
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20

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



MICHIGAN
190

Chain of Custody Record 491409



Environment Testing
TestAmerica

Address:

Regulatory Program: DW NPDES RCRA Other: Julia M. Kelly

Site Contact: ARCADIS Date: 9/16/20

COC No: 1 of 1 COCs

TAL-8210

Company Name: ARCADIS
 Address: 28550 CABOT DRIVE
 City/State/Zip: NOVI MI 48377
 Phone: 248-994-2240
 Fax: 248-994-2241
 Project Name: FORD LTP
 Site: LEVOVIA
 PO #: 30050315.701.01

Project Manager: K. HASSEY
 Tell/Email: 248-994-2240
 Lab Contact: M. DELORENZO
 Carrier: ARCADIS

Analysis Turnaround Time: 10 DAYS
 CALENDAR DAYS WORKING DAYS
 TAT, if different from Below:
 2 weeks 1 week 2 days 1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Sample Specific Notes:
MH-1066-091620	9/16/20	0915	G	GW	6	N	N	13 VOAS FOR METHOD 8260B 3 VOAS FOR METHOD 8260A
MH-1171-091620	9/16/20	1057	G	GW	6	N	N	" "
MH-12A-091620	9/16/20	1140	G	GW	6	N	N	" "
TRIP BLANK	9/16/20	—	G	GW	6	N	N	1 TRIP BLANK
OUP-01	9/16/20	—	G	GW	6	N	N	13 VOAS FOR METHOD 8260B 3 VOAS FOR METHOD 8260A



Preservation Used: 1= Ice / 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification: Non-Hazard Flammable Skin Irritant Poison B Unknown

Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Return to Client Disposal by Lab Archive for _____ Months

Special Instructions/QC Requirements & Comments: SUBMIT ALL RESULTS THROUGH CAODENA AT JIM.TOMARIJA@CAODENA.COM. CAODENA #E20516Z
LEVEL IV REPORTING.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:	Relinquished by:	Company:	Date/Time:
<u>Christina Blum</u>	ARCADIS	9/16/20 1720	<u>NOVI COLD STORAGE</u>	ARCADIS	9/16/20 1720			
<u>Julia M. Kelly</u>	ARCADIS	9/21/20 15:58	<u>EUROFINS</u>	EUROFINS	9/21/20 1558			
<u>W J</u>	EUROFINS	9/21/20 15:58	<u>EUROFINS</u>	EUROFINS	9/21/20 1558			

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Eurofins TestAmerica Canton Sample Receipt Form/Narrative

Login #: 136903

Canton Facility

Client Arcodis Site Name

Cooler unpacked by: Matt Snyder

Cooler Received on 9-22-20 Opened on 9-22-20

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TA Foam Box Client Cooler Box Other
Packing material used: Bubble Wrap Foam Plastic Bag None Other
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt
IR GUN# IR-10 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
IR GUN #IR-11 (CF +0.9°C) Observed Cooler Temp. 1.0 °C Corrected Cooler Temp. 1.9 °C

- 2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1
-Were the seals on the outside of the cooler(s) signed & dated?
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?
-Were tamper/custody seals intact and uncompromised?
3. Shippers' packing slip attached to the cooler(s)?
4. Did custody papers accompany the sample(s)?
5. Were the custody papers relinquished & signed in the appropriate place?
6. Was/were the person(s) who collected the samples clearly identified on the COC?
7. Did all bottles arrive in good condition (Unbroken)?
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated?
11. Sufficient quantity received to perform indicated analyses?
12. Are these work share samples and all listed on the COC?

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

- 13. Were all preserved sample(s) at the correct pH upon receipt?
14. Were VOAs on the COC?
15. Were air bubbles >6 mm in any VOA vials? Larger than this.
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #
17. Was a LL Hg or Me Hg trip blank present?

Contacted PM Date by via Verbal Voice Mail Other
Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page Samples processed by:

Only one trip blanks

19. SAMPLE CONDITION
Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION
Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):
VOA Sample Preservation - Date/Time VOAs Frozen:



DATA VERIFICATION REPORT

October 06, 2020

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2020 Utility Corridor Evaluation Vapor Testing
Project number: 30050315.701.01
Event Specific Scope of Work References: Sample COC
Laboratory: TestAmerica - North Canton
Laboratory submittal: 136903-1
Sample date: 2020-09-16
Report received by CADENA: 2020-10-05
Initial Data Verification completed by CADENA: 2020-10-06
Number of Samples: 4 Water and 1 trip blank
Sample Matrices: Water
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E205162

Laboratory: TestAmerica - North Canton

Laboratory Submittal: 136903-1

Analyte	Cas No.	Sample Name: MH-1066_091620				Sample Name: MH-1171_091620				Sample Name: MH-1219_091620				Sample Name: TRIP BLANK				Sample Name: DUP-01			
		Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier
GC/MS VOC																					
<u>OSW-8260B</u>																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	0.17	1.0	ug/l	J	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
<u>OSW-8260BBSim</u>																					
1,4-Dioxane	123-91-1	ND	2.0	ug/l	---	0.89	2.0	ug/l	J	0.92	2.0	ug/l	J					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-136903-1

CADENA Verification Report: 2020-10-06

Analyses Performed By:

TestAmerica

Edison, New Jersey

Report #38680R

Review Level: Tier III

Project: 30050315.402.02



DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-136903-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						VOC (Full Scan)	VOC (SIM)	MISC
240-136903-1	MH-1066_091620	2401369031	Water	9/16/2020		X	X	
	MH-1171_091620	2401369032	Water	9/16/2020		X	X	
	MH-1219_091620	2401369033	Water	9/16/2020		X	X	
	TRIP BLANK_20200916	2401369034	Water	9/16/2020		X		
	DUP-01_091620	2401369035	Water	9/16/2020	MH- 1171_091620	X	X	

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260B and 8260B SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) 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 8260B/8260B-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

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 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	Duplicate Result	RPD
MH-1171_091620/ DUP-01_091620	1,4-Dioxane	0.89 J	2 U	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. 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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260B/8260B-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:



DATE: October 15, 2020

PEER REVIEW: Joseph C. Houser

DATE: October 16, 2020



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



MICHIGAN
190

Chain of Custody Record 491409



Environment Testing
TestAmerica

Address:

Regulatory Program: DW NPDES RCRA Other: Julia M. Kelly

Site Contact: ARCADIS Date: 9/16/20

COC No: 1 of 1 COCs

TAL-8210

Company Name: ARCADIS
 Address: 28550 CABOT DRIVE
 City/State/Zip: NOVI MI 48377
 Phone: 248-994-2240
 Fax: 248-994-2241
 Project Name: FORD LTP
 Site: LEVOVIA
 PO #: 30050315.701.01

Project Manager: K. HASSEY
 Tell/Email: 248-994-2240
 Analysis Turnaround Time: 10 DAYS
 CALENDAR DAYS WORKING DAYS
 TAT, if different from Below:
 2 weeks 1 week 2 days 1 day

Lab Contact: ARCADIS Date: 9/16/20
 Lab Contact: M. DELORENZO Carrier: ARCADIS

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Sample Specific Notes:
MH-1066-091620	9/16/20	0915	G	GW	6	N	N	13 VOAS FOR METHOD 8260B 3 VOAS FOR METHOD 8260B
MH-1171-091620	9/16/20	1057	G	GW	6	N	N	" "
MH-12A-091620	9/16/20	1140	G	GW	6	N	N	" "
TRIP BLANK	9/16/20	---	G	GW	6	N	N	1 TRIP BLANK
OUP-01	9/16/20	---	G	GW	6	N	N	13 VOAS FOR METHOD 8260B 3 VOAS FOR METHOD 8260B



Preservation Used: 1= Ice / 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown

Return to Client Disposal by Lab Archive for _____ Months

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Special Instructions/QC Requirements & Comments: SUBMIT ALL RESULTS THROUGH CAODENA AT JIM.TOMARIJA@CAODENA.COM. CAODENA #EZO516Z
LEVEL IV REPORTING.

Custody Seal No.: _____

Relinquished by: Christina Blum Date/Time: 9/16/2020 1720
 Relinquished by: Julia M. Kelly Date/Time: 9/21/2020 1550
 Relinquished by: WJ Date/Time: 9/21/20 15:58

Received by: ARCADIS Date/Time: 9/16/2020 1720
 Received by: ARCADIS Date/Time: 9/21/20 1550
 Received in Laboratory by: WJ Date/Time: 9-22-20 9-22-20

Company: ARCADIS
 Company: EUROFINS
 Company: EUROFINS

Cooler Temp. (°C): Obs'd: _____ Corrd: _____ Therm ID No.: _____



Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Client Sample ID: MH-1066_091620

Lab Sample ID: 240-136903-1

Date Collected: 09/16/20 09:15

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			09/29/20 18:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		70 - 133		09/29/20 18:06	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 19:12	1
cis-1,2-Dichloroethene	0.17	J	1.0	0.16	ug/L			09/29/20 19:12	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			09/29/20 19:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 19:12	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			09/29/20 19:12	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			09/29/20 19:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	119		75 - 130		09/29/20 19:12	1
4-Bromofluorobenzene (Surr)	66		47 - 134		09/29/20 19:12	1
Toluene-d8 (Surr)	92		69 - 122		09/29/20 19:12	1
Dibromofluoromethane (Surr)	111		78 - 129		09/29/20 19:12	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Client Sample ID: MH-1171_091620

Lab Sample ID: 240-136903-2

Date Collected: 09/16/20 10:57

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.89	J	2.0	0.86	ug/L			09/28/20 22:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		70 - 133					09/28/20 22:47	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 19:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			09/29/20 19:36	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			09/29/20 19:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 19:36	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			09/29/20 19:36	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			09/29/20 19:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		75 - 130					09/29/20 19:36	1
4-Bromofluorobenzene (Surr)	69		47 - 134					09/29/20 19:36	1
Toluene-d8 (Surr)	94		69 - 122					09/29/20 19:36	1
Dibromofluoromethane (Surr)	109		78 - 129					09/29/20 19:36	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Client Sample ID: MH-1219_091620

Lab Sample ID: 240-136903-3

Date Collected: 09/16/20 11:40

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.92	J	2.0	0.86	ug/L			09/28/20 23:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		70 - 133					09/28/20 23:12	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	0.95	ug/L			09/30/20 15:47	5
cis-1,2-Dichloroethene	5.0	U	5.0	0.80	ug/L			09/30/20 15:47	5
Tetrachloroethene	5.0	U	5.0	0.75	ug/L			09/30/20 15:47	5
trans-1,2-Dichloroethene	5.0	U	5.0	0.95	ug/L			09/30/20 15:47	5
Trichloroethene	5.0	U	5.0	0.50	ug/L			09/30/20 15:47	5
Vinyl chloride	5.0	U	5.0	1.0	ug/L			09/30/20 15:47	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	115		75 - 130					09/30/20 15:47	5
4-Bromofluorobenzene (Surr)	69		47 - 134					09/30/20 15:47	5
Toluene-d8 (Surr)	89		69 - 122					09/30/20 15:47	5
Dibromofluoromethane (Surr)	107		78 - 129					09/30/20 15:47	5

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-136903-4

Date Collected: 09/16/20 00:00

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 19:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			09/29/20 19:59	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			09/29/20 19:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/29/20 19:59	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			09/29/20 19:59	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			09/29/20 19:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	117		75 - 130		09/29/20 19:59	1
4-Bromofluorobenzene (Surr)	65		47 - 134		09/29/20 19:59	1
Toluene-d8 (Surr)	87		69 - 122		09/29/20 19:59	1
Dibromofluoromethane (Surr)	107		78 - 129		09/29/20 19:59	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136903-1

Client Sample ID: DUP-01

Lab Sample ID: 240-136903-5

Date Collected: 09/16/20 00:00

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			09/29/20 12:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		70 - 133					09/29/20 12:20	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/30/20 16:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			09/30/20 16:10	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			09/30/20 16:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/30/20 16:10	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			09/30/20 16:10	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			09/30/20 16:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	115		75 - 130					09/30/20 16:10	1
4-Bromofluorobenzene (Surr)	69		47 - 134					09/30/20 16:10	1
Toluene-d8 (Surr)	91		69 - 122					09/30/20 16:10	1
Dibromofluoromethane (Surr)	107		78 - 129					09/30/20 16:10	1

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-136904-1
Client Project/Site: Ford LTP

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey



Authorized for release by:
10/6/2020 3:17:18 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.com

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results through
TotalAccess

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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.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

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.
U	Indicates the analyte was analyzed for but not detected.

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

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

Job ID: 240-136904-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP

Report Number: 240-136904-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 9/22/2020 9:20 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.9° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples TRIP BLANK (240-136904-1), MH-1020_091820 (240-136904-2), MH-1043_091820 (240-136904-3), MH-1181_091820 (240-136904-4) and MH-1096_091820 (240-136904-5) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 10/01/2020 and 10/02/2020.

Samples MH-1020_091820 (240-136904-2)[3.33X] and MH-1043_091820 (240-136904-3)[2X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Method 8260B: The following volatiles sample was diluted due to foaming at the time of purging during the original sample analysis: MH-1020_091820 (240-136904-2) and MH-1043_091820 (240-136904-3). Elevated reporting limits (RLs) are provided.

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

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Samples MH-1020_091820 (240-136904-2), MH-1043_091820 (240-136904-3), MH-1181_091820 (240-136904-4) and MH-1096_091820 (240-136904-5) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

Job ID: 240-136904-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

8260B SIM. The samples were analyzed on 09/29/2020.

Sample MH-1020_091820 (240-136904-2)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The following volatiles sample was diluted due to foaming at the time of purging during the original sample analysis: MH-1020_091820 (240-136904-2). Elevated reporting limits (RLs) are provided.

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

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Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

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Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-136904-1	TRIP BLANK	Water	09/18/20 00:00	09/22/20 09:20	
240-136904-2	MH-1020_091820	Water	09/18/20 10:05	09/22/20 09:20	
240-136904-3	MH-1043_091820	Water	09/18/20 08:32	09/22/20 09:20	
240-136904-4	MH-1181_091820	Water	09/18/20 11:00	09/22/20 09:20	
240-136904-5	MH-1096_091820	Water	09/18/20 11:30	09/22/20 09:20	

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Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-136904-1

No Detections.

Client Sample ID: MH-1020_091820

Lab Sample ID: 240-136904-2

No Detections.

Client Sample ID: MH-1043_091820

Lab Sample ID: 240-136904-3

No Detections.

Client Sample ID: MH-1181_091820

Lab Sample ID: 240-136904-4

No Detections.

Client Sample ID: MH-1096_091820

Lab Sample ID: 240-136904-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.89	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-136904-1

Date Collected: 09/18/20 00:00

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/01/20 18:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/01/20 18:51	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/01/20 18:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/01/20 18:51	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/01/20 18:51	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/01/20 18:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		75 - 130		10/01/20 18:51	1
4-Bromofluorobenzene (Surr)	98		47 - 134		10/01/20 18:51	1
Toluene-d8 (Surr)	97		69 - 122		10/01/20 18:51	1
Dibromofluoromethane (Surr)	100		78 - 129		10/01/20 18:51	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

Client Sample ID: MH-1020_091820

Lab Sample ID: 240-136904-2

Date Collected: 09/18/20 10:05

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	10	U	10	4.3	ug/L			09/29/20 16:02	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		70 - 133		09/29/20 16:02	5

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	3.3	U	3.3	0.63	ug/L			10/01/20 13:54	3.33
cis-1,2-Dichloroethene	3.3	U	3.3	0.53	ug/L			10/01/20 13:54	3.33
Tetrachloroethene	3.3	U	3.3	0.50	ug/L			10/01/20 13:54	3.33
trans-1,2-Dichloroethene	3.3	U	3.3	0.63	ug/L			10/01/20 13:54	3.33
Trichloroethene	3.3	U	3.3	0.33	ug/L			10/01/20 13:54	3.33
Vinyl chloride	3.3	U	3.3	0.67	ug/L			10/01/20 13:54	3.33

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		75 - 130		10/01/20 13:54	3.33
4-Bromofluorobenzene (Surr)	97		47 - 134		10/01/20 13:54	3.33
Toluene-d8 (Surr)	93		69 - 122		10/01/20 13:54	3.33
Dibromofluoromethane (Surr)	100		78 - 129		10/01/20 13:54	3.33

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

Client Sample ID: MH-1043_091820

Lab Sample ID: 240-136904-3

Date Collected: 09/18/20 08:32

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			09/29/20 16:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		70 - 133					09/29/20 16:26	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	2.0	U	2.0	0.38	ug/L			10/02/20 11:36	2
cis-1,2-Dichloroethene	2.0	U	2.0	0.32	ug/L			10/02/20 11:36	2
Tetrachloroethene	2.0	U	2.0	0.30	ug/L			10/02/20 11:36	2
trans-1,2-Dichloroethene	2.0	U	2.0	0.38	ug/L			10/02/20 11:36	2
Trichloroethene	2.0	U	2.0	0.20	ug/L			10/02/20 11:36	2
Vinyl chloride	2.0	U	2.0	0.40	ug/L			10/02/20 11:36	2
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		75 - 130					10/02/20 11:36	2
4-Bromofluorobenzene (Surr)	96		47 - 134					10/02/20 11:36	2
Toluene-d8 (Surr)	94		69 - 122					10/02/20 11:36	2
Dibromofluoromethane (Surr)	102		78 - 129					10/02/20 11:36	2

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

Client Sample ID: MH-1181_091820

Lab Sample ID: 240-136904-4

Date Collected: 09/18/20 11:00

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			09/29/20 16:51	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		70 - 133					09/29/20 16:51	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/01/20 19:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/01/20 19:41	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/01/20 19:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/01/20 19:41	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/01/20 19:41	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/01/20 19:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		75 - 130					10/01/20 19:41	1
4-Bromofluorobenzene (Surr)	96		47 - 134					10/01/20 19:41	1
Toluene-d8 (Surr)	94		69 - 122					10/01/20 19:41	1
Dibromofluoromethane (Surr)	101		78 - 129					10/01/20 19:41	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

Client Sample ID: MH-1096_091820

Lab Sample ID: 240-136904-5

Date Collected: 09/18/20 11:30

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.89	J	2.0	0.86	ug/L			09/29/20 17:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		70 - 133					09/29/20 17:16	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/01/20 20:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/01/20 20:06	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/01/20 20:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/01/20 20:06	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/01/20 20:06	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/01/20 20:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		75 - 130					10/01/20 20:06	1
4-Bromofluorobenzene (Surr)	96		47 - 134					10/01/20 20:06	1
Toluene-d8 (Surr)	94		69 - 122					10/01/20 20:06	1
Dibromofluoromethane (Surr)	98		78 - 129					10/01/20 20:06	1

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (75-130)	BFB (47-134)	TOL (69-122)	DBFM (78-129)
240-136771-C-14 MS	Matrix Spike	96	100	95	90
240-136771-C-14 MSD	Matrix Spike Duplicate	95	101	96	91
240-136904-1	TRIP BLANK	110	98	97	100
240-136904-2	MH-1020_091820	106	97	93	100
240-136904-3	MH-1043_091820	107	96	94	102
240-136904-4	MH-1181_091820	106	96	94	101
240-136904-5	MH-1096_091820	105	96	94	98
240-137087-B-45 MS	Matrix Spike	99	103	98	92
240-137087-B-45 MSD	Matrix Spike Duplicate	98	101	97	91
LCS 240-453870/6	Lab Control Sample	98	103	99	93
LCS 240-454065/6	Lab Control Sample	96	100	96	92
MB 240-453870/9	Method Blank	102	98	93	97
MB 240-454065/9	Method Blank	104	97	93	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		DCA (70-133)
240-136837-A-2 MS	Matrix Spike	95
240-136837-A-2 MSD	Matrix Spike Duplicate	93
240-136904-2	MH-1020_091820	92
240-136904-3	MH-1043_091820	91
240-136904-4	MH-1181_091820	91
240-136904-5	MH-1096_091820	90
LCS 240-453472/4	Lab Control Sample	86
MB 240-453472/5	Method Blank	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-453870/9
Matrix: Water
Analysis Batch: 453870

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/01/20 11:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/01/20 11:01	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/01/20 11:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/01/20 11:01	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/01/20 11:01	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/01/20 11:01	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	102		75 - 130		10/01/20 11:01	1
4-Bromofluorobenzene (Surr)	98		47 - 134		10/01/20 11:01	1
Toluene-d8 (Surr)	93		69 - 122		10/01/20 11:01	1
Dibromofluoromethane (Surr)	97		78 - 129		10/01/20 11:01	1

Lab Sample ID: LCS 240-453870/6
Matrix: Water
Analysis Batch: 453870

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

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
1,1-Dichloroethene	20.0	19.7		ug/L		99	73 - 129
cis-1,2-Dichloroethene	20.0	19.2		ug/L		96	75 - 124
Tetrachloroethene	20.0	19.8		ug/L		99	70 - 125
trans-1,2-Dichloroethene	20.0	19.2		ug/L		96	74 - 130
Trichloroethene	20.0	18.2		ug/L		91	71 - 121
Vinyl chloride	20.0	19.8		ug/L		99	61 - 134

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	98		75 - 130
4-Bromofluorobenzene (Surr)	103		47 - 134
Toluene-d8 (Surr)	99		69 - 122
Dibromofluoromethane (Surr)	93		78 - 129

Lab Sample ID: 240-136771-C-14 MS
Matrix: Water
Analysis Batch: 453870

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample	Sample	Spike Added	MS	MS	Unit	D	%Rec	%Rec. Limits
	Result	Qualifier		Result	Qualifier				
1,1-Dichloroethene	4.0	U	80.0	77.7		ug/L		97	64 - 132
cis-1,2-Dichloroethene	4.0	U	80.0	76.9		ug/L		96	68 - 121
Tetrachloroethene	4.0	U	80.0	75.2		ug/L		94	52 - 129
trans-1,2-Dichloroethene	4.0	U	80.0	77.1		ug/L		96	69 - 126
Trichloroethene	10		80.0	81.4		ug/L		89	56 - 124
Vinyl chloride	4.0	U	80.0	83.3		ug/L		104	49 - 136

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	96		75 - 130
4-Bromofluorobenzene (Surr)	100		47 - 134
Toluene-d8 (Surr)	95		69 - 122

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-136771-C-14 MS
Matrix: Water
Analysis Batch: 453870

Client Sample ID: Matrix Spike
Prep Type: Total/NA

<i>Surrogate</i>	<i>%Recovery</i>	<i>MS MS Qualifier</i>	<i>Limits</i>
<i>Dibromofluoromethane (Surr)</i>	90		78 - 129

Lab Sample ID: 240-136771-C-14 MSD
Matrix: Water
Analysis Batch: 453870

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MSD Result</i>	<i>MSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
1,1-Dichloroethene	4.0	U	80.0	83.8		ug/L		105	64 - 132	8	35
cis-1,2-Dichloroethene	4.0	U	80.0	84.9		ug/L		106	68 - 121	10	35
Tetrachloroethene	4.0	U	80.0	82.4		ug/L		103	52 - 129	9	35
trans-1,2-Dichloroethene	4.0	U	80.0	83.2		ug/L		104	69 - 126	8	35
Trichloroethene	10		80.0	88.8		ug/L		98	56 - 124	9	35
Vinyl chloride	4.0	U	80.0	80.7		ug/L		101	49 - 136	3	35

<i>Surrogate</i>	<i>%Recovery</i>	<i>MSD MSD Qualifier</i>	<i>Limits</i>
<i>1,2-Dichloroethane-d4 (Surr)</i>	95		75 - 130
<i>4-Bromofluorobenzene (Surr)</i>	101		47 - 134
<i>Toluene-d8 (Surr)</i>	96		69 - 122
<i>Dibromofluoromethane (Surr)</i>	91		78 - 129

Lab Sample ID: MB 240-454065/9
Matrix: Water
Analysis Batch: 454065

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

<i>Analyte</i>	<i>MB Result</i>	<i>MB Qualifier</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/02/20 11:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/02/20 11:11	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/02/20 11:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/02/20 11:11	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/02/20 11:11	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/02/20 11:11	1

<i>Surrogate</i>	<i>%Recovery</i>	<i>MB MB Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>1,2-Dichloroethane-d4 (Surr)</i>	104		75 - 130		10/02/20 11:11	1
<i>4-Bromofluorobenzene (Surr)</i>	97		47 - 134		10/02/20 11:11	1
<i>Toluene-d8 (Surr)</i>	93		69 - 122		10/02/20 11:11	1
<i>Dibromofluoromethane (Surr)</i>	99		78 - 129		10/02/20 11:11	1

Lab Sample ID: LCS 240-454065/6
Matrix: Water
Analysis Batch: 454065

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

<i>Analyte</i>	<i>Spike Added</i>	<i>LCS Result</i>	<i>LCS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>
1,1-Dichloroethene	20.0	19.3		ug/L		97	73 - 129
cis-1,2-Dichloroethene	20.0	18.9		ug/L		95	75 - 124
Tetrachloroethene	20.0	18.6		ug/L		93	70 - 125
trans-1,2-Dichloroethene	20.0	19.1		ug/L		95	74 - 130
Trichloroethene	20.0	17.9		ug/L		89	71 - 121

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-454065/6
Matrix: Water
Analysis Batch: 454065

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vinyl chloride	20.0	18.8		ug/L		94	61 - 134
Surrogate							
	LCS %Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	96		75 - 130				
4-Bromofluorobenzene (Surr)	100		47 - 134				
Toluene-d8 (Surr)	96		69 - 122				
Dibromofluoromethane (Surr)	92		78 - 129				

Lab Sample ID: 240-137087-B-45 MS
Matrix: Water
Analysis Batch: 454065

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	25	U	500	514		ug/L		103	64 - 132
cis-1,2-Dichloroethene	25	U	500	508		ug/L		102	68 - 121
Tetrachloroethene	14	J	500	493		ug/L		96	52 - 129
trans-1,2-Dichloroethene	25	U	500	501		ug/L		100	69 - 126
Trichloroethene	13	J	500	481		ug/L		94	56 - 124
Vinyl chloride	25	U	500	474		ug/L		95	49 - 136
Surrogate									
	MS %Recovery	MS Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	99		75 - 130						
4-Bromofluorobenzene (Surr)	103		47 - 134						
Toluene-d8 (Surr)	98		69 - 122						
Dibromofluoromethane (Surr)	92		78 - 129						

Lab Sample ID: 240-137087-B-45 MSD
Matrix: Water
Analysis Batch: 454065

Client Sample ID: Matrix Spike Duplicate
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-Dichloroethene	25	U	500	517		ug/L		103	64 - 132	1	35
cis-1,2-Dichloroethene	25	U	500	523		ug/L		105	68 - 121	3	35
Tetrachloroethene	14	J	500	485		ug/L		94	52 - 129	2	35
trans-1,2-Dichloroethene	25	U	500	507		ug/L		101	69 - 126	1	35
Trichloroethene	13	J	500	484		ug/L		94	56 - 124	1	35
Vinyl chloride	25	U	500	484		ug/L		97	49 - 136	2	35
Surrogate											
	MSD %Recovery	MSD Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	98		75 - 130								
4-Bromofluorobenzene (Surr)	101		47 - 134								
Toluene-d8 (Surr)	97		69 - 122								
Dibromofluoromethane (Surr)	91		78 - 129								

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-453472/5
Matrix: Water
Analysis Batch: 453472

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			09/29/20 11:06	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		70 - 133					09/29/20 11:06	1

Lab Sample ID: LCS 240-453472/4
Matrix: Water
Analysis Batch: 453472

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	10.0		ug/L		100	80 - 135
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	86		70 - 133				

Lab Sample ID: 240-136837-A-2 MS
Matrix: Water
Analysis Batch: 453472

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	13		10.0	23.9		ug/L		110	46 - 170
Surrogate	MS %Recovery	MS Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	95		70 - 133						

Lab Sample ID: 240-136837-A-2 MSD
Matrix: Water
Analysis Batch: 453472

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
1,4-Dioxane	13		10.0	22.5		ug/L		97	46 - 170	6	26
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	93		70 - 133								

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

GC/MS VOA

Analysis Batch: 453472

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-136904-2	MH-1020_091820	Total/NA	Water	8260B SIM	
240-136904-3	MH-1043_091820	Total/NA	Water	8260B SIM	
240-136904-4	MH-1181_091820	Total/NA	Water	8260B SIM	
240-136904-5	MH-1096_091820	Total/NA	Water	8260B SIM	
MB 240-453472/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-453472/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-136837-A-2 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-136837-A-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 453870

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-136904-1	TRIP BLANK	Total/NA	Water	8260B	
240-136904-2	MH-1020_091820	Total/NA	Water	8260B	
240-136904-4	MH-1181_091820	Total/NA	Water	8260B	
240-136904-5	MH-1096_091820	Total/NA	Water	8260B	
MB 240-453870/9	Method Blank	Total/NA	Water	8260B	
LCS 240-453870/6	Lab Control Sample	Total/NA	Water	8260B	
240-136771-C-14 MS	Matrix Spike	Total/NA	Water	8260B	
240-136771-C-14 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 454065

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-136904-3	MH-1043_091820	Total/NA	Water	8260B	
MB 240-454065/9	Method Blank	Total/NA	Water	8260B	
LCS 240-454065/6	Lab Control Sample	Total/NA	Water	8260B	
240-137087-B-45 MS	Matrix Spike	Total/NA	Water	8260B	
240-137087-B-45 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-136904-1

Date Collected: 09/18/20 00:00

Matrix: Water

Date Received: 09/22/20 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	453870	10/01/20 18:51	HMB	TAL CAN

Client Sample ID: MH-1020_091820

Lab Sample ID: 240-136904-2

Date Collected: 09/18/20 10:05

Matrix: Water

Date Received: 09/22/20 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		3.33	453870	10/01/20 13:54	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		5	453472	09/29/20 16:02	SAM	TAL CAN

Client Sample ID: MH-1043_091820

Lab Sample ID: 240-136904-3

Date Collected: 09/18/20 08:32

Matrix: Water

Date Received: 09/22/20 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		2	454065	10/02/20 11:36	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	453472	09/29/20 16:26	SAM	TAL CAN

Client Sample ID: MH-1181_091820

Lab Sample ID: 240-136904-4

Date Collected: 09/18/20 11:00

Matrix: Water

Date Received: 09/22/20 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	453870	10/01/20 19:41	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	453472	09/29/20 16:51	SAM	TAL CAN

Client Sample ID: MH-1096_091820

Lab Sample ID: 240-136904-5

Date Collected: 09/18/20 11:30

Matrix: Water

Date Received: 09/22/20 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	453870	10/01/20 20:06	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	453472	09/29/20 17:16	SAM	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-20 *
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20

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

Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 136904


Client Arcadis Site Name _____
 Cooler Received on 9-22-20 Opened on 9-22-20
 FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Cooler unpacked by:
Matt Snyder

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____
 Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other _____
 COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt See Multiple Cooler Form
 IR GUN# IR-10 (CF +0.7°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 IR GUN #IR-11 (CF +0.9°C) Observed Cooler Temp. 1.0 °C Corrected Cooler Temp. 1.9 °C

- 2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1
 - Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 - Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No NA
 - Were tamper/custody seals intact and uncompromised? Yes No NA
- 3. Shippers' packing slip attached to the cooler(s)? Yes No
- 4. Did custody papers accompany the sample(s)? Yes No
- 5. Were the custody papers relinquished & signed in the appropriate place? Yes No
- 6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
- 7. Did all bottles arrive in good condition (Unbroken)? Yes No
- 8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
- 9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? Yes No
- 10. Were correct bottle(s) used for the test(s) indicated? Yes No
- 11. Sufficient quantity received to perform indicated analyses? Yes No
- 12. Are these work share samples and all listed on the COC? Yes No
- If yes, Questions 13-17 have been checked at the originating laboratory.
- 13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC907861
- 14. Were VOAs on the COC? Yes No
- 15. Were air bubbles >6 mm in any VOA vials? Yes No NA  Larger than this.
- 16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
- 17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:

 VOAs
 Oil and Grease
 TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____
 Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page Samples processed by: _____

19. SAMPLE CONDITION
 Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container.
 Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION
 Sample(s) _____ were further preserved in the laboratory.
 Time preserved: _____ Preservative(s) added/Lot number(s): _____
 VOA Sample Preservation - Date/Time VOAs Frozen: _____



DATA VERIFICATION REPORT

October 07, 2020

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2020 Utility Corridor Evaluation Vapor Testing
Project number: 30050315.701.01
Event Specific Scope of Work References: Sample COC
Laboratory: TestAmerica - North Canton
Laboratory submittal: 136904-1
Sample date: 2020-09-18
Report received by CADENA: 2020-10-06
Initial Data Verification completed by CADENA: 2020-10-07
Number of Samples: 4 Water and 1 trip blank
Sample Matrices: Water
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E205162

Laboratory: TestAmerica - North Canton

Laboratory Submittal: 136904-1

Analyte	Cas No.	Sample Name: TRIP BLANK				MH-1020_091820				MH-1043_091820				MH-1181_091820				MH-1096_091820			
		Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier
GC/MS VOC																					
<u>OSW-8260B</u>																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	3.3	ug/l	---	ND	2.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	3.3	ug/l	---	ND	2.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	3.3	ug/l	---	ND	2.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	3.3	ug/l	---	ND	2.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	3.3	ug/l	---	ND	2.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	3.3	ug/l	---	ND	2.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
<u>OSW-8260BBSim</u>																					
1,4-Dioxane	123-91-1					ND	10	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	0.89	2.0	ug/l	J

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-136904-1

CADENA Verification Report: 2020-10-07

Analyses Performed By:

TestAmerica

Edison, New Jersey

Report #38681R

Review Level: Tier III

Project: 30050315.402.02

DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-136904-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						VOC (Full Scan)	VOC (SIM)	MISC
240-136904-1	TRIP BLANK_20200918	2401369041	Water	9/18/2020		X		
	MH-1020_091820	2401369042	Water	9/18/2020		X	X	
	MH-1043_091820	2401369043	Water	9/18/2020		X	X	
	MH-1181_091820	2401369044	Water	9/18/2020		X	X	
	MH-1096_091820	2401369045	Water	9/18/2020		X	X	

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260B and 8260B SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) 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 8260B/8260B-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

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 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.

A field duplicate was not performed on a sample within this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. 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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260B/8260B-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:



DATE: October 15, 2020

PEER REVIEW: Joseph C. Houser

DATE: October 16, 2020



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-136904-1

Date Collected: 09/18/20 00:00

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/01/20 18:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/01/20 18:51	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/01/20 18:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/01/20 18:51	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/01/20 18:51	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/01/20 18:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		75 - 130		10/01/20 18:51	1
4-Bromofluorobenzene (Surr)	98		47 - 134		10/01/20 18:51	1
Toluene-d8 (Surr)	97		69 - 122		10/01/20 18:51	1
Dibromofluoromethane (Surr)	100		78 - 129		10/01/20 18:51	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

Client Sample ID: MH-1020_091820

Lab Sample ID: 240-136904-2

Date Collected: 09/18/20 10:05

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	10	U	10	4.3	ug/L			09/29/20 16:02	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		70 - 133		09/29/20 16:02	5

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	3.3	U	3.3	0.63	ug/L			10/01/20 13:54	3.33
cis-1,2-Dichloroethene	3.3	U	3.3	0.53	ug/L			10/01/20 13:54	3.33
Tetrachloroethene	3.3	U	3.3	0.50	ug/L			10/01/20 13:54	3.33
trans-1,2-Dichloroethene	3.3	U	3.3	0.63	ug/L			10/01/20 13:54	3.33
Trichloroethene	3.3	U	3.3	0.33	ug/L			10/01/20 13:54	3.33
Vinyl chloride	3.3	U	3.3	0.67	ug/L			10/01/20 13:54	3.33

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		75 - 130		10/01/20 13:54	3.33
4-Bromofluorobenzene (Surr)	97		47 - 134		10/01/20 13:54	3.33
Toluene-d8 (Surr)	93		69 - 122		10/01/20 13:54	3.33
Dibromofluoromethane (Surr)	100		78 - 129		10/01/20 13:54	3.33

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

Client Sample ID: MH-1043_091820

Lab Sample ID: 240-136904-3

Date Collected: 09/18/20 08:32

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			09/29/20 16:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		70 - 133					09/29/20 16:26	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	2.0	U	2.0	0.38	ug/L			10/02/20 11:36	2
cis-1,2-Dichloroethene	2.0	U	2.0	0.32	ug/L			10/02/20 11:36	2
Tetrachloroethene	2.0	U	2.0	0.30	ug/L			10/02/20 11:36	2
trans-1,2-Dichloroethene	2.0	U	2.0	0.38	ug/L			10/02/20 11:36	2
Trichloroethene	2.0	U	2.0	0.20	ug/L			10/02/20 11:36	2
Vinyl chloride	2.0	U	2.0	0.40	ug/L			10/02/20 11:36	2
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		75 - 130					10/02/20 11:36	2
4-Bromofluorobenzene (Surr)	96		47 - 134					10/02/20 11:36	2
Toluene-d8 (Surr)	94		69 - 122					10/02/20 11:36	2
Dibromofluoromethane (Surr)	102		78 - 129					10/02/20 11:36	2

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

Client Sample ID: MH-1181_091820

Lab Sample ID: 240-136904-4

Date Collected: 09/18/20 11:00

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			09/29/20 16:51	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		70 - 133					09/29/20 16:51	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/01/20 19:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/01/20 19:41	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/01/20 19:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/01/20 19:41	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/01/20 19:41	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/01/20 19:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		75 - 130					10/01/20 19:41	1
4-Bromofluorobenzene (Surr)	96		47 - 134					10/01/20 19:41	1
Toluene-d8 (Surr)	94		69 - 122					10/01/20 19:41	1
Dibromofluoromethane (Surr)	101		78 - 129					10/01/20 19:41	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-136904-1

Client Sample ID: MH-1096_091820

Lab Sample ID: 240-136904-5

Date Collected: 09/18/20 11:30

Matrix: Water

Date Received: 09/22/20 09:20

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.89	J	2.0	0.86	ug/L			09/29/20 17:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		70 - 133					09/29/20 17:16	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/01/20 20:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/01/20 20:06	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/01/20 20:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/01/20 20:06	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/01/20 20:06	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/01/20 20:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		75 - 130					10/01/20 20:06	1
4-Bromofluorobenzene (Surr)	96		47 - 134					10/01/20 20:06	1
Toluene-d8 (Surr)	94		69 - 122					10/01/20 20:06	1
Dibromofluoromethane (Surr)	98		78 - 129					10/01/20 20:06	1

12/30/2020
Mr. Jim Tomalia
Arcadis U.S., Inc.
28550 Cabot Dr.
Suite 500
Novi MI 48377

Project Name: Ford LTP
Project #:
Workorder #: 2012569A

Dear Mr. Jim Tomalia

The following report includes the data for the above referenced project for sample(s) received on 12/21/2020 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Ausha Scott at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Ausha Scott
Project Manager

WORK ORDER #: 2012569A

Work Order Summary

CLIENT:	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	517-819-0356	P.O. #	30050315.701.01
FAX:		PROJECT #	Ford LTP
DATE RECEIVED:	12/21/2020	CONTACT:	Ausha Scott
DATE COMPLETED:	12/30/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SL-2_121520	TO-15	5.5 "Hg	14.8 psi
02A	SL-3_121620	TO-15	3.9 "Hg	14.9 psi
03A	MH-1041_121520	TO-15	4.9 "Hg	14.9 psi
04A	MH-1066_121520	TO-15	5.7 "Hg	14.9 psi
05A	MH-1088_121520	TO-15	4.7 "Hg	15 psi
06A	MH-1245_121520	TO-15	2.2 "Hg	15 psi
07A	MH-1258_121620	TO-15	4.9 "Hg	14.9 psi
08A	MH-1001_121620	TO-15	5.1 "Hg	14.9 psi
09A	MH-1210_121620	TO-15	5.7 "Hg	14.8 psi
10A	MH-1219_121620	TO-15	3.7 "Hg	14.9 psi
11A	MH-1171_121520	TO-15	4.7 "Hg	15 psi
12A	MH-1244_121520	TO-15	3.5 "Hg	14.9 psi
13A	MH-1116_121720	TO-15	5.7 "Hg	14.9 psi
14A	WDC_121520	TO-15	5.9 "Hg	15 psi
15A	EDC_121520	TO-15	3.7 "Hg	15 psi
16A	MH-1255_121620	TO-15	5.1 "Hg	14.9 psi
17A	MH-1256_121620	TO-15	6.3 "Hg	14.8 psi
18A	MH-1113_121620	TO-15	5.7 "Hg	14.9 psi
19A	MH-1096_121620	TO-15	4.5 "Hg	14.9 psi
20A	MH-1231_121520	TO-15	4.9 "Hg	14.9 psi
21A	Lab Blank	TO-15	NA	NA
22A	CCV	TO-15	NA	NA
23A	LCS	TO-15	NA	NA

Continued on next page

WORK ORDER #: 2012569A

Work Order Summary

CLIENT:	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	517-819-0356	P.O. #	30050315.701.01
FAX:		PROJECT #	Ford LTP
DATE RECEIVED:	12/21/2020	CONTACT:	Ausha Scott
DATE COMPLETED:	12/30/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
23AA	LCSD	TO-15	NA	NA

CERTIFIED BY: 
 Technical Director

DATE: 12/30/20

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935
 Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
 Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards
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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
 (916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
Arcadis U.S., Inc.
Workorder# 2012569A

Twenty 1 Liter Summa Canister (100% Certified) samples were received on December 21, 2020. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Dilution was performed on samples SL-2_121520, SL-3_121620, MH-1255_121620 and MH-1231_121520 due to the presence of high level target species.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-2_121520	Date/Time Analyzed:	12/28/20 08:31 PM
Lab ID:	2012569A-01A	Dilution Factor:	12.3
Date/Time Collected:	12/15/20 12:10 PM	Instrument/Filename:	msd3.i / 3122818
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	3.5	12	24	14 J
1,4-Dioxane	123-91-1	6.3	28	89	Not Detected
cis-1,2-Dichloroethene	156-59-2	4.0	12	24	6800
Tetrachloroethene	127-18-4	4.6	21	42	Not Detected
trans-1,2-Dichloroethene	156-60-5	5.8	12	24	44
Trichloroethene	79-01-6	4.8	16	33	2200
Vinyl Chloride	75-01-4	2.9	7.9	16	1700

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	91
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-3_121620	Date/Time Analyzed:	12/28/20 08:58 PM
Lab ID:	2012569A-02A	Dilution Factor:	5.79
Date/Time Collected:	12/16/20 12:16 PM	Instrument/Filename:	msd3.i / 3122819
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.7	5.7	11	7.6 J
1,4-Dioxane	123-91-1	3.0	13	42	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.9	5.7	11	4300
Tetrachloroethene	127-18-4	2.1	9.8	20	Not Detected
trans-1,2-Dichloroethene	156-60-5	2.7	5.7	11	28
Trichloroethene	79-01-6	2.3	7.8	16	1400
Vinyl Chloride	75-01-4	1.3	3.7	7.4	1100

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1041_121520	Date/Time Analyzed:	12/28/20 01:10 PM
Lab ID:	2012569A-03A	Dilution Factor:	2.41
Date/Time Collected:	12/15/20 12:42 PM	Instrument/Filename:	msd3.i / 3122806
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.69	2.4	4.8	Not Detected
1,4-Dioxane	123-91-1	1.2	5.4	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.78	2.4	4.8	Not Detected
Tetrachloroethene	127-18-4	0.89	4.1	8.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.4	4.8	Not Detected
Trichloroethene	79-01-6	0.94	3.2	6.5	Not Detected
Vinyl Chloride	75-01-4	0.56	1.5	3.1	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1066_121520	Date/Time Analyzed:	12/28/20 01:39 PM
Lab ID:	2012569A-04A	Dilution Factor:	2.48
Date/Time Collected:	12/15/20 01:28 PM	Instrument/Filename:	msd3.i / 3122807
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.71	2.4	4.9	Not Detected
1,4-Dioxane	123-91-1	1.3	5.6	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.81	2.4	4.9	Not Detected
Tetrachloroethene	127-18-4	0.92	4.2	8.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	2.4	4.9	Not Detected
Trichloroethene	79-01-6	0.97	3.3	6.7	Not Detected
Vinyl Chloride	75-01-4	0.58	1.6	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	91
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	102

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1088_121520	Date/Time Analyzed:	12/28/20 02:08 PM
Lab ID:	2012569A-05A	Dilution Factor:	2.40
Date/Time Collected:	12/15/20 02:47 PM	Instrument/Filename:	msd3.i / 3122808
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.69	2.4	4.8	Not Detected
1,4-Dioxane	123-91-1	1.2	5.4	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.78	2.4	4.8	Not Detected
Tetrachloroethene	127-18-4	0.89	4.1	8.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.4	4.8	Not Detected
Trichloroethene	79-01-6	0.94	3.2	6.4	Not Detected
Vinyl Chloride	75-01-4	0.56	1.5	3.1	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	91
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1245_121520	Date/Time Analyzed:	12/28/20 02:38 PM
Lab ID:	2012569A-06A	Dilution Factor:	2.18
Date/Time Collected:	12/15/20 10:10 AM	Instrument/Filename:	msd3.i / 3122809
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.63	2.2	4.3	Not Detected
1,4-Dioxane	123-91-1	1.1	4.9	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.71	2.2	4.3	150
Tetrachloroethene	127-18-4	0.81	3.7	7.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	2.2	4.3	2.6 J
Trichloroethene	79-01-6	0.85	2.9	5.8	120
Vinyl Chloride	75-01-4	0.51	1.4	2.8	45

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	91
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1258_121620	Date/Time Analyzed:	12/28/20 03:07 PM
Lab ID:	2012569A-07A	Dilution Factor:	2.41
Date/Time Collected:	12/16/20 10:53 AM	Instrument/Filename:	msd3.i / 3122810
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.69	2.4	4.8	Not Detected
1,4-Dioxane	123-91-1	1.2	5.4	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.78	2.4	4.8	860
Tetrachloroethene	127-18-4	0.89	4.1	8.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.4	4.8	3.7 J
Trichloroethene	79-01-6	0.94	3.2	6.5	70
Vinyl Chloride	75-01-4	0.56	1.5	3.1	100

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	91
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1001_121620	Date/Time Analyzed:	12/28/20 03:37 PM
Lab ID:	2012569A-08A	Dilution Factor:	2.43
Date/Time Collected:	12/16/20 08:36 AM	Instrument/Filename:	msd3.i / 3122811
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.70	2.4	4.8	Not Detected
1,4-Dioxane	123-91-1	1.2	5.5	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.79	2.4	4.8	Not Detected
Tetrachloroethene	127-18-4	0.90	4.1	8.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.4	4.8	Not Detected
Trichloroethene	79-01-6	0.95	3.3	6.5	Not Detected
Vinyl Chloride	75-01-4	0.57	1.6	3.1	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1210_121620	Date/Time Analyzed:	12/28/20 04:06 PM
Lab ID:	2012569A-09A	Dilution Factor:	2.48
Date/Time Collected:	12/16/20 09:08 AM	Instrument/Filename:	msd3.i / 3122812
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.71	2.4	4.9	Not Detected
1,4-Dioxane	123-91-1	1.3	5.6	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.81	2.4	4.9	5.2
Tetrachloroethene	127-18-4	0.92	4.2	8.4	4.5 J
trans-1,2-Dichloroethene	156-60-5	1.2	2.4	4.9	Not Detected
Trichloroethene	79-01-6	0.97	3.3	6.7	Not Detected
Vinyl Chloride	75-01-4	0.58	1.6	3.2	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	91
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1219_121620	Date/Time Analyzed:	12/28/20 04:35 PM
Lab ID:	2012569A-10A	Dilution Factor:	2.30
Date/Time Collected:	12/16/20 09:44 AM	Instrument/Filename:	msd3.i / 3122813
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.66	2.3	4.6	Not Detected
1,4-Dioxane	123-91-1	1.2	5.2	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.75	2.3	4.6	Not Detected
Tetrachloroethene	127-18-4	0.85	3.9	7.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.3	4.6	Not Detected
Trichloroethene	79-01-6	0.90	3.1	6.2	Not Detected
Vinyl Chloride	75-01-4	0.54	1.5	2.9	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	93
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1171_121520	Date/Time Analyzed:	12/28/20 05:04 PM
Lab ID:	2012569A-11A	Dilution Factor:	2.40
Date/Time Collected:	12/15/20 03:17 PM	Instrument/Filename:	msd3.i / 3122814
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.69	2.4	4.8	Not Detected
1,4-Dioxane	123-91-1	1.2	5.4	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.78	2.4	4.8	Not Detected
Tetrachloroethene	127-18-4	0.89	4.1	8.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.4	4.8	Not Detected
Trichloroethene	79-01-6	0.94	3.2	6.4	Not Detected
Vinyl Chloride	75-01-4	0.56	1.5	3.1	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1244_121520	Date/Time Analyzed:	12/28/20 05:33 PM
Lab ID:	2012569A-12A	Dilution Factor:	2.28
Date/Time Collected:	12/15/20 11:05 AM	Instrument/Filename:	msd3.i / 3122815
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.66	2.3	4.5	Not Detected
1,4-Dioxane	123-91-1	1.2	5.1	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.74	2.2	4.5	400
Tetrachloroethene	127-18-4	0.85	3.9	7.7	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.2	4.5	3.7 J
Trichloroethene	79-01-6	0.89	3.1	6.1	280
Vinyl Chloride	75-01-4	0.53	1.4	2.9	100

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1116_121720	Date/Time Analyzed:	12/28/20 06:02 PM
Lab ID:	2012569A-13A	Dilution Factor:	2.48
Date/Time Collected:	12/17/20 09:21 AM	Instrument/Filename:	msd3.i / 3122816
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.71	2.4	4.9	Not Detected
1,4-Dioxane	123-91-1	1.3	5.6	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.81	2.4	4.9	Not Detected
Tetrachloroethene	127-18-4	0.92	4.2	8.4	1.2 J
trans-1,2-Dichloroethene	156-60-5	1.2	2.4	4.9	Not Detected
Trichloroethene	79-01-6	0.97	3.3	6.7	Not Detected
Vinyl Chloride	75-01-4	0.58	1.6	3.2	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	WDC_121520	Date/Time Analyzed:	12/28/20 09:27 PM
Lab ID:	2012569A-14A	Dilution Factor:	2.52
Date/Time Collected:	12/15/20 09:34 AM	Instrument/Filename:	msd3.i / 3122820
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.72	2.5	5.0	Not Detected
1,4-Dioxane	123-91-1	1.3	5.7	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.82	2.5	5.0	Not Detected
Tetrachloroethene	127-18-4	0.94	4.3	8.5	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	2.5	5.0	Not Detected
Trichloroethene	79-01-6	0.98	3.4	6.8	Not Detected
Vinyl Chloride	75-01-4	0.59	1.6	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	91
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	EDC_121520	Date/Time Analyzed:	12/28/20 09:56 PM
Lab ID:	2012569A-15A	Dilution Factor:	2.30
Date/Time Collected:	12/15/20 08:58 AM	Instrument/Filename:	msd3.i / 3122821
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.66	2.3	4.6	Not Detected
1,4-Dioxane	123-91-1	1.2	5.2	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.75	2.3	4.6	Not Detected
Tetrachloroethene	127-18-4	0.85	3.9	7.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.3	4.6	Not Detected
Trichloroethene	79-01-6	0.90	3.1	6.2	Not Detected
Vinyl Chloride	75-01-4	0.54	1.5	2.9	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	93
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1255_121620	Date/Time Analyzed:	12/28/20 11:51 PM
Lab ID:	2012569A-16A	Dilution Factor:	16.2
Date/Time Collected:	12/16/20 11:38 AM	Instrument/Filename:	msd3.i / 3122825
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	4.6	16	32	32
1,4-Dioxane	123-91-1	8.4	36	120	Not Detected
cis-1,2-Dichloroethene	156-59-2	5.3	16	32	510
Tetrachloroethene	127-18-4	6.0	27	55	Not Detected
trans-1,2-Dichloroethene	156-60-5	7.6	16	32	20 J
Trichloroethene	79-01-6	6.3	22	44	83
Vinyl Chloride	75-01-4	3.8	10	21	5600

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	93
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1256_121620	Date/Time Analyzed:	12/28/20 10:26 PM
Lab ID:	2012569A-17A	Dilution Factor:	2.54
Date/Time Collected:	12/16/20 11:15 AM	Instrument/Filename:	msd3.i / 3122822
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.73	2.5	5.0	Not Detected
1,4-Dioxane	123-91-1	1.3	5.7	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.83	2.5	5.0	150
Tetrachloroethene	127-18-4	0.94	4.3	8.6	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	2.5	5.0	Not Detected
Trichloroethene	79-01-6	0.99	3.4	6.8	15
Vinyl Chloride	75-01-4	0.59	1.6	3.2	10

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	93
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1113_121620	Date/Time Analyzed:	12/28/20 10:55 PM
Lab ID:	2012569A-18A	Dilution Factor:	2.48
Date/Time Collected:	12/16/20 03:15 PM	Instrument/Filename:	msd3.i / 3122823
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.71	2.4	4.9	Not Detected
1,4-Dioxane	123-91-1	1.3	5.6	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.81	2.4	4.9	Not Detected
Tetrachloroethene	127-18-4	0.92	4.2	8.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	2.4	4.9	Not Detected
Trichloroethene	79-01-6	0.97	3.3	6.7	Not Detected
Vinyl Chloride	75-01-4	0.58	1.6	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	94
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1096_121620	Date/Time Analyzed:	12/28/20 11:24 PM
Lab ID:	2012569A-19A	Dilution Factor:	2.37
Date/Time Collected:	12/16/20 02:09 PM	Instrument/Filename:	msd3.i / 3122824
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.68	2.3	4.7	Not Detected
1,4-Dioxane	123-91-1	1.2	5.3	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.77	2.3	4.7	Not Detected
Tetrachloroethene	127-18-4	0.88	4.0	8.0	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.3	4.7	Not Detected
Trichloroethene	79-01-6	0.93	3.2	6.4	Not Detected
Vinyl Chloride	75-01-4	0.55	1.5	3.0	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	94
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1231_121520	Date/Time Analyzed:	12/28/20 08:04 PM
Lab ID:	2012569A-20A	Dilution Factor:	96.2
Date/Time Collected:	12/15/20 11:43 AM	Instrument/Filename:	msd3.i / 3122817
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	28	95	190	100 J
1,4-Dioxane	123-91-1	50	220	690	Not Detected
cis-1,2-Dichloroethene	156-59-2	31	95	190	37000
Tetrachloroethene	127-18-4	36	160	330	Not Detected
trans-1,2-Dichloroethene	156-60-5	45	95	190	260
Trichloroethene	79-01-6	38	130	260	14000
Vinyl Chloride	75-01-4	22	61	120	11000

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Lab Blank	Date/Time Analyzed:	12/28/20 11:35 AM
Lab ID:	2012569A-21A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3122805a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.29	0.99	2.0	Not Detected
1,4-Dioxane	123-91-1	0.52	2.2	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.32	0.99	2.0	Not Detected
Tetrachloroethene	127-18-4	0.37	1.7	3.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.47	0.99	2.0	Not Detected
Trichloroethene	79-01-6	0.39	1.3	2.7	Not Detected
Vinyl Chloride	75-01-4	0.23	0.64	1.3	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	91
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	CCV	Date/Time Analyzed:	12/28/20 10:01 AM
Lab ID:	2012569A-22A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3122802
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	86
1,4-Dioxane	123-91-1	98
cis-1,2-Dichloroethene	156-59-2	95
Tetrachloroethene	127-18-4	105
trans-1,2-Dichloroethene	156-60-5	90
Trichloroethene	79-01-6	98
Vinyl Chloride	75-01-4	78

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	93
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCS	Date/Time Analyzed:	12/28/20 10:29 AM
Lab ID:	2012569A-23A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3122803
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	89
1,4-Dioxane	123-91-1	98
cis-1,2-Dichloroethene	156-59-2	95
Tetrachloroethene	127-18-4	107
trans-1,2-Dichloroethene	156-60-5	90
Trichloroethene	79-01-6	98
Vinyl Chloride	75-01-4	79

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	91
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCSD	Date/Time Analyzed:	12/28/20 10:56 AM
Lab ID:	2012569A-23AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3122804
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	91
1,4-Dioxane	123-91-1	101
cis-1,2-Dichloroethene	156-59-2	96
Tetrachloroethene	127-18-4	108
trans-1,2-Dichloroethene	156-60-5	92
Trichloroethene	79-01-6	99
Vinyl Chloride	75-01-4	81

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	91
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	101

* % Recovery is calculated using unrounded analytical results.



DATA VERIFICATION REPORT

December 30, 2020

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2020 Utility Corridor Evaluation Vapor Testing
Project number: 30050315.701.04
Event Specific Scope of Work References: Sample COC
Laboratory: EUROFINS-FOLSOM
Laboratory submittal: 2012569A
Sample date: 2020-12-15, 12-16, 12-17
Report received by CADENA: 2020-12-30
Initial Data Verification completed by CADENA: 2020-12-30
Number of Samples: 20
Sample Matrices: AIR
Test Categories: TO-15 GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) TO-15 Analysis

SDG #2012569A

CADENA Verification Report: 2020-12-30

Analyses Performed By:
Eurofins Air Toxics
Folsom, California

Report #40112R
Review Level: Tier III
Project: 30050315.701.02

DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 2012569A for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						TO-15 (Full Scan)	TO-15 (SIM)	MISC
2012569A	SL-2_121520	2012569A-01A	Air	12/15/2020		X		
	SL-3_121620	2012569A-02A	Air	12/16/2020		X		
	MH-1041_121520	2012569A-03A	Air	12/15/2020		X		
	MH-1066_121520	2012569A-04A	Air	12/15/2020		X		
	MH-1088_121520	2012569A-05A	Air	12/15/2020		X		
	MH-1245_121520	2012569A-06A	Air	12/15/2020		X		
	MH-1258_121620	2012569A-07A	Air	12/16/2020		X		
	MH-1001_121620	2012569A-08A	Air	12/16/2020		X		
	MH-1210_121620	2012569A-09A	Air	12/16/2020		X		
	MH-1219_121620	2012569A-10A	Air	12/16/2020		X		
	MH-1171_121520	2012569A-11A	Air	12/15/2020		X		
	MH-1244_121520	2012569A-12A	Air	12/15/2020		X		
	MH-1116_121720	2012569A-13A	Air	12/17/2020		X		
	WDC_121520	2012569A-14A	Air	12/15/2020		X		
	EDC_121520	2012569A-15A	Air	12/15/2020		X		
	MH-1255_121620	2012569A-16A	Air	12/16/2020		X		
	MH-1256_121620	2012569A-17A	Air	12/16/2020		X		
	MH-1113_121620	2012569A-18A	Air	12/16/2020		X		
	MH-1096_121620	2012569A-19A	Air	12/16/2020		X		
	MH-1231_121520	2012569A-20A	Air	12/15/2020		X		

DATA REVIEW

Note: The field duplicate DUP-01_121620 for parent sample MH-1096_121620 was analyzed in SDG 2012569B.

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Method TO-15 (Full Scan). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation	Return Canister Pressure
USEPA TO-15	Air	30 days from collection to analysis (Canister)	Ambient Temperature	< -2" Hg

All samples were analyzed within the specified holding time and canister return pressure / vacuum criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (30%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (30%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than 140% or less than 60% of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

5. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra. All identified compounds met the specified criteria.

6. Field Duplicate Sample Analysis

The field duplicate analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 35% for air 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 not greater than five times the RL, a control limit of three times the RL is applied to the difference between the duplicate sample results.

Results (in $\mu\text{g}/\text{m}^3$) for the field duplicate samples are summarized in the following table.

Sample ID / Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MH-1096_121620/ DUP-01_121620	Tetrachloroethene	8.0 U	2.4 J	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

Note: Dilution was performed on samples SL-2_121520, SL-3_121620, MH-1255_121620 and MH-1231_121520 due to the presence of high-level target species.

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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: TO-15 (Full Scan)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Canister return pressure (<-2"Hg)		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Field Duplicate Sample RPD		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

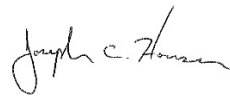
%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Joseph C. Houser

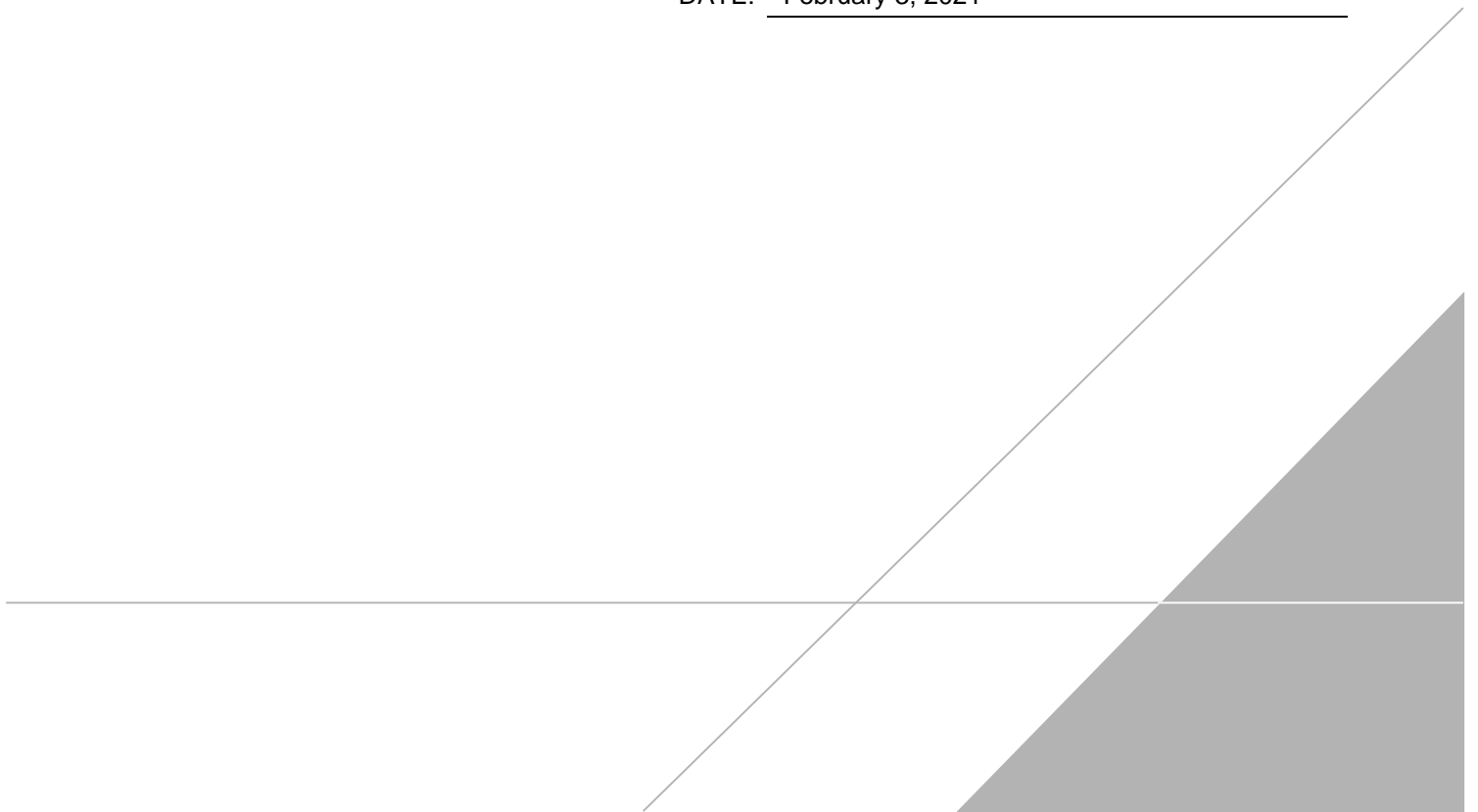
SIGNATURE:



DATE: February 3, 2021

PEER REVIEW: Andrew Korycinski

DATE: February 3, 2021



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



**NO CORRECTIONS/QUALIFIERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**



EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-2_121520	Date/Time Analyzed:	12/28/20 08:31 PM
Lab ID:	2012569A-01A	Dilution Factor:	12.3
Date/Time Collected:	12/15/20 12:10 PM	Instrument/Filename:	msd3.i / 3122818
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	3.5	12	24	14 J
1,4-Dioxane	123-91-1	6.3	28	89	Not Detected
cis-1,2-Dichloroethene	156-59-2	4.0	12	24	6800
Tetrachloroethene	127-18-4	4.6	21	42	Not Detected
trans-1,2-Dichloroethene	156-60-5	5.8	12	24	44
Trichloroethene	79-01-6	4.8	16	33	2200
Vinyl Chloride	75-01-4	2.9	7.9	16	1700

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	91
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-3_121620	Date/Time Analyzed:	12/28/20 08:58 PM
Lab ID:	2012569A-02A	Dilution Factor:	5.79
Date/Time Collected:	12/16/20 12:16 PM	Instrument/Filename:	msd3.i / 3122819
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.7	5.7	11	7.6 J
1,4-Dioxane	123-91-1	3.0	13	42	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.9	5.7	11	4300
Tetrachloroethene	127-18-4	2.1	9.8	20	Not Detected
trans-1,2-Dichloroethene	156-60-5	2.7	5.7	11	28
Trichloroethene	79-01-6	2.3	7.8	16	1400
Vinyl Chloride	75-01-4	1.3	3.7	7.4	1100

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1041_121520	Date/Time Analyzed:	12/28/20 01:10 PM
Lab ID:	2012569A-03A	Dilution Factor:	2.41
Date/Time Collected:	12/15/20 12:42 PM	Instrument/Filename:	msd3.i / 3122806
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.69	2.4	4.8	Not Detected
1,4-Dioxane	123-91-1	1.2	5.4	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.78	2.4	4.8	Not Detected
Tetrachloroethene	127-18-4	0.89	4.1	8.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.4	4.8	Not Detected
Trichloroethene	79-01-6	0.94	3.2	6.5	Not Detected
Vinyl Chloride	75-01-4	0.56	1.5	3.1	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1066_121520	Date/Time Analyzed:	12/28/20 01:39 PM
Lab ID:	2012569A-04A	Dilution Factor:	2.48
Date/Time Collected:	12/15/20 01:28 PM	Instrument/Filename:	msd3.i / 3122807
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.71	2.4	4.9	Not Detected
1,4-Dioxane	123-91-1	1.3	5.6	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.81	2.4	4.9	Not Detected
Tetrachloroethene	127-18-4	0.92	4.2	8.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	2.4	4.9	Not Detected
Trichloroethene	79-01-6	0.97	3.3	6.7	Not Detected
Vinyl Chloride	75-01-4	0.58	1.6	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	91
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	102

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1088_121520	Date/Time Analyzed:	12/28/20 02:08 PM
Lab ID:	2012569A-05A	Dilution Factor:	2.40
Date/Time Collected:	12/15/20 02:47 PM	Instrument/Filename:	msd3.i / 3122808
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.69	2.4	4.8	Not Detected
1,4-Dioxane	123-91-1	1.2	5.4	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.78	2.4	4.8	Not Detected
Tetrachloroethene	127-18-4	0.89	4.1	8.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.4	4.8	Not Detected
Trichloroethene	79-01-6	0.94	3.2	6.4	Not Detected
Vinyl Chloride	75-01-4	0.56	1.5	3.1	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	91
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1245_121520	Date/Time Analyzed:	12/28/20 02:38 PM
Lab ID:	2012569A-06A	Dilution Factor:	2.18
Date/Time Collected:	12/15/20 10:10 AM	Instrument/Filename:	msd3.i / 3122809
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.63	2.2	4.3	Not Detected
1,4-Dioxane	123-91-1	1.1	4.9	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.71	2.2	4.3	150
Tetrachloroethene	127-18-4	0.81	3.7	7.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	2.2	4.3	2.6 J
Trichloroethene	79-01-6	0.85	2.9	5.8	120
Vinyl Chloride	75-01-4	0.51	1.4	2.8	45

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	91
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1258_121620	Date/Time Analyzed:	12/28/20 03:07 PM
Lab ID:	2012569A-07A	Dilution Factor:	2.41
Date/Time Collected:	12/16/20 10:53 AM	Instrument/Filename:	msd3.i / 3122810
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.69	2.4	4.8	Not Detected
1,4-Dioxane	123-91-1	1.2	5.4	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.78	2.4	4.8	860
Tetrachloroethene	127-18-4	0.89	4.1	8.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.4	4.8	3.7 J
Trichloroethene	79-01-6	0.94	3.2	6.5	70
Vinyl Chloride	75-01-4	0.56	1.5	3.1	100

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	91
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1001_121620	Date/Time Analyzed:	12/28/20 03:37 PM
Lab ID:	2012569A-08A	Dilution Factor:	2.43
Date/Time Collected:	12/16/20 08:36 AM	Instrument/Filename:	msd3.i / 3122811
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.70	2.4	4.8	Not Detected
1,4-Dioxane	123-91-1	1.2	5.5	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.79	2.4	4.8	Not Detected
Tetrachloroethene	127-18-4	0.90	4.1	8.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.4	4.8	Not Detected
Trichloroethene	79-01-6	0.95	3.3	6.5	Not Detected
Vinyl Chloride	75-01-4	0.57	1.6	3.1	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1210_121620	Date/Time Analyzed:	12/28/20 04:06 PM
Lab ID:	2012569A-09A	Dilution Factor:	2.48
Date/Time Collected:	12/16/20 09:08 AM	Instrument/Filename:	msd3.i / 3122812
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.71	2.4	4.9	Not Detected
1,4-Dioxane	123-91-1	1.3	5.6	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.81	2.4	4.9	5.2
Tetrachloroethene	127-18-4	0.92	4.2	8.4	4.5 J
trans-1,2-Dichloroethene	156-60-5	1.2	2.4	4.9	Not Detected
Trichloroethene	79-01-6	0.97	3.3	6.7	Not Detected
Vinyl Chloride	75-01-4	0.58	1.6	3.2	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	91
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1219_121620	Date/Time Analyzed:	12/28/20 04:35 PM
Lab ID:	2012569A-10A	Dilution Factor:	2.30
Date/Time Collected:	12/16/20 09:44 AM	Instrument/Filename:	msd3.i / 3122813
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.66	2.3	4.6	Not Detected
1,4-Dioxane	123-91-1	1.2	5.2	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.75	2.3	4.6	Not Detected
Tetrachloroethene	127-18-4	0.85	3.9	7.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.3	4.6	Not Detected
Trichloroethene	79-01-6	0.90	3.1	6.2	Not Detected
Vinyl Chloride	75-01-4	0.54	1.5	2.9	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	93
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1171_121520	Date/Time Analyzed:	12/28/20 05:04 PM
Lab ID:	2012569A-11A	Dilution Factor:	2.40
Date/Time Collected:	12/15/20 03:17 PM	Instrument/Filename:	msd3.i / 3122814
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.69	2.4	4.8	Not Detected
1,4-Dioxane	123-91-1	1.2	5.4	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.78	2.4	4.8	Not Detected
Tetrachloroethene	127-18-4	0.89	4.1	8.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.4	4.8	Not Detected
Trichloroethene	79-01-6	0.94	3.2	6.4	Not Detected
Vinyl Chloride	75-01-4	0.56	1.5	3.1	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1244_121520	Date/Time Analyzed:	12/28/20 05:33 PM
Lab ID:	2012569A-12A	Dilution Factor:	2.28
Date/Time Collected:	12/15/20 11:05 AM	Instrument/Filename:	msd3.i / 3122815
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.66	2.3	4.5	Not Detected
1,4-Dioxane	123-91-1	1.2	5.1	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.74	2.2	4.5	400
Tetrachloroethene	127-18-4	0.85	3.9	7.7	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.2	4.5	3.7 J
Trichloroethene	79-01-6	0.89	3.1	6.1	280
Vinyl Chloride	75-01-4	0.53	1.4	2.9	100

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1116_121720	Date/Time Analyzed:	12/28/20 06:02 PM
Lab ID:	2012569A-13A	Dilution Factor:	2.48
Date/Time Collected:	12/17/20 09:21 AM	Instrument/Filename:	msd3.i / 3122816
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.71	2.4	4.9	Not Detected
1,4-Dioxane	123-91-1	1.3	5.6	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.81	2.4	4.9	Not Detected
Tetrachloroethene	127-18-4	0.92	4.2	8.4	1.2 J
trans-1,2-Dichloroethene	156-60-5	1.2	2.4	4.9	Not Detected
Trichloroethene	79-01-6	0.97	3.3	6.7	Not Detected
Vinyl Chloride	75-01-4	0.58	1.6	3.2	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	WDC_121520	Date/Time Analyzed:	12/28/20 09:27 PM
Lab ID:	2012569A-14A	Dilution Factor:	2.52
Date/Time Collected:	12/15/20 09:34 AM	Instrument/Filename:	msd3.i / 3122820
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.72	2.5	5.0	Not Detected
1,4-Dioxane	123-91-1	1.3	5.7	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.82	2.5	5.0	Not Detected
Tetrachloroethene	127-18-4	0.94	4.3	8.5	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	2.5	5.0	Not Detected
Trichloroethene	79-01-6	0.98	3.4	6.8	Not Detected
Vinyl Chloride	75-01-4	0.59	1.6	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	91
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	EDC_121520	Date/Time Analyzed:	12/28/20 09:56 PM
Lab ID:	2012569A-15A	Dilution Factor:	2.30
Date/Time Collected:	12/15/20 08:58 AM	Instrument/Filename:	msd3.i / 3122821
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.66	2.3	4.6	Not Detected
1,4-Dioxane	123-91-1	1.2	5.2	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.75	2.3	4.6	Not Detected
Tetrachloroethene	127-18-4	0.85	3.9	7.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.3	4.6	Not Detected
Trichloroethene	79-01-6	0.90	3.1	6.2	Not Detected
Vinyl Chloride	75-01-4	0.54	1.5	2.9	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	93
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1255_121620	Date/Time Analyzed:	12/28/20 11:51 PM
Lab ID:	2012569A-16A	Dilution Factor:	16.2
Date/Time Collected:	12/16/20 11:38 AM	Instrument/Filename:	msd3.i / 3122825
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	4.6	16	32	32
1,4-Dioxane	123-91-1	8.4	36	120	Not Detected
cis-1,2-Dichloroethene	156-59-2	5.3	16	32	510
Tetrachloroethene	127-18-4	6.0	27	55	Not Detected
trans-1,2-Dichloroethene	156-60-5	7.6	16	32	20 J
Trichloroethene	79-01-6	6.3	22	44	83
Vinyl Chloride	75-01-4	3.8	10	21	5600

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	93
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1256_121620	Date/Time Analyzed:	12/28/20 10:26 PM
Lab ID:	2012569A-17A	Dilution Factor:	2.54
Date/Time Collected:	12/16/20 11:15 AM	Instrument/Filename:	msd3.i / 3122822
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.73	2.5	5.0	Not Detected
1,4-Dioxane	123-91-1	1.3	5.7	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.83	2.5	5.0	150
Tetrachloroethene	127-18-4	0.94	4.3	8.6	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	2.5	5.0	Not Detected
Trichloroethene	79-01-6	0.99	3.4	6.8	15
Vinyl Chloride	75-01-4	0.59	1.6	3.2	10

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	93
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1113_121620	Date/Time Analyzed:	12/28/20 10:55 PM
Lab ID:	2012569A-18A	Dilution Factor:	2.48
Date/Time Collected:	12/16/20 03:15 PM	Instrument/Filename:	msd3.i / 3122823
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.71	2.4	4.9	Not Detected
1,4-Dioxane	123-91-1	1.3	5.6	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.81	2.4	4.9	Not Detected
Tetrachloroethene	127-18-4	0.92	4.2	8.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	2.4	4.9	Not Detected
Trichloroethene	79-01-6	0.97	3.3	6.7	Not Detected
Vinyl Chloride	75-01-4	0.58	1.6	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	94
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1096_121620	Date/Time Analyzed:	12/28/20 11:24 PM
Lab ID:	2012569A-19A	Dilution Factor:	2.37
Date/Time Collected:	12/16/20 02:09 PM	Instrument/Filename:	msd3.i / 3122824
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.68	2.3	4.7	Not Detected
1,4-Dioxane	123-91-1	1.2	5.3	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.77	2.3	4.7	Not Detected
Tetrachloroethene	127-18-4	0.88	4.0	8.0	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.3	4.7	Not Detected
Trichloroethene	79-01-6	0.93	3.2	6.4	Not Detected
Vinyl Chloride	75-01-4	0.55	1.5	3.0	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	94
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1231_121520	Date/Time Analyzed:	12/28/20 08:04 PM
Lab ID:	2012569A-20A	Dilution Factor:	96.2
Date/Time Collected:	12/15/20 11:43 AM	Instrument/Filename:	msd3.i / 3122817
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	28	95	190	100 J
1,4-Dioxane	123-91-1	50	220	690	Not Detected
cis-1,2-Dichloroethene	156-59-2	31	95	190	37000
Tetrachloroethene	127-18-4	36	160	330	Not Detected
trans-1,2-Dichloroethene	156-60-5	45	95	190	260
Trichloroethene	79-01-6	38	130	260	14000
Vinyl Chloride	75-01-4	22	61	120	11000

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	100

Analysis Request / Canister Chain of Custody

For Laboratory Use Only

2012569

PID: _____

Workorder #: _____

180 Blue Ravine Rd. Suite B, Folsom, CA 95630

Phone (800) 985-5955; Fax (916) 351-8279

Click links below to view:

[Canister Sampling Guide](#)

[Helium Shroud Video](#)

Client: <u>Ford</u> PID: <u>NA</u>		Special Instructions/Notes: Report ONLY: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, 1,4-Dioxane, PCE, TCE and VC. Submit results through Cadena at jim.tomalia@cadena.com. Cadena #E205762		Turnaround Time (Rush surcharges may apply)											
Project Name: <u>Ford LTP</u>		P.O.# <u>30050315.70</u>		5 Day Turnaround Time											
Project Manager: <u>Kris Hinskey</u>		Level IV Reporting		Canister Vacuum/Pressure											
Sampler: <u>Andrew Banitt, Emma Whitherspoon</u>				Requested Analyses											
Site Name: <u>Ford LTP</u>				Lab Use Only											
Lab ID	Sample Identification	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Initial (in Hg)	Final (in Hg)	Receipt	Final (psig) Gas: N ₂ / He	TO-15 (See Special Instructions/Notes)			
				Date	Time	Date	Time								
01A	SL-2-121520	1L1540	23628	12/15/20	1158	12/15/20	1210	-29.5	-6			X			
02A	SL-3-121820	1L3078	24544	12/18/20	1203	12/18/20	1216	-29	-5			X			
03A	MH-1041-121920	1L2908	23530	12/19/20	1230	12/19/20	1242	-29.5	-6			X			
04A	MH-1066-121520	1L2786	24208	12/15/20	1316	12/15/20	1328	-28.5	-7			X			
05A	MH-1088-121520	1L2362	24557	12/15/20	1436	12/15/20	1447	-29	-5.5			X			
06A	MH-1245-121520	1L2836	23527	12/15/20	0956	12/15/20	1010	-29.5	-3.5			X			
07A	MH-1258-121620	1L1711	24891	12/16/20	1041	12/16/20	1053	-29	-6			X			
08A	MH-1001-121620	1L3267	23451	12/16/20	0828	12/16/20	0836	-29	-6			X			
09A	MH-1210-121620	1L3308	24548	12/16/20	0858	12/16/20	0908	-29	-7			X			
10A	MH-1219-121620	1L1944	23409	12/16/20	0431	12/16/20	0444	-28.5	-5			X			
11A	MH-1171-121520	1L1752	25176	12/15/20	1506	12/15/20	1517	-29	-5.5			X			
12A	MH-1244-121520	1L3864	23155	12/15/20	1053	12/15/20	1105	-29.5	-4.5			X			
13A	MH-1118-121720	1L2630	23190	12/17/20	0909	12/17/20	0921	-29	-7			X			
14A	WDC-121520	1L2503	23576	12/15/20	0924	12/15/20	0934	-29	-7.5			X			
15A	EDC-121520	1L2651	23447	12/15/20	0845	12/15/20	0858	-29.5	-5			X			
Relinquished by: (Signature/Affiliation)		Date		Time		Received by: (Signature/Affiliation)		Date		Time					
<u>Whitherspoon / Arcadis</u>		12/18/20		1500		<u>[Signature]</u>		12/21/20		1105					
Relinquished by: (Signature/Affiliation)		Date		Time		Received by: (Signature/Affiliation)		Date		Time					
Relinquished by: (Signature/Affiliation)		Date		Time		Received by: (Signature/Affiliation)		Date		Time					
Shipper Name: <u>Fels</u>		Custody Seals Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> None													
<p>Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922</p>															

12/30/2020
Mr. Jim Tomalia
Arcadis U.S., Inc.
28550 Cabot Dr.
Suite 500
Novi MI 48377

Project Name: Ford LTP
Project #:
Workorder #: 2012569B

Dear Mr. Jim Tomalia

The following report includes the data for the above referenced project for sample(s) received on 12/21/2020 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Ausha Scott at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Ausha Scott
Project Manager

WORK ORDER #: 2012569B

Work Order Summary

CLIENT:	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	517-819-0356	P.O. #	30050315.701.01
FAX:		PROJECT #	Ford LTP
DATE RECEIVED:	12/21/2020	CONTACT:	Ausha Scott
DATE COMPLETED:	12/30/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
21A	MH-1082_121720	TO-15	5.5 "Hg	15 psi
22A	MH-1067_121720	TO-15	6.0 "Hg	15 psi
23A	MH-1043_121720	TO-15	6.5 "Hg	15 psi
24A	MH-1020_121720	TO-15	5.0 "Hg	15 psi
25A	MH-1181_121720	TO-15	4.5 "Hg	15 psi
26A	MH-1123_121720	TO-15	5.5 "Hg	15 psi
27A	MH-1122_121720	TO-15	5.5 "Hg	15 psi
28A	DUP-01_121620	TO-15	4.0 "Hg	15 psi
29A	Lab Blank	TO-15	NA	NA
30A	CCV	TO-15	NA	NA
31A	LCS	TO-15	NA	NA
31AA	LCSD	TO-15	NA	NA

CERTIFIED BY: 

 Technical Director

DATE: 12/30/20

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
 (916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
Arcadis U.S., Inc.
Workorder# 2012569B

Eight 1 Liter Summa Canister (100% Certified) samples were received on December 21, 2020. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1082_121720	Date/Time Analyzed:	12/23/20 06:34 PM
Lab ID:	2012569B-21A	Dilution Factor:	2.47
Date/Time Collected:	12/17/20 02:29 PM	Instrument/Filename:	msdp.i / p122313
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.6	2.4	4.9	Not Detected
1,4-Dioxane	123-91-1	2.6	5.3	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.8	2.4	4.9	Not Detected
Tetrachloroethene	127-18-4	1.4	4.2	8.4	20
trans-1,2-Dichloroethene	156-60-5	1.3	2.4	4.9	Not Detected
Trichloroethene	79-01-6	0.96	3.3	6.6	2.5 J
Vinyl Chloride	75-01-4	0.80	1.6	3.2	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	86
4-Bromofluorobenzene	460-00-4	70-130	101
Toluene-d8	2037-26-5	70-130	102

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1067_121720	Date/Time Analyzed:	12/23/20 07:03 PM
Lab ID:	2012569B-22A	Dilution Factor:	2.52
Date/Time Collected:	12/17/20 02:01 PM	Instrument/Filename:	msdp.i / p122314
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.6	2.5	5.0	Not Detected
1,4-Dioxane	123-91-1	2.7	5.4	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.8	2.5	5.0	Not Detected
Tetrachloroethene	127-18-4	1.4	4.3	8.5	22
trans-1,2-Dichloroethene	156-60-5	1.3	2.5	5.0	Not Detected
Trichloroethene	79-01-6	0.98	3.4	6.8	Not Detected
Vinyl Chloride	75-01-4	0.81	1.6	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	88
4-Bromofluorobenzene	460-00-4	70-130	101
Toluene-d8	2037-26-5	70-130	102

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1043_121720	Date/Time Analyzed:	12/23/20 07:33 PM
Lab ID:	2012569B-23A	Dilution Factor:	2.58
Date/Time Collected:	12/17/20 12:15 PM	Instrument/Filename:	msdp.i / p122315
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.7	2.6	5.1	Not Detected
1,4-Dioxane	123-91-1	2.7	5.6	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.8	2.6	5.1	Not Detected
Tetrachloroethene	127-18-4	1.4	4.4	8.8	2.9 J
trans-1,2-Dichloroethene	156-60-5	1.3	2.6	5.1	Not Detected
Trichloroethene	79-01-6	1.0	3.5	6.9	Not Detected
Vinyl Chloride	75-01-4	0.83	1.6	3.3	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	86
4-Bromofluorobenzene	460-00-4	70-130	101
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1020_121720	Date/Time Analyzed:	12/23/20 08:02 PM
Lab ID:	2012569B-24A	Dilution Factor:	2.42
Date/Time Collected:	12/17/20 11:33 AM	Instrument/Filename:	msdp.i / p122316
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.6	2.4	4.8	Not Detected
1,4-Dioxane	123-91-1	2.6	5.2	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	2.4	4.8	Not Detected
Tetrachloroethene	127-18-4	1.3	4.1	8.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	2.4	4.8	Not Detected
Trichloroethene	79-01-6	0.94	3.2	6.5	Not Detected
Vinyl Chloride	75-01-4	0.78	1.5	3.1	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	86
4-Bromofluorobenzene	460-00-4	70-130	100
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1181_121720	Date/Time Analyzed:	12/24/20 01:50 AM
Lab ID:	2012569B-25A	Dilution Factor:	2.38
Date/Time Collected:	12/17/20 10:52 AM	Instrument/Filename:	msdp.i / p122325
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.5	2.4	4.7	Not Detected
1,4-Dioxane	123-91-1	2.5	5.1	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	2.4	4.7	Not Detected
Tetrachloroethene	127-18-4	1.3	4.0	8.1	1.4 J
trans-1,2-Dichloroethene	156-60-5	1.2	2.4	4.7	Not Detected
Trichloroethene	79-01-6	0.92	3.2	6.4	Not Detected
Vinyl Chloride	75-01-4	0.77	1.5	3.0	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	87
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	102

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1123_121720	Date/Time Analyzed:	12/24/20 02:20 AM
Lab ID:	2012569B-26A	Dilution Factor:	2.47
Date/Time Collected:	12/17/20 10:27 AM	Instrument/Filename:	msdp.i / p122326
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.6	2.4	4.9	Not Detected
1,4-Dioxane	123-91-1	2.6	5.3	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.8	2.4	4.9	Not Detected
Tetrachloroethene	127-18-4	1.4	4.2	8.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.3	2.4	4.9	Not Detected
Trichloroethene	79-01-6	0.96	3.3	6.6	Not Detected
Vinyl Chloride	75-01-4	0.80	1.6	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	86
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1122_121720	Date/Time Analyzed:	12/24/20 12:52 AM
Lab ID:	2012569B-27A	Dilution Factor:	2.47
Date/Time Collected:	12/17/20 09:43 AM	Instrument/Filename:	msdp.i / p122323
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.6	2.4	4.9	Not Detected
1,4-Dioxane	123-91-1	2.6	5.3	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.8	2.4	4.9	Not Detected
Tetrachloroethene	127-18-4	1.4	4.2	8.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.3	2.4	4.9	Not Detected
Trichloroethene	79-01-6	0.96	3.3	6.6	Not Detected
Vinyl Chloride	75-01-4	0.80	1.6	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	88
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	DUP-01_121620	Date/Time Analyzed:	12/24/20 01:21 AM
Lab ID:	2012569B-28A	Dilution Factor:	2.33
Date/Time Collected:	12/16/20 12:00 AM	Instrument/Filename:	msdp.i / p122324
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.5	2.3	4.6	Not Detected
1,4-Dioxane	123-91-1	2.5	5.0	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	2.3	4.6	Not Detected
Tetrachloroethene	127-18-4	1.3	4.0	7.9	2.4 J
trans-1,2-Dichloroethene	156-60-5	1.2	2.3	4.6	Not Detected
Trichloroethene	79-01-6	0.90	3.1	6.3	Not Detected
Vinyl Chloride	75-01-4	0.75	1.5	3.0	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	86
4-Bromofluorobenzene	460-00-4	70-130	101
Toluene-d8	2037-26-5	70-130	102

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Lab Blank	Date/Time Analyzed:	12/23/20 03:34 PM
Lab ID:	2012569B-29A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p122308a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.65	0.99	2.0	Not Detected
1,4-Dioxane	123-91-1	1.1	2.2	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.72	0.99	2.0	Not Detected
Tetrachloroethene	127-18-4	0.55	1.7	3.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.51	0.99	2.0	Not Detected
Trichloroethene	79-01-6	0.39	1.3	2.7	Not Detected
Vinyl Chloride	75-01-4	0.32	0.64	1.3	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	90
4-Bromofluorobenzene	460-00-4	70-130	101
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	CCV	Date/Time Analyzed:	12/23/20 10:51 AM
Lab ID:	2012569B-30A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p122302
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	96
1,4-Dioxane	123-91-1	98
cis-1,2-Dichloroethene	156-59-2	102
Tetrachloroethene	127-18-4	107
trans-1,2-Dichloroethene	156-60-5	101
Trichloroethene	79-01-6	98
Vinyl Chloride	75-01-4	90

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	88
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCS	Date/Time Analyzed:	12/23/20 11:19 AM
Lab ID:	2012569B-31A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p122303
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	97
1,4-Dioxane	123-91-1	98
cis-1,2-Dichloroethene	156-59-2	100
Tetrachloroethene	127-18-4	104
trans-1,2-Dichloroethene	156-60-5	97
Trichloroethene	79-01-6	96
Vinyl Chloride	75-01-4	88

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	87
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	101

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCSD	Date/Time Analyzed:	12/23/20 11:47 AM
Lab ID:	2012569B-31AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p122304
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	97
1,4-Dioxane	123-91-1	97
cis-1,2-Dichloroethene	156-59-2	100
Tetrachloroethene	127-18-4	104
trans-1,2-Dichloroethene	156-60-5	97
Trichloroethene	79-01-6	96
Vinyl Chloride	75-01-4	84

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	86
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	100

* % Recovery is calculated using unrounded analytical results.



DATA VERIFICATION REPORT

December 30, 2020

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2020 Utility Corridor Evaluation Vapor Testing
Project number: 30050315.701.04
Event Specific Scope of Work References: Sample COC
Laboratory: EUROFINS-FOLSOM
Laboratory submittal: 2012569B
Sample date: 2020-12-16, 12-17
Report received by CADENA: 2020-12-30
Initial Data Verification completed by CADENA: 2020-12-30
Number of Samples: 8
Sample Matrices: AIR
Test Categories: TO-15 GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) TO-15 Analysis

SDG #2012569B

CADENA Verification Report: 2020-12-30

Analyses Performed By:
Eurofins Air Toxics
Folsom, California

Report #40113R
Review Level: Tier III
Project: 30050315.701.02

DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 2012569B for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						TO-15 (Full Scan)	TO-15 (SIM)	MIS C
2012569B	MH-1082_121720	2012569B-21A	Air	12/17/2020		X		
	MH-1067_121720	2012569B-22A	Air	12/17/2020		X		
	MH-1043_121720	2012569B-23A	Air	12/17/2020		X		
	MH-1020_121720	2012569B-24A	Air	12/17/2020		X		
	MH-1181_121720	2012569B-25A	Air	12/17/2020		X		
	MH-1123_121720	2012569B-26A	Air	12/17/2020		X		
	MH-1122_121720	2012569B-27A	Air	12/17/2020		X		
	DUP-01_121620	2012569B-28A	Air	12/16/2020	MH-1096_121620	X		

Note: The parent sample MH-1096_121620 for field duplicate DUP-01_121620 was analyzed in SDG 2012569A.

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Method TO-15 (Full Scan). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation	Return Canister Pressure
USEPA TO-15	Air	30 days from collection to analysis (Canister)	Ambient Temperature	< -2" Hg

All samples were analyzed within the specified holding time and canister return pressure / vacuum criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (30%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (30%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than 140% or less than 60% of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

5. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

6. Field Duplicate Sample Analysis

The field duplicate analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 35% for air 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 not greater than five times the RL, a control limit of three times the RL is applied to the difference between the duplicate sample results.

Results (in $\mu\text{g}/\text{m}^3$) for the field duplicate samples are summarized in the following table.

Sample ID / Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MH-1096_121620/ DUP-01_121620	Tetrachloroethene	8.0 U	2.4 J	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. 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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: TO-15 (Full Scan)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Canister return pressure (<-2"Hg)		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Field Duplicate Sample RPD		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Joseph C. Houser

SIGNATURE:



DATE: February 3, 2021

PEER REVIEW: Andrew Korycinski

DATE: February 3, 2021



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



**NO CORRECTIONS/QUALIFIERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**



EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1082_121720	Date/Time Analyzed:	12/23/20 06:34 PM
Lab ID:	2012569B-21A	Dilution Factor:	2.47
Date/Time Collected:	12/17/20 02:29 PM	Instrument/Filename:	msdp.i / p122313
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.6	2.4	4.9	Not Detected
1,4-Dioxane	123-91-1	2.6	5.3	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.8	2.4	4.9	Not Detected
Tetrachloroethene	127-18-4	1.4	4.2	8.4	20
trans-1,2-Dichloroethene	156-60-5	1.3	2.4	4.9	Not Detected
Trichloroethene	79-01-6	0.96	3.3	6.6	2.5 J
Vinyl Chloride	75-01-4	0.80	1.6	3.2	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	86
4-Bromofluorobenzene	460-00-4	70-130	101
Toluene-d8	2037-26-5	70-130	102

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1067_121720	Date/Time Analyzed:	12/23/20 07:03 PM
Lab ID:	2012569B-22A	Dilution Factor:	2.52
Date/Time Collected:	12/17/20 02:01 PM	Instrument/Filename:	msdp.i / p122314
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.6	2.5	5.0	Not Detected
1,4-Dioxane	123-91-1	2.7	5.4	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.8	2.5	5.0	Not Detected
Tetrachloroethene	127-18-4	1.4	4.3	8.5	22
trans-1,2-Dichloroethene	156-60-5	1.3	2.5	5.0	Not Detected
Trichloroethene	79-01-6	0.98	3.4	6.8	Not Detected
Vinyl Chloride	75-01-4	0.81	1.6	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	88
4-Bromofluorobenzene	460-00-4	70-130	101
Toluene-d8	2037-26-5	70-130	102

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1043_121720	Date/Time Analyzed:	12/23/20 07:33 PM
Lab ID:	2012569B-23A	Dilution Factor:	2.58
Date/Time Collected:	12/17/20 12:15 PM	Instrument/Filename:	msdp.i / p122315
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.7	2.6	5.1	Not Detected
1,4-Dioxane	123-91-1	2.7	5.6	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.8	2.6	5.1	Not Detected
Tetrachloroethene	127-18-4	1.4	4.4	8.8	2.9 J
trans-1,2-Dichloroethene	156-60-5	1.3	2.6	5.1	Not Detected
Trichloroethene	79-01-6	1.0	3.5	6.9	Not Detected
Vinyl Chloride	75-01-4	0.83	1.6	3.3	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	86
4-Bromofluorobenzene	460-00-4	70-130	101
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1020_121720	Date/Time Analyzed:	12/23/20 08:02 PM
Lab ID:	2012569B-24A	Dilution Factor:	2.42
Date/Time Collected:	12/17/20 11:33 AM	Instrument/Filename:	msdp.i / p122316
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.6	2.4	4.8	Not Detected
1,4-Dioxane	123-91-1	2.6	5.2	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	2.4	4.8	Not Detected
Tetrachloroethene	127-18-4	1.3	4.1	8.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	2.4	4.8	Not Detected
Trichloroethene	79-01-6	0.94	3.2	6.5	Not Detected
Vinyl Chloride	75-01-4	0.78	1.5	3.1	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	86
4-Bromofluorobenzene	460-00-4	70-130	100
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1181_121720	Date/Time Analyzed:	12/24/20 01:50 AM
Lab ID:	2012569B-25A	Dilution Factor:	2.38
Date/Time Collected:	12/17/20 10:52 AM	Instrument/Filename:	msdp.i / p122325
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.5	2.4	4.7	Not Detected
1,4-Dioxane	123-91-1	2.5	5.1	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	2.4	4.7	Not Detected
Tetrachloroethene	127-18-4	1.3	4.0	8.1	1.4 J
trans-1,2-Dichloroethene	156-60-5	1.2	2.4	4.7	Not Detected
Trichloroethene	79-01-6	0.92	3.2	6.4	Not Detected
Vinyl Chloride	75-01-4	0.77	1.5	3.0	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	87
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	102

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1123_121720	Date/Time Analyzed:	12/24/20 02:20 AM
Lab ID:	2012569B-26A	Dilution Factor:	2.47
Date/Time Collected:	12/17/20 10:27 AM	Instrument/Filename:	msdp.i / p122326
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.6	2.4	4.9	Not Detected
1,4-Dioxane	123-91-1	2.6	5.3	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.8	2.4	4.9	Not Detected
Tetrachloroethene	127-18-4	1.4	4.2	8.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.3	2.4	4.9	Not Detected
Trichloroethene	79-01-6	0.96	3.3	6.6	Not Detected
Vinyl Chloride	75-01-4	0.80	1.6	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	86
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1122_121720	Date/Time Analyzed:	12/24/20 12:52 AM
Lab ID:	2012569B-27A	Dilution Factor:	2.47
Date/Time Collected:	12/17/20 09:43 AM	Instrument/Filename:	msdp.i / p122323
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.6	2.4	4.9	Not Detected
1,4-Dioxane	123-91-1	2.6	5.3	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.8	2.4	4.9	Not Detected
Tetrachloroethene	127-18-4	1.4	4.2	8.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.3	2.4	4.9	Not Detected
Trichloroethene	79-01-6	0.96	3.3	6.6	Not Detected
Vinyl Chloride	75-01-4	0.80	1.6	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	88
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	DUP-01_121620	Date/Time Analyzed:	12/24/20 01:21 AM
Lab ID:	2012569B-28A	Dilution Factor:	2.33
Date/Time Collected:	12/16/20 12:00 AM	Instrument/Filename:	msdp.i / p122324
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.5	2.3	4.6	Not Detected
1,4-Dioxane	123-91-1	2.5	5.0	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	2.3	4.6	Not Detected
Tetrachloroethene	127-18-4	1.3	4.0	7.9	2.4 J
trans-1,2-Dichloroethene	156-60-5	1.2	2.3	4.6	Not Detected
Trichloroethene	79-01-6	0.90	3.1	6.3	Not Detected
Vinyl Chloride	75-01-4	0.75	1.5	3.0	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	86
4-Bromofluorobenzene	460-00-4	70-130	101
Toluene-d8	2037-26-5	70-130	102

Analysis Request / Canister Chain of Custody

For Laboratory Use Only

PID: _____ Workorder #: 2012569

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
 Phone (800) 985-5955; Fax (916) 351-8279

Click links below to view:

[Canister Sampling Guide](#)

[Helium Shroud Video](#)

Client: <u>Ford</u>	PID: <u>NA</u>	Special Instructions/Notes: Report ONLY: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, 1,4-Dioxane, PCE, TCE and VC. Submit results through Cadena at jim.tomalia@cadena.com. Cadena #E205162 #E20383: Level IV Reporting	Turnaround Time (Rush surcharges may apply) 5 Day Turnaround Time	
Project Name: <u>Ford LTP</u>	P.O.# <u>30050315</u>		Canister Vacuum/Pressure Lab Use Only	Requested Analyses
Project Manager: <u>Kris Hinskey</u>				
Sampler: <u>Andrew Barth, Emma White, Theresa Spoon</u>	Site Name: <u>Ford LTP</u>			

12/16/20

Lab ID	Sample Identification	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Initial (in Hg)	Final (in Hg)	Receipt	Final (psig) Gas: N ₂ / He	TO-15 (See Special Instructions/Notes)	Requested Analyses		
				Date	Time	Date	Time								
18A	MH-1255-121620	122345	24843	12/16/20	1127	12/16/20	1135	-29	-6			X			
17A	MH-1256-121620	121929	24559	12/16/20	1105	12/16/20	1115	-28.5	-7			X			
16A	MH-1113-121620	122493	24323	12/16/20	1504	12/16/20	1515	-28.5	-6.5			X			
15A	MH-1096-121620	122467	23582	12/16/20	1356	12/16/20	1409	-28.5	-5.5			X			
20A	MH-1231-121520	123297	24914	12/19/20	1131	12/19/20	1143	-29.5	-5			X			
21A	MH-1082-121720	122719	23587	12/17/20	1419	12/17/20	1429	-28.5	-7			X			
22A	MH-1067-121720	122840	24729	12/17/20	1349	12/17/20	1401	-28.5	-7			X			
23A	MH-1043-121720	122658	24108	12/17/20	1204	12/17/20	1215	-28.5	-7			X			
24A	MH-1020-121720	121913	23563	12/17/20	1122	12/17/20	1135	-28.5	-6.5			X			
25A	MH-1181-121720	40885	25251	12/17/20	1040	12/17/20	1052	-28.5	-5.5			X			
26A	MH-1123-121720	122595	24145	12/17/20	1015	12/17/20	1027	-28.5	-6.5			X			
27A	MH-1122-121720	122064	25250	12/17/20	0933	12/17/20	0943	-29	-6			X			
28A	DUP-01-121820	121899	25315	12/16/20	-	12/16/20	-	-28.5	-5.5			X			
												X			
												X			
												X			

Relinquished by: (Signature/Affiliation) <u>Theresa Spoon / Arcadis</u>	Date <u>12/18/20</u>	Time <u>1500</u>	Received by: (Signature/Affiliation) <u>Jim Tomalia</u>	Date <u>12/21/20</u>	Time <u>1105</u>
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Shipper Name: Kel B Custody Seals Intact? Yes No None GOOD

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-142241-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey



Authorized for release by:
12/30/2020 1:48:05 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.com

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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.



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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142241-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	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

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142241-1

Job ID: 240-142241-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP - Off Site

Report Number: 240-142241-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 12/19/2020 8:00 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.3° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Sample TRIP BLANK (240-142241-1) was analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The sample was analyzed on 12/24/2020.

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

VOLATILE ORGANIC COMPOUNDS

Sample MH-1122_121720 (240-142241-2) was analyzed for volatile organic compounds in accordance with EPA SW-846 Method 8260B. The sample was analyzed on 12/22/2020.

The continuing calibration verification (CCV) associated with batch 240-466627 recovered above the upper control limit for 1,4-dioxane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: MH-1122_121720 (240-142241-2) and (CCVIS 240-466627/4).

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

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142241-1

Job ID: 240-142241-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

PERCENT SOLIDS

Sample MH-1122_121720 (240-142241-2) was analyzed for percent solids in accordance with ASTM Method D2216-80. The sample was analyzed on 12/22/2020.

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

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Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142241-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B MI	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
Moisture	Percent Moisture	EPA	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142241-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-142241-1	TRIP BLANK	Water	12/17/20 00:00	12/19/20 08:00	
240-142241-2	MH-1122_121720	Solid	12/17/20 09:46	12/19/20 08:00	

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Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142241-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-142241-1

No Detections.

Client Sample ID: MH-1122_121720

Lab Sample ID: 240-142241-2

No Detections.

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This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Off Site

Job ID: 240-142241-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-142241-1

Date Collected: 12/17/20 00:00

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 17:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/24/20 17:39	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/24/20 17:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 17:39	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/24/20 17:39	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/24/20 17:39	1
1,4-Dioxane	50	U	50	13	ug/L			12/24/20 17:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		75 - 130		12/24/20 17:39	1
4-Bromofluorobenzene (Surr)	91		47 - 134		12/24/20 17:39	1
Toluene-d8 (Surr)	101		69 - 122		12/24/20 17:39	1
Dibromofluoromethane (Surr)	123		78 - 129		12/24/20 17:39	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142241-1

Client Sample ID: MH-1122_121720

Lab Sample ID: 240-142241-2

Date Collected: 12/17/20 09:46

Matrix: Solid

Date Received: 12/19/20 08:00

Percent Solids: 63.3

Method: 8260B MI - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	86	U	86	34	ug/Kg	☼	12/21/20 19:37	12/22/20 19:30	1
1,4-Dioxane	27000	U	27000	2300	ug/Kg	☼	12/21/20 19:37	12/22/20 19:30	1
cis-1,2-Dichloroethene	86	U	86	19	ug/Kg	☼	12/21/20 19:37	12/22/20 19:30	1
Tetrachloroethene	86	U	86	39	ug/Kg	☼	12/21/20 19:37	12/22/20 19:30	1
trans-1,2-Dichloroethene	86	U	86	22	ug/Kg	☼	12/21/20 19:37	12/22/20 19:30	1
Trichloroethene	86	U	86	24	ug/Kg	☼	12/21/20 19:37	12/22/20 19:30	1
Vinyl chloride	69	U	69	26	ug/Kg	☼	12/21/20 19:37	12/22/20 19:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		47 - 136	12/21/20 19:37	12/22/20 19:30	1
4-Bromofluorobenzene (Surr)	84		51 - 124	12/21/20 19:37	12/22/20 19:30	1
Dibromofluoromethane (Surr)	93		49 - 122	12/21/20 19:37	12/22/20 19:30	1
Toluene-d8 (Surr)	92		55 - 123	12/21/20 19:37	12/22/20 19:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	63.3		0.1	0.1	%			12/22/20 18:32	1
Percent Moisture	36.7		0.1	0.1	%			12/22/20 18:32	1

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142241-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA	BFB	TOL	DBFM
		(75-130)	(47-134)	(69-122)	(78-129)
240-141832-C-7 MS	Matrix Spike	141 S1+	100	69	134 S1+
240-141832-C-7 MSD	Matrix Spike Duplicate	129	112	109	126
240-142241-1	TRIP BLANK	118	91	101	123
LCS 240-466994/4	Lab Control Sample	120	103	101	128
MB 240-466994/6	Method Blank	117	97	97	118

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B MI - Volatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA	BFB	DBFM	TOL
		(47-136)	(51-124)	(49-122)	(55-123)
240-142241-2	MH-1122_121720	100	84	93	92
240-142241-2 MS	MH-1122_121720	103	94	98	98
240-142241-2 MSD	MH-1122_121720	93	88	90	90
LCS 240-466442/2-A	Lab Control Sample	89	88	86	90
LCSD 240-466442/3-A	Lab Control Sample Dup	90	89	91	92
MB 240-466442/1-A	Method Blank	96	81	89	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142241-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-466994/6
Matrix: Water
Analysis Batch: 466994

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

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 13:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/24/20 13:36	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/24/20 13:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 13:36	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/24/20 13:36	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/24/20 13:36	1
1,4-Dioxane	50	U	50	13	ug/L			12/24/20 13:36	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	117		75 - 130		12/24/20 13:36	1
4-Bromofluorobenzene (Surr)	97		47 - 134		12/24/20 13:36	1
Toluene-d8 (Surr)	97		69 - 122		12/24/20 13:36	1
Dibromofluoromethane (Surr)	118		78 - 129		12/24/20 13:36	1

Lab Sample ID: LCS 240-466994/4
Matrix: Water
Analysis Batch: 466994

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

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
1,1-Dichloroethene	10.0	10.5		ug/L		105	73 - 129
cis-1,2-Dichloroethene	10.0	10.3		ug/L		103	75 - 124
Tetrachloroethene	10.0	9.00		ug/L		90	70 - 125
trans-1,2-Dichloroethene	10.0	9.76		ug/L		98	74 - 130
Trichloroethene	10.0	9.05		ug/L		91	71 - 121
Vinyl chloride	10.0	9.04		ug/L		90	61 - 134
1,4-Dioxane	200	107		ug/L		53	10 - 172

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	120		75 - 130
4-Bromofluorobenzene (Surr)	103		47 - 134
Toluene-d8 (Surr)	101		69 - 122
Dibromofluoromethane (Surr)	128		78 - 129

Lab Sample ID: 240-141832-C-7 MS
Matrix: Water
Analysis Batch: 466994

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS MS		Unit	D	%Rec	%Rec. Limits
				Result	Qualifier				
cis-1,2-Dichloroethene	2200	F1	2000	3970		ug/L		88	68 - 121
trans-1,2-Dichloroethene	200	U F1	2000	3010	F1	ug/L		150	69 - 126
Trichloroethene	200	U	2000	1970		ug/L		98	56 - 124
Vinyl chloride	4200	F1	2000	7940	F1	ug/L		185	49 - 136

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	141	S1+	75 - 130
4-Bromofluorobenzene (Surr)	100		47 - 134
Toluene-d8 (Surr)	69		69 - 122

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142241-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-141832-C-7 MS
Matrix: Water
Analysis Batch: 466994

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
Dibromofluoromethane (Surr)	134	S1+	78 - 129

Lab Sample ID: 240-141832-C-7 MSD
Matrix: Water
Analysis Batch: 466994

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD		Unit	D	%Rec	%Rec.		RPD	Limit
				Result	Qualifier				Limits	RPD		
cis-1,2-Dichloroethene	2200	F1	2000	4690	F1	ug/L		124	68 - 121	17	35	
trans-1,2-Dichloroethene	200	U F1	2000	3120	F1	ug/L		156	69 - 126	4	35	
Trichloroethene	200	U	2000	2080		ug/L		104	56 - 124	6	35	
Vinyl chloride	4200	F1	2000	8640	E F1	ug/L		220	49 - 136	8	35	

Surrogate	MSD MSD		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	129		75 - 130
4-Bromofluorobenzene (Surr)	112		47 - 134
Toluene-d8 (Surr)	109		69 - 122
Dibromofluoromethane (Surr)	126		78 - 129

Method: 8260B MI - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-466442/1-A
Matrix: Solid
Analysis Batch: 466627

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 466442

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1-Dichloroethene	40	U	40	16	ug/Kg		12/21/20 19:37	12/22/20 18:24	1
1,4-Dioxane	13000	U	13000	1100	ug/Kg		12/21/20 19:37	12/22/20 18:24	1
cis-1,2-Dichloroethene	40	U	40	9.0	ug/Kg		12/21/20 19:37	12/22/20 18:24	1
Tetrachloroethene	40	U	40	18	ug/Kg		12/21/20 19:37	12/22/20 18:24	1
trans-1,2-Dichloroethene	40	U	40	10	ug/Kg		12/21/20 19:37	12/22/20 18:24	1
Trichloroethene	40	U	40	11	ug/Kg		12/21/20 19:37	12/22/20 18:24	1
Vinyl chloride	32	U	32	12	ug/Kg		12/21/20 19:37	12/22/20 18:24	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	96		47 - 136	12/21/20 19:37	12/22/20 18:24	1
4-Bromofluorobenzene (Surr)	81		51 - 124	12/21/20 19:37	12/22/20 18:24	1
Dibromofluoromethane (Surr)	89		49 - 122	12/21/20 19:37	12/22/20 18:24	1
Toluene-d8 (Surr)	89		55 - 123	12/21/20 19:37	12/22/20 18:24	1

Lab Sample ID: LCS 240-466442/2-A
Matrix: Solid
Analysis Batch: 466627

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 466442

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
1,1-Dichloroethene	1000	1060		ug/Kg		106	48 - 140
1,4-Dioxane	20000	23400		ug/Kg		117	44 - 154
cis-1,2-Dichloroethene	1000	991		ug/Kg		99	76 - 120
Tetrachloroethene	1000	971		ug/Kg		97	75 - 124

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142241-1

Method: 8260B MI - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-466442/2-A
Matrix: Solid
Analysis Batch: 466627

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 466442

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
trans-1,2-Dichloroethene	1000	1050		ug/Kg		105	74 - 125
Trichloroethene	1000	970		ug/Kg		97	75 - 123
Vinyl chloride	1000	923		ug/Kg		92	39 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	89		47 - 136
4-Bromofluorobenzene (Surr)	88		51 - 124
Dibromofluoromethane (Surr)	86		49 - 122
Toluene-d8 (Surr)	90		55 - 123

Lab Sample ID: LCSD 240-466442/3-A
Matrix: Solid
Analysis Batch: 466627

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 466442

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
1,1-Dichloroethene	1000	1080		ug/Kg		108	48 - 140	3	40
1,4-Dioxane	20000	24400		ug/Kg		122	44 - 154	4	40
cis-1,2-Dichloroethene	1000	1020		ug/Kg		102	76 - 120	3	40
Tetrachloroethene	1000	986		ug/Kg		99	75 - 124	1	40
trans-1,2-Dichloroethene	1000	1070		ug/Kg		107	74 - 125	2	40
Trichloroethene	1000	958		ug/Kg		96	75 - 123	1	40
Vinyl chloride	1000	965		ug/Kg		96	39 - 140	4	40

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	90		47 - 136
4-Bromofluorobenzene (Surr)	89		51 - 124
Dibromofluoromethane (Surr)	91		49 - 122
Toluene-d8 (Surr)	92		55 - 123

Lab Sample ID: 240-142241-2 MS
Matrix: Solid
Analysis Batch: 466627

Client Sample ID: MH-1122_121720
Prep Type: Total/NA
Prep Batch: 466442

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	86	U	1550	1760		ug/Kg	☼	114	20 - 150
1,4-Dioxane	27000	U	31000	45800		ug/Kg	☼	148	48 - 149
cis-1,2-Dichloroethene	86	U	1550	1740		ug/Kg	☼	112	35 - 130
Tetrachloroethene	86	U	1550	1590		ug/Kg	☼	103	13 - 144
trans-1,2-Dichloroethene	86	U	1550	1810		ug/Kg	☼	117	31 - 138
Trichloroethene	86	U	1550	1630		ug/Kg	☼	105	10 - 162
Vinyl chloride	69	U	1550	1560		ug/Kg	☼	101	15 - 150

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	103		47 - 136
4-Bromofluorobenzene (Surr)	94		51 - 124
Dibromofluoromethane (Surr)	98		49 - 122
Toluene-d8 (Surr)	98		55 - 123

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142241-1

Method: 8260B MI - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-142241-2 MSD

Matrix: Solid

Analysis Batch: 466627

Client Sample ID: MH-1122_121720

Prep Type: Total/NA

Prep Batch: 466442

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
1,1-Dichloroethene	86	U	1570	1620		ug/Kg	☼	103	20 - 150	8	40
1,4-Dioxane	27000	U	31400	40500		ug/Kg	☼	129	48 - 149	12	40
cis-1,2-Dichloroethene	86	U	1570	1610		ug/Kg	☼	103	35 - 130	7	40
Tetrachloroethene	86	U	1570	1480		ug/Kg	☼	94	13 - 144	7	40
trans-1,2-Dichloroethene	86	U	1570	1680		ug/Kg	☼	107	31 - 138	8	40
Trichloroethene	86	U	1570	1520		ug/Kg	☼	97	10 - 162	7	40
Vinyl chloride	69	U	1570	1430		ug/Kg	☼	91	15 - 150	9	40
MSD MSD											
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	93		47 - 136								
4-Bromofluorobenzene (Surr)	88		51 - 124								
Dibromofluoromethane (Surr)	90		49 - 122								
Toluene-d8 (Surr)	90		55 - 123								

Method: Moisture - Percent Moisture

Lab Sample ID: 240-142257-A-11 DU

Matrix: Solid

Analysis Batch: 466650

Client Sample ID: Duplicate

Prep Type: Total/NA

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Percent Solids	80.4		79.9		%		0.7	20
Percent Moisture	19.6		20.1		%		3	20

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142241-1

GC/MS VOA

Prep Batch: 466442

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-142241-2	MH-1122_121720	Total/NA	Solid	5030B	
MB 240-466442/1-A	Method Blank	Total/NA	Solid	5030B	
LCS 240-466442/2-A	Lab Control Sample	Total/NA	Solid	5030B	
LCSD 240-466442/3-A	Lab Control Sample Dup	Total/NA	Solid	5030B	
240-142241-2 MS	MH-1122_121720	Total/NA	Solid	5030B	
240-142241-2 MSD	MH-1122_121720	Total/NA	Solid	5030B	

Analysis Batch: 466627

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-142241-2	MH-1122_121720	Total/NA	Solid	8260B MI	466442
MB 240-466442/1-A	Method Blank	Total/NA	Solid	8260B MI	466442
LCS 240-466442/2-A	Lab Control Sample	Total/NA	Solid	8260B MI	466442
LCSD 240-466442/3-A	Lab Control Sample Dup	Total/NA	Solid	8260B MI	466442
240-142241-2 MS	MH-1122_121720	Total/NA	Solid	8260B MI	466442
240-142241-2 MSD	MH-1122_121720	Total/NA	Solid	8260B MI	466442

Analysis Batch: 466994

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-142241-1	TRIP BLANK	Total/NA	Water	8260B	
MB 240-466994/6	Method Blank	Total/NA	Water	8260B	
LCS 240-466994/4	Lab Control Sample	Total/NA	Water	8260B	
240-141832-C-7 MS	Matrix Spike	Total/NA	Water	8260B	
240-141832-C-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

General Chemistry

Analysis Batch: 466650

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-142241-2	MH-1122_121720	Total/NA	Solid	Moisture	
240-142257-A-11 DU	Duplicate	Total/NA	Solid	Moisture	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142241-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-142241-1

Date Collected: 12/17/20 00:00

Matrix: Water

Date Received: 12/19/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	466994	12/24/20 17:39	LEE	TAL CAN

Client Sample ID: MH-1122_121720

Lab Sample ID: 240-142241-2

Date Collected: 12/17/20 09:46

Matrix: Solid

Date Received: 12/19/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	466650	12/22/20 18:32	AJ	TAL CAN

Client Sample ID: MH-1122_121720

Lab Sample ID: 240-142241-2

Date Collected: 12/17/20 09:46

Matrix: Solid

Date Received: 12/19/20 08:00

Percent Solids: 63.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			466442	12/21/20 19:37	LAM	TAL CAN
Total/NA	Analysis	8260B MI		1	466627	12/22/20 19:30	TJL1	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142241-1

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-21
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20

Canton Facility
 Client ARCADIS Site Name _____ Cooler unpacked by: Yanny Ruge
 Cooler Received on 12-19-20 Opened on 12-21-20
 FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box _____ Client Cooler _____ Box _____ Other _____
 Packing material used: Bubble Wrap Foam _____ Plastic Bag _____ None _____ Other _____
 COOLANT: Wet Ice Blue Ice _____ Dry Ice _____ Water _____ None _____

1. Cooler temperature upon receipt See Multiple Cooler Form
 IR GUN# IR-11 (CF +0.9 °C) Observed Cooler Temp. 0.4 °C Corrected Cooler Temp. 1.3 °C
 IR GUN #IR-12 (CF +0.5 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
 -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? Yes No
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
- If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC907861
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? Larger than this Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 59702 Yes No
17. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____
 Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page Samples processed by: _____

19. SAMPLE CONDITION
 Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container.
 Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION
 Sample(s) _____ were further preserved in the laboratory.
 Time preserved: _____ Preservative(s) added/Lot number(s): _____
 VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT



December 30, 2020

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2020 Utility Corridor Evaluation Vapor Testing
Project number: 30050315.701.04
Event Specific Scope of Work References: Sample COC
Laboratory: TestAmerica - North Canton
Laboratory submittal: 142241-1
Sample date: 2020-12-17
Report received by CADENA: 2020-12-30
Initial Data Verification completed by CADENA: 2020-12-30
Number of Samples:2
Sample Matrices:Soil/water
Test Categories:GCMS VOC

Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD and surrogate recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

1,4-DIOXANE QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, LCS/LCD RPD, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

Reportable Results Only

CADENA Project ID: E205162

Laboratory: TestAmerica - North Canton

Laboratory Submittal: 142241-1

Sample Name: TRIP BLANK
Lab Sample ID: 2401422411
Sample Date: 12/17/2020

MH-1122_121720
2401422412
12/17/2020

Analyte	Cas No.	Report		Units	Valid Qualifier	Report		Units	Valid Qualifier	
		Result	Limit			Result	Limit			
GC/MS VOC										
<u>OSW-8260B</u>										
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	86	ug/kg	---	
1,4-Dioxane	123-91-1	ND	50	ug/l	---	ND	27000	ug/kg	---	
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	86	ug/kg	---	
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	86	ug/kg	---	
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	86	ug/kg	---	
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	86	ug/kg	---	
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	69	ug/kg	---	

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-142241-1

CADENA Verification Report: 2020-12-30

Analyses Performed By:
TestAmerica
Edison, New Jersey

Report #39941R
Review Level: Tier III
Project: 30050315.701.02



DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-142241-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						VOC (Full Scan)	VOC (SIM)	MISC
240-142241-1	TRIP BLANK	240-142241-1	Water	12/17/2020		X		
	MH-1122_121720	240-142241-2	Solid	12/17/2020		X	X	

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260B and 8260B SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) 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 8260B	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl
	Soil	14 days from collection to analysis	Cool to < 6 °C

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample Locations	Initial/Continuing	Compound	Criteria
MH-1122_121720	CCV %D	1,4-Dioxane	+52.2%
TRIP BLANK	CCV %D	1,4-Dioxane	-29.1%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

DATA REVIEW

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01 ¹	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01 ¹	Non-detect	No Action
		Detect	
Initial Calibration	%RSD > 15% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD >90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D >90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

¹ RRF of 0.01 only applies to compounds which are typically poor responding compounds (i.e., ketones, 1,4-dioxane, etc.)

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within 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 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.

A field duplicate analysis was not performed on a sample within this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. 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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260B/8260B-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:



DATE: January 15, 2021

PEER REVIEW: Joseph C. Houser

DATE: January 19, 2021



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Off Site

Job ID: 240-142241-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-142241-1

Date Collected: 12/17/20 00:00

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 17:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/24/20 17:39	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/24/20 17:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 17:39	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/24/20 17:39	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/24/20 17:39	1
1,4-Dioxane	50	U J	50	13	ug/L			12/24/20 17:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		75 - 130		12/24/20 17:39	1
4-Bromofluorobenzene (Surr)	91		47 - 134		12/24/20 17:39	1
Toluene-d8 (Surr)	101		69 - 122		12/24/20 17:39	1
Dibromofluoromethane (Surr)	123		78 - 129		12/24/20 17:39	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142241-1

Client Sample ID: MH-1122_121720

Lab Sample ID: 240-142241-2

Date Collected: 12/17/20 09:46

Matrix: Solid

Date Received: 12/19/20 08:00

Percent Solids: 63.3

Method: 8260B MI - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	86	U	86	34	ug/Kg	☼	12/21/20 19:37	12/22/20 19:30	1
1,4-Dioxane	27000	U	27000	2300	ug/Kg	☼	12/21/20 19:37	12/22/20 19:30	1
cis-1,2-Dichloroethene	86	U	86	19	ug/Kg	☼	12/21/20 19:37	12/22/20 19:30	1
Tetrachloroethene	86	U	86	39	ug/Kg	☼	12/21/20 19:37	12/22/20 19:30	1
trans-1,2-Dichloroethene	86	U	86	22	ug/Kg	☼	12/21/20 19:37	12/22/20 19:30	1
Trichloroethene	86	U	86	24	ug/Kg	☼	12/21/20 19:37	12/22/20 19:30	1
Vinyl chloride	69	U	69	26	ug/Kg	☼	12/21/20 19:37	12/22/20 19:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		47 - 136	12/21/20 19:37	12/22/20 19:30	1
4-Bromofluorobenzene (Surr)	84		51 - 124	12/21/20 19:37	12/22/20 19:30	1
Dibromofluoromethane (Surr)	93		49 - 122	12/21/20 19:37	12/22/20 19:30	1
Toluene-d8 (Surr)	92		55 - 123	12/21/20 19:37	12/22/20 19:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	63.3		0.1	0.1	%			12/22/20 18:32	1
Percent Moisture	36.7		0.1	0.1	%			12/22/20 18:32	1

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-142242-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey



Authorized for release by:
12/30/2020 1:50:54 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@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.



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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142242-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
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.
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

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

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142242-1

Job ID: 240-142242-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP - Off Site

Report Number: 240-142242-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 12/19/2020 8:00 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.3° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples MH-1171_121520 (240-142242-1), MH-1041_121520 (240-142242-2) and MH-1066_121520 (240-142242-3) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 12/24/2020.

1,2-Dichloroethane-d4 (Surr) and Dibromofluoromethane (Surr) failed the surrogate recovery criteria high for MH-1041_121520 (240-142242-2).

1,2-Dichloroethane-d4 (Surr) and Dibromofluoromethane (Surr) failed the surrogate recovery criteria high for MH-1066_121520 (240-142242-3). Refer to the QC report for details.

Surrogate recovery for the following samples were outside the upper control limit: MH-1041_121520 (240-142242-2) and MH-1066_121520 (240-142242-3). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

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

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142242-1

Job ID: 240-142242-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Samples MH-1171_121520 (240-142242-1), MH-1041_121520 (240-142242-2) and MH-1066_121520 (240-142242-3) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 12/22/2020.

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

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Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142242-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

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Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142242-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-142242-1	MH-1171_121520	Water	12/15/20 15:20	12/19/20 08:00	
240-142242-2	MH-1041_121520	Water	12/15/20 13:00	12/19/20 08:00	
240-142242-3	MH-1066_121520	Water	12/15/20 13:30	12/19/20 08:00	

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Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142242-1

Client Sample ID: MH-1171_121520

Lab Sample ID: 240-142242-1

No Detections.

Client Sample ID: MH-1041_121520

Lab Sample ID: 240-142242-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.4	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA

Client Sample ID: MH-1066_121520

Lab Sample ID: 240-142242-3

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton



Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Off Site

Job ID: 240-142242-1

Client Sample ID: MH-1171_121520

Lab Sample ID: 240-142242-1

Date Collected: 12/15/20 15:20

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			12/22/20 17:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		70 - 133		12/22/20 17:04	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 18:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/24/20 18:01	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/24/20 18:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 18:01	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/24/20 18:01	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/24/20 18:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	126		75 - 130		12/24/20 18:01	1
4-Bromofluorobenzene (Surr)	100		47 - 134		12/24/20 18:01	1
Toluene-d8 (Surr)	102		69 - 122		12/24/20 18:01	1
Dibromofluoromethane (Surr)	126		78 - 129		12/24/20 18:01	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142242-1

Client Sample ID: MH-1041_121520

Lab Sample ID: 240-142242-2

Date Collected: 12/15/20 13:00

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.4	J	2.0	0.86	ug/L			12/22/20 17:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		70 - 133		12/22/20 17:29	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 18:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/24/20 18:24	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/24/20 18:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 18:24	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/24/20 18:24	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/24/20 18:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	134	S1+	75 - 130		12/24/20 18:24	1
4-Bromofluorobenzene (Surr)	100		47 - 134		12/24/20 18:24	1
Toluene-d8 (Surr)	107		69 - 122		12/24/20 18:24	1
Dibromofluoromethane (Surr)	131	S1+	78 - 129		12/24/20 18:24	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142242-1

Client Sample ID: MH-1066_121520

Lab Sample ID: 240-142242-3

Date Collected: 12/15/20 13:30

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			12/22/20 17:55	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		70 - 133					12/22/20 17:55	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 18:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/24/20 18:46	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/24/20 18:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 18:46	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/24/20 18:46	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/24/20 18:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	131	S1+	75 - 130					12/24/20 18:46	1
4-Bromofluorobenzene (Surr)	98		47 - 134					12/24/20 18:46	1
Toluene-d8 (Surr)	104		69 - 122					12/24/20 18:46	1
Dibromofluoromethane (Surr)	132	S1+	78 - 129					12/24/20 18:46	1

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142242-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA	BFB	TOL	DBFM
		(75-130)	(47-134)	(69-122)	(78-129)
240-141832-C-7 MS	Matrix Spike	141 S1+	100	69	134 S1+
240-141832-C-7 MSD	Matrix Spike Duplicate	129	112	109	126
240-142242-1	MH-1171_121520	126	100	102	126
240-142242-2	MH-1041_121520	134 S1+	100	107	131 S1+
240-142242-3	MH-1066_121520	131 S1+	98	104	132 S1+
LCS 240-466994/4	Lab Control Sample	120	103	101	128
MB 240-466994/6	Method Blank	117	97	97	118

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA
		(70-133)
240-142242-1	MH-1171_121520	88
240-142242-2	MH-1041_121520	89
240-142242-3	MH-1066_121520	88
240-142242-3 MS	MH-1066_121520	87
240-142242-3 MSD	MH-1066_121520	85
LCS 240-466610/4	Lab Control Sample	88
MB 240-466610/5	Method Blank	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142242-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-466994/6
Matrix: Water
Analysis Batch: 466994

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 13:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/24/20 13:36	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/24/20 13:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 13:36	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/24/20 13:36	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/24/20 13:36	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	117		75 - 130		12/24/20 13:36	1
4-Bromofluorobenzene (Surr)	97		47 - 134		12/24/20 13:36	1
Toluene-d8 (Surr)	97		69 - 122		12/24/20 13:36	1
Dibromofluoromethane (Surr)	118		78 - 129		12/24/20 13:36	1

Lab Sample ID: LCS 240-466994/4
Matrix: Water
Analysis Batch: 466994

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	10.5		ug/L		105	73 - 129
cis-1,2-Dichloroethene	10.0	10.3		ug/L		103	75 - 124
Tetrachloroethene	10.0	9.00		ug/L		90	70 - 125
trans-1,2-Dichloroethene	10.0	9.76		ug/L		98	74 - 130
Trichloroethene	10.0	9.05		ug/L		91	71 - 121
Vinyl chloride	10.0	9.04		ug/L		90	61 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	120		75 - 130
4-Bromofluorobenzene (Surr)	103		47 - 134
Toluene-d8 (Surr)	101		69 - 122
Dibromofluoromethane (Surr)	128		78 - 129

Lab Sample ID: 240-141832-C-7 MS
Matrix: Water
Analysis Batch: 466994

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	2200	F1	2000	3970		ug/L		88	68 - 121
trans-1,2-Dichloroethene	200	U F1	2000	3010	F1	ug/L		150	69 - 126
Trichloroethene	200	U	2000	1970		ug/L		98	56 - 124
Vinyl chloride	4200	F1	2000	7940	F1	ug/L		185	49 - 136

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	141	S1+	75 - 130
4-Bromofluorobenzene (Surr)	100		47 - 134
Toluene-d8 (Surr)	69		69 - 122
Dibromofluoromethane (Surr)	134	S1+	78 - 129

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142242-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-141832-C-7 MSD
Matrix: Water
Analysis Batch: 466994

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	2200	F1	2000	4690	F1	ug/L		124	68 - 121	17	35
trans-1,2-Dichloroethene	200	U F1	2000	3120	F1	ug/L		156	69 - 126	4	35
Trichloroethene	200	U	2000	2080		ug/L		104	56 - 124	6	35
Vinyl chloride	4200	F1	2000	8640	E F1	ug/L		220	49 - 136	8	35

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	129		75 - 130
4-Bromofluorobenzene (Surr)	112		47 - 134
Toluene-d8 (Surr)	109		69 - 122
Dibromofluoromethane (Surr)	126		78 - 129

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-466610/5
Matrix: Water
Analysis Batch: 466610

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			12/22/20 14:07	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		70 - 133		12/22/20 14:07	1

Lab Sample ID: LCS 240-466610/4
Matrix: Water
Analysis Batch: 466610

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	10.5		ug/L		105	80 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	88		70 - 133

Lab Sample ID: 240-142242-3 MS
Matrix: Water
Analysis Batch: 466610

Client Sample ID: MH-1066_121520
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	46 - 170

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	87		70 - 133

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Off Site

Job ID: 240-142242-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-142242-3 MSD
Matrix: Water
Analysis Batch: 466610

Client Sample ID: MH-1066_121520
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	46 - 170	3	26
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	85		70 - 133								

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QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142242-1

GC/MS VOA

Analysis Batch: 466610

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-142242-1	MH-1171_121520	Total/NA	Water	8260B SIM	
240-142242-2	MH-1041_121520	Total/NA	Water	8260B SIM	
240-142242-3	MH-1066_121520	Total/NA	Water	8260B SIM	
MB 240-466610/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-466610/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-142242-3 MS	MH-1066_121520	Total/NA	Water	8260B SIM	
240-142242-3 MSD	MH-1066_121520	Total/NA	Water	8260B SIM	

Analysis Batch: 466994

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-142242-1	MH-1171_121520	Total/NA	Water	8260B	
240-142242-2	MH-1041_121520	Total/NA	Water	8260B	
240-142242-3	MH-1066_121520	Total/NA	Water	8260B	
MB 240-466994/6	Method Blank	Total/NA	Water	8260B	
LCS 240-466994/4	Lab Control Sample	Total/NA	Water	8260B	
240-141832-C-7 MS	Matrix Spike	Total/NA	Water	8260B	
240-141832-C-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142242-1

Client Sample ID: MH-1171_121520

Lab Sample ID: 240-142242-1

Date Collected: 12/15/20 15:20

Matrix: Water

Date Received: 12/19/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	466994	12/24/20 18:01	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	466610	12/22/20 17:04	SAM	TAL CAN

Client Sample ID: MH-1041_121520

Lab Sample ID: 240-142242-2

Date Collected: 12/15/20 13:00

Matrix: Water

Date Received: 12/19/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	466994	12/24/20 18:24	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	466610	12/22/20 17:29	SAM	TAL CAN

Client Sample ID: MH-1066_121520

Lab Sample ID: 240-142242-3

Date Collected: 12/15/20 13:30

Matrix: Water

Date Received: 12/19/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	466994	12/24/20 18:46	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	466610	12/22/20 17:55	SAM	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Off Site

Job ID: 240-142242-1

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-21
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20



Canton Facility _____
 Client ARCADIS Site Name _____
 Cooler Received on 12-19-20 Opened on 12-21-20 Cooler unpacked by: Yanny Ruge
 FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box _____ Client Cooler _____ Box _____ Other _____
 Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None
 1. Cooler temperature upon receipt _____ See Multiple Cooler Form
 IR GUN# IR-11 (CF +0.9°C) Observed Cooler Temp. 0.4°C Corrected Cooler Temp. 1.3°C
 IR GUN #IR-12 (CF +0.5°C) Observed Cooler Temp. _____°C Corrected Cooler Temp. _____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
 -Were tamper/custody seals intact and uncompromised? Yes No NA
 3. Shippers' packing slip attached to the cooler(s)? Yes No
 4. Did custody papers accompany the sample(s)? Yes No
 5. Were the custody papers relinquished & signed in the appropriate place? Yes No
 6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
 7. Did all bottles arrive in good condition (Unbroken)? Yes No
 8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? TR-12-21-20 Yes No
 9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? Yes No
 10. Were correct bottle(s) used for the test(s) indicated? Yes No
 11. Sufficient quantity received to perform indicated analyses? Yes No
 12. Are these work share samples and all listed on the COC? Yes No
- If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC907861
 14. Were VOAs on the COC? Yes No
 15. Were air bubbles >6 mm in any VOA vials? ● Larger than this. Yes No NA
 16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
 17. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____
 Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page Samples processed by: _____
NO Trip blank need for this job

19. SAMPLE CONDITION
 Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container.
 Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION
 Sample(s) _____ were further preserved in the laboratory.
 Time preserved: _____ Preservative(s) added/Lot number(s): _____
 VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT



December 30, 2020

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2020 Utility Corridor Evaluation Vapor Testing
Project number: 30050315.701.04
Event Specific Scope of Work References: Sample COC
Laboratory: TestAmerica - North Canton
Laboratory submittal: 142242-1
Sample date: 2020-12-15
Report received by CADENA: 2020-12-30
Initial Data Verification completed by CADENA: 2020-12-30
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC

Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC sample -002 and -003 surrogate recovery outliers did not result in qualification of client sample data.

GCMS VOC QC batch MS/MSD and surrogate recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

Reportable Results Only

CADENA Project ID: E205162

Laboratory: TestAmerica - North Canton

Laboratory Submittal: 142242-1

Sample Name:	MH-1171_121520	MH-1041_121520	MH-1066_121520
Lab Sample ID:	2401422421	2401422422	2401422423
Sample Date:	12/15/2020	12/15/2020	12/15/2020

Analyte	Cas No.	MH-1171_121520				MH-1041_121520				MH-1066_121520			
		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
<u>OSW-8260B</u>													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
<u>OSW-8260BBSim</u>													
1,4-Dioxane	123-91-1	ND	2.0	ug/l	---	1.4	2.0	ug/l	J	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-142242-1

CADENA Verification Report: 2020-12-30

Analyses Performed By:
TestAmerica
Edison, New Jersey

Report #39942R
Review Level: Tier III
Project: 30050315.701.02



DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-142242-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						VOC (Full Scan)	VOC (SIM)	MISC
240-142242-1	MH-1171_121520	240-142242-1	Water	12/15/2020		X		
	MH-1041_121520	240-142242-2	Water	12/15/2020		X		
	MH-1066_121520	240-142242-3	Water	12/15/2020		X		

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

Note: The Trip Blank was not received at the laboratory.

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260B and 8260B SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) 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 8260B/8260B-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl
	Soil	14 days from collection to analysis	Cool to < 6 °C

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

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 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.

A field duplicate analysis was not performed on a sample within this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. 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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260B/8260B-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:



DATE: January 15, 2021

PEER REVIEW: Joseph C. Houser

DATE: January 19, 2021



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



**NO CORRECTIONS/QUALIFIERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**



Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Off Site

Job ID: 240-142242-1

Client Sample ID: MH-1171_121520

Lab Sample ID: 240-142242-1

Date Collected: 12/15/20 15:20

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			12/22/20 17:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		70 - 133		12/22/20 17:04	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 18:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/24/20 18:01	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/24/20 18:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 18:01	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/24/20 18:01	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/24/20 18:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	126		75 - 130		12/24/20 18:01	1
4-Bromofluorobenzene (Surr)	100		47 - 134		12/24/20 18:01	1
Toluene-d8 (Surr)	102		69 - 122		12/24/20 18:01	1
Dibromofluoromethane (Surr)	126		78 - 129		12/24/20 18:01	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142242-1

Client Sample ID: MH-1041_121520

Lab Sample ID: 240-142242-2

Date Collected: 12/15/20 13:00

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.4	J	2.0	0.86	ug/L			12/22/20 17:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		70 - 133		12/22/20 17:29	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 18:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/24/20 18:24	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/24/20 18:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 18:24	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/24/20 18:24	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/24/20 18:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	134	S1+	75 - 130		12/24/20 18:24	1
4-Bromofluorobenzene (Surr)	100		47 - 134		12/24/20 18:24	1
Toluene-d8 (Surr)	107		69 - 122		12/24/20 18:24	1
Dibromofluoromethane (Surr)	131	S1+	78 - 129		12/24/20 18:24	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142242-1

Client Sample ID: MH-1066_121520

Lab Sample ID: 240-142242-3

Date Collected: 12/15/20 13:30

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			12/22/20 17:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		70 - 133		12/22/20 17:55	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 18:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/24/20 18:46	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/24/20 18:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 18:46	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/24/20 18:46	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/24/20 18:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	131	S1+	75 - 130		12/24/20 18:46	1
4-Bromofluorobenzene (Surr)	98		47 - 134		12/24/20 18:46	1
Toluene-d8 (Surr)	104		69 - 122		12/24/20 18:46	1
Dibromofluoromethane (Surr)	132	S1+	78 - 129		12/24/20 18:46	1

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-142243-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey



Authorized for release by:
12/31/2020 10:20:04 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.com

LINKS

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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.



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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	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

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Job ID: 240-142243-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP - Off Site

Report Number: 240-142243-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 12/19/2020 8:00 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.3° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples TRIP BLANK (240-142243-1), MH-1181_121720 (240-142243-2), MH-1067_121720 (240-142243-3), MH-1020_121720 (240-142243-4) and MH-1043_121720 (240-142243-5) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 12/24/2020 and 12/29/2020.

Samples MH-1067_121720 (240-142243-3)[5X], MH-1020_121720 (240-142243-4)[3.33X] and MH-1043_121720 (240-142243-5)[2X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The following volatiles samples were diluted due to foaming at the time of purging during the original sample analysis: MH-1067_121720 (240-142243-3), MH-1020_121720 (240-142243-4) and MH-1043_121720 (240-142243-5). Elevated reporting limits (RLs) are provided.

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

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Samples MH-1181_121720 (240-142243-2), MH-1067_121720 (240-142243-3), MH-1020_121720 (240-142243-4) and MH-1043_121720 (240-142243-5) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Job ID: 240-142243-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

8260B SIM. The samples were analyzed on 12/23/2020.

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

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Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

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Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-142243-1	TRIP BLANK	Water	12/17/20 00:00	12/19/20 08:00	
240-142243-2	MH-1181_121720	Water	12/17/20 11:00	12/19/20 08:00	
240-142243-3	MH-1067_121720	Water	12/17/20 14:05	12/19/20 08:00	
240-142243-4	MH-1020_121720	Water	12/17/20 11:35	12/19/20 08:00	
240-142243-5	MH-1043_121720	Water	12/17/20 12:20	12/19/20 08:00	

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Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-142243-1

No Detections.

Client Sample ID: MH-1181_121720

Lab Sample ID: 240-142243-2

No Detections.

Client Sample ID: MH-1067_121720

Lab Sample ID: 240-142243-3

No Detections.

Client Sample ID: MH-1020_121720

Lab Sample ID: 240-142243-4

No Detections.

Client Sample ID: MH-1043_121720

Lab Sample ID: 240-142243-5

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton



Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-142243-1

Date Collected: 12/17/20 00:00

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 19:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/24/20 19:08	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/24/20 19:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 19:08	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/24/20 19:08	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/24/20 19:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		75 - 130		12/24/20 19:08	1
4-Bromofluorobenzene (Surr)	96		47 - 134		12/24/20 19:08	1
Toluene-d8 (Surr)	99		69 - 122		12/24/20 19:08	1
Dibromofluoromethane (Surr)	124		78 - 129		12/24/20 19:08	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Client Sample ID: MH-1181_121720

Lab Sample ID: 240-142243-2

Date Collected: 12/17/20 11:00

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			12/23/20 13:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		70 - 133		12/23/20 13:40	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 19:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/24/20 19:31	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/24/20 19:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 19:31	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/24/20 19:31	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/24/20 19:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	126		75 - 130		12/24/20 19:31	1
4-Bromofluorobenzene (Surr)	102		47 - 134		12/24/20 19:31	1
Toluene-d8 (Surr)	103		69 - 122		12/24/20 19:31	1
Dibromofluoromethane (Surr)	126		78 - 129		12/24/20 19:31	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Client Sample ID: MH-1067_121720

Lab Sample ID: 240-142243-3

Date Collected: 12/17/20 14:05

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			12/23/20 14:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		70 - 133		12/23/20 14:05	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	0.95	ug/L			12/29/20 18:49	5
cis-1,2-Dichloroethene	5.0	U	5.0	0.80	ug/L			12/29/20 18:49	5
Tetrachloroethene	5.0	U	5.0	0.75	ug/L			12/29/20 18:49	5
trans-1,2-Dichloroethene	5.0	U	5.0	0.95	ug/L			12/29/20 18:49	5
Trichloroethene	5.0	U	5.0	0.50	ug/L			12/29/20 18:49	5
Vinyl chloride	5.0	U	5.0	1.0	ug/L			12/29/20 18:49	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		75 - 130		12/29/20 18:49	5
4-Bromofluorobenzene (Surr)	104		47 - 134		12/29/20 18:49	5
Toluene-d8 (Surr)	82		69 - 122		12/29/20 18:49	5
Dibromofluoromethane (Surr)	95		78 - 129		12/29/20 18:49	5

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Client Sample ID: MH-1020_121720

Lab Sample ID: 240-142243-4

Date Collected: 12/17/20 11:35

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			12/23/20 16:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		70 - 133					12/23/20 16:37	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	3.3	U	3.3	0.63	ug/L			12/29/20 19:14	3.33
cis-1,2-Dichloroethene	3.3	U	3.3	0.53	ug/L			12/29/20 19:14	3.33
Tetrachloroethene	3.3	U	3.3	0.50	ug/L			12/29/20 19:14	3.33
trans-1,2-Dichloroethene	3.3	U	3.3	0.63	ug/L			12/29/20 19:14	3.33
Trichloroethene	3.3	U	3.3	0.33	ug/L			12/29/20 19:14	3.33
Vinyl chloride	3.3	U	3.3	0.67	ug/L			12/29/20 19:14	3.33
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		75 - 130					12/29/20 19:14	3.33
4-Bromofluorobenzene (Surr)	103		47 - 134					12/29/20 19:14	3.33
Toluene-d8 (Surr)	83		69 - 122					12/29/20 19:14	3.33
Dibromofluoromethane (Surr)	90		78 - 129					12/29/20 19:14	3.33

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Client Sample ID: MH-1043_121720

Lab Sample ID: 240-142243-5

Date Collected: 12/17/20 12:20

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			12/23/20 15:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		70 - 133					12/23/20 15:46	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	2.0	U	2.0	0.38	ug/L			12/29/20 19:39	2
cis-1,2-Dichloroethene	2.0	U	2.0	0.32	ug/L			12/29/20 19:39	2
Tetrachloroethene	2.0	U	2.0	0.30	ug/L			12/29/20 19:39	2
trans-1,2-Dichloroethene	2.0	U	2.0	0.38	ug/L			12/29/20 19:39	2
Trichloroethene	2.0	U	2.0	0.20	ug/L			12/29/20 19:39	2
Vinyl chloride	2.0	U	2.0	0.40	ug/L			12/29/20 19:39	2
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		75 - 130					12/29/20 19:39	2
4-Bromofluorobenzene (Surr)	104		47 - 134					12/29/20 19:39	2
Toluene-d8 (Surr)	82		69 - 122					12/29/20 19:39	2
Dibromofluoromethane (Surr)	87		78 - 129					12/29/20 19:39	2

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (75-130)	BFB (47-134)	TOL (69-122)	DBFM (78-129)
240-141832-C-7 MS	Matrix Spike	141 S1+	100	69	134 S1+
240-141832-C-7 MSD	Matrix Spike Duplicate	129	112	109	126
240-142243-1	TRIP BLANK	120	96	99	124
240-142243-2	MH-1181_121720	126	102	103	126
240-142243-3	MH-1067_121720	93	104	82	95
240-142243-4	MH-1020_121720	91	103	83	90
240-142243-5	MH-1043_121720	89	104	82	87
240-142387-D-2 MS	Matrix Spike	93	111	82	88
240-142387-E-2 MSD	Matrix Spike Duplicate	89	112	79	86
LCS 240-466994/4	Lab Control Sample	120	103	101	128
LCS 240-467344/4	Lab Control Sample	89	117	82	89
MB 240-466994/6	Method Blank	117	97	97	118
MB 240-467344/7	Method Blank	95	102	78	91

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA
		(70-133)
240-142243-2	MH-1181_121720	91
240-142243-3	MH-1067_121720	86
240-142243-3 MS	MH-1067_121720	90
240-142243-3 MSD	MH-1067_121720	92
240-142243-4	MH-1020_121720	89
240-142243-5	MH-1043_121720	91
LCS 240-466760/4	Lab Control Sample	90
MB 240-466760/5	Method Blank	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-466994/6
Matrix: Water
Analysis Batch: 466994

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

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 13:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/24/20 13:36	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/24/20 13:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 13:36	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/24/20 13:36	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/24/20 13:36	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	117		75 - 130		12/24/20 13:36	1
4-Bromofluorobenzene (Surr)	97		47 - 134		12/24/20 13:36	1
Toluene-d8 (Surr)	97		69 - 122		12/24/20 13:36	1
Dibromofluoromethane (Surr)	118		78 - 129		12/24/20 13:36	1

Lab Sample ID: LCS 240-466994/4
Matrix: Water
Analysis Batch: 466994

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

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
1,1-Dichloroethene	10.0	10.5		ug/L		105	73 - 129
cis-1,2-Dichloroethene	10.0	10.3		ug/L		103	75 - 124
Tetrachloroethene	10.0	9.00		ug/L		90	70 - 125
trans-1,2-Dichloroethene	10.0	9.76		ug/L		98	74 - 130
Trichloroethene	10.0	9.05		ug/L		91	71 - 121
Vinyl chloride	10.0	9.04		ug/L		90	61 - 134

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	120		75 - 130
4-Bromofluorobenzene (Surr)	103		47 - 134
Toluene-d8 (Surr)	101		69 - 122
Dibromofluoromethane (Surr)	128		78 - 129

Lab Sample ID: 240-141832-C-7 MS
Matrix: Water
Analysis Batch: 466994

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Sample		Spike Added	MS MS		Unit	D	%Rec	%Rec. Limits
	Result	Qualifier		Result	Qualifier				
cis-1,2-Dichloroethene	2200	F1	2000	3970		ug/L		88	68 - 121
trans-1,2-Dichloroethene	200	U F1	2000	3010	F1	ug/L		150	69 - 126
Trichloroethene	200	U	2000	1970		ug/L		98	56 - 124
Vinyl chloride	4200	F1	2000	7940	F1	ug/L		185	49 - 136

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	141	S1+	75 - 130
4-Bromofluorobenzene (Surr)	100		47 - 134
Toluene-d8 (Surr)	69		69 - 122
Dibromofluoromethane (Surr)	134	S1+	78 - 129

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-141832-C-7 MSD
Matrix: Water
Analysis Batch: 466994

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	2200	F1	2000	4690	F1	ug/L		124	68 - 121	17	35
trans-1,2-Dichloroethene	200	U F1	2000	3120	F1	ug/L		156	69 - 126	4	35
Trichloroethene	200	U	2000	2080		ug/L		104	56 - 124	6	35
Vinyl chloride	4200	F1	2000	8640	E F1	ug/L		220	49 - 136	8	35

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	129		75 - 130
4-Bromofluorobenzene (Surr)	112		47 - 134
Toluene-d8 (Surr)	109		69 - 122
Dibromofluoromethane (Surr)	126		78 - 129

Lab Sample ID: MB 240-467344/7
Matrix: Water
Analysis Batch: 467344

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/29/20 14:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/29/20 14:14	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/29/20 14:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/29/20 14:14	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/29/20 14:14	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/29/20 14:14	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		75 - 130		12/29/20 14:14	1
4-Bromofluorobenzene (Surr)	102		47 - 134		12/29/20 14:14	1
Toluene-d8 (Surr)	78		69 - 122		12/29/20 14:14	1
Dibromofluoromethane (Surr)	91		78 - 129		12/29/20 14:14	1

Lab Sample ID: LCS 240-467344/4
Matrix: Water
Analysis Batch: 467344

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	9.08		ug/L		91	73 - 129
cis-1,2-Dichloroethene	10.0	9.50		ug/L		95	75 - 124
Tetrachloroethene	10.0	9.75		ug/L		98	70 - 125
trans-1,2-Dichloroethene	10.0	9.02		ug/L		90	74 - 130
Trichloroethene	10.0	9.62		ug/L		96	71 - 121
Vinyl chloride	10.0	9.39		ug/L		94	61 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	89		75 - 130
4-Bromofluorobenzene (Surr)	117		47 - 134
Toluene-d8 (Surr)	82		69 - 122
Dibromofluoromethane (Surr)	89		78 - 129

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-142387-D-2 MS

Matrix: Water

Analysis Batch: 467344

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	1.0	U	10.0	9.09		ug/L		91	64 - 132
cis-1,2-Dichloroethene	1.0	U	10.0	9.35		ug/L		94	68 - 121
Tetrachloroethene	1.0	U	10.0	8.69		ug/L		87	52 - 129
trans-1,2-Dichloroethene	1.0	U	10.0	8.89		ug/L		89	69 - 126
Trichloroethene	1.0	U	10.0	9.34		ug/L		93	56 - 124
Vinyl chloride	1.0	U	10.0	8.86		ug/L		89	49 - 136

Surrogate	MS %Recovery	MS Qualifier	MS Limits
1,2-Dichloroethane-d4 (Surr)	93		75 - 130
4-Bromofluorobenzene (Surr)	111		47 - 134
Toluene-d8 (Surr)	82		69 - 122
Dibromofluoromethane (Surr)	88		78 - 129

Lab Sample ID: 240-142387-E-2 MSD

Matrix: Water

Analysis Batch: 467344

Client Sample ID: Matrix Spike Duplicate

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-Dichloroethene	1.0	U	10.0	8.99		ug/L		90	64 - 132	1	35
cis-1,2-Dichloroethene	1.0	U	10.0	9.60		ug/L		96	68 - 121	3	35
Tetrachloroethene	1.0	U	10.0	8.50		ug/L		85	52 - 129	2	35
trans-1,2-Dichloroethene	1.0	U	10.0	8.64		ug/L		86	69 - 126	3	35
Trichloroethene	1.0	U	10.0	9.02		ug/L		90	56 - 124	3	35
Vinyl chloride	1.0	U	10.0	9.65		ug/L		96	49 - 136	9	35

Surrogate	MSD %Recovery	MSD Qualifier	MSD Limits
1,2-Dichloroethane-d4 (Surr)	89		75 - 130
4-Bromofluorobenzene (Surr)	112		47 - 134
Toluene-d8 (Surr)	79		69 - 122
Dibromofluoromethane (Surr)	86		78 - 129

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-466760/5

Matrix: Water

Analysis Batch: 466760

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			12/23/20 11:09	1

Surrogate	MB %Recovery	MB Qualifier	MB Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		70 - 133		12/23/20 11:09	1

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-466760/4
Matrix: Water
Analysis Batch: 466760

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	10.5		ug/L		105	80 - 135
Surrogate							
	%Recovery	LCS Qualifier	LCS Limits				
1,2-Dichloroethane-d4 (Surr)	90		70 - 133				

Lab Sample ID: 240-142243-3 MS
Matrix: Water
Analysis Batch: 466760

Client Sample ID: MH-1067_121720
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	46 - 170
Surrogate									
	%Recovery	MS Qualifier	MS Limits						
1,2-Dichloroethane-d4 (Surr)	90		70 - 133						

Lab Sample ID: 240-142243-3 MSD
Matrix: Water
Analysis Batch: 466760

Client Sample ID: MH-1067_121720
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	46 - 170	4	26
Surrogate											
	%Recovery	MSD Qualifier	MSD Limits								
1,2-Dichloroethane-d4 (Surr)	92		70 - 133								

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

GC/MS VOA

Analysis Batch: 466760

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-142243-2	MH-1181_121720	Total/NA	Water	8260B SIM	
240-142243-3	MH-1067_121720	Total/NA	Water	8260B SIM	
240-142243-4	MH-1020_121720	Total/NA	Water	8260B SIM	
240-142243-5	MH-1043_121720	Total/NA	Water	8260B SIM	
MB 240-466760/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-466760/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-142243-3 MS	MH-1067_121720	Total/NA	Water	8260B SIM	
240-142243-3 MSD	MH-1067_121720	Total/NA	Water	8260B SIM	

Analysis Batch: 466994

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-142243-1	TRIP BLANK	Total/NA	Water	8260B	
240-142243-2	MH-1181_121720	Total/NA	Water	8260B	
MB 240-466994/6	Method Blank	Total/NA	Water	8260B	
LCS 240-466994/4	Lab Control Sample	Total/NA	Water	8260B	
240-141832-C-7 MS	Matrix Spike	Total/NA	Water	8260B	
240-141832-C-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 467344

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-142243-3	MH-1067_121720	Total/NA	Water	8260B	
240-142243-4	MH-1020_121720	Total/NA	Water	8260B	
240-142243-5	MH-1043_121720	Total/NA	Water	8260B	
MB 240-467344/7	Method Blank	Total/NA	Water	8260B	
LCS 240-467344/4	Lab Control Sample	Total/NA	Water	8260B	
240-142387-D-2 MS	Matrix Spike	Total/NA	Water	8260B	
240-142387-E-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Client Sample ID: TRIP BLANK

Date Collected: 12/17/20 00:00

Date Received: 12/19/20 08:00

Lab Sample ID: 240-142243-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	466994	12/24/20 19:08	LEE	TAL CAN

Client Sample ID: MH-1181_121720

Date Collected: 12/17/20 11:00

Date Received: 12/19/20 08:00

Lab Sample ID: 240-142243-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	466994	12/24/20 19:31	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	466760	12/23/20 13:40	SAM	TAL CAN

Client Sample ID: MH-1067_121720

Date Collected: 12/17/20 14:05

Date Received: 12/19/20 08:00

Lab Sample ID: 240-142243-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	467344	12/29/20 18:49	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	466760	12/23/20 14:05	SAM	TAL CAN

Client Sample ID: MH-1020_121720

Date Collected: 12/17/20 11:35

Date Received: 12/19/20 08:00

Lab Sample ID: 240-142243-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		3.33	467344	12/29/20 19:14	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	466760	12/23/20 16:37	SAM	TAL CAN

Client Sample ID: MH-1043_121720

Date Collected: 12/17/20 12:20

Date Received: 12/19/20 08:00

Lab Sample ID: 240-142243-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		2	467344	12/29/20 19:39	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	466760	12/23/20 15:46	SAM	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-21
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20

TestAmerica Laboratory location: Brighton --- 10448 Citalan Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

Client Project Manager: Kris Hinskey
Telephone: 248-994-2240
Email: kristoffer.hinskey@arcadis.com

Site Contact: Julia McClafferty
Telephone: 734-644-5131

Lab Contact: Mike DeMonico
Telephone: 330-497-9396

Company Name: Arcadis
Address: 28550 Cabot Drive, Suite 500
City/State/Zip: Novi, MI, 48377
Phone: 248-994-2240
Project Name: Ford LTP Off-Site
Project Number: 30050315.701.04
PO # 30050315.701.04

Sampler Name: *Elma Witherspoon*
Method of Shipment/Carrier: *Novi Cold Storage*
Shipping/Tracking No:

Sample Identification	Sample Date	Sample Time	Matrix				Containers & Preservatives				Filtered Sample (Y/N)	Composite C/Grab/C	Analyses						Sample Specific Notes / Special Instructions						
			Air	Aqueous	Sediment	Solid	Other:	H2SO4	HNO3	HCl			NaOH	ZnAc	NaOH	Others:	1,1-DCE 8260B	615-1,2-DCE 8260B		Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	
TRIP BLANK																									1 Trip Blank 3 vials for 8260B 3 vials for 8260B SIM
MH-181-121720	12/17/20	1100	6																						
MH-1067-121720	12/17/20	1405	6																						
MH-1020-121720	12/17/20	1135	6																						
MH-1043-121720	12/17/20	1720	6																						

Barcode: 240-142243 Chain of Custody

Possible Hazard Identification: Non-Hazard Flammable Irritant Poison B Unknown

Sample Disposal (A fee may be assessed): Return to Client Disposal By Lab Archive for Months

Special Instructions/OC Requirements & Comments: CADENA # E205162 ALL SAMPLES COLLECTED FROM SANITARY SEWERS (CONTAIN SANITARY WASTE)

Submit all results through Cadena at jtomalia@cadenaco.com. Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
<i>Elma Witherspoon</i>	Arcadis	12/17/20/1600	Andrew Bant	Arcadis	12/17/20/1600
Andrew Bant	Arcadis	12/17/20/1635	Novi Cold Storage	Arcadis	12/17/20/1635
<i>Elma Witherspoon</i>	Arcadis	12/18/20/1500	<i>Elma Witherspoon</i>	Arcadis	12/18/20/1500

Relinquished by: *Elma Witherspoon* Arcadis 12/18/20/1530 Amend Bittschell ETA
 Relinquished by: *Andrew Bant* Arcadis 12/18/20/1532 ETA
 Relinquished by: *Elma Witherspoon* Arcadis 12-19-20 800



Eurofins TestAmerica Canton Sample Receipt Form/Narrative Login # : 142243
Canton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: Jenny Ruge
Cooler Received on 12-19-20 Opened on 12-21-20
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____
Receipt After-hours: Drop-off Date/Time _____ **Storage Location** _____

TestAmerica Cooler # 1A Foam Box Client Cooler Box Other _____
Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt _____ See Multiple Cooler Form
IR GUN# IR-11 (CF +0.9 °C) Observed Cooler Temp. 0.4 °C Corrected Cooler Temp. 1.3 °C
IR GUN #IR-12 (CF +0.5 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
-Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
-Were tamper/custody seals intact and uncompromised? Yes No NA

3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? Yes No
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
If yes, Questions 13-17 have been checked at the originating laboratory.

13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC907861
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? Yes Larger than this: 59072 Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 59072 Yes No
17. Was a LL Hg or Me Hg trip blank present? Yes No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____
Concerning _____

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page Samples processed by: _____

19. SAMPLE CONDITION
Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION
Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____
VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT



December 31, 2020

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162

Project: Ford Livonia Transmission Plant - 2020 Utility Corridor Evaluation Vapor Testing

Project number: 30050315.701.04

Event Specific Scope of Work References: Sample COC

Laboratory: TestAmerica - North Canton

Laboratory submittal: 142243-1

Sample date: 2020-12-17

Report received by CADENA: 2020-12-31

Initial Data Verification completed by CADENA: 2020-12-31

Number of Samples:5

Sample Matrices:Water

Test Categories:GCMS VOC

Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD and surrogate outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

Reportable Results Only

CADENA Project ID: E205162

Laboratory: TestAmerica - North Canton

Laboratory Submittal: 142243-1

Sample Name:	TRIP BLANK	MH-1181_121720	MH-1067_121720	MH-1020_121720	MH-1043_121720
Lab Sample ID:	2401422431	2401422432	2401422433	2401422434	2401422435
Sample Date:	12/17/2020	12/17/2020	12/17/2020	12/17/2020	12/17/2020

Analyte	Cas No.	Sample 1				Sample 2				Sample 3				Sample 4				Sample 5			
		Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier
GC/MS VOC																					
<u>OSW-8260B</u>																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	3.3	ug/l	---	ND	2.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	3.3	ug/l	---	ND	2.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	3.3	ug/l	---	ND	2.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	3.3	ug/l	---	ND	2.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	3.3	ug/l	---	ND	2.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	3.3	ug/l	---	ND	2.0	ug/l	---
<u>OSW-8260BBSim</u>																					
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

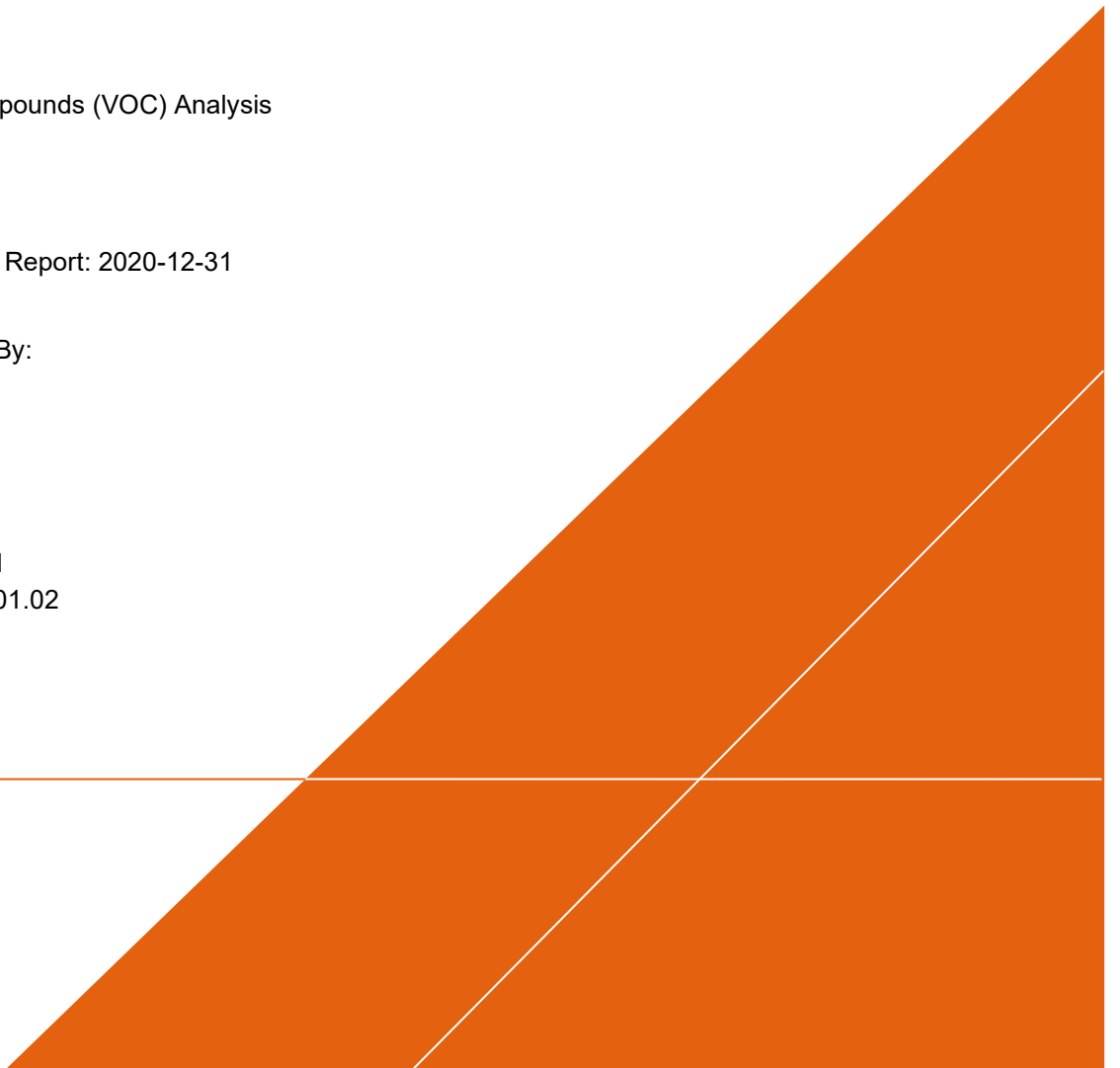
Volatile Organic Compounds (VOC) Analysis

SDG # 240-142243-1

CADENA Verification Report: 2020-12-31

Analyses Performed By:
TestAmerica
Edison, New Jersey

Report #39943R
Review Level: Tier III
Project: 30050315.701.02



DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-142243-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						VOC (Full Scan)	VOC (SIM)	MISC
240-142243-1	TRIP BLANK	240-142243-1	Water	12/17/2020		X		
	MH-1181_121720	240-142243-1	Water	12/17/2020		X	X	
	MH-1067_121720	240-142243-1	Water	12/17/2020		X	X	
	MH-1020_121720	240-142243-1	Water	12/17/2020		X	X	
	MH-1043_121720	240-142243-1	Water	12/17/2020		X	X	

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260B and 8260B SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) 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 8260B/8260B-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl
	Soil	14 days from collection to analysis	Cool to < 6 °C

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

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 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.

A field duplicate analysis was not performed on a sample within this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. 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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260B/8260B-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:



DATE: January 15, 2021

PEER REVIEW: Joseph C. Houser

DATE: January 19, 2021



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



**NO CORRECTIONS/QUALIFIERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**



TestAmerica Laboratory location: Brighton --- 10448 Citalan Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Client Contact Company Name: Arcadis Address: 28550 Cabot Drive, Suite 500 City/State/Zip: Novi, MI, 48377 Phone: 248-994-2240 Project Name: Ford LTP Off-Site Project Number: 30050315.701.04 PO # 30050315.701.04		Regulatory program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other	
Client Project Manager: Kris Hinskey Telephone: 248-994-2240 Email: kristoffer.hinskey@arcadis.com		Lab Contact: Mike DeMonico Telephone: 330-497-9396	
Sampler Name: Emma Witherspoon Method of Shipment/Carrier:		Analysis Turnaround Time TAT if different from below: <input type="checkbox"/> 3 weeks <input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day	
Shipping/Tracking No:		Containers & Preservatives HCl NaOH ZnAc NaOH Other:	
Matrix Aqueous Sediment Solid Other:		Filtered Sample (Y/N) Composite C/Grab C	
Sample Date Sample Time		Analyses 1,1-DCE 8260B 615-1,2-DCE 8260B Trans-1,2-DCE 8260B PCE 8260B TCE 8260B Vinyl Chloride 8260B 1,4-Dioxane 8260B SIM	
Sample Identification TRIP BLANK MH-181-121720 MH-1067-121720 MH-1020-121720 MH-1043-121720		1 Trip Blank 3 Vials for 8260B 3 Vials for 8260B SIM	
Possible Hazard Identification <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown		Sample Disposal (A fee may be assessed) <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Months	
Special Instructions/OC Requirements & Comments: Submit all results through Cadena at jtomalia@cadenaco.com. Level IV Reporting requested.			
Relinquished by: <i>El Witherspoon</i> Relinquished by: Andrew Bant Relinquished by: <i>El Witherspoon</i>		ALL SAMPLES COLLECTED FROM SANITARY SEWERS (CONTAIN SANITARY WASTE)	
Date/Time: 12/17/20/1600 Date/Time: 12/17/20/1635 Date/Time: 12/18/20/1500		Company: Arcadis Company: Arcadis Company: Arcadis	
Date/Time: 12/18/20/1530 Date/Time: 12/18/20/1532		Company: Arcadis Company: Arcadis	



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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-142243-1

Date Collected: 12/17/20 00:00

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 19:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/24/20 19:08	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/24/20 19:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 19:08	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/24/20 19:08	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/24/20 19:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		75 - 130		12/24/20 19:08	1
4-Bromofluorobenzene (Surr)	96		47 - 134		12/24/20 19:08	1
Toluene-d8 (Surr)	99		69 - 122		12/24/20 19:08	1
Dibromofluoromethane (Surr)	124		78 - 129		12/24/20 19:08	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Client Sample ID: MH-1181_121720

Lab Sample ID: 240-142243-2

Date Collected: 12/17/20 11:00

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			12/23/20 13:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		70 - 133					12/23/20 13:40	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 19:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/24/20 19:31	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/24/20 19:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/24/20 19:31	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/24/20 19:31	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/24/20 19:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	126		75 - 130					12/24/20 19:31	1
4-Bromofluorobenzene (Surr)	102		47 - 134					12/24/20 19:31	1
Toluene-d8 (Surr)	103		69 - 122					12/24/20 19:31	1
Dibromofluoromethane (Surr)	126		78 - 129					12/24/20 19:31	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Client Sample ID: MH-1067_121720

Lab Sample ID: 240-142243-3

Date Collected: 12/17/20 14:05

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			12/23/20 14:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		70 - 133		12/23/20 14:05	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	0.95	ug/L			12/29/20 18:49	5
cis-1,2-Dichloroethene	5.0	U	5.0	0.80	ug/L			12/29/20 18:49	5
Tetrachloroethene	5.0	U	5.0	0.75	ug/L			12/29/20 18:49	5
trans-1,2-Dichloroethene	5.0	U	5.0	0.95	ug/L			12/29/20 18:49	5
Trichloroethene	5.0	U	5.0	0.50	ug/L			12/29/20 18:49	5
Vinyl chloride	5.0	U	5.0	1.0	ug/L			12/29/20 18:49	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		75 - 130		12/29/20 18:49	5
4-Bromofluorobenzene (Surr)	104		47 - 134		12/29/20 18:49	5
Toluene-d8 (Surr)	82		69 - 122		12/29/20 18:49	5
Dibromofluoromethane (Surr)	95		78 - 129		12/29/20 18:49	5

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Client Sample ID: MH-1020_121720

Lab Sample ID: 240-142243-4

Date Collected: 12/17/20 11:35

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			12/23/20 16:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		70 - 133					12/23/20 16:37	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	3.3	U	3.3	0.63	ug/L			12/29/20 19:14	3.33
cis-1,2-Dichloroethene	3.3	U	3.3	0.53	ug/L			12/29/20 19:14	3.33
Tetrachloroethene	3.3	U	3.3	0.50	ug/L			12/29/20 19:14	3.33
trans-1,2-Dichloroethene	3.3	U	3.3	0.63	ug/L			12/29/20 19:14	3.33
Trichloroethene	3.3	U	3.3	0.33	ug/L			12/29/20 19:14	3.33
Vinyl chloride	3.3	U	3.3	0.67	ug/L			12/29/20 19:14	3.33
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		75 - 130					12/29/20 19:14	3.33
4-Bromofluorobenzene (Surr)	103		47 - 134					12/29/20 19:14	3.33
Toluene-d8 (Surr)	83		69 - 122					12/29/20 19:14	3.33
Dibromofluoromethane (Surr)	90		78 - 129					12/29/20 19:14	3.33

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142243-1

Client Sample ID: MH-1043_121720

Lab Sample ID: 240-142243-5

Date Collected: 12/17/20 12:20

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			12/23/20 15:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		70 - 133		12/23/20 15:46	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	2.0	U	2.0	0.38	ug/L			12/29/20 19:39	2
cis-1,2-Dichloroethene	2.0	U	2.0	0.32	ug/L			12/29/20 19:39	2
Tetrachloroethene	2.0	U	2.0	0.30	ug/L			12/29/20 19:39	2
trans-1,2-Dichloroethene	2.0	U	2.0	0.38	ug/L			12/29/20 19:39	2
Trichloroethene	2.0	U	2.0	0.20	ug/L			12/29/20 19:39	2
Vinyl chloride	2.0	U	2.0	0.40	ug/L			12/29/20 19:39	2

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		75 - 130		12/29/20 19:39	2
4-Bromofluorobenzene (Surr)	104		47 - 134		12/29/20 19:39	2
Toluene-d8 (Surr)	82		69 - 122		12/29/20 19:39	2
Dibromofluoromethane (Surr)	87		78 - 129		12/29/20 19:39	2

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-142244-1
Client Project/Site: Ford LTP - Off Site
Revision: 2

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey



Authorized for release by:
1/19/2021 4:12:23 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.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.



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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
U	Indicates the analyte was analyzed for but not detected.

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

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Job ID: 240-142244-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP - Off Site

Report Number: 240-142244-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 12/19/2020 8:00 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.3° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples TRIP BLANK (240-142244-1), DUP-01 (240-142244-2), MH-1096_121620 (240-142244-3), MH-1210_121620 (240-142244-4), MH-1219_121620 (240-142244-5) and MH-1001_121620 (240-142244-6) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 12/28/2020 and 12/29/2020.

The matrix spike/matrix spike duplicate (MS/MSD) for samples TRIP BLANK (240-142244-1), DUP-01 (240-142244-2), MH-1096_121620 (240-142244-3), MH-1210_121620 (240-142244-4) and MH-1001_121620 (240-142244-6) was not reported, because the analyte list for these samples did not match the analyte list for the MS/MSD parent sample.

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

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Samples DUP-01 (240-142244-2), MH-1096_121620 (240-142244-3), MH-1210_121620 (240-142244-4) and MH-1219_121620 (240-142244-5) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 12/22/2020.

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Job ID: 240-142244-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

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

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Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

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Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-142244-1	TRIP BLANK	Water	12/16/20 00:00	12/19/20 08:00	
240-142244-2	DUP-01	Water	12/16/20 00:00	12/19/20 08:00	
240-142244-3	MH-1096_121620	Water	12/16/20 14:15	12/19/20 08:00	
240-142244-4	MH-1210_121620	Water	12/16/20 09:15	12/19/20 08:00	
240-142244-5	MH-1219_121620	Water	12/16/20 09:45	12/19/20 08:00	
240-142244-6	MH-1001_121620	Water	12/16/20 08:40	12/19/20 08:00	

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Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-142244-1

No Detections.

Client Sample ID: DUP-01

Lab Sample ID: 240-142244-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	5.2		2.0	0.86	ug/L	1		8260B SIM	Total/NA

Client Sample ID: MH-1096_121620

Lab Sample ID: 240-142244-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	5.2		2.0	0.86	ug/L	1		8260B SIM	Total/NA

Client Sample ID: MH-1210_121620

Lab Sample ID: 240-142244-4

No Detections.

Client Sample ID: MH-1219_121620

Lab Sample ID: 240-142244-5

No Detections.

Client Sample ID: MH-1001_121620

Lab Sample ID: 240-142244-6

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-142244-1

Date Collected: 12/16/20 00:00

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 21:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/28/20 21:15	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/28/20 21:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 21:15	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/28/20 21:15	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/28/20 21:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		75 - 130		12/28/20 21:15	1
4-Bromofluorobenzene (Surr)	72		47 - 134		12/28/20 21:15	1
Toluene-d8 (Surr)	85		69 - 122		12/28/20 21:15	1
Dibromofluoromethane (Surr)	96		78 - 129		12/28/20 21:15	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Client Sample ID: DUP-01

Lab Sample ID: 240-142244-2

Date Collected: 12/16/20 00:00

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	5.2		2.0	0.86	ug/L			12/22/20 19:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		70 - 133					12/22/20 19:10	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 21:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/28/20 21:39	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/28/20 21:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 21:39	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/28/20 21:39	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/28/20 21:39	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		75 - 130					12/28/20 21:39	1
4-Bromofluorobenzene (Surr)	82		47 - 134					12/28/20 21:39	1
Toluene-d8 (Surr)	85		69 - 122					12/28/20 21:39	1
Dibromofluoromethane (Surr)	92		78 - 129					12/28/20 21:39	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Client Sample ID: MH-1096_121620

Lab Sample ID: 240-142244-3

Date Collected: 12/16/20 14:15

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	5.2		2.0	0.86	ug/L			12/22/20 19:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		70 - 133					12/22/20 19:35	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 22:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/28/20 22:02	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/28/20 22:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 22:02	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/28/20 22:02	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/28/20 22:02	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		75 - 130					12/28/20 22:02	1
4-Bromofluorobenzene (Surr)	97		47 - 134					12/28/20 22:02	1
Toluene-d8 (Surr)	87		69 - 122					12/28/20 22:02	1
Dibromofluoromethane (Surr)	91		78 - 129					12/28/20 22:02	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Client Sample ID: MH-1210_121620

Lab Sample ID: 240-142244-4

Date Collected: 12/16/20 09:15

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			12/22/20 20:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		70 - 133		12/22/20 20:01	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 22:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/28/20 22:26	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/28/20 22:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 22:26	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/28/20 22:26	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/28/20 22:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		75 - 130		12/28/20 22:26	1
4-Bromofluorobenzene (Surr)	79		47 - 134		12/28/20 22:26	1
Toluene-d8 (Surr)	87		69 - 122		12/28/20 22:26	1
Dibromofluoromethane (Surr)	91		78 - 129		12/28/20 22:26	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Client Sample ID: MH-1219_121620

Lab Sample ID: 240-142244-5

Date Collected: 12/16/20 09:45

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			12/22/20 20:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		70 - 133					12/22/20 20:26	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/29/20 16:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/29/20 16:03	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/29/20 16:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/29/20 16:03	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/29/20 16:03	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/29/20 16:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		75 - 130					12/29/20 16:03	1
4-Bromofluorobenzene (Surr)	73		47 - 134					12/29/20 16:03	1
Toluene-d8 (Surr)	86		69 - 122					12/29/20 16:03	1
Dibromofluoromethane (Surr)	91		78 - 129					12/29/20 16:03	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Client Sample ID: MH-1001_121620

Lab Sample ID: 240-142244-6

Date Collected: 12/16/20 08:40

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U H	2.0	0.86	ug/L			01/19/21 13:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		70 - 133		01/19/21 13:24	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 23:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/28/20 23:14	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/28/20 23:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 23:14	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/28/20 23:14	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/28/20 23:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		75 - 130		12/28/20 23:14	1
4-Bromofluorobenzene (Surr)	75		47 - 134		12/28/20 23:14	1
Toluene-d8 (Surr)	87		69 - 122		12/28/20 23:14	1
Dibromofluoromethane (Surr)	93		78 - 129		12/28/20 23:14	1

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (75-130)	BFB (47-134)	TOL (69-122)	DBFM (78-129)
240-142244-1	TRIP BLANK	98	72	85	96
240-142244-2	DUP-01	93	82	85	92
240-142244-3	MH-1096_121620	90	97	87	91
240-142244-4	MH-1210_121620	91	79	87	91
240-142244-5	MH-1219_121620	91	73	86	91
240-142244-6	MH-1001_121620	95	75	87	93
240-142355-A-2 MS	Matrix Spike	84	95	95	88
240-142355-D-2 MSD	Matrix Spike Duplicate	78	93	92	88
LCS 240-467184/4	Lab Control Sample	81	95	94	87
LCS 240-467346/4	Lab Control Sample	82	95	92	84
MB 240-467184/7	Method Blank	98	70	87	101
MB 240-467346/7	Method Blank	92	75	90	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA
		(70-133)
240-142242-A-3 MS	Matrix Spike	87
240-142242-A-3 MSD	Matrix Spike Duplicate	85
240-142244-2	DUP-01	96
240-142244-3	MH-1096_121620	91
240-142244-4	MH-1210_121620	86
240-142244-5	MH-1219_121620	84
240-142244-6	MH-1001_121620	82
240-143272-C-1 MS	Matrix Spike	91
240-143272-C-1 MSD	Matrix Spike Duplicate	89
LCS 240-466610/4	Lab Control Sample	88
LCS 240-469681/4	Lab Control Sample	78
MB 240-466610/5	Method Blank	89
MB 240-469681/5	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-467184/7
Matrix: Water
Analysis Batch: 467184

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 15:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/28/20 15:13	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/28/20 15:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 15:13	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/28/20 15:13	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/28/20 15:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		75 - 130		12/28/20 15:13	1
4-Bromofluorobenzene (Surr)	70		47 - 134		12/28/20 15:13	1
Toluene-d8 (Surr)	87		69 - 122		12/28/20 15:13	1
Dibromofluoromethane (Surr)	101		78 - 129		12/28/20 15:13	1

Lab Sample ID: LCS 240-467184/4
Matrix: Water
Analysis Batch: 467184

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	9.68		ug/L		97	73 - 129
cis-1,2-Dichloroethene	10.0	9.55		ug/L		95	75 - 124
Tetrachloroethene	10.0	10.5		ug/L		105	70 - 125
trans-1,2-Dichloroethene	10.0	10.3		ug/L		103	74 - 130
Trichloroethene	10.0	9.01		ug/L		90	71 - 121
Vinyl chloride	10.0	8.97		ug/L		90	61 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	81		75 - 130
4-Bromofluorobenzene (Surr)	95		47 - 134
Toluene-d8 (Surr)	94		69 - 122
Dibromofluoromethane (Surr)	87		78 - 129

Lab Sample ID: MB 240-467346/7
Matrix: Water
Analysis Batch: 467346

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/29/20 14:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/29/20 14:27	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/29/20 14:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/29/20 14:27	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/29/20 14:27	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/29/20 14:27	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		75 - 130		12/29/20 14:27	1
4-Bromofluorobenzene (Surr)	75		47 - 134		12/29/20 14:27	1
Toluene-d8 (Surr)	90		69 - 122		12/29/20 14:27	1

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-467346/7
Matrix: Water
Analysis Batch: 467346

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

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Dibromofluoromethane (Surr)	95		78 - 129		12/29/20 14:27	1

Lab Sample ID: LCS 240-467346/4
Matrix: Water
Analysis Batch: 467346

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	9.72		ug/L		97	73 - 129	
cis-1,2-Dichloroethene	10.0	9.83		ug/L		98	75 - 124	
Tetrachloroethene	10.0	10.3		ug/L		103	70 - 125	
trans-1,2-Dichloroethene	10.0	10.3		ug/L		103	74 - 130	
Trichloroethene	10.0	9.21		ug/L		92	71 - 121	
Vinyl chloride	10.0	9.16		ug/L		92	61 - 134	

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	82		75 - 130
4-Bromofluorobenzene (Surr)	95		47 - 134
Toluene-d8 (Surr)	92		69 - 122
Dibromofluoromethane (Surr)	84		78 - 129

Lab Sample ID: 240-142355-A-2 MS
Matrix: Water
Analysis Batch: 467346

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits	
1,1-Dichloroethene	1.0	U	10.0	9.46		ug/L		95	64 - 132	
cis-1,2-Dichloroethene	1.0	U	10.0	9.76		ug/L		98	68 - 121	
Tetrachloroethene	1.0	U	10.0	11.1		ug/L		111	52 - 129	
trans-1,2-Dichloroethene	1.0	U	10.0	9.98		ug/L		100	69 - 126	
Trichloroethene	1.9		10.0	10.8		ug/L		89	56 - 124	
Vinyl chloride	1.0	U	10.0	9.11		ug/L		91	49 - 136	

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	84		75 - 130
4-Bromofluorobenzene (Surr)	95		47 - 134
Toluene-d8 (Surr)	95		69 - 122
Dibromofluoromethane (Surr)	88		78 - 129

Lab Sample ID: 240-142355-D-2 MSD
Matrix: Water
Analysis Batch: 467346

Client Sample ID: Matrix Spike Duplicate
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-Dichloroethene	1.0	U	10.0	9.77		ug/L		98	64 - 132	3	35	
cis-1,2-Dichloroethene	1.0	U	10.0	9.64		ug/L		96	68 - 121	1	35	
Tetrachloroethene	1.0	U	10.0	10.1		ug/L		101	52 - 129	9	35	
trans-1,2-Dichloroethene	1.0	U	10.0	10.1		ug/L		101	69 - 126	2	35	
Trichloroethene	1.9		10.0	10.6		ug/L		87	56 - 124	2	35	

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-142355-D-2 MSD

Client Sample ID: Matrix Spike Duplicate

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 467346

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Vinyl chloride	1.0	U	10.0	9.10		ug/L		91	49 - 136	0	35
MSD MSD											
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	78		75 - 130								
4-Bromofluorobenzene (Surr)	93		47 - 134								
Toluene-d8 (Surr)	92		69 - 122								
Dibromofluoromethane (Surr)	88		78 - 129								

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-466610/5

Client Sample ID: Method Blank

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 466610

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			12/22/20 14:07	1
MB MB									
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		70 - 133					12/22/20 14:07	1

Lab Sample ID: LCS 240-466610/4

Client Sample ID: Lab Control Sample

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 466610

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	10.5		ug/L		105	80 - 135
LCS LCS							
Surrogate	%Recovery	Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	88		70 - 133				

Lab Sample ID: 240-142242-A-3 MS

Client Sample ID: Matrix Spike

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 466610

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	46 - 170
MS MS									
Surrogate	%Recovery	Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	87		70 - 133						

Lab Sample ID: 240-142242-A-3 MSD

Client Sample ID: Matrix Spike Duplicate

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 466610

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	46 - 170	3	26

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-142242-A-3 MSD
Matrix: Water
Analysis Batch: 466610

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	85		70 - 133

Lab Sample ID: MB 240-469681/5
Matrix: Water
Analysis Batch: 469681

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			01/19/21 12:34	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		70 - 133		01/19/21 12:34	1

Lab Sample ID: LCS 240-469681/4
Matrix: Water
Analysis Batch: 469681

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	9.62		ug/L		96	80 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	78		70 - 133

Lab Sample ID: 240-143272-C-1 MS
Matrix: Water
Analysis Batch: 469681

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	2.0	U	10.0	9.36		ug/L		94	46 - 170

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	91		70 - 133

Lab Sample ID: 240-143272-C-1 MSD
Matrix: Water
Analysis Batch: 469681

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
1,4-Dioxane	2.0	U	10.0	9.90		ug/L		99	46 - 170	6	26

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	89		70 - 133

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

GC/MS VOA

Analysis Batch: 466610

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-142244-2	DUP-01	Total/NA	Water	8260B SIM	
240-142244-3	MH-1096_121620	Total/NA	Water	8260B SIM	
240-142244-4	MH-1210_121620	Total/NA	Water	8260B SIM	
240-142244-5	MH-1219_121620	Total/NA	Water	8260B SIM	
MB 240-466610/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-466610/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-142242-A-3 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-142242-A-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 467184

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-142244-1	TRIP BLANK	Total/NA	Water	8260B	
240-142244-2	DUP-01	Total/NA	Water	8260B	
240-142244-3	MH-1096_121620	Total/NA	Water	8260B	
240-142244-4	MH-1210_121620	Total/NA	Water	8260B	
240-142244-6	MH-1001_121620	Total/NA	Water	8260B	
MB 240-467184/7	Method Blank	Total/NA	Water	8260B	
LCS 240-467184/4	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 467346

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-142244-5	MH-1219_121620	Total/NA	Water	8260B	
MB 240-467346/7	Method Blank	Total/NA	Water	8260B	
LCS 240-467346/4	Lab Control Sample	Total/NA	Water	8260B	
240-142355-A-2 MS	Matrix Spike	Total/NA	Water	8260B	
240-142355-D-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 469681

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-142244-6	MH-1001_121620	Total/NA	Water	8260B SIM	
MB 240-469681/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-469681/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-143272-C-1 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-143272-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Client Sample ID: TRIP BLANK

Date Collected: 12/16/20 00:00

Date Received: 12/19/20 08:00

Lab Sample ID: 240-142244-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	467184	12/28/20 21:15	LRW	TAL CAN

Client Sample ID: DUP-01

Date Collected: 12/16/20 00:00

Date Received: 12/19/20 08:00

Lab Sample ID: 240-142244-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	467184	12/28/20 21:39	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	466610	12/22/20 19:10	SAM	TAL CAN

Client Sample ID: MH-1096_121620

Date Collected: 12/16/20 14:15

Date Received: 12/19/20 08:00

Lab Sample ID: 240-142244-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	467184	12/28/20 22:02	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	466610	12/22/20 19:35	SAM	TAL CAN

Client Sample ID: MH-1210_121620

Date Collected: 12/16/20 09:15

Date Received: 12/19/20 08:00

Lab Sample ID: 240-142244-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	467184	12/28/20 22:26	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	466610	12/22/20 20:01	SAM	TAL CAN

Client Sample ID: MH-1219_121620

Date Collected: 12/16/20 09:45

Date Received: 12/19/20 08:00

Lab Sample ID: 240-142244-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	467346	12/29/20 16:03	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	466610	12/22/20 20:26	SAM	TAL CAN

Client Sample ID: MH-1001_121620

Date Collected: 12/16/20 08:40

Date Received: 12/19/20 08:00

Lab Sample ID: 240-142244-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	467184	12/28/20 23:14	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	469681	01/19/21 13:24	SAM	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Eurofins TestAmerica, Canton

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-21
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20 *
Minnesota	NELAP	OH00048	12-31-21
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-21 *
West Virginia DEP	State	210	12-31-21

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



TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

Client Contact
Company Name: Arcadis
Address: 28550 Cabot Drive, Suite 500
City/State/Zip: Novi, MI, 48377
Phone: 248-994-2240
Project Name: Ford LTP Off-Site
Project Number: 30050315.701.04
PO #: 30050315.701.04

Client Project Manager: Kris Hinskey
Telephone: 248-994-2240
Email: kristoffer.hinskey@arcadis.com

Site Contact: Julia McClafferty
Telephone: 734-644-5131

Lab Contact: Mike DeMonico
Telephone: 330-497-9396

Sampler Name: EMMA Witherspoon
Method of Shipment/Carrier:
Shipping/Tracking No:

Analysis Turnaround Time
PAT if different from below
10 day
 3 weeks
 2 weeks
 1 week
 2 days
 1 day

Containers & Preservatives
H2SO4
HNO3
HCl
NaOH
ZnOH
Ulnres
Other:

Matrix
Air
Aqueous
Sediment
Solid
Other:

Sample Date Sample Time

Sample Date	Sample Time	Air	Aqueous	Sediment	Solid	Other:	H2SO4	HNO3	HCl	NaOH	ZnOH	Ulnres	Other:
TRIP BLANK	-												
DOP-01-121620	-												
MH-1096-121620	1415												
MH-1710-121620	915												
MH-1291-121620	945												
MH-1001-121620	840												

Filtered Sample (Y/N)
Composite=C/Grab=C

1-DCE 8260B
Cs-1,2-DCE 8260B
Trans-1,2-DCE 8260B
PCE 8260B
TCE 8260B
Vinyl Chloride 8260B
1,4-Dioxane 8260B SIM

Job/SDG No:
Walk-in client
Lab sampling
COCs

Sample Specific Notes / Special Instructions:
1 TRIP BLANK
3 UOLS for 8260B
3 UOLS for 8260B SIM

240-142244 Chain of Custody

Company: Arcadis
Date/Time: 12/16/20 14:50
Received by: Andrew Benitt

Company: Arcadis
Date/Time: 12/16/20 1730
Received by: Nov, Cold Storage

Company: Arcadis
Date/Time: 12/18/20 1500
Received by: E Witherspoon

Company: Arcadis
Date/Time: 12/18/20 1530
Received by: Amanda Battahall

Company: ETA
Date/Time: 12/18/20 1532
Received by: Johnny Denev

Company: ETA
Date/Time: 12-19-20 800
Received by: Johnny Denev

ALL SAMPLES COLLECTED FROM SANITARY SEWERS
(CONTAIN SANITARY WASTE)

CADENA# E205162

Submit all results through Cadena at jtomalia@cadenaco.com.
Level IV Reporting requested.



Canton Facility

Client ARCANAIS Site Name _____ Cooler unpacked by Yenny Ruge

Cooler Received on 12-19-20 Opened on 12-21-20

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box _____ Client Cooler _____ Box _____ Other _____

Packing material used: Bubble Wrap Foam _____ Plastic Bag _____ None _____ Other _____

COOLANT: Wet Ice Blue Ice _____ Dry Ice _____ Water _____ None _____

1. Cooler temperature upon receipt See Multiple Cooler Form
 IR GUN# IR-11 (CF +0.9 °C) Observed Cooler Temp. 0.4 °C Corrected Cooler Temp. 1.3 °C
 IR GUN #IR-12 (CF +0.5 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No NA
 -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N) and sample type of grab/comp (Y/N)? Yes No
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
 If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC907861
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? Yes No NA ● Larger than this.
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 95072 Yes No
17. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page Samples processed by: _____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT



January 19, 2021

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2020 Utility Corridor Evaluation Vapor Testing
Project number: 30050315.701.04
Event Specific Scope of Work References: Sample COC
Laboratory: TestAmerica - North Canton
Laboratory submittal: 142244-1
Sample date: 2020-12-16
Report received by CADENA: 2020-12-31
Initial Data Verification completed by CADENA: 2020-12-31
Number of Samples:6
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

This report was revised to change a sample name. It was revised a second time to add 1,4-dioxane to sample 6.

HTQ - GCMS VOC SIM sample -006 analyses were performed outside of reference holding time so all associated results should be considered to be estimated and qualified with UJ flags if non-detect.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E205162

Laboratory: TestAmerica - North Canton

Laboratory Submittal: 142244-1

Sample Name: MH-1001_121620

Lab Sample ID: 2401422446

Sample Date: 12/16/2020

Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC					
<u>OSW-8260BBSim</u>					
1,4-Dioxane	123-91-1	ND	2.0	ug/l	UJ

Analytical Results Summary

Reportable Results Only

CADENA Project ID: E205162

Laboratory: TestAmerica - North Canton

Laboratory Submittal: 142244-1

Sample Name: TRIP BLANK	DUP-01	MH-1096_121620	MH-1210_121620	MH-1219_121620	MH-1001_121620
Lab Sample ID: 2401422441	2401422442	2401422443	2401422444	2401422445	2401422446
Sample Date: 12/16/2020	12/16/2020	12/16/2020	12/16/2020	12/16/2020	12/16/2020

Analyte	Cas No.	Report			Valid			Report			Valid			Report			Valid			Report			Valid		
		Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier
GC/MS VOC																									
<u>OSW-8260B</u>																									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
<u>OSW-8260BBSim</u>																									
1,4-Dioxane	123-91-1					5.2	2.0	ug/l	---	5.2	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	UJ

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

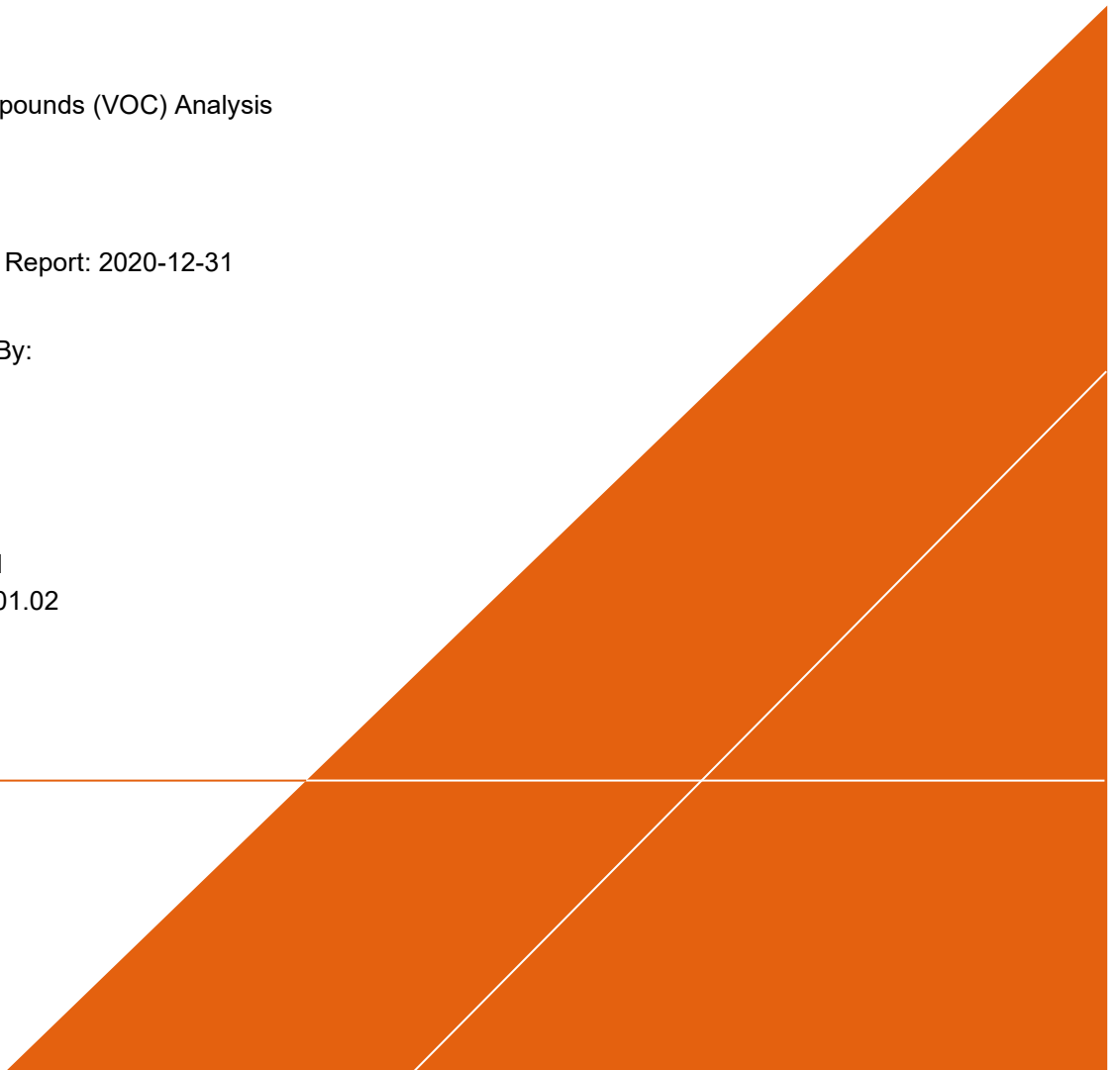
Volatile Organic Compounds (VOC) Analysis

SDG # 240-142244-1

CADENA Verification Report: 2020-12-31

Analyses Performed By:
TestAmerica
Edison, New Jersey

Report #39944R
Review Level: Tier III
Project: 30050315.701.02



DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-142244-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						VOC (Full Scan)	VOC (SIM)	MISC
240-142244-1	TRIP BLANK	240-142244-1	Water	12/16/2020		X		
	DUP-01	240-142244-2	Water	12/16/2020	MH-1096_121620	X	X	
	MH-1096_121620	240-142244-3	Water	12/16/2020		X	X	
	MH-1210_121620	240-142244-4	Water	12/16/2020		X	X	
	MH-1219_121620	240-142244-5	Water	12/16/2020		X	X	
	MH-1001_121620	240-142244-6	Water	12/16/2020		X		

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260B and 8260B SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) 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 8260B/8260B-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

The analyses that exceeded the holding time are presented in the following table.

Sample Locations	Analyte	Holding Time	Criteria
MH-1001_121620	1,4-Dioxane	34 days	<14 Days

Sample results associated with sample locations above were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed greater than two times holding time	J	R

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

DATA REVIEW

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within 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 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	Duplicate Result	RPD
MH-1096_121620/ DUP-01	1,4-Dioxane	5.2	5.2	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. 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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260B/8260B-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					

Tier II Validation

Holding times/Preservation		X	X		
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Tier III Validation

System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:



DATE: January 15, 2021

PEER REVIEW: Joseph C. Houser

DATE: January 19, 2021



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-142244-1

Date Collected: 12/16/20 00:00

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 21:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/28/20 21:15	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/28/20 21:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 21:15	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/28/20 21:15	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/28/20 21:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		75 - 130		12/28/20 21:15	1
4-Bromofluorobenzene (Surr)	72		47 - 134		12/28/20 21:15	1
Toluene-d8 (Surr)	85		69 - 122		12/28/20 21:15	1
Dibromofluoromethane (Surr)	96		78 - 129		12/28/20 21:15	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Client Sample ID: DUP-01

Lab Sample ID: 240-142244-2

Date Collected: 12/16/20 00:00

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	5.2		2.0	0.86	ug/L			12/22/20 19:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		70 - 133		12/22/20 19:10	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 21:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/28/20 21:39	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/28/20 21:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 21:39	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/28/20 21:39	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/28/20 21:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		75 - 130		12/28/20 21:39	1
4-Bromofluorobenzene (Surr)	82		47 - 134		12/28/20 21:39	1
Toluene-d8 (Surr)	85		69 - 122		12/28/20 21:39	1
Dibromofluoromethane (Surr)	92		78 - 129		12/28/20 21:39	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Client Sample ID: MH-1096_121620

Lab Sample ID: 240-142244-3

Date Collected: 12/16/20 14:15

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	5.2		2.0	0.86	ug/L			12/22/20 19:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		70 - 133		12/22/20 19:35	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 22:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/28/20 22:02	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/28/20 22:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 22:02	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/28/20 22:02	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/28/20 22:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		75 - 130		12/28/20 22:02	1
4-Bromofluorobenzene (Surr)	97		47 - 134		12/28/20 22:02	1
Toluene-d8 (Surr)	87		69 - 122		12/28/20 22:02	1
Dibromofluoromethane (Surr)	91		78 - 129		12/28/20 22:02	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Client Sample ID: MH-1210_121620

Lab Sample ID: 240-142244-4

Date Collected: 12/16/20 09:15

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			12/22/20 20:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		70 - 133		12/22/20 20:01	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 22:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/28/20 22:26	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/28/20 22:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 22:26	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/28/20 22:26	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/28/20 22:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		75 - 130		12/28/20 22:26	1
4-Bromofluorobenzene (Surr)	79		47 - 134		12/28/20 22:26	1
Toluene-d8 (Surr)	87		69 - 122		12/28/20 22:26	1
Dibromofluoromethane (Surr)	91		78 - 129		12/28/20 22:26	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Client Sample ID: MH-1219_121620

Lab Sample ID: 240-142244-5

Date Collected: 12/16/20 09:45

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			12/22/20 20:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		70 - 133		12/22/20 20:26	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/29/20 16:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/29/20 16:03	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/29/20 16:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/29/20 16:03	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/29/20 16:03	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/29/20 16:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		75 - 130		12/29/20 16:03	1
4-Bromofluorobenzene (Surr)	73		47 - 134		12/29/20 16:03	1
Toluene-d8 (Surr)	86		69 - 122		12/29/20 16:03	1
Dibromofluoromethane (Surr)	91		78 - 129		12/29/20 16:03	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-142244-1

Client Sample ID: MH-1001_121620

Lab Sample ID: 240-142244-6

Date Collected: 12/16/20 08:40

Matrix: Water

Date Received: 12/19/20 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	R 2.0	U H	2.0	0.86	ug/L			01/19/21 13:24	1
Surrogate									
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		70 - 133					01/19/21 13:24	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 23:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/28/20 23:14	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/28/20 23:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 23:14	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/28/20 23:14	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/28/20 23:14	1
Surrogate									
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		75 - 130					12/28/20 23:14	1
4-Bromofluorobenzene (Surr)	75		47 - 134					12/28/20 23:14	1
Toluene-d8 (Surr)	87		69 - 122					12/28/20 23:14	1
Dibromofluoromethane (Surr)	93		78 - 129					12/28/20 23:14	1

4/5/2021

Mr. Jim Tomalia
Arcadis U.S., Inc.
28550 Cabot Dr.
Suite 500
Novi MI 48377

Project Name: Ford LTP
Project #:
Workorder #: 2103778

Dear Mr. Jim Tomalia

The following report includes the data for the above referenced project for sample(s) received on 3/29/2021 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Jade White at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Jade White
Project Manager

WORK ORDER #: 2103778

Work Order Summary

CLIENT:	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	517-819-0356	P.O. #	30080642.701.04
FAX:		PROJECT #	Ford LTP
DATE RECEIVED:	03/29/2021	CONTACT:	Jade White
DATE COMPLETED:	04/05/2021		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SL-4_032221	TO-15	5.5 "Hg	9.8 psi
02A	MH-1096_032221	TO-15	7.8 "Hg	10 psi
03A	MH-1245_032221	TO-15	6.5 "Hg	9.9 psi
04A	MH-1244_032221	TO-15	6.1 "Hg	9.7 psi
05A	MH-1231_032221	TO-15	5.1 "Hg	9.9 psi
06A	SL-5_032321	TO-15	4.3 "Hg	9.9 psi
07A	WDC_032321	TO-15	4.5 "Hg	9.9 psi
08A	EDC_032321	TO-15	5.5 "Hg	9.8 psi
09A	MH-1181_032321	TO-15	7.6 "Hg	9.9 psi
10A	MH-1123_032321	TO-15	6.7 "Hg	9.8 psi
11A	MH-1116_032321	TO-15	6.3 "Hg	10 psi
12A	MH-1113_032321	TO-15	5.7 "Hg	10 psi
13A	MH-1259_032321	TO-15	6.9 "Hg	9.9 psi
14A	MH-1122_032421	TO-15	6.3 "Hg	9.9 psi
15A	MH-1020_032421	TO-15	7.3 "Hg	10 psi
16A	Lab Blank	TO-15	NA	NA
17A	CCV	TO-15	NA	NA
18A	LCS	TO-15	NA	NA
18AA	LCSD	TO-15	NA	NA

CERTIFIED BY: 

 Technical Director

DATE: 04/05/21

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935
 Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
 Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
EPA Method TO-15
Arcadis U.S., Inc.
Workorder# 2103778

Fifteen 1 Liter Summa Canister (100% Certified) samples were received on March 29, 2021. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Dilution was performed on samples SL-4_032221, MH-1244_032221 and MH-1231_032221 due to the presence of high level target species.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-4_032221	Date/Time Analyzed:	4/1/21 02:59 AM
Lab ID:	2103778-01A	Dilution Factor:	16.3
Date/Time Collected:	3/22/21 04:11 PM	Instrument/Filename:	msdj.i / j033125
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	11	19	32	33
1,4-Dioxane	123-91-1	29	79	120	Not Detected
cis-1,2-Dichloroethene	156-59-2	8.4	19	32	7200
Tetrachloroethene	127-18-4	15	33	55	Not Detected
trans-1,2-Dichloroethene	156-60-5	6.5	19	32	75
Trichloroethene	79-01-6	10	26	44	4400
Vinyl Chloride	75-01-4	3.8	12	21	3100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	103

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1096_032221	Date/Time Analyzed:	3/31/21 03:42 PM
Lab ID:	2103778-02A	Dilution Factor:	2.27
Date/Time Collected:	3/22/21 04:26 PM	Instrument/Filename:	msdj.i / j033108
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.5	2.7	4.5	Not Detected
1,4-Dioxane	123-91-1	4.0	11	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.2	2.7	4.5	Not Detected
Tetrachloroethene	127-18-4	2.2	4.6	7.7	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.90	2.7	4.5	Not Detected
Trichloroethene	79-01-6	1.5	3.6	6.1	Not Detected
Vinyl Chloride	75-01-4	0.52	1.7	2.9	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1245_032221	Date/Time Analyzed:	3/31/21 04:13 PM
Lab ID:	2103778-03A	Dilution Factor:	2.14
Date/Time Collected:	3/22/21 01:35 PM	Instrument/Filename:	msdj.i / j033109
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.5	4.2	Not Detected
1,4-Dioxane	123-91-1	3.8	10	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.1	2.5	4.2	2.2 J
Tetrachloroethene	127-18-4	2.0	4.4	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.85	2.5	4.2	Not Detected
Trichloroethene	79-01-6	1.4	3.4	5.8	2.0 J
Vinyl Chloride	75-01-4	0.49	1.6	2.7	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1244_032221	Date/Time Analyzed:	3/31/21 04:40 PM
Lab ID:	2103778-04A	Dilution Factor:	4.17
Date/Time Collected:	3/22/21 01:48 PM	Instrument/Filename:	msdj.i / j033110
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.8	5.0	8.3	14
1,4-Dioxane	123-91-1	7.4	20	30	Not Detected
cis-1,2-Dichloroethene	156-59-2	2.1	5.0	8.3	1000
Tetrachloroethene	127-18-4	4.0	8.5	14	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.6	5.0	8.3	20
Trichloroethene	79-01-6	2.7	6.7	11	1100
Vinyl Chloride	75-01-4	0.96	3.2	5.3	1200

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1231_032221	Date/Time Analyzed:	4/1/21 03:26 AM
Lab ID:	2103778-05A	Dilution Factor:	101
Date/Time Collected:	3/22/21 02:05 PM	Instrument/Filename:	msdj.i / j033126
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	68	120	200	190 J
1,4-Dioxane	123-91-1	180	490	730	Not Detected
cis-1,2-Dichloroethene	156-59-2	52	120	200	46000
Tetrachloroethene	127-18-4	96	200	340	Not Detected
trans-1,2-Dichloroethene	156-60-5	40	120	200	400
Trichloroethene	79-01-6	65	160	270	19000
Vinyl Chloride	75-01-4	23	77	130	23000

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	103

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-5_032321	Date/Time Analyzed:	3/31/21 05:11 PM
Lab ID:	2103778-06A	Dilution Factor:	1.95
Date/Time Collected:	3/23/21 09:15 AM	Instrument/Filename:	msdj.i / j033111
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	2.3	3.9	Not Detected
1,4-Dioxane	123-91-1	3.4	9.5	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.0	2.3	3.9	230
Tetrachloroethene	127-18-4	1.8	4.0	6.6	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.77	2.3	3.9	3.5 J
Trichloroethene	79-01-6	1.2	3.1	5.2	110
Vinyl Chloride	75-01-4	0.45	1.5	2.5	71

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	WDC_032321	Date/Time Analyzed:	3/31/21 05:42 PM
Lab ID:	2103778-07A	Dilution Factor:	1.97
Date/Time Collected:	3/23/21 09:56 AM	Instrument/Filename:	msdj.i / j033112
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	2.3	3.9	Not Detected
1,4-Dioxane	123-91-1	3.5	9.6	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.0	2.3	3.9	Not Detected
Tetrachloroethene	127-18-4	1.9	4.0	6.7	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.78	2.3	3.9	Not Detected
Trichloroethene	79-01-6	1.3	3.2	5.3	5.6
Vinyl Chloride	75-01-4	0.45	1.5	2.5	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	EDC_032321	Date/Time Analyzed:	3/31/21 06:12 PM
Lab ID:	2103778-08A	Dilution Factor:	2.04
Date/Time Collected:	3/23/21 10:16 AM	Instrument/Filename:	msdj.i / j033113
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.4	4.0	Not Detected
1,4-Dioxane	123-91-1	3.6	9.9	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.0	2.4	4.0	4.6
Tetrachloroethene	127-18-4	1.9	4.2	6.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.81	2.4	4.0	Not Detected
Trichloroethene	79-01-6	1.3	3.3	5.5	7.5
Vinyl Chloride	75-01-4	0.47	1.6	2.6	0.58 J

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1181_032321	Date/Time Analyzed:	3/31/21 06:43 PM
Lab ID:	2103778-09A	Dilution Factor:	2.24
Date/Time Collected:	3/23/21 03:22 PM	Instrument/Filename:	msdj.i / j033114
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.5	2.7	4.4	Not Detected
1,4-Dioxane	123-91-1	4.0	11	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.2	2.7	4.4	Not Detected
Tetrachloroethene	127-18-4	2.1	4.6	7.6	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.89	2.7	4.4	Not Detected
Trichloroethene	79-01-6	1.4	3.6	6.0	Not Detected
Vinyl Chloride	75-01-4	0.52	1.7	2.9	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1123_032321	Date/Time Analyzed:	3/31/21 07:13 PM
Lab ID:	2103778-10A	Dilution Factor:	2.14
Date/Time Collected:	3/23/21 03:48 PM	Instrument/Filename:	msdj.i / j033115
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.5	4.2	Not Detected
1,4-Dioxane	123-91-1	3.8	10	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.1	2.5	4.2	Not Detected
Tetrachloroethene	127-18-4	2.0	4.4	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.85	2.5	4.2	Not Detected
Trichloroethene	79-01-6	1.4	3.4	5.8	Not Detected
Vinyl Chloride	75-01-4	0.49	1.6	2.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1116_032321	Date/Time Analyzed:	4/1/21 12:30 AM
Lab ID:	2103778-11A	Dilution Factor:	2.13
Date/Time Collected:	3/23/21 03:59 PM	Instrument/Filename:	msdj.i / j033120
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.5	4.2	Not Detected
1,4-Dioxane	123-91-1	3.8	10	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.1	2.5	4.2	Not Detected
Tetrachloroethene	127-18-4	2.0	4.3	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.84	2.5	4.2	Not Detected
Trichloroethene	79-01-6	1.4	3.4	5.7	Not Detected
Vinyl Chloride	75-01-4	0.49	1.6	2.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1113_032321	Date/Time Analyzed:	4/1/21 01:01 AM
Lab ID:	2103778-12A	Dilution Factor:	2.07
Date/Time Collected:	3/23/21 04:13 PM	Instrument/Filename:	msdj.i / j033121
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.5	4.1	Not Detected
1,4-Dioxane	123-91-1	3.6	10	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.1	2.5	4.1	Not Detected
Tetrachloroethene	127-18-4	2.0	4.2	7.0	2.6 J
trans-1,2-Dichloroethene	156-60-5	0.82	2.5	4.1	Not Detected
Trichloroethene	79-01-6	1.3	3.3	5.6	Not Detected
Vinyl Chloride	75-01-4	0.48	1.6	2.6	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1259_032321	Date/Time Analyzed:	4/1/21 01:31 AM
Lab ID:	2103778-13A	Dilution Factor:	2.17
Date/Time Collected:	3/23/21 05:11 PM	Instrument/Filename:	msdj.i / j033122
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.5	2.6	4.3	Not Detected
1,4-Dioxane	123-91-1	3.8	10	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.1	2.6	4.3	Not Detected
Tetrachloroethene	127-18-4	2.1	4.4	7.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.86	2.6	4.3	Not Detected
Trichloroethene	79-01-6	1.4	3.5	5.8	1.7 J
Vinyl Chloride	75-01-4	0.50	1.7	2.8	0.56 J

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1122_032421	Date/Time Analyzed:	4/1/21 02:02 AM
Lab ID:	2103778-14A	Dilution Factor:	2.12
Date/Time Collected:	3/24/21 08:47 AM	Instrument/Filename:	msdj.i / j033123
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.5	4.2	Not Detected
1,4-Dioxane	123-91-1	3.7	10	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.1	2.5	4.2	Not Detected
Tetrachloroethene	127-18-4	2.0	4.3	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.84	2.5	4.2	Not Detected
Trichloroethene	79-01-6	1.4	3.4	5.7	Not Detected
Vinyl Chloride	75-01-4	0.49	1.6	2.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1020_032421	Date/Time Analyzed:	4/1/21 02:33 AM
Lab ID:	2103778-15A	Dilution Factor:	2.22
Date/Time Collected:	3/24/21 09:09 AM	Instrument/Filename:	msdj.i / j033124
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.5	2.6	4.4	Not Detected
1,4-Dioxane	123-91-1	3.9	11	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.1	2.6	4.4	Not Detected
Tetrachloroethene	127-18-4	2.1	4.5	7.5	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.88	2.6	4.4	Not Detected
Trichloroethene	79-01-6	1.4	3.6	6.0	Not Detected
Vinyl Chloride	75-01-4	0.51	1.7	2.8	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Lab Blank	Date/Time Analyzed:	3/31/21 12:32 PM
Lab ID:	2103778-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j033105a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.67	1.2	2.0	Not Detected
1,4-Dioxane	123-91-1	1.8	4.9	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.52	1.2	2.0	Not Detected
Tetrachloroethene	127-18-4	0.95	2.0	3.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.40	1.2	2.0	Not Detected
Trichloroethene	79-01-6	0.64	1.6	2.7	Not Detected
Vinyl Chloride	75-01-4	0.23	0.77	1.3	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	CCV	Date/Time Analyzed:	3/31/21 10:30 AM
Lab ID:	2103778-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j033102
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	88
1,4-Dioxane	123-91-1	87
cis-1,2-Dichloroethene	156-59-2	97
Tetrachloroethene	127-18-4	101
trans-1,2-Dichloroethene	156-60-5	89
Trichloroethene	79-01-6	99
Vinyl Chloride	75-01-4	89

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	98
Toluene-d8	2037-26-5	70-130	103

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCS	Date/Time Analyzed:	3/31/21 10:56 AM
Lab ID:	2103778-18A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j033103
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	87
1,4-Dioxane	123-91-1	105
cis-1,2-Dichloroethene	156-59-2	94
Tetrachloroethene	127-18-4	100
trans-1,2-Dichloroethene	156-60-5	87
Trichloroethene	79-01-6	97
Vinyl Chloride	75-01-4	86

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	99
Toluene-d8	2037-26-5	70-130	103

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCSD	Date/Time Analyzed:	3/31/21 11:22 AM
Lab ID:	2103778-18AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j033104
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	87
1,4-Dioxane	123-91-1	108
cis-1,2-Dichloroethene	156-59-2	93
Tetrachloroethene	127-18-4	103
trans-1,2-Dichloroethene	156-60-5	88
Trichloroethene	79-01-6	100
Vinyl Chloride	75-01-4	87

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	99
Toluene-d8	2037-26-5	70-130	103

* % Recovery is calculated using unrounded analytical results.



DATA VERIFICATION REPORT

April 5, 2021

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2021 Utility Corridor Evaluation Vapor Testing
Project number: 30080642.701.04
Event Specific Scope of Work References: Sample COC
Laboratory: EUROFINS-FOLSOM
Laboratory submittal: 2103778
Sample date: 2021-03-22, 03-23, 03-24
Report received by CADENA: 2021-04-05
Initial Data Verification completed by CADENA: 2021-04-05
Number of Samples: 15
Sample Matrices: AIR
Test Categories: TO-15 GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) TO-15 Analysis

SDG #2103778

CADENA Verification Report: 2021-04-05

Analyses Performed By:
Eurofins Air Toxics
Folsom, California

Report #41084R
Review Level: Tier III
Project: 30080642.701.02

DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 2103778 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						TO-15 (Full Scan)	TO-15 (SIM)	MISC
2103778	SL-4_032221	2103778-01A	Air	3/22/2021		X		
	MH-1096_032221	2103778-02A	Air	3/22/2021		X		
	MH-1245_032221	2103778-03A	Air	3/22/2021		X		
	MH-1244_032221	2103778-04A	Air	3/22/2021		X		
	MH-1231_032221	2103778-05A	Air	3/22/2021		X		
	SL-5_032321	2103778-06A	Air	3/23/2021		X		
	WDC_032321	2103778-07A	Air	3/23/2021		X		
	EDC_032321	2103778-08A	Air	3/23/2021		X		
	MH-1181_032321	2103778-09A	Air	3/23/2021		X		
	MH-1123_032321	2103778-10A	Air	3/23/2021		X		
	MH-1116_032321	2103778-11A	Air	3/23/2021		X		
	MH-1113_032321	2103778-12A	Air	3/23/2021		X		
	MH-1259_032321	2103778-13A	Air	3/23/2021		X		
	MH-1122_032421	2103778-14A	Air	3/24/2021		X		
	MH-1020_032421	2103778-15A	Air	3/24/2021		X		

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Method TO-15 (Full Scan). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation	Return Canister Pressure
USEPA TO-15	Air	30 days from collection to analysis (Canister)	Ambient Temperature	< -2" Hg

All samples were analyzed within the specified holding time and canister return pressure / vacuum criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (30%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (30%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than 140% or less than 60% of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

5. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra. All identified compounds met the specified criteria.

6. Field Duplicate Sample Analysis

The field duplicate analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 35% for air 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 not greater than five times the RL, a control limit of three times the RL is applied to the difference between the duplicate sample results.

A field duplicate was not performed on a sample location within this SDG.

7. System Performance and Overall Assessment

Note: Dilution was performed on samples SL-4_032221, MH-1244_032221 and MH-1231_032221 due to the presence of high-level target species.

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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: TO-15 (Full Scan)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Canister return pressure (<-2"Hg)		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Field Duplicate Sample RPD	X				X
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Joseph C. Houser

SIGNATURE:



DATE: April 21, 2021

PEER REVIEW: Dennis Capria

DATE: April 27, 2021



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



**NO CORRECTIONS/QUALIFIERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**



EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-4_032221	Date/Time Analyzed:	4/1/21 02:59 AM
Lab ID:	2103778-01A	Dilution Factor:	16.3
Date/Time Collected:	3/22/21 04:11 PM	Instrument/Filename:	msdj.i / j033125
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	11	19	32	33
1,4-Dioxane	123-91-1	29	79	120	Not Detected
cis-1,2-Dichloroethene	156-59-2	8.4	19	32	7200
Tetrachloroethene	127-18-4	15	33	55	Not Detected
trans-1,2-Dichloroethene	156-60-5	6.5	19	32	75
Trichloroethene	79-01-6	10	26	44	4400
Vinyl Chloride	75-01-4	3.8	12	21	3100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	103

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1096_032221	Date/Time Analyzed:	3/31/21 03:42 PM
Lab ID:	2103778-02A	Dilution Factor:	2.27
Date/Time Collected:	3/22/21 04:26 PM	Instrument/Filename:	msdj.i / j033108
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.5	2.7	4.5	Not Detected
1,4-Dioxane	123-91-1	4.0	11	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.2	2.7	4.5	Not Detected
Tetrachloroethene	127-18-4	2.2	4.6	7.7	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.90	2.7	4.5	Not Detected
Trichloroethene	79-01-6	1.5	3.6	6.1	Not Detected
Vinyl Chloride	75-01-4	0.52	1.7	2.9	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1245_032221	Date/Time Analyzed:	3/31/21 04:13 PM
Lab ID:	2103778-03A	Dilution Factor:	2.14
Date/Time Collected:	3/22/21 01:35 PM	Instrument/Filename:	msdj.i / j033109
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.5	4.2	Not Detected
1,4-Dioxane	123-91-1	3.8	10	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.1	2.5	4.2	2.2 J
Tetrachloroethene	127-18-4	2.0	4.4	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.85	2.5	4.2	Not Detected
Trichloroethene	79-01-6	1.4	3.4	5.8	2.0 J
Vinyl Chloride	75-01-4	0.49	1.6	2.7	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1244_032221	Date/Time Analyzed:	3/31/21 04:40 PM
Lab ID:	2103778-04A	Dilution Factor:	4.17
Date/Time Collected:	3/22/21 01:48 PM	Instrument/Filename:	msdj.i / j033110
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.8	5.0	8.3	14
1,4-Dioxane	123-91-1	7.4	20	30	Not Detected
cis-1,2-Dichloroethene	156-59-2	2.1	5.0	8.3	1000
Tetrachloroethene	127-18-4	4.0	8.5	14	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.6	5.0	8.3	20
Trichloroethene	79-01-6	2.7	6.7	11	1100
Vinyl Chloride	75-01-4	0.96	3.2	5.3	1200

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1231_032221	Date/Time Analyzed:	4/1/21 03:26 AM
Lab ID:	2103778-05A	Dilution Factor:	101
Date/Time Collected:	3/22/21 02:05 PM	Instrument/Filename:	msdj.i / j033126
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	68	120	200	190 J
1,4-Dioxane	123-91-1	180	490	730	Not Detected
cis-1,2-Dichloroethene	156-59-2	52	120	200	46000
Tetrachloroethene	127-18-4	96	200	340	Not Detected
trans-1,2-Dichloroethene	156-60-5	40	120	200	400
Trichloroethene	79-01-6	65	160	270	19000
Vinyl Chloride	75-01-4	23	77	130	23000

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	103

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-5_032321	Date/Time Analyzed:	3/31/21 05:11 PM
Lab ID:	2103778-06A	Dilution Factor:	1.95
Date/Time Collected:	3/23/21 09:15 AM	Instrument/Filename:	msdj.i / j033111
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	2.3	3.9	Not Detected
1,4-Dioxane	123-91-1	3.4	9.5	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.0	2.3	3.9	230
Tetrachloroethene	127-18-4	1.8	4.0	6.6	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.77	2.3	3.9	3.5 J
Trichloroethene	79-01-6	1.2	3.1	5.2	110
Vinyl Chloride	75-01-4	0.45	1.5	2.5	71

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	WDC_032321	Date/Time Analyzed:	3/31/21 05:42 PM
Lab ID:	2103778-07A	Dilution Factor:	1.97
Date/Time Collected:	3/23/21 09:56 AM	Instrument/Filename:	msdj.i / j033112
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	2.3	3.9	Not Detected
1,4-Dioxane	123-91-1	3.5	9.6	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.0	2.3	3.9	Not Detected
Tetrachloroethene	127-18-4	1.9	4.0	6.7	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.78	2.3	3.9	Not Detected
Trichloroethene	79-01-6	1.3	3.2	5.3	5.6
Vinyl Chloride	75-01-4	0.45	1.5	2.5	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	EDC_032321	Date/Time Analyzed:	3/31/21 06:12 PM
Lab ID:	2103778-08A	Dilution Factor:	2.04
Date/Time Collected:	3/23/21 10:16 AM	Instrument/Filename:	msdj.i / j033113
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.4	4.0	Not Detected
1,4-Dioxane	123-91-1	3.6	9.9	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.0	2.4	4.0	4.6
Tetrachloroethene	127-18-4	1.9	4.2	6.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.81	2.4	4.0	Not Detected
Trichloroethene	79-01-6	1.3	3.3	5.5	7.5
Vinyl Chloride	75-01-4	0.47	1.6	2.6	0.58 J

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1181_032321	Date/Time Analyzed:	3/31/21 06:43 PM
Lab ID:	2103778-09A	Dilution Factor:	2.24
Date/Time Collected:	3/23/21 03:22 PM	Instrument/Filename:	msdj.i / j033114
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.5	2.7	4.4	Not Detected
1,4-Dioxane	123-91-1	4.0	11	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.2	2.7	4.4	Not Detected
Tetrachloroethene	127-18-4	2.1	4.6	7.6	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.89	2.7	4.4	Not Detected
Trichloroethene	79-01-6	1.4	3.6	6.0	Not Detected
Vinyl Chloride	75-01-4	0.52	1.7	2.9	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1123_032321	Date/Time Analyzed:	3/31/21 07:13 PM
Lab ID:	2103778-10A	Dilution Factor:	2.14
Date/Time Collected:	3/23/21 03:48 PM	Instrument/Filename:	msdj.i / j033115
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.5	4.2	Not Detected
1,4-Dioxane	123-91-1	3.8	10	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.1	2.5	4.2	Not Detected
Tetrachloroethene	127-18-4	2.0	4.4	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.85	2.5	4.2	Not Detected
Trichloroethene	79-01-6	1.4	3.4	5.8	Not Detected
Vinyl Chloride	75-01-4	0.49	1.6	2.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1116_032321	Date/Time Analyzed:	4/1/21 12:30 AM
Lab ID:	2103778-11A	Dilution Factor:	2.13
Date/Time Collected:	3/23/21 03:59 PM	Instrument/Filename:	msdj.i / j033120
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.5	4.2	Not Detected
1,4-Dioxane	123-91-1	3.8	10	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.1	2.5	4.2	Not Detected
Tetrachloroethene	127-18-4	2.0	4.3	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.84	2.5	4.2	Not Detected
Trichloroethene	79-01-6	1.4	3.4	5.7	Not Detected
Vinyl Chloride	75-01-4	0.49	1.6	2.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1113_032321	Date/Time Analyzed:	4/1/21 01:01 AM
Lab ID:	2103778-12A	Dilution Factor:	2.07
Date/Time Collected:	3/23/21 04:13 PM	Instrument/Filename:	msdj.i / j033121
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.5	4.1	Not Detected
1,4-Dioxane	123-91-1	3.6	10	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.1	2.5	4.1	Not Detected
Tetrachloroethene	127-18-4	2.0	4.2	7.0	2.6 J
trans-1,2-Dichloroethene	156-60-5	0.82	2.5	4.1	Not Detected
Trichloroethene	79-01-6	1.3	3.3	5.6	Not Detected
Vinyl Chloride	75-01-4	0.48	1.6	2.6	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1259_032321	Date/Time Analyzed:	4/1/21 01:31 AM
Lab ID:	2103778-13A	Dilution Factor:	2.17
Date/Time Collected:	3/23/21 05:11 PM	Instrument/Filename:	msdj.i / j033122
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.5	2.6	4.3	Not Detected
1,4-Dioxane	123-91-1	3.8	10	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.1	2.6	4.3	Not Detected
Tetrachloroethene	127-18-4	2.1	4.4	7.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.86	2.6	4.3	Not Detected
Trichloroethene	79-01-6	1.4	3.5	5.8	1.7 J
Vinyl Chloride	75-01-4	0.50	1.7	2.8	0.56 J

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1122_032421	Date/Time Analyzed:	4/1/21 02:02 AM
Lab ID:	2103778-14A	Dilution Factor:	2.12
Date/Time Collected:	3/24/21 08:47 AM	Instrument/Filename:	msdj.i / j033123
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.5	4.2	Not Detected
1,4-Dioxane	123-91-1	3.7	10	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.1	2.5	4.2	Not Detected
Tetrachloroethene	127-18-4	2.0	4.3	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.84	2.5	4.2	Not Detected
Trichloroethene	79-01-6	1.4	3.4	5.7	Not Detected
Vinyl Chloride	75-01-4	0.49	1.6	2.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1020_032421	Date/Time Analyzed:	4/1/21 02:33 AM
Lab ID:	2103778-15A	Dilution Factor:	2.22
Date/Time Collected:	3/24/21 09:09 AM	Instrument/Filename:	msdj.i / j033124
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.5	2.6	4.4	Not Detected
1,4-Dioxane	123-91-1	3.9	11	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.1	2.6	4.4	Not Detected
Tetrachloroethene	127-18-4	2.1	4.5	7.5	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.88	2.6	4.4	Not Detected
Trichloroethene	79-01-6	1.4	3.6	6.0	Not Detected
Vinyl Chloride	75-01-4	0.51	1.7	2.8	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	101

Analysis Request / Canister Chain of Custody

For Laboratory Use Only

PID: _____ Workorder #: 2103778

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
Phone (800) 985-5955; Fax (916) 351-8279

Click links below to view:

[Canister Sampling Guide](#)

[Helium Shroud Video](#)

Client: <u>Ford</u>	PID: <u>NA</u>	Special Instructions/Notes: Report ONLY: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, 1,4-Dioxane, PCE, TCE and VC. Submit results through Cadena at jim.tomalia@cadena.com. Cadena #E205162 Level IV Reporting	Turnaround Time (Rush surcharges may apply)	
Project Name: <u>Ford LTP</u>			5 Day Turnaround Time	
Project Manager: <u>Kris Hinskey</u>	P.O.# <u>30080642.701.04</u>		Canister Vacuum/Pressure	Requested Analyses
Sampler: <u>Emma Witherspoon Andrew Banitt</u>			Lab Use Only	
Site Name: <u>Ford LTP</u>				

Lab ID	Sample Identification	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Initial (in Hg)	Final (in Hg)	Receipt	Final (psig) Gas: N ₂ / He	TO-15 (See Special Instructions/Notes)	Do Not Analyze
				Date	Time	Date	Time						
01A	SL-4-032221	121941	1910	3/22/21	1610	3/22/21	1611	-29	-4			X	
02A	MH-1096-032221	121788	1910	3/22/21	1625	3/22/21	1626	-29	-6.5			X	
03A	MH-1245-032221	122943	2028	3/22/21	1334	3/22/21	1335	-29	-5.5			X	
04A	MH-1244-032221	123272	1946	3/22/21	1347	3/22/21	1348	-29	-5.5			X	
05A	MH-1231-032221	34002498	1946	3/22/21	1404	3/22/21	1405	-29	-4			X	
06A	SL-5-032321	123233	2046	3/23/21	0914	3/23/21	0915	-29	-4			X	
07A	WDC-032321	123287	1913	3/23/21	0955	3/23/21	0956	-28.5	-4.5			X	
08A	EDC-032321	122839	1945	3/23/21	1015	3/23/21	1016	-29	-5			X	
09A	MH-1181-032321	122851	2035	3/23/21	1520	3/23/21	1522	-29	-6			X	
10A	MH-1123-032321	122641	1922	3/23/21	1547	3/23/21	1548	-29.5	-6			X	
11A	MH-1116-032321	123222	2028	3/23/21	1558	3/23/21	1559	-29	-6			X	
12A	MH-1113-032321	122879	1910	3/23/21	1612	3/23/21	1613	-29	-4.5			X	
13A	MH-1259-032321	123216	19380	3/23/21	1710	3/23/21	1711	-29	-6			X	
14A	MH-1122-032421	121812	1913	3/24/21	0846	3/24/21	0847	-28.5	-5.5			X	
15A	MH-1020-032421	122620	1922	3/24/21	0908	3/24/21	0909	-28.5	-6			X	

Relinquished by: (Signature/Affiliation) <i>E Witherspoon / Arcadis</i>	Date <u>3/25/21</u>	Time <u>1200</u>	Received by: (Signature/Affiliation) <i>[Signature]</i>	Date <u>3-29-21</u>	Time <u>0919</u>
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only

Shipper Name: [Signature] Custody Seals Intact? Yes No None

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and International laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

4/5/2021

Mr. Jim Tomalia
Arcadis U.S., Inc.
28550 Cabot Dr.
Suite 500
Novi MI 48377

Project Name: Ford LTP
Project #:
Workorder #: 2103779

Dear Mr. Jim Tomalia

The following report includes the data for the above referenced project for sample(s) received on 3/29/2021 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Jade White at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Jade White
Project Manager

WORK ORDER #: 2103779

Work Order Summary

CLIENT:	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	517-819-0356	P.O. #	30080642.701.04
FAX:		PROJECT #	Ford LTP
DATE RECEIVED:	03/29/2021	CONTACT:	Jade White
DATE COMPLETED:	04/05/2021		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	MH-1043_032421	TO-15	8 "Hg	9.8 psi
02A	MH-1067_032421	TO-15	8.6 "Hg	9.9 psi
03A	MH-1082_032421	TO-15	7.3 "Hg	10 psi
04A	DUP-01	TO-15	6.9 "Hg	10.1 psi
05A	DUP-02	TO-15	5.9 "Hg	9.9 psi
06A	MH-1001_032321	TO-15	5.9 "Hg	10 psi
07A	MH-1041_032321	TO-15	6.7 "Hg	10 psi
08A	MH-1066_032321	TO-15	6.5 "Hg	10 psi
09A	MH-1088_032321	TO-15	5.3 "Hg	10 psi
10A	MH-1210_032321	TO-15	6.1 "Hg	10.1 psi
11A	MH-1219_032321	TO-15	7.8 "Hg	10 psi
12A	MH-1171_032321	TO-15	7.1 "Hg	10.1 psi
13A	MH-1255_032321	TO-15	7.8 "Hg	10 psi
14A	MH-1248_032221	TO-15	7.1 "Hg	10 psi
15A	MH-1258_032221	TO-15	5.7 "Hg	10 psi
16A	MH-1256_032221	TO-15	7.1 "Hg	10 psi
17A	SL-3_032221	TO-15	6.3 "Hg	10 psi
18A	Lab Blank	TO-15	NA	NA
18B	Lab Blank	TO-15	NA	NA
19A	CCV	TO-15	NA	NA
19B	CCV	TO-15	NA	NA
20A	LCS	TO-15	NA	NA
20AA	LCSD	TO-15	NA	NA

Continued on next page

WORK ORDER #: 2103779

Work Order Summary

CLIENT:	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	517-819-0356	P.O. #	30080642.701.04
FAX:		PROJECT #	Ford LTP
DATE RECEIVED:	03/29/2021	CONTACT:	Jade White
DATE COMPLETED:	04/05/2021		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
20B	LCS	TO-15	NA	NA
20BB	LCSD	TO-15	NA	NA

CERTIFIED BY: 

 Technical Director

DATE: 04/05/21

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935
 Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
 Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
 (916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
Arcadis U.S., Inc.
Workorder# 2103779

Seventeen 1 Liter Summa Canister (100% Certified) samples were received on March 29, 2021. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Dilution was performed on samples MH-1255_032321, MH-1256_032221 and SL-3_032221 due to the presence of high level target species.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1043_032421	Date/Time Analyzed:	3/31/21 11:45 PM
Lab ID:	2103779-01A	Dilution Factor:	2.27
Date/Time Collected:	3/24/21 09:48 AM	Instrument/Filename:	msdp.i / p033122
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.5	2.2	4.5	Not Detected
1,4-Dioxane	123-91-1	2.4	4.9	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.2	4.5	Not Detected
Tetrachloroethene	127-18-4	1.2	3.8	7.7	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	2.2	4.5	Not Detected
Trichloroethene	79-01-6	0.88	3.0	6.1	Not Detected
Vinyl Chloride	75-01-4	0.73	1.4	2.9	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	113
4-Bromofluorobenzene	460-00-4	70-130	110
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1067_032421	Date/Time Analyzed:	4/1/21 12:15 AM
Lab ID:	2103779-02A	Dilution Factor:	2.34
Date/Time Collected:	3/24/21 10:27 AM	Instrument/Filename:	msdp.i / p033123
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.5	2.3	4.6	Not Detected
1,4-Dioxane	123-91-1	2.5	5.0	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	2.3	4.6	Not Detected
Tetrachloroethene	127-18-4	1.3	4.0	7.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	2.3	4.6	Not Detected
Trichloroethene	79-01-6	0.91	3.1	6.3	Not Detected
Vinyl Chloride	75-01-4	0.76	1.5	3.0	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	114
4-Bromofluorobenzene	460-00-4	70-130	114
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1082_032421	Date/Time Analyzed:	4/1/21 12:44 AM
Lab ID:	2103779-03A	Dilution Factor:	2.22
Date/Time Collected:	3/24/21 10:50 AM	Instrument/Filename:	msdp.i / p033124
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.2	4.4	Not Detected
1,4-Dioxane	123-91-1	2.4	4.8	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.2	4.4	Not Detected
Tetrachloroethene	127-18-4	1.2	3.8	7.5	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.2	4.4	Not Detected
Trichloroethene	79-01-6	0.86	3.0	6.0	Not Detected
Vinyl Chloride	75-01-4	0.72	1.4	2.8	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	112
4-Bromofluorobenzene	460-00-4	70-130	114
Toluene-d8	2037-26-5	70-130	95

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	DUP-01	Date/Time Analyzed:	4/1/21 01:13 AM
Lab ID:	2103779-04A	Dilution Factor:	2.19
Date/Time Collected:	3/22/21 12:00 AM	Instrument/Filename:	msdp.i / p033125
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.2	4.3	Not Detected
1,4-Dioxane	123-91-1	2.3	4.7	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.2	4.3	6.8
Tetrachloroethene	127-18-4	1.2	3.7	7.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.2	4.3	Not Detected
Trichloroethene	79-01-6	0.85	2.9	5.9	10
Vinyl Chloride	75-01-4	0.71	1.4	2.8	0.89 J

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	116
4-Bromofluorobenzene	460-00-4	70-130	111
Toluene-d8	2037-26-5	70-130	94

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	DUP-02	Date/Time Analyzed:	4/1/21 01:43 AM
Lab ID:	2103779-05A	Dilution Factor:	2.08
Date/Time Collected:	3/23/21 12:00 AM	Instrument/Filename:	msdp.i / p033126
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.1	4.1	Not Detected
1,4-Dioxane	123-91-1	2.2	4.5	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.1	4.1	5.7
Tetrachloroethene	127-18-4	1.1	3.5	7.0	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.1	4.1	Not Detected
Trichloroethene	79-01-6	0.80	2.8	5.6	Not Detected
Vinyl Chloride	75-01-4	0.67	1.3	2.6	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	113
4-Bromofluorobenzene	460-00-4	70-130	112
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1001_032321	Date/Time Analyzed:	4/1/21 09:35 PM
Lab ID:	2103779-06A	Dilution Factor:	2.09
Date/Time Collected:	3/23/21 10:48 AM	Instrument/Filename:	msdp.i / p040116
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.1	4.1	Not Detected
1,4-Dioxane	123-91-1	2.2	4.5	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.1	4.1	7.5
Tetrachloroethene	127-18-4	1.1	3.5	7.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.1	4.1	Not Detected
Trichloroethene	79-01-6	0.81	2.8	5.6	Not Detected
Vinyl Chloride	75-01-4	0.67	1.3	2.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	112
4-Bromofluorobenzene	460-00-4	70-130	111
Toluene-d8	2037-26-5	70-130	93

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1041_032321	Date/Time Analyzed:	4/1/21 10:05 PM
Lab ID:	2103779-07A	Dilution Factor:	2.16
Date/Time Collected:	3/23/21 11:19 AM	Instrument/Filename:	msdp.i / p040117
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.1	4.3	Not Detected
1,4-Dioxane	123-91-1	2.3	4.7	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.1	4.3	Not Detected
Tetrachloroethene	127-18-4	1.2	3.7	7.3	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.1	4.3	Not Detected
Trichloroethene	79-01-6	0.84	2.9	5.8	Not Detected
Vinyl Chloride	75-01-4	0.70	1.4	2.8	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	109
4-Bromofluorobenzene	460-00-4	70-130	109
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1066_032321	Date/Time Analyzed:	4/1/21 10:34 PM
Lab ID:	2103779-08A	Dilution Factor:	2.14
Date/Time Collected:	3/23/21 11:48 AM	Instrument/Filename:	msdp.i / p040118
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.1	4.2	Not Detected
1,4-Dioxane	123-91-1	2.3	4.6	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.1	4.2	Not Detected
Tetrachloroethene	127-18-4	1.2	3.6	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.1	4.2	Not Detected
Trichloroethene	79-01-6	0.83	2.9	5.8	Not Detected
Vinyl Chloride	75-01-4	0.69	1.4	2.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	112
4-Bromofluorobenzene	460-00-4	70-130	108
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1088_032321	Date/Time Analyzed:	3/31/21 05:36 PM
Lab ID:	2103779-09A	Dilution Factor:	2.04
Date/Time Collected:	3/23/21 12:12 PM	Instrument/Filename:	msdp.i / p033114
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	2.0	4.0	Not Detected
1,4-Dioxane	123-91-1	2.2	4.4	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.0	4.0	Not Detected
Tetrachloroethene	127-18-4	1.1	3.4	6.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	2.0	4.0	Not Detected
Trichloroethene	79-01-6	0.79	2.7	5.5	Not Detected
Vinyl Chloride	75-01-4	0.66	1.3	2.6	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	111
4-Bromofluorobenzene	460-00-4	70-130	110
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1210_032321	Date/Time Analyzed:	3/31/21 06:06 PM
Lab ID:	2103779-10A	Dilution Factor:	2.12
Date/Time Collected:	3/23/21 01:21 PM	Instrument/Filename:	msdp.i / p033115
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.1	4.2	Not Detected
1,4-Dioxane	123-91-1	2.2	4.6	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.1	4.2	Not Detected
Tetrachloroethene	127-18-4	1.2	3.6	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.1	4.2	Not Detected
Trichloroethene	79-01-6	0.82	2.8	5.7	Not Detected
Vinyl Chloride	75-01-4	0.68	1.4	2.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	112
4-Bromofluorobenzene	460-00-4	70-130	110
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1219_032321	Date/Time Analyzed:	3/31/21 06:35 PM
Lab ID:	2103779-11A	Dilution Factor:	2.27
Date/Time Collected:	3/23/21 02:28 PM	Instrument/Filename:	msdp.i / p033116
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.5	2.2	4.5	Not Detected
1,4-Dioxane	123-91-1	2.4	4.9	16	7.3 J
cis-1,2-Dichloroethene	156-59-2	1.6	2.2	4.5	7.3
Tetrachloroethene	127-18-4	1.2	3.8	7.7	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	2.2	4.5	Not Detected
Trichloroethene	79-01-6	0.88	3.0	6.1	Not Detected
Vinyl Chloride	75-01-4	0.73	1.4	2.9	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	116
4-Bromofluorobenzene	460-00-4	70-130	108
Toluene-d8	2037-26-5	70-130	95

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1171_032321	Date/Time Analyzed:	3/31/21 09:20 PM
Lab ID:	2103779-12A	Dilution Factor:	2.21
Date/Time Collected:	3/23/21 02:56 PM	Instrument/Filename:	msdp.i / p033117
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.2	4.4	Not Detected
1,4-Dioxane	123-91-1	2.3	4.8	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.2	4.4	40
Tetrachloroethene	127-18-4	1.2	3.7	7.5	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.2	4.4	Not Detected
Trichloroethene	79-01-6	0.86	3.0	5.9	1.7 J
Vinyl Chloride	75-01-4	0.71	1.4	2.8	1.8 J

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	107
4-Bromofluorobenzene	460-00-4	70-130	109
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1255_032321	Date/Time Analyzed:	4/1/21 02:10 AM
Lab ID:	2103779-13A	Dilution Factor:	30.3
Date/Time Collected:	3/23/21 04:38 PM	Instrument/Filename:	msdp.i / p033127
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	20	30	60	37 J
1,4-Dioxane	123-91-1	32	66	220	Not Detected
cis-1,2-Dichloroethene	156-59-2	22	30	60	810
Tetrachloroethene	127-18-4	16	51	100	Not Detected
trans-1,2-Dichloroethene	156-60-5	16	30	60	37 J
Trichloroethene	79-01-6	12	41	81	140
Vinyl Chloride	75-01-4	9.8	19	39	7800

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	107
4-Bromofluorobenzene	460-00-4	70-130	110
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1248_032221	Date/Time Analyzed:	3/31/21 09:50 PM
Lab ID:	2103779-14A	Dilution Factor:	2.20
Date/Time Collected:	3/22/21 01:17 PM	Instrument/Filename:	msdp.i / p033118
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.2	4.4	Not Detected
1,4-Dioxane	123-91-1	2.3	4.8	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.2	4.4	6.0
Tetrachloroethene	127-18-4	1.2	3.7	7.5	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.2	4.4	Not Detected
Trichloroethene	79-01-6	0.85	3.0	5.9	12
Vinyl Chloride	75-01-4	0.71	1.4	2.8	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	115
4-Bromofluorobenzene	460-00-4	70-130	108
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1258_032221	Date/Time Analyzed:	3/31/21 10:19 PM
Lab ID:	2103779-15A	Dilution Factor:	2.07
Date/Time Collected:	3/22/21 02:30 PM	Instrument/Filename:	msdp.i / p033119
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	2.0	4.1	Not Detected
1,4-Dioxane	123-91-1	2.2	4.5	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.0	4.1	43
Tetrachloroethene	127-18-4	1.1	3.5	7.0	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.0	4.1	Not Detected
Trichloroethene	79-01-6	0.80	2.8	5.6	3.4 J
Vinyl Chloride	75-01-4	0.67	1.3	2.6	5.8

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	110
4-Bromofluorobenzene	460-00-4	70-130	111
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1256_032221	Date/Time Analyzed:	3/31/21 10:47 PM
Lab ID:	2103779-16A	Dilution Factor:	17.6
Date/Time Collected:	3/22/21 02:42 PM	Instrument/Filename:	msdp.i / p033120
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	11	17	35	35
1,4-Dioxane	123-91-1	19	38	130	Not Detected
cis-1,2-Dichloroethene	156-59-2	13	17	35	7400
Tetrachloroethene	127-18-4	9.6	30	60	Not Detected
trans-1,2-Dichloroethene	156-60-5	9.0	17	35	63
Trichloroethene	79-01-6	6.8	24	47	2100
Vinyl Chloride	75-01-4	5.7	11	22	3100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	106
4-Bromofluorobenzene	460-00-4	70-130	107
Toluene-d8	2037-26-5	70-130	93

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-3_032221	Date/Time Analyzed:	3/31/21 11:16 PM
Lab ID:	2103779-17A	Dilution Factor:	3.40
Date/Time Collected:	3/22/21 03:49 PM	Instrument/Filename:	msdp.i / p033121
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.2	3.4	6.7	6.6 J
1,4-Dioxane	123-91-1	3.6	7.4	24	Not Detected
cis-1,2-Dichloroethene	156-59-2	2.4	3.4	6.7	1700
Tetrachloroethene	127-18-4	1.9	5.8	12	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.7	3.4	6.7	14
Trichloroethene	79-01-6	1.3	4.6	9.1	1000
Vinyl Chloride	75-01-4	1.1	2.2	4.3	650

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	112
4-Bromofluorobenzene	460-00-4	70-130	110
Toluene-d8	2037-26-5	70-130	94

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Lab Blank	Date/Time Analyzed:	3/31/21 11:46 AM
Lab ID:	2103779-18A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p033105a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.65	0.99	2.0	Not Detected
1,4-Dioxane	123-91-1	1.1	2.2	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.72	0.99	2.0	Not Detected
Tetrachloroethene	127-18-4	0.55	1.7	3.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.51	0.99	2.0	Not Detected
Trichloroethene	79-01-6	0.39	1.3	2.7	Not Detected
Vinyl Chloride	75-01-4	0.32	0.64	1.3	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	111
4-Bromofluorobenzene	460-00-4	70-130	114
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Lab Blank	Date/Time Analyzed:	4/1/21 12:34 PM
Lab ID:	2103779-18B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p040106c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.65	0.99	2.0	Not Detected
1,4-Dioxane	123-91-1	1.1	2.2	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.72	0.99	2.0	Not Detected
Tetrachloroethene	127-18-4	0.55	1.7	3.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.51	0.99	2.0	Not Detected
Trichloroethene	79-01-6	0.39	1.3	2.7	Not Detected
Vinyl Chloride	75-01-4	0.32	0.64	1.3	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	114
4-Bromofluorobenzene	460-00-4	70-130	111
Toluene-d8	2037-26-5	70-130	95

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	CCV	Date/Time Analyzed:	3/31/21 10:04 AM
Lab ID:	2103779-19A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p033102
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	100
1,4-Dioxane	123-91-1	90
cis-1,2-Dichloroethene	156-59-2	94
Tetrachloroethene	127-18-4	119
trans-1,2-Dichloroethene	156-60-5	94
Trichloroethene	79-01-6	104
Vinyl Chloride	75-01-4	94

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	114
4-Bromofluorobenzene	460-00-4	70-130	119
Toluene-d8	2037-26-5	70-130	94

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	CCV	Date/Time Analyzed:	4/1/21 10:00 AM
Lab ID:	2103779-19B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p040102
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	100
1,4-Dioxane	123-91-1	95
cis-1,2-Dichloroethene	156-59-2	99
Tetrachloroethene	127-18-4	119
trans-1,2-Dichloroethene	156-60-5	97
Trichloroethene	79-01-6	108
Vinyl Chloride	75-01-4	98

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	120
4-Bromofluorobenzene	460-00-4	70-130	117
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCS	Date/Time Analyzed:	3/31/21 10:32 AM
Lab ID:	2103779-20A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p033103
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	106
1,4-Dioxane	123-91-1	90
cis-1,2-Dichloroethene	156-59-2	98
Tetrachloroethene	127-18-4	118
trans-1,2-Dichloroethene	156-60-5	99
Trichloroethene	79-01-6	105
Vinyl Chloride	75-01-4	103

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	117
4-Bromofluorobenzene	460-00-4	70-130	120
Toluene-d8	2037-26-5	70-130	95

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCSD	Date/Time Analyzed:	3/31/21 11:00 AM
Lab ID:	2103779-20AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p033104
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	105
1,4-Dioxane	123-91-1	90
cis-1,2-Dichloroethene	156-59-2	99
Tetrachloroethene	127-18-4	117
trans-1,2-Dichloroethene	156-60-5	99
Trichloroethene	79-01-6	106
Vinyl Chloride	75-01-4	102

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	114
4-Bromofluorobenzene	460-00-4	70-130	115
Toluene-d8	2037-26-5	70-130	95

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCS	Date/Time Analyzed:	4/1/21 10:29 AM
Lab ID:	2103779-20B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p040103
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	108
1,4-Dioxane	123-91-1	92
cis-1,2-Dichloroethene	156-59-2	99
Tetrachloroethene	127-18-4	117
trans-1,2-Dichloroethene	156-60-5	98
Trichloroethene	79-01-6	109
Vinyl Chloride	75-01-4	106

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	116
4-Bromofluorobenzene	460-00-4	70-130	116
Toluene-d8	2037-26-5	70-130	95

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCSD	Date/Time Analyzed:	4/1/21 10:58 AM
Lab ID:	2103779-20BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p040104
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	105
1,4-Dioxane	123-91-1	93
cis-1,2-Dichloroethene	156-59-2	100
Tetrachloroethene	127-18-4	117
trans-1,2-Dichloroethene	156-60-5	97
Trichloroethene	79-01-6	104
Vinyl Chloride	75-01-4	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	112
4-Bromofluorobenzene	460-00-4	70-130	116
Toluene-d8	2037-26-5	70-130	96

* % Recovery is calculated using unrounded analytical results.



DATA VERIFICATION REPORT

April 5, 2021

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2021 Utility Corridor Evaluation Vapor Testing
Project number: 30080642.701.04
Event Specific Scope of Work References: Sample COC
Laboratory: EUROFINS-FOLSOM
Laboratory submittal: 2103779
Sample date: 2021-03-22, 03-23, 03-24
Report received by CADENA: 2021-04-05
Initial Data Verification completed by CADENA: 2021-04-05
Number of Samples: 17
Sample Matrices: AIR
Test Categories: TO-15 GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) TO-15 Analysis

SDG #2103779

CADENA Verification Report: 2021-04-05

Analyses Performed By:
Eurofins Air Toxics
Folsom, California

Report #41085R
Review Level: Tier III
Project: 30080642.701.02

DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 2103779 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						TO-15 (Full Scan)	TO-15 (SIM)	MISC
2103779	MH-1043_032421	2103779-01A	Air	3/24/2021		X		
	MH-1067_032421	2103779-02A	Air	3/24/2021		X		
	MH-1082_032421	2103779-03A	Air	3/24/2021		X		
	DUP-01	2103779-04A	Air	3/22/2021	MH-1248_032221	X		
	DUP-02	2103779-05A	Air	3/23/2021	MH-1219_032321	X		
	MH-1001_032321	2103779-06A	Air	3/23/2021		X		
	MH-1041_032321	2103779-07A	Air	3/23/2021		X		
	MH-1066_032321	2103779-08A	Air	3/23/2021		X		
	MH-1088_032321	2103779-09A	Air	3/23/2021		X		
	MH-1210_032321	2103779-10A	Air	3/23/2021		X		
	MH-1219_032321	2103779-11A	Air	3/23/2021		X		
	MH-1171_032321	2103779-12A	Air	3/23/2021		X		
	MH-1255_032321	2103779-13A	Air	3/23/2021		X		
	MH-1248_032221	2103779-14A	Air	3/22/2021		X		
	MH-1258_032221	2103779-15A	Air	3/22/2021		X		
	MH-1256_032221	2103779-16A	Air	3/22/2021		X		
	SL-3_032221	2103779-17A	Air	3/22/2021		X		

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Method TO-15 (Full Scan). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation	Return Canister Pressure
USEPA TO-15	Air	30 days from collection to analysis (Canister)	Ambient Temperature	< -2" Hg

All samples were analyzed within the specified holding time and canister return pressure / vacuum criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (30%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (30%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than 140% or less than 60% of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

5. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra. All identified compounds met the specified criteria.

6. Field Duplicate Sample Analysis

The field duplicate analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 35% for air 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 not greater than five times the RL, a control limit of three times the RL is applied to the difference between the duplicate sample results.

Results (in $\mu\text{g}/\text{m}^3$) for the field duplicate samples are summarized in the following table.

Sample ID / Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MH-1248_032221/ DUP-01	cis-1,2-Dichloroethene	6.0	6.8	AC
	Trichloroethene	12	10	AC
	Vinyl Chloride	2.8 U	0.89 J	AC
MH-1219_032321/ DUP-02	1,4-Dioxane	7.3 J	15 U	AC
	cis-1,2-Dichloroethene	7.3	5.7	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

Note: Dilution was performed on samples MH-1255_032321, MH-1256_032221 and SL-3_032221 due to the presence of high-level target species.

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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: TO-15 (Full Scan)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Canister return pressure (<-2"Hg)		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Field Duplicate Sample RPD		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

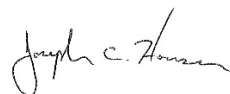
%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Joseph C. Houser

SIGNATURE:



DATE: April 21, 2021

PEER REVIEW: Dennis Capria

DATE: April 27, 2021



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



**NO CORRECTIONS/QUALIFIERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**



EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1043_032421	Date/Time Analyzed:	3/31/21 11:45 PM
Lab ID:	2103779-01A	Dilution Factor:	2.27
Date/Time Collected:	3/24/21 09:48 AM	Instrument/Filename:	msdp.i / p033122
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.5	2.2	4.5	Not Detected
1,4-Dioxane	123-91-1	2.4	4.9	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.2	4.5	Not Detected
Tetrachloroethene	127-18-4	1.2	3.8	7.7	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	2.2	4.5	Not Detected
Trichloroethene	79-01-6	0.88	3.0	6.1	Not Detected
Vinyl Chloride	75-01-4	0.73	1.4	2.9	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	113
4-Bromofluorobenzene	460-00-4	70-130	110
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1067_032421	Date/Time Analyzed:	4/1/21 12:15 AM
Lab ID:	2103779-02A	Dilution Factor:	2.34
Date/Time Collected:	3/24/21 10:27 AM	Instrument/Filename:	msdp.i / p033123
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.5	2.3	4.6	Not Detected
1,4-Dioxane	123-91-1	2.5	5.0	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	2.3	4.6	Not Detected
Tetrachloroethene	127-18-4	1.3	4.0	7.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	2.3	4.6	Not Detected
Trichloroethene	79-01-6	0.91	3.1	6.3	Not Detected
Vinyl Chloride	75-01-4	0.76	1.5	3.0	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	114
4-Bromofluorobenzene	460-00-4	70-130	114
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1082_032421	Date/Time Analyzed:	4/1/21 12:44 AM
Lab ID:	2103779-03A	Dilution Factor:	2.22
Date/Time Collected:	3/24/21 10:50 AM	Instrument/Filename:	msdp.i / p033124
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.2	4.4	Not Detected
1,4-Dioxane	123-91-1	2.4	4.8	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.2	4.4	Not Detected
Tetrachloroethene	127-18-4	1.2	3.8	7.5	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.2	4.4	Not Detected
Trichloroethene	79-01-6	0.86	3.0	6.0	Not Detected
Vinyl Chloride	75-01-4	0.72	1.4	2.8	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	112
4-Bromofluorobenzene	460-00-4	70-130	114
Toluene-d8	2037-26-5	70-130	95

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	DUP-01	Date/Time Analyzed:	4/1/21 01:13 AM
Lab ID:	2103779-04A	Dilution Factor:	2.19
Date/Time Collected:	3/22/21 12:00 AM	Instrument/Filename:	msdp.i / p033125
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.2	4.3	Not Detected
1,4-Dioxane	123-91-1	2.3	4.7	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.2	4.3	6.8
Tetrachloroethene	127-18-4	1.2	3.7	7.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.2	4.3	Not Detected
Trichloroethene	79-01-6	0.85	2.9	5.9	10
Vinyl Chloride	75-01-4	0.71	1.4	2.8	0.89 J

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	116
4-Bromofluorobenzene	460-00-4	70-130	111
Toluene-d8	2037-26-5	70-130	94

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	DUP-02	Date/Time Analyzed:	4/1/21 01:43 AM
Lab ID:	2103779-05A	Dilution Factor:	2.08
Date/Time Collected:	3/23/21 12:00 AM	Instrument/Filename:	msdp.i / p033126
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.1	4.1	Not Detected
1,4-Dioxane	123-91-1	2.2	4.5	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.1	4.1	5.7
Tetrachloroethene	127-18-4	1.1	3.5	7.0	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.1	4.1	Not Detected
Trichloroethene	79-01-6	0.80	2.8	5.6	Not Detected
Vinyl Chloride	75-01-4	0.67	1.3	2.6	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	113
4-Bromofluorobenzene	460-00-4	70-130	112
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1001_032321	Date/Time Analyzed:	4/1/21 09:35 PM
Lab ID:	2103779-06A	Dilution Factor:	2.09
Date/Time Collected:	3/23/21 10:48 AM	Instrument/Filename:	msdp.i / p040116
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.1	4.1	Not Detected
1,4-Dioxane	123-91-1	2.2	4.5	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.1	4.1	7.5
Tetrachloroethene	127-18-4	1.1	3.5	7.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.1	4.1	Not Detected
Trichloroethene	79-01-6	0.81	2.8	5.6	Not Detected
Vinyl Chloride	75-01-4	0.67	1.3	2.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	112
4-Bromofluorobenzene	460-00-4	70-130	111
Toluene-d8	2037-26-5	70-130	93

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1041_032321	Date/Time Analyzed:	4/1/21 10:05 PM
Lab ID:	2103779-07A	Dilution Factor:	2.16
Date/Time Collected:	3/23/21 11:19 AM	Instrument/Filename:	msdp.i / p040117
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.1	4.3	Not Detected
1,4-Dioxane	123-91-1	2.3	4.7	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.1	4.3	Not Detected
Tetrachloroethene	127-18-4	1.2	3.7	7.3	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.1	4.3	Not Detected
Trichloroethene	79-01-6	0.84	2.9	5.8	Not Detected
Vinyl Chloride	75-01-4	0.70	1.4	2.8	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	109
4-Bromofluorobenzene	460-00-4	70-130	109
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1066_032321	Date/Time Analyzed:	4/1/21 10:34 PM
Lab ID:	2103779-08A	Dilution Factor:	2.14
Date/Time Collected:	3/23/21 11:48 AM	Instrument/Filename:	msdp.i / p040118
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.1	4.2	Not Detected
1,4-Dioxane	123-91-1	2.3	4.6	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.1	4.2	Not Detected
Tetrachloroethene	127-18-4	1.2	3.6	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.1	4.2	Not Detected
Trichloroethene	79-01-6	0.83	2.9	5.8	Not Detected
Vinyl Chloride	75-01-4	0.69	1.4	2.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	112
4-Bromofluorobenzene	460-00-4	70-130	108
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1088_032321	Date/Time Analyzed:	3/31/21 05:36 PM
Lab ID:	2103779-09A	Dilution Factor:	2.04
Date/Time Collected:	3/23/21 12:12 PM	Instrument/Filename:	msdp.i / p033114
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	2.0	4.0	Not Detected
1,4-Dioxane	123-91-1	2.2	4.4	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.0	4.0	Not Detected
Tetrachloroethene	127-18-4	1.1	3.4	6.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	2.0	4.0	Not Detected
Trichloroethene	79-01-6	0.79	2.7	5.5	Not Detected
Vinyl Chloride	75-01-4	0.66	1.3	2.6	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	111
4-Bromofluorobenzene	460-00-4	70-130	110
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1210_032321	Date/Time Analyzed:	3/31/21 06:06 PM
Lab ID:	2103779-10A	Dilution Factor:	2.12
Date/Time Collected:	3/23/21 01:21 PM	Instrument/Filename:	msdp.i / p033115
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.1	4.2	Not Detected
1,4-Dioxane	123-91-1	2.2	4.6	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.1	4.2	Not Detected
Tetrachloroethene	127-18-4	1.2	3.6	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.1	4.2	Not Detected
Trichloroethene	79-01-6	0.82	2.8	5.7	Not Detected
Vinyl Chloride	75-01-4	0.68	1.4	2.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	112
4-Bromofluorobenzene	460-00-4	70-130	110
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1219_032321	Date/Time Analyzed:	3/31/21 06:35 PM
Lab ID:	2103779-11A	Dilution Factor:	2.27
Date/Time Collected:	3/23/21 02:28 PM	Instrument/Filename:	msdp.i / p033116
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.5	2.2	4.5	Not Detected
1,4-Dioxane	123-91-1	2.4	4.9	16	7.3 J
cis-1,2-Dichloroethene	156-59-2	1.6	2.2	4.5	7.3
Tetrachloroethene	127-18-4	1.2	3.8	7.7	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.2	2.2	4.5	Not Detected
Trichloroethene	79-01-6	0.88	3.0	6.1	Not Detected
Vinyl Chloride	75-01-4	0.73	1.4	2.9	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	116
4-Bromofluorobenzene	460-00-4	70-130	108
Toluene-d8	2037-26-5	70-130	95

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1171_032321	Date/Time Analyzed:	3/31/21 09:20 PM
Lab ID:	2103779-12A	Dilution Factor:	2.21
Date/Time Collected:	3/23/21 02:56 PM	Instrument/Filename:	msdp.i / p033117
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.2	4.4	Not Detected
1,4-Dioxane	123-91-1	2.3	4.8	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.2	4.4	40
Tetrachloroethene	127-18-4	1.2	3.7	7.5	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.2	4.4	Not Detected
Trichloroethene	79-01-6	0.86	3.0	5.9	1.7 J
Vinyl Chloride	75-01-4	0.71	1.4	2.8	1.8 J

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	107
4-Bromofluorobenzene	460-00-4	70-130	109
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1255_032321	Date/Time Analyzed:	4/1/21 02:10 AM
Lab ID:	2103779-13A	Dilution Factor:	30.3
Date/Time Collected:	3/23/21 04:38 PM	Instrument/Filename:	msdp.i / p033127
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	20	30	60	37 J
1,4-Dioxane	123-91-1	32	66	220	Not Detected
cis-1,2-Dichloroethene	156-59-2	22	30	60	810
Tetrachloroethene	127-18-4	16	51	100	Not Detected
trans-1,2-Dichloroethene	156-60-5	16	30	60	37 J
Trichloroethene	79-01-6	12	41	81	140
Vinyl Chloride	75-01-4	9.8	19	39	7800

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	107
4-Bromofluorobenzene	460-00-4	70-130	110
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1248_032221	Date/Time Analyzed:	3/31/21 09:50 PM
Lab ID:	2103779-14A	Dilution Factor:	2.20
Date/Time Collected:	3/22/21 01:17 PM	Instrument/Filename:	msdp.i / p033118
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.2	4.4	Not Detected
1,4-Dioxane	123-91-1	2.3	4.8	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.2	4.4	6.0
Tetrachloroethene	127-18-4	1.2	3.7	7.5	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.2	4.4	Not Detected
Trichloroethene	79-01-6	0.85	3.0	5.9	12
Vinyl Chloride	75-01-4	0.71	1.4	2.8	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	115
4-Bromofluorobenzene	460-00-4	70-130	108
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1258_032221	Date/Time Analyzed:	3/31/21 10:19 PM
Lab ID:	2103779-15A	Dilution Factor:	2.07
Date/Time Collected:	3/22/21 02:30 PM	Instrument/Filename:	msdp.i / p033119
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	2.0	4.1	Not Detected
1,4-Dioxane	123-91-1	2.2	4.5	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.0	4.1	43
Tetrachloroethene	127-18-4	1.1	3.5	7.0	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.0	4.1	Not Detected
Trichloroethene	79-01-6	0.80	2.8	5.6	3.4 J
Vinyl Chloride	75-01-4	0.67	1.3	2.6	5.8

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	110
4-Bromofluorobenzene	460-00-4	70-130	111
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1256_032221	Date/Time Analyzed:	3/31/21 10:47 PM
Lab ID:	2103779-16A	Dilution Factor:	17.6
Date/Time Collected:	3/22/21 02:42 PM	Instrument/Filename:	msdp.i / p033120
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	11	17	35	35
1,4-Dioxane	123-91-1	19	38	130	Not Detected
cis-1,2-Dichloroethene	156-59-2	13	17	35	7400
Tetrachloroethene	127-18-4	9.6	30	60	Not Detected
trans-1,2-Dichloroethene	156-60-5	9.0	17	35	63
Trichloroethene	79-01-6	6.8	24	47	2100
Vinyl Chloride	75-01-4	5.7	11	22	3100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	106
4-Bromofluorobenzene	460-00-4	70-130	107
Toluene-d8	2037-26-5	70-130	93

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-3_032221	Date/Time Analyzed:	3/31/21 11:16 PM
Lab ID:	2103779-17A	Dilution Factor:	3.40
Date/Time Collected:	3/22/21 03:49 PM	Instrument/Filename:	msdp.i / p033121
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.2	3.4	6.7	6.6 J
1,4-Dioxane	123-91-1	3.6	7.4	24	Not Detected
cis-1,2-Dichloroethene	156-59-2	2.4	3.4	6.7	1700
Tetrachloroethene	127-18-4	1.9	5.8	12	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.7	3.4	6.7	14
Trichloroethene	79-01-6	1.3	4.6	9.1	1000
Vinyl Chloride	75-01-4	1.1	2.2	4.3	650

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	112
4-Bromofluorobenzene	460-00-4	70-130	110
Toluene-d8	2037-26-5	70-130	94

Analysis Request /Canister Chain of Custody

For Laboratory Use Only

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
 Phone (800) 985-5955; Fax (916) 351-8279

PID: _____ Workorder #: 2103779

Click links below to view:
[Canister Sampling Guide](#)
[Helium Shroud Video](#)

Client: <u>Ford</u> PID: <u>NA</u>		Special Instructions/Notes: Report ONLY: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, 1,4-Dioxane, PCE, TCE and VC. Submit results through Cadena at jim.tomalia@cadena.com. Cadena #E205162 Level IV Reporting		Turnaround Time (Rush surcharges may apply)											
Project Name: <u>Ford LTP</u>		P.O.# <u>30080642.701.04</u>		5 Day Turnaround Time											
Project Manager: <u>Kris Hinskey</u>				Canister Vacuum/Pressure		Requested Analyses									
Sampler: <u>Emma Witherspoon Andrew Banitt</u>				Lab Use Only											
Site Name: <u>Ford LTP</u>				Receipt		Final (psig) Gas: N ₂ / He									
				Initial (in Hg)		TO-15 (See Special Instructions/Notes)									
				Final (in Hg)		Do Not Analyze									
Lab ID	Sample Identification	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Initial (in Hg)	Final (in Hg)	Receipt	Final (psig) Gas: N ₂ / He	TO-15 (See Special Instructions/Notes)	Do Not Analyze		
				Date	Time	Date	Time								
01A	MH-1043-032421	122906	1824	3/24/21	0947	3/24/21	0948	-28.5	-6.5			X			
02A	MH-1067-032421	122677	1910	3/24/21	1026	3/24/21	1027	-28.5	-7			X			
03A	MH-1082-032421	122058	1938	3/24/21	1049	3/24/21	1050	-28.5	-5.5			X			
04A	DUP-01	123952	1910	3/22/21	-	3/22/21	-	-29	-6.5			X			
05A	DUP-02	122201	1922	3/23/21	-	3/23/21	-	-28.5	-5			X			
06A	MH-1901-032321	121753	1922	3/23/21	1046	3/23/21	1048	-29	-6			X			
07A	MH-1041-032321	121891	2023	3/23/21	1118	3/23/21	1119	-29	-6			X			
08A	MH-1066-032321	3400074Z	2005	3/23/21	1147	3/23/21	1148	-29	-5.5			X			
09A	MH-1088-032321	121861	1920	3/23/21	1211	3/23/21	1212	-29	-4			X			
10A	MH-1210-032321	122737	1913	3/23/21	1320	3/23/21	1321	-29	-4.5			X			
11A	MH-1219-032321	123050	2011	3/23/21	1427	3/23/21	1428	-29	-6.5			X			
12A	MH-1171-032321	122471	1922	3/23/21	1455	3/23/21	1456	-29.5	-6			X			
13A	MH-1255-032321	121594	1928	3/23/21	1637	3/23/21	1638	-29	-6.5			X			
14A	MH-1248-032221	122107	2005	3/22/21	1315	3/22/21	1317	-29	-6			X			
15A	MH-1258-032221	122330	1946	3/22/21	1429	3/22/21	1430	-29	-4.5			X			
Relinquished by: (Signature/Affiliation)				Date	Time	Received by: (Signature/Affiliation)				Date	Time				
<i>E. Witherspoon / Arcadis</i>				3/25/21	1200	<i>[Signature]</i>				3-29-21	0919				
Relinquished by: (Signature/Affiliation)				Date	Time	Received by: (Signature/Affiliation)				Date	Time				
Relinquished by: (Signature/Affiliation)				Date	Time	Received by: (Signature/Affiliation)				Date	Time				
Lab Use Only															
Shipper Name: <u>Ford</u>		Custody Seals Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> None													
<p>Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922</p>															

4/9/2021
Mr. Jim Tomalia
Arcadis U.S., Inc.
28550 Cabot Dr.
Suite 500
Novi MI 48377

Project Name: Ford LTP
Project #:
Workorder #: 2104073

Dear Mr. Jim Tomalia

The following report includes the data for the above referenced project for sample(s) received on 4/5/2021 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Jade White at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Jade White
Project Manager

WORK ORDER #: 2104073

Work Order Summary

CLIENT:	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	517-819-0356	P.O. #	30080642.701.04
FAX:		PROJECT #	Ford LTP
DATE RECEIVED:	04/05/2021	CONTACT:	Jade White
DATE COMPLETED:	04/09/2021		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SL-2_033021	TO-15	6.3 "Hg	9.9 psi
02A	Lab Blank	TO-15	NA	NA
03A	CCV	TO-15	NA	NA
04A	LCS	TO-15	NA	NA
04AA	LCSD	TO-15	NA	NA

CERTIFIED BY: 

 Technical Director

DATE: 04/09/21

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
 (916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
Arcadis U.S., Inc.
Workorder# 2104073

One 1 Liter Summa Canister (100% Certified) sample was received on April 05, 2021. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-2_033021	Date/Time Analyzed:	4/7/21 09:47 PM
Lab ID:	2104073-01A	Dilution Factor:	2.12
Date/Time Collected:	3/30/21 02:50 PM	Instrument/Filename:	msdp.i / p040718
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.1	4.2	Not Detected
1,4-Dioxane	123-91-1	2.2	4.6	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.1	4.2	89
Tetrachloroethene	127-18-4	1.2	3.6	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.1	4.2	Not Detected
Trichloroethene	79-01-6	0.82	2.8	5.7	52
Vinyl Chloride	75-01-4	0.68	1.4	2.7	34

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	106
4-Bromofluorobenzene	460-00-4	70-130	109
Toluene-d8	2037-26-5	70-130	94

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Lab Blank	Date/Time Analyzed:	4/7/21 12:08 PM
Lab ID:	2104073-02A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p040705c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.65	0.99	2.0	Not Detected
1,4-Dioxane	123-91-1	1.1	2.2	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.72	0.99	2.0	Not Detected
Tetrachloroethene	127-18-4	0.55	1.7	3.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.51	0.99	2.0	Not Detected
Trichloroethene	79-01-6	0.39	1.3	2.7	Not Detected
Vinyl Chloride	75-01-4	0.32	0.64	1.3	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	108
4-Bromofluorobenzene	460-00-4	70-130	112
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	CCV	Date/Time Analyzed:	4/7/21 10:30 AM
Lab ID:	2104073-03A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p040702
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	105
1,4-Dioxane	123-91-1	92
cis-1,2-Dichloroethene	156-59-2	99
Tetrachloroethene	127-18-4	114
trans-1,2-Dichloroethene	156-60-5	100
Trichloroethene	79-01-6	103
Vinyl Chloride	75-01-4	115

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	109
4-Bromofluorobenzene	460-00-4	70-130	115
Toluene-d8	2037-26-5	70-130	94

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCS	Date/Time Analyzed:	4/7/21 10:59 AM
Lab ID:	2104073-04A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p040703
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	114
1,4-Dioxane	123-91-1	90
cis-1,2-Dichloroethene	156-59-2	108
Tetrachloroethene	127-18-4	117
trans-1,2-Dichloroethene	156-60-5	105
Trichloroethene	79-01-6	103
Vinyl Chloride	75-01-4	106

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	112
4-Bromofluorobenzene	460-00-4	70-130	116
Toluene-d8	2037-26-5	70-130	95

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCSD	Date/Time Analyzed:	4/7/21 11:27 AM
Lab ID:	2104073-04AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p040704
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	119
1,4-Dioxane	123-91-1	91
cis-1,2-Dichloroethene	156-59-2	108
Tetrachloroethene	127-18-4	118
trans-1,2-Dichloroethene	156-60-5	106
Trichloroethene	79-01-6	103
Vinyl Chloride	75-01-4	111

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	117
4-Bromofluorobenzene	460-00-4	70-130	113
Toluene-d8	2037-26-5	70-130	94

* % Recovery is calculated using unrounded analytical results.



DATA VERIFICATION REPORT

April 9, 2021

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2021 Utility Corridor Evaluation Vapor Testing
Project number: 30080642.701.04
Event Specific Scope of Work References: Sample COC
Laboratory: EUROFINS-FOLSOM
Laboratory submittal: 2104073
Sample date: 2021-03-30
Report received by CADENA: 2021-04-09
Initial Data Verification completed by CADENA: 2021-04-09
Number of Samples: 1
Sample Matrices: AIR
Test Categories: TO-15 GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) TO-15 Analysis

SDG #2104073

CADENA Verification Report: 2021-04-09

Analyses Performed By:
Eurofins Air Toxics
Folsom, California

Report #41086R
Review Level: Tier III
Project: 30080642.701.02

DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 2104073 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						TO-15 (Full Scan)	TO-15 (SIM)	MISC
2104073	SL-2_033021	2104073-01A	Air	3/30/2021		X		

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Method TO-15 (Full Scan). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation	Return Canister Pressure
USEPA TO-15	Air	30 days from collection to analysis (Canister)	Ambient Temperature	< -2" Hg

All samples were analyzed within the specified holding time and canister return pressure / vacuum criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (30%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (30%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than 140% or less than 60% of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

5. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra. All identified compounds met the specified criteria.

6. Field Duplicate Sample Analysis

The field duplicate analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 35% for air 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 not greater than five times the RL, a control limit of three times the RL is applied to the difference between the duplicate sample results.

A field duplicate was not performed on a sample location within this SDG.

7. 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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: TO-15 (Full Scan)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Canister return pressure (<-2"Hg)		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Field Duplicate Sample RPD	X				X
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Joseph C. Houser

SIGNATURE:



DATE: April 21, 2021

PEER REVIEW: Dennis Capria

DATE: April 27, 2021



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



**NO CORRECTIONS/QUALIFIERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**



EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-2_033021	Date/Time Analyzed:	4/7/21 09:47 PM
Lab ID:	2104073-01A	Dilution Factor:	2.12
Date/Time Collected:	3/30/21 02:50 PM	Instrument/Filename:	msdp.i / p040718
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.4	2.1	4.2	Not Detected
1,4-Dioxane	123-91-1	2.2	4.6	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.1	4.2	89
Tetrachloroethene	127-18-4	1.2	3.6	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.1	4.2	Not Detected
Trichloroethene	79-01-6	0.82	2.8	5.7	52
Vinyl Chloride	75-01-4	0.68	1.4	2.7	34

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	106
4-Bromofluorobenzene	460-00-4	70-130	109
Toluene-d8	2037-26-5	70-130	94

Analysis Request /Canister Chain of Custody

For Laboratory Use Only

PID: _____ Workorder #: 2104073

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
 Phone (800) 985-5955; Fax (916) 351-8279

Click links below to view:

[Canister Sampling Guide](#)

[Helium Shroud Video](#)

Client: <u>Ford</u>	PID: <u>NA</u>	Special Instructions/Notes: Report ONLY: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, 1,4-Dioxane, PCE, TCE and VC. Submit results through Cadena at jim.tomalia@cadena.com. Cadena #E205162. Level IV Reporting	Turnaround Time (Rush surcharges may apply)			
Project Name: <u>Ford LTP</u>			5 Day Turnaround Time			
Project Manager: <u>Kris Hinskey</u>	P.O.# <u>30080642.701.04</u>		Canister Vacuum/Pressure		Requested Analyses	
Sampler: <u>Emma Witherspoon Andrew Banitt</u>						
Site Name: <u>Ford LTP</u>						

Lab ID	Sample Identification	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Initial (in Hg)	Final (in Hg)	Lab Use Only		TO-15 (See Special Instructions/Notes)	Do Not Analyze
				Date	Time	Date	Time			Receipt	Final (psig) Gas: N ₂ / He		
<u>01A</u>	<u>SL-2_033021</u>	<u>1L2416</u>	<u>2005</u>	<u>3/30/21</u>	<u>1449</u>	<u>3/30/21</u>	<u>1450</u>	<u>-29</u>	<u>-4</u>			<u>X</u>	

Relinquished by: (Signature/Affiliation) <u>Emma Witherspoon / Arcadis</u>	Date <u>3/30/21</u>	Time <u>1600</u>	Received by: (Signature/Affiliation) <u>JIM TOMALIA</u>	Date <u>4/5/21</u>	Time <u>0925</u>
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Shipper Name: <u>Kal So</u>	Custody Seals Intact? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> None	Lab Use Only <u>GOOD</u>
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Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-146606-1
Client Project/Site: Ford LTP Off-Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey



Authorized for release by:
4/9/2021 2:28:45 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.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.



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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

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.
U	Indicates the analyte was analyzed for but not detected.

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

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Job ID: 240-146606-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative 240-146606-1

Comments

No additional comments.

Receipt

The samples were received on 3/26/2021 8:00 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 2.2° C.

GC/MS VOA

Method 8260B: The following volatiles samples were diluted due to foaming at the time of purging during the original sample analysis: MH-1096_032221 (240-146606-2), DUP-01 (240-146606-3), MH-1041_032321 (240-146606-4), MH-1043_032421 (240-146606-12) and MH-1020_032421 (240-146606-13). Elevated reporting limits (RLs) are provided.

Method 8260B SIM: The following volatiles samples were diluted due to foaming at the time of purging during the original sample analysis: MH-1096_032221 (240-146606-2), MH-1041_032321 (240-146606-4), MH-1043_032421 (240-146606-12) and MH-1020_032421 (240-146606-13). Elevated reporting limits (RLs) are provided.

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

VOA Prep

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

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

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- 13
- 14

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-146606-1	TRIP BLANK	Water	03/22/21 00:00	03/26/21 08:00	
240-146606-2	MH-1096_032221	Water	03/22/21 16:30	03/26/21 08:00	
240-146606-3	DUP-01	Water	03/22/21 00:00	03/26/21 08:00	
240-146606-4	MH-1041_032321	Water	03/23/21 11:30	03/26/21 08:00	
240-146606-5	MH-1210_032321	Water	03/23/21 13:30	03/26/21 08:00	
240-146606-6	MH-1219_032321	Water	03/23/21 14:30	03/26/21 08:00	
240-146606-7	MH-1066_032321	Water	03/23/21 12:00	03/26/21 08:00	
240-146606-8	MH-1181_032321	Water	03/23/21 15:30	03/26/21 08:00	
240-146606-9	MH-1171_032321	Water	03/23/21 15:00	03/26/21 08:00	
240-146606-10	MH-1001_032321	Water	03/23/21 10:55	03/26/21 08:00	
240-146606-11	MH-1067_032421	Water	03/24/21 10:30	03/26/21 08:00	
240-146606-12	MH-1043_032421	Water	03/24/21 09:50	03/26/21 08:00	
240-146606-13	MH-1020_032421	Water	03/24/21 09:15	03/26/21 08:00	

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-146606-1

No Detections.

Client Sample ID: MH-1096_032221

Lab Sample ID: 240-146606-2

No Detections.

Client Sample ID: DUP-01

Lab Sample ID: 240-146606-3

No Detections.

Client Sample ID: MH-1041_032321

Lab Sample ID: 240-146606-4

No Detections.

Client Sample ID: MH-1210_032321

Lab Sample ID: 240-146606-5

No Detections.

Client Sample ID: MH-1219_032321

Lab Sample ID: 240-146606-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.29	J	1.0	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: MH-1066_032321

Lab Sample ID: 240-146606-7

No Detections.

Client Sample ID: MH-1181_032321

Lab Sample ID: 240-146606-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.42	J	1.0	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: MH-1171_032321

Lab Sample ID: 240-146606-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.39	J	1.0	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: MH-1001_032321

Lab Sample ID: 240-146606-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.1	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	0.40	J	1.0	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: MH-1067_032421

Lab Sample ID: 240-146606-11

No Detections.

Client Sample ID: MH-1043_032421

Lab Sample ID: 240-146606-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.8	J	6.0	2.6	ug/L	3		8260B SIM	Total/NA

Client Sample ID: MH-1020_032421

Lab Sample ID: 240-146606-13

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-146606-1

Date Collected: 03/22/21 00:00

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/02/21 11:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/02/21 11:42	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/02/21 11:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/02/21 11:42	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/02/21 11:42	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/02/21 11:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		75 - 130		04/02/21 11:42	1
4-Bromofluorobenzene (Surr)	73		47 - 134		04/02/21 11:42	1
Toluene-d8 (Surr)	87		69 - 122		04/02/21 11:42	1
Dibromofluoromethane (Surr)	82		78 - 129		04/02/21 11:42	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1096_032221

Lab Sample ID: 240-146606-2

Date Collected: 03/22/21 16:30

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	6.0	U	6.0	2.6	ug/L			04/01/21 13:59	3

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	74		70 - 133		04/01/21 13:59	3

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	0.95	ug/L			04/02/21 12:04	5
cis-1,2-Dichloroethene	5.0	U	5.0	0.80	ug/L			04/02/21 12:04	5
Tetrachloroethene	5.0	U	5.0	0.75	ug/L			04/02/21 12:04	5
trans-1,2-Dichloroethene	5.0	U	5.0	0.95	ug/L			04/02/21 12:04	5
Trichloroethene	5.0	U	5.0	0.50	ug/L			04/02/21 12:04	5
Vinyl chloride	5.0	U	5.0	1.0	ug/L			04/02/21 12:04	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		75 - 130		04/02/21 12:04	5
4-Bromofluorobenzene (Surr)	76		47 - 134		04/02/21 12:04	5
Toluene-d8 (Surr)	88		69 - 122		04/02/21 12:04	5
Dibromofluoromethane (Surr)	84		78 - 129		04/02/21 12:04	5

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: DUP-01

Lab Sample ID: 240-146606-3

Date Collected: 03/22/21 00:00

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			04/01/21 11:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	73		70 - 133					04/01/21 11:56	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	0.95	ug/L			04/02/21 12:26	5
cis-1,2-Dichloroethene	5.0	U	5.0	0.80	ug/L			04/02/21 12:26	5
Tetrachloroethene	5.0	U	5.0	0.75	ug/L			04/02/21 12:26	5
trans-1,2-Dichloroethene	5.0	U	5.0	0.95	ug/L			04/02/21 12:26	5
Trichloroethene	5.0	U	5.0	0.50	ug/L			04/02/21 12:26	5
Vinyl chloride	5.0	U	5.0	1.0	ug/L			04/02/21 12:26	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	112		75 - 130					04/02/21 12:26	5
4-Bromofluorobenzene (Surr)	74		47 - 134					04/02/21 12:26	5
Toluene-d8 (Surr)	90		69 - 122					04/02/21 12:26	5
Dibromofluoromethane (Surr)	86		78 - 129					04/02/21 12:26	5

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1041_032321

Lab Sample ID: 240-146606-4

Date Collected: 03/23/21 11:30

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	6.0	U	6.0	2.6	ug/L			04/01/21 12:45	3

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		70 - 133		04/01/21 12:45	3

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	0.95	ug/L			04/02/21 12:48	5
cis-1,2-Dichloroethene	5.0	U	5.0	0.80	ug/L			04/02/21 12:48	5
Tetrachloroethene	5.0	U	5.0	0.75	ug/L			04/02/21 12:48	5
trans-1,2-Dichloroethene	5.0	U	5.0	0.95	ug/L			04/02/21 12:48	5
Trichloroethene	5.0	U	5.0	0.50	ug/L			04/02/21 12:48	5
Vinyl chloride	5.0	U	5.0	1.0	ug/L			04/02/21 12:48	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		75 - 130		04/02/21 12:48	5
4-Bromofluorobenzene (Surr)	73		47 - 134		04/02/21 12:48	5
Toluene-d8 (Surr)	88		69 - 122		04/02/21 12:48	5
Dibromofluoromethane (Surr)	83		78 - 129		04/02/21 12:48	5

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1210_032321

Lab Sample ID: 240-146606-5

Date Collected: 03/23/21 13:30

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			04/01/21 13:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		70 - 133					04/01/21 13:10	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/02/21 13:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/02/21 13:10	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/02/21 13:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/02/21 13:10	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/02/21 13:10	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/02/21 13:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		75 - 130					04/02/21 13:10	1
4-Bromofluorobenzene (Surr)	74		47 - 134					04/02/21 13:10	1
Toluene-d8 (Surr)	87		69 - 122					04/02/21 13:10	1
Dibromofluoromethane (Surr)	82		78 - 129					04/02/21 13:10	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1219_032321

Lab Sample ID: 240-146606-6

Date Collected: 03/23/21 14:30

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			04/01/21 13:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		70 - 133					04/01/21 13:35	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/02/21 13:31	1
cis-1,2-Dichloroethene	0.29	J	1.0	0.16	ug/L			04/02/21 13:31	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/02/21 13:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/02/21 13:31	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/02/21 13:31	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/02/21 13:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		75 - 130					04/02/21 13:31	1
4-Bromofluorobenzene (Surr)	73		47 - 134					04/02/21 13:31	1
Toluene-d8 (Surr)	86		69 - 122					04/02/21 13:31	1
Dibromofluoromethane (Surr)	82		78 - 129					04/02/21 13:31	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1066_032321

Lab Sample ID: 240-146606-7

Date Collected: 03/23/21 12:00

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			04/01/21 14:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		70 - 133		04/01/21 14:24	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/02/21 13:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/02/21 13:53	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/02/21 13:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/02/21 13:53	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/02/21 13:53	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/02/21 13:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		75 - 130		04/02/21 13:53	1
4-Bromofluorobenzene (Surr)	75		47 - 134		04/02/21 13:53	1
Toluene-d8 (Surr)	87		69 - 122		04/02/21 13:53	1
Dibromofluoromethane (Surr)	81		78 - 129		04/02/21 13:53	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1181_032321

Lab Sample ID: 240-146606-8

Date Collected: 03/23/21 15:30

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			04/01/21 14:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		70 - 133					04/01/21 14:49	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/02/21 14:15	1
cis-1,2-Dichloroethene	0.42	J	1.0	0.16	ug/L			04/02/21 14:15	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/02/21 14:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/02/21 14:15	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/02/21 14:15	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/02/21 14:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	114		75 - 130					04/02/21 14:15	1
4-Bromofluorobenzene (Surr)	80		47 - 134					04/02/21 14:15	1
Toluene-d8 (Surr)	88		69 - 122					04/02/21 14:15	1
Dibromofluoromethane (Surr)	87		78 - 129					04/02/21 14:15	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1171_032321

Lab Sample ID: 240-146606-9

Date Collected: 03/23/21 15:00

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			04/01/21 15:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		70 - 133		04/01/21 15:15	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/06/21 12:50	1
cis-1,2-Dichloroethene	0.39	J	1.0	0.16	ug/L			04/06/21 12:50	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/06/21 12:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/06/21 12:50	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/06/21 12:50	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/06/21 12:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		75 - 130		04/06/21 12:50	1
4-Bromofluorobenzene (Surr)	68		47 - 134		04/06/21 12:50	1
Toluene-d8 (Surr)	80		69 - 122		04/06/21 12:50	1
Dibromofluoromethane (Surr)	86		78 - 129		04/06/21 12:50	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1001_032321

Lab Sample ID: 240-146606-10

Date Collected: 03/23/21 10:55

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.1	J	2.0	0.86	ug/L			04/01/21 16:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	78		70 - 133					04/01/21 16:31	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/05/21 17:36	1
cis-1,2-Dichloroethene	0.40	J	1.0	0.16	ug/L			04/05/21 17:36	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/05/21 17:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/05/21 17:36	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/05/21 17:36	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/05/21 17:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	112		75 - 130					04/05/21 17:36	1
4-Bromofluorobenzene (Surr)	74		47 - 134					04/05/21 17:36	1
Toluene-d8 (Surr)	87		69 - 122					04/05/21 17:36	1
Dibromofluoromethane (Surr)	85		78 - 129					04/05/21 17:36	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1067_032421

Lab Sample ID: 240-146606-11

Date Collected: 03/24/21 10:30

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			04/01/21 16:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		70 - 133					04/01/21 16:54	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/07/21 12:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/07/21 12:21	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/07/21 12:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/07/21 12:21	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/07/21 12:21	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/07/21 12:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		75 - 130					04/07/21 12:21	1
4-Bromofluorobenzene (Surr)	72		47 - 134					04/07/21 12:21	1
Toluene-d8 (Surr)	85		69 - 122					04/07/21 12:21	1
Dibromofluoromethane (Surr)	89		78 - 129					04/07/21 12:21	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1043_032421

Lab Sample ID: 240-146606-12

Date Collected: 03/24/21 09:50

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.8	J	6.0	2.6	ug/L			04/02/21 13:01	3

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		70 - 133		04/02/21 13:01	3

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	8.0	U	8.0	1.5	ug/L			04/06/21 14:40	8
cis-1,2-Dichloroethene	8.0	U	8.0	1.3	ug/L			04/06/21 14:40	8
Tetrachloroethene	8.0	U	8.0	1.2	ug/L			04/06/21 14:40	8
trans-1,2-Dichloroethene	8.0	U	8.0	1.5	ug/L			04/06/21 14:40	8
Trichloroethene	8.0	U	8.0	0.80	ug/L			04/06/21 14:40	8
Vinyl chloride	8.0	U	8.0	1.6	ug/L			04/06/21 14:40	8

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		75 - 130		04/06/21 14:40	8
4-Bromofluorobenzene (Surr)	73		47 - 134		04/06/21 14:40	8
Toluene-d8 (Surr)	84		69 - 122		04/06/21 14:40	8
Dibromofluoromethane (Surr)	84		78 - 129		04/06/21 14:40	8

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1020_032421

Lab Sample ID: 240-146606-13

Date Collected: 03/24/21 09:15

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	6.0	U	6.0	2.6	ug/L			04/02/21 13:26	3

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		70 - 133		04/02/21 13:26	3

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	3.3	U	3.3	0.63	ug/L			04/06/21 15:02	3.33
cis-1,2-Dichloroethene	3.3	U	3.3	0.53	ug/L			04/06/21 15:02	3.33
Tetrachloroethene	3.3	U	3.3	0.50	ug/L			04/06/21 15:02	3.33
trans-1,2-Dichloroethene	3.3	U	3.3	0.63	ug/L			04/06/21 15:02	3.33
Trichloroethene	3.3	U	3.3	0.33	ug/L			04/06/21 15:02	3.33
Vinyl chloride	3.3	U	3.3	0.67	ug/L			04/06/21 15:02	3.33

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		75 - 130		04/06/21 15:02	3.33
4-Bromofluorobenzene (Surr)	76		47 - 134		04/06/21 15:02	3.33
Toluene-d8 (Surr)	84		69 - 122		04/06/21 15:02	3.33
Dibromofluoromethane (Surr)	85		78 - 129		04/06/21 15:02	3.33

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (75-130)	BFB (47-134)	TOL (69-122)	DBFM (78-129)
240-146439-B-11 MS	Matrix Spike	98	90	92	85
240-146439-B-11 MSD	Matrix Spike Duplicate	97	92	91	85
240-146556-B-7 MS	Matrix Spike	98	88	90	88
240-146556-B-7 MSD	Matrix Spike Duplicate	97	92	90	87
240-146606-1	TRIP BLANK	107	73	87	82
240-146606-2	MH-1096_032221	110	76	88	84
240-146606-3	DUP-01	112	74	90	86
240-146606-4	MH-1041_032321	108	73	88	83
240-146606-5	MH-1210_032321	109	74	87	82
240-146606-6	MH-1219_032321	109	73	86	82
240-146606-7	MH-1066_032321	109	75	87	81
240-146606-8	MH-1181_032321	114	80	88	87
240-146606-9	MH-1171_032321	105	68	80	86
240-146606-10	MH-1001_032321	112	74	87	85
240-146606-11	MH-1067_032421	106	72	85	89
240-146606-12	MH-1043_032421	110	73	84	84
240-146606-13	MH-1020_032421	107	76	84	85
240-146768-B-10 MS	Matrix Spike	95	95	92	94
240-146768-B-10 MSD	Matrix Spike Duplicate	92	93	89	92
LCS 240-479438/4	Lab Control Sample	106	93	89	91
LCS 240-479644/4	Lab Control Sample	95	89	89	86
LCS 240-479863/4	Lab Control Sample	97	90	90	85
LCS 240-480068/4	Lab Control Sample	95	90	89	87
MB 240-479438/7	Method Blank	108	76	88	81
MB 240-479644/7	Method Blank	102	75	87	83
MB 240-479863/7	Method Blank	106	75	86	81
MB 240-480068/7	Method Blank	104	73	86	85

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		DCA (70-133)
240-146606-2	MH-1096_032221	74
240-146606-3	DUP-01	73
240-146606-4	MH-1041_032321	85
240-146606-5	MH-1210_032321	80
240-146606-6	MH-1219_032321	82
240-146606-7	MH-1066_032321	83
240-146606-8	MH-1181_032321	84
240-146606-9	MH-1171_032321	82
240-146606-9 MS	MH-1171_032321	79
240-146606-9 MSD	MH-1171_032321	75

Eurofins TestAmerica, Canton

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (70-133)
240-146606-10	MH-1001_032321	78
240-146606-11	MH-1067_032421	83
240-146606-12	MH-1043_032421	80
240-146606-13	MH-1020_032421	85
240-146812-C-1 MS	Matrix Spike	78
240-146812-C-1 MSD	Matrix Spike Duplicate	85
LCS 240-479226/4	Lab Control Sample	82
LCS 240-479445/4	Lab Control Sample	85
MB 240-479226/5	Method Blank	80
MB 240-479445/5	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-479438/7
Matrix: Water
Analysis Batch: 479438

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/02/21 11:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/02/21 11:20	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/02/21 11:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/02/21 11:20	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/02/21 11:20	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/02/21 11:20	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		75 - 130		04/02/21 11:20	1
4-Bromofluorobenzene (Surr)	76		47 - 134		04/02/21 11:20	1
Toluene-d8 (Surr)	88		69 - 122		04/02/21 11:20	1
Dibromofluoromethane (Surr)	81		78 - 129		04/02/21 11:20	1

Lab Sample ID: LCS 240-479438/4
Matrix: Water
Analysis Batch: 479438

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	11.4		ug/L		114	73 - 129
cis-1,2-Dichloroethene	10.0	10.0		ug/L		100	75 - 124
Tetrachloroethene	10.0	9.54		ug/L		95	70 - 125
trans-1,2-Dichloroethene	10.0	9.72		ug/L		97	74 - 130
Trichloroethene	10.0	10.2		ug/L		102	71 - 121
Vinyl chloride	10.0	10.1		ug/L		101	61 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	106		75 - 130
4-Bromofluorobenzene (Surr)	93		47 - 134
Toluene-d8 (Surr)	89		69 - 122
Dibromofluoromethane (Surr)	91		78 - 129

Lab Sample ID: 240-146439-B-11 MS
Matrix: Water
Analysis Batch: 479438

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	9.6	J	250	192		ug/L		73	64 - 132
cis-1,2-Dichloroethene	690		250	870		ug/L		73	68 - 121
Tetrachloroethene	25	U	250	189		ug/L		76	52 - 129
trans-1,2-Dichloroethene	25	U	250	204		ug/L		81	69 - 126
Trichloroethene	4.7	J	250	200		ug/L		78	56 - 124
Vinyl chloride	76		250	291		ug/L		86	49 - 136

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		75 - 130
4-Bromofluorobenzene (Surr)	90		47 - 134
Toluene-d8 (Surr)	92		69 - 122

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-146439-B-11 MS
Matrix: Water
Analysis Batch: 479438

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	%Recovery	MS MS Qualifier	Limits
Dibromofluoromethane (Surr)	85		78 - 129

Lab Sample ID: 240-146439-B-11 MSD
Matrix: Water
Analysis Batch: 479438

Client Sample ID: Matrix Spike Duplicate
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-Dichloroethene	9.6	J	250	202		ug/L		77	64 - 132	5	35
cis-1,2-Dichloroethene	690		250	869		ug/L		73	68 - 121	0	35
Tetrachloroethene	25	U	250	220		ug/L		88	52 - 129	15	35
trans-1,2-Dichloroethene	25	U	250	214		ug/L		86	69 - 126	5	35
Trichloroethene	4.7	J	250	218		ug/L		85	56 - 124	9	35
Vinyl chloride	76		250	302		ug/L		90	49 - 136	4	35

Surrogate	%Recovery	MSD MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		75 - 130
4-Bromofluorobenzene (Surr)	92		47 - 134
Toluene-d8 (Surr)	91		69 - 122
Dibromofluoromethane (Surr)	85		78 - 129

Lab Sample ID: MB 240-479644/7
Matrix: Water
Analysis Batch: 479644

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/05/21 12:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/05/21 12:08	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/05/21 12:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/05/21 12:08	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/05/21 12:08	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/05/21 12:08	1

Surrogate	%Recovery	MB MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		75 - 130		04/05/21 12:08	1
4-Bromofluorobenzene (Surr)	75		47 - 134		04/05/21 12:08	1
Toluene-d8 (Surr)	87		69 - 122		04/05/21 12:08	1
Dibromofluoromethane (Surr)	83		78 - 129		04/05/21 12:08	1

Lab Sample ID: LCS 240-479644/4
Matrix: Water
Analysis Batch: 479644

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	8.09		ug/L		81	73 - 129
cis-1,2-Dichloroethene	10.0	9.69		ug/L		97	75 - 124
Tetrachloroethene	10.0	10.0		ug/L		100	70 - 125
trans-1,2-Dichloroethene	10.0	9.33		ug/L		93	74 - 130
Trichloroethene	10.0	9.65		ug/L		97	71 - 121

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-479644/4
Matrix: Water
Analysis Batch: 479644

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vinyl chloride	10.0	10.1		ug/L		101	61 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		75 - 130
4-Bromofluorobenzene (Surr)	89		47 - 134
Toluene-d8 (Surr)	89		69 - 122
Dibromofluoromethane (Surr)	86		78 - 129

Lab Sample ID: MB 240-479863/7
Matrix: Water
Analysis Batch: 479863

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/06/21 12:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/06/21 12:29	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/06/21 12:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/06/21 12:29	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/06/21 12:29	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/06/21 12:29	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		75 - 130		04/06/21 12:29	1
4-Bromofluorobenzene (Surr)	75		47 - 134		04/06/21 12:29	1
Toluene-d8 (Surr)	86		69 - 122		04/06/21 12:29	1
Dibromofluoromethane (Surr)	81		78 - 129		04/06/21 12:29	1

Lab Sample ID: LCS 240-479863/4
Matrix: Water
Analysis Batch: 479863

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	7.97		ug/L		80	73 - 129
cis-1,2-Dichloroethene	10.0	9.63		ug/L		96	75 - 124
Tetrachloroethene	10.0	9.61		ug/L		96	70 - 125
trans-1,2-Dichloroethene	10.0	9.29		ug/L		93	74 - 130
Trichloroethene	10.0	9.20		ug/L		92	71 - 121
Vinyl chloride	10.0	10.6		ug/L		106	61 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		75 - 130
4-Bromofluorobenzene (Surr)	90		47 - 134
Toluene-d8 (Surr)	90		69 - 122
Dibromofluoromethane (Surr)	85		78 - 129

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-146556-B-7 MS

Matrix: Water
Analysis Batch: 479863

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	310		167	456		ug/L		89	68 - 121
Tetrachloroethene	38		167	179		ug/L		85	52 - 129
trans-1,2-Dichloroethene	17	U	167	148		ug/L		89	69 - 126
Trichloroethene	6.5	J	167	148		ug/L		85	56 - 124
Vinyl chloride	64		167	236		ug/L		103	49 - 136

Surrogate	MS %Recovery	MS Qualifier	MS Limits
1,2-Dichloroethane-d4 (Surr)	98		75 - 130
4-Bromofluorobenzene (Surr)	88		47 - 134
Toluene-d8 (Surr)	90		69 - 122
Dibromofluoromethane (Surr)	88		78 - 129

Lab Sample ID: 240-146556-B-7 MSD

Matrix: Water
Analysis Batch: 479863

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	310		167	439		ug/L		78	68 - 121	4	35
Tetrachloroethene	38		167	191		ug/L		91	52 - 129	6	35
trans-1,2-Dichloroethene	17	U	167	149		ug/L		90	69 - 126	1	35
Trichloroethene	6.5	J	167	150		ug/L		86	56 - 124	1	35
Vinyl chloride	64		167	221		ug/L		94	49 - 136	6	35

Surrogate	MSD %Recovery	MSD Qualifier	MSD Limits
1,2-Dichloroethane-d4 (Surr)	97		75 - 130
4-Bromofluorobenzene (Surr)	92		47 - 134
Toluene-d8 (Surr)	90		69 - 122
Dibromofluoromethane (Surr)	87		78 - 129

Lab Sample ID: MB 240-480068/7

Matrix: Water
Analysis Batch: 480068

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/07/21 11:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/07/21 11:59	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/07/21 11:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/07/21 11:59	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/07/21 11:59	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/07/21 11:59	1

Surrogate	MB %Recovery	MB Qualifier	MB Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		75 - 130		04/07/21 11:59	1
4-Bromofluorobenzene (Surr)	73		47 - 134		04/07/21 11:59	1
Toluene-d8 (Surr)	86		69 - 122		04/07/21 11:59	1
Dibromofluoromethane (Surr)	85		78 - 129		04/07/21 11:59	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-480068/4
Matrix: Water
Analysis Batch: 480068

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	10.4		ug/L		104	73 - 129
cis-1,2-Dichloroethene	10.0	9.50		ug/L		95	75 - 124
Tetrachloroethene	10.0	9.86		ug/L		99	70 - 125
trans-1,2-Dichloroethene	10.0	9.39		ug/L		94	74 - 130
Trichloroethene	10.0	9.50		ug/L		95	71 - 121
Vinyl chloride	10.0	11.1		ug/L		111	61 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		75 - 130
4-Bromofluorobenzene (Surr)	90		47 - 134
Toluene-d8 (Surr)	89		69 - 122
Dibromofluoromethane (Surr)	87		78 - 129

Lab Sample ID: 240-146768-B-10 MS
Matrix: Water
Analysis Batch: 480068

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	1000		500	1460		ug/L		88	68 - 121
Tetrachloroethene	87		500	520		ug/L		87	52 - 129
trans-1,2-Dichloroethene	50	U	500	462		ug/L		92	69 - 126
Trichloroethene	30	J	500	472		ug/L		88	56 - 124
Vinyl chloride	390		500	748		ug/L		72	49 - 136

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		75 - 130
4-Bromofluorobenzene (Surr)	95		47 - 134
Toluene-d8 (Surr)	92		69 - 122
Dibromofluoromethane (Surr)	94		78 - 129

Lab Sample ID: 240-146768-B-10 MSD
Matrix: Water
Analysis Batch: 480068

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	1000		500	1410		ug/L		78	68 - 121	3	35
Tetrachloroethene	87		500	519		ug/L		86	52 - 129	0	35
trans-1,2-Dichloroethene	50	U	500	450		ug/L		90	69 - 126	3	35
Trichloroethene	30	J	500	465		ug/L		87	56 - 124	1	35
Vinyl chloride	390		500	761		ug/L		75	49 - 136	2	35

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	92		75 - 130
4-Bromofluorobenzene (Surr)	93		47 - 134
Toluene-d8 (Surr)	89		69 - 122
Dibromofluoromethane (Surr)	92		78 - 129

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-479226/5
Matrix: Water
Analysis Batch: 479226

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			04/01/21 11:07	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		70 - 133					04/01/21 11:07	1

Lab Sample ID: LCS 240-479226/4
Matrix: Water
Analysis Batch: 479226

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	10.5		ug/L		105	80 - 135
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	82		70 - 133				

Lab Sample ID: 240-146606-9 MS
Matrix: Water
Analysis Batch: 479226

Client Sample ID: MH-1171_032321
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	46 - 170
Surrogate	MS %Recovery	MS Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	79		70 - 133						

Lab Sample ID: 240-146606-9 MSD
Matrix: Water
Analysis Batch: 479226

Client Sample ID: MH-1171_032321
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	46 - 170	1	26
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	75		70 - 133								

Lab Sample ID: MB 240-479445/5
Matrix: Water
Analysis Batch: 479445

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			04/02/21 12:11	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		70 - 133					04/02/21 12:11	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-479445/4
Matrix: Water
Analysis Batch: 479445

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	10.8		ug/L		108	80 - 135
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	85		70 - 133				

Lab Sample ID: 240-146812-C-1 MS
Matrix: Water
Analysis Batch: 479445

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	33		10.0	44.1		ug/L		112	46 - 170
Surrogate	MS %Recovery	MS Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	78		70 - 133						

Lab Sample ID: 240-146812-C-1 MSD
Matrix: Water
Analysis Batch: 479445

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	33		10.0	43.2		ug/L		102	46 - 170	2	26
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	85		70 - 133								

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

GC/MS VOA

Analysis Batch: 479226

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-146606-2	MH-1096_032221	Total/NA	Water	8260B SIM	
240-146606-3	DUP-01	Total/NA	Water	8260B SIM	
240-146606-4	MH-1041_032321	Total/NA	Water	8260B SIM	
240-146606-5	MH-1210_032321	Total/NA	Water	8260B SIM	
240-146606-6	MH-1219_032321	Total/NA	Water	8260B SIM	
240-146606-7	MH-1066_032321	Total/NA	Water	8260B SIM	
240-146606-8	MH-1181_032321	Total/NA	Water	8260B SIM	
240-146606-9	MH-1171_032321	Total/NA	Water	8260B SIM	
240-146606-10	MH-1001_032321	Total/NA	Water	8260B SIM	
240-146606-11	MH-1067_032421	Total/NA	Water	8260B SIM	
MB 240-479226/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-479226/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-146606-9 MS	MH-1171_032321	Total/NA	Water	8260B SIM	
240-146606-9 MSD	MH-1171_032321	Total/NA	Water	8260B SIM	

Analysis Batch: 479438

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-146606-1	TRIP BLANK	Total/NA	Water	8260B	
240-146606-2	MH-1096_032221	Total/NA	Water	8260B	
240-146606-3	DUP-01	Total/NA	Water	8260B	
240-146606-4	MH-1041_032321	Total/NA	Water	8260B	
240-146606-5	MH-1210_032321	Total/NA	Water	8260B	
240-146606-6	MH-1219_032321	Total/NA	Water	8260B	
240-146606-7	MH-1066_032321	Total/NA	Water	8260B	
240-146606-8	MH-1181_032321	Total/NA	Water	8260B	
MB 240-479438/7	Method Blank	Total/NA	Water	8260B	
LCS 240-479438/4	Lab Control Sample	Total/NA	Water	8260B	
240-146439-B-11 MS	Matrix Spike	Total/NA	Water	8260B	
240-146439-B-11 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 479445

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-146606-12	MH-1043_032421	Total/NA	Water	8260B SIM	
240-146606-13	MH-1020_032421	Total/NA	Water	8260B SIM	
MB 240-479445/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-479445/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-146812-C-1 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-146812-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 479644

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-146606-10	MH-1001_032321	Total/NA	Water	8260B	
MB 240-479644/7	Method Blank	Total/NA	Water	8260B	
LCS 240-479644/4	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 479863

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-146606-9	MH-1171_032321	Total/NA	Water	8260B	
240-146606-12	MH-1043_032421	Total/NA	Water	8260B	
240-146606-13	MH-1020_032421	Total/NA	Water	8260B	
MB 240-479863/7	Method Blank	Total/NA	Water	8260B	

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QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

GC/MS VOA (Continued)

Analysis Batch: 479863 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 240-479863/4	Lab Control Sample	Total/NA	Water	8260B	
240-146556-B-7 MS	Matrix Spike	Total/NA	Water	8260B	
240-146556-B-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 480068

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-146606-11	MH-1067_032421	Total/NA	Water	8260B	
MB 240-480068/7	Method Blank	Total/NA	Water	8260B	
LCS 240-480068/4	Lab Control Sample	Total/NA	Water	8260B	
240-146768-B-10 MS	Matrix Spike	Total/NA	Water	8260B	
240-146768-B-10 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	



Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: TRIP BLANK

Date Collected: 03/22/21 00:00

Date Received: 03/26/21 08:00

Lab Sample ID: 240-146606-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	479438	04/02/21 11:42	LEE	TAL CAN

Client Sample ID: MH-1096_032221

Date Collected: 03/22/21 16:30

Date Received: 03/26/21 08:00

Lab Sample ID: 240-146606-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	479438	04/02/21 12:04	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		3	479226	04/01/21 13:59	CS	TAL CAN

Client Sample ID: DUP-01

Date Collected: 03/22/21 00:00

Date Received: 03/26/21 08:00

Lab Sample ID: 240-146606-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	479438	04/02/21 12:26	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	479226	04/01/21 11:56	CS	TAL CAN

Client Sample ID: MH-1041_032321

Date Collected: 03/23/21 11:30

Date Received: 03/26/21 08:00

Lab Sample ID: 240-146606-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	479438	04/02/21 12:48	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		3	479226	04/01/21 12:45	CS	TAL CAN

Client Sample ID: MH-1210_032321

Date Collected: 03/23/21 13:30

Date Received: 03/26/21 08:00

Lab Sample ID: 240-146606-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	479438	04/02/21 13:10	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	479226	04/01/21 13:10	CS	TAL CAN

Client Sample ID: MH-1219_032321

Date Collected: 03/23/21 14:30

Date Received: 03/26/21 08:00

Lab Sample ID: 240-146606-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	479438	04/02/21 13:31	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	479226	04/01/21 13:35	CS	TAL CAN

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1066_032321

Lab Sample ID: 240-146606-7

Date Collected: 03/23/21 12:00

Matrix: Water

Date Received: 03/26/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	479438	04/02/21 13:53	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	479226	04/01/21 14:24	CS	TAL CAN

Client Sample ID: MH-1181_032321

Lab Sample ID: 240-146606-8

Date Collected: 03/23/21 15:30

Matrix: Water

Date Received: 03/26/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	479438	04/02/21 14:15	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	479226	04/01/21 14:49	CS	TAL CAN

Client Sample ID: MH-1171_032321

Lab Sample ID: 240-146606-9

Date Collected: 03/23/21 15:00

Matrix: Water

Date Received: 03/26/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	479863	04/06/21 12:50	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	479226	04/01/21 15:15	CS	TAL CAN

Client Sample ID: MH-1001_032321

Lab Sample ID: 240-146606-10

Date Collected: 03/23/21 10:55

Matrix: Water

Date Received: 03/26/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	479644	04/05/21 17:36	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	479226	04/01/21 16:31	CS	TAL CAN

Client Sample ID: MH-1067_032421

Lab Sample ID: 240-146606-11

Date Collected: 03/24/21 10:30

Matrix: Water

Date Received: 03/26/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	480068	04/07/21 12:21	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	479226	04/01/21 16:54	CS	TAL CAN

Client Sample ID: MH-1043_032421

Lab Sample ID: 240-146606-12

Date Collected: 03/24/21 09:50

Matrix: Water

Date Received: 03/26/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		8	479863	04/06/21 14:40	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		3	479445	04/02/21 13:01	CS	TAL CAN

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1020_032421

Lab Sample ID: 240-146606-13

Date Collected: 03/24/21 09:15

Matrix: Water

Date Received: 03/26/21 08:00

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Analysis	8260B		3.33	479863	04/06/21 15:02	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		3	479445	04/02/21 13:26	CS	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

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Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-21 *
Illinois	NELAP	004498	07-31-21
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21 *
Kentucky (WW)	State	KY98016	12-31-21
Minnesota	NELAP	OH00048	12-31-21
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-22
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-23-22
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-22
West Virginia DEP	State	210	12-31-21

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



2/12/21

TestAmerica Laboratory location: Brighton ... 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2766

Regulatory program: DW NPDES RCRA Other

Client Project Manager: Kris Hinskey
Telephone: 248-994-2240
Email: kris@hinskey.com

Site Contact: Julia McClafferty
Telephone: 734-644-5131

Lab Contact: Mike DeMonico
Telephone: 330-497-9396

Company Name: Arcadis
Address: 28550 Cabot Drive, Suite 500
City/State/Zip: Novi, MI, 48377

Phone: 248-994-2240

Project Name: Ford I.T.P Off-Site
Project Number: 30080642.701.04

PO # 30080642.701.04

Sample Identification	Sample Date	Sample Time	Matrix				Containers & Preservatives				Filtered Sample (Y/N)	Composite C / Grab G	Analyses							Sample Specific Notes / Special Instructions:					
			Air	Aqueous	Sediment	Solid	Other:	H2SO4	HNO3	HCl			NaOH	ZnAc/NaOH	Others:	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B		TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM		
TRIP BLANK	---	---	X																						1 Trip Blank
MH-1096-032221	3/22/21	1630	X																						3 VOAs for 8260B 1 VOAs for 8260B SIM
DUP-01	3/22/21	-	X																						
MH-1041-032321	3/23/21	1130	X																						
MH-1210-032321	3/23/21	1330	X																						
MH-1219-032321	3/23/21	1430	X																						
MH-1066-032321	3/23/21	1200	X																						
MH-1181-032321	3/23/21	1530	X																						
MH-1171-032321	3/23/21	1500	X																						
MH-1001-032321	3/23/21	1055	X																						



Possible Hazard Identification
 Non-Hazard Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at tomalia@cadenaco.com. Cadena #E205162
Level IV Reporting requested.

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return to Client Disposal By Lab Archive For _____ Months

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
<i>John Burt</i>	Arcadis	3/24/21 1700	<i>Novi, Corp Storage</i>	Arcadis	3/24/21 1700
<i>John Burt</i>	Arcadis	3/25/21 0945	<i>Andrew Battalio</i>	EIA	3/25/21 946
<i>Andrew Battalio</i>	EIA	3/25/21 1406	<i>MJS</i>	EIA CANTON	3/26/21 800

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21122

Chain of Custody Record

TestAmerica Laboratory Location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

Client Contact: Arcadis
Address: 28550 Cabot Drive, Suite 500
City/State/Zip: Novi, MI, 48377
Phone: 248-994-2240

Client Project Manager: Kris Hinskey
Telephone: 248-994-2240
Email: kristoffer.hinskey@arcadis.com

Sampler Name: Emma Witherspoon, Andrew Banitt
Method of Shipment/Carrier:
Shipping/Tracking No:

Site Contact: Julia McClafferty
Telephone: 734-644-5131
Lab Contact: Mike DelMonico
Telephone: 330-497-9396

TestAmerica Laboratories, Inc.
COC No: 2 of 2 COCs
For lab use only

Sample Identification	Sample Date	Sample Time	Matrix				Containers & Preservatives				Filtered Sample (Y/N)	Composite C/Grab/C	Analytes							Sample Specific Notes / Special Instructions:		
			Air	Aqueous	Sediment	Solid	Other:	H2SO4	HNO3	HCl			NaOH	ZnAc	NaOH	Tap	Other:	1,1-DCE 8260B	Tris-1,2-DCE 8260B		PCE 8260B	TCE 8260B
MH-1067_032421	3/24/21	1030	X												X	X	X	X	X	X		3 VOAs for 8260B 3 VOAs for 8260B SIM
MH-1043_032421	3/24/21	0950	X												X	X	X	X	X	X		
MH-1020_032421	3/24/21	0915	X												X	X	X	X	X	X		

Possible Hazard Identification
 Non-Hazard Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments:
Submit all results through Cadena at jomalia@cadenaco.com. Cadena #E205162
Level IV Reporting requested.

Retinquished by: Andrew Banitt
Retinquished by: Andrew Banitt
Retinquished by: Andrew Banitt

Company: Arcadis
Date/Time: 3/24/21 1700
Received by: Nov. Cold Storage
Company: Arcadis

Company: Arcadis
Date/Time: 3/25/21 0945
Received by: Andrew Banitt
Company: ETA

Company: ETA
Date/Time: 3/25/21 1406
Received in Laboratory by: MJS
Company: ETA CANTON

Company: Arcadis
Date/Time: 3/24/21 1700
Received by: Andrew Banitt
Company: ETA

Company: Arcadis
Date/Time: 3/25/21 0946
Received by: Andrew Banitt
Company: MAR 26 2021

Company: Arcadis
Date/Time: 3/25/21 800
Received by: Andrew Banitt
Company: ETA

All samples collected from sanitary sewers (contain sanitary waste)



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Eurofins TestAmerica Canton Sample Receipt Form/Narrative Login # : 240-146606
Canton Facility

Client Arcadis Site Name _____ Cooler unpacked by: **MJS ETA CANTON**
 Cooler Received on MAR 26 2021 Opened on MAR 27 2021
 FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ **Storage Location** _____

TestAmerica Cooler # 17 Foam Box Client Cooler Box Other _____
 Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
 COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt See Multiple Cooler Form
 IR GUN# IR-11 (CF +0.1 °C) Observed Cooler Temp. 2.1 °C Corrected Cooler Temp. 2.2 °C
 IR GUN #IR-12 (CF +0.2°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
 -Were tamper/custody seals intact and uncompromised? Yes No NA

3. Shippers' packing slip attached to the cooler(s)? Yes No
 4. Did custody papers accompany the sample(s)? Yes No
 5. Were the custody papers relinquished & signed in the appropriate place? Yes No
 6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
 7. Did all bottles arrive in good condition (Unbroken)? Yes No
 8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
 9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
 10. Were correct bottle(s) used for the test(s) indicated? Yes No
 11. Sufficient quantity received to perform indicated analyses? Yes No
 12. Are these work share samples and all listed on the COC? Yes No
 If yes, Questions 13-17 have been checked at the originating laboratory.

13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC022887
 14. Were VOAs on the COC? Yes No
 15. Were air bubbles >6 mm in any VOA vials? Larger than this. Yes No NA
 16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # NA Yes No
 17. Was a LL Hg or Me Hg trip blank present? Yes No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____
 Concerning _____

Tests that are not checked for pH by Receiving:
 VOAs
 Oil and Grease
 TOC

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page Samples processed by: _____

19. SAMPLE CONDITION
 Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container.
 Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION
 Sample(s) _____ were further preserved in the laboratory.
 Time preserved: _____ Preservative(s) added/Lot number(s): _____
 VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT



April 09, 2021

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2021 Utility Corridor Evalyation Vapor Testing
Project number: 30080642.701.04
Event Specific Scope of Work References: Sample COC
Laboratory: TestAmerica - North Canton
Laboratory submittal: 146606-1
Sample date: 2021-03-23 2021-03-24 2021-03-22
Report received by CADENA: 2021-04-09
Initial Data Verification completed by CADENA: 2021-04-09
Number of Samples:13
Sample Matrices:Water
Test Categories:GCMS VOC

Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

Reportable Results Only

CADENA Project ID: E205162
 Laboratory: TestAmerica - North Canton
 Laboratory Submittal: 146606-1

Sample Name: TRIP BLANK	MH-1001_032321	MH-1067_032421	MH-1043_032421	MH-1020_032421	MH-1096_032221	DUP-01
Lab Sample ID: 2401466061	24014660610	24014660611	24014660612	24014660613	2401466062	2401466063
Sample Date: 3/22/2021	3/23/2021	3/24/2021	3/24/2021	3/24/2021	3/22/2021	3/22/2021

Analyte	Cas No.	Report			Valid			Report			Valid			Report			Valid			Report			Valid						
		Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier				
GC/MS VOC																													
<u>OSW-82608</u>																													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	8.0	ug/l	---	ND	3.3	ug/l	---	ND	5.0	ug/l	---	ND	5.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	0.40	1.0	ug/l	J	ND	1.0	ug/l	---	ND	8.0	ug/l	---	ND	3.3	ug/l	---	ND	5.0	ug/l	---	ND	5.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	8.0	ug/l	---	ND	3.3	ug/l	---	ND	5.0	ug/l	---	ND	5.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	8.0	ug/l	---	ND	3.3	ug/l	---	ND	5.0	ug/l	---	ND	5.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	8.0	ug/l	---	ND	3.3	ug/l	---	ND	5.0	ug/l	---	ND	5.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	8.0	ug/l	---	ND	3.3	ug/l	---	ND	5.0	ug/l	---	ND	5.0	ug/l	---
<u>OSW-82608550</u>																													
1,4-Dioxane	123-91-1					1.1	2.0	ug/l	J	ND	2.0	ug/l	---	2.8	6.0	ug/l	J	ND	6.0	ug/l	---	ND	6.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-146606-1

CADENA Verification Report: 2021-04-09

Analyses Performed By:
TestAmerica
Edison, New Jersey

Report #41099R
Review Level: Tier III
Project: 30080642.701.02



DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-146606-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						VOC (Full Scan)	VOC (SIM)	MISC
240-146606-1	TRIP BLANK	240-146606-1	Water	3/22/2021		X		
	MH-1096_032221	240-146606-2	Water	3/22/2021		X	X	
	DUP-01	240-146606-3	Water	3/22/2021	MH-1096_032221	X	X	
	MH-1041_032321	240-146606-4	Water	3/23/2021		X	X	
	MH-1210_032321	240-146606-5	Water	3/23/2021		X	X	
	MH-1219_032321	240-146606-6	Water	3/23/2021		X	X	
	MH-1066_032321	240-146606-7	Water	3/23/2021		X	X	
	MH-1181_032321	240-146606-8	Water	3/23/2021		X	X	
	MH-1171_032321	240-146606-9	Water	3/23/2021		X	X	
	MH-1001_032321	240-146606-10	Water	3/23/2021		X	X	
	MH-1067_032421	240-146606-11	Water	3/24/2021		X	X	
	MH-1043_032421	240-146606-12	Water	3/24/2021		X	X	
	MH-1020_032421	240-146606-13	Water	3/24/2021		X	X	

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

The following volatiles samples were diluted due to foaming at the time of purging during the original sample analysis: MH-1096_032221 (240-146606-2), DUP-01 (240-146606-3), MH-1041_032321 (240-146606-4), MH-1043_032421 (240-146606-12) and MH-1020_032421 (240-146606-13). Elevated reporting limits (RLs) are provided.

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260B and 8260B SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) 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 8260B/8260B-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl
	Soil	14 days from collection to analysis	Cool to < 6 °C

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

DATA REVIEW

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	Duplicate Result	RPD
MH-1096_032221/ DUP-01	All compounds	U	U	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. 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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260B/8260B-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					

Tier II Validation

Holding times/Preservation		X		X	
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Tier III Validation

System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:



DATE: April 23, 2021

PEER REVIEW: Joseph C. Houser

DATE: April 23, 2021



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



**NO CORRECTIONS/QUALIFIERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**



21122

Chain of Custody Record

TestAmerica Laboratory Location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Client Contact Company Name: Arcadis Address: 28550 Cabot Drive, Suite 500 City/State/Zip: Novi, MI, 48377 Phone: 248-994-2240 Project Name: Ford LTP Off-Site Project Number: 30080642.701.04 PO # 30080642.701.04		Regulatory program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other		Site Contact: Julia McClafferty Telephone: 734-644-5131		Lab Contact: Mike DelMonico Telephone: 330-497-9396		TestAmerica Laboratories, Inc. COC No: 2 of 2 COCs For lab use only															
Sampler Name: Emma Witherspoon, Andrew Banitt		Method of Shipment/Carrier:		Shipping/Tracking No:		Analyses Walk-in client Lab sampling Job/SDC No:		Sample Specific Notes / Special Instructions: 3 VOAs for 8260B 3 VOAs for 8260B SIM															
Sample Identification		Matrix		Containers & Preservatives		Filtered Sample (Y/N)		Composite C/Grab C															
Sample Date	Sample Time	Air	Aqueous	Sediment	Solid	Other	H2SO4	HNO3	HCl	NaOH	ZnAc	NaOH	Lipids	Other:	1,1-DCE 8260B	Cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM		
MH-1067_032421	3/24/21 1030	X							6						X	X	X	X	X	X	X	X	
MH-1043_032421	3/24/21 0950	X							6						X	X	X	X	X	X	X	X	
MH-1020_032421	3/24/21 0915	X							6						X	X	X	X	X	X	X	X	
Possible Hazard Identification <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Irritable <input type="checkbox"/> Flammable <input type="checkbox"/> Corrosive		<input type="checkbox"/> Return to Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		Special Instructions/QC Requirements & Comments: Submit all results through Cadena at jomalia@cadenaco.com. Cadena #E205162 Level IV Reporting requested.		All samples collected from sanitary sewers (contain sanitary waste)																	
Relinquished by: Andrew Banitt		Company: Arcadis		Date/Time: 3/24/21 1700		Received by: Nov. Cold Storage		Company: Arcadis		Date/Time: 3/24/21 1700													
Relinquished by: Andrew Banitt		Company: Arcadis		Date/Time: 3/25/21 0945		Received by: Andrew Banitt		Company: ETA		Date/Time: 3/25/21 946													
Relinquished by: Andrew Banitt		Company: ETA		Date/Time: 3/25/21 1406		Received in Laboratory by: MJS		Company: ETA CANTON		Date/Time: MAR 26 2021													

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-146606-1

Date Collected: 03/22/21 00:00

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/02/21 11:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/02/21 11:42	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/02/21 11:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/02/21 11:42	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/02/21 11:42	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/02/21 11:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		75 - 130		04/02/21 11:42	1
4-Bromofluorobenzene (Surr)	73		47 - 134		04/02/21 11:42	1
Toluene-d8 (Surr)	87		69 - 122		04/02/21 11:42	1
Dibromofluoromethane (Surr)	82		78 - 129		04/02/21 11:42	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1096_032221

Lab Sample ID: 240-146606-2

Date Collected: 03/22/21 16:30

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	6.0	U	6.0	2.6	ug/L			04/01/21 13:59	3

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	74		70 - 133		04/01/21 13:59	3

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	0.95	ug/L			04/02/21 12:04	5
cis-1,2-Dichloroethene	5.0	U	5.0	0.80	ug/L			04/02/21 12:04	5
Tetrachloroethene	5.0	U	5.0	0.75	ug/L			04/02/21 12:04	5
trans-1,2-Dichloroethene	5.0	U	5.0	0.95	ug/L			04/02/21 12:04	5
Trichloroethene	5.0	U	5.0	0.50	ug/L			04/02/21 12:04	5
Vinyl chloride	5.0	U	5.0	1.0	ug/L			04/02/21 12:04	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		75 - 130		04/02/21 12:04	5
4-Bromofluorobenzene (Surr)	76		47 - 134		04/02/21 12:04	5
Toluene-d8 (Surr)	88		69 - 122		04/02/21 12:04	5
Dibromofluoromethane (Surr)	84		78 - 129		04/02/21 12:04	5

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: DUP-01

Lab Sample ID: 240-146606-3

Date Collected: 03/22/21 00:00

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			04/01/21 11:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	73		70 - 133		04/01/21 11:56	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	0.95	ug/L			04/02/21 12:26	5
cis-1,2-Dichloroethene	5.0	U	5.0	0.80	ug/L			04/02/21 12:26	5
Tetrachloroethene	5.0	U	5.0	0.75	ug/L			04/02/21 12:26	5
trans-1,2-Dichloroethene	5.0	U	5.0	0.95	ug/L			04/02/21 12:26	5
Trichloroethene	5.0	U	5.0	0.50	ug/L			04/02/21 12:26	5
Vinyl chloride	5.0	U	5.0	1.0	ug/L			04/02/21 12:26	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	112		75 - 130		04/02/21 12:26	5
4-Bromofluorobenzene (Surr)	74		47 - 134		04/02/21 12:26	5
Toluene-d8 (Surr)	90		69 - 122		04/02/21 12:26	5
Dibromofluoromethane (Surr)	86		78 - 129		04/02/21 12:26	5

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1041_032321

Lab Sample ID: 240-146606-4

Date Collected: 03/23/21 11:30

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	6.0	U	6.0	2.6	ug/L			04/01/21 12:45	3

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		70 - 133		04/01/21 12:45	3

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	0.95	ug/L			04/02/21 12:48	5
cis-1,2-Dichloroethene	5.0	U	5.0	0.80	ug/L			04/02/21 12:48	5
Tetrachloroethene	5.0	U	5.0	0.75	ug/L			04/02/21 12:48	5
trans-1,2-Dichloroethene	5.0	U	5.0	0.95	ug/L			04/02/21 12:48	5
Trichloroethene	5.0	U	5.0	0.50	ug/L			04/02/21 12:48	5
Vinyl chloride	5.0	U	5.0	1.0	ug/L			04/02/21 12:48	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		75 - 130		04/02/21 12:48	5
4-Bromofluorobenzene (Surr)	73		47 - 134		04/02/21 12:48	5
Toluene-d8 (Surr)	88		69 - 122		04/02/21 12:48	5
Dibromofluoromethane (Surr)	83		78 - 129		04/02/21 12:48	5

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1210_032321

Lab Sample ID: 240-146606-5

Date Collected: 03/23/21 13:30

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			04/01/21 13:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		70 - 133					04/01/21 13:10	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/02/21 13:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/02/21 13:10	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/02/21 13:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/02/21 13:10	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/02/21 13:10	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/02/21 13:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		75 - 130					04/02/21 13:10	1
4-Bromofluorobenzene (Surr)	74		47 - 134					04/02/21 13:10	1
Toluene-d8 (Surr)	87		69 - 122					04/02/21 13:10	1
Dibromofluoromethane (Surr)	82		78 - 129					04/02/21 13:10	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1219_032321

Lab Sample ID: 240-146606-6

Date Collected: 03/23/21 14:30

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			04/01/21 13:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		70 - 133					04/01/21 13:35	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/02/21 13:31	1
cis-1,2-Dichloroethene	0.29	J	1.0	0.16	ug/L			04/02/21 13:31	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/02/21 13:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/02/21 13:31	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/02/21 13:31	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/02/21 13:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		75 - 130					04/02/21 13:31	1
4-Bromofluorobenzene (Surr)	73		47 - 134					04/02/21 13:31	1
Toluene-d8 (Surr)	86		69 - 122					04/02/21 13:31	1
Dibromofluoromethane (Surr)	82		78 - 129					04/02/21 13:31	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1066_032321

Lab Sample ID: 240-146606-7

Date Collected: 03/23/21 12:00

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			04/01/21 14:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		70 - 133		04/01/21 14:24	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/02/21 13:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/02/21 13:53	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/02/21 13:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/02/21 13:53	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/02/21 13:53	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/02/21 13:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		75 - 130		04/02/21 13:53	1
4-Bromofluorobenzene (Surr)	75		47 - 134		04/02/21 13:53	1
Toluene-d8 (Surr)	87		69 - 122		04/02/21 13:53	1
Dibromofluoromethane (Surr)	81		78 - 129		04/02/21 13:53	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1181_032321

Lab Sample ID: 240-146606-8

Date Collected: 03/23/21 15:30

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			04/01/21 14:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		70 - 133		04/01/21 14:49	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/02/21 14:15	1
cis-1,2-Dichloroethene	0.42	J	1.0	0.16	ug/L			04/02/21 14:15	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/02/21 14:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/02/21 14:15	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/02/21 14:15	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/02/21 14:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	114		75 - 130		04/02/21 14:15	1
4-Bromofluorobenzene (Surr)	80		47 - 134		04/02/21 14:15	1
Toluene-d8 (Surr)	88		69 - 122		04/02/21 14:15	1
Dibromofluoromethane (Surr)	87		78 - 129		04/02/21 14:15	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1171_032321

Lab Sample ID: 240-146606-9

Date Collected: 03/23/21 15:00

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			04/01/21 15:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		70 - 133		04/01/21 15:15	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/06/21 12:50	1
cis-1,2-Dichloroethene	0.39	J	1.0	0.16	ug/L			04/06/21 12:50	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/06/21 12:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/06/21 12:50	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/06/21 12:50	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/06/21 12:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		75 - 130		04/06/21 12:50	1
4-Bromofluorobenzene (Surr)	68		47 - 134		04/06/21 12:50	1
Toluene-d8 (Surr)	80		69 - 122		04/06/21 12:50	1
Dibromofluoromethane (Surr)	86		78 - 129		04/06/21 12:50	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1001_032321

Lab Sample ID: 240-146606-10

Date Collected: 03/23/21 10:55

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.1	J	2.0	0.86	ug/L			04/01/21 16:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	78		70 - 133					04/01/21 16:31	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/05/21 17:36	1
cis-1,2-Dichloroethene	0.40	J	1.0	0.16	ug/L			04/05/21 17:36	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/05/21 17:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/05/21 17:36	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/05/21 17:36	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/05/21 17:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	112		75 - 130					04/05/21 17:36	1
4-Bromofluorobenzene (Surr)	74		47 - 134					04/05/21 17:36	1
Toluene-d8 (Surr)	87		69 - 122					04/05/21 17:36	1
Dibromofluoromethane (Surr)	85		78 - 129					04/05/21 17:36	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1067_032421

Lab Sample ID: 240-146606-11

Date Collected: 03/24/21 10:30

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			04/01/21 16:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		70 - 133					04/01/21 16:54	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/07/21 12:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/07/21 12:21	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/07/21 12:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/07/21 12:21	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/07/21 12:21	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/07/21 12:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		75 - 130					04/07/21 12:21	1
4-Bromofluorobenzene (Surr)	72		47 - 134					04/07/21 12:21	1
Toluene-d8 (Surr)	85		69 - 122					04/07/21 12:21	1
Dibromofluoromethane (Surr)	89		78 - 129					04/07/21 12:21	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1043_032421

Lab Sample ID: 240-146606-12

Date Collected: 03/24/21 09:50

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.8	J	6.0	2.6	ug/L			04/02/21 13:01	3

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		70 - 133		04/02/21 13:01	3

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	8.0	U	8.0	1.5	ug/L			04/06/21 14:40	8
cis-1,2-Dichloroethene	8.0	U	8.0	1.3	ug/L			04/06/21 14:40	8
Tetrachloroethene	8.0	U	8.0	1.2	ug/L			04/06/21 14:40	8
trans-1,2-Dichloroethene	8.0	U	8.0	1.5	ug/L			04/06/21 14:40	8
Trichloroethene	8.0	U	8.0	0.80	ug/L			04/06/21 14:40	8
Vinyl chloride	8.0	U	8.0	1.6	ug/L			04/06/21 14:40	8

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		75 - 130		04/06/21 14:40	8
4-Bromofluorobenzene (Surr)	73		47 - 134		04/06/21 14:40	8
Toluene-d8 (Surr)	84		69 - 122		04/06/21 14:40	8
Dibromofluoromethane (Surr)	84		78 - 129		04/06/21 14:40	8

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 240-146606-1

Client Sample ID: MH-1020_032421

Lab Sample ID: 240-146606-13

Date Collected: 03/24/21 09:15

Matrix: Water

Date Received: 03/26/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	6.0	U	6.0	2.6	ug/L			04/02/21 13:26	3

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		70 - 133		04/02/21 13:26	3

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	3.3	U	3.3	0.63	ug/L			04/06/21 15:02	3.33
cis-1,2-Dichloroethene	3.3	U	3.3	0.53	ug/L			04/06/21 15:02	3.33
Tetrachloroethene	3.3	U	3.3	0.50	ug/L			04/06/21 15:02	3.33
trans-1,2-Dichloroethene	3.3	U	3.3	0.63	ug/L			04/06/21 15:02	3.33
Trichloroethene	3.3	U	3.3	0.33	ug/L			04/06/21 15:02	3.33
Vinyl chloride	3.3	U	3.3	0.67	ug/L			04/06/21 15:02	3.33

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		75 - 130		04/06/21 15:02	3.33
4-Bromofluorobenzene (Surr)	76		47 - 134		04/06/21 15:02	3.33
Toluene-d8 (Surr)	84		69 - 122		04/06/21 15:02	3.33
Dibromofluoromethane (Surr)	85		78 - 129		04/06/21 15:02	3.33

4/29/2021
Mr. Jim Tomalia
Arcadis U.S., Inc.
28550 Cabot Dr.
Suite 500
Novi MI 48377

Project Name: Ford LTP
Project #:
Workorder #: 2104466

Dear Mr. Jim Tomalia

The following report includes the data for the above referenced project for sample(s) received on 4/22/2021 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Jade White at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Jade White
Project Manager

WORK ORDER #: 2104466

Work Order Summary

CLIENT:	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	517-819-0356	P.O. #	30080642.701.04
FAX:		PROJECT #	Ford LTP
DATE RECEIVED:	04/22/2021	CONTACT:	Jade White
DATE COMPLETED:	04/29/2021		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	MH-1258_041921	TO-15	6.3 "Hg	9.8 psi
02A	MH-1256_041921	TO-15	5.1 "Hg	10.2 psi
03A	MH-1259_041921	TO-15	8 "Hg	10.1 psi
04A	MH-1248_041921	TO-15	8.4 "Hg	9.8 psi
05A	MH-1245_041921	TO-15	7.1 "Hg	9.9 psi
06A	MH-1244_041921	TO-15	6.9 "Hg	10 psi
07A	MH-1231_041921	TO-15	6.9 "Hg	14.7 psi
08A	SL-3_041921	TO-15	5.3 "Hg	10 psi
09A	SL-4_041921	TO-15	6.5 "Hg	9.8 psi
10A	SL-5_042021	TO-15	6.1 "Hg	10.1 psi
11A	WDC_042021	TO-15	5.1 "Hg	10.2 psi
12A	EDC_042021	TO-15	5.9 "Hg	10.1 psi
13A	DUP-01	TO-15	5.3 "Hg	9.8 psi
14A	SL-2_042021	TO-15	5.1 "Hg	9.7 psi
15A	MH-1255_042021	TO-15	5.5 "Hg	10 psi
16A	DUP-02	TO-15	5.5 "Hg	10 psi
17A	Lab Blank	TO-15	NA	NA
17B	Lab Blank	TO-15	NA	NA
18A	CCV	TO-15	NA	NA
18B	CCV	TO-15	NA	NA
19A	LCS	TO-15	NA	NA
19AA	LCSD	TO-15	NA	NA
19B	LCS	TO-15	NA	NA

Continued on next page

WORK ORDER #: 2104466

Work Order Summary

CLIENT: Mr. Jim Tomalia
Arcadis U.S., Inc.
28550 Cabot Dr.
Suite 500
Novi, MI 48377

BILL TO: Accounts Payable
Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129

PHONE: 517-819-0356

FAX:

DATE RECEIVED: 04/22/2021

DATE COMPLETED: 04/29/2021

P.O. # 30080642.701.04

PROJECT # Ford LTP

CONTACT: Jade White

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
19BB	LCSD	TO-15	NA	NA

CERTIFIED BY:



Technical Director

DATE: 04/29/21

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
Arcadis U.S., Inc.
Workorder# 2104466

Sixteen 1 Liter Summa Canister (100% Certified) samples were received on April 22, 2021. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Dilution was performed on samples MH-1256_041921, MH-1244_041921, MH-1231_041921, SL-4_041921, SL-2_042021, MH-1255_042021 and DUP-02 due to the presence of high level target species.

Dilution was performed on sample DUP-01 due to the presence of high level non-target species.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1258_041921	Date/Time Analyzed:	4/25/21 12:58 PM
Lab ID:	2104466-01A	Dilution Factor:	2.11
Date/Time Collected:	4/19/21 10:40 AM	Instrument/Filename:	msd3.i / 3042506
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.61	2.1	4.2	Not Detected
1,4-Dioxane	123-91-1	1.1	4.8	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.69	2.1	4.2	260
Tetrachloroethene	127-18-4	0.78	3.6	7.2	2.2 J
trans-1,2-Dichloroethene	156-60-5	0.99	2.1	4.2	1.4 J
Trichloroethene	79-01-6	0.82	2.8	5.7	20
Vinyl Chloride	75-01-4	0.49	1.3	2.7	32

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1256_041921	Date/Time Analyzed:	4/26/21 07:28 AM
Lab ID:	2104466-02A	Dilution Factor:	40.8
Date/Time Collected:	4/19/21 10:54 AM	Instrument/Filename:	msd3.i / 3042530
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	12	40	81	140
1,4-Dioxane	123-91-1	21	92	290	Not Detected
cis-1,2-Dichloroethene	156-59-2	13	40	81	30000
Tetrachloroethene	127-18-4	15	69	140	Not Detected
trans-1,2-Dichloroethene	156-60-5	19	40	81	270
Trichloroethene	79-01-6	16	55	110	15000
Vinyl Chloride	75-01-4	9.5	26	52	14000

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1259_041921	Date/Time Analyzed:	4/25/21 01:27 PM
Lab ID:	2104466-03A	Dilution Factor:	2.30
Date/Time Collected:	4/19/21 11:23 AM	Instrument/Filename:	msd3.i / 3042507
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.66	2.3	4.6	0.70 J
1,4-Dioxane	123-91-1	1.2	5.2	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.75	2.3	4.6	5.4
Tetrachloroethene	127-18-4	0.85	3.9	7.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.3	4.6	Not Detected
Trichloroethene	79-01-6	0.90	3.1	6.2	7.0
Vinyl Chloride	75-01-4	0.54	1.5	2.9	7.0

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1248_041921	Date/Time Analyzed:	4/25/21 01:56 PM
Lab ID:	2104466-04A	Dilution Factor:	2.31
Date/Time Collected:	4/19/21 01:47 PM	Instrument/Filename:	msd3.i / 3042508
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.66	2.3	4.6	Not Detected
1,4-Dioxane	123-91-1	1.2	5.2	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.75	2.3	4.6	5.8
Tetrachloroethene	127-18-4	0.86	3.9	7.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.3	4.6	Not Detected
Trichloroethene	79-01-6	0.90	3.1	6.2	2.2 J
Vinyl Chloride	75-01-4	0.54	1.5	3.0	3.0

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1245_041921	Date/Time Analyzed:	4/25/21 09:23 PM
Lab ID:	2104466-05A	Dilution Factor:	2.19
Date/Time Collected:	4/19/21 01:56 PM	Instrument/Filename:	msd3.i / 3042519
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.63	2.2	4.3	Not Detected
1,4-Dioxane	123-91-1	1.1	4.9	16	1.2 J
cis-1,2-Dichloroethene	156-59-2	0.71	2.2	4.3	Not Detected
Tetrachloroethene	127-18-4	0.81	3.7	7.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	2.2	4.3	Not Detected
Trichloroethene	79-01-6	0.86	2.9	5.9	Not Detected
Vinyl Chloride	75-01-4	0.51	1.4	2.8	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1244_041921	Date/Time Analyzed:	4/25/21 05:56 PM
Lab ID:	2104466-06A	Dilution Factor:	27.3
Date/Time Collected:	4/19/21 02:08 PM	Instrument/Filename:	msd3.i / 3042515
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	7.8	27	54	87
1,4-Dioxane	123-91-1	14	61	200	Not Detected
cis-1,2-Dichloroethene	156-59-2	8.9	27	54	21000
Tetrachloroethene	127-18-4	10	46	92	Not Detected
trans-1,2-Dichloroethene	156-60-5	13	27	54	180
Trichloroethene	79-01-6	11	37	73	11000
Vinyl Chloride	75-01-4	6.4	17	35	8500

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1231_041921	Date/Time Analyzed:	4/26/21 01:37 AM
Lab ID:	2104466-07A	Dilution Factor:	51.9
Date/Time Collected:	4/19/21 02:32 PM	Instrument/Filename:	msd3.i / 3042528
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	15	51	100	67 J
1,4-Dioxane	123-91-1	27	120	370	Not Detected
cis-1,2-Dichloroethene	156-59-2	17	51	100	27000
Tetrachloroethene	127-18-4	19	88	180	Not Detected
trans-1,2-Dichloroethene	156-60-5	24	51	100	180
Trichloroethene	79-01-6	20	70	140	10000
Vinyl Chloride	75-01-4	12	33	66	9800

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-3_041921	Date/Time Analyzed:	4/25/21 09:53 PM
Lab ID:	2104466-08A	Dilution Factor:	2.04
Date/Time Collected:	4/19/21 03:10 PM	Instrument/Filename:	msd3.i / 3042520
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.59	2.0	4.0	Not Detected
1,4-Dioxane	123-91-1	1.0	4.6	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.66	2.0	4.0	37
Tetrachloroethene	127-18-4	0.76	3.4	6.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.95	2.0	4.0	Not Detected
Trichloroethene	79-01-6	0.80	2.7	5.5	14
Vinyl Chloride	75-01-4	0.48	1.3	2.6	6.6

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	103
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-4_041921	Date/Time Analyzed:	4/25/21 04:32 PM
Lab ID:	2104466-09A	Dilution Factor:	14.2
Date/Time Collected:	4/19/21 03:43 PM	Instrument/Filename:	msd3.i / 3042512
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	4.1	14	28	24 J
1,4-Dioxane	123-91-1	7.3	32	100	Not Detected
cis-1,2-Dichloroethene	156-59-2	4.6	14	28	7900
Tetrachloroethene	127-18-4	5.3	24	48	Not Detected
trans-1,2-Dichloroethene	156-60-5	6.6	14	28	60
Trichloroethene	79-01-6	5.6	19	38	3500
Vinyl Chloride	75-01-4	3.3	9.1	18	2400

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-5_042021	Date/Time Analyzed:	4/25/21 10:22 PM
Lab ID:	2104466-10A	Dilution Factor:	2.12
Date/Time Collected:	4/20/21 08:46 AM	Instrument/Filename:	msd3.i / 3042521
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.61	2.1	4.2	Not Detected
1,4-Dioxane	123-91-1	1.1	4.8	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.69	2.1	4.2	50
Tetrachloroethene	127-18-4	0.79	3.6	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.99	2.1	4.2	Not Detected
Trichloroethene	79-01-6	0.83	2.8	5.7	38
Vinyl Chloride	75-01-4	0.49	1.4	2.7	6.3

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	107
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	WDC_042021	Date/Time Analyzed:	4/25/21 10:51 PM
Lab ID:	2104466-11A	Dilution Factor:	2.04
Date/Time Collected:	4/20/21 09:16 AM	Instrument/Filename:	msd3.i / 3042522
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.59	2.0	4.0	Not Detected
1,4-Dioxane	123-91-1	1.0	4.6	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.66	2.0	4.0	Not Detected
Tetrachloroethene	127-18-4	0.76	3.4	6.9	2.1 J
trans-1,2-Dichloroethene	156-60-5	0.95	2.0	4.0	Not Detected
Trichloroethene	79-01-6	0.80	2.7	5.5	Not Detected
Vinyl Chloride	75-01-4	0.48	1.3	2.6	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	EDC_042021	Date/Time Analyzed:	4/25/21 11:20 PM
Lab ID:	2104466-12A	Dilution Factor:	2.10
Date/Time Collected:	4/20/21 09:29 AM	Instrument/Filename:	msd3.i / 3042523
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.60	2.1	4.2	Not Detected
1,4-Dioxane	123-91-1	1.1	4.7	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.68	2.1	4.2	3.3 J
Tetrachloroethene	127-18-4	0.78	3.6	7.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.98	2.1	4.2	1.0 J
Trichloroethene	79-01-6	0.82	2.8	5.6	19
Vinyl Chloride	75-01-4	0.49	1.3	2.7	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	DUP-01	Date/Time Analyzed:	4/25/21 05:00 PM
Lab ID:	2104466-13A	Dilution Factor:	8.10
Date/Time Collected:	4/19/21 12:00 AM	Instrument/Filename:	msd3.i / 3042513
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.3	8.0	16	Not Detected
1,4-Dioxane	123-91-1	4.2	18	58	Not Detected
cis-1,2-Dichloroethene	156-59-2	2.6	8.0	16	19
Tetrachloroethene	127-18-4	3.0	14	27	Not Detected
trans-1,2-Dichloroethene	156-60-5	3.8	8.0	16	Not Detected
Trichloroethene	79-01-6	3.2	11	22	7.7 J
Vinyl Chloride	75-01-4	1.9	5.2	10	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-2_042021	Date/Time Analyzed:	4/26/21 05:00 PM
Lab ID:	2104466-14A	Dilution Factor:	4.00
Date/Time Collected:	4/20/21 10:44 AM	Instrument/Filename:	msd3.i / 3042614
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	4.0	7.9	6.0 J
1,4-Dioxane	123-91-1	2.1	9.0	29	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.3	4.0	7.9	2200
Tetrachloroethene	127-18-4	1.5	6.8	14	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	4.0	7.9	17
Trichloroethene	79-01-6	1.6	5.4	11	880
Vinyl Chloride	75-01-4	0.93	2.6	5.1	640

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1255_042021	Date/Time Analyzed:	4/25/21 05:28 PM
Lab ID:	2104466-15A	Dilution Factor:	2.94
Date/Time Collected:	4/20/21 11:13 AM	Instrument/Filename:	msd3.i / 3042514
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.84	2.9	5.8	4.3 J
1,4-Dioxane	123-91-1	1.5	6.6	21	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.96	2.9	5.8	260
Tetrachloroethene	127-18-4	1.1	5.0	10	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.4	2.9	5.8	8.6
Trichloroethene	79-01-6	1.2	3.9	7.9	9.3
Vinyl Chloride	75-01-4	0.68	1.9	3.8	1200

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	DUP-02	Date/Time Analyzed:	4/26/21 05:28 PM
Lab ID:	2104466-16A	Dilution Factor:	4.11
Date/Time Collected:	4/20/21 12:00 AM	Instrument/Filename:	msd3.i / 3042615
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	4.1	8.1	3.2 J
1,4-Dioxane	123-91-1	2.1	9.2	30	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.3	4.1	8.1	250
Tetrachloroethene	127-18-4	1.5	7.0	14	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	4.1	8.1	6.9 J
Trichloroethene	79-01-6	1.6	5.5	11	9.1 J
Vinyl Chloride	75-01-4	0.96	2.6	5.2	1200

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	107
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Lab Blank	Date/Time Analyzed:	4/25/21 11:14 AM
Lab ID:	2104466-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3042505a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.29	0.99	2.0	Not Detected
1,4-Dioxane	123-91-1	0.52	2.2	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.32	0.99	2.0	Not Detected
Tetrachloroethene	127-18-4	0.37	1.7	3.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.47	0.99	2.0	Not Detected
Trichloroethene	79-01-6	0.39	1.3	2.7	Not Detected
Vinyl Chloride	75-01-4	0.23	0.64	1.3	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Lab Blank	Date/Time Analyzed:	4/26/21 11:50 AM
Lab ID:	2104466-17B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3042605c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.29	0.99	2.0	Not Detected
1,4-Dioxane	123-91-1	0.52	2.2	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.32	0.99	2.0	Not Detected
Tetrachloroethene	127-18-4	0.37	1.7	3.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.47	0.99	2.0	Not Detected
Trichloroethene	79-01-6	0.39	1.3	2.7	Not Detected
Vinyl Chloride	75-01-4	0.23	0.64	1.3	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	CCV	Date/Time Analyzed:	4/25/21 09:35 AM
Lab ID:	2104466-18A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3042502
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	107
1,4-Dioxane	123-91-1	98
cis-1,2-Dichloroethene	156-59-2	104
Tetrachloroethene	127-18-4	106
trans-1,2-Dichloroethene	156-60-5	106
Trichloroethene	79-01-6	104
Vinyl Chloride	75-01-4	114

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	107
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	CCV	Date/Time Analyzed:	4/26/21 09:59 AM
Lab ID:	2104466-18B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3042602
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	107
1,4-Dioxane	123-91-1	98
cis-1,2-Dichloroethene	156-59-2	104
Tetrachloroethene	127-18-4	105
trans-1,2-Dichloroethene	156-60-5	106
Trichloroethene	79-01-6	105
Vinyl Chloride	75-01-4	113

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	107
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCS	Date/Time Analyzed:	4/25/21 10:04 AM
Lab ID:	2104466-19A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3042503
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	107
1,4-Dioxane	123-91-1	98
cis-1,2-Dichloroethene	156-59-2	100
Tetrachloroethene	127-18-4	103
trans-1,2-Dichloroethene	156-60-5	101
Trichloroethene	79-01-6	104
Vinyl Chloride	75-01-4	112

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	108
Toluene-d8	2037-26-5	70-130	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCSD	Date/Time Analyzed:	4/25/21 10:33 AM
Lab ID:	2104466-19AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3042504
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	108
1,4-Dioxane	123-91-1	96
cis-1,2-Dichloroethene	156-59-2	100
Tetrachloroethene	127-18-4	102
trans-1,2-Dichloroethene	156-60-5	103
Trichloroethene	79-01-6	100
Vinyl Chloride	75-01-4	106

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	107
Toluene-d8	2037-26-5	70-130	99

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCS	Date/Time Analyzed:	4/26/21 10:29 AM
Lab ID:	2104466-19B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3042603
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	108
1,4-Dioxane	123-91-1	97
cis-1,2-Dichloroethene	156-59-2	104
Tetrachloroethene	127-18-4	103
trans-1,2-Dichloroethene	156-60-5	104
Trichloroethene	79-01-6	100
Vinyl Chloride	75-01-4	114

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	109
Toluene-d8	2037-26-5	70-130	99

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCSD	Date/Time Analyzed:	4/26/21 10:58 AM
Lab ID:	2104466-19BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3042604
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	106
1,4-Dioxane	123-91-1	96
cis-1,2-Dichloroethene	156-59-2	101
Tetrachloroethene	127-18-4	100
trans-1,2-Dichloroethene	156-60-5	101
Trichloroethene	79-01-6	101
Vinyl Chloride	75-01-4	117

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	100

* % Recovery is calculated using unrounded analytical results.



DATA VERIFICATION REPORT

April 29, 2021

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2021 Utility Corridor Evaluation Vapor Testing
Project number: 30080642.701.04
Event Specific Scope of Work References: Sample COC
Laboratory: EUROFINS-FOLSOM
Laboratory submittal: 2104466
Sample date: 2021-04-19, 2021-04-20
Report received by CADENA: 2021-04-29
Initial Data Verification completed by CADENA: 2021-04-29
Number of Samples: 16
Sample Matrices: AIR
Test Categories: TO-15 GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) TO-15 Analysis

SDG #2104466

CADENA Verification Report: 2021-04-29

Analyses Performed By:
Eurofins Air Toxics
Folsom, California

Report #41304R
Review Level: Tier III
Project: 30080642.701.02

DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 2104466 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						TO-15 (Full Scan)	TO-15 (SIM)	MISC
2104466	MH-1258_041921_V	2104466-01A	Air	4/19/2021		X		
	MH-1256_041921_V	2104466-02A	Air	4/19/2021		X		
	MH-1259_041921_V	2104466-03A	Air	4/19/2021		X		
	MH-1248_041921_V	2104466-04A	Air	4/19/2021		X		
	MH-1245_041921_V	2104466-05A	Air	4/19/2021		X		
	MH-1244_041921_V	2104466-06A	Air	4/19/2021		X		
	MH-1231_041921_V	2104466-07A	Air	4/19/2021		X		
	SL-3_041921_V	2104466-08A	Air	4/19/2021		X		
	SL-4_041921_V	2104466-09A	Air	4/19/2021		X		
	SL-5_042021_V	2104466-10A	Air	4/20/2021		X		
	WDC_042021_V	2104466-11A	Air	4/20/2021		X		
	EDC_042021_V	2104466-12A	Air	4/20/2021		X		
	DUP-01_041921_V	2104466-13A	Air	4/19/2021	SL-3_041921_V	X		
	SL-2_042021_V	2104466-14A	Air	4/20/2021		X		
	MH-1255_042021_V	2104466-15A	Air	4/20/2021		X		

DATA REVIEW

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						TO-15 (Full Scan)	TO-15 (SIM)	MISC
	DUP-02_042021_V	2104466-16A	Air	4/20/2021	MH-1255_042021_V	X		

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Method TO-15 (Full Scan). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation	Return Canister Pressure
USEPA TO-15	Air	30 days from collection to analysis (Canister)	Ambient Temperature	< -2" Hg

All samples were analyzed within the specified holding time and canister return pressure / vacuum criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (30%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (30%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than 140% or less than 60% of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

5. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra. All identified compounds met the specified criteria.

6. Field Duplicate Sample Analysis

The field duplicate analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 35% for air 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 not greater than five times the RL, a control limit of three times the RL is applied to the difference between the duplicate sample results.

Results (in $\mu\text{g}/\text{m}^3$) for the field duplicate samples are summarized in the following table.

Sample ID / Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SL-3_041921_V / DUP-01_041921_V	cis-1,2-Dichloroethene	37	19	AC
	Trichloroethene	14	7.7 J	AC
	Vinyl Chloride	6.6	10 U	AC
MH-1255_042021_V / DUP-02_042021_V	1,1-Dichloroethene	4.3 J	3.2 J	AC
	cis-1,2-Dichloroethene	260	250	3.9%
	trans-1,2-Dichloroethene	8.6	6.9 J	AC
	Trichloroethene	9.3	9.1 J	AC
	Vinyl Chloride	1200	1200	0.0%

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

Note: Dilution was performed on samples MH-1256_041921, MH-1244_041921, MH-1231_041921, SL-4_041921, SL-2_042021, MH-1255_042021 and DUP-02 due to the presence of high-level target species.

Dilution was performed on sample DUP-01 due to the presence of high-level non-target species.

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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: TO-15 (Full Scan)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Canister return pressure (<-2"Hg)		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Field Duplicate Sample RPD		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

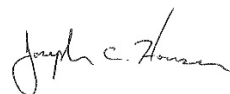
%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Joseph C. Houser

SIGNATURE:



DATE: May 11, 2021

PEER REVIEW: Andrew Korycinski

DATE: May 13, 2021



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



**NO CORRECTIONS/QUALIFIERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**



EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1258_041921	Date/Time Analyzed:	4/25/21 12:58 PM
Lab ID:	2104466-01A	Dilution Factor:	2.11
Date/Time Collected:	4/19/21 10:40 AM	Instrument/Filename:	msd3.i / 3042506
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.61	2.1	4.2	Not Detected
1,4-Dioxane	123-91-1	1.1	4.8	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.69	2.1	4.2	260
Tetrachloroethene	127-18-4	0.78	3.6	7.2	2.2 J
trans-1,2-Dichloroethene	156-60-5	0.99	2.1	4.2	1.4 J
Trichloroethene	79-01-6	0.82	2.8	5.7	20
Vinyl Chloride	75-01-4	0.49	1.3	2.7	32

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1256_041921	Date/Time Analyzed:	4/26/21 07:28 AM
Lab ID:	2104466-02A	Dilution Factor:	40.8
Date/Time Collected:	4/19/21 10:54 AM	Instrument/Filename:	msd3.i / 3042530
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	12	40	81	140
1,4-Dioxane	123-91-1	21	92	290	Not Detected
cis-1,2-Dichloroethene	156-59-2	13	40	81	30000
Tetrachloroethene	127-18-4	15	69	140	Not Detected
trans-1,2-Dichloroethene	156-60-5	19	40	81	270
Trichloroethene	79-01-6	16	55	110	15000
Vinyl Chloride	75-01-4	9.5	26	52	14000

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1259_041921	Date/Time Analyzed:	4/25/21 01:27 PM
Lab ID:	2104466-03A	Dilution Factor:	2.30
Date/Time Collected:	4/19/21 11:23 AM	Instrument/Filename:	msd3.i / 3042507
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.66	2.3	4.6	0.70 J
1,4-Dioxane	123-91-1	1.2	5.2	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.75	2.3	4.6	5.4
Tetrachloroethene	127-18-4	0.85	3.9	7.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.3	4.6	Not Detected
Trichloroethene	79-01-6	0.90	3.1	6.2	7.0
Vinyl Chloride	75-01-4	0.54	1.5	2.9	7.0

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1248_041921	Date/Time Analyzed:	4/25/21 01:56 PM
Lab ID:	2104466-04A	Dilution Factor:	2.31
Date/Time Collected:	4/19/21 01:47 PM	Instrument/Filename:	msd3.i / 3042508
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.66	2.3	4.6	Not Detected
1,4-Dioxane	123-91-1	1.2	5.2	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.75	2.3	4.6	5.8
Tetrachloroethene	127-18-4	0.86	3.9	7.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.1	2.3	4.6	Not Detected
Trichloroethene	79-01-6	0.90	3.1	6.2	2.2 J
Vinyl Chloride	75-01-4	0.54	1.5	3.0	3.0

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1245_041921	Date/Time Analyzed:	4/25/21 09:23 PM
Lab ID:	2104466-05A	Dilution Factor:	2.19
Date/Time Collected:	4/19/21 01:56 PM	Instrument/Filename:	msd3.i / 3042519
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.63	2.2	4.3	Not Detected
1,4-Dioxane	123-91-1	1.1	4.9	16	1.2 J
cis-1,2-Dichloroethene	156-59-2	0.71	2.2	4.3	Not Detected
Tetrachloroethene	127-18-4	0.81	3.7	7.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	2.2	4.3	Not Detected
Trichloroethene	79-01-6	0.86	2.9	5.9	Not Detected
Vinyl Chloride	75-01-4	0.51	1.4	2.8	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1244_041921	Date/Time Analyzed:	4/25/21 05:56 PM
Lab ID:	2104466-06A	Dilution Factor:	27.3
Date/Time Collected:	4/19/21 02:08 PM	Instrument/Filename:	msd3.i / 3042515
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	7.8	27	54	87
1,4-Dioxane	123-91-1	14	61	200	Not Detected
cis-1,2-Dichloroethene	156-59-2	8.9	27	54	21000
Tetrachloroethene	127-18-4	10	46	92	Not Detected
trans-1,2-Dichloroethene	156-60-5	13	27	54	180
Trichloroethene	79-01-6	11	37	73	11000
Vinyl Chloride	75-01-4	6.4	17	35	8500

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1231_041921	Date/Time Analyzed:	4/26/21 01:37 AM
Lab ID:	2104466-07A	Dilution Factor:	51.9
Date/Time Collected:	4/19/21 02:32 PM	Instrument/Filename:	msd3.i / 3042528
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	15	51	100	67 J
1,4-Dioxane	123-91-1	27	120	370	Not Detected
cis-1,2-Dichloroethene	156-59-2	17	51	100	27000
Tetrachloroethene	127-18-4	19	88	180	Not Detected
trans-1,2-Dichloroethene	156-60-5	24	51	100	180
Trichloroethene	79-01-6	20	70	140	10000
Vinyl Chloride	75-01-4	12	33	66	9800

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-3_041921	Date/Time Analyzed:	4/25/21 09:53 PM
Lab ID:	2104466-08A	Dilution Factor:	2.04
Date/Time Collected:	4/19/21 03:10 PM	Instrument/Filename:	msd3.i / 3042520
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.59	2.0	4.0	Not Detected
1,4-Dioxane	123-91-1	1.0	4.6	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.66	2.0	4.0	37
Tetrachloroethene	127-18-4	0.76	3.4	6.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.95	2.0	4.0	Not Detected
Trichloroethene	79-01-6	0.80	2.7	5.5	14
Vinyl Chloride	75-01-4	0.48	1.3	2.6	6.6

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	103
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-4_041921	Date/Time Analyzed:	4/25/21 04:32 PM
Lab ID:	2104466-09A	Dilution Factor:	14.2
Date/Time Collected:	4/19/21 03:43 PM	Instrument/Filename:	msd3.i / 3042512
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	4.1	14	28	24 J
1,4-Dioxane	123-91-1	7.3	32	100	Not Detected
cis-1,2-Dichloroethene	156-59-2	4.6	14	28	7900
Tetrachloroethene	127-18-4	5.3	24	48	Not Detected
trans-1,2-Dichloroethene	156-60-5	6.6	14	28	60
Trichloroethene	79-01-6	5.6	19	38	3500
Vinyl Chloride	75-01-4	3.3	9.1	18	2400

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-5_042021	Date/Time Analyzed:	4/25/21 10:22 PM
Lab ID:	2104466-10A	Dilution Factor:	2.12
Date/Time Collected:	4/20/21 08:46 AM	Instrument/Filename:	msd3.i / 3042521
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.61	2.1	4.2	Not Detected
1,4-Dioxane	123-91-1	1.1	4.8	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.69	2.1	4.2	50
Tetrachloroethene	127-18-4	0.79	3.6	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.99	2.1	4.2	Not Detected
Trichloroethene	79-01-6	0.83	2.8	5.7	38
Vinyl Chloride	75-01-4	0.49	1.4	2.7	6.3

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	107
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	WDC_042021	Date/Time Analyzed:	4/25/21 10:51 PM
Lab ID:	2104466-11A	Dilution Factor:	2.04
Date/Time Collected:	4/20/21 09:16 AM	Instrument/Filename:	msd3.i / 3042522
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.59	2.0	4.0	Not Detected
1,4-Dioxane	123-91-1	1.0	4.6	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.66	2.0	4.0	Not Detected
Tetrachloroethene	127-18-4	0.76	3.4	6.9	2.1 J
trans-1,2-Dichloroethene	156-60-5	0.95	2.0	4.0	Not Detected
Trichloroethene	79-01-6	0.80	2.7	5.5	Not Detected
Vinyl Chloride	75-01-4	0.48	1.3	2.6	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	EDC_042021	Date/Time Analyzed:	4/25/21 11:20 PM
Lab ID:	2104466-12A	Dilution Factor:	2.10
Date/Time Collected:	4/20/21 09:29 AM	Instrument/Filename:	msd3.i / 3042523
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.60	2.1	4.2	Not Detected
1,4-Dioxane	123-91-1	1.1	4.7	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.68	2.1	4.2	3.3 J
Tetrachloroethene	127-18-4	0.78	3.6	7.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.98	2.1	4.2	1.0 J
Trichloroethene	79-01-6	0.82	2.8	5.6	19
Vinyl Chloride	75-01-4	0.49	1.3	2.7	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	DUP-01	Date/Time Analyzed:	4/25/21 05:00 PM
Lab ID:	2104466-13A	Dilution Factor:	8.10
Date/Time Collected:	4/19/21 12:00 AM	Instrument/Filename:	msd3.i / 3042513
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.3	8.0	16	Not Detected
1,4-Dioxane	123-91-1	4.2	18	58	Not Detected
cis-1,2-Dichloroethene	156-59-2	2.6	8.0	16	19
Tetrachloroethene	127-18-4	3.0	14	27	Not Detected
trans-1,2-Dichloroethene	156-60-5	3.8	8.0	16	Not Detected
Trichloroethene	79-01-6	3.2	11	22	7.7 J
Vinyl Chloride	75-01-4	1.9	5.2	10	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-2_042021	Date/Time Analyzed:	4/26/21 05:00 PM
Lab ID:	2104466-14A	Dilution Factor:	4.00
Date/Time Collected:	4/20/21 10:44 AM	Instrument/Filename:	msd3.i / 3042614
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	4.0	7.9	6.0 J
1,4-Dioxane	123-91-1	2.1	9.0	29	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.3	4.0	7.9	2200
Tetrachloroethene	127-18-4	1.5	6.8	14	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	4.0	7.9	17
Trichloroethene	79-01-6	1.6	5.4	11	880
Vinyl Chloride	75-01-4	0.93	2.6	5.1	640

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1255_042021	Date/Time Analyzed:	4/25/21 05:28 PM
Lab ID:	2104466-15A	Dilution Factor:	2.94
Date/Time Collected:	4/20/21 11:13 AM	Instrument/Filename:	msd3.i / 3042514
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.84	2.9	5.8	4.3 J
1,4-Dioxane	123-91-1	1.5	6.6	21	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.96	2.9	5.8	260
Tetrachloroethene	127-18-4	1.1	5.0	10	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.4	2.9	5.8	8.6
Trichloroethene	79-01-6	1.2	3.9	7.9	9.3
Vinyl Chloride	75-01-4	0.68	1.9	3.8	1200

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	DUP-02	Date/Time Analyzed:	4/26/21 05:28 PM
Lab ID:	2104466-16A	Dilution Factor:	4.11
Date/Time Collected:	4/20/21 12:00 AM	Instrument/Filename:	msd3.i / 3042615
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	4.1	8.1	3.2 J
1,4-Dioxane	123-91-1	2.1	9.2	30	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.3	4.1	8.1	250
Tetrachloroethene	127-18-4	1.5	7.0	14	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	4.1	8.1	6.9 J
Trichloroethene	79-01-6	1.6	5.5	11	9.1 J
Vinyl Chloride	75-01-4	0.96	2.6	5.2	1200

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	107
Toluene-d8	2037-26-5	70-130	98

Analysis Request / Canister Chain of Custody

For Laboratory Use Only

PID: _____ Workorder #: 2104466

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
 Phone (800) 985-5955; Fax (916) 351-8279

Click links below to view:

[Canister Sampling Guide](#)
[Helium Shroud Video](#)

Client:	Ford	PID:	NA	Special Instructions/Notes: Report ONLY: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, 1,4-Dioxane, PCE, TCE and VC. Submit results through Cadena at jim.tomalia@cadena.com. Cadena #E205162. Level IV Reporting	Turnaround Time (Rush surcharges may apply) 5 Day Turnaround Time	
Project Name:	Ford LTP				Canister Vacuum/Pressure	Requested Analyses
Project Manager:	Kris Hinskey	P.O.#	30080642.701.04			
Sampler:	Emma Witherspoon, Andrew Banitt					
Site Name:	Ford LTP					

Lab ID	Sample Identification	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Initial (in Hg)	Final (in Hg)	Lab Use Only		TO-15 (See Special Instructions/Notes)	Do Not Analyze
				Date	Time	Date	Time			Receipt	Final (psig) Gas: N ₂ / He		
01A	MH-1258_041921	LC630	1912	4/19/21	1039	4/19/21	1040	-28.5	-5.5			x	
02A	MH-1256_041921	1L3173	2005	4/19/21	1053	4/19/21	1054	-28	-3.5			x	
03A	MH-1259_041921	1L2746	1928	4/19/21	1122	4/19/21	1123	-28	-6.5			x	
04A	MH-1248_041921	1L2323	1938	4/19/21	1346	4/19/21	1347	-28	-7.5			x	
05A	MH-1245_041921	0000003004	2028	4/19/21	1355	4/19/21	1356	-29	-7			x	
06A	MH-1244_041921	1L3011	1910	4/19/21	1407	4/19/21	1408	-29	-6.5			x	
07A	MH-1231_041921	1L2538	1824	4/19/21	1431	4/19/21	1432	-29	-7			x	
08A	SL-3_041921	1L2580	2005	4/19/21	1509	4/19/21	1510	-29	-5.5			x	
09A	SL-4_041921	1L2753	1938	4/19/21	1542	4/19/21	1543	-28.5	-7			x	
10A	SL-5_042021	1L2532	1910	4/20/21	0845	4/20/21	0846	-29	-7			x	
11A	WDC_042021	1L1624	1922	4/20/21	0915	4/20/21	0916	-29	-6.5			x	
12A	EDC_042021	1L3264	1922	4/20/21	0928	4/20/21	0929	-29	-7.5			x	
13A	DUP-01	1L1508	1938	4/19/21	--	4/19/21	--	-28.5	-5.5			x	
14A	SL-2_042021	40868	2005	4/20/21	1043	4/20/21	1044	-29	-6.5			x	
15A	MH-1255_042021	1L1641	2005	4/20/21	1112	4/20/21	1113	-29	-6			x	

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
<i>E. Witherspoon / Arcadis</i>	4/20/21	1500	<i>[Signature]</i>	4/22/21	1027
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only

Shipper Name: Fed Ex Custody Seals Intact? Yes No None 6097

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

Analysis Request /Canister Chain of Custody

For Laboratory Use Only
 PID: _____ Workorder #: 2104466

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
 Phone (800) 985-5955; Fax (916) 351-8279

Click links below to view:
[Canister Sampling Guide](#)
[Helium Shroud Video](#)

Client: <u>Ford</u>	PID: <u>NA</u>	Special Instructions/Notes: Report ONLY: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, 1,4-Dioxane, PCE, TCE and VC. Submit results through Cadena at jim.tomalia@cadena.com. Cadena #E205162. Level IV Reporting	Turnaround Time (Rush surcharges may apply)		
Project Name: <u>Ford LTP</u>			5 Day Turnaround Time		
Project Manager: <u>Kris Hinskey</u>	P.O.# <u>30080642.701.04</u>		Canister Vacuum/Pressure	Requested Analyses	
Sampler: <u>Emma Witherspoon Andrew Banitt</u>					
Site Name: <u>Ford LTP</u>					

Lab ID	Sample Identification	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Initial (in Hg)	Final (in Hg)	Lab Use Only		TO-15 (See Special Instructions/Notes)	Do Not Analyze
				Date	Time	Date	Time			Receipt	Final (psig) Gas: N ₂ / He		
<u>16A</u>	<u>DUP-02</u>	<u>1L2406</u>	<u>1938</u>	<u>4/20/21</u>	<u>--</u>	<u>4/20/21</u>	<u>--</u>	<u>-29</u>	<u>-6.5</u>			<u>x</u>	

Relinquished by: (Signature/Affiliation) <u>Witherspoon / Arcadis</u>	Date <u>4/20/21</u>	Time <u>1500</u>	Received by: (Signature/Affiliation) <u>[Signature] / [Signature]</u>	Date <u>4/22/21</u>	Time <u>1027</u>
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only			
Shipper Name: <u>Folke</u>	Custody Seals Intact? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> None		<u>6017</u>

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-147838-1

Client Project/Site: Ford LTP Utility Corridor Sampling

For:

ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey



Authorized for release by:
4/28/2021 2:55:49 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.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.



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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

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

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Job ID: 240-147838-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

**Job Narrative
240-147838-1**

Comments

No additional comments.

Receipt

The samples were received on 4/21/2021 8:00 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 2.6° C.

GC/MS VOA

Method 8260B SIM: The following samples was diluted due to the nature of the sample matrix: SL-2_042021 (240-147838-6). Elevated reporting limits (RLs) are provided.

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

VOA Prep

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

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Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396



Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-147838-1	TRIP BLANK	Water	04/19/21 00:00	04/21/21 08:00	
240-147838-2	MH-1231_041921	Water	04/19/21 14:35	04/21/21 08:00	
240-147838-3	SL-3_041921	Water	04/19/21 15:15	04/21/21 08:00	
240-147838-4	SL-4_041921	Water	04/19/21 15:45	04/21/21 08:00	
240-147838-5	SL-5_042021	Water	04/20/21 08:50	04/21/21 08:00	
240-147838-6	SL-2_042021	Water	04/20/21 10:50	04/21/21 08:00	
240-147838-7	DUP-01	Water	04/19/21 00:00	04/21/21 08:00	

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Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-147838-1

No Detections.

Client Sample ID: MH-1231_041921

Lab Sample ID: 240-147838-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	7.8		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	560		33	5.3	ug/L	33.33		8260B	Total/NA
Trichloroethene	180		33	3.3	ug/L	33.33		8260B	Total/NA
Vinyl chloride	110		33	6.7	ug/L	33.33		8260B	Total/NA

Client Sample ID: SL-3_041921

Lab Sample ID: 240-147838-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	7.0		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	280		14	2.3	ug/L	14.29		8260B	Total/NA
Trichloroethene	79		14	1.4	ug/L	14.29		8260B	Total/NA
Vinyl chloride	44		14	2.9	ug/L	14.29		8260B	Total/NA

Client Sample ID: SL-4_041921

Lab Sample ID: 240-147838-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	6.6		4.0	1.7	ug/L	2		8260B SIM	Total/NA
cis-1,2-Dichloroethene	210		10	1.6	ug/L	10		8260B	Total/NA
Trichloroethene	56		10	1.0	ug/L	10		8260B	Total/NA
Vinyl chloride	26		10	2.0	ug/L	10		8260B	Total/NA

Client Sample ID: SL-5_042021

Lab Sample ID: 240-147838-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	5.8		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	160		5.0	0.80	ug/L	5		8260B	Total/NA
Trichloroethene	34		5.0	0.50	ug/L	5		8260B	Total/NA
Vinyl chloride	14		5.0	1.0	ug/L	5		8260B	Total/NA

Client Sample ID: SL-2_042021

Lab Sample ID: 240-147838-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	5.5		4.0	1.7	ug/L	2		8260B SIM	Total/NA
cis-1,2-Dichloroethene	53		4.0	0.64	ug/L	4		8260B	Total/NA
Trichloroethene	15		4.0	0.40	ug/L	4		8260B	Total/NA
Vinyl chloride	8.8		4.0	0.80	ug/L	4		8260B	Total/NA

Client Sample ID: DUP-01

Lab Sample ID: 240-147838-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	12		4.0	1.7	ug/L	2		8260B SIM	Total/NA
cis-1,2-Dichloroethene	560		33	5.3	ug/L	33.33		8260B	Total/NA
Trichloroethene	170		33	3.3	ug/L	33.33		8260B	Total/NA
Vinyl chloride	91		33	6.7	ug/L	33.33		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-147838-1

Date Collected: 04/19/21 00:00

Matrix: Water

Date Received: 04/21/21 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/26/21 08:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/26/21 08:51	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/26/21 08:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/26/21 08:51	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/26/21 08:51	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/26/21 08:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		75 - 130		04/26/21 08:51	1
4-Bromofluorobenzene (Surr)	82		47 - 134		04/26/21 08:51	1
Toluene-d8 (Surr)	85		69 - 122		04/26/21 08:51	1
Dibromofluoromethane (Surr)	91		78 - 129		04/26/21 08:51	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Client Sample ID: MH-1231_041921

Lab Sample ID: 240-147838-2

Date Collected: 04/19/21 14:35

Matrix: Water

Date Received: 04/21/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	7.8		2.0	0.86	ug/L			04/22/21 18:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		70 - 133					04/22/21 18:05	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	33	U	33	6.3	ug/L			04/26/21 09:13	33.33
cis-1,2-Dichloroethene	560		33	5.3	ug/L			04/26/21 09:13	33.33
Tetrachloroethene	33	U	33	5.0	ug/L			04/26/21 09:13	33.33
trans-1,2-Dichloroethene	33	U	33	6.3	ug/L			04/26/21 09:13	33.33
Trichloroethene	180		33	3.3	ug/L			04/26/21 09:13	33.33
Vinyl chloride	110		33	6.7	ug/L			04/26/21 09:13	33.33
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		75 - 130					04/26/21 09:13	33.33
4-Bromofluorobenzene (Surr)	78		47 - 134					04/26/21 09:13	33.33
Toluene-d8 (Surr)	81		69 - 122					04/26/21 09:13	33.33
Dibromofluoromethane (Surr)	88		78 - 129					04/26/21 09:13	33.33

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Client Sample ID: SL-3_041921

Lab Sample ID: 240-147838-3

Date Collected: 04/19/21 15:15

Matrix: Water

Date Received: 04/21/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	7.0		2.0	0.86	ug/L			04/22/21 18:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		70 - 133		04/22/21 18:30	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	14	U	14	2.7	ug/L			04/26/21 09:36	14.29
cis-1,2-Dichloroethene	280		14	2.3	ug/L			04/26/21 09:36	14.29
Tetrachloroethene	14	U	14	2.1	ug/L			04/26/21 09:36	14.29
trans-1,2-Dichloroethene	14	U	14	2.7	ug/L			04/26/21 09:36	14.29
Trichloroethene	79		14	1.4	ug/L			04/26/21 09:36	14.29
Vinyl chloride	44		14	2.9	ug/L			04/26/21 09:36	14.29

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		75 - 130		04/26/21 09:36	14.29
4-Bromofluorobenzene (Surr)	82		47 - 134		04/26/21 09:36	14.29
Toluene-d8 (Surr)	83		69 - 122		04/26/21 09:36	14.29
Dibromofluoromethane (Surr)	92		78 - 129		04/26/21 09:36	14.29

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Client Sample ID: SL-4_041921

Lab Sample ID: 240-147838-4

Date Collected: 04/19/21 15:45

Matrix: Water

Date Received: 04/21/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	6.6		4.0	1.7	ug/L			04/26/21 16:53	2
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		70 - 133					04/26/21 16:53	2

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	10	U	10	1.9	ug/L			04/26/21 09:58	10
cis-1,2-Dichloroethene	210		10	1.6	ug/L			04/26/21 09:58	10
Tetrachloroethene	10	U	10	1.5	ug/L			04/26/21 09:58	10
trans-1,2-Dichloroethene	10	U	10	1.9	ug/L			04/26/21 09:58	10
Trichloroethene	56		10	1.0	ug/L			04/26/21 09:58	10
Vinyl chloride	26		10	2.0	ug/L			04/26/21 09:58	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	79		75 - 130					04/26/21 09:58	10
4-Bromofluorobenzene (Surr)	78		47 - 134					04/26/21 09:58	10
Toluene-d8 (Surr)	79		69 - 122					04/26/21 09:58	10
Dibromofluoromethane (Surr)	85		78 - 129					04/26/21 09:58	10

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Client Sample ID: SL-5_042021

Lab Sample ID: 240-147838-5

Date Collected: 04/20/21 08:50

Matrix: Water

Date Received: 04/21/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	5.8		2.0	0.86	ug/L			04/22/21 19:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		70 - 133					04/22/21 19:19	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	0.95	ug/L			04/26/21 10:20	5
cis-1,2-Dichloroethene	160		5.0	0.80	ug/L			04/26/21 10:20	5
Tetrachloroethene	5.0	U	5.0	0.75	ug/L			04/26/21 10:20	5
trans-1,2-Dichloroethene	5.0	U	5.0	0.95	ug/L			04/26/21 10:20	5
Trichloroethene	34		5.0	0.50	ug/L			04/26/21 10:20	5
Vinyl chloride	14		5.0	1.0	ug/L			04/26/21 10:20	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	78		75 - 130					04/26/21 10:20	5
4-Bromofluorobenzene (Surr)	79		47 - 134					04/26/21 10:20	5
Toluene-d8 (Surr)	80		69 - 122					04/26/21 10:20	5
Dibromofluoromethane (Surr)	87		78 - 129					04/26/21 10:20	5

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Client Sample ID: SL-2_042021

Lab Sample ID: 240-147838-6

Date Collected: 04/20/21 10:50

Matrix: Water

Date Received: 04/21/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	5.5		4.0	1.7	ug/L			04/22/21 21:00	2
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		70 - 133					04/22/21 21:00	2

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	4.0	U	4.0	0.76	ug/L			04/26/21 10:43	4
cis-1,2-Dichloroethene	53		4.0	0.64	ug/L			04/26/21 10:43	4
Tetrachloroethene	4.0	U	4.0	0.60	ug/L			04/26/21 10:43	4
trans-1,2-Dichloroethene	4.0	U	4.0	0.76	ug/L			04/26/21 10:43	4
Trichloroethene	15		4.0	0.40	ug/L			04/26/21 10:43	4
Vinyl chloride	8.8		4.0	0.80	ug/L			04/26/21 10:43	4
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		75 - 130					04/26/21 10:43	4
4-Bromofluorobenzene (Surr)	89		47 - 134					04/26/21 10:43	4
Toluene-d8 (Surr)	85		69 - 122					04/26/21 10:43	4
Dibromofluoromethane (Surr)	86		78 - 129					04/26/21 10:43	4

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Client Sample ID: DUP-01

Lab Sample ID: 240-147838-7

Date Collected: 04/19/21 00:00

Matrix: Water

Date Received: 04/21/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	12		4.0	1.7	ug/L			04/26/21 17:17	2

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		70 - 133		04/26/21 17:17	2

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	33	U	33	6.3	ug/L			04/26/21 11:05	33.33
cis-1,2-Dichloroethene	560		33	5.3	ug/L			04/26/21 11:05	33.33
Tetrachloroethene	33	U	33	5.0	ug/L			04/26/21 11:05	33.33
trans-1,2-Dichloroethene	33	U	33	6.3	ug/L			04/26/21 11:05	33.33
Trichloroethene	170		33	3.3	ug/L			04/26/21 11:05	33.33
Vinyl chloride	91		33	6.7	ug/L			04/26/21 11:05	33.33

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		75 - 130		04/26/21 11:05	33.33
4-Bromofluorobenzene (Surr)	85		47 - 134		04/26/21 11:05	33.33
Toluene-d8 (Surr)	83		69 - 122		04/26/21 11:05	33.33
Dibromofluoromethane (Surr)	94		78 - 129		04/26/21 11:05	33.33

Surrogate Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (75-130)	BFB (47-134)	TOL (69-122)	DBFM (78-129)
240-147838-1	TRIP BLANK	82	82	85	91
240-147838-2	MH-1231_041921	80	78	81	88
240-147838-3	SL-3_041921	84	82	83	92
240-147838-4	SL-4_041921	79	78	79	85
240-147838-5	SL-5_042021	78	79	80	87
240-147838-6	SL-2_042021	82	89	85	86
240-147838-7	DUP-01	83	85	83	94
LCS 240-482723/4	Lab Control Sample	85	88	86	92
MB 240-482723/6	Method Blank	80	83	81	90

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
 BFB = 4-Bromofluorobenzene (Surr)
 TOL = Toluene-d8 (Surr)
 DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		DCA (70-133)
240-147838-2	MH-1231_041921	86
240-147838-3	SL-3_041921	86
240-147838-4	SL-4_041921	86
240-147838-5	SL-5_042021	86
240-147838-6	SL-2_042021	84
240-147838-7	DUP-01	80
240-147854-C-1 MS	Matrix Spike	83
240-147854-E-1 MSD	Matrix Spike Duplicate	90
240-147963-C-2 MS	Matrix Spike	83
240-147963-F-2 MSD	Matrix Spike Duplicate	85
LCS 240-482341/4	Lab Control Sample	86
LCS 240-482829/4	Lab Control Sample	82
MB 240-482341/5	Method Blank	82
MB 240-482829/5	Method Blank	84

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-482723/6
Matrix: Water
Analysis Batch: 482723

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/26/21 08:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/26/21 08:29	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/26/21 08:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/26/21 08:29	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/26/21 08:29	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/26/21 08:29	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		75 - 130		04/26/21 08:29	1
4-Bromofluorobenzene (Surr)	83		47 - 134		04/26/21 08:29	1
Toluene-d8 (Surr)	81		69 - 122		04/26/21 08:29	1
Dibromofluoromethane (Surr)	90		78 - 129		04/26/21 08:29	1

Lab Sample ID: LCS 240-482723/4
Matrix: Water
Analysis Batch: 482723

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	9.64		ug/L		96	73 - 129
cis-1,2-Dichloroethene	10.0	9.48		ug/L		95	75 - 124
Tetrachloroethene	10.0	8.91		ug/L		89	70 - 125
trans-1,2-Dichloroethene	10.0	9.39		ug/L		94	74 - 130
Trichloroethene	10.0	8.63		ug/L		86	71 - 121
Vinyl chloride	10.0	7.72		ug/L		77	61 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	85		75 - 130
4-Bromofluorobenzene (Surr)	88		47 - 134
Toluene-d8 (Surr)	86		69 - 122
Dibromofluoromethane (Surr)	92		78 - 129

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-482341/5
Matrix: Water
Analysis Batch: 482341

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			04/22/21 13:19	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		70 - 133		04/22/21 13:19	1

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-482341/4
Matrix: Water
Analysis Batch: 482341

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	10.6		ug/L		106	80 - 135
Surrogate	%Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	86		70 - 133				

Lab Sample ID: 240-147854-C-1 MS
Matrix: Water
Analysis Batch: 482341

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	12		10.0	22.9		ug/L		110	46 - 170
Surrogate	%Recovery	MS Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	83		70 - 133						

Lab Sample ID: 240-147854-E-1 MSD
Matrix: Water
Analysis Batch: 482341

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
1,4-Dioxane	12		10.0	22.5		ug/L		105	46 - 170	2	26
Surrogate	%Recovery	MSD Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	90		70 - 133								

Lab Sample ID: MB 240-482829/5
Matrix: Water
Analysis Batch: 482829

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			04/26/21 15:05	1	
Surrogate	%Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac				
1,2-Dichloroethane-d4 (Surr)	84		70 - 133		04/26/21 15:05	1				

Lab Sample ID: LCS 240-482829/4
Matrix: Water
Analysis Batch: 482829

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	11.3		ug/L		113	80 - 135
Surrogate	%Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	82		70 - 133				

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-147963-C-2 MS
Matrix: Water
Analysis Batch: 482829

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	18		10.0	28.5		ug/L		105	46 - 170
MS MS									
Surrogate	%Recovery	Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	83		70 - 133						

Lab Sample ID: 240-147963-F-2 MSD
Matrix: Water
Analysis Batch: 482829

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	18		10.0	29.4		ug/L		114	46 - 170	3	26
MSD MSD											
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	85		70 - 133								



QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

GC/MS VOA

Analysis Batch: 482341

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-147838-2	MH-1231_041921	Total/NA	Water	8260B SIM	
240-147838-3	SL-3_041921	Total/NA	Water	8260B SIM	
240-147838-5	SL-5_042021	Total/NA	Water	8260B SIM	
240-147838-6	SL-2_042021	Total/NA	Water	8260B SIM	
MB 240-482341/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-482341/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-147854-C-1 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-147854-E-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 482723

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-147838-1	TRIP BLANK	Total/NA	Water	8260B	
240-147838-2	MH-1231_041921	Total/NA	Water	8260B	
240-147838-3	SL-3_041921	Total/NA	Water	8260B	
240-147838-4	SL-4_041921	Total/NA	Water	8260B	
240-147838-5	SL-5_042021	Total/NA	Water	8260B	
240-147838-6	SL-2_042021	Total/NA	Water	8260B	
240-147838-7	DUP-01	Total/NA	Water	8260B	
MB 240-482723/6	Method Blank	Total/NA	Water	8260B	
LCS 240-482723/4	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 482829

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-147838-4	SL-4_041921	Total/NA	Water	8260B SIM	
240-147838-7	DUP-01	Total/NA	Water	8260B SIM	
MB 240-482829/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-482829/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-147963-C-2 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-147963-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-147838-1

Date Collected: 04/19/21 00:00

Matrix: Water

Date Received: 04/21/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	482723	04/26/21 08:51	LEE	TAL CAN

Client Sample ID: MH-1231_041921

Lab Sample ID: 240-147838-2

Date Collected: 04/19/21 14:35

Matrix: Water

Date Received: 04/21/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		33.33	482723	04/26/21 09:13	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	482341	04/22/21 18:05	CS	TAL CAN

Client Sample ID: SL-3_041921

Lab Sample ID: 240-147838-3

Date Collected: 04/19/21 15:15

Matrix: Water

Date Received: 04/21/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		14.29	482723	04/26/21 09:36	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	482341	04/22/21 18:30	CS	TAL CAN

Client Sample ID: SL-4_041921

Lab Sample ID: 240-147838-4

Date Collected: 04/19/21 15:45

Matrix: Water

Date Received: 04/21/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10	482723	04/26/21 09:58	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		2	482829	04/26/21 16:53	SAM	TAL CAN

Client Sample ID: SL-5_042021

Lab Sample ID: 240-147838-5

Date Collected: 04/20/21 08:50

Matrix: Water

Date Received: 04/21/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	482723	04/26/21 10:20	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	482341	04/22/21 19:19	CS	TAL CAN

Client Sample ID: SL-2_042021

Lab Sample ID: 240-147838-6

Date Collected: 04/20/21 10:50

Matrix: Water

Date Received: 04/21/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		4	482723	04/26/21 10:43	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		2	482341	04/22/21 21:00	CS	TAL CAN

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Client Sample ID: DUP-01

Lab Sample ID: 240-147838-7

Date Collected: 04/19/21 00:00

Matrix: Water

Date Received: 04/21/21 08:00

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Analysis	8260B		33.33	482723	04/26/21 11:05	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		2	482829	04/26/21 17:17	SAM	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

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Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-22
Illinois	NELAP	004498	07-31-21
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21 *
Kentucky (WW)	State	KY98016	12-31-21
Minnesota	NELAP	OH00048	12-31-21
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-22
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-23-22
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-22
West Virginia DEP	State	210	12-31-21

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



TestAmerica Laboratory location: Brighton --- 10448 Ciation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Client Contact Company Name: Arcadis Address: 28550 Cabot Drive, Suite 500 City/State/Zip: Novi, MI, 48377 Phone: 248-994-2240 Project Name: Ford LTP Utility Corridor Sampling Project Number: 30080642.701.04 PO # 30080642.701.04		Regulatory program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other	
Client Project Manager: Kris Hinskey Telephone: 248-994-2240 Email: kris@hinskey.com		Lab Contact: Mike DelMonico Telephone: 330-497-9396	
Sampler Name: Emma Witherspoon, Andrew Banitt Method of Shipment/Carrier: Shipping/Tracking No:		Analysis Turnaround Time TAT if different from below: <input type="checkbox"/> 3 weeks <input type="checkbox"/> 2 weeks <input checked="" type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day 5 day	
Sample Identification		Analyses	
Sample Date	Sample Time	Sample Disposal (A fee may be charged)	Sample Specific Notes / Special Instructions:
---	---	<input type="checkbox"/> Return to Client	1 Trip Blank
4/19/21	1435	<input type="checkbox"/> Return to Client	3 VOAs for 8260B 3 VOAs for 8260B SIM
4/19/21	1515	<input type="checkbox"/> Return to Client	
4/19/21	1545	<input type="checkbox"/> Return to Client	
4/20/21	0850	<input type="checkbox"/> Return to Client	
4/20/21	1050	<input type="checkbox"/> Return to Client	
4/19/21	--	<input type="checkbox"/> Return to Client	
Possible Hazard Identification <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown		Sample Disposal (A fee may be charged) <input type="checkbox"/> Return to Client	
Special Instructions/QC Requirements & Comments: Submit all results through Cadena at tomalia@cadenaco.com. Cadena #E205162 Level IV Reporting requested.			
Relinquished by: <i>John Endo</i>		Received by: <i>Edy Moe</i> Date/Time: 4/20/21 1544 Company: Arcadis	
Relinquished by: <i>Lolly Moe</i>		Received by: <i>JIA</i> Date/Time: 4-21-21 800 Company: JIA	
Relinquished by:		Received in Laboratory by:	

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Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 147838

Client Arcaadis Site Name _____

Cooler unpacked by: _____

Cooler Received on 4-21-21 Opened on 4-21-21

FedEx: 1st Grd Exp UPS FAS Chippert Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box _____ Client Cooler _____ Box _____ Other _____
 Packing material used: Bubble Wrap Foam _____ Plastic Bag _____ None _____ Other _____
 COOLANT: Wet Ice Blue Ice _____ Dry Ice _____ Water _____ None _____


1. Cooler temperature upon receipt See Multiple Cooler Form
 IR GUN# IR-11 (CF +0.1 °C) Observed Cooler Temp. 25 °C Corrected Cooler Temp. 26 °C
 IR GUN #IR-12 (CF +0.2°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
 -Were tamper/custody seals intact and uncompromised? Yes No NA

Tests that are not checked for pH by Receiving:
 VOAs
 Oil and Grease
 TOC

3. Shippers' packing slip attached to the cooler(s)? Yes No
 4. Did custody papers accompany the sample(s)? Yes No
 5. Were the custody papers relinquished & signed in the appropriate place? Yes No
 6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
 7. Did all bottles arrive in good condition (Unbroken)? Yes No
 8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
 9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
 10. Were correct bottle(s) used for the test(s) indicated? Yes No
 11. Sufficient quantity received to perform indicated analyses? Yes No
 12. Are these work share samples and all listed on the COC? Yes No

If yes, Questions 13-17 have been checked at the originating laboratory.

13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC022887
 14. Were VOAs on the COC? Yes No
 15. Were air bubbles >6 mm in any VOA vials?  ← Larger than this. Yes No NA
 16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
 17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page

Samples processed by: _____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container.
 Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
 Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT



April 29, 2021

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2021 Utility Corridor Evaluation Vapor Testing
Project number: 30080642.701.04
Event Specific Scope of Work References: Sample COC
Laboratory: TestAmerica - North Canton
Laboratory submittal: 147838-1
Sample date: 2021-04-19 2021-04-20
Report received by CADENA: 2021-04-28
Initial Data Verification completed by CADENA: 2021-04-29
Number of Samples: 6 Water and 1 trip blank
Sample Matrices: Water
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E205162
 Laboratory: TestAmerica - North Canton
 Laboratory Submittal: 147838-1

Analyte	Cas No.	Sample Name: TRIP BLANK				MH-1231_041921				SL-3_041921				SL-4_041921				SL-5_042021				SL-2_042021				DUP-01			
		Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier
GC/MS VOC																													
<u>OSW-82608</u>																													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	33	ug/l	---	ND	14	ug/l	---	ND	10	ug/l	---	ND	5.0	ug/l	---	ND	4.0	ug/l	---	ND	33	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	560	33	ug/l	---	280	14	ug/l	---	210	10	ug/l	---	160	5.0	ug/l	---	53	4.0	ug/l	---	560	33	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	33	ug/l	---	ND	14	ug/l	---	ND	10	ug/l	---	ND	5.0	ug/l	---	ND	4.0	ug/l	---	ND	33	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	33	ug/l	---	ND	14	ug/l	---	ND	10	ug/l	---	ND	5.0	ug/l	---	ND	4.0	ug/l	---	ND	33	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	180	33	ug/l	---	79	14	ug/l	---	56	10	ug/l	---	34	5.0	ug/l	---	15	4.0	ug/l	---	170	33	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	110	33	ug/l	---	44	14	ug/l	---	26	10	ug/l	---	14	5.0	ug/l	---	8.8	4.0	ug/l	---	91	33	ug/l	---
<u>OSW-82608BSim</u>																													
1,4-Dioxane	123-91-1					7.8	2.0	ug/l	---	7.0	2.0	ug/l	---	6.6	4.0	ug/l	---	5.8	2.0	ug/l	---	5.5	4.0	ug/l	---	12	4.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-147838-1

CADENA Verification Report: 2021-04-29

Analyses Performed By:
TestAmerica
Edison, New Jersey

Report #41317R
Review Level: Tier III
Project: 30080642.701.02



DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-147838-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						VOC (Full Scan)	VOC (SIM)	MISC
240-147838-1	TRIP BLANK	240-147838-1	Water	4/19/2021		X		
	MH-1231_041921	240-147838-2	Water	4/19/2021		X	X	
	SL-3_041921	240-147838-3	Water	4/19/2021		X	X	
	SL-4_041921	240-147838-4	Water	4/19/2021		X	X	
	SL-5_042021	240-147838-5	Water	4/20/2021		X	X	
	SL-2_042021	240-147838-6	Water	4/20/2021		X	X	
	DUP-01	240-147838-7	Water	4/20/2021	MH-1231_041921	X	X	

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

The following sample was diluted due to the nature of the sample matrix:SL-2_042021 (240-147838-6). Elevated reporting limits (RLs) are provided.

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260B and 8260B SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) 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 8260B/8260B-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl
	Soil	14 days from collection to analysis	Cool to < 6 °C

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

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 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	Duplicate Result	RPD
MH-1231_041921/ DUP-01	1,4-Dioxane	12	7.8	NC
	cis-1,2-Dichloroethene	560	560	0.0%
	Trichloroethene	170	180	5.7%
	Vinyl chloride	91	110	AC

Notes:

AC Acceptable
NC Not compliant

1,4-Dioxane associated with sample locations MH-1231_041921 and DUP-01 exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. 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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260B/8260B-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X	X		
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:



DATE: May 13, 2021

PEER REVIEW: Joseph C. Houser

DATE: May 13, 2021



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-147838-1

Date Collected: 04/19/21 00:00

Matrix: Water

Date Received: 04/21/21 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/26/21 08:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/26/21 08:51	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/26/21 08:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/26/21 08:51	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/26/21 08:51	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/26/21 08:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		75 - 130		04/26/21 08:51	1
4-Bromofluorobenzene (Surr)	82		47 - 134		04/26/21 08:51	1
Toluene-d8 (Surr)	85		69 - 122		04/26/21 08:51	1
Dibromofluoromethane (Surr)	91		78 - 129		04/26/21 08:51	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Client Sample ID: MH-1231_041921

Lab Sample ID: 240-147838-2

Date Collected: 04/19/21 14:35

Matrix: Water

Date Received: 04/21/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	7.8	J	2.0	0.86	ug/L			04/22/21 18:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		70 - 133					04/22/21 18:05	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	33	U	33	6.3	ug/L			04/26/21 09:13	33.33
cis-1,2-Dichloroethene	560		33	5.3	ug/L			04/26/21 09:13	33.33
Tetrachloroethene	33	U	33	5.0	ug/L			04/26/21 09:13	33.33
trans-1,2-Dichloroethene	33	U	33	6.3	ug/L			04/26/21 09:13	33.33
Trichloroethene	180		33	3.3	ug/L			04/26/21 09:13	33.33
Vinyl chloride	110		33	6.7	ug/L			04/26/21 09:13	33.33
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		75 - 130					04/26/21 09:13	33.33
4-Bromofluorobenzene (Surr)	78		47 - 134					04/26/21 09:13	33.33
Toluene-d8 (Surr)	81		69 - 122					04/26/21 09:13	33.33
Dibromofluoromethane (Surr)	88		78 - 129					04/26/21 09:13	33.33

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Client Sample ID: SL-3_041921

Lab Sample ID: 240-147838-3

Date Collected: 04/19/21 15:15

Matrix: Water

Date Received: 04/21/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	7.0		2.0	0.86	ug/L			04/22/21 18:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		70 - 133		04/22/21 18:30	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	14	U	14	2.7	ug/L			04/26/21 09:36	14.29
cis-1,2-Dichloroethene	280		14	2.3	ug/L			04/26/21 09:36	14.29
Tetrachloroethene	14	U	14	2.1	ug/L			04/26/21 09:36	14.29
trans-1,2-Dichloroethene	14	U	14	2.7	ug/L			04/26/21 09:36	14.29
Trichloroethene	79		14	1.4	ug/L			04/26/21 09:36	14.29
Vinyl chloride	44		14	2.9	ug/L			04/26/21 09:36	14.29

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		75 - 130		04/26/21 09:36	14.29
4-Bromofluorobenzene (Surr)	82		47 - 134		04/26/21 09:36	14.29
Toluene-d8 (Surr)	83		69 - 122		04/26/21 09:36	14.29
Dibromofluoromethane (Surr)	92		78 - 129		04/26/21 09:36	14.29

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Client Sample ID: SL-4_041921

Lab Sample ID: 240-147838-4

Date Collected: 04/19/21 15:45

Matrix: Water

Date Received: 04/21/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	6.6		4.0	1.7	ug/L			04/26/21 16:53	2
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		70 - 133					04/26/21 16:53	2

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	10	U	10	1.9	ug/L			04/26/21 09:58	10
cis-1,2-Dichloroethene	210		10	1.6	ug/L			04/26/21 09:58	10
Tetrachloroethene	10	U	10	1.5	ug/L			04/26/21 09:58	10
trans-1,2-Dichloroethene	10	U	10	1.9	ug/L			04/26/21 09:58	10
Trichloroethene	56		10	1.0	ug/L			04/26/21 09:58	10
Vinyl chloride	26		10	2.0	ug/L			04/26/21 09:58	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	79		75 - 130					04/26/21 09:58	10
4-Bromofluorobenzene (Surr)	78		47 - 134					04/26/21 09:58	10
Toluene-d8 (Surr)	79		69 - 122					04/26/21 09:58	10
Dibromofluoromethane (Surr)	85		78 - 129					04/26/21 09:58	10

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Client Sample ID: SL-5_042021

Lab Sample ID: 240-147838-5

Date Collected: 04/20/21 08:50

Matrix: Water

Date Received: 04/21/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	5.8		2.0	0.86	ug/L			04/22/21 19:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		70 - 133					04/22/21 19:19	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	0.95	ug/L			04/26/21 10:20	5
cis-1,2-Dichloroethene	160		5.0	0.80	ug/L			04/26/21 10:20	5
Tetrachloroethene	5.0	U	5.0	0.75	ug/L			04/26/21 10:20	5
trans-1,2-Dichloroethene	5.0	U	5.0	0.95	ug/L			04/26/21 10:20	5
Trichloroethene	34		5.0	0.50	ug/L			04/26/21 10:20	5
Vinyl chloride	14		5.0	1.0	ug/L			04/26/21 10:20	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	78		75 - 130					04/26/21 10:20	5
4-Bromofluorobenzene (Surr)	79		47 - 134					04/26/21 10:20	5
Toluene-d8 (Surr)	80		69 - 122					04/26/21 10:20	5
Dibromofluoromethane (Surr)	87		78 - 129					04/26/21 10:20	5

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Client Sample ID: SL-2_042021

Lab Sample ID: 240-147838-6

Date Collected: 04/20/21 10:50

Matrix: Water

Date Received: 04/21/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	5.5		4.0	1.7	ug/L			04/22/21 21:00	2

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		70 - 133		04/22/21 21:00	2

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	4.0	U	4.0	0.76	ug/L			04/26/21 10:43	4
cis-1,2-Dichloroethene	53		4.0	0.64	ug/L			04/26/21 10:43	4
Tetrachloroethene	4.0	U	4.0	0.60	ug/L			04/26/21 10:43	4
trans-1,2-Dichloroethene	4.0	U	4.0	0.76	ug/L			04/26/21 10:43	4
Trichloroethene	15		4.0	0.40	ug/L			04/26/21 10:43	4
Vinyl chloride	8.8		4.0	0.80	ug/L			04/26/21 10:43	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		75 - 130		04/26/21 10:43	4
4-Bromofluorobenzene (Surr)	89		47 - 134		04/26/21 10:43	4
Toluene-d8 (Surr)	85		69 - 122		04/26/21 10:43	4
Dibromofluoromethane (Surr)	86		78 - 129		04/26/21 10:43	4

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-147838-1

Client Sample ID: DUP-01

Lab Sample ID: 240-147838-7

Date Collected: 04/19/21 00:00

Matrix: Water

Date Received: 04/21/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	12	J	4.0	1.7	ug/L			04/26/21 17:17	2

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		70 - 133		04/26/21 17:17	2

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	33	U	33	6.3	ug/L			04/26/21 11:05	33.33
cis-1,2-Dichloroethene	560		33	5.3	ug/L			04/26/21 11:05	33.33
Tetrachloroethene	33	U	33	5.0	ug/L			04/26/21 11:05	33.33
trans-1,2-Dichloroethene	33	U	33	6.3	ug/L			04/26/21 11:05	33.33
Trichloroethene	170		33	3.3	ug/L			04/26/21 11:05	33.33
Vinyl chloride	91		33	6.7	ug/L			04/26/21 11:05	33.33

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		75 - 130		04/26/21 11:05	33.33
4-Bromofluorobenzene (Surr)	85		47 - 134		04/26/21 11:05	33.33
Toluene-d8 (Surr)	83		69 - 122		04/26/21 11:05	33.33
Dibromofluoromethane (Surr)	94		78 - 129		04/26/21 11:05	33.33

6/15/2021
Mr. Jim Tomalia
Arcadis U.S., Inc.
28550 Cabot Dr.
Suite 500
Novi MI 48377

Project Name: Ford LTP
Project #:
Workorder #: 2106318

Dear Mr. Jim Tomalia

The following report includes the data for the above referenced project for sample(s) received on 6/14/2021 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Jade White at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Jade White
Project Manager

WORK ORDER #: 2106318

Work Order Summary

CLIENT:	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	517-819-0356	P.O. #	30080642.701.04
FAX:		PROJECT #	Ford LTP
DATE RECEIVED:	06/14/2021	CONTACT:	Jade White
DATE COMPLETED:	06/15/2021		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SL-7_061021	TO-15	6.3 "Hg	10 psi
02A	SL-6_061021	TO-15	6.5 "Hg	10 psi
03A	SL-5_061021	TO-15	5.7 "Hg	10 psi
04A	SL-8_061021	TO-15	5.5 "Hg	9.9 psi
05A	SL-9_061021	TO-15	8.4 "Hg	9.9 psi
06A	MH-1234_061021	TO-15	6.3 "Hg	10 psi
07A	MH-1233_061021	TO-15	8.4 "Hg	9.9 psi
08A	MH-1252_061021	TO-15	5.3 "Hg	9.8 psi
09A	MH-1261_061021	TO-15	8 "Hg	9.8 psi
10A	DUP-01	TO-15	4.3 "Hg	10 psi
11A	Lab Blank	TO-15	NA	NA
12A	CCV	TO-15	NA	NA
13A	LCS	TO-15	NA	NA
13AA	LCSD	TO-15	NA	NA

CERTIFIED BY: 

 Technical Director

DATE: 06/15/21

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935
 Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
 Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
 (916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
Arcadis U.S., Inc.
Workorder# 2106318

Ten 1 Liter Summa Canister (100% Certified) samples were received on June 14, 2021. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Dilution was performed on samples SL-5_061021 and DUP-01 due to the presence of high level target species.

Dilution was performed on samples SL-7_061021 and SL-6_061021 due to the presence of high level non-target species.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-7_061021	Date/Time Analyzed:	6/14/21 09:30 PM
Lab ID:	2106318-01A	Dilution Factor:	8.51
Date/Time Collected:	6/10/21 09:00 AM	Instrument/Filename:	msda.i / a061417
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	4.7	10	17	Not Detected
1,4-Dioxane	123-91-1	4.0	15	61	Not Detected
cis-1,2-Dichloroethene	156-59-2	5.4	10	17	20
Tetrachloroethene	127-18-4	3.7	17	29	Not Detected
trans-1,2-Dichloroethene	156-60-5	3.7	10	17	Not Detected
Trichloroethene	79-01-6	3.4	14	23	28
Vinyl Chloride	75-01-4	2.8	6.5	11	12

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	95
4-Bromofluorobenzene	460-00-4	70-130	92
Toluene-d8	2037-26-5	70-130	107

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-6_061021	Date/Time Analyzed:	6/14/21 09:54 PM
Lab ID:	2106318-02A	Dilution Factor:	6.13
Date/Time Collected:	6/10/21 09:30 AM	Instrument/Filename:	msda.i / a061418
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	3.4	7.3	12	Not Detected
1,4-Dioxane	123-91-1	2.9	11	44	Not Detected
cis-1,2-Dichloroethene	156-59-2	3.9	7.3	12	27
Tetrachloroethene	127-18-4	2.7	12	21	2.9 J
trans-1,2-Dichloroethene	156-60-5	2.7	7.3	12	Not Detected
Trichloroethene	79-01-6	2.5	9.9	16	25
Vinyl Chloride	75-01-4	2.0	4.7	7.8	5.6 J

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	88
4-Bromofluorobenzene	460-00-4	70-130	99
Toluene-d8	2037-26-5	70-130	109

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-5_061021	Date/Time Analyzed:	6/14/21 10:19 PM
Lab ID:	2106318-03A	Dilution Factor:	20.7
Date/Time Collected:	6/10/21 09:55 AM	Instrument/Filename:	msda.i / a061419
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	11	25	41	55
1,4-Dioxane	123-91-1	9.7	37	150	Not Detected
cis-1,2-Dichloroethene	156-59-2	13	25	41	13000
Tetrachloroethene	127-18-4	9.0	42	70	Not Detected
trans-1,2-Dichloroethene	156-60-5	9.1	25	41	140
Trichloroethene	79-01-6	8.3	33	56	7800
Vinyl Chloride	75-01-4	6.9	16	26	6500

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	93
Toluene-d8	2037-26-5	70-130	109

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-8_061021	Date/Time Analyzed:	6/14/21 10:45 PM
Lab ID:	2106318-04A	Dilution Factor:	2.05
Date/Time Collected:	6/10/21 10:23 AM	Instrument/Filename:	msda.i / a061420
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.1	2.4	4.1	1.5 J
1,4-Dioxane	123-91-1	0.96	3.7	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.3	2.4	4.1	550
Tetrachloroethene	127-18-4	0.89	4.2	7.0	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.90	2.4	4.1	4.3
Trichloroethene	79-01-6	0.82	3.3	5.5	290
Vinyl Chloride	75-01-4	0.68	1.6	2.6	210

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	93
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	109

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-9_061021	Date/Time Analyzed:	6/14/21 11:12 PM
Lab ID:	2106318-05A	Dilution Factor:	2.32
Date/Time Collected:	6/10/21 10:43 AM	Instrument/Filename:	msda.i / a061421
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	2.8	4.6	7.4
1,4-Dioxane	123-91-1	1.1	4.2	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.8	4.6	1400
Tetrachloroethene	127-18-4	1.0	4.7	7.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	2.8	4.6	13
Trichloroethene	79-01-6	0.93	3.7	6.2	1000
Vinyl Chloride	75-01-4	0.77	1.8	3.0	310

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	93
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	110

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1234_061021	Date/Time Analyzed:	6/14/21 11:38 PM
Lab ID:	2106318-06A	Dilution Factor:	2.13
Date/Time Collected:	6/10/21 01:26 PM	Instrument/Filename:	msda.i / a061422
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	2.5	4.2	Not Detected
1,4-Dioxane	123-91-1	1.0	3.8	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.4	2.5	4.2	1.9 J
Tetrachloroethene	127-18-4	0.93	4.3	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.94	2.5	4.2	1.9 J
Trichloroethene	79-01-6	0.86	3.4	5.7	3.8 J
Vinyl Chloride	75-01-4	0.71	1.6	2.7	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	91
4-Bromofluorobenzene	460-00-4	70-130	92
Toluene-d8	2037-26-5	70-130	108

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1233_061021	Date/Time Analyzed:	6/15/21 12:05 AM
Lab ID:	2106318-07A	Dilution Factor:	2.32
Date/Time Collected:	6/10/21 01:49 PM	Instrument/Filename:	msda.i / a061423
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	2.8	4.6	Not Detected
1,4-Dioxane	123-91-1	1.1	4.2	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.8	4.6	5.7
Tetrachloroethene	127-18-4	1.0	4.7	7.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	2.8	4.6	Not Detected
Trichloroethene	79-01-6	0.93	3.7	6.2	8.2
Vinyl Chloride	75-01-4	0.77	1.8	3.0	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	93
Toluene-d8	2037-26-5	70-130	108

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1252_061021	Date/Time Analyzed:	6/15/21 12:31 AM
Lab ID:	2106318-08A	Dilution Factor:	2.02
Date/Time Collected:	6/10/21 02:09 PM	Instrument/Filename:	msda.i / a061424
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.1	2.4	4.0	Not Detected
1,4-Dioxane	123-91-1	0.94	3.6	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.3	2.4	4.0	2.8 J
Tetrachloroethene	127-18-4	0.88	4.1	6.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.89	2.4	4.0	Not Detected
Trichloroethene	79-01-6	0.81	3.2	5.4	3.2 J
Vinyl Chloride	75-01-4	0.67	1.5	2.6	0.88 J

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	93
Toluene-d8	2037-26-5	70-130	109

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1261_061021	Date/Time Analyzed:	6/15/21 12:58 AM
Lab ID:	2106318-09A	Dilution Factor:	2.27
Date/Time Collected:	6/10/21 02:43 PM	Instrument/Filename:	msda.i / a061425
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	2.7	4.5	Not Detected
1,4-Dioxane	123-91-1	1.1	4.1	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.4	2.7	4.5	2.0 J
Tetrachloroethene	127-18-4	0.99	4.6	7.7	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	2.7	4.5	Not Detected
Trichloroethene	79-01-6	0.91	3.6	6.1	2.9 J
Vinyl Chloride	75-01-4	0.76	1.7	2.9	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	95
4-Bromofluorobenzene	460-00-4	70-130	92
Toluene-d8	2037-26-5	70-130	110

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	DUP-01	Date/Time Analyzed:	6/15/21 01:22 AM
Lab ID:	2106318-10A	Dilution Factor:	26.2
Date/Time Collected:	6/10/21 12:00 AM	Instrument/Filename:	msda.i / a061426
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	14	31	52	64
1,4-Dioxane	123-91-1	12	47	190	Not Detected
cis-1,2-Dichloroethene	156-59-2	17	31	52	17000
Tetrachloroethene	127-18-4	11	53	89	Not Detected
trans-1,2-Dichloroethene	156-60-5	12	31	52	170
Trichloroethene	79-01-6	10	42	70	9700
Vinyl Chloride	75-01-4	8.7	20	33	8100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	93
4-Bromofluorobenzene	460-00-4	70-130	93
Toluene-d8	2037-26-5	70-130	110

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Lab Blank	Date/Time Analyzed:	6/14/21 12:42 PM
Lab ID:	2106318-11A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msda.i / a061407c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.55	1.2	2.0	Not Detected
1,4-Dioxane	123-91-1	0.47	1.8	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.63	1.2	2.0	Not Detected
Tetrachloroethene	127-18-4	0.44	2.0	3.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.44	1.2	2.0	Not Detected
Trichloroethene	79-01-6	0.40	1.6	2.7	Not Detected
Vinyl Chloride	75-01-4	0.33	0.77	1.3	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	95
4-Bromofluorobenzene	460-00-4	70-130	90
Toluene-d8	2037-26-5	70-130	108

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	CCV	Date/Time Analyzed:	6/14/21 09:38 AM
Lab ID:	2106318-12A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msda.i / a061405
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	96
1,4-Dioxane	123-91-1	112
cis-1,2-Dichloroethene	156-59-2	109
Tetrachloroethene	127-18-4	102
trans-1,2-Dichloroethene	156-60-5	100
Trichloroethene	79-01-6	104
Vinyl Chloride	75-01-4	114

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	93
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	109

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCS	Date/Time Analyzed:	6/14/21 08:28 AM
Lab ID:	2106318-13A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msda.i / a061403
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	94
1,4-Dioxane	123-91-1	111
cis-1,2-Dichloroethene	156-59-2	107
Tetrachloroethene	127-18-4	100
trans-1,2-Dichloroethene	156-60-5	97
Trichloroethene	79-01-6	102
Vinyl Chloride	75-01-4	109

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	94
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	108

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCSD	Date/Time Analyzed:	6/14/21 08:53 AM
Lab ID:	2106318-13AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msda.i / a061404
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	97
1,4-Dioxane	123-91-1	111
cis-1,2-Dichloroethene	156-59-2	110
Tetrachloroethene	127-18-4	103
trans-1,2-Dichloroethene	156-60-5	100
Trichloroethene	79-01-6	102
Vinyl Chloride	75-01-4	114

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	109

* % Recovery is calculated using unrounded analytical results.



DATA VERIFICATION REPORT

June 15, 2021

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2021 Utility Corridor Evaluation Vapor Testing
Project number: 30080642.701.04
Event Specific Scope of Work References: Sample COC
Laboratory: EUROFINS-FOLSOM
Laboratory submittal: 2106318
Sample date: 2021-06-10
Report received by CADENA: 2021-06-15
Initial Data Verification completed by CADENA: 2021-06-15
Number of Samples: 10
Sample Matrices: AIR
Test Categories: TO-15 GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) TO-15 Analysis

SDG #2106318

CADENA Verification Report: 2021-06-15

Analyses Performed By:
Eurofins Air Toxics
Folsom, California

Report #41855R
Review Level: Tier III
Project: 30080642.701.02

DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 2106318 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						TO-15 (Full Scan)	TO-15 (SIM)	MISC
2106318	SL-7_061021_V	2106318-01A	Air	6/10/2021		X		
	SL-6_061021_V	2106318-02A	Air	6/10/2021		X		
	SL-5_061021_V	2106318-03A	Air	6/10/2021		X		
	SL-8_061021_V	2106318-04A	Air	6/10/2021		X		
	SL-9_061021_V	2106318-05A	Air	6/10/2021		X		
	MH-1234_061021_V	2106318-06A	Air	6/10/2021		X		
	MH-1233_061021_V	2106318-07A	Air	6/10/2021		X		
	MH-1252_061021_V	2106318-08A	Air	6/10/2021		X		
	MH-1261_061021_V	2106318-09A	Air	6/10/2021		X		
	DUP-01_061021_V	2106318-10A	Air	6/10/2021	SL-5_061021_V	X		

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Method TO-15 (Full Scan). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation	Return Canister Pressure
USEPA TO-15	Air	30 days from collection to analysis (Canister)	Ambient Temperature	< -2" Hg

All samples were analyzed within the specified holding time and canister return pressure / vacuum criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (30%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (30%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than 140% or less than 60% of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

5. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra. All identified compounds met the specified criteria.

6. Field Duplicate Sample Analysis

The field duplicate analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 35% for air 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 not greater than five times the RL, a control limit of three times the RL is applied to the difference between the duplicate sample results.

Results (in $\mu\text{g}/\text{m}^3$) for the field duplicate samples are summarized in the following table.

Sample ID / Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SL-5_061021_V/ DUP-01_061021_V	1,1-Dichloroethene	55	64	AC
	cis-1,2-Dichloroethene	13000	17000	26.7%
	trans-1,2-Dichloroethene	140	170	AC
	Trichloroethene	7800	9700	21.7%
	Vinyl Chloride	6500	8100	21.9%

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

Note: Dilution was performed on samples SL-5_061021 and DUP-01 due to the presence of high level target species.

Dilution was performed on samples SL-7_061021 and SL-6_061021 due to the presence of high level non-target species.

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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: TO-15 (Full Scan)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Canister return pressure (<-2"Hg)		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Field Duplicate Sample RPD		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Joseph C. Houser

SIGNATURE:



DATE: June 21, 2021

PEER REVIEW: Andrew Korycinski

DATE: June 24, 2021



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



**NO CORRECTIONS/QUALIFIERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**



EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-7_061021	Date/Time Analyzed:	6/14/21 09:30 PM
Lab ID:	2106318-01A	Dilution Factor:	8.51
Date/Time Collected:	6/10/21 09:00 AM	Instrument/Filename:	msda.i / a061417
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	4.7	10	17	Not Detected
1,4-Dioxane	123-91-1	4.0	15	61	Not Detected
cis-1,2-Dichloroethene	156-59-2	5.4	10	17	20
Tetrachloroethene	127-18-4	3.7	17	29	Not Detected
trans-1,2-Dichloroethene	156-60-5	3.7	10	17	Not Detected
Trichloroethene	79-01-6	3.4	14	23	28
Vinyl Chloride	75-01-4	2.8	6.5	11	12

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	95
4-Bromofluorobenzene	460-00-4	70-130	92
Toluene-d8	2037-26-5	70-130	107

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-6_061021	Date/Time Analyzed:	6/14/21 09:54 PM
Lab ID:	2106318-02A	Dilution Factor:	6.13
Date/Time Collected:	6/10/21 09:30 AM	Instrument/Filename:	msda.i / a061418
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	3.4	7.3	12	Not Detected
1,4-Dioxane	123-91-1	2.9	11	44	Not Detected
cis-1,2-Dichloroethene	156-59-2	3.9	7.3	12	27
Tetrachloroethene	127-18-4	2.7	12	21	2.9 J
trans-1,2-Dichloroethene	156-60-5	2.7	7.3	12	Not Detected
Trichloroethene	79-01-6	2.5	9.9	16	25
Vinyl Chloride	75-01-4	2.0	4.7	7.8	5.6 J

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	88
4-Bromofluorobenzene	460-00-4	70-130	99
Toluene-d8	2037-26-5	70-130	109

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-5_061021	Date/Time Analyzed:	6/14/21 10:19 PM
Lab ID:	2106318-03A	Dilution Factor:	20.7
Date/Time Collected:	6/10/21 09:55 AM	Instrument/Filename:	msda.i / a061419
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	11	25	41	55
1,4-Dioxane	123-91-1	9.7	37	150	Not Detected
cis-1,2-Dichloroethene	156-59-2	13	25	41	13000
Tetrachloroethene	127-18-4	9.0	42	70	Not Detected
trans-1,2-Dichloroethene	156-60-5	9.1	25	41	140
Trichloroethene	79-01-6	8.3	33	56	7800
Vinyl Chloride	75-01-4	6.9	16	26	6500

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	93
Toluene-d8	2037-26-5	70-130	109

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-8_061021	Date/Time Analyzed:	6/14/21 10:45 PM
Lab ID:	2106318-04A	Dilution Factor:	2.05
Date/Time Collected:	6/10/21 10:23 AM	Instrument/Filename:	msda.i / a061420
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.1	2.4	4.1	1.5 J
1,4-Dioxane	123-91-1	0.96	3.7	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.3	2.4	4.1	550
Tetrachloroethene	127-18-4	0.89	4.2	7.0	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.90	2.4	4.1	4.3
Trichloroethene	79-01-6	0.82	3.3	5.5	290
Vinyl Chloride	75-01-4	0.68	1.6	2.6	210

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	93
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	109

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-9_061021	Date/Time Analyzed:	6/14/21 11:12 PM
Lab ID:	2106318-05A	Dilution Factor:	2.32
Date/Time Collected:	6/10/21 10:43 AM	Instrument/Filename:	msda.i / a061421
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	2.8	4.6	7.4
1,4-Dioxane	123-91-1	1.1	4.2	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.8	4.6	1400
Tetrachloroethene	127-18-4	1.0	4.7	7.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	2.8	4.6	13
Trichloroethene	79-01-6	0.93	3.7	6.2	1000
Vinyl Chloride	75-01-4	0.77	1.8	3.0	310

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	93
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	110

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1234_061021	Date/Time Analyzed:	6/14/21 11:38 PM
Lab ID:	2106318-06A	Dilution Factor:	2.13
Date/Time Collected:	6/10/21 01:26 PM	Instrument/Filename:	msda.i / a061422
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	2.5	4.2	Not Detected
1,4-Dioxane	123-91-1	1.0	3.8	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.4	2.5	4.2	1.9 J
Tetrachloroethene	127-18-4	0.93	4.3	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.94	2.5	4.2	1.9 J
Trichloroethene	79-01-6	0.86	3.4	5.7	3.8 J
Vinyl Chloride	75-01-4	0.71	1.6	2.7	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	91
4-Bromofluorobenzene	460-00-4	70-130	92
Toluene-d8	2037-26-5	70-130	108

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1233_061021	Date/Time Analyzed:	6/15/21 12:05 AM
Lab ID:	2106318-07A	Dilution Factor:	2.32
Date/Time Collected:	6/10/21 01:49 PM	Instrument/Filename:	msda.i / a061423
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.3	2.8	4.6	Not Detected
1,4-Dioxane	123-91-1	1.1	4.2	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.5	2.8	4.6	5.7
Tetrachloroethene	127-18-4	1.0	4.7	7.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	2.8	4.6	Not Detected
Trichloroethene	79-01-6	0.93	3.7	6.2	8.2
Vinyl Chloride	75-01-4	0.77	1.8	3.0	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	93
Toluene-d8	2037-26-5	70-130	108

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1252_061021	Date/Time Analyzed:	6/15/21 12:31 AM
Lab ID:	2106318-08A	Dilution Factor:	2.02
Date/Time Collected:	6/10/21 02:09 PM	Instrument/Filename:	msda.i / a061424
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.1	2.4	4.0	Not Detected
1,4-Dioxane	123-91-1	0.94	3.6	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.3	2.4	4.0	2.8 J
Tetrachloroethene	127-18-4	0.88	4.1	6.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.89	2.4	4.0	Not Detected
Trichloroethene	79-01-6	0.81	3.2	5.4	3.2 J
Vinyl Chloride	75-01-4	0.67	1.5	2.6	0.88 J

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	93
Toluene-d8	2037-26-5	70-130	109

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1261_061021	Date/Time Analyzed:	6/15/21 12:58 AM
Lab ID:	2106318-09A	Dilution Factor:	2.27
Date/Time Collected:	6/10/21 02:43 PM	Instrument/Filename:	msda.i / a061425
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	2.7	4.5	Not Detected
1,4-Dioxane	123-91-1	1.1	4.1	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.4	2.7	4.5	2.0 J
Tetrachloroethene	127-18-4	0.99	4.6	7.7	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.0	2.7	4.5	Not Detected
Trichloroethene	79-01-6	0.91	3.6	6.1	2.9 J
Vinyl Chloride	75-01-4	0.76	1.7	2.9	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	95
4-Bromofluorobenzene	460-00-4	70-130	92
Toluene-d8	2037-26-5	70-130	110

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	DUP-01	Date/Time Analyzed:	6/15/21 01:22 AM
Lab ID:	2106318-10A	Dilution Factor:	26.2
Date/Time Collected:	6/10/21 12:00 AM	Instrument/Filename:	msda.i / a061426
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	14	31	52	64
1,4-Dioxane	123-91-1	12	47	190	Not Detected
cis-1,2-Dichloroethene	156-59-2	17	31	52	17000
Tetrachloroethene	127-18-4	11	53	89	Not Detected
trans-1,2-Dichloroethene	156-60-5	12	31	52	170
Trichloroethene	79-01-6	10	42	70	9700
Vinyl Chloride	75-01-4	8.7	20	33	8100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	93
4-Bromofluorobenzene	460-00-4	70-130	93
Toluene-d8	2037-26-5	70-130	110

Analysis Request /Canister Chain of Custody

For Laboratory Use Only

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
 Phone (800) 985-5955; Fax (916) 351-8279

PID: _____ Workorder #: 2106318

Click links below to view:

- [Canister Sampling Guide](#)
- [Helium Shroud Video](#)

Client: <u>Ford</u>	PID: <u>NA</u>	Special Instructions/Notes: Report ONLY: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, 1,4-Dioxane, PCE, TCE and VC. Submit results through Cadena at jim.tomalia@cadena.com. Cadena #E205162. Level IV Reporting	Turnaround Time (Rush surcharges may apply)	
Project Name: <u>Ford LTP</u>			1 Day Turnaround Time	
Project Manager: <u>Kris Hinskey</u>	P.O.# <u>30080642.701.04</u>		Canister Vacuum/Pressure	Requested Analyses
Sampler: <u>Emma Witherspoon, Andrew Banitt</u>			Lab Use Only	
Site Name: <u>Ford LTP</u>				

Lab ID	Sample Identification	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Initial (in Hg)	Final (in Hg)	Receipt	Final (psig) Gas: N ₂ / He	TO-15 (See Special Instructions/Notes)	Do Not Analyze
				Date	Time	Date	Time						
01A	SL-7_061021	1L2029	1920	6/10/21	0858	6/10/21	0900	-29.5	-5.5			X	
02A	SL-6_061021	1L2144	2103	6/10/21	0929	6/10/21	0930	-29.5	-5.5			X	
03A	SL-5_061021	1L1987	2035	6/10/21	0953	6/10/21	0955	-29.5	-4.5			X	
04A	SL-8_061021	1L2187	2050	6/10/21	1022	6/10/21	1023	-29.5	-4.5			X	
05A	SL-9_061021	1L2180	1824	6/10/21	1041	6/10/21	1043	-29.5	-6.5			X	
06A	MH-1234_061021	1L1974	1831	6/10/21	1324	6/10/21	1326	-29.5	-5			X	
07A	MH-1233_061021	1L1962	1913	6/10/21	1348	6/10/21	1349	-29.5	-7			X	
08A	MH-1252_061021	1L2243	1938	6/10/21	1408	6/10/21	1409	-29.5	-7			X	
09A	MH-1261_061021	1L2292	2005	6/10/21	1442	6/10/21	1443	-29.5	-7.5			X	
10A	DUP-01	1L2254	2005	6/10/21	--	6/10/21	--	-29.5	-3.5			X	

Relinquished by: (Signature/Affiliation) <i>Emma Witherspoon / Arcadis</i>	Date <u>6/11/21</u>	Time <u>1030</u>	Received by: (Signature/Affiliation) <i>Jim Tomalia / Cadena</i>	Date <u>6/11/21</u>	Time <u>0948</u>
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only

Shipper Name: pal Custody Seals Intact? Yes No None GOOD

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-151104-1

Client Project/Site: Ford LTP - Utility Corridor Sampling

For:

ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey



Authorized for release by:
6/16/2021 3:29:39 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.com

LINKS

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results through
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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.



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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
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.
U	Indicates the analyte was analyzed for but not detected.

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

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Job ID: 240-151104-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-151104-1

Comments

No additional comments.

Receipt

The samples were received on 6/12/2021 8:00 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 2.7° C.

GC/MS VOA

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

VOA Prep

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

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Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396



Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-151104-1	TRIP BLANK	Water	06/10/21 00:00	06/12/21 08:00	
240-151104-2	SL-5_061021	Water	06/10/21 10:00	06/12/21 08:00	
240-151104-3	SL-6_061021	Water	06/10/21 09:35	06/12/21 08:00	
240-151104-4	SL-7_061021	Water	06/10/21 09:05	06/12/21 08:00	
240-151104-5	SL-8_061021	Water	06/10/21 10:25	06/12/21 08:00	
240-151104-6	SL-9_061021	Water	06/10/21 10:45	06/12/21 08:00	
240-151104-7	DUP-01	Water	06/10/21 00:00	06/12/21 08:00	

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-151104-1

No Detections.

Client Sample ID: SL-5_061021

Lab Sample ID: 240-151104-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	4.7		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	110		5.0	2.3	ug/L	5		8260B	Total/NA
Trichloroethene	27		5.0	2.2	ug/L	5		8260B	Total/NA
Vinyl chloride	14		5.0	2.3	ug/L	5		8260B	Total/NA

Client Sample ID: SL-6_061021

Lab Sample ID: 240-151104-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.3		1.0	0.46	ug/L	1		8260B	Total/NA
Trichloroethene	0.73	J	1.0	0.44	ug/L	1		8260B	Total/NA

Client Sample ID: SL-7_061021

Lab Sample ID: 240-151104-4

No Detections.

Client Sample ID: SL-8_061021

Lab Sample ID: 240-151104-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	5.4		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	180		8.0	3.7	ug/L	8		8260B	Total/NA
Trichloroethene	47		8.0	3.5	ug/L	8		8260B	Total/NA
Vinyl chloride	26		8.0	3.6	ug/L	8		8260B	Total/NA

Client Sample ID: SL-9_061021

Lab Sample ID: 240-151104-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.8		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	110		5.0	2.3	ug/L	5		8260B	Total/NA
Trichloroethene	26		5.0	2.2	ug/L	5		8260B	Total/NA
Vinyl chloride	12		5.0	2.3	ug/L	5		8260B	Total/NA

Client Sample ID: DUP-01

Lab Sample ID: 240-151104-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	5.1		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	140		5.0	2.3	ug/L	5		8260B	Total/NA
Trichloroethene	33		5.0	2.2	ug/L	5		8260B	Total/NA
Vinyl chloride	17		5.0	2.3	ug/L	5		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-151104-1

Date Collected: 06/10/21 00:00

Matrix: Water

Date Received: 06/12/21 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/15/21 20:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/15/21 20:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/15/21 20:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/15/21 20:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/15/21 20:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/15/21 20:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	81		75 - 130		06/15/21 20:25	1
4-Bromofluorobenzene (Surr)	118		47 - 134		06/15/21 20:25	1
Toluene-d8 (Surr)	107		69 - 122		06/15/21 20:25	1
Dibromofluoromethane (Surr)	88		78 - 129		06/15/21 20:25	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Client Sample ID: SL-5_061021

Lab Sample ID: 240-151104-2

Date Collected: 06/10/21 10:00

Matrix: Water

Date Received: 06/12/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.7		2.0	0.86	ug/L			06/14/21 20:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		70 - 133					06/14/21 20:13	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	2.5	ug/L			06/15/21 20:49	5
cis-1,2-Dichloroethene	110		5.0	2.3	ug/L			06/15/21 20:49	5
Tetrachloroethene	5.0	U	5.0	2.2	ug/L			06/15/21 20:49	5
trans-1,2-Dichloroethene	5.0	U	5.0	2.6	ug/L			06/15/21 20:49	5
Trichloroethene	27		5.0	2.2	ug/L			06/15/21 20:49	5
Vinyl chloride	14		5.0	2.3	ug/L			06/15/21 20:49	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		75 - 130					06/15/21 20:49	5
4-Bromofluorobenzene (Surr)	119		47 - 134					06/15/21 20:49	5
Toluene-d8 (Surr)	107		69 - 122					06/15/21 20:49	5
Dibromofluoromethane (Surr)	89		78 - 129					06/15/21 20:49	5

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Client Sample ID: SL-6_061021

Lab Sample ID: 240-151104-3

Date Collected: 06/10/21 09:35

Matrix: Water

Date Received: 06/12/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/14/21 20:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	81		70 - 133		06/14/21 20:37	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/15/21 21:13	1
cis-1,2-Dichloroethene	1.3		1.0	0.46	ug/L			06/15/21 21:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/15/21 21:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/15/21 21:13	1
Trichloroethene	0.73	J	1.0	0.44	ug/L			06/15/21 21:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/15/21 21:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		75 - 130		06/15/21 21:13	1
4-Bromofluorobenzene (Surr)	119		47 - 134		06/15/21 21:13	1
Toluene-d8 (Surr)	108		69 - 122		06/15/21 21:13	1
Dibromofluoromethane (Surr)	90		78 - 129		06/15/21 21:13	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Client Sample ID: SL-7_061021

Lab Sample ID: 240-151104-4

Date Collected: 06/10/21 09:05

Matrix: Water

Date Received: 06/12/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/14/21 21:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		70 - 133		06/14/21 21:02	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/15/21 21:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/15/21 21:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/15/21 21:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/15/21 21:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/15/21 21:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/15/21 21:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		75 - 130		06/15/21 21:36	1
4-Bromofluorobenzene (Surr)	126		47 - 134		06/15/21 21:36	1
Toluene-d8 (Surr)	108		69 - 122		06/15/21 21:36	1
Dibromofluoromethane (Surr)	92		78 - 129		06/15/21 21:36	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Client Sample ID: SL-8_061021

Lab Sample ID: 240-151104-5

Date Collected: 06/10/21 10:25

Matrix: Water

Date Received: 06/12/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	5.4		2.0	0.86	ug/L			06/14/21 21:27	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		70 - 133					06/14/21 21:27	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	8.0	U	8.0	3.9	ug/L			06/15/21 22:00	8
cis-1,2-Dichloroethene	180		8.0	3.7	ug/L			06/15/21 22:00	8
Tetrachloroethene	8.0	U	8.0	3.5	ug/L			06/15/21 22:00	8
trans-1,2-Dichloroethene	8.0	U	8.0	4.1	ug/L			06/15/21 22:00	8
Trichloroethene	47		8.0	3.5	ug/L			06/15/21 22:00	8
Vinyl chloride	26		8.0	3.6	ug/L			06/15/21 22:00	8
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		75 - 130					06/15/21 22:00	8
4-Bromofluorobenzene (Surr)	120		47 - 134					06/15/21 22:00	8
Toluene-d8 (Surr)	107		69 - 122					06/15/21 22:00	8
Dibromofluoromethane (Surr)	90		78 - 129					06/15/21 22:00	8

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Client Sample ID: SL-9_061021

Lab Sample ID: 240-151104-6

Date Collected: 06/10/21 10:45

Matrix: Water

Date Received: 06/12/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.8		2.0	0.86	ug/L			06/14/21 21:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		70 - 133					06/14/21 21:52	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	2.5	ug/L			06/15/21 22:24	5
cis-1,2-Dichloroethene	110		5.0	2.3	ug/L			06/15/21 22:24	5
Tetrachloroethene	5.0	U	5.0	2.2	ug/L			06/15/21 22:24	5
trans-1,2-Dichloroethene	5.0	U	5.0	2.6	ug/L			06/15/21 22:24	5
Trichloroethene	26		5.0	2.2	ug/L			06/15/21 22:24	5
Vinyl chloride	12		5.0	2.3	ug/L			06/15/21 22:24	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	81		75 - 130					06/15/21 22:24	5
4-Bromofluorobenzene (Surr)	119		47 - 134					06/15/21 22:24	5
Toluene-d8 (Surr)	106		69 - 122					06/15/21 22:24	5
Dibromofluoromethane (Surr)	90		78 - 129					06/15/21 22:24	5

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Client Sample ID: DUP-01

Lab Sample ID: 240-151104-7

Date Collected: 06/10/21 00:00

Matrix: Water

Date Received: 06/12/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	5.1		2.0	0.86	ug/L			06/14/21 22:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		70 - 133					06/14/21 22:17	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	2.5	ug/L			06/15/21 22:47	5
cis-1,2-Dichloroethene	140		5.0	2.3	ug/L			06/15/21 22:47	5
Tetrachloroethene	5.0	U	5.0	2.2	ug/L			06/15/21 22:47	5
trans-1,2-Dichloroethene	5.0	U	5.0	2.6	ug/L			06/15/21 22:47	5
Trichloroethene	33		5.0	2.2	ug/L			06/15/21 22:47	5
Vinyl chloride	17		5.0	2.3	ug/L			06/15/21 22:47	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		75 - 130					06/15/21 22:47	5
4-Bromofluorobenzene (Surr)	122		47 - 134					06/15/21 22:47	5
Toluene-d8 (Surr)	110		69 - 122					06/15/21 22:47	5
Dibromofluoromethane (Surr)	89		78 - 129					06/15/21 22:47	5

Surrogate Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (75-130)	BFB (47-134)	TOL (69-122)	DBFM (78-129)
240-151103-E-4 MS	Matrix Spike	82	123	107	93
240-151103-F-4 MSD	Matrix Spike Duplicate	82	124	111	94
240-151104-1	TRIP BLANK	81	118	107	88
240-151104-2	SL-5_061021	80	119	107	89
240-151104-3	SL-6_061021	80	119	108	90
240-151104-4	SL-7_061021	82	126	108	92
240-151104-5	SL-8_061021	82	120	107	90
240-151104-6	SL-9_061021	81	119	106	90
240-151104-7	DUP-01	80	122	110	89
LCS 240-490711/4	Lab Control Sample	78	117	105	90
MB 240-490711/7	Method Blank	80	121	106	88

Surrogate Legend
 DCA = 1,2-Dichloroethane-d4 (Surr)
 BFB = 4-Bromofluorobenzene (Surr)
 TOL = Toluene-d8 (Surr)
 DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		DCA (70-133)
240-150917-H-3 MS	Matrix Spike	80
240-150917-N-3 MSD	Matrix Spike Duplicate	82
240-151104-2	SL-5_061021	87
240-151104-3	SL-6_061021	81
240-151104-4	SL-7_061021	84
240-151104-5	SL-8_061021	84
240-151104-6	SL-9_061021	84
240-151104-7	DUP-01	88
LCS 240-490579/4	Lab Control Sample	77
MB 240-490579/5	Method Blank	78

Surrogate Legend
 DCA = 1,2-Dichloroethane-d4 (Surr)

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-490711/7
Matrix: Water
Analysis Batch: 490711

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/15/21 14:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/15/21 14:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/15/21 14:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/15/21 14:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/15/21 14:30	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/15/21 14:30	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		75 - 130		06/15/21 14:30	1
4-Bromofluorobenzene (Surr)	121		47 - 134		06/15/21 14:30	1
Toluene-d8 (Surr)	106		69 - 122		06/15/21 14:30	1
Dibromofluoromethane (Surr)	88		78 - 129		06/15/21 14:30	1

Lab Sample ID: LCS 240-490711/4
Matrix: Water
Analysis Batch: 490711

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	10.2		ug/L		102	73 - 129
cis-1,2-Dichloroethene	10.0	9.94		ug/L		99	75 - 124
Tetrachloroethene	10.0	10.8		ug/L		108	70 - 125
trans-1,2-Dichloroethene	10.0	10.1		ug/L		101	74 - 130
Trichloroethene	10.0	9.77		ug/L		98	71 - 121
Vinyl chloride	10.0	9.40		ug/L		94	61 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	78		75 - 130
4-Bromofluorobenzene (Surr)	117		47 - 134
Toluene-d8 (Surr)	105		69 - 122
Dibromofluoromethane (Surr)	90		78 - 129

Lab Sample ID: 240-151103-E-4 MS
Matrix: Water
Analysis Batch: 490711

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	1.0	U	10.0	9.76		ug/L		98	64 - 132
cis-1,2-Dichloroethene	0.87	J	10.0	10.3		ug/L		94	68 - 121
Tetrachloroethene	1.0	U	10.0	10.1		ug/L		101	52 - 129
trans-1,2-Dichloroethene	1.0	U	10.0	9.38		ug/L		94	69 - 126
Trichloroethene	28	F1	10.0	41.6	E F1	ug/L		135	56 - 124
Vinyl chloride	1.0	U	10.0	9.17		ug/L		92	49 - 136

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	82		75 - 130
4-Bromofluorobenzene (Surr)	123		47 - 134
Toluene-d8 (Surr)	107		69 - 122

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-151103-E-4 MS
Matrix: Water
Analysis Batch: 490711

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	93		78 - 129

Lab Sample ID: 240-151103-F-4 MSD
Matrix: Water
Analysis Batch: 490711

Client Sample ID: Matrix Spike Duplicate
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-Dichloroethene	1.0	U	10.0	10.1		ug/L		101	64 - 132	3	35
cis-1,2-Dichloroethene	0.87	J	10.0	10.3		ug/L		95	68 - 121	1	35
Tetrachloroethene	1.0	U	10.0	10.5		ug/L		105	52 - 129	3	35
trans-1,2-Dichloroethene	1.0	U	10.0	9.65		ug/L		96	69 - 126	3	35
Trichloroethene	28	F1	10.0	40.2	E	ug/L		121	56 - 124	3	35
Vinyl chloride	1.0	U	10.0	9.24		ug/L		92	49 - 136	1	35

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	82		75 - 130
4-Bromofluorobenzene (Surr)	124		47 - 134
Toluene-d8 (Surr)	111		69 - 122
Dibromofluoromethane (Surr)	94		78 - 129

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-490579/5
Matrix: Water
Analysis Batch: 490579

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/14/21 18:34	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	78		70 - 133		06/14/21 18:34	1

Lab Sample ID: LCS 240-490579/4
Matrix: Water
Analysis Batch: 490579

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	10.6		ug/L		106	80 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	77		70 - 133

Lab Sample ID: 240-150917-H-3 MS
Matrix: Water
Analysis Batch: 490579

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	46 - 170

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

<i>Surrogate</i>	<i>%Recovery</i>	<i>MS MS Qualifier</i>	<i>Limits</i>
1,2-Dichloroethane-d4 (Surr)	80		70 - 133

Lab Sample ID: 240-150917-N-3 MSD
 Matrix: Water
 Analysis Batch: 490579

Client Sample ID: Matrix Spike Duplicate
 Prep Type: Total/NA

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MSD Result</i>	<i>MSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	46 - 170	3	26

<i>Surrogate</i>	<i>%Recovery</i>	<i>MSD MSD Qualifier</i>	<i>Limits</i>
1,2-Dichloroethane-d4 (Surr)	82		70 - 133



QC Association Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

GC/MS VOA

Analysis Batch: 490579

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-151104-2	SL-5_061021	Total/NA	Water	8260B SIM	
240-151104-3	SL-6_061021	Total/NA	Water	8260B SIM	
240-151104-4	SL-7_061021	Total/NA	Water	8260B SIM	
240-151104-5	SL-8_061021	Total/NA	Water	8260B SIM	
240-151104-6	SL-9_061021	Total/NA	Water	8260B SIM	
240-151104-7	DUP-01	Total/NA	Water	8260B SIM	
MB 240-490579/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-490579/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-150917-H-3 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-150917-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 490711

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-151104-1	TRIP BLANK	Total/NA	Water	8260B	
240-151104-2	SL-5_061021	Total/NA	Water	8260B	
240-151104-3	SL-6_061021	Total/NA	Water	8260B	
240-151104-4	SL-7_061021	Total/NA	Water	8260B	
240-151104-5	SL-8_061021	Total/NA	Water	8260B	
240-151104-6	SL-9_061021	Total/NA	Water	8260B	
240-151104-7	DUP-01	Total/NA	Water	8260B	
MB 240-490711/7	Method Blank	Total/NA	Water	8260B	
LCS 240-490711/4	Lab Control Sample	Total/NA	Water	8260B	
240-151103-E-4 MS	Matrix Spike	Total/NA	Water	8260B	
240-151103-F-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-151104-1

Date Collected: 06/10/21 00:00

Matrix: Water

Date Received: 06/12/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	490711	06/15/21 20:25	LRW	TAL CAN

Client Sample ID: SL-5_061021

Lab Sample ID: 240-151104-2

Date Collected: 06/10/21 10:00

Matrix: Water

Date Received: 06/12/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	490711	06/15/21 20:49	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	490579	06/14/21 20:13	CS	TAL CAN

Client Sample ID: SL-6_061021

Lab Sample ID: 240-151104-3

Date Collected: 06/10/21 09:35

Matrix: Water

Date Received: 06/12/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	490711	06/15/21 21:13	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	490579	06/14/21 20:37	CS	TAL CAN

Client Sample ID: SL-7_061021

Lab Sample ID: 240-151104-4

Date Collected: 06/10/21 09:05

Matrix: Water

Date Received: 06/12/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	490711	06/15/21 21:36	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	490579	06/14/21 21:02	CS	TAL CAN

Client Sample ID: SL-8_061021

Lab Sample ID: 240-151104-5

Date Collected: 06/10/21 10:25

Matrix: Water

Date Received: 06/12/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		8	490711	06/15/21 22:00	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	490579	06/14/21 21:27	CS	TAL CAN

Client Sample ID: SL-9_061021

Lab Sample ID: 240-151104-6

Date Collected: 06/10/21 10:45

Matrix: Water

Date Received: 06/12/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	490711	06/15/21 22:24	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	490579	06/14/21 21:52	CS	TAL CAN

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Client Sample ID: DUP-01
Date Collected: 06/10/21 00:00
Date Received: 06/12/21 08:00

Lab Sample ID: 240-151104-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	490711	06/15/21 22:47	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	490579	06/14/21 22:17	CS	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

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Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-22
Illinois	NELAP	200004	07-31-21
Iowa	State	421	06-01-21 *
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22
Kentucky (WW)	State	KY98016	12-31-21
Minnesota	NELAP	OH00048	12-31-21
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-22
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-23-22
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-22
West Virginia DEP	State	210	12-31-21

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



**Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility**

Login # : 151104

Client Arcadis Site Name Ford LTP

Cooler unpacked by:

Cooler Received on 6-12-21 Opened on 6-12-21

STUE


FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TA Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt See Multiple Cooler Form
 IR GUN# IR-11 (CF +0.1 °C) Observed Cooler Temp. 2.6 °C Corrected Cooler Temp. 2.7 °C
 IR GUN #IR-12 (CF +0.2 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
 -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? Yes No
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC022887
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? Yes No NA  ← Larger than this.
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered Yes No
17. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container.
 Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
 Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT



June 16, 2021

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162

Project: Ford Livonia Transmission Plant - 2021 Utility Corridor Evalyation Vapor Testing

Project number: 30080642.701.04 EAT-WA03

Event Specific Scope of Work References: Sample COC

Laboratory: TestAmerica - North Canton

Laboratory submittal: 151104-1

Sample date: 2021-06-10

Report received by CADENA: 2021-06-16

Initial Data Verification completed by CADENA: 2021-06-16

Number of Samples:7

Sample Matrices:Water

Test Categories:GCMS VOC

Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

Reportable Results Only

CADENA Project ID: E205162
 Laboratory: TestAmerica - North Canton
 Laboratory Submittal: 151104-1

Sample Name: TRIP BLANK	SL-5_061021	SL-6_061021	SL-7_061021	SL-8_061021	SL-9_061021	DUP-01
Lab Sample ID: 2401511041	2401511042	2401511043	2401511044	2401511045	2401511046	2401511047
Sample Date: 6/10/2021	6/10/2021	6/10/2021	6/10/2021	6/10/2021	6/10/2021	6/10/2021

Analyte	Cas No.	Report			Valid			Report			Valid			Report			Valid			Report			Valid						
		Result	Limit	Units	Result	Limit	Units	Result	Limit	Units	Result	Limit	Units	Result	Limit	Units	Result	Limit	Units	Result	Limit	Units	Result	Limit	Units				
GC/MS VOC																													
<u>OSW-82608</u>																													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	8.0	ug/l	---	ND	5.0	ug/l	---	ND	5.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	110	5.0	ug/l	---	1.3	1.0	ug/l	---	ND	1.0	ug/l	---	180	8.0	ug/l	---	110	5.0	ug/l	---	140	5.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	8.0	ug/l	---	ND	5.0	ug/l	---	ND	5.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	8.0	ug/l	---	ND	5.0	ug/l	---	ND	5.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	27	5.0	ug/l	---	0.73	1.0	ug/l	J	ND	1.0	ug/l	---	47	8.0	ug/l	---	26	5.0	ug/l	---	33	5.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	14	5.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	26	8.0	ug/l	---	12	5.0	ug/l	---	17	5.0	ug/l	---
<u>OSW-82608BSim</u>																													
1,4-Dioxane	123-91-1					4.7	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	5.4	2.0	ug/l	---	2.8	2.0	ug/l	---	5.1	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-151104-1

CADENA Verification Report: 2021-06-16

Analyses Performed By:
Eurofins TestAmerica
North Canton, Ohio

Report #41882R
Review Level: Tier III
Project: 30080642.701.02

DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-151104-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						VOC (Full Scan)	VOC (SIM)	MISC
240-151104-1	TRIP BLANKTB_061021	2401511041	Water	6/10/2021		X		
	SL-5_061021	2401511042	Water	6/10/2021		X	X	
	SL-6_061021	2401511043	Water	6/10/2021		X	X	
	SL-7_061021	2401511044	Water	6/10/2021		X	X	
	SL-8_061021	2401511045	Water	6/10/2021		X	X	
	SL-9_061021	2401511046	Water	6/10/2021		X	X	
	DUP-01_061021	2401511047	Water	6/10/2021	SL-5_061021	X	X	

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260B and 8260B SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) 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 8260B/8260B-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl
	Soil	14 days from collection to analysis	Cool to < 6 °C

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

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 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	Duplicate Result	RPD
SL-5_061021/DUP-01_061021	1,4-Dioxane	4.7	5.1	AC
	cis-1,2-Dichloroethene	110	140	24.0%
	Trichloroethene	27	33	20.0%
	Vinyl chloride	14	17	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. 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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260B/8260B-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

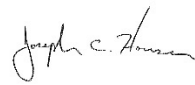
%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Joseph C. Houser

SIGNATURE:



DATE: June 23, 2021

PEER REVIEW: Andrew Korycinski

DATE: June 24, 2021



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



**NO CORRECTIONS/QUALIFIERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**



Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-151104-1

Date Collected: 06/10/21 00:00

Matrix: Water

Date Received: 06/12/21 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/15/21 20:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/15/21 20:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/15/21 20:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/15/21 20:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/15/21 20:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/15/21 20:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	81		75 - 130		06/15/21 20:25	1
4-Bromofluorobenzene (Surr)	118		47 - 134		06/15/21 20:25	1
Toluene-d8 (Surr)	107		69 - 122		06/15/21 20:25	1
Dibromofluoromethane (Surr)	88		78 - 129		06/15/21 20:25	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Client Sample ID: SL-5_061021

Lab Sample ID: 240-151104-2

Date Collected: 06/10/21 10:00

Matrix: Water

Date Received: 06/12/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.7		2.0	0.86	ug/L			06/14/21 20:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		70 - 133					06/14/21 20:13	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	2.5	ug/L			06/15/21 20:49	5
cis-1,2-Dichloroethene	110		5.0	2.3	ug/L			06/15/21 20:49	5
Tetrachloroethene	5.0	U	5.0	2.2	ug/L			06/15/21 20:49	5
trans-1,2-Dichloroethene	5.0	U	5.0	2.6	ug/L			06/15/21 20:49	5
Trichloroethene	27		5.0	2.2	ug/L			06/15/21 20:49	5
Vinyl chloride	14		5.0	2.3	ug/L			06/15/21 20:49	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		75 - 130					06/15/21 20:49	5
4-Bromofluorobenzene (Surr)	119		47 - 134					06/15/21 20:49	5
Toluene-d8 (Surr)	107		69 - 122					06/15/21 20:49	5
Dibromofluoromethane (Surr)	89		78 - 129					06/15/21 20:49	5

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Client Sample ID: SL-6_061021

Lab Sample ID: 240-151104-3

Date Collected: 06/10/21 09:35

Matrix: Water

Date Received: 06/12/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/14/21 20:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	81		70 - 133		06/14/21 20:37	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/15/21 21:13	1
cis-1,2-Dichloroethene	1.3		1.0	0.46	ug/L			06/15/21 21:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/15/21 21:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/15/21 21:13	1
Trichloroethene	0.73	J	1.0	0.44	ug/L			06/15/21 21:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/15/21 21:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		75 - 130		06/15/21 21:13	1
4-Bromofluorobenzene (Surr)	119		47 - 134		06/15/21 21:13	1
Toluene-d8 (Surr)	108		69 - 122		06/15/21 21:13	1
Dibromofluoromethane (Surr)	90		78 - 129		06/15/21 21:13	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Client Sample ID: SL-7_061021

Lab Sample ID: 240-151104-4

Date Collected: 06/10/21 09:05

Matrix: Water

Date Received: 06/12/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/14/21 21:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		70 - 133		06/14/21 21:02	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/15/21 21:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/15/21 21:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/15/21 21:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/15/21 21:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/15/21 21:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/15/21 21:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		75 - 130		06/15/21 21:36	1
4-Bromofluorobenzene (Surr)	126		47 - 134		06/15/21 21:36	1
Toluene-d8 (Surr)	108		69 - 122		06/15/21 21:36	1
Dibromofluoromethane (Surr)	92		78 - 129		06/15/21 21:36	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Client Sample ID: SL-8_061021

Lab Sample ID: 240-151104-5

Date Collected: 06/10/21 10:25

Matrix: Water

Date Received: 06/12/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	5.4		2.0	0.86	ug/L			06/14/21 21:27	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		70 - 133					06/14/21 21:27	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	8.0	U	8.0	3.9	ug/L			06/15/21 22:00	8
cis-1,2-Dichloroethene	180		8.0	3.7	ug/L			06/15/21 22:00	8
Tetrachloroethene	8.0	U	8.0	3.5	ug/L			06/15/21 22:00	8
trans-1,2-Dichloroethene	8.0	U	8.0	4.1	ug/L			06/15/21 22:00	8
Trichloroethene	47		8.0	3.5	ug/L			06/15/21 22:00	8
Vinyl chloride	26		8.0	3.6	ug/L			06/15/21 22:00	8
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		75 - 130					06/15/21 22:00	8
4-Bromofluorobenzene (Surr)	120		47 - 134					06/15/21 22:00	8
Toluene-d8 (Surr)	107		69 - 122					06/15/21 22:00	8
Dibromofluoromethane (Surr)	90		78 - 129					06/15/21 22:00	8

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Client Sample ID: SL-9_061021

Lab Sample ID: 240-151104-6

Date Collected: 06/10/21 10:45

Matrix: Water

Date Received: 06/12/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.8		2.0	0.86	ug/L			06/14/21 21:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		70 - 133		06/14/21 21:52	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	2.5	ug/L			06/15/21 22:24	5
cis-1,2-Dichloroethene	110		5.0	2.3	ug/L			06/15/21 22:24	5
Tetrachloroethene	5.0	U	5.0	2.2	ug/L			06/15/21 22:24	5
trans-1,2-Dichloroethene	5.0	U	5.0	2.6	ug/L			06/15/21 22:24	5
Trichloroethene	26		5.0	2.2	ug/L			06/15/21 22:24	5
Vinyl chloride	12		5.0	2.3	ug/L			06/15/21 22:24	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	81		75 - 130		06/15/21 22:24	5
4-Bromofluorobenzene (Surr)	119		47 - 134		06/15/21 22:24	5
Toluene-d8 (Surr)	106		69 - 122		06/15/21 22:24	5
Dibromofluoromethane (Surr)	90		78 - 129		06/15/21 22:24	5

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-151104-1

Client Sample ID: DUP-01

Lab Sample ID: 240-151104-7

Date Collected: 06/10/21 00:00

Matrix: Water

Date Received: 06/12/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	5.1		2.0	0.86	ug/L			06/14/21 22:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		70 - 133					06/14/21 22:17	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	2.5	ug/L			06/15/21 22:47	5
cis-1,2-Dichloroethene	140		5.0	2.3	ug/L			06/15/21 22:47	5
Tetrachloroethene	5.0	U	5.0	2.2	ug/L			06/15/21 22:47	5
trans-1,2-Dichloroethene	5.0	U	5.0	2.6	ug/L			06/15/21 22:47	5
Trichloroethene	33		5.0	2.2	ug/L			06/15/21 22:47	5
Vinyl chloride	17		5.0	2.3	ug/L			06/15/21 22:47	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		75 - 130					06/15/21 22:47	5
4-Bromofluorobenzene (Surr)	122		47 - 134					06/15/21 22:47	5
Toluene-d8 (Surr)	110		69 - 122					06/15/21 22:47	5
Dibromofluoromethane (Surr)	89		78 - 129					06/15/21 22:47	5

2-6/21

Chain of Custody Record

MICHIGAN
190

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

Client Contact
Company Name: Arcadis
Address: 28550 Cabot Drive, Suite 500
City/State/Zip: Novi, MI, 48377
Phone: 248-994-2240

Client Project Manager: Kris Hinskey
Telephone: 248-994-2240
Email: kris@hinskey.com

Site Contact: Julia McClafferty
Telephone: 734-644-5131

Lab Contact: Mike DeMunico
Telephone: 330-497-9396

Project Name: Ford I, TP Utility Corridor Sampling
Project Number: 30080642.701.04
PO # 30080642.701.04

Sampler Name: Emma Witherspoon, Andrew Banitt
Method of Shipment/Carrier:
Shipping/Tracking No:

Analysis Turnaround Time
TAT: if different from below
1 day 3 weeks
2 weeks 1 week
2 days 1 day

Sample Identification	Sample Date	Sample Time	Matrix				Containers & Preservatives				Filtered Sample (Y/N)	Composite (C/Grab)	Analyses							Sample Specific Notes / Special Instructions:					
			Air	Aqueous	Sediment	Solid	Other:	H2SO4	HNO3	HCl			NaOH	ZnAc	Other:	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B		TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM		
TRIP BLANK	---	---																						1 Trip Blank	
SL-5_061021	6/10/21	1000	X																						3 VOAs for 8260B 3 VOAs for 8260B SIM
SL-6_061021	6/10/21	0935	X																						
SL-7_061021	6/10/21	0905	X																						
SL-8_061021	6/10/21	1025	X																						
SL-9_061021	6/10/21	1045	X																						
DUP-01	6/10/21	--	X																						

Possible Hazard Identification
 Non-Hazard Flammable Irritant Unknown

Special Instructions/QC Requirements & Comments:
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E205162
Level IV Reporting requested.

Received by: *Andrew Banitt* Date/Time: 6/11/21 11:25
Company: Arcadis
Received by: *Emma Witherspoon* Date/Time: 6/11/21 11:30
Company: ETA
Received in Laboratory by: *Andrew Banitt* Date/Time: 6-12-21 08:00
Company: ETA



All Samples collected from sanitary sewers (contain sanitary waste)



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7/23/2021

Mr. Jim Tomalia
Arcadis U.S., Inc.
28550 Cabot Dr.
Suite 500
Novi MI 48377

Project Name: Ford LTP
Project #: 30050315/30080642
Workorder #: 2107380

Dear Mr. Jim Tomalia

The following report includes the data for the above referenced project for sample(s) received on 7/16/2021 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Jade White at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Jade White
Project Manager

WORK ORDER #: 2107380

Work Order Summary

CLIENT:	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	517-819-0356	P.O. #	30080642.701.04
FAX:		PROJECT #	30050315/30080642 Ford LTP
DATE RECEIVED:	07/16/2021	CONTACT:	Jade White
DATE COMPLETED:	07/23/2021		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SL-15_071321	TO-15	6.0 "Hg	10.4 psi
02A	SL-14_071321	TO-15	6.5 "Hg	10 psi
03A	SL-13_071321	TO-15	6.5 "Hg	10 psi
04A	SL-7_071321	TO-15	6.0 "Hg	10 psi
05A	SL-6_071321	TO-15	6.5 "Hg	10 psi
06A	SL-5_071321	TO-15	7.5 "Hg	10 psi
07A	SL-8_071321	TO-15	7.5 "Hg	10 psi
08A	SL-9_071321	TO-15	6.0 "Hg	10 psi
09A	SL-10_071321	TO-15	7.0 "Hg	10 psi
10A	SL-11_071321	TO-15	5.5 "Hg	10 psi
11A	SL-12_071321	TO-15	6.5 "Hg	10 psi
12A	DUP-01	TO-15	6.5 "Hg	10 psi
13A	Lab Blank	TO-15	NA	NA
14A	CCV	TO-15	NA	NA
15A	LCS	TO-15	NA	NA
15AA	LCSD	TO-15	NA	NA

CERTIFIED BY: 

 Technical Director

DATE: 07/23/21

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935
 Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
 Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
 (916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
Arcadis U.S., Inc.
Workorder# 2107380

Twelve 1 Liter Summa Canister (100% Certified) samples were received on July 16, 2021. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

A revised Chain of Custody (COC) was provided by the client on 07/14/21.

Analytical Notes

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Dilution was performed on sample SL-5_071321 due to the presence of high level non-target species.

Dilution was performed on samples SL-8_071321, SL-9_071321, SL-10_071321, SL-12_071321 and DUP-01 due to the presence of high level target species.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-15_071321	Date/Time Analyzed:	7/22/21 08:50 PM
Lab ID:	2107380-01A	Dilution Factor:	2.13
Date/Time Collected:	7/13/21 09:08 AM	Instrument/Filename:	msda.i / a072216
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	2.5	4.2	Not Detected
1,4-Dioxane	123-91-1	1.0	3.8	15	2.3 J
cis-1,2-Dichloroethene	156-59-2	1.4	2.5	4.2	Not Detected
Tetrachloroethene	127-18-4	0.93	4.3	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.94	2.5	4.2	Not Detected
Trichloroethene	79-01-6	0.86	3.4	5.7	1.9 J
Vinyl Chloride	75-01-4	0.71	1.6	2.7	1.8 J

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	89
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-14_071321	Date/Time Analyzed:	7/22/21 02:27 PM
Lab ID:	2107380-02A	Dilution Factor:	2.14
Date/Time Collected:	7/13/21 09:39 AM	Instrument/Filename:	msda.i / a072207
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	2.5	4.2	Not Detected
1,4-Dioxane	123-91-1	1.0	3.8	15	2.4 J
cis-1,2-Dichloroethene	156-59-2	1.4	2.5	4.2	1.5 J
Tetrachloroethene	127-18-4	0.93	4.4	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.94	2.5	4.2	Not Detected
Trichloroethene	79-01-6	0.86	3.4	5.8	4.0 J
Vinyl Chloride	75-01-4	0.71	1.6	2.7	9.1

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	90
4-Bromofluorobenzene	460-00-4	70-130	98
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-13_071321	Date/Time Analyzed:	7/22/21 02:54 PM
Lab ID:	2107380-03A	Dilution Factor:	2.14
Date/Time Collected:	7/13/21 10:03 AM	Instrument/Filename:	msda.i / a072208
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	2.5	4.2	Not Detected
1,4-Dioxane	123-91-1	1.0	3.8	15	2.9 J
cis-1,2-Dichloroethene	156-59-2	1.4	2.5	4.2	7.1
Tetrachloroethene	127-18-4	0.93	4.4	7.2	2.9 J
trans-1,2-Dichloroethene	156-60-5	0.94	2.5	4.2	Not Detected
Trichloroethene	79-01-6	0.86	3.4	5.8	5.3 J
Vinyl Chloride	75-01-4	0.71	1.6	2.7	3.1

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	89
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-7_071321	Date/Time Analyzed:	7/22/21 03:20 PM
Lab ID:	2107380-04A	Dilution Factor:	2.10
Date/Time Collected:	7/13/21 10:27 AM	Instrument/Filename:	msda.i / a072209
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	2.5	4.2	3.6 J
1,4-Dioxane	123-91-1	0.98	3.8	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.3	2.5	4.2	610
Tetrachloroethene	127-18-4	0.92	4.3	7.1	2.3 J
trans-1,2-Dichloroethene	156-60-5	0.92	2.5	4.2	8.6
Trichloroethene	79-01-6	0.84	3.4	5.6	380
Vinyl Chloride	75-01-4	0.70	1.6	2.7	420

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	87
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-6_071321	Date/Time Analyzed:	7/22/21 03:47 PM
Lab ID:	2107380-05A	Dilution Factor:	2.14
Date/Time Collected:	7/13/21 10:51 AM	Instrument/Filename:	msda.i / a072210
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	2.5	4.2	8.9
1,4-Dioxane	123-91-1	1.0	3.8	15	2.9 J
cis-1,2-Dichloroethene	156-59-2	1.4	2.5	4.2	1600
Tetrachloroethene	127-18-4	0.93	4.4	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.94	2.5	4.2	21
Trichloroethene	79-01-6	0.86	3.4	5.8	970
Vinyl Chloride	75-01-4	0.71	1.6	2.7	890

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	88
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-5_071321	Date/Time Analyzed:	7/22/21 05:53 PM
Lab ID:	2107380-06A	Dilution Factor:	22.4
Date/Time Collected:	7/13/21 12:15 PM	Instrument/Filename:	msda.i / a072215
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	12	27	44	19 J
1,4-Dioxane	123-91-1	10	40	160	Not Detected
cis-1,2-Dichloroethene	156-59-2	14	27	44	3300
Tetrachloroethene	127-18-4	9.8	46	76	Not Detected
trans-1,2-Dichloroethene	156-60-5	9.8	27	44	36 J
Trichloroethene	79-01-6	9.0	36	60	2200
Vinyl Chloride	75-01-4	7.5	17	29	1600

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	85
4-Bromofluorobenzene	460-00-4	70-130	99
Toluene-d8	2037-26-5	70-130	95

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-8_071321	Date/Time Analyzed:	7/22/21 04:11 PM
Lab ID:	2107380-07A	Dilution Factor:	8.96
Date/Time Collected:	7/13/21 12:41 PM	Instrument/Filename:	msda.i / a072211
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	4.9	11	18	23
1,4-Dioxane	123-91-1	4.2	16	64	Not Detected
cis-1,2-Dichloroethene	156-59-2	5.7	11	18	4100
Tetrachloroethene	127-18-4	3.9	18	30	Not Detected
trans-1,2-Dichloroethene	156-60-5	3.9	11	18	58
Trichloroethene	79-01-6	3.6	14	24	3100
Vinyl Chloride	75-01-4	3.0	6.9	11	2400

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	89
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-9_071321	Date/Time Analyzed:	7/22/21 04:36 PM
Lab ID:	2107380-08A	Dilution Factor:	14.0
Date/Time Collected:	7/13/21 01:04 PM	Instrument/Filename:	msda.i / a072212
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	7.7	17	28	44
1,4-Dioxane	123-91-1	6.5	25	100	Not Detected
cis-1,2-Dichloroethene	156-59-2	8.9	17	28	7300
Tetrachloroethene	127-18-4	6.1	28	47	Not Detected
trans-1,2-Dichloroethene	156-60-5	6.2	17	28	110
Trichloroethene	79-01-6	5.6	22	38	5900
Vinyl Chloride	75-01-4	4.7	11	18	4100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	85
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-10_071321	Date/Time Analyzed:	7/22/21 05:02 PM
Lab ID:	2107380-09A	Dilution Factor:	14.6
Date/Time Collected:	7/13/21 01:31 PM	Instrument/Filename:	msda.i / a072213
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	8.0	17	29	33
1,4-Dioxane	123-91-1	6.8	26	100	Not Detected
cis-1,2-Dichloroethene	156-59-2	9.2	17	29	6900
Tetrachloroethene	127-18-4	6.4	30	50	Not Detected
trans-1,2-Dichloroethene	156-60-5	6.4	17	29	91
Trichloroethene	79-01-6	5.9	24	39	5400
Vinyl Chloride	75-01-4	4.9	11	19	3400

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	85
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-11_071321	Date/Time Analyzed:	7/22/21 05:28 PM
Lab ID:	2107380-10A	Dilution Factor:	2.06
Date/Time Collected:	7/13/21 01:52 PM	Instrument/Filename:	msda.i / a072214
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.1	2.4	4.1	Not Detected
1,4-Dioxane	123-91-1	0.96	3.7	15	1.3 J
cis-1,2-Dichloroethene	156-59-2	1.3	2.4	4.1	32
Tetrachloroethene	127-18-4	0.90	4.2	7.0	2.2 J
trans-1,2-Dichloroethene	156-60-5	0.90	2.4	4.1	Not Detected
Trichloroethene	79-01-6	0.83	3.3	5.5	28
Vinyl Chloride	75-01-4	0.69	1.6	2.6	19

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	88
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	95

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-12_071321	Date/Time Analyzed:	7/22/21 09:15 PM
Lab ID:	2107380-11A	Dilution Factor:	8.58
Date/Time Collected:	7/13/21 02:16 PM	Instrument/Filename:	msda.i / a072217
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	4.7	10	17	33
1,4-Dioxane	123-91-1	4.0	15	62	Not Detected
cis-1,2-Dichloroethene	156-59-2	5.4	10	17	4200
Tetrachloroethene	127-18-4	3.7	17	29	Not Detected
trans-1,2-Dichloroethene	156-60-5	3.8	10	17	81
Trichloroethene	79-01-6	3.4	14	23	3900
Vinyl Chloride	75-01-4	2.9	6.6	11	3100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	88
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	DUP-01	Date/Time Analyzed:	7/22/21 09:39 PM
Lab ID:	2107380-12A	Dilution Factor:	7.15
Date/Time Collected:	7/13/21 12:00 AM	Instrument/Filename:	msda.i / a072218
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	3.9	8.5	14	16
1,4-Dioxane	123-91-1	3.3	13	52	Not Detected
cis-1,2-Dichloroethene	156-59-2	4.5	8.5	14	3600
Tetrachloroethene	127-18-4	3.1	14	24	Not Detected
trans-1,2-Dichloroethene	156-60-5	3.1	8.5	14	39
Trichloroethene	79-01-6	2.9	12	19	2300
Vinyl Chloride	75-01-4	2.4	5.5	9.1	1600

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	86
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	95

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Lab Blank	Date/Time Analyzed:	7/22/21 12:52 PM
Lab ID:	2107380-13A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msda.i / a072206a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.55	1.2	2.0	Not Detected
1,4-Dioxane	123-91-1	0.47	1.8	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.63	1.2	2.0	Not Detected
Tetrachloroethene	127-18-4	0.44	2.0	3.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.44	1.2	2.0	Not Detected
Trichloroethene	79-01-6	0.40	1.6	2.7	Not Detected
Vinyl Chloride	75-01-4	0.33	0.77	1.3	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	91
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	CCV	Date/Time Analyzed:	7/22/21 09:38 AM
Lab ID:	2107380-14A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msda.i / a072202
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	92
1,4-Dioxane	123-91-1	109
cis-1,2-Dichloroethene	156-59-2	94
Tetrachloroethene	127-18-4	110
trans-1,2-Dichloroethene	156-60-5	91
Trichloroethene	79-01-6	107
Vinyl Chloride	75-01-4	94

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCS	Date/Time Analyzed:	7/22/21 10:03 AM
Lab ID:	2107380-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msda.i / a072203
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	92
1,4-Dioxane	123-91-1	107
cis-1,2-Dichloroethene	156-59-2	92
Tetrachloroethene	127-18-4	111
trans-1,2-Dichloroethene	156-60-5	90
Trichloroethene	79-01-6	106
Vinyl Chloride	75-01-4	92

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	94
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	96

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCSD	Date/Time Analyzed:	7/22/21 10:28 AM
Lab ID:	2107380-15AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msda.i / a072204
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	95
1,4-Dioxane	123-91-1	108
cis-1,2-Dichloroethene	156-59-2	96
Tetrachloroethene	127-18-4	112
trans-1,2-Dichloroethene	156-60-5	92
Trichloroethene	79-01-6	108
Vinyl Chloride	75-01-4	94

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	94
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	97

* % Recovery is calculated using unrounded analytical results.



DATA VERIFICATION REPORT

July 23, 2021

Kris Hinskey
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Novi, MI US 48377

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2021 Utility Corridor Evaluation Vapor Testing
Project number: 30080642.701.04
Event Specific Scope of Work References: Sample COC
Laboratory: EUROFINS-FOLSOM
Laboratory submittal: 2107380
Sample date: 2021-07-13
Report received by CADENA: 2021-07-23
Initial Data Verification completed by CADENA: 2021-07-23
Number of Samples: 12
Sample Matrices: AIR
Test Categories: TO-15 GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) TO-15 Analysis

SDG #2107380

CADENA Verification Report: 2021-07-23

Analyses Performed By:
Eurofins Air Toxics
Folsom, California

Report #42339R
Review Level: Tier III
Project: 30080642.701.02

DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 2107380 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						TO-15 (Full Scan)	TO-15 (SIM)	MISC
2107380	SL-15_071321_V	2107380-01A	Air	7/13/2021		X		
	SL-14_071321_V	2107380-02A	Air	7/13/2021		X		
	SL-13_071321_V	2107380-03A	Air	7/13/2021		X		
	SL-7_071321_V	2107380-04A	Air	7/13/2021		X		
	SL-6_071321_V	2107380-05A	Air	7/13/2021		X		
	SL-5_071321_V	2107380-06A	Air	7/13/2021		X		
	SL-8_071321_V	2107380-07A	Air	7/13/2021		X		
	SL-9_071321_V	2107380-08A	Air	7/13/2021		X		
	SL-10_071321_V	2107380-09A	Air	7/13/2021		X		
	SL-11_071321_V	2107380-10A	Air	7/13/2021		X		
	SL-12_071321_V	2107380-11A	Air	7/13/2021		X		
	DUP-01_071321_V	2107380-12A	Air	7/13/2021	SL-5_071321_V	X		

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Method TO-15 (Full Scan). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation	Return Canister Pressure
USEPA TO-15	Air	30 days from collection to analysis (Canister)	Ambient Temperature	< -2" Hg

All samples were analyzed within the specified holding time and canister return pressure / vacuum criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (30%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (30%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than 140% or less than 60% of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

5. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra. All identified compounds met the specified criteria.

6. Field Duplicate Sample Analysis

The field duplicate analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 35% for air 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 not greater than five times the RL, a control limit of three times the RL is applied to the difference between the duplicate sample results.

Results (in $\mu\text{g}/\text{m}^3$) for the field duplicate samples are summarized in the following table.

Sample ID / Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SL-5_071321_V/ DUP-01_071321_V	1,1-Dichloroethene	19 J	16	AC
	cis-1,2-Dichloroethene	3300	3600	8.7%
	trans-1,2-Dichloroethene	36 J	39	AC
	Trichloroethene	2200	2300	4.4%
	Vinyl Chloride	1600	1600	0.0%

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

Note: Dilution was performed on sample SL-5_071321 due to the presence of high-level non-target species.

Dilution was performed on samples SL-8_071321, SL-9_071321, SL-10_071321, SL-12_071321 and DUP-01 due to the presence of high-level target species.

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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: TO-15 (Full Scan)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Canister return pressure (<-2"Hg)		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Field Duplicate Sample RPD		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Joseph C. Houser

SIGNATURE:



DATE: August 11, 2021

PEER REVIEW: Andrew Korycinski

DATE: August 11, 2021



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



**NO CORRECTIONS/QUALIFIERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**



EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-15_071321	Date/Time Analyzed:	7/22/21 08:50 PM
Lab ID:	2107380-01A	Dilution Factor:	2.13
Date/Time Collected:	7/13/21 09:08 AM	Instrument/Filename:	msda.i / a072216
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	2.5	4.2	Not Detected
1,4-Dioxane	123-91-1	1.0	3.8	15	2.3 J
cis-1,2-Dichloroethene	156-59-2	1.4	2.5	4.2	Not Detected
Tetrachloroethene	127-18-4	0.93	4.3	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.94	2.5	4.2	Not Detected
Trichloroethene	79-01-6	0.86	3.4	5.7	1.9 J
Vinyl Chloride	75-01-4	0.71	1.6	2.7	1.8 J

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	89
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-14_071321	Date/Time Analyzed:	7/22/21 02:27 PM
Lab ID:	2107380-02A	Dilution Factor:	2.14
Date/Time Collected:	7/13/21 09:39 AM	Instrument/Filename:	msda.i / a072207
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	2.5	4.2	Not Detected
1,4-Dioxane	123-91-1	1.0	3.8	15	2.4 J
cis-1,2-Dichloroethene	156-59-2	1.4	2.5	4.2	1.5 J
Tetrachloroethene	127-18-4	0.93	4.4	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.94	2.5	4.2	Not Detected
Trichloroethene	79-01-6	0.86	3.4	5.8	4.0 J
Vinyl Chloride	75-01-4	0.71	1.6	2.7	9.1

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	90
4-Bromofluorobenzene	460-00-4	70-130	98
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-13_071321	Date/Time Analyzed:	7/22/21 02:54 PM
Lab ID:	2107380-03A	Dilution Factor:	2.14
Date/Time Collected:	7/13/21 10:03 AM	Instrument/Filename:	msda.i / a072208
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	2.5	4.2	Not Detected
1,4-Dioxane	123-91-1	1.0	3.8	15	2.9 J
cis-1,2-Dichloroethene	156-59-2	1.4	2.5	4.2	7.1
Tetrachloroethene	127-18-4	0.93	4.4	7.2	2.9 J
trans-1,2-Dichloroethene	156-60-5	0.94	2.5	4.2	Not Detected
Trichloroethene	79-01-6	0.86	3.4	5.8	5.3 J
Vinyl Chloride	75-01-4	0.71	1.6	2.7	3.1

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	89
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-7_071321	Date/Time Analyzed:	7/22/21 03:20 PM
Lab ID:	2107380-04A	Dilution Factor:	2.10
Date/Time Collected:	7/13/21 10:27 AM	Instrument/Filename:	msda.i / a072209
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	2.5	4.2	3.6 J
1,4-Dioxane	123-91-1	0.98	3.8	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.3	2.5	4.2	610
Tetrachloroethene	127-18-4	0.92	4.3	7.1	2.3 J
trans-1,2-Dichloroethene	156-60-5	0.92	2.5	4.2	8.6
Trichloroethene	79-01-6	0.84	3.4	5.6	380
Vinyl Chloride	75-01-4	0.70	1.6	2.7	420

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	87
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-6_071321	Date/Time Analyzed:	7/22/21 03:47 PM
Lab ID:	2107380-05A	Dilution Factor:	2.14
Date/Time Collected:	7/13/21 10:51 AM	Instrument/Filename:	msda.i / a072210
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.2	2.5	4.2	8.9
1,4-Dioxane	123-91-1	1.0	3.8	15	2.9 J
cis-1,2-Dichloroethene	156-59-2	1.4	2.5	4.2	1600
Tetrachloroethene	127-18-4	0.93	4.4	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.94	2.5	4.2	21
Trichloroethene	79-01-6	0.86	3.4	5.8	970
Vinyl Chloride	75-01-4	0.71	1.6	2.7	890

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	88
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-5_071321	Date/Time Analyzed:	7/22/21 05:53 PM
Lab ID:	2107380-06A	Dilution Factor:	22.4
Date/Time Collected:	7/13/21 12:15 PM	Instrument/Filename:	msda.i / a072215
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	12	27	44	19 J
1,4-Dioxane	123-91-1	10	40	160	Not Detected
cis-1,2-Dichloroethene	156-59-2	14	27	44	3300
Tetrachloroethene	127-18-4	9.8	46	76	Not Detected
trans-1,2-Dichloroethene	156-60-5	9.8	27	44	36 J
Trichloroethene	79-01-6	9.0	36	60	2200
Vinyl Chloride	75-01-4	7.5	17	29	1600

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	85
4-Bromofluorobenzene	460-00-4	70-130	99
Toluene-d8	2037-26-5	70-130	95

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-8_071321	Date/Time Analyzed:	7/22/21 04:11 PM
Lab ID:	2107380-07A	Dilution Factor:	8.96
Date/Time Collected:	7/13/21 12:41 PM	Instrument/Filename:	msda.i / a072211
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	4.9	11	18	23
1,4-Dioxane	123-91-1	4.2	16	64	Not Detected
cis-1,2-Dichloroethene	156-59-2	5.7	11	18	4100
Tetrachloroethene	127-18-4	3.9	18	30	Not Detected
trans-1,2-Dichloroethene	156-60-5	3.9	11	18	58
Trichloroethene	79-01-6	3.6	14	24	3100
Vinyl Chloride	75-01-4	3.0	6.9	11	2400

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	89
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-9_071321	Date/Time Analyzed:	7/22/21 04:36 PM
Lab ID:	2107380-08A	Dilution Factor:	14.0
Date/Time Collected:	7/13/21 01:04 PM	Instrument/Filename:	msda.i / a072212
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	7.7	17	28	44
1,4-Dioxane	123-91-1	6.5	25	100	Not Detected
cis-1,2-Dichloroethene	156-59-2	8.9	17	28	7300
Tetrachloroethene	127-18-4	6.1	28	47	Not Detected
trans-1,2-Dichloroethene	156-60-5	6.2	17	28	110
Trichloroethene	79-01-6	5.6	22	38	5900
Vinyl Chloride	75-01-4	4.7	11	18	4100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	85
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-10_071321	Date/Time Analyzed:	7/22/21 05:02 PM
Lab ID:	2107380-09A	Dilution Factor:	14.6
Date/Time Collected:	7/13/21 01:31 PM	Instrument/Filename:	msda.i / a072213
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	8.0	17	29	33
1,4-Dioxane	123-91-1	6.8	26	100	Not Detected
cis-1,2-Dichloroethene	156-59-2	9.2	17	29	6900
Tetrachloroethene	127-18-4	6.4	30	50	Not Detected
trans-1,2-Dichloroethene	156-60-5	6.4	17	29	91
Trichloroethene	79-01-6	5.9	24	39	5400
Vinyl Chloride	75-01-4	4.9	11	19	3400

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	85
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-11_071321	Date/Time Analyzed:	7/22/21 05:28 PM
Lab ID:	2107380-10A	Dilution Factor:	2.06
Date/Time Collected:	7/13/21 01:52 PM	Instrument/Filename:	msda.i / a072214
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.1	2.4	4.1	Not Detected
1,4-Dioxane	123-91-1	0.96	3.7	15	1.3 J
cis-1,2-Dichloroethene	156-59-2	1.3	2.4	4.1	32
Tetrachloroethene	127-18-4	0.90	4.2	7.0	2.2 J
trans-1,2-Dichloroethene	156-60-5	0.90	2.4	4.1	Not Detected
Trichloroethene	79-01-6	0.83	3.3	5.5	28
Vinyl Chloride	75-01-4	0.69	1.6	2.6	19

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	88
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	95

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-12_071321	Date/Time Analyzed:	7/22/21 09:15 PM
Lab ID:	2107380-11A	Dilution Factor:	8.58
Date/Time Collected:	7/13/21 02:16 PM	Instrument/Filename:	msda.i / a072217
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	4.7	10	17	33
1,4-Dioxane	123-91-1	4.0	15	62	Not Detected
cis-1,2-Dichloroethene	156-59-2	5.4	10	17	4200
Tetrachloroethene	127-18-4	3.7	17	29	Not Detected
trans-1,2-Dichloroethene	156-60-5	3.8	10	17	81
Trichloroethene	79-01-6	3.4	14	23	3900
Vinyl Chloride	75-01-4	2.9	6.6	11	3100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	88
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	DUP-01	Date/Time Analyzed:	7/22/21 09:39 PM
Lab ID:	2107380-12A	Dilution Factor:	7.15
Date/Time Collected:	7/13/21 12:00 AM	Instrument/Filename:	msda.i / a072218
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	3.9	8.5	14	16
1,4-Dioxane	123-91-1	3.3	13	52	Not Detected
cis-1,2-Dichloroethene	156-59-2	4.5	8.5	14	3600
Tetrachloroethene	127-18-4	3.1	14	24	Not Detected
trans-1,2-Dichloroethene	156-60-5	3.1	8.5	14	39
Trichloroethene	79-01-6	2.9	12	19	2300
Vinyl Chloride	75-01-4	2.4	5.5	9.1	1600

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	86
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	95

Analysis Request / Canister Chain of Custody

For Laboratory Use Only
 Workorder # **2107380**

PID: _____

Click links below to view:

[Canister Sampling Guide](#)
[Helium Shroud Video](#)

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
 Phone (800) 985-5955; Fax (916) 351-8279

Client: <u>Ford</u>	PID: <u>NA</u>	Special Instructions/Notes: Report ONLY: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, 1,4-Dioxane, PCE, TCE and VC. Submit results through Cadena at jim.tomalla@cadena.com. Cadena #E205162. Level IV Reporting	Turnaround Time (Rush surcharges may apply)
Project Name: <u>Ford LTP</u>			-1 Day Turnaround Time Standard 10-day TAT
Project Manager: <u>Kris Hinskey</u>	P.O.# <u>30080642.701.04</u>		Canister Vacuum/Pressure
Sampler: <u>Andrew Banitt, Korey Pearson</u>			Requested Analytes
Site Name: <u>Ford LTP</u>			

Lab ID	Sample Identification	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Initial (in Hg)	Final (in Hg)	Lab Use Only			
				Date	Time	Date	Time			Receipt	Final (psig) Gas: N ₂ / He	TO-15 (See Special Instructions/Notes)	Do Not Analyze
01A	SL-15_071321	34000980	2014	7/13/21	0906	7/13/21	0908	-29	-5.5			X	
02A	SL-14_071321	8976	1902	7/13/21	0938	7/13/21	0939	-29	-6.5			X	
03A	SL-13_071321	8518	2046	7/13/21	1001	7/13/21	1003	-29	-6			X	
04A	SL-7_071321	09641	2103	7/13/21	1026	7/13/21	1027	-29	-6			X	
05A	SL-6_071321	1L2670	1922	7/13/21	1050	7/13/21	1051	-29.5	-6			X	
06A	SL-5_071321	1L3071	1831	7/13/21	1213	7/13/21	1215	-29	-6.5			X	
07A	SL-8_071321	1L3895	2103	7/13/21	1239	7/13/21	1241	-29	-7			X	
08A	SL-9_071321	34000335	2046	7/13/21	1303	7/13/21	1304	-29	-6			X	
09A	SL-10_071321	1L1556	2005	7/13/21	1330	7/13/21	1331	-29	-6.5			X	
10A	SL-11_071321	LC296	1910	7/13/21	1351	7/13/21	1352	-29	-5			X	
11A	SL-12_071321	1L3179	2028	7/13/21	1415	7/13/21	1416	-29	-6			X	
12A	DUP-01	1L2821	1922	7/13/21	-	7/13/21	-	-29	-6			X	

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
<i>Andrew Banitt</i> ACCORIS	7/14/21	1200			
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only

Shipper Name:	Custody Seals Intact?	Yes	No	None
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Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T Hotline (800) 467-4922

REVISED COL 07/14/21

Analysis Request /Canister Chain of Custody

For Laboratory Use Only

PID: _____ Workorder #: 2107380

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
 Phone (800) 985-5955; Fax (916) 351-8279

Click links below to view:

- [Canister Sampling Guide](#)
- [Helium Shroud Video](#)

Client:	Ford	PID:	NA	Special Instructions/Notes: Report ONLY: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, 1,4-Dioxane, PCE, TCE and VC. Submit results through Cadena at jim.tomalia@cadena.com. Cadena #E205162. Level IV Reporting
Project Name:	Ford LTP			
Project Manager:	Kris Hinskey	P.O.#	30080642.701.04	
Sampler:	Andrew Banitt, Korey Pearson			
Site Name:	Ford LTP			

Turnaround Time (Rush surcharges may apply)

1 Day Turnaround Time

Lab ID	Sample Identification	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Initial (in Hg)	Final (in Hg)	Lab Use Only		TO-15 (See Special Instructions/Notes)	Do Not Analyze
				Date	Time	Date	Time			Receipt	Final (psig) Gas: N ₂ / He		
	SL-15_071321	34000980	2014	7/13/21	0906	7/13/21	0908	-29	-5.5			X	
	SL-14_071321	8976	1902	7/13/21	0938	7/13/21	0939	-29	-6.5			X	
	SL-13_071321	8518	2046	7/13/21	1001	7/13/21	1003	-29	-6			X	
	SL-7_071321	09641	2103	7/13/21	1026	7/13/21	1027	-29	-6			X	
	SL-6_071321	1L2670	1922	7/13/21	1050	7/13/21	1051	-29.5	-6			X	
	SL-5_071321	1L3071	1831	7/13/21	1213	7/13/21	1215	-29	-6.5			X	
	SL-8_071321	1L3895	2103	7/13/21	1239	7/13/21	1241	-29	-7			X	
	SL-9_071321	34000335	2046	7/13/21	1303	7/13/21	1304	-29	-6			X	
	SL-10_071321	1L1556	2005	7/13/21	1330	7/13/21	1331	-29	-6.5			X	
	SL-11_071321	LC296	1910	7/13/21	1351	7/13/21	1352	-29	-5			X	
	SL-12_071321	1L3179	2028	7/13/21	1415	7/13/21	1416	-29	-6			X	
	DUP-01	1L2821	1922	7/13/21	--	7/13/21	--	-29	-6			X	

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
<i>[Signature]</i> Arcobis	7/14/21	1200	<i>[Signature]</i>	7/16/21	0955
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only

Shipper Name: E. [Signature] Custody Seals Intact? Yes No None

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-152869-1

Client Project/Site: Ford LTP Utility Corridor Sampling

For:

ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey



Authorized for release by:
7/30/2021 4:04:03 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.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.



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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
♠	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

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Job ID: 240-152869-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative 240-152869-1

Comments

No additional comments.

Receipt

The samples were received on 7/15/2021 8:00 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 1.1° C.

GC/MS VOA

Method 8260B: The continuing calibration verification (CCV) associated with batch 240-495964 recovered above the upper control limit for Vinyl chloride. The samples associated with this CCV were non-detect for the affected analytes; therefore, the data have been reported. The associated samples are impacted: SL-15_071321 (240-152869-2) and SL-14_071321 (240-152869-3).

Method 8260B: No MS/MSD in batch 496148 due to an instrument fault: SL-13_071321 (240-152869-4), SL-10_071321 (240-152869-10), SL-11_071321 (240-152869-11), SL-12_071321 (240-152869-12) and DUP-01 (240-152869-13).

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

VOA Prep

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

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

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Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-152869-1	TRIP BLANK	Water	07/13/21 00:00	07/15/21 08:00
240-152869-2	SL-15_071321	Water	07/13/21 09:10	07/15/21 08:00
240-152869-3	SL-14_071321	Water	07/13/21 09:40	07/15/21 08:00
240-152869-4	SL-13_071321	Water	07/13/21 10:05	07/15/21 08:00
240-152869-5	SL-7_071321	Water	07/13/21 10:30	07/15/21 08:00
240-152869-6	SL-6_071321	Water	07/13/21 10:55	07/15/21 08:00
240-152869-7	SL-5_071321	Water	07/13/21 12:10	07/15/21 08:00
240-152869-8	SL-8_071321	Water	07/13/21 12:40	07/15/21 08:00
240-152869-9	SL-9_071321	Water	07/13/21 13:00	07/15/21 08:00
240-152869-10	SL-10_071321	Water	07/13/21 13:30	07/15/21 08:00
240-152869-11	SL-11_071321	Water	07/13/21 13:50	07/15/21 08:00
240-152869-12	SL-12_071321	Water	07/13/21 14:05	07/15/21 08:00
240-152869-13	DUP-01	Water	07/13/21 00:00	07/15/21 08:00

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Detection Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-152869-1

No Detections.

Client Sample ID: SL-15_071321

Lab Sample ID: 240-152869-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.7	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA

Client Sample ID: SL-14_071321

Lab Sample ID: 240-152869-3

No Detections.

Client Sample ID: SL-13_071321

Lab Sample ID: 240-152869-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.2		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: SL-7_071321

Lab Sample ID: 240-152869-5

No Detections.

Client Sample ID: SL-6_071321

Lab Sample ID: 240-152869-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	5.2		1.0	0.46	ug/L	1		8260B	Total/NA
Trichloroethene	0.96	J	1.0	0.44	ug/L	1		8260B	Total/NA
Vinyl chloride	0.80	J	1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: SL-5_071321

Lab Sample ID: 240-152869-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.91	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	81		5.0	2.3	ug/L	5		8260B	Total/NA
Trichloroethene	20		5.0	2.2	ug/L	5		8260B	Total/NA
Vinyl chloride	10		5.0	2.3	ug/L	5		8260B	Total/NA

Client Sample ID: SL-8_071321

Lab Sample ID: 240-152869-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	63		8.0	3.7	ug/L	8		8260B	Total/NA
Trichloroethene	18		8.0	3.5	ug/L	8		8260B	Total/NA
Vinyl chloride	8.8		8.0	3.6	ug/L	8		8260B	Total/NA

Client Sample ID: SL-9_071321

Lab Sample ID: 240-152869-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.1	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	48		5.0	2.3	ug/L	5		8260B	Total/NA
Trichloroethene	15		5.0	2.2	ug/L	5		8260B	Total/NA
Vinyl chloride	6.7		5.0	2.3	ug/L	5		8260B	Total/NA

Client Sample ID: SL-10_071321

Lab Sample ID: 240-152869-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	35		1.0	0.46	ug/L	1		8260B	Total/NA
Trichloroethene	12		1.0	0.44	ug/L	1		8260B	Total/NA
Vinyl chloride	6.0		1.0	0.45	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-11_071321

Lab Sample ID: 240-152869-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	28		1.7	0.77	ug/L	1.67		8260B	Total/NA
Trichloroethene	10		1.7	0.73	ug/L	1.67		8260B	Total/NA
Vinyl chloride	4.0		1.7	0.75	ug/L	1.67		8260B	Total/NA

Client Sample ID: SL-12_071321

Lab Sample ID: 240-152869-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	26		2.0	0.92	ug/L	2		8260B	Total/NA
Trichloroethene	9.0		2.0	0.88	ug/L	2		8260B	Total/NA
Vinyl chloride	3.9		2.0	0.90	ug/L	2		8260B	Total/NA

Client Sample ID: DUP-01

Lab Sample ID: 240-152869-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.6	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	110		4.0	1.8	ug/L	4		8260B	Total/NA
Trichloroethene	26		4.0	1.8	ug/L	4		8260B	Total/NA
Vinyl chloride	18		4.0	1.8	ug/L	4		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-152869-1

Date Collected: 07/13/21 00:00

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/20/21 13:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			07/20/21 13:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/20/21 13:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/20/21 13:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			07/20/21 13:30	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			07/20/21 13:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	121		75 - 130		07/20/21 13:30	1
4-Bromofluorobenzene (Surr)	75		47 - 134		07/20/21 13:30	1
Toluene-d8 (Surr)	89		69 - 122		07/20/21 13:30	1
Dibromofluoromethane (Surr)	111		78 - 129		07/20/21 13:30	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-15_071321

Lab Sample ID: 240-152869-2

Date Collected: 07/13/21 09:10

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.7	J	2.0	0.86	ug/L			07/20/21 21:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	81		70 - 133		07/20/21 21:14	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/21/21 16:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			07/21/21 16:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/21/21 16:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/21/21 16:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			07/21/21 16:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			07/21/21 16:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	119		75 - 130		07/21/21 16:54	1
4-Bromofluorobenzene (Surr)	87		47 - 134		07/21/21 16:54	1
Toluene-d8 (Surr)	94		69 - 122		07/21/21 16:54	1
Dibromofluoromethane (Surr)	104		78 - 129		07/21/21 16:54	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-14_071321

Lab Sample ID: 240-152869-3

Date Collected: 07/13/21 09:40

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			07/20/21 21:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		70 - 133		07/20/21 21:41	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/21/21 17:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			07/21/21 17:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/21/21 17:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/21/21 17:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			07/21/21 17:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			07/21/21 17:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	117		75 - 130		07/21/21 17:16	1
4-Bromofluorobenzene (Surr)	77		47 - 134		07/21/21 17:16	1
Toluene-d8 (Surr)	92		69 - 122		07/21/21 17:16	1
Dibromofluoromethane (Surr)	102		78 - 129		07/21/21 17:16	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-13_071321

Lab Sample ID: 240-152869-4

Date Collected: 07/13/21 10:05

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			07/20/21 22:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		70 - 133		07/20/21 22:09	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/22/21 12:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			07/22/21 12:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/22/21 12:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/22/21 12:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			07/22/21 12:10	1
Vinyl chloride	1.2		1.0	0.45	ug/L			07/22/21 12:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		75 - 130		07/22/21 12:10	1
4-Bromofluorobenzene (Surr)	85		47 - 134		07/22/21 12:10	1
Toluene-d8 (Surr)	90		69 - 122		07/22/21 12:10	1
Dibromofluoromethane (Surr)	99		78 - 129		07/22/21 12:10	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-7_071321

Lab Sample ID: 240-152869-5

Date Collected: 07/13/21 10:30

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			07/20/21 22:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		70 - 133					07/20/21 22:36	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/20/21 13:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			07/20/21 13:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/20/21 13:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/20/21 13:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			07/20/21 13:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			07/20/21 13:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	122		75 - 130					07/20/21 13:52	1
4-Bromofluorobenzene (Surr)	74		47 - 134					07/20/21 13:52	1
Toluene-d8 (Surr)	91		69 - 122					07/20/21 13:52	1
Dibromofluoromethane (Surr)	112		78 - 129					07/20/21 13:52	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-6_071321

Lab Sample ID: 240-152869-6

Date Collected: 07/13/21 10:55

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			07/20/21 23:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		70 - 133					07/20/21 23:04	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/20/21 14:14	1
cis-1,2-Dichloroethene	5.2		1.0	0.46	ug/L			07/20/21 14:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/20/21 14:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/20/21 14:14	1
Trichloroethene	0.96	J	1.0	0.44	ug/L			07/20/21 14:14	1
Vinyl chloride	0.80	J	1.0	0.45	ug/L			07/20/21 14:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	124		75 - 130					07/20/21 14:14	1
4-Bromofluorobenzene (Surr)	74		47 - 134					07/20/21 14:14	1
Toluene-d8 (Surr)	92		69 - 122					07/20/21 14:14	1
Dibromofluoromethane (Surr)	117		78 - 129					07/20/21 14:14	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-5_071321

Lab Sample ID: 240-152869-7

Date Collected: 07/13/21 12:10

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.91	J	2.0	0.86	ug/L			07/20/21 23:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		70 - 133					07/20/21 23:31	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	2.5	ug/L			07/20/21 14:35	5
cis-1,2-Dichloroethene	81		5.0	2.3	ug/L			07/20/21 14:35	5
Tetrachloroethene	5.0	U	5.0	2.2	ug/L			07/20/21 14:35	5
trans-1,2-Dichloroethene	5.0	U	5.0	2.6	ug/L			07/20/21 14:35	5
Trichloroethene	20		5.0	2.2	ug/L			07/20/21 14:35	5
Vinyl chloride	10		5.0	2.3	ug/L			07/20/21 14:35	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	122		75 - 130					07/20/21 14:35	5
4-Bromofluorobenzene (Surr)	70		47 - 134					07/20/21 14:35	5
Toluene-d8 (Surr)	89		69 - 122					07/20/21 14:35	5
Dibromofluoromethane (Surr)	113		78 - 129					07/20/21 14:35	5

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-8_071321

Lab Sample ID: 240-152869-8

Date Collected: 07/13/21 12:40

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			07/20/21 23:59	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		70 - 133					07/20/21 23:59	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	8.0	U	8.0	3.9	ug/L			07/20/21 14:57	8
cis-1,2-Dichloroethene	63		8.0	3.7	ug/L			07/20/21 14:57	8
Tetrachloroethene	8.0	U	8.0	3.5	ug/L			07/20/21 14:57	8
trans-1,2-Dichloroethene	8.0	U	8.0	4.1	ug/L			07/20/21 14:57	8
Trichloroethene	18		8.0	3.5	ug/L			07/20/21 14:57	8
Vinyl chloride	8.8		8.0	3.6	ug/L			07/20/21 14:57	8
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		75 - 130					07/20/21 14:57	8
4-Bromofluorobenzene (Surr)	76		47 - 134					07/20/21 14:57	8
Toluene-d8 (Surr)	89		69 - 122					07/20/21 14:57	8
Dibromofluoromethane (Surr)	112		78 - 129					07/20/21 14:57	8

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-9_071321

Lab Sample ID: 240-152869-9

Date Collected: 07/13/21 13:00

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.1	J	2.0	0.86	ug/L			07/21/21 00:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		70 - 133					07/21/21 00:26	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	2.5	ug/L			07/20/21 15:19	5
cis-1,2-Dichloroethene	48		5.0	2.3	ug/L			07/20/21 15:19	5
Tetrachloroethene	5.0	U	5.0	2.2	ug/L			07/20/21 15:19	5
trans-1,2-Dichloroethene	5.0	U	5.0	2.6	ug/L			07/20/21 15:19	5
Trichloroethene	15		5.0	2.2	ug/L			07/20/21 15:19	5
Vinyl chloride	6.7		5.0	2.3	ug/L			07/20/21 15:19	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	119		75 - 130					07/20/21 15:19	5
4-Bromofluorobenzene (Surr)	79		47 - 134					07/20/21 15:19	5
Toluene-d8 (Surr)	89		69 - 122					07/20/21 15:19	5
Dibromofluoromethane (Surr)	110		78 - 129					07/20/21 15:19	5

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-10_071321

Lab Sample ID: 240-152869-10

Date Collected: 07/13/21 13:30

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			07/21/21 00:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		70 - 133					07/21/21 00:53	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/22/21 12:31	1
cis-1,2-Dichloroethene	35		1.0	0.46	ug/L			07/22/21 12:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/22/21 12:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/22/21 12:31	1
Trichloroethene	12		1.0	0.44	ug/L			07/22/21 12:31	1
Vinyl chloride	6.0		1.0	0.45	ug/L			07/22/21 12:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		75 - 130					07/22/21 12:31	1
4-Bromofluorobenzene (Surr)	90		47 - 134					07/22/21 12:31	1
Toluene-d8 (Surr)	90		69 - 122					07/22/21 12:31	1
Dibromofluoromethane (Surr)	98		78 - 129					07/22/21 12:31	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-11_071321

Lab Sample ID: 240-152869-11

Date Collected: 07/13/21 13:50

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			07/21/21 01:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		70 - 133					07/21/21 01:21	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.7	U	1.7	0.82	ug/L			07/22/21 12:53	1.67
cis-1,2-Dichloroethene	28		1.7	0.77	ug/L			07/22/21 12:53	1.67
Tetrachloroethene	1.7	U	1.7	0.73	ug/L			07/22/21 12:53	1.67
trans-1,2-Dichloroethene	1.7	U	1.7	0.85	ug/L			07/22/21 12:53	1.67
Trichloroethene	10		1.7	0.73	ug/L			07/22/21 12:53	1.67
Vinyl chloride	4.0		1.7	0.75	ug/L			07/22/21 12:53	1.67
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		75 - 130					07/22/21 12:53	1.67
4-Bromofluorobenzene (Surr)	94		47 - 134					07/22/21 12:53	1.67
Toluene-d8 (Surr)	94		69 - 122					07/22/21 12:53	1.67
Dibromofluoromethane (Surr)	101		78 - 129					07/22/21 12:53	1.67

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-12_071321

Lab Sample ID: 240-152869-12

Date Collected: 07/13/21 14:05

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			07/21/21 01:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		70 - 133					07/21/21 01:48	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	2.0	U	2.0	0.98	ug/L			07/22/21 13:15	2
cis-1,2-Dichloroethene	26		2.0	0.92	ug/L			07/22/21 13:15	2
Tetrachloroethene	2.0	U	2.0	0.88	ug/L			07/22/21 13:15	2
trans-1,2-Dichloroethene	2.0	U	2.0	1.0	ug/L			07/22/21 13:15	2
Trichloroethene	9.0		2.0	0.88	ug/L			07/22/21 13:15	2
Vinyl chloride	3.9		2.0	0.90	ug/L			07/22/21 13:15	2
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		75 - 130					07/22/21 13:15	2
4-Bromofluorobenzene (Surr)	95		47 - 134					07/22/21 13:15	2
Toluene-d8 (Surr)	91		69 - 122					07/22/21 13:15	2
Dibromofluoromethane (Surr)	97		78 - 129					07/22/21 13:15	2

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: DUP-01

Lab Sample ID: 240-152869-13

Date Collected: 07/13/21 00:00

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.6	J	2.0	0.86	ug/L			07/21/21 02:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		70 - 133					07/21/21 02:16	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	4.0	U	4.0	2.0	ug/L			07/22/21 13:37	4
cis-1,2-Dichloroethene	110		4.0	1.8	ug/L			07/22/21 13:37	4
Tetrachloroethene	4.0	U	4.0	1.8	ug/L			07/22/21 13:37	4
trans-1,2-Dichloroethene	4.0	U	4.0	2.0	ug/L			07/22/21 13:37	4
Trichloroethene	26		4.0	1.8	ug/L			07/22/21 13:37	4
Vinyl chloride	18		4.0	1.8	ug/L			07/22/21 13:37	4
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		75 - 130					07/22/21 13:37	4
4-Bromofluorobenzene (Surr)	91		47 - 134					07/22/21 13:37	4
Toluene-d8 (Surr)	90		69 - 122					07/22/21 13:37	4
Dibromofluoromethane (Surr)	92		78 - 129					07/22/21 13:37	4

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (75-130)	BFB (47-134)	TOL (69-122)	DBFM (78-129)
240-152869-1	TRIP BLANK	121	75	89	111
240-152869-2	SL-15_071321	119	87	94	104
240-152869-3	SL-14_071321	117	77	92	102
240-152869-4	SL-13_071321	110	85	90	99
240-152869-5	SL-7_071321	122	74	91	112
240-152869-6	SL-6_071321	124	74	92	117
240-152869-7	SL-5_071321	122	70	89	113
240-152869-8	SL-8_071321	120	76	89	112
240-152869-8 MS	SL-8_071321	95	99	100	91
240-152869-8 MSD	SL-8_071321	97	100	99	92
240-152869-9	SL-9_071321	119	79	89	110
240-152869-10	SL-10_071321	107	90	90	98
240-152869-11	SL-11_071321	109	94	94	101
240-152869-12	SL-12_071321	107	95	91	97
240-152869-13	DUP-01	105	91	90	92
240-152897-G-7 MS	Matrix Spike	103	99	99	94
240-152897-I-7 MSD	Matrix Spike Duplicate	99	97	98	92
LCS 240-495759/4	Lab Control Sample	104	102	105	97
LCS 240-495964/4	Lab Control Sample	102	99	100	94
LCS 240-496148/4	Lab Control Sample	98	100	97	91
MB 240-495759/7	Method Blank	123	70	89	109
MB 240-495964/7	Method Blank	115	81	93	102
MB 240-496148/7	Method Blank	111	80	92	98

Surrogate Legend

- DCA = 1,2-Dichloroethane-d4 (Surr)
- BFB = 4-Bromofluorobenzene (Surr)
- TOL = Toluene-d8 (Surr)
- DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		DCA (70-133)
240-152869-2	SL-15_071321	81
240-152869-3	SL-14_071321	87
240-152869-4	SL-13_071321	84
240-152869-5	SL-7_071321	83
240-152869-6	SL-6_071321	86
240-152869-7	SL-5_071321	86
240-152869-8	SL-8_071321	84
240-152869-9	SL-9_071321	85
240-152869-10	SL-10_071321	85
240-152869-11	SL-11_071321	86
240-152869-12	SL-12_071321	85
240-152869-13	DUP-01	83
500-202418-B-11 MS	Matrix Spike	79
500-202418-C-11 MSD	Matrix Spike Duplicate	78

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (70-133)
LCS 240-495864/4	Lab Control Sample	83
MB 240-495864/5	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-495759/7
Matrix: Water
Analysis Batch: 495759

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/20/21 11:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			07/20/21 11:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/20/21 11:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/20/21 11:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			07/20/21 11:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			07/20/21 11:37	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	123		75 - 130		07/20/21 11:37	1
4-Bromofluorobenzene (Surr)	70		47 - 134		07/20/21 11:37	1
Toluene-d8 (Surr)	89		69 - 122		07/20/21 11:37	1
Dibromofluoromethane (Surr)	109		78 - 129		07/20/21 11:37	1

Lab Sample ID: LCS 240-495759/4
Matrix: Water
Analysis Batch: 495759

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	9.59		ug/L		96	73 - 129
cis-1,2-Dichloroethene	10.0	10.6		ug/L		106	75 - 124
Tetrachloroethene	10.0	9.93		ug/L		99	70 - 125
trans-1,2-Dichloroethene	10.0	10.9		ug/L		109	74 - 130
Trichloroethene	10.0	9.74		ug/L		97	71 - 121
Vinyl chloride	10.0	11.6		ug/L		116	61 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	104		75 - 130
4-Bromofluorobenzene (Surr)	102		47 - 134
Toluene-d8 (Surr)	105		69 - 122
Dibromofluoromethane (Surr)	97		78 - 129

Lab Sample ID: 240-152869-8 MS
Matrix: Water
Analysis Batch: 495759

Client Sample ID: SL-8_071321
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	8.0	U	80.0	63.5		ug/L		79	64 - 132
cis-1,2-Dichloroethene	63		80.0	138		ug/L		93	68 - 121
Tetrachloroethene	8.0	U	80.0	67.1		ug/L		84	52 - 129
trans-1,2-Dichloroethene	8.0	U	80.0	81.5		ug/L		102	69 - 126
Trichloroethene	18		80.0	89.7		ug/L		89	56 - 124
Vinyl chloride	8.8		80.0	84.1		ug/L		94	49 - 136

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		75 - 130
4-Bromofluorobenzene (Surr)	99		47 - 134
Toluene-d8 (Surr)	100		69 - 122

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-152869-8 MS
Matrix: Water
Analysis Batch: 495759

Client Sample ID: SL-8_071321
Prep Type: Total/NA

<i>Surrogate</i>	<i>%Recovery</i>	<i>MS MS Qualifier</i>	<i>Limits</i>
<i>Dibromofluoromethane (Surr)</i>	91		78 - 129

Lab Sample ID: 240-152869-8 MSD
Matrix: Water
Analysis Batch: 495759

Client Sample ID: SL-8_071321
Prep Type: Total/NA

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MSD Result</i>	<i>MSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
1,1-Dichloroethene	8.0	U	80.0	64.9		ug/L		81	64 - 132	2	35
cis-1,2-Dichloroethene	63		80.0	142		ug/L		99	68 - 121	3	35
Tetrachloroethene	8.0	U	80.0	68.2		ug/L		85	52 - 129	2	35
trans-1,2-Dichloroethene	8.0	U	80.0	83.9		ug/L		105	69 - 126	3	35
Trichloroethene	18		80.0	90.9		ug/L		91	56 - 124	1	35
Vinyl chloride	8.8		80.0	88.3		ug/L		99	49 - 136	5	35

<i>Surrogate</i>	<i>%Recovery</i>	<i>MSD MSD Qualifier</i>	<i>Limits</i>
<i>1,2-Dichloroethane-d4 (Surr)</i>	97		75 - 130
<i>4-Bromofluorobenzene (Surr)</i>	100		47 - 134
<i>Toluene-d8 (Surr)</i>	99		69 - 122
<i>Dibromofluoromethane (Surr)</i>	92		78 - 129

Lab Sample ID: MB 240-495964/7
Matrix: Water
Analysis Batch: 495964

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

<i>Analyte</i>	<i>MB Result</i>	<i>MB Qualifier</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/21/21 15:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			07/21/21 15:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/21/21 15:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/21/21 15:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			07/21/21 15:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			07/21/21 15:29	1

<i>Surrogate</i>	<i>%Recovery</i>	<i>MB MB Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>1,2-Dichloroethane-d4 (Surr)</i>	115		75 - 130		07/21/21 15:29	1
<i>4-Bromofluorobenzene (Surr)</i>	81		47 - 134		07/21/21 15:29	1
<i>Toluene-d8 (Surr)</i>	93		69 - 122		07/21/21 15:29	1
<i>Dibromofluoromethane (Surr)</i>	102		78 - 129		07/21/21 15:29	1

Lab Sample ID: LCS 240-495964/4
Matrix: Water
Analysis Batch: 495964

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

<i>Analyte</i>	<i>Spike Added</i>	<i>LCS Result</i>	<i>LCS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>
1,1-Dichloroethene	10.0	9.37		ug/L		94	73 - 129
cis-1,2-Dichloroethene	10.0	11.1		ug/L		111	75 - 124
Tetrachloroethene	10.0	9.50		ug/L		95	70 - 125
trans-1,2-Dichloroethene	10.0	10.9		ug/L		109	74 - 130
Trichloroethene	10.0	10.1		ug/L		101	71 - 121

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-495964/4
Matrix: Water
Analysis Batch: 495964

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vinyl chloride	10.0	11.3		ug/L		113	61 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	102		75 - 130
4-Bromofluorobenzene (Surr)	99		47 - 134
Toluene-d8 (Surr)	100		69 - 122
Dibromofluoromethane (Surr)	94		78 - 129

Lab Sample ID: 240-152897-G-7 MS
Matrix: Water
Analysis Batch: 495964

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	103		75 - 130
4-Bromofluorobenzene (Surr)	99		47 - 134
Toluene-d8 (Surr)	99		69 - 122
Dibromofluoromethane (Surr)	94		78 - 129

Lab Sample ID: 240-152897-I-7 MSD
Matrix: Water
Analysis Batch: 495964

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	99		75 - 130
4-Bromofluorobenzene (Surr)	97		47 - 134
Toluene-d8 (Surr)	98		69 - 122
Dibromofluoromethane (Surr)	92		78 - 129

Lab Sample ID: MB 240-496148/7
Matrix: Water
Analysis Batch: 496148

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/22/21 11:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			07/22/21 11:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/22/21 11:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/22/21 11:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			07/22/21 11:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			07/22/21 11:15	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		75 - 130		07/22/21 11:15	1
4-Bromofluorobenzene (Surr)	80		47 - 134		07/22/21 11:15	1
Toluene-d8 (Surr)	92		69 - 122		07/22/21 11:15	1
Dibromofluoromethane (Surr)	98		78 - 129		07/22/21 11:15	1

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-496148/4
Matrix: Water
Analysis Batch: 496148

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	9.04		ug/L		90	73 - 129
cis-1,2-Dichloroethene	10.0	10.5		ug/L		105	75 - 124
Tetrachloroethene	10.0	8.64		ug/L		86	70 - 125
trans-1,2-Dichloroethene	10.0	10.5		ug/L		105	74 - 130
Trichloroethene	10.0	9.72		ug/L		97	71 - 121
Vinyl chloride	10.0	10.1		ug/L		101	61 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		75 - 130
4-Bromofluorobenzene (Surr)	100		47 - 134
Toluene-d8 (Surr)	97		69 - 122
Dibromofluoromethane (Surr)	91		78 - 129

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-495864/5
Matrix: Water
Analysis Batch: 495864

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			07/20/21 20:19	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		70 - 133		07/20/21 20:19	1

Lab Sample ID: LCS 240-495864/4
Matrix: Water
Analysis Batch: 495864

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	8.35		ug/L		83	80 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	83		70 - 133

Lab Sample ID: 500-202418-B-11 MS
Matrix: Water
Analysis Batch: 495864

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	180		10.0	180	4	ug/L		-35	46 - 170

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	79		70 - 133

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 500-202418-C-11 MSD

Client Sample ID: Matrix Spike Duplicate

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 495864

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	180		10.0	185	4	ug/L		19	46 - 170	3	26
<i>MSD MSD</i>											
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	78		70 - 133								

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

GC/MS VOA

Analysis Batch: 495759

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-152869-1	TRIP BLANK	Total/NA	Water	8260B	
240-152869-5	SL-7_071321	Total/NA	Water	8260B	
240-152869-6	SL-6_071321	Total/NA	Water	8260B	
240-152869-7	SL-5_071321	Total/NA	Water	8260B	
240-152869-8	SL-8_071321	Total/NA	Water	8260B	
240-152869-9	SL-9_071321	Total/NA	Water	8260B	
MB 240-495759/7	Method Blank	Total/NA	Water	8260B	
LCS 240-495759/4	Lab Control Sample	Total/NA	Water	8260B	
240-152869-8 MS	SL-8_071321	Total/NA	Water	8260B	
240-152869-8 MSD	SL-8_071321	Total/NA	Water	8260B	

Analysis Batch: 495864

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-152869-2	SL-15_071321	Total/NA	Water	8260B SIM	
240-152869-3	SL-14_071321	Total/NA	Water	8260B SIM	
240-152869-4	SL-13_071321	Total/NA	Water	8260B SIM	
240-152869-5	SL-7_071321	Total/NA	Water	8260B SIM	
240-152869-6	SL-6_071321	Total/NA	Water	8260B SIM	
240-152869-7	SL-5_071321	Total/NA	Water	8260B SIM	
240-152869-8	SL-8_071321	Total/NA	Water	8260B SIM	
240-152869-9	SL-9_071321	Total/NA	Water	8260B SIM	
240-152869-10	SL-10_071321	Total/NA	Water	8260B SIM	
240-152869-11	SL-11_071321	Total/NA	Water	8260B SIM	
240-152869-12	SL-12_071321	Total/NA	Water	8260B SIM	
240-152869-13	DUP-01	Total/NA	Water	8260B SIM	
MB 240-495864/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-495864/4	Lab Control Sample	Total/NA	Water	8260B SIM	
500-202418-B-11 MS	Matrix Spike	Total/NA	Water	8260B SIM	
500-202418-C-11 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 495964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-152869-2	SL-15_071321	Total/NA	Water	8260B	
240-152869-3	SL-14_071321	Total/NA	Water	8260B	
MB 240-495964/7	Method Blank	Total/NA	Water	8260B	
LCS 240-495964/4	Lab Control Sample	Total/NA	Water	8260B	
240-152897-G-7 MS	Matrix Spike	Total/NA	Water	8260B	
240-152897-I-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 496148

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-152869-4	SL-13_071321	Total/NA	Water	8260B	
240-152869-10	SL-10_071321	Total/NA	Water	8260B	
240-152869-11	SL-11_071321	Total/NA	Water	8260B	
240-152869-12	SL-12_071321	Total/NA	Water	8260B	
240-152869-13	DUP-01	Total/NA	Water	8260B	
MB 240-496148/7	Method Blank	Total/NA	Water	8260B	
LCS 240-496148/4	Lab Control Sample	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: TRIP BLANK

Date Collected: 07/13/21 00:00

Date Received: 07/15/21 08:00

Lab Sample ID: 240-152869-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	495759	07/20/21 13:30	LEE	TAL CAN

Client Sample ID: SL-15_071321

Date Collected: 07/13/21 09:10

Date Received: 07/15/21 08:00

Lab Sample ID: 240-152869-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	495964	07/21/21 16:54	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	495864	07/20/21 21:14	CS	TAL CAN

Client Sample ID: SL-14_071321

Date Collected: 07/13/21 09:40

Date Received: 07/15/21 08:00

Lab Sample ID: 240-152869-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	495964	07/21/21 17:16	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	495864	07/20/21 21:41	CS	TAL CAN

Client Sample ID: SL-13_071321

Date Collected: 07/13/21 10:05

Date Received: 07/15/21 08:00

Lab Sample ID: 240-152869-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	496148	07/22/21 12:10	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	495864	07/20/21 22:09	CS	TAL CAN

Client Sample ID: SL-7_071321

Date Collected: 07/13/21 10:30

Date Received: 07/15/21 08:00

Lab Sample ID: 240-152869-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	495759	07/20/21 13:52	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	495864	07/20/21 22:36	CS	TAL CAN

Client Sample ID: SL-6_071321

Date Collected: 07/13/21 10:55

Date Received: 07/15/21 08:00

Lab Sample ID: 240-152869-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	495759	07/20/21 14:14	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	495864	07/20/21 23:04	CS	TAL CAN

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-5_071321

Lab Sample ID: 240-152869-7

Date Collected: 07/13/21 12:10

Matrix: Water

Date Received: 07/15/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	495759	07/20/21 14:35	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	495864	07/20/21 23:31	CS	TAL CAN

Client Sample ID: SL-8_071321

Lab Sample ID: 240-152869-8

Date Collected: 07/13/21 12:40

Matrix: Water

Date Received: 07/15/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		8	495759	07/20/21 14:57	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	495864	07/20/21 23:59	CS	TAL CAN

Client Sample ID: SL-9_071321

Lab Sample ID: 240-152869-9

Date Collected: 07/13/21 13:00

Matrix: Water

Date Received: 07/15/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	495759	07/20/21 15:19	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	495864	07/21/21 00:26	CS	TAL CAN

Client Sample ID: SL-10_071321

Lab Sample ID: 240-152869-10

Date Collected: 07/13/21 13:30

Matrix: Water

Date Received: 07/15/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	496148	07/22/21 12:31	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	495864	07/21/21 00:53	CS	TAL CAN

Client Sample ID: SL-11_071321

Lab Sample ID: 240-152869-11

Date Collected: 07/13/21 13:50

Matrix: Water

Date Received: 07/15/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1.67	496148	07/22/21 12:53	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	495864	07/21/21 01:21	CS	TAL CAN

Client Sample ID: SL-12_071321

Lab Sample ID: 240-152869-12

Date Collected: 07/13/21 14:05

Matrix: Water

Date Received: 07/15/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		2	496148	07/22/21 13:15	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	495864	07/21/21 01:48	CS	TAL CAN

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: DUP-01
Date Collected: 07/13/21 00:00
Date Received: 07/15/21 08:00

Lab Sample ID: 240-152869-13
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		4	496148	07/22/21 13:37	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	495864	07/21/21 02:16	CS	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

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Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22
Illinois	NELAP	200004	07-31-21
Iowa	State	421	06-01-21 *
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22
Kentucky (WW)	State	KY98016	12-31-21
Minnesota	NELAP	OH00048	12-31-21
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	03-31-22
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-23-22
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-22
West Virginia DEP	State	210	12-31-21

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



Chain of Custody Record

10/1.1

TestAmerica Laboratory location: Brighton -- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Client Contact		Regulatory program:		Other	
Company Name: Arcadis	Client Project Manager: Kris Hinskey	DW	NPDES	RCRA	Other
Address: 28550 Cabot Drive, Suite 500	Site Contact: Julia McClafferty	Lab Contact: Mike DeMonico			
City/State/Zip: Novi, MI, 48377	Telephone: 248-994-2240	Telephone: 330-497-9396			
Phone: 248-994-2240	Email: kristoffer.hinskey@arcadis.com	Analyses			
Project Name: Ford LTP Utility Corridor Sampling	Sampler Name: Andrew Banitt, Corey Pearson	TCE 8260B			
Project Number: 30080642.701.04	Method of Shipment/Carrier:	PCE 8260B			
PO # 30080642.701.04	Shipping/Tracking No:	Trans-1,2-DCE 8260B			
		cis-1,2-DCE 8260B			
		1-DCE 8260B			
		Composite C/Grab			
		Filtered Sample (Y/N)			
		1,4-Dioxane 8260B SIM			
		Vinyl Chloride 8260B			
		1,4-Dioxane 8260B SIM			
TRIP BLANK	---	---	---	---	---
SL 15_071321	7/13/21	0910	X	X	X
SL 14_071321	7/13/21	0940	X	X	X
SL 13_071321	7/13/21	1005	X	X	X
SL 7_071321	7/13/21	1030	X	X	X
SL-6_071321	7/13/21	1055	X	X	X
SL-5_071321	7/13/21	1210	X	X	X
SL-8_071321	7/13/21	1240	X	X	X
SL-9_071321	7/13/21	1300	X	X	X
SL 10_071321	7/13/21	1330	X	X	X

Sample Specific Notes:
1 Trip Blank
3 VOAs for 8260B
3 VOAs for 8260B SIM

For lab use only: 1 of 2 CUC

Walk-in client
Lab sampling
Job/SDG No:

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month):
Return to Client Disposal By Lab Archive For _____ Month

Possible Hazard Identification:
 Non-Hazard
 Irritant
 Corrosive
 Flammable
 Toxic
 Unknown

Special Instructions/OC Requirements & Comments:
All Samples collected from sanitary sewers (contain sanitary waste)

Relinquished by: *Andrew Banitt* Date/Time: 7/14/21 1230 Company: Arcadis
Relinquished by: *Julia McClafferty* Date/Time: 7/14/21 1237 Company: EIA
Relinquished by: *Julia McClafferty* Date/Time: 7/15/21 0800 Company: EIA



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Chain of Custody Record

1.0 of 1.1

TestAmerica Laboratory location: Brighton -- 10448 Citation Drive, Suite 200 Brighton, MI 48116 / 810-229-2763

Client Contact Company Name: Arcadis Address: 28550 Cabot Drive, Suite 500 City/State/Zip: Novi, MI, 48377 Phone: 248-994-2240 Project Name: Ford LTP Utility Corridor Sampling Project Number: 30080642.701.04 PO # 30080642.701.04		Regulatory program: DW NPDES RCRA Other Site Contact: Julia McClafferty Telephone: 734-644-5131 Email: kristoffer.hinskey@arcadis.com Sampler Name: Andrew Barritt, Corey Pearson Method of Shipment/Carrier: Shipping/Tracking No:		Lab Contact: Mike DeMonic Telephone: 330-497-9396		TestAmerica Laboratories, Inc. COC No:	
Analysis Turnaround Time TAT: 10 day (entire time in lab)		Containers & Preservatives: H2SO4 HNO3 HCl NaOH ZnAc NaOH Other:		Analyses 1-DCE 8260B cis-1,2-DCE 8260B Trans-1,2-DCE 8260B PCE 8260B TCE 8260B Vinyl Chloride 8260B 1,4-Dioxane 8260B SIM		For lab use only Walk-in client Lab sampling Job/SDG No: Sample Specific Notes Special Instructions:	
Sample Identification		Matrix Air Aqueous Sediment Solid Other:		Filtered Sample (Y/N) Composite C / Grab G		Sample Specific Notes Special Instructions:	
Sample Date	Sample Time	Matrix	Containers & Preservatives	Filtered Sample (Y/N)	Composite C / Grab G	Analyses	Sample Specific Notes Special Instructions
7/13/21	1350	X	H2SO4 HNO3 HCl NaOH ZnAc NaOH Other:	N	G	X X X X X X X	3 VOAs for 8260B 3 VOAs for 8260B SIM
7/13/21	1405	X	H2SO4 HNO3 HCl NaOH ZnAc NaOH Other:	N	G	X X X X X X X	
7/13/21		X	H2SO4 HNO3 HCl NaOH ZnAc NaOH Other:	N	G	X X X X X X X	
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Irritant <input type="checkbox"/> Flammable <input type="checkbox"/> Corrosive		P, Iron B Unknown		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 _____ Months		All Samples collected from sanitary sewers (contain sanitary waste)	
Relinquished by: <i>John Barritt</i> Date/Time: 7/14/21 1230 Company: Arcadis		Received by: <i>Joseph H</i> Date/Time: 7/14/21 1237 Company: ETA		Relinquished by: <i>Joseph H</i> Date/Time: 7/15-21 0800 Company: ETA		Received in Laboratory by:	

Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # 152809

Client ARCADIS Site Name _____


Cooler unpacked by
JUSTIN H

Cooler Received on 7-15-21 Opened on 7-15-21

FedEx 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours Drop-off Date/Time Storage Location

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____
 Packing material used Bubble Wrap Foam Plastic Bag None Other _____
 COOLANT: Wet Ice Blue Ice Dry Ice Water None

- 1 Cooler temperature upon receipt See Multiple Cooler Form
 IR GUN# IR-11 (CF +0.1 °C) Observed Cooler Temp 1.0 °C Corrected Cooler Temp 1.1 °C
 IR GUN #IR-12 (CF +0.2 °C) Observed Cooler Temp _____ °C Corrected Cooler Temp _____ °C
- 2 Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
 -Were tamper/custody seals intact and uncompromised? Yes No NA
- 3 Shippers' packing slip attached to the cooler(s)? Yes No
- 4 Did custody papers accompany the sample(s)? Yes No
- 5 Were the custody papers relinquished & signed in the appropriate place? Yes No
- 6 Was/were the person(s) who collected the samples clearly identified on the COC? Yes No JMH 7-16-21
- 7 Did all bottles arrive in good condition (Unbroken)? Yes No
- 8 Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
- 9 For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
- 10 Were correct bottle(s) used for the test(s) indicated? Yes No
- 11 Sufficient quantity received to perform indicated analyses? Yes No
- 12 Are these work share samples and all listed on the COC? Yes No
- If yes, Questions 13-17 have been checked at the originating laboratory
- 13 Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC022887
- 14 Were VOAs on the COC? Yes No
- 15 Were air bubbles >6 mm in any VOA vials? Yes No NA  ← Larger than this
- 16 Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0303101F Yes No
- 17 Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page Samples processed by _____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired

Sample(s) _____ were received in a broken container

Sample(s) _____ were received with bubble >6 mm in diameter (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory

Time preserved _____ Preservative(s) added/Lot number(s) _____

VOA Sample Preservation - Date/Time VOAs Frozen _____

DATA VERIFICATION REPORT



July 31, 2021

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2021 Utility Corridor Evaluation Vapor Testing
Project number: 30080642.701.04 EAT-WA03
Event Specific Scope of Work References: Sample COC
Laboratory: TestAmerica - North Canton
Laboratory submittal: 152869-1
Sample date: 2021-07-13
Report received by CADENA: 2021-07-30
Initial Data Verification completed by CADENA: 2021-07-31
Number of Samples:13
Sample Matrices:Water
Test Categories:GCMS VOC

Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GC VOC SIM QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

GC VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

GC VOC QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

Reportable Results Only

CADENA Project ID: E205162
 Laboratory: TestAmerica - North Canton
 Laboratory Submit#: 152869-1

Analyte	CAS No.	7/13/2021		7/13/2021		7/13/2021		7/13/2021		7/13/2021		7/13/2021		7/13/2021		7/13/2021		7/13/2021		7/13/2021		7/13/2021		7/13/2021		7/13/2021		7/13/2021		7/13/2021		7/13/2021		7/13/2021		7/13/2021																	
		Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier												
		Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid												
GC/MS VOC																																																					
<u>OSW-8200</u>																																																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.7	ug/l	---	ND	2.0	ug/l	---	ND	4.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	8.0	ug/l	---	ND	5.0	ug/l	---								
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	35	1.0	ug/l	---	28	1.7	ug/l	---	26	2.0	ug/l	---	110	4.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	5.2	1.0	ug/l	---	81	5.0	ug/l	---	63	8.0	ug/l	---	48	5.0	ug/l	---				
Tetrachloroethene	123-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.7	ug/l	---	ND	2.0	ug/l	---	ND	4.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	8.0	ug/l	---	ND	5.0	ug/l	---				
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.7	ug/l	---	ND	2.0	ug/l	---	ND	4.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	8.0	ug/l	---	ND	5.0	ug/l	---				
Trichloroethene	79-01-6	ND	1.0	ug/l	---	12	1.0	ug/l	---	10	1.7	ug/l	---	9.0	2.0	ug/l	---	26	4.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.96	1.0	ug/l	J	20	5.0	ug/l	---	18	8.0	ug/l	---	15	5.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	6.0	1.0	ug/l	---	4.0	1.7	ug/l	---	3.9	2.0	ug/l	---	18	4.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.2	1.0	ug/l	---	ND	1.0	ug/l	---	0.80	1.0	ug/l	J	10	5.0	ug/l	---	8.8	8.0	ug/l	---	6.7	5.0	ug/l	---
<u>OSW-820885m</u>																																																					
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	1.6	2.0	ug/l	J	1.7	2.0	ug/l	J	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	0.91	2.0	ug/l	J	ND	2.0	ug/l	---	1.1	2.0	ug/l	J

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

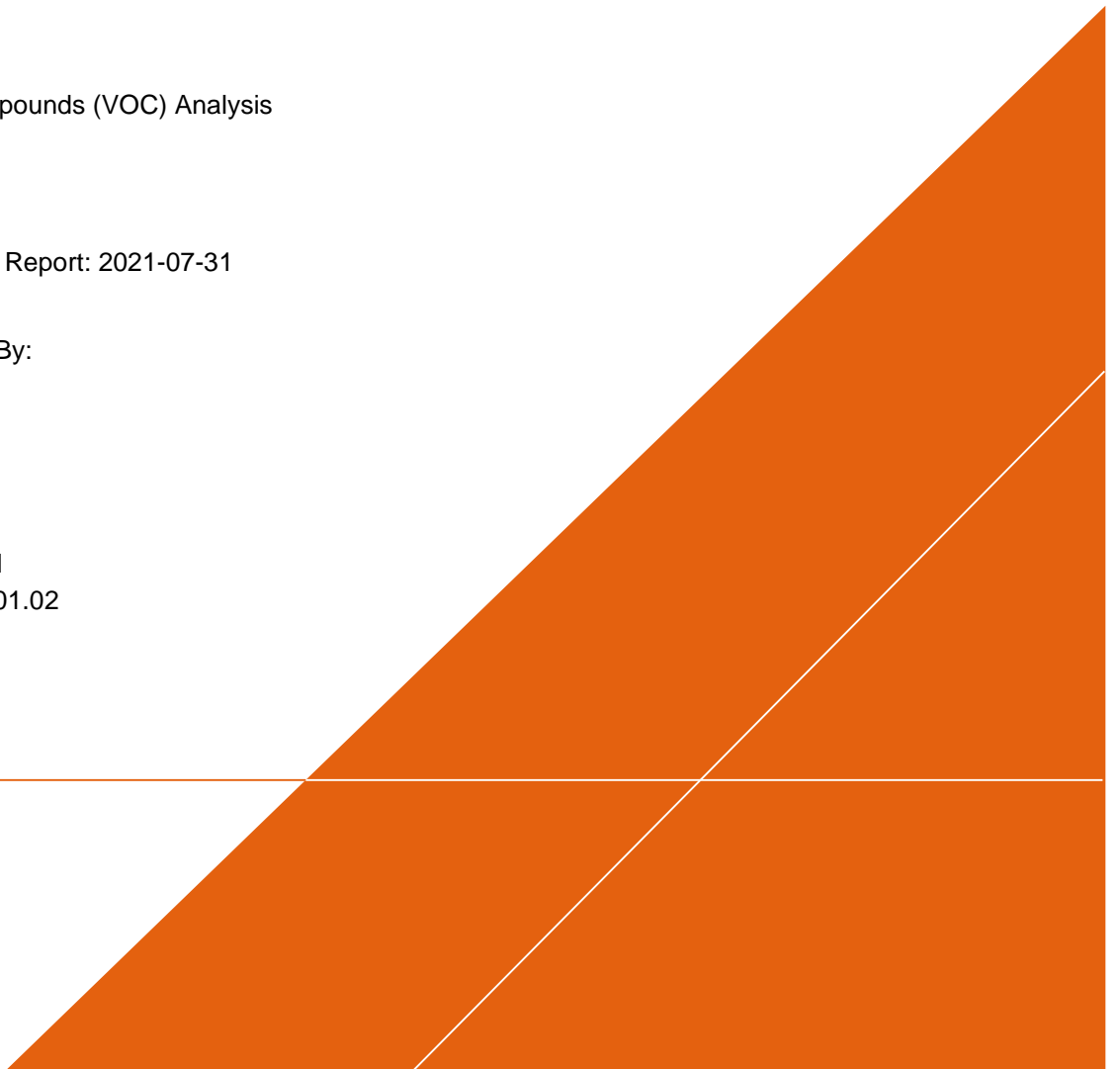
Volatile Organic Compounds (VOC) Analysis

SDG # 240-152869-1

CADENA Verification Report: 2021-07-31

Analyses Performed By:
TestAmerica
Edison, New Jersey

Report #42340R
Review Level: Tier III
Project: 30080642.701.02



DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-152869-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						VOC (Full Scan)	VOC (SIM)	MISC
240-152869-1	TRIP BLANK	240-152869-1	Water	7/13/2021		X		
	SL-15_071321	240-152869-1	Water	7/13/2021		X	X	
	SL-14_071321	240-152869-1	Water	7/13/2021		X	X	
	SL-13_071321	240-152869-1	Water	7/13/2021		X	X	
	SL-7_071321	240-152869-1	Water	7/13/2021		X	X	
	SL-6_071321	240-152869-1	Water	7/13/2021		X	X	
	SL-5_071321	240-152869-1	Water	7/13/2021		X	X	
	SL-8_071321	240-152869-1	Water	7/13/2021		X	X	
	SL-9_071321	240-152869-1	Water	7/13/2021		X	X	
	SL-10_071321	240-152869-1	Water	7/13/2021		X	X	
	SL-11_071321	240-152869-1	Water	7/13/2021		X	X	
	SL-12_071321	240-152869-1	Water	7/13/2021		X	X	
	DUP-01	240-152869-1	Water	7/13/2021	SL-5_071321	X	X	

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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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260B and 8260B SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) 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 8260B/8260B-SIM	Water	14 days from collection to analysis (7 days if unpreserved)	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criterion.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample Locations	Initial/Continuing	Compound	Criteria
SL-15_071321 SL-14_071321	CCV %D	Vinyl chloride	+20.1%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

DATA REVIEW

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01 ¹	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01 ¹	Non-detect	No Action
		Detect	
Initial Calibration	%RSD > 15% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD >90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D >90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

¹ RRF of 0.01 only applies to compounds which are typically poor responding compounds (i.e., ketones, 1,4-dioxane, etc.)

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within 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 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.

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Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SL-5_071321/DUP 01	1,4-Dioxane	0.91 J	1.6 J	AC
	cis-1,2-Dichloroethene	81	110	30.4%
	Trichloroethene	20	26	AC
	Vinyl chloride	10	18	AC

Notes:

AC Acceptable

The compound cis-1,2-Dichloroethene associated with sample locations SL-5_071321 and DUP 01 exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. 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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260B/8260B-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X	X		
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:



DATE: August 5, 2021

PEER REVIEW: Joseph C. Houser

DATE: August 11, 2021



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



Chain of Custody Record

1.0 of 1.1

TestAmerica Laboratory location: Brighton -- 10448 Citation Drive, Suite 200 Brighton, MI 48116 / 810-229-2763

Client Contact Company Name: Arcadis Address: 28550 Cabot Drive, Suite 500 City/State/Zip: Novi, MI, 48377 Phone: 248-994-2240 Project Name: Ford LTP Utility Corridor Sampling Project Number: 30080642.701.04 PO # 30080642.701.04		Regulatory program: DW NPDES RCRA Other Site Contact: Julia McClafferty Telephone: 734-644-5131 Lab Contact: Mike DeMonic Telephone: 330-497-9396		TestAmerica Laboratories, Inc. COC No:	
Email: kristoffer.hinskey@arcadis.com Sampler Name: Andrew Barritt, Corey Pearson Method of Shipment/Carrier: Shipping/Tracking No:		Analysis Turnaround Time TAT: 10 day Analysis: Walk-in client, Lab sampling, Job/SDG No:		For lab use only COC:	
Containers & Preservatives: TAT: 10 day Analysis: Walk-in client, Lab sampling, Job/SDG No:		Matrix: Air, Aqueous, Sediment, Solid, Other		Sample Specific Notes Special Instructions:	
Sample Date	Sample Time	Matrix	Sample ID	Analysis	Notes
7/13/21	1350	Air	SL 11_071321	1,4-Dioxane 8260B SIM	3 VOAs for 8260B 3 VOAs for 8260B SIM
7/13/21	1405	Air	SL 12_071321	Vinyl Chloride 8260B	
7/13/21		Air	DUP-01	TCE 8260B	
		Air		PCE 8260B	
		Air		Trans-1,2-DCE 8260B	
		Air		cis-1,2-DCE 8260B	
		Air		1,1-DCE 8260B	
		Air		Composite C / Grab G	
		Air		Filtered Sample (Y/N)	
		Air		1,4-Dioxane 8260B SIM	
		Air		Vinyl Chloride 8260B	
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		Air		TCE 8260B	
		Air		PCE 8260B	
		Air		Trans-1,2-DCE 8260B	
		Air		cis-1,2-DCE 8260B	
		Air		1,1-DCE 8260	

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-152869-1

Date Collected: 07/13/21 00:00

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/20/21 13:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			07/20/21 13:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/20/21 13:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/20/21 13:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			07/20/21 13:30	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			07/20/21 13:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	121		75 - 130		07/20/21 13:30	1
4-Bromofluorobenzene (Surr)	75		47 - 134		07/20/21 13:30	1
Toluene-d8 (Surr)	89		69 - 122		07/20/21 13:30	1
Dibromofluoromethane (Surr)	111		78 - 129		07/20/21 13:30	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-15_071321

Lab Sample ID: 240-152869-2

Date Collected: 07/13/21 09:10

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.7	J	2.0	0.86	ug/L			07/20/21 21:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	81		70 - 133		07/20/21 21:14	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/21/21 16:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			07/21/21 16:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/21/21 16:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/21/21 16:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			07/21/21 16:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			07/21/21 16:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	119		75 - 130		07/21/21 16:54	1
4-Bromofluorobenzene (Surr)	87		47 - 134		07/21/21 16:54	1
Toluene-d8 (Surr)	94		69 - 122		07/21/21 16:54	1
Dibromofluoromethane (Surr)	104		78 - 129		07/21/21 16:54	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-14_071321

Lab Sample ID: 240-152869-3

Date Collected: 07/13/21 09:40

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			07/20/21 21:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		70 - 133		07/20/21 21:41	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/21/21 17:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			07/21/21 17:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/21/21 17:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/21/21 17:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			07/21/21 17:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			07/21/21 17:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	117		75 - 130		07/21/21 17:16	1
4-Bromofluorobenzene (Surr)	77		47 - 134		07/21/21 17:16	1
Toluene-d8 (Surr)	92		69 - 122		07/21/21 17:16	1
Dibromofluoromethane (Surr)	102		78 - 129		07/21/21 17:16	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-13_071321

Lab Sample ID: 240-152869-4

Date Collected: 07/13/21 10:05

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			07/20/21 22:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		70 - 133		07/20/21 22:09	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/22/21 12:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			07/22/21 12:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/22/21 12:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/22/21 12:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			07/22/21 12:10	1
Vinyl chloride	1.2		1.0	0.45	ug/L			07/22/21 12:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		75 - 130		07/22/21 12:10	1
4-Bromofluorobenzene (Surr)	85		47 - 134		07/22/21 12:10	1
Toluene-d8 (Surr)	90		69 - 122		07/22/21 12:10	1
Dibromofluoromethane (Surr)	99		78 - 129		07/22/21 12:10	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-7_071321

Lab Sample ID: 240-152869-5

Date Collected: 07/13/21 10:30

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			07/20/21 22:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		70 - 133					07/20/21 22:36	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/20/21 13:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			07/20/21 13:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/20/21 13:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/20/21 13:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			07/20/21 13:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			07/20/21 13:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	122		75 - 130					07/20/21 13:52	1
4-Bromofluorobenzene (Surr)	74		47 - 134					07/20/21 13:52	1
Toluene-d8 (Surr)	91		69 - 122					07/20/21 13:52	1
Dibromofluoromethane (Surr)	112		78 - 129					07/20/21 13:52	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-6_071321

Lab Sample ID: 240-152869-6

Date Collected: 07/13/21 10:55

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			07/20/21 23:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		70 - 133					07/20/21 23:04	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/20/21 14:14	1
cis-1,2-Dichloroethene	5.2		1.0	0.46	ug/L			07/20/21 14:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/20/21 14:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/20/21 14:14	1
Trichloroethene	0.96	J	1.0	0.44	ug/L			07/20/21 14:14	1
Vinyl chloride	0.80	J	1.0	0.45	ug/L			07/20/21 14:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	124		75 - 130					07/20/21 14:14	1
4-Bromofluorobenzene (Surr)	74		47 - 134					07/20/21 14:14	1
Toluene-d8 (Surr)	92		69 - 122					07/20/21 14:14	1
Dibromofluoromethane (Surr)	117		78 - 129					07/20/21 14:14	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-5_071321

Lab Sample ID: 240-152869-7

Date Collected: 07/13/21 12:10

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.91	J	2.0	0.86	ug/L			07/20/21 23:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		70 - 133					07/20/21 23:31	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	2.5	ug/L			07/20/21 14:35	5
cis-1,2-Dichloroethene	81	J	5.0	2.3	ug/L			07/20/21 14:35	5
Tetrachloroethene	5.0	U	5.0	2.2	ug/L			07/20/21 14:35	5
trans-1,2-Dichloroethene	5.0	U	5.0	2.6	ug/L			07/20/21 14:35	5
Trichloroethene	20		5.0	2.2	ug/L			07/20/21 14:35	5
Vinyl chloride	10		5.0	2.3	ug/L			07/20/21 14:35	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	122		75 - 130					07/20/21 14:35	5
4-Bromofluorobenzene (Surr)	70		47 - 134					07/20/21 14:35	5
Toluene-d8 (Surr)	89		69 - 122					07/20/21 14:35	5
Dibromofluoromethane (Surr)	113		78 - 129					07/20/21 14:35	5

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-8_071321

Lab Sample ID: 240-152869-8

Date Collected: 07/13/21 12:40

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			07/20/21 23:59	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		70 - 133					07/20/21 23:59	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	8.0	U	8.0	3.9	ug/L			07/20/21 14:57	8
cis-1,2-Dichloroethene	63		8.0	3.7	ug/L			07/20/21 14:57	8
Tetrachloroethene	8.0	U	8.0	3.5	ug/L			07/20/21 14:57	8
trans-1,2-Dichloroethene	8.0	U	8.0	4.1	ug/L			07/20/21 14:57	8
Trichloroethene	18		8.0	3.5	ug/L			07/20/21 14:57	8
Vinyl chloride	8.8		8.0	3.6	ug/L			07/20/21 14:57	8
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		75 - 130					07/20/21 14:57	8
4-Bromofluorobenzene (Surr)	76		47 - 134					07/20/21 14:57	8
Toluene-d8 (Surr)	89		69 - 122					07/20/21 14:57	8
Dibromofluoromethane (Surr)	112		78 - 129					07/20/21 14:57	8

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-9_071321

Lab Sample ID: 240-152869-9

Date Collected: 07/13/21 13:00

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.1	J	2.0	0.86	ug/L			07/21/21 00:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		70 - 133					07/21/21 00:26	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	2.5	ug/L			07/20/21 15:19	5
cis-1,2-Dichloroethene	48		5.0	2.3	ug/L			07/20/21 15:19	5
Tetrachloroethene	5.0	U	5.0	2.2	ug/L			07/20/21 15:19	5
trans-1,2-Dichloroethene	5.0	U	5.0	2.6	ug/L			07/20/21 15:19	5
Trichloroethene	15		5.0	2.2	ug/L			07/20/21 15:19	5
Vinyl chloride	6.7		5.0	2.3	ug/L			07/20/21 15:19	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	119		75 - 130					07/20/21 15:19	5
4-Bromofluorobenzene (Surr)	79		47 - 134					07/20/21 15:19	5
Toluene-d8 (Surr)	89		69 - 122					07/20/21 15:19	5
Dibromofluoromethane (Surr)	110		78 - 129					07/20/21 15:19	5

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-10_071321

Lab Sample ID: 240-152869-10

Date Collected: 07/13/21 13:30

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			07/21/21 00:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		70 - 133					07/21/21 00:53	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/22/21 12:31	1
cis-1,2-Dichloroethene	35		1.0	0.46	ug/L			07/22/21 12:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/22/21 12:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/22/21 12:31	1
Trichloroethene	12		1.0	0.44	ug/L			07/22/21 12:31	1
Vinyl chloride	6.0		1.0	0.45	ug/L			07/22/21 12:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		75 - 130					07/22/21 12:31	1
4-Bromofluorobenzene (Surr)	90		47 - 134					07/22/21 12:31	1
Toluene-d8 (Surr)	90		69 - 122					07/22/21 12:31	1
Dibromofluoromethane (Surr)	98		78 - 129					07/22/21 12:31	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-11_071321

Lab Sample ID: 240-152869-11

Date Collected: 07/13/21 13:50

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			07/21/21 01:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		70 - 133					07/21/21 01:21	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.7	U	1.7	0.82	ug/L			07/22/21 12:53	1.67
cis-1,2-Dichloroethene	28		1.7	0.77	ug/L			07/22/21 12:53	1.67
Tetrachloroethene	1.7	U	1.7	0.73	ug/L			07/22/21 12:53	1.67
trans-1,2-Dichloroethene	1.7	U	1.7	0.85	ug/L			07/22/21 12:53	1.67
Trichloroethene	10		1.7	0.73	ug/L			07/22/21 12:53	1.67
Vinyl chloride	4.0		1.7	0.75	ug/L			07/22/21 12:53	1.67
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		75 - 130					07/22/21 12:53	1.67
4-Bromofluorobenzene (Surr)	94		47 - 134					07/22/21 12:53	1.67
Toluene-d8 (Surr)	94		69 - 122					07/22/21 12:53	1.67
Dibromofluoromethane (Surr)	101		78 - 129					07/22/21 12:53	1.67

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: SL-12_071321

Lab Sample ID: 240-152869-12

Date Collected: 07/13/21 14:05

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			07/21/21 01:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		70 - 133					07/21/21 01:48	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	2.0	U	2.0	0.98	ug/L			07/22/21 13:15	2
cis-1,2-Dichloroethene	26		2.0	0.92	ug/L			07/22/21 13:15	2
Tetrachloroethene	2.0	U	2.0	0.88	ug/L			07/22/21 13:15	2
trans-1,2-Dichloroethene	2.0	U	2.0	1.0	ug/L			07/22/21 13:15	2
Trichloroethene	9.0		2.0	0.88	ug/L			07/22/21 13:15	2
Vinyl chloride	3.9		2.0	0.90	ug/L			07/22/21 13:15	2
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		75 - 130					07/22/21 13:15	2
4-Bromofluorobenzene (Surr)	95		47 - 134					07/22/21 13:15	2
Toluene-d8 (Surr)	91		69 - 122					07/22/21 13:15	2
Dibromofluoromethane (Surr)	97		78 - 129					07/22/21 13:15	2

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Utility Corridor Sampling

Job ID: 240-152869-1

Client Sample ID: DUP-01

Lab Sample ID: 240-152869-13

Date Collected: 07/13/21 00:00

Matrix: Water

Date Received: 07/15/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.6	J	2.0	0.86	ug/L			07/21/21 02:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		70 - 133					07/21/21 02:16	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	4.0	U	4.0	2.0	ug/L			07/22/21 13:37	4
cis-1,2-Dichloroethene	110	J	4.0	1.8	ug/L			07/22/21 13:37	4
Tetrachloroethene	4.0	U	4.0	1.8	ug/L			07/22/21 13:37	4
trans-1,2-Dichloroethene	4.0	U	4.0	2.0	ug/L			07/22/21 13:37	4
Trichloroethene	26		4.0	1.8	ug/L			07/22/21 13:37	4
Vinyl chloride	18		4.0	1.8	ug/L			07/22/21 13:37	4
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		75 - 130					07/22/21 13:37	4
4-Bromofluorobenzene (Surr)	91		47 - 134					07/22/21 13:37	4
Toluene-d8 (Surr)	90		69 - 122					07/22/21 13:37	4
Dibromofluoromethane (Surr)	92		78 - 129					07/22/21 13:37	4

10/13/2021
Mr. Jim Tomalia
Arcadis U.S., Inc.
28550 Cabot Dr.
Suite 500
Novi MI 48377

Project Name: Ford LTP
Project #:
Workorder #: 2110246

Dear Mr. Jim Tomalia

The following report includes the data for the above referenced project for sample(s) received on 10/12/2021 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Jade White at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Jade White
Project Manager

WORK ORDER #: 2110246

Work Order Summary

CLIENT:	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	517-819-0356	P.O. #	30080642.701.04
FAX:		PROJECT #	Ford LTP
DATE RECEIVED:	10/12/2021	CONTACT:	Jade White
DATE COMPLETED:	10/13/2021		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SL-15_100721	TO-15	7.1 "Hg	10 psi
02A	SL-14_100721	TO-15	6.3 "Hg	10 psi
03A	SL-13_100721	TO-15	5.9 "Hg	9.9 psi
04A	SL-7_100721	TO-15	6.1 "Hg	9.8 psi
05A	SL-6_100721	TO-15	7.1 "Hg	9.9 psi
06A	SL-5_100721	TO-15	3.9 "Hg	9.8 psi
07A	SL-8_100721	TO-15	5.3 "Hg	9.9 psi
08A	SL-9_100721	TO-15	7.8 "Hg	9.9 psi
09A	SL-10_100721	TO-15	6.1 "Hg	9.8 psi
10A	SL-11_100721	TO-15	6.3 "Hg	9.9 psi
11A	SL-12_100721	TO-15	5.9 "Hg	10 psi
12A	MH-1231_100721	TO-15	7.3 "Hg	10 psi
13A	SL-2_100721	TO-15	5.5 "Hg	9.9 psi
14A	SL-3_100721	TO-15	5.5 "Hg	9.8 psi
15A	SL-4_100721	TO-15	5.9 "Hg	10 psi
16A	DUP-01	TO-15	4.3 "Hg	10 psi
17A	Lab Blank	TO-15	NA	NA
17B	Lab Blank	TO-15	NA	NA
18A	CCV	TO-15	NA	NA
18B	CCV	TO-15	NA	NA
19A	LCS	TO-15	NA	NA
19AA	LCSD	TO-15	NA	NA
19B	LCS	TO-15	NA	NA

Continued on next page

WORK ORDER #: 2110246

Work Order Summary

CLIENT:	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	517-819-0356	P.O. #	30080642.701.04
FAX:		PROJECT #	Ford LTP
DATE RECEIVED:	10/12/2021	CONTACT:	Jade White
DATE COMPLETED:	10/13/2021		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
19BB	LCSD	TO-15	NA	NA

CERTIFIED BY: 
 Technical Director

DATE: 10/13/21

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935
 Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
 Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
 (916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
Arcadis U.S., Inc.
Workorder# 2110246

Sixteen 1 Liter Summa Canister (100% Certified) samples were received on October 12, 2021. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Dilution was performed on samples SL-11_100721, SL-12_100721 and SL-4_100721 due to the presence of high level target species.

Dilution was performed on samples SL-15_100721, SL-14_100721, SL-13_100721, SL-7_100721, SL-6_100721, SL-9_100721, SL-10_100721 and MH-1231_100721 due to the presence of high level non-target species.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-15_100721	Date/Time Analyzed:	10/12/21 09:40 PM
Lab ID:	2110246-01A	Dilution Factor:	8.80
Date/Time Collected:	10/7/21 09:53 AM	Instrument/Filename:	msd3.i / 3101217
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	9.3	13	17	Not Detected
1,4-Dioxane	123-91-1	6.9	24	63	Not Detected
cis-1,2-Dichloroethene	156-59-2	7.4	13	17	Not Detected
Tetrachloroethene	127-18-4	7.6	22	30	Not Detected
trans-1,2-Dichloroethene	156-60-5	8.3	13	17	Not Detected
Trichloroethene	79-01-6	10	17	24	Not Detected
Vinyl Chloride	75-01-4	8.1	8.3	11	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-14_100721	Date/Time Analyzed:	10/12/21 10:07 PM
Lab ID:	2110246-02A	Dilution Factor:	21.3
Date/Time Collected:	10/7/21 10:14 AM	Instrument/Filename:	msd3.i / 3101218
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	22	31	42	Not Detected
1,4-Dioxane	123-91-1	17	58	150	Not Detected
cis-1,2-Dichloroethene	156-59-2	18	31	42	Not Detected
Tetrachloroethene	127-18-4	18	53	72	Not Detected
trans-1,2-Dichloroethene	156-60-5	20	31	42	Not Detected
Trichloroethene	79-01-6	25	42	57	Not Detected
Vinyl Chloride	75-01-4	20	20	27	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-13_100721	Date/Time Analyzed:	10/12/21 10:33 PM
Lab ID:	2110246-03A	Dilution Factor:	20.8
Date/Time Collected:	10/7/21 10:33 AM	Instrument/Filename:	msd3.i / 3101219
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	22	30	41	Not Detected
1,4-Dioxane	123-91-1	16	56	150	Not Detected
cis-1,2-Dichloroethene	156-59-2	17	30	41	Not Detected
Tetrachloroethene	127-18-4	18	52	70	Not Detected
trans-1,2-Dichloroethene	156-60-5	20	30	41	Not Detected
Trichloroethene	79-01-6	24	41	56	Not Detected
Vinyl Chloride	75-01-4	19	20	26	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-7_100721	Date/Time Analyzed:	10/12/21 11:10 PM
Lab ID:	2110246-04A	Dilution Factor:	10.5
Date/Time Collected:	10/7/21 10:53 AM	Instrument/Filename:	msd3.i / 3101220
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	11	15	21	Not Detected
1,4-Dioxane	123-91-1	8.2	28	76	Not Detected
cis-1,2-Dichloroethene	156-59-2	8.8	15	21	Not Detected
Tetrachloroethene	127-18-4	9.0	26	36	Not Detected
trans-1,2-Dichloroethene	156-60-5	9.9	15	21	Not Detected
Trichloroethene	79-01-6	12	21	28	Not Detected
Vinyl Chloride	75-01-4	9.6	9.9	13	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-6_100721	Date/Time Analyzed:	10/12/21 11:38 PM
Lab ID:	2110246-05A	Dilution Factor:	11.0
Date/Time Collected:	10/7/21 11:10 AM	Instrument/Filename:	msd3.i / 3101221
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	12	16	22	Not Detected
1,4-Dioxane	123-91-1	8.6	30	79	Not Detected
cis-1,2-Dichloroethene	156-59-2	9.2	16	22	Not Detected
Tetrachloroethene	127-18-4	9.4	28	37	Not Detected
trans-1,2-Dichloroethene	156-60-5	10	16	22	Not Detected
Trichloroethene	79-01-6	13	22	30	Not Detected
Vinyl Chloride	75-01-4	10	10	14	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-5_100721	Date/Time Analyzed:	10/13/21 07:46 AM
Lab ID:	2110246-06A	Dilution Factor:	1.92
Date/Time Collected:	10/7/21 12:25 PM	Instrument/Filename:	msd3.i / 3101226
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.0	2.8	3.8	Not Detected
1,4-Dioxane	123-91-1	1.5	5.2	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.8	3.8	440
Tetrachloroethene	127-18-4	1.6	4.8	6.5	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.8	2.8	3.8	4.8
Trichloroethene	79-01-6	2.2	3.8	5.2	140
Vinyl Chloride	75-01-4	1.8	1.8	2.4	97

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-8_100721	Date/Time Analyzed:	10/13/21 12:35 AM
Lab ID:	2110246-07A	Dilution Factor:	2.03
Date/Time Collected:	10/7/21 12:47 PM	Instrument/Filename:	msd3.i / 3101223
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.1	3.0	4.0	Not Detected
1,4-Dioxane	123-91-1	1.6	5.5	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	3.0	4.0	390
Tetrachloroethene	127-18-4	1.7	5.1	6.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	3.0	4.0	4.4
Trichloroethene	79-01-6	2.4	4.0	5.4	140
Vinyl Chloride	75-01-4	1.9	1.9	2.6	93

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-9_100721	Date/Time Analyzed:	10/13/21 01:02 AM
Lab ID:	2110246-08A	Dilution Factor:	11.3
Date/Time Collected:	10/7/21 01:11 PM	Instrument/Filename:	msd3.i / 3101224
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	12	16	22	Not Detected
1,4-Dioxane	123-91-1	8.9	30	81	Not Detected
cis-1,2-Dichloroethene	156-59-2	9.4	16	22	930
Tetrachloroethene	127-18-4	9.7	28	38	Not Detected
trans-1,2-Dichloroethene	156-60-5	11	16	22	13 J
Trichloroethene	79-01-6	13	22	30	370
Vinyl Chloride	75-01-4	10	11	14	260

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-10_100721	Date/Time Analyzed:	10/13/21 01:29 AM
Lab ID:	2110246-09A	Dilution Factor:	10.5
Date/Time Collected:	10/7/21 01:27 PM	Instrument/Filename:	msd3.i / 3101225
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	11	15	21	Not Detected
1,4-Dioxane	123-91-1	8.2	28	76	Not Detected
cis-1,2-Dichloroethene	156-59-2	8.8	15	21	1800
Tetrachloroethene	127-18-4	9.0	26	36	Not Detected
trans-1,2-Dichloroethene	156-60-5	9.9	15	21	18 J
Trichloroethene	79-01-6	12	21	28	570
Vinyl Chloride	75-01-4	9.6	9.9	13	360

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-11_100721	Date/Time Analyzed:	10/12/21 11:17 PM
Lab ID:	2110246-10A	Dilution Factor:	4.24
Date/Time Collected:	10/7/21 01:51 PM	Instrument/Filename:	msdp.i / p101221
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	4.5	6.2	8.4	Not Detected
1,4-Dioxane	123-91-1	3.3	11	30	Not Detected
cis-1,2-Dichloroethene	156-59-2	3.5	6.2	8.4	2100
Tetrachloroethene	127-18-4	3.6	11	14	Not Detected
trans-1,2-Dichloroethene	156-60-5	4.0	6.2	8.4	24
Trichloroethene	79-01-6	5.0	8.4	11	610
Vinyl Chloride	75-01-4	3.9	4.0	5.4	390

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	92

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-12_100721	Date/Time Analyzed:	10/12/21 11:46 PM
Lab ID:	2110246-11A	Dilution Factor:	4.18
Date/Time Collected:	10/7/21 02:11 PM	Instrument/Filename:	msdp.i / p101222
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	4.4	6.1	8.3	Not Detected
1,4-Dioxane	123-91-1	3.3	11	30	Not Detected
cis-1,2-Dichloroethene	156-59-2	3.5	6.1	8.3	1500
Tetrachloroethene	127-18-4	3.6	10	14	Not Detected
trans-1,2-Dichloroethene	156-60-5	4.0	6.1	8.3	18
Trichloroethene	79-01-6	4.9	8.3	11	490
Vinyl Chloride	75-01-4	3.8	4.0	5.3	320

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	92

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1231_100721	Date/Time Analyzed:	10/13/21 12:14 AM
Lab ID:	2110246-12A	Dilution Factor:	14.8
Date/Time Collected:	10/7/21 02:46 PM	Instrument/Filename:	msdp.i / p101223
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	16	22	29	Not Detected
1,4-Dioxane	123-91-1	12	40	110	Not Detected
cis-1,2-Dichloroethene	156-59-2	12	22	29	4400
Tetrachloroethene	127-18-4	13	37	50	Not Detected
trans-1,2-Dichloroethene	156-60-5	14	22	29	53
Trichloroethene	79-01-6	17	29	40	1600
Vinyl Chloride	75-01-4	14	14	19	1500

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	94

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-2_100721	Date/Time Analyzed:	10/13/21 12:43 AM
Lab ID:	2110246-13A	Dilution Factor:	2.05
Date/Time Collected:	10/7/21 03:22 PM	Instrument/Filename:	msdp.i / p101224
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.2	3.0	4.1	Not Detected
1,4-Dioxane	123-91-1	1.6	5.5	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	3.0	4.1	880
Tetrachloroethene	127-18-4	1.8	5.1	7.0	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	3.0	4.1	12
Trichloroethene	79-01-6	2.4	4.1	5.5	320
Vinyl Chloride	75-01-4	1.9	1.9	2.6	250

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	109
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-3_100721	Date/Time Analyzed:	10/13/21 01:13 AM
Lab ID:	2110246-14A	Dilution Factor:	2.04
Date/Time Collected:	10/7/21 03:42 PM	Instrument/Filename:	msdp.i / p101225
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.2	3.0	4.0	Not Detected
1,4-Dioxane	123-91-1	1.6	5.5	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	3.0	4.0	120
Tetrachloroethene	127-18-4	1.8	5.1	6.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	3.0	4.0	Not Detected
Trichloroethene	79-01-6	2.4	4.0	5.5	36
Vinyl Chloride	75-01-4	1.9	1.9	2.6	18

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	95
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-4_100721	Date/Time Analyzed:	10/13/21 09:20 AM
Lab ID:	2110246-15A	Dilution Factor:	13.9
Date/Time Collected:	10/7/21 04:16 PM	Instrument/Filename:	msdp.i / p101231
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	15	20	28	30
1,4-Dioxane	123-91-1	11	38	100	Not Detected
cis-1,2-Dichloroethene	156-59-2	12	20	28	8200
Tetrachloroethene	127-18-4	12	35	47	Not Detected
trans-1,2-Dichloroethene	156-60-5	13	20	28	130
Trichloroethene	79-01-6	16	28	37	4000
Vinyl Chloride	75-01-4	13	13	18	2800

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	95
4-Bromofluorobenzene	460-00-4	70-130	101
Toluene-d8	2037-26-5	70-130	93

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	DUP-01	Date/Time Analyzed:	10/13/21 01:42 AM
Lab ID:	2110246-16A	Dilution Factor:	1.96
Date/Time Collected:	10/7/21 12:00 AM	Instrument/Filename:	msdp.i / p101226
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.1	2.9	3.9	Not Detected
1,4-Dioxane	123-91-1	1.5	5.3	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.9	3.9	390
Tetrachloroethene	127-18-4	1.7	4.9	6.6	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.8	2.9	3.9	5.6
Trichloroethene	79-01-6	2.3	3.9	5.3	110
Vinyl Chloride	75-01-4	1.8	1.8	2.5	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	107
Toluene-d8	2037-26-5	70-130	92

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Lab Blank	Date/Time Analyzed:	10/12/21 12:03 PM
Lab ID:	2110246-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3101205d
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.0	1.5	2.0	Not Detected
1,4-Dioxane	123-91-1	0.79	2.7	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.84	1.5	2.0	Not Detected
Tetrachloroethene	127-18-4	0.86	2.5	3.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.95	1.5	2.0	Not Detected
Trichloroethene	79-01-6	1.2	2.0	2.7	Not Detected
Vinyl Chloride	75-01-4	0.92	0.94	1.3	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Lab Blank	Date/Time Analyzed:	10/12/21 01:07 PM
Lab ID:	2110246-17B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p101206c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.0	1.5	2.0	Not Detected
1,4-Dioxane	123-91-1	0.79	2.7	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.84	1.5	2.0	Not Detected
Tetrachloroethene	127-18-4	0.86	2.5	3.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.95	1.5	2.0	Not Detected
Trichloroethene	79-01-6	1.2	2.0	2.7	Not Detected
Vinyl Chloride	75-01-4	0.92	0.94	1.3	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	103
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	102

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	CCV	Date/Time Analyzed:	10/12/21 10:13 AM
Lab ID:	2110246-18A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3101202
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	102
1,4-Dioxane	123-91-1	106
cis-1,2-Dichloroethene	156-59-2	104
Tetrachloroethene	127-18-4	105
trans-1,2-Dichloroethene	156-60-5	101
Trichloroethene	79-01-6	102
Vinyl Chloride	75-01-4	104

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	CCV	Date/Time Analyzed:	10/12/21 10:41 AM
Lab ID:	2110246-18B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p101202
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	109
1,4-Dioxane	123-91-1	99
cis-1,2-Dichloroethene	156-59-2	117
Tetrachloroethene	127-18-4	105
trans-1,2-Dichloroethene	156-60-5	111
Trichloroethene	79-01-6	100
Vinyl Chloride	75-01-4	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	112
4-Bromofluorobenzene	460-00-4	70-130	108
Toluene-d8	2037-26-5	70-130	95

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCS	Date/Time Analyzed:	10/12/21 10:41 AM
Lab ID:	2110246-19A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3101203
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	98
1,4-Dioxane	123-91-1	96
cis-1,2-Dichloroethene	156-59-2	102
Tetrachloroethene	127-18-4	103
trans-1,2-Dichloroethene	156-60-5	98
Trichloroethene	79-01-6	105
Vinyl Chloride	75-01-4	101

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	101

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCSD	Date/Time Analyzed:	10/12/21 11:08 AM
Lab ID:	2110246-19AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3101204
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	98
1,4-Dioxane	123-91-1	96
cis-1,2-Dichloroethene	156-59-2	102
Tetrachloroethene	127-18-4	103
trans-1,2-Dichloroethene	156-60-5	98
Trichloroethene	79-01-6	104
Vinyl Chloride	75-01-4	96

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	96
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCS	Date/Time Analyzed:	10/12/21 11:10 AM
Lab ID:	2110246-19B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p101203
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	110
1,4-Dioxane	123-91-1	100
cis-1,2-Dichloroethene	156-59-2	114
Tetrachloroethene	127-18-4	103
trans-1,2-Dichloroethene	156-60-5	116
Trichloroethene	79-01-6	103
Vinyl Chloride	75-01-4	106

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	110
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	98

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCSD	Date/Time Analyzed:	10/12/21 11:39 AM
Lab ID:	2110246-19BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p101204
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	107
1,4-Dioxane	123-91-1	97
cis-1,2-Dichloroethene	156-59-2	117
Tetrachloroethene	127-18-4	103
trans-1,2-Dichloroethene	156-60-5	111
Trichloroethene	79-01-6	100
Vinyl Chloride	75-01-4	103

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	107
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	96

* % Recovery is calculated using unrounded analytical results.



DATA VERIFICATION REPORT

October 13, 2021

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2021 Utility Corridor Evaluation Vapor Testing
Project number: 30080642.701.04
Event Specific Scope of Work References: Sample COC
Laboratory: EUROFINS-FOLSOM
Laboratory submittal: 2110246
Sample date: 2021-10-07
Report received by CADENA: 2021-10-13
Initial Data Verification completed by CADENA: 2021-10-13
Number of Samples: 16
Sample Matrices: AIR
Test Categories: TO-15 GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) TO-15 Analysis

SDG #2110246

CADENA Verification Report: 2021-10-13

Analyses Performed By:
Eurofins Air Toxics
Folsom, California

Report #43076R
Review Level: Tier III
Project: 30080642.701.02

DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 2110246 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						TO-15 (Full Scan)	TO-15 (SIM)	MISC
2110246	SL-15_100721_V	2110246-01A	Air	10/7/2021		X		
	SL-14_100721_V	2110246-02A	Air	10/7/2021		X		
	SL-13_100721_V	2110246-03A	Air	10/7/2021		X		
	SL-7_100721_V	2110246-04A	Air	10/7/2021		X		
	SL-6_100721_V	2110246-05A	Air	10/7/2021		X		
	SL-5_100721_V	2110246-06A	Air	10/7/2021		X		
	SL-8_100721_V	2110246-07A	Air	10/7/2021		X		
	SL-9_100721_V	2110246-08A	Air	10/7/2021		X		
	SL-10_100721_V	2110246-09A	Air	10/7/2021		X		
	SL-11_100721_V	2110246-10A	Air	10/7/2021		X		
	SL-12_100721_V	2110246-11A	Air	10/7/2021		X		
	MH-1231_100721_V	2110246-12A	Air	10/7/2021		X		
	SL-2_100721_V	2110246-13A	Air	10/7/2021		X		
	SL-3_100721_V	2110246-14A	Air	10/7/2021		X		
	SL-4_100721_V	2110246-15A	Air	10/7/2021		X		
	DUP-01_100721_V	2110246-16A	Air	10/7/2021	SL-5_100721_V	X		

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Method TO-15 (Full Scan). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation	Return Canister Pressure
USEPA TO-15	Air	30 days from collection to analysis (Canister)	Ambient Temperature	< -2" Hg

All samples were analyzed within the specified holding time and canister return pressure / vacuum criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (30%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (30%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than 140% or less than 60% of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

5. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra. All identified compounds met the specified criteria.

6. Field Duplicate Sample Analysis

The field duplicate analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 35% for air 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 not greater than five times the RL, a control limit of three times the RL is applied to the difference between the duplicate sample results.

Results (in $\mu\text{g}/\text{m}^3$) for the field duplicate samples are summarized in the following table.

Sample ID / Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SL-5_100721_V/ DUP-01_100721_V	cis-1,2-Dichloroethene	440	390	12.0%
	trans-1,2-Dichloroethene	4.8	5.6	AC
	Trichloroethene	140	110	24.0%
	Vinyl Chloride	97	100	3.0%

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

Note: Dilution was performed on samples SL-11_100721, SL-12_100721 and SL-4_100721 due to the presence of high-level target species.

Dilution was performed on samples SL-15_100721, SL-14_100721, SL-13_100721, SL-7_100721, SL-6_100721, SL-9_100721, SL-10_100721 and MH-1231_100721 due to the presence of high level non-target species.

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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: TO-15 (Full Scan)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Canister return pressure (<-2"Hg)		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Field Duplicate Sample RPD		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

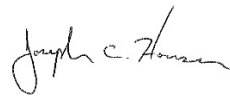
%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Joseph C. Houser

SIGNATURE:



DATE: October 15, 2021

PEER REVIEW: Andrew Korycinski

DATE: October 19, 2021



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



**NO CORRECTIONS/QUALIFIERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**



EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-15_100721	Date/Time Analyzed:	10/12/21 09:40 PM
Lab ID:	2110246-01A	Dilution Factor:	8.80
Date/Time Collected:	10/7/21 09:53 AM	Instrument/Filename:	msd3.i / 3101217
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	9.3	13	17	Not Detected
1,4-Dioxane	123-91-1	6.9	24	63	Not Detected
cis-1,2-Dichloroethene	156-59-2	7.4	13	17	Not Detected
Tetrachloroethene	127-18-4	7.6	22	30	Not Detected
trans-1,2-Dichloroethene	156-60-5	8.3	13	17	Not Detected
Trichloroethene	79-01-6	10	17	24	Not Detected
Vinyl Chloride	75-01-4	8.1	8.3	11	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-14_100721	Date/Time Analyzed:	10/12/21 10:07 PM
Lab ID:	2110246-02A	Dilution Factor:	21.3
Date/Time Collected:	10/7/21 10:14 AM	Instrument/Filename:	msd3.i / 3101218
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	22	31	42	Not Detected
1,4-Dioxane	123-91-1	17	58	150	Not Detected
cis-1,2-Dichloroethene	156-59-2	18	31	42	Not Detected
Tetrachloroethene	127-18-4	18	53	72	Not Detected
trans-1,2-Dichloroethene	156-60-5	20	31	42	Not Detected
Trichloroethene	79-01-6	25	42	57	Not Detected
Vinyl Chloride	75-01-4	20	20	27	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-13_100721	Date/Time Analyzed:	10/12/21 10:33 PM
Lab ID:	2110246-03A	Dilution Factor:	20.8
Date/Time Collected:	10/7/21 10:33 AM	Instrument/Filename:	msd3.i / 3101219
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	22	30	41	Not Detected
1,4-Dioxane	123-91-1	16	56	150	Not Detected
cis-1,2-Dichloroethene	156-59-2	17	30	41	Not Detected
Tetrachloroethene	127-18-4	18	52	70	Not Detected
trans-1,2-Dichloroethene	156-60-5	20	30	41	Not Detected
Trichloroethene	79-01-6	24	41	56	Not Detected
Vinyl Chloride	75-01-4	19	20	26	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-7_100721	Date/Time Analyzed:	10/12/21 11:10 PM
Lab ID:	2110246-04A	Dilution Factor:	10.5
Date/Time Collected:	10/7/21 10:53 AM	Instrument/Filename:	msd3.i / 3101220
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	11	15	21	Not Detected
1,4-Dioxane	123-91-1	8.2	28	76	Not Detected
cis-1,2-Dichloroethene	156-59-2	8.8	15	21	Not Detected
Tetrachloroethene	127-18-4	9.0	26	36	Not Detected
trans-1,2-Dichloroethene	156-60-5	9.9	15	21	Not Detected
Trichloroethene	79-01-6	12	21	28	Not Detected
Vinyl Chloride	75-01-4	9.6	9.9	13	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-6_100721	Date/Time Analyzed:	10/12/21 11:38 PM
Lab ID:	2110246-05A	Dilution Factor:	11.0
Date/Time Collected:	10/7/21 11:10 AM	Instrument/Filename:	msd3.i / 3101221
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	12	16	22	Not Detected
1,4-Dioxane	123-91-1	8.6	30	79	Not Detected
cis-1,2-Dichloroethene	156-59-2	9.2	16	22	Not Detected
Tetrachloroethene	127-18-4	9.4	28	37	Not Detected
trans-1,2-Dichloroethene	156-60-5	10	16	22	Not Detected
Trichloroethene	79-01-6	13	22	30	Not Detected
Vinyl Chloride	75-01-4	10	10	14	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-5_100721	Date/Time Analyzed:	10/13/21 07:46 AM
Lab ID:	2110246-06A	Dilution Factor:	1.92
Date/Time Collected:	10/7/21 12:25 PM	Instrument/Filename:	msd3.i / 3101226
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.0	2.8	3.8	Not Detected
1,4-Dioxane	123-91-1	1.5	5.2	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.8	3.8	440
Tetrachloroethene	127-18-4	1.6	4.8	6.5	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.8	2.8	3.8	4.8
Trichloroethene	79-01-6	2.2	3.8	5.2	140
Vinyl Chloride	75-01-4	1.8	1.8	2.4	97

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-8_100721	Date/Time Analyzed:	10/13/21 12:35 AM
Lab ID:	2110246-07A	Dilution Factor:	2.03
Date/Time Collected:	10/7/21 12:47 PM	Instrument/Filename:	msd3.i / 3101223
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.1	3.0	4.0	Not Detected
1,4-Dioxane	123-91-1	1.6	5.5	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	3.0	4.0	390
Tetrachloroethene	127-18-4	1.7	5.1	6.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	3.0	4.0	4.4
Trichloroethene	79-01-6	2.4	4.0	5.4	140
Vinyl Chloride	75-01-4	1.9	1.9	2.6	93

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-9_100721	Date/Time Analyzed:	10/13/21 01:02 AM
Lab ID:	2110246-08A	Dilution Factor:	11.3
Date/Time Collected:	10/7/21 01:11 PM	Instrument/Filename:	msd3.i / 3101224
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	12	16	22	Not Detected
1,4-Dioxane	123-91-1	8.9	30	81	Not Detected
cis-1,2-Dichloroethene	156-59-2	9.4	16	22	930
Tetrachloroethene	127-18-4	9.7	28	38	Not Detected
trans-1,2-Dichloroethene	156-60-5	11	16	22	13 J
Trichloroethene	79-01-6	13	22	30	370
Vinyl Chloride	75-01-4	10	11	14	260

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-10_100721	Date/Time Analyzed:	10/13/21 01:29 AM
Lab ID:	2110246-09A	Dilution Factor:	10.5
Date/Time Collected:	10/7/21 01:27 PM	Instrument/Filename:	msd3.i / 3101225
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	11	15	21	Not Detected
1,4-Dioxane	123-91-1	8.2	28	76	Not Detected
cis-1,2-Dichloroethene	156-59-2	8.8	15	21	1800
Tetrachloroethene	127-18-4	9.0	26	36	Not Detected
trans-1,2-Dichloroethene	156-60-5	9.9	15	21	18 J
Trichloroethene	79-01-6	12	21	28	570
Vinyl Chloride	75-01-4	9.6	9.9	13	360

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-11_100721	Date/Time Analyzed:	10/12/21 11:17 PM
Lab ID:	2110246-10A	Dilution Factor:	4.24
Date/Time Collected:	10/7/21 01:51 PM	Instrument/Filename:	msdp.i / p101221
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	4.5	6.2	8.4	Not Detected
1,4-Dioxane	123-91-1	3.3	11	30	Not Detected
cis-1,2-Dichloroethene	156-59-2	3.5	6.2	8.4	2100
Tetrachloroethene	127-18-4	3.6	11	14	Not Detected
trans-1,2-Dichloroethene	156-60-5	4.0	6.2	8.4	24
Trichloroethene	79-01-6	5.0	8.4	11	610
Vinyl Chloride	75-01-4	3.9	4.0	5.4	390

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	92

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-12_100721	Date/Time Analyzed:	10/12/21 11:46 PM
Lab ID:	2110246-11A	Dilution Factor:	4.18
Date/Time Collected:	10/7/21 02:11 PM	Instrument/Filename:	msdp.i / p101222
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	4.4	6.1	8.3	Not Detected
1,4-Dioxane	123-91-1	3.3	11	30	Not Detected
cis-1,2-Dichloroethene	156-59-2	3.5	6.1	8.3	1500
Tetrachloroethene	127-18-4	3.6	10	14	Not Detected
trans-1,2-Dichloroethene	156-60-5	4.0	6.1	8.3	18
Trichloroethene	79-01-6	4.9	8.3	11	490
Vinyl Chloride	75-01-4	3.8	4.0	5.3	320

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	92

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1231_100721	Date/Time Analyzed:	10/13/21 12:14 AM
Lab ID:	2110246-12A	Dilution Factor:	14.8
Date/Time Collected:	10/7/21 02:46 PM	Instrument/Filename:	msdp.i / p101223
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	16	22	29	Not Detected
1,4-Dioxane	123-91-1	12	40	110	Not Detected
cis-1,2-Dichloroethene	156-59-2	12	22	29	4400
Tetrachloroethene	127-18-4	13	37	50	Not Detected
trans-1,2-Dichloroethene	156-60-5	14	22	29	53
Trichloroethene	79-01-6	17	29	40	1600
Vinyl Chloride	75-01-4	14	14	19	1500

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	94

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-2_100721	Date/Time Analyzed:	10/13/21 12:43 AM
Lab ID:	2110246-13A	Dilution Factor:	2.05
Date/Time Collected:	10/7/21 03:22 PM	Instrument/Filename:	msdp.i / p101224
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.2	3.0	4.1	Not Detected
1,4-Dioxane	123-91-1	1.6	5.5	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	3.0	4.1	880
Tetrachloroethene	127-18-4	1.8	5.1	7.0	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	3.0	4.1	12
Trichloroethene	79-01-6	2.4	4.1	5.5	320
Vinyl Chloride	75-01-4	1.9	1.9	2.6	250

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	109
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-3_100721	Date/Time Analyzed:	10/13/21 01:13 AM
Lab ID:	2110246-14A	Dilution Factor:	2.04
Date/Time Collected:	10/7/21 03:42 PM	Instrument/Filename:	msdp.i / p101225
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.2	3.0	4.0	Not Detected
1,4-Dioxane	123-91-1	1.6	5.5	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	3.0	4.0	120
Tetrachloroethene	127-18-4	1.8	5.1	6.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	3.0	4.0	Not Detected
Trichloroethene	79-01-6	2.4	4.0	5.5	36
Vinyl Chloride	75-01-4	1.9	1.9	2.6	18

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	95
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-4_100721	Date/Time Analyzed:	10/13/21 09:20 AM
Lab ID:	2110246-15A	Dilution Factor:	13.9
Date/Time Collected:	10/7/21 04:16 PM	Instrument/Filename:	msdp.i / p101231
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	15	20	28	30
1,4-Dioxane	123-91-1	11	38	100	Not Detected
cis-1,2-Dichloroethene	156-59-2	12	20	28	8200
Tetrachloroethene	127-18-4	12	35	47	Not Detected
trans-1,2-Dichloroethene	156-60-5	13	20	28	130
Trichloroethene	79-01-6	16	28	37	4000
Vinyl Chloride	75-01-4	13	13	18	2800

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	95
4-Bromofluorobenzene	460-00-4	70-130	101
Toluene-d8	2037-26-5	70-130	93

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	DUP-01	Date/Time Analyzed:	10/13/21 01:42 AM
Lab ID:	2110246-16A	Dilution Factor:	1.96
Date/Time Collected:	10/7/21 12:00 AM	Instrument/Filename:	msdp.i / p101226
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.1	2.9	3.9	Not Detected
1,4-Dioxane	123-91-1	1.5	5.3	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.9	3.9	390
Tetrachloroethene	127-18-4	1.7	4.9	6.6	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.8	2.9	3.9	5.6
Trichloroethene	79-01-6	2.3	3.9	5.3	110
Vinyl Chloride	75-01-4	1.8	1.8	2.5	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	107
Toluene-d8	2037-26-5	70-130	92

Analysis Request / Canister Chain of Custody

For Laboratory Use Only

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
 Phone (800) 985-5955; Fax (916) 351-8279

PID: _____ Workorder #: 2110246

Click links below to view:

- [Canister Sampling Guide](#)
- [Helium Shroud Video](#)

Client: <u>Ford</u>	PID: <u>NA</u>	Special Instructions/Notes: Report ONLY: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, 1,4-Dioxane, PCE, TCE and VC. Submit results through Cadena at jim.tomalia@cadena.com. Cadena #E205162. Level IV Reporting	Turnaround Time (Rush surcharges may apply)	
Project Name: <u>Ford LTP</u>	Project Manager: <u>Kris Hinskey</u>		1 Day Turnaround Time	
Sampler: <u>Andrew Banitt, Korey Pearson</u>	P.O.# <u>30080642.701.04</u>		Canister Vacuum/Pressure	
Site Name: <u>Ford LTP</u>			Requested Analyses	

Lab ID	Sample Identification	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Initial (in Hg)	Final (in Hg)	Lab Use Only		TO-15 (See Special Instructions/Notes)	Do Not Analyze
				Date	Time	Date	Time			Receipt	Final (psig) Gas: N ₂ / He		
<i>01A</i>	SL-15_100721	1L3258	1922	10/7/21	0952	10/7/21	0953	-29	-6.5			X	
<i>02A</i>	SL-14_100721	1L2190	1922	10/7/21	1013	10/7/21	1014	-29	-6			X	
<i>03A</i>	SL-13_100721	1L2176	1912	10/7/21	1032	10/7/21	1033	-29	-5			X	
<i>04A</i>	SL-7_100721	1L3353	1922	10/7/21	1051	10/7/21	1053	-29	-5.5			X	
<i>05A</i>	SL-6_100721	1L3075	2016	10/7/21	1109	10/7/21	1110	-29	-6.5			X	
<i>06A</i>	SL-5_100721	1L3191	2046	10/7/21	1224	10/7/21	1225	-29.5	-3.5			X	
<i>07A</i>	SL-8_100721	1L2465	1922	10/7/21	1246	10/7/21	1247	-29	-5			X	
<i>08A</i>	SL-9_100721	1L2792	1913	10/7/21	1310	10/7/21	1311	-29.5	-7			X	
<i>09A</i>	SL-10_100721	1L2478	1912	10/7/21	1326	10/7/21	1327	-29	-5			X	
<i>10A</i>	SL-11_100721	1L2819	1824	10/7/21	1350	10/7/21	1351	-29	-5.5			X	
<i>11A</i>	SL-12_100721	1L1857	1938	10/7/21	1409	10/7/21	1411	-29	-5			X	
<i>12A</i>	MH-1231_100721	1L2688	1938	10/7/21	1445	10/7/21	1446	-29	-7			X	
<i>13A</i>	SL-2_100721	LC305	2005	10/7/21	1521	10/7/21	1522	-29	-5			X	
<i>14A</i>	SL-3_100721	1L1529	2005	10/7/21	1540	10/7/21	1542	-29	-4.5			X	
<i>15A</i>	SL-4_100721	1L2875	2005	10/7/21	1614	10/7/21	1616	-29	-5			X	

Relinquished by: (Signature/Affiliation) <i>Andrew Banitt</i> <i>Aircad</i>	Date: <i>10/8/21</i>	Time: <i>1400</i>	Received by: (Signature/Affiliation) <i>[Signature]</i>	Date: <i>10/12/21</i>	Time: <i>1125</i>
Relinquished by: (Signature/Affiliation)	Date:	Time:	Received by: (Signature/Affiliation)	Date:	Time:
Relinquished by: (Signature/Affiliation)	Date:	Time:	Received by: (Signature/Affiliation)	Date:	Time:

Lab Use Only

Shipper Name: *[Signature]* Custody Seals Intact? Yes No None

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-157760-1

Client Project/Site: Ford LTP - Utility Corridor Sampling

For:

ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey



*Authorized for release by:
10/14/2021 3:44:10 PM*

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.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.



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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

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.
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

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

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Job ID: 240-157760-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative 240-157760-1

Comments

No additional comments.

Receipt

The samples were received on 10/9/2021 8:00 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 0.3° C.

GC/MS VOA

Method 8260B: Surrogate recovery for the following sample was outside the upper control limit: SL-6_100721 (240-157760-6). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Method 8260B: The continuing calibration verification (CCV) associated with batch 508017 recovered above the upper control limit for 1,1-Dichloroethene and/or Toluene. The samples associated with this CCV were non-detect for the affected analytes; therefore, the data have been reported. The associated sample is impacted: SL-5_100721 (240-157760-7).

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

VOA Prep

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



Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

- 1
- 2
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- 8
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- 10
- 11
- 12
- 13
- 14

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-157760-1	TRIP BLANK	Water	10/07/21 00:00	10/09/21 08:00
240-157760-2	SL-15_100721	Water	10/07/21 09:55	10/09/21 08:00
240-157760-3	SL-14_100721	Water	10/07/21 10:10	10/09/21 08:00
240-157760-4	SL-13_100721	Water	10/07/21 10:30	10/09/21 08:00
240-157760-5	SL-7_100721	Water	10/07/21 10:50	10/09/21 08:00
240-157760-6	SL-6_100721	Water	10/07/21 11:05	10/09/21 08:00
240-157760-7	SL-5_100721	Water	10/07/21 12:15	10/09/21 08:00
240-157760-8	SL-8_100721	Water	10/07/21 12:45	10/09/21 08:00
240-157760-9	SL-9_100721	Water	10/07/21 13:00	10/09/21 08:00
240-157760-10	SL-10_100721	Water	10/07/21 13:25	10/09/21 08:00
240-157760-11	SL-11_100721	Water	10/07/21 13:45	10/09/21 08:00
240-157760-12	SL-12_100721	Water	10/07/21 14:05	10/09/21 08:00
240-157760-13	MH-1231_100721	Water	10/07/21 14:45	10/09/21 08:00
240-157760-14	SL-2_100721	Water	10/07/21 15:15	10/09/21 08:00
240-157760-15	SL-3_100721	Water	10/07/21 15:45	10/09/21 08:00
240-157760-16	SL-4_100721	Water	10/07/21 16:15	10/09/21 08:00
240-157760-17	DUP-01	Water	10/07/21 00:00	10/09/21 08:00



Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-157760-1

No Detections.

Client Sample ID: SL-15_100721

Lab Sample ID: 240-157760-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.3	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA

Client Sample ID: SL-14_100721

Lab Sample ID: 240-157760-3

No Detections.

Client Sample ID: SL-13_100721

Lab Sample ID: 240-157760-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.1	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA

Client Sample ID: SL-7_100721

Lab Sample ID: 240-157760-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.95	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA

Client Sample ID: SL-6_100721

Lab Sample ID: 240-157760-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.92	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA

Client Sample ID: SL-5_100721

Lab Sample ID: 240-157760-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.9		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	44		2.0	0.92	ug/L	2		8260B	Total/NA
Trichloroethene	7.4		2.0	0.88	ug/L	2		8260B	Total/NA
Vinyl chloride	4.1		2.0	0.90	ug/L	2		8260B	Total/NA

Client Sample ID: SL-8_100721

Lab Sample ID: 240-157760-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	4.8		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	38		1.0	0.46	ug/L	1		8260B	Total/NA
Trichloroethene	8.9		1.0	0.44	ug/L	1		8260B	Total/NA
Vinyl chloride	8.8		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: SL-9_100721

Lab Sample ID: 240-157760-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	18		1.0	0.46	ug/L	1		8260B	Total/NA
Trichloroethene	4.7		1.0	0.44	ug/L	1		8260B	Total/NA
Vinyl chloride	2.1		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: SL-10_100721

Lab Sample ID: 240-157760-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.7		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	34		1.0	0.46	ug/L	1		8260B	Total/NA
Trichloroethene	7.5		1.0	0.44	ug/L	1		8260B	Total/NA
Vinyl chloride	4.6		1.0	0.45	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-11_100721

Lab Sample ID: 240-157760-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	3.1		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	31		1.0	0.46	ug/L	1		8260B	Total/NA
Trichloroethene	6.5		1.0	0.44	ug/L	1		8260B	Total/NA
Vinyl chloride	4.2		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: SL-12_100721

Lab Sample ID: 240-157760-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.7	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	19		1.0	0.46	ug/L	1		8260B	Total/NA
Trichloroethene	4.0		1.0	0.44	ug/L	1		8260B	Total/NA
Vinyl chloride	2.3		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: MH-1231_100721

Lab Sample ID: 240-157760-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	11		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	260		10	4.6	ug/L	10		8260B	Total/NA
Trichloroethene	51		10	4.4	ug/L	10		8260B	Total/NA
Vinyl chloride	38		10	4.5	ug/L	10		8260B	Total/NA

Client Sample ID: SL-2_100721

Lab Sample ID: 240-157760-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	7.4		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	91		2.5	1.2	ug/L	2.5		8260B	Total/NA
Trichloroethene	20		2.5	1.1	ug/L	2.5		8260B	Total/NA
Vinyl chloride	14		2.5	1.1	ug/L	2.5		8260B	Total/NA

Client Sample ID: SL-3_100721

Lab Sample ID: 240-157760-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	8.3		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	140		5.0	2.3	ug/L	5		8260B	Total/NA
Trichloroethene	25		5.0	2.2	ug/L	5		8260B	Total/NA
Vinyl chloride	17		5.0	2.3	ug/L	5		8260B	Total/NA

Client Sample ID: SL-4_100721

Lab Sample ID: 240-157760-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	6.7		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	97		2.5	1.2	ug/L	2.5		8260B	Total/NA
Trichloroethene	17		2.5	1.1	ug/L	2.5		8260B	Total/NA
Vinyl chloride	11		2.5	1.1	ug/L	2.5		8260B	Total/NA

Client Sample ID: DUP-01

Lab Sample ID: 240-157760-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	3.0		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	40		2.0	0.92	ug/L	2		8260B	Total/NA
Trichloroethene	7.2		2.0	0.88	ug/L	2		8260B	Total/NA
Vinyl chloride	4.6		2.0	0.90	ug/L	2		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-157760-1

Date Collected: 10/07/21 00:00

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 09:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/12/21 09:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 09:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 09:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 09:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/12/21 09:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		62 - 137		10/12/21 09:46	1
4-Bromofluorobenzene (Surr)	78		56 - 136		10/12/21 09:46	1
Toluene-d8 (Surr)	107		78 - 122		10/12/21 09:46	1
Dibromofluoromethane (Surr)	106		73 - 120		10/12/21 09:46	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-15_100721

Lab Sample ID: 240-157760-2

Date Collected: 10/07/21 09:55

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.3	J	2.0	0.86	ug/L			10/11/21 21:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	81		66 - 120		10/11/21 21:31	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 10:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/12/21 10:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 10:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 10:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 10:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/12/21 10:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		62 - 137		10/12/21 10:09	1
4-Bromofluorobenzene (Surr)	94		56 - 136		10/12/21 10:09	1
Toluene-d8 (Surr)	115		78 - 122		10/12/21 10:09	1
Dibromofluoromethane (Surr)	112		73 - 120		10/12/21 10:09	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-14_100721

Lab Sample ID: 240-157760-3

Date Collected: 10/07/21 10:10

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			10/11/21 21:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	81		66 - 120		10/11/21 21:55	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 10:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/12/21 10:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 10:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 10:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 10:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/12/21 10:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		62 - 137		10/12/21 10:31	1
4-Bromofluorobenzene (Surr)	84		56 - 136		10/12/21 10:31	1
Toluene-d8 (Surr)	108		78 - 122		10/12/21 10:31	1
Dibromofluoromethane (Surr)	117		73 - 120		10/12/21 10:31	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-13_100721

Lab Sample ID: 240-157760-4

Date Collected: 10/07/21 10:30

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.1	J	2.0	0.86	ug/L			10/11/21 22:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	81		66 - 120		10/11/21 22:18	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 10:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/12/21 10:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 10:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 10:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 10:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/12/21 10:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		62 - 137		10/12/21 10:54	1
4-Bromofluorobenzene (Surr)	81		56 - 136		10/12/21 10:54	1
Toluene-d8 (Surr)	110		78 - 122		10/12/21 10:54	1
Dibromofluoromethane (Surr)	106		73 - 120		10/12/21 10:54	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-7_100721

Lab Sample ID: 240-157760-5

Date Collected: 10/07/21 10:50

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.95	J	2.0	0.86	ug/L			10/11/21 22:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		66 - 120		10/11/21 22:42	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 15:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/12/21 15:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 15:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 15:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 15:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/12/21 15:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		62 - 137		10/12/21 15:47	1
4-Bromofluorobenzene (Surr)	78		56 - 136		10/12/21 15:47	1
Toluene-d8 (Surr)	107		78 - 122		10/12/21 15:47	1
Dibromofluoromethane (Surr)	98		73 - 120		10/12/21 15:47	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-6_100721

Lab Sample ID: 240-157760-6

Date Collected: 10/07/21 11:05

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.92	J	2.0	0.86	ug/L			10/11/21 23:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		66 - 120					10/11/21 23:06	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 16:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/12/21 16:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 16:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 16:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 16:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/12/21 16:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		62 - 137					10/12/21 16:09	1
4-Bromofluorobenzene (Surr)	95		56 - 136					10/12/21 16:09	1
Toluene-d8 (Surr)	126	S1+	78 - 122					10/12/21 16:09	1
Dibromofluoromethane (Surr)	118		73 - 120					10/12/21 16:09	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-5_100721

Lab Sample ID: 240-157760-7

Date Collected: 10/07/21 12:15

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.9		2.0	0.86	ug/L			10/12/21 00:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	81		66 - 120					10/12/21 00:42	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	2.0	U	2.0	0.98	ug/L			10/13/21 11:16	2
cis-1,2-Dichloroethene	44		2.0	0.92	ug/L			10/13/21 11:16	2
Tetrachloroethene	2.0	U	2.0	0.88	ug/L			10/13/21 11:16	2
trans-1,2-Dichloroethene	2.0	U	2.0	1.0	ug/L			10/13/21 11:16	2
Trichloroethene	7.4		2.0	0.88	ug/L			10/13/21 11:16	2
Vinyl chloride	4.1		2.0	0.90	ug/L			10/13/21 11:16	2
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		62 - 137					10/13/21 11:16	2
4-Bromofluorobenzene (Surr)	78		56 - 136					10/13/21 11:16	2
Toluene-d8 (Surr)	110		78 - 122					10/13/21 11:16	2
Dibromofluoromethane (Surr)	98		73 - 120					10/13/21 11:16	2

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-8_100721

Lab Sample ID: 240-157760-8

Date Collected: 10/07/21 12:45

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.8		2.0	0.86	ug/L			10/12/21 01:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		66 - 120					10/12/21 01:05	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 16:54	1
cis-1,2-Dichloroethene	38		1.0	0.46	ug/L			10/12/21 16:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 16:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 16:54	1
Trichloroethene	8.9		1.0	0.44	ug/L			10/12/21 16:54	1
Vinyl chloride	8.8		1.0	0.45	ug/L			10/12/21 16:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	75		62 - 137					10/12/21 16:54	1
4-Bromofluorobenzene (Surr)	81		56 - 136					10/12/21 16:54	1
Toluene-d8 (Surr)	94		78 - 122					10/12/21 16:54	1
Dibromofluoromethane (Surr)	86		73 - 120					10/12/21 16:54	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-9_100721

Lab Sample ID: 240-157760-9

Date Collected: 10/07/21 13:00

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			10/12/21 01:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	78		66 - 120					10/12/21 01:29	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 12:23	1
cis-1,2-Dichloroethene	18		1.0	0.46	ug/L			10/12/21 12:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 12:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 12:23	1
Trichloroethene	4.7		1.0	0.44	ug/L			10/12/21 12:23	1
Vinyl chloride	2.1		1.0	0.45	ug/L			10/12/21 12:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		62 - 137					10/12/21 12:23	1
4-Bromofluorobenzene (Surr)	92		56 - 136					10/12/21 12:23	1
Toluene-d8 (Surr)	90		78 - 122					10/12/21 12:23	1
Dibromofluoromethane (Surr)	88		73 - 120					10/12/21 12:23	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-10_100721

Lab Sample ID: 240-157760-10

Date Collected: 10/07/21 13:25

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.7		2.0	0.86	ug/L			10/12/21 01:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		66 - 120		10/12/21 01:53	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 11:13	1
cis-1,2-Dichloroethene	34		1.0	0.46	ug/L			10/12/21 11:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 11:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 11:13	1
Trichloroethene	7.5		1.0	0.44	ug/L			10/12/21 11:13	1
Vinyl chloride	4.6		1.0	0.45	ug/L			10/12/21 11:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	114		62 - 137		10/12/21 11:13	1
4-Bromofluorobenzene (Surr)	95		56 - 136		10/12/21 11:13	1
Toluene-d8 (Surr)	93		78 - 122		10/12/21 11:13	1
Dibromofluoromethane (Surr)	89		73 - 120		10/12/21 11:13	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-11_100721

Lab Sample ID: 240-157760-11

Date Collected: 10/07/21 13:45

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	3.1		2.0	0.86	ug/L			10/12/21 02:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		66 - 120		10/12/21 02:17	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 11:35	1
cis-1,2-Dichloroethene	31		1.0	0.46	ug/L			10/12/21 11:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 11:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 11:35	1
Trichloroethene	6.5		1.0	0.44	ug/L			10/12/21 11:35	1
Vinyl chloride	4.2		1.0	0.45	ug/L			10/12/21 11:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		62 - 137		10/12/21 11:35	1
4-Bromofluorobenzene (Surr)	95		56 - 136		10/12/21 11:35	1
Toluene-d8 (Surr)	94		78 - 122		10/12/21 11:35	1
Dibromofluoromethane (Surr)	90		73 - 120		10/12/21 11:35	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-12_100721

Lab Sample ID: 240-157760-12

Date Collected: 10/07/21 14:05

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.7	J	2.0	0.86	ug/L			10/12/21 02:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		66 - 120					10/12/21 02:41	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 11:57	1
cis-1,2-Dichloroethene	19		1.0	0.46	ug/L			10/12/21 11:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 11:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 11:57	1
Trichloroethene	4.0		1.0	0.44	ug/L			10/12/21 11:57	1
Vinyl chloride	2.3		1.0	0.45	ug/L			10/12/21 11:57	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		62 - 137					10/12/21 11:57	1
4-Bromofluorobenzene (Surr)	94		56 - 136					10/12/21 11:57	1
Toluene-d8 (Surr)	95		78 - 122					10/12/21 11:57	1
Dibromofluoromethane (Surr)	92		73 - 120					10/12/21 11:57	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: MH-1231_100721

Lab Sample ID: 240-157760-13

Date Collected: 10/07/21 14:45

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	11		2.0	0.86	ug/L			10/12/21 03:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		66 - 120					10/12/21 03:04	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	10	U	10	4.9	ug/L			10/12/21 12:45	10
cis-1,2-Dichloroethene	260		10	4.6	ug/L			10/12/21 12:45	10
Tetrachloroethene	10	U	10	4.4	ug/L			10/12/21 12:45	10
trans-1,2-Dichloroethene	10	U	10	5.1	ug/L			10/12/21 12:45	10
Trichloroethene	51		10	4.4	ug/L			10/12/21 12:45	10
Vinyl chloride	38		10	4.5	ug/L			10/12/21 12:45	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		62 - 137					10/12/21 12:45	10
4-Bromofluorobenzene (Surr)	94		56 - 136					10/12/21 12:45	10
Toluene-d8 (Surr)	92		78 - 122					10/12/21 12:45	10
Dibromofluoromethane (Surr)	91		73 - 120					10/12/21 12:45	10

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-2_100721

Lab Sample ID: 240-157760-14

Date Collected: 10/07/21 15:15

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	7.4		2.0	0.86	ug/L			10/12/21 03:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		66 - 120		10/12/21 03:28	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	2.5	U	2.5	1.2	ug/L			10/12/21 13:07	2.5
cis-1,2-Dichloroethene	91		2.5	1.2	ug/L			10/12/21 13:07	2.5
Tetrachloroethene	2.5	U	2.5	1.1	ug/L			10/12/21 13:07	2.5
trans-1,2-Dichloroethene	2.5	U	2.5	1.3	ug/L			10/12/21 13:07	2.5
Trichloroethene	20		2.5	1.1	ug/L			10/12/21 13:07	2.5
Vinyl chloride	14		2.5	1.1	ug/L			10/12/21 13:07	2.5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	115		62 - 137		10/12/21 13:07	2.5
4-Bromofluorobenzene (Surr)	93		56 - 136		10/12/21 13:07	2.5
Toluene-d8 (Surr)	92		78 - 122		10/12/21 13:07	2.5
Dibromofluoromethane (Surr)	92		73 - 120		10/12/21 13:07	2.5

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-3_100721

Lab Sample ID: 240-157760-15

Date Collected: 10/07/21 15:45

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	8.3		2.0	0.86	ug/L			10/12/21 03:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		66 - 120					10/12/21 03:52	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	2.5	ug/L			10/12/21 13:29	5
cis-1,2-Dichloroethene	140		5.0	2.3	ug/L			10/12/21 13:29	5
Tetrachloroethene	5.0	U	5.0	2.2	ug/L			10/12/21 13:29	5
trans-1,2-Dichloroethene	5.0	U	5.0	2.6	ug/L			10/12/21 13:29	5
Trichloroethene	25		5.0	2.2	ug/L			10/12/21 13:29	5
Vinyl chloride	17		5.0	2.3	ug/L			10/12/21 13:29	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		62 - 137					10/12/21 13:29	5
4-Bromofluorobenzene (Surr)	95		56 - 136					10/12/21 13:29	5
Toluene-d8 (Surr)	93		78 - 122					10/12/21 13:29	5
Dibromofluoromethane (Surr)	93		73 - 120					10/12/21 13:29	5

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-4_100721

Lab Sample ID: 240-157760-16

Date Collected: 10/07/21 16:15

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	6.7		2.0	0.86	ug/L			10/12/21 04:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		66 - 120		10/12/21 04:16	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	2.5	U	2.5	1.2	ug/L			10/12/21 13:51	2.5
cis-1,2-Dichloroethene	97		2.5	1.2	ug/L			10/12/21 13:51	2.5
Tetrachloroethene	2.5	U	2.5	1.1	ug/L			10/12/21 13:51	2.5
trans-1,2-Dichloroethene	2.5	U	2.5	1.3	ug/L			10/12/21 13:51	2.5
Trichloroethene	17		2.5	1.1	ug/L			10/12/21 13:51	2.5
Vinyl chloride	11		2.5	1.1	ug/L			10/12/21 13:51	2.5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		62 - 137		10/12/21 13:51	2.5
4-Bromofluorobenzene (Surr)	94		56 - 136		10/12/21 13:51	2.5
Toluene-d8 (Surr)	94		78 - 122		10/12/21 13:51	2.5
Dibromofluoromethane (Surr)	92		73 - 120		10/12/21 13:51	2.5

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: DUP-01

Lab Sample ID: 240-157760-17

Date Collected: 10/07/21 00:00

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	3.0		2.0	0.86	ug/L			10/12/21 04:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		66 - 120		10/12/21 04:40	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	2.0	U	2.0	0.98	ug/L			10/13/21 12:09	2
cis-1,2-Dichloroethene	40		2.0	0.92	ug/L			10/13/21 12:09	2
Tetrachloroethene	2.0	U	2.0	0.88	ug/L			10/13/21 12:09	2
trans-1,2-Dichloroethene	2.0	U	2.0	1.0	ug/L			10/13/21 12:09	2
Trichloroethene	7.2		2.0	0.88	ug/L			10/13/21 12:09	2
Vinyl chloride	4.6		2.0	0.90	ug/L			10/13/21 12:09	2

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	117		62 - 137		10/13/21 12:09	2
4-Bromofluorobenzene (Surr)	95		56 - 136		10/13/21 12:09	2
Toluene-d8 (Surr)	96		78 - 122		10/13/21 12:09	2
Dibromofluoromethane (Surr)	94		73 - 120		10/13/21 12:09	2

Surrogate Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (62-137)	BFB (56-136)	TOL (78-122)	DBFM (73-120)
240-157760-1	TRIP BLANK	94	78	107	106
240-157760-2	SL-15_100721	105	94	115	112
240-157760-3	SL-14_100721	107	84	108	117
240-157760-4	SL-13_100721	100	81	110	106
240-157760-5	SL-7_100721	95	78	107	98
240-157760-6	SL-6_100721	106	95	126 S1+	118
240-157760-7	SL-5_100721	90	78	110	98
240-157760-8	SL-8_100721	75	81	94	86
240-157760-9	SL-9_100721	109	92	90	88
240-157760-10	SL-10_100721	114	95	93	89
240-157760-11	SL-11_100721	111	95	94	90
240-157760-12	SL-12_100721	118	94	95	92
240-157760-13	MH-1231_100721	118	94	92	91
240-157760-14	SL-2_100721	115	93	92	92
240-157760-15	SL-3_100721	118	95	93	93
240-157760-16	SL-4_100721	118	94	94	92
240-157760-17	DUP-01	117	95	96	94
LCS 240-507762/4	Lab Control Sample	94	89	115	104
LCS 240-507764/4	Lab Control Sample	109	98	98	88
LCS 240-508017/4	Lab Control Sample	89	77	113	99
LCS 240-508019/4	Lab Control Sample	106	98	100	89
MB 240-507762/6	Method Blank	100	78	110	111
MB 240-507764/7	Method Blank	118	77	92	89
MB 240-508017/6	Method Blank	89	68	102	102
MB 240-508019/7	Method Blank	119	79	94	92

Surrogate Legend

- DCA = 1,2-Dichloroethane-d4 (Surr)
- BFB = 4-Bromofluorobenzene (Surr)
- TOL = Toluene-d8 (Surr)
- DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		DCA (66-120)
240-157760-2	SL-15_100721	81
240-157760-3	SL-14_100721	81
240-157760-4	SL-13_100721	81
240-157760-5	SL-7_100721	80
240-157760-6	SL-6_100721	80
240-157760-7	SL-5_100721	81
240-157760-8	SL-8_100721	82
240-157760-9	SL-9_100721	78
240-157760-10	SL-10_100721	84
240-157760-11	SL-11_100721	82
240-157760-12	SL-12_100721	83
240-157760-13	MH-1231_100721	84

Surrogate Summary

Client: ARCADIS U.S., Inc.

Job ID: 240-157760-1

Project/Site: Ford LTP - Utility Corridor Sampling

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (66-120)
240-157760-14	SL-2_100721	84
240-157760-15	SL-3_100721	83
240-157760-16	SL-4_100721	83
240-157760-17	DUP-01	80
LCS 240-507716/4	Lab Control Sample	83
MB 240-507716/5	Method Blank	83

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-507762/6
Matrix: Water
Analysis Batch: 507762

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 09:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/12/21 09:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 09:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 09:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 09:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/12/21 09:24	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		62 - 137		10/12/21 09:24	1
4-Bromofluorobenzene (Surr)	78		56 - 136		10/12/21 09:24	1
Toluene-d8 (Surr)	110		78 - 122		10/12/21 09:24	1
Dibromofluoromethane (Surr)	111		73 - 120		10/12/21 09:24	1

Lab Sample ID: LCS 240-507762/4
Matrix: Water
Analysis Batch: 507762

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	10.3		ug/L		103	63 - 134
cis-1,2-Dichloroethene	10.0	11.6		ug/L		116	77 - 123
Tetrachloroethene	10.0	10.2		ug/L		102	76 - 123
trans-1,2-Dichloroethene	10.0	11.2		ug/L		112	75 - 124
Trichloroethene	10.0	9.12		ug/L		91	70 - 122
Vinyl chloride	10.0	11.2		ug/L		112	60 - 144

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	94		62 - 137
4-Bromofluorobenzene (Surr)	89		56 - 136
Toluene-d8 (Surr)	115		78 - 122
Dibromofluoromethane (Surr)	104		73 - 120

Lab Sample ID: MB 240-507764/7
Matrix: Water
Analysis Batch: 507764

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 10:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/12/21 10:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 10:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 10:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 10:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/12/21 10:51	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		62 - 137		10/12/21 10:51	1
4-Bromofluorobenzene (Surr)	77		56 - 136		10/12/21 10:51	1
Toluene-d8 (Surr)	92		78 - 122		10/12/21 10:51	1

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-507764/7
Matrix: Water
Analysis Batch: 507764

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

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Dibromofluoromethane (Surr)</i>	89		73 - 120		10/12/21 10:51	1

Lab Sample ID: LCS 240-507764/4
Matrix: Water
Analysis Batch: 507764

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

<i>Analyte</i>	<i>Spike Added</i>	<i>LCS Result</i>	<i>LCS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>
1,1-Dichloroethene	10.0	9.34		ug/L		93	63 - 134
cis-1,2-Dichloroethene	10.0	9.93		ug/L		99	77 - 123
Tetrachloroethene	10.0	9.50		ug/L		95	76 - 123
trans-1,2-Dichloroethene	10.0	10.2		ug/L		102	75 - 124
Trichloroethene	10.0	9.44		ug/L		94	70 - 122
Vinyl chloride	10.0	10.3		ug/L		103	60 - 144

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>1,2-Dichloroethane-d4 (Surr)</i>	109		62 - 137
<i>4-Bromofluorobenzene (Surr)</i>	98		56 - 136
<i>Toluene-d8 (Surr)</i>	98		78 - 122
<i>Dibromofluoromethane (Surr)</i>	88		73 - 120

Lab Sample ID: MB 240-508017/6
Matrix: Water
Analysis Batch: 508017

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

<i>Analyte</i>	<i>Result</i>	<i>Qualifier</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/13/21 10:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/13/21 10:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/13/21 10:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/13/21 10:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/13/21 10:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/13/21 10:53	1

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>1,2-Dichloroethane-d4 (Surr)</i>	89		62 - 137		10/13/21 10:53	1
<i>4-Bromofluorobenzene (Surr)</i>	68		56 - 136		10/13/21 10:53	1
<i>Toluene-d8 (Surr)</i>	102		78 - 122		10/13/21 10:53	1
<i>Dibromofluoromethane (Surr)</i>	102		73 - 120		10/13/21 10:53	1

Lab Sample ID: LCS 240-508017/4
Matrix: Water
Analysis Batch: 508017

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

<i>Analyte</i>	<i>Spike Added</i>	<i>LCS Result</i>	<i>LCS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>
1,1-Dichloroethene	10.0	9.64		ug/L		96	63 - 134
cis-1,2-Dichloroethene	10.0	11.4		ug/L		114	77 - 123
Tetrachloroethene	10.0	9.88		ug/L		99	76 - 123
trans-1,2-Dichloroethene	10.0	11.0		ug/L		110	75 - 124
Trichloroethene	10.0	9.20		ug/L		92	70 - 122

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-508017/4
Matrix: Water
Analysis Batch: 508017

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vinyl chloride	10.0	9.65		ug/L		97	60 - 144

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	89		62 - 137
4-Bromofluorobenzene (Surr)	77		56 - 136
Toluene-d8 (Surr)	113		78 - 122
Dibromofluoromethane (Surr)	99		73 - 120

Lab Sample ID: MB 240-508019/7
Matrix: Water
Analysis Batch: 508019

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/13/21 11:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/13/21 11:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/13/21 11:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/13/21 11:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/13/21 11:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/13/21 11:47	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	119		62 - 137		10/13/21 11:47	1
4-Bromofluorobenzene (Surr)	79		56 - 136		10/13/21 11:47	1
Toluene-d8 (Surr)	94		78 - 122		10/13/21 11:47	1
Dibromofluoromethane (Surr)	92		73 - 120		10/13/21 11:47	1

Lab Sample ID: LCS 240-508019/4
Matrix: Water
Analysis Batch: 508019

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	9.15		ug/L		92	63 - 134
cis-1,2-Dichloroethene	10.0	10.4		ug/L		104	77 - 123
Tetrachloroethene	10.0	9.15		ug/L		92	76 - 123
trans-1,2-Dichloroethene	10.0	10.2		ug/L		102	75 - 124
Trichloroethene	10.0	9.59		ug/L		96	70 - 122
Vinyl chloride	10.0	9.74		ug/L		97	60 - 144

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	106		62 - 137
4-Bromofluorobenzene (Surr)	98		56 - 136
Toluene-d8 (Surr)	100		78 - 122
Dibromofluoromethane (Surr)	89		73 - 120

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-507716/5
Matrix: Water
Analysis Batch: 507716

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			10/11/21 20:19	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		66 - 120					10/11/21 20:19	1

Lab Sample ID: LCS 240-507716/4
Matrix: Water
Analysis Batch: 507716

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	9.49		ug/L		95	80 - 122
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	83		66 - 120				

QC Association Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

GC/MS VOA

Analysis Batch: 507716

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-157760-2	SL-15_100721	Total/NA	Water	8260B SIM	
240-157760-3	SL-14_100721	Total/NA	Water	8260B SIM	
240-157760-4	SL-13_100721	Total/NA	Water	8260B SIM	
240-157760-5	SL-7_100721	Total/NA	Water	8260B SIM	
240-157760-6	SL-6_100721	Total/NA	Water	8260B SIM	
240-157760-7	SL-5_100721	Total/NA	Water	8260B SIM	
240-157760-8	SL-8_100721	Total/NA	Water	8260B SIM	
240-157760-9	SL-9_100721	Total/NA	Water	8260B SIM	
240-157760-10	SL-10_100721	Total/NA	Water	8260B SIM	
240-157760-11	SL-11_100721	Total/NA	Water	8260B SIM	
240-157760-12	SL-12_100721	Total/NA	Water	8260B SIM	
240-157760-13	MH-1231_100721	Total/NA	Water	8260B SIM	
240-157760-14	SL-2_100721	Total/NA	Water	8260B SIM	
240-157760-15	SL-3_100721	Total/NA	Water	8260B SIM	
240-157760-16	SL-4_100721	Total/NA	Water	8260B SIM	
240-157760-17	DUP-01	Total/NA	Water	8260B SIM	
MB 240-507716/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-507716/4	Lab Control Sample	Total/NA	Water	8260B SIM	

Analysis Batch: 507762

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-157760-1	TRIP BLANK	Total/NA	Water	8260B	
240-157760-2	SL-15_100721	Total/NA	Water	8260B	
240-157760-3	SL-14_100721	Total/NA	Water	8260B	
240-157760-4	SL-13_100721	Total/NA	Water	8260B	
240-157760-5	SL-7_100721	Total/NA	Water	8260B	
240-157760-6	SL-6_100721	Total/NA	Water	8260B	
240-157760-8	SL-8_100721	Total/NA	Water	8260B	
MB 240-507762/6	Method Blank	Total/NA	Water	8260B	
LCS 240-507762/4	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 507764

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-157760-9	SL-9_100721	Total/NA	Water	8260B	
240-157760-10	SL-10_100721	Total/NA	Water	8260B	
240-157760-11	SL-11_100721	Total/NA	Water	8260B	
240-157760-12	SL-12_100721	Total/NA	Water	8260B	
240-157760-13	MH-1231_100721	Total/NA	Water	8260B	
240-157760-14	SL-2_100721	Total/NA	Water	8260B	
240-157760-15	SL-3_100721	Total/NA	Water	8260B	
240-157760-16	SL-4_100721	Total/NA	Water	8260B	
MB 240-507764/7	Method Blank	Total/NA	Water	8260B	
LCS 240-507764/4	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 508017

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-157760-7	SL-5_100721	Total/NA	Water	8260B	
MB 240-508017/6	Method Blank	Total/NA	Water	8260B	
LCS 240-508017/4	Lab Control Sample	Total/NA	Water	8260B	

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

GC/MS VOA

Analysis Batch: 508019

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-157760-17	DUP-01	Total/NA	Water	8260B	
MB 240-508019/7	Method Blank	Total/NA	Water	8260B	
LCS 240-508019/4	Lab Control Sample	Total/NA	Water	8260B	

- 1
- 2
- 3
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- 9
- 10
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- 12
- 13
- 14

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: TRIP BLANK

Date Collected: 10/07/21 00:00

Date Received: 10/09/21 08:00

Lab Sample ID: 240-157760-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	507762	10/12/21 09:46	LEE	TAL CAN

Client Sample ID: SL-15_100721

Date Collected: 10/07/21 09:55

Date Received: 10/09/21 08:00

Lab Sample ID: 240-157760-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	507762	10/12/21 10:09	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	507716	10/11/21 21:31	CS	TAL CAN

Client Sample ID: SL-14_100721

Date Collected: 10/07/21 10:10

Date Received: 10/09/21 08:00

Lab Sample ID: 240-157760-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	507762	10/12/21 10:31	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	507716	10/11/21 21:55	CS	TAL CAN

Client Sample ID: SL-13_100721

Date Collected: 10/07/21 10:30

Date Received: 10/09/21 08:00

Lab Sample ID: 240-157760-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	507762	10/12/21 10:54	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	507716	10/11/21 22:18	CS	TAL CAN

Client Sample ID: SL-7_100721

Date Collected: 10/07/21 10:50

Date Received: 10/09/21 08:00

Lab Sample ID: 240-157760-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	507762	10/12/21 15:47	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	507716	10/11/21 22:42	CS	TAL CAN

Client Sample ID: SL-6_100721

Date Collected: 10/07/21 11:05

Date Received: 10/09/21 08:00

Lab Sample ID: 240-157760-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	507762	10/12/21 16:09	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	507716	10/11/21 23:06	CS	TAL CAN

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-5_100721

Lab Sample ID: 240-157760-7

Date Collected: 10/07/21 12:15

Matrix: Water

Date Received: 10/09/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		2	508017	10/13/21 11:16	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	507716	10/12/21 00:42	CS	TAL CAN

Client Sample ID: SL-8_100721

Lab Sample ID: 240-157760-8

Date Collected: 10/07/21 12:45

Matrix: Water

Date Received: 10/09/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	507762	10/12/21 16:54	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	507716	10/12/21 01:05	CS	TAL CAN

Client Sample ID: SL-9_100721

Lab Sample ID: 240-157760-9

Date Collected: 10/07/21 13:00

Matrix: Water

Date Received: 10/09/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	507764	10/12/21 12:23	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	507716	10/12/21 01:29	CS	TAL CAN

Client Sample ID: SL-10_100721

Lab Sample ID: 240-157760-10

Date Collected: 10/07/21 13:25

Matrix: Water

Date Received: 10/09/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	507764	10/12/21 11:13	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	507716	10/12/21 01:53	CS	TAL CAN

Client Sample ID: SL-11_100721

Lab Sample ID: 240-157760-11

Date Collected: 10/07/21 13:45

Matrix: Water

Date Received: 10/09/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	507764	10/12/21 11:35	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	507716	10/12/21 02:17	CS	TAL CAN

Client Sample ID: SL-12_100721

Lab Sample ID: 240-157760-12

Date Collected: 10/07/21 14:05

Matrix: Water

Date Received: 10/09/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	507764	10/12/21 11:57	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	507716	10/12/21 02:41	CS	TAL CAN

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: MH-1231_100721

Lab Sample ID: 240-157760-13

Date Collected: 10/07/21 14:45

Matrix: Water

Date Received: 10/09/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10	507764	10/12/21 12:45	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	507716	10/12/21 03:04	CS	TAL CAN

Client Sample ID: SL-2_100721

Lab Sample ID: 240-157760-14

Date Collected: 10/07/21 15:15

Matrix: Water

Date Received: 10/09/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		2.5	507764	10/12/21 13:07	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	507716	10/12/21 03:28	CS	TAL CAN

Client Sample ID: SL-3_100721

Lab Sample ID: 240-157760-15

Date Collected: 10/07/21 15:45

Matrix: Water

Date Received: 10/09/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	507764	10/12/21 13:29	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	507716	10/12/21 03:52	CS	TAL CAN

Client Sample ID: SL-4_100721

Lab Sample ID: 240-157760-16

Date Collected: 10/07/21 16:15

Matrix: Water

Date Received: 10/09/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		2.5	507764	10/12/21 13:51	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	507716	10/12/21 04:16	CS	TAL CAN

Client Sample ID: DUP-01

Lab Sample ID: 240-157760-17

Date Collected: 10/07/21 00:00

Matrix: Water

Date Received: 10/09/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		2	508019	10/13/21 12:09	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	507716	10/12/21 04:40	CS	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22
Kentucky (WW)	State	KY98016	12-31-21
Minnesota	NELAP	OH00048	12-31-21
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	03-31-22
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-23-22
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-18-10	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-22
West Virginia DEP	State	210	12-31-21

0-2/0.3

Chain of Custody Record

MICHIGAN 190

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton -- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

Client Project Manager: Kris Hinskey
 Telephone: 248-994-2240
 Email: kristoffer.hinskey@arcadis.com

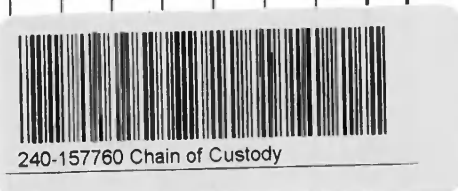
Site Contact: Julia McClafferty
 Telephone: 330-497-9396
 Lab Contact: Mike DeMonico

Company Name: Arcadis
 Address: 28550 Cabot Drive, Suite 500
 City/State/Zip: Novi, MI, 48377
 Phone: 248-994-2240

Project Name: Ford LTP Utility Corridor Sampling
 Project Number: 30080642.701.04
 PO # 30080642.701.04

Sampler Name: Andrew Banitt, Corey Pearson
 Method of Shipment/Carrier:
 Shipping/Tracking No:

Sample Identification	Sample Date	Sample Time	Matrix				Containers & Preservatives				Filtered Sample (Y/N)	Composite=C / Grab-Q	Analyses							Sample Specific Notes / Special Instructions:		
			Air	Aqueous	Sediment	Solid	Other:	H2SO4	HNO3	HCl			NaOH	NaOH	Unpres	Other:	1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B		PCE 8260B	Vinyl Chloride 8260B
TRIP BLANK	---	---	X																		1 Trip Blank	
SL-15_100721	10/7/21	0955	X																			3 VOAs for 8260B 3 VOAs for 8260B SIM
SL-14_100721	10/7/21	1010	X																			
SL-13_100721	10/7/21	1030	X																			
SL-7_100721	10/7/21	1050	X																			
SL-6_100721	10/7/21	1105	X																			
SL-5_100721	10/7/21	1215	X																			
SL-8_100721	10/7/21	1245	X																			
SL-9_100721	10/7/21	1300	X																			
SL-10_100721	10/7/21	1325	X																			



Possible Hazard Identification
 Non-Hazard Flammable Irritant Unknown Poison B Unknown

Special Instructions/QC Requirements & Comments:
 Submit all results through Cadena at jtomala@cadenaco.com. Cadena #E205162
 Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
<i>Andrew Banitt</i>	Arcadis	10/8/21 1430	<i>[Signature]</i>	ETA	10/8/21 1435
<i>[Signature]</i>	ETA	10/8/21 1435	<i>[Signature]</i>	ETA	10/9/21 800

All Samples collected from sanitary sewers (contain sanitary waste)

Received in Laboratory by:



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Eurofins TestAmerica Canton Sample Receipt Form/Narrative Login # : 157760
Canton Facility

Client Ascadis Site Name _____ Cooler unpacked by: _____
 Cooler Received on 10/19/21 Opened on 10/19/21 Trent
 FedEx: 1st Grd UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ **Storage Location** _____

TestAmerica Cooler # 265 Foam Box Client Cooler Box Other _____
 Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
 COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt See Multiple Cooler Form
 IR GUN# IR-14 (CF +0.1 °C) Observed Cooler Temp. 0.2 °C Corrected Cooler Temp. 0.3 °C
 IR GUN #IR-15 (CF +0.2 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes NA
 -Were tamper/custody seals intact and uncompromised? Yes No NA

3. Shippers' packing slip attached to the cooler(s)? Yes No
 4. Did custody papers accompany the sample(s)? Yes No
 5. Were the custody papers relinquished & signed in the appropriate place? Yes No
 6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
 7. Did all bottles arrive in good condition (Unbroken)? Yes No
 8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
 9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/composite (Y/N)? Yes No
 10. Were correct bottle(s) used for the test(s) indicated? Yes No
 11. Sufficient quantity received to perform indicated analyses? Yes No
 12. Are these work share samples and all listed on the COC? Yes No
 If yes, Questions 13-17 have been checked at the originating laboratory.

13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC157842
 14. Were VOAs on the COC? Yes No NA
 15. Were air bubbles >6 mm in any VOA vials? Larger than this. Yes No NA
 16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered Yes No
 17. Was a LL Hg or Me Hg trip blank present? Yes NA

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____
 Concerning _____

Tests that are not checked for pH by Receiving:
 VOAs
 Oil and Grease
 TOC

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page Samples processed by: _____
TB does not receive 8260-Sim

19. SAMPLE CONDITION
 Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container.
 Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION
 Sample(s) _____ were further preserved in the laboratory.
 Time preserved: _____ Preservative(s) added/Lot number(s): _____
 VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT



October 14, 2021

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162

Project: Ford Livonia Transmission Plant - 2021 Utility Corridor Evaluation Vapor Testing

Project number: 30080642.701.04 EAT-WA04

Event Specific Scope of Work References: Sample COC

Laboratory: TestAmerica - North Canton

Laboratory submittal: 157760-1

Sample date: 2021-10-07

Report received by CADENA: 2021-10-14

Initial Data Verification completed by CADENA: 2021-10-14

Number of Samples:17

Sample Matrices:Water

Test Categories:GCMS VOC

Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC sample -006 SURROGATE recoveries were outliers biased high for at least 1 surrogate. Associated client sample results were non-detect so qualification was not required based on these high bias QC outliers.

GCMS VOC QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

Reportable Results Only

CADENA Project ID: E205162
 Laboratory: TestAmerica - North Canton
 Laboratory Submittal: 157760-1

Analyte	Cas No.	Report		Valid		Report		Valid		Report		Valid		Report		Valid		Report		Valid		Report		Valid		Report		Valid									
		Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier				
		10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021					
GC/MS VOC																																					
<u>OSW-82608</u>																																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	2.5	ug/l	---	ND	5.0	ug/l	---	ND	2.5	ug/l	---	ND	2.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	34	1.0	ug/l	---	31	1.0	ug/l	---	19	1.0	ug/l	---	260	1.0	ug/l	---	91	2.5	ug/l	---	140	5.0	ug/l	---	97	2.5	ug/l	---	40	2.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	2.5	ug/l	---	ND	5.0	ug/l	---	ND	2.5	ug/l	---	ND	2.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	2.5	ug/l	---	ND	5.0	ug/l	---	ND	2.5	ug/l	---	ND	2.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	7.5	1.0	ug/l	---	6.5	1.0	ug/l	---	4.0	1.0	ug/l	---	51	1.0	ug/l	---	20	2.5	ug/l	---	25	5.0	ug/l	---	17	2.5	ug/l	---	7.2	2.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	4.6	1.0	ug/l	---	4.2	1.0	ug/l	---	2.3	1.0	ug/l	---	38	1.0	ug/l	---	14	2.5	ug/l	---	17	5.0	ug/l	---	11	2.5	ug/l	---	4.6	2.0	ug/l	---
<u>OSW-82608Sim</u>																																					
1,4-Dioxane	123-91-1					2.7	2.0	ug/l	---	3.1	2.0	ug/l	---	1.7	2.0	ug/l	J	11	2.0	ug/l	---	7.4	2.0	ug/l	---	8.3	2.0	ug/l	---	6.7	2.0	ug/l	---	3.0	2.0	ug/l	---

Analytical Results Summary

Reportable Results Only

CADENA Project ID: E205162
 Laboratory: TestAmerica - North Canton
 Laboratory Submittal: 157760-1

Analyte	Cas No.	Sample Name: SL-15_100721		SL-14_100721		SL-13_100721		SL-7_100721		SL-6_100721		SL-5_100721		SL-8_100721		SL-9_100721																	
		Lab Sample ID: 2401577602		2401577603		2401577604		2401577605		2401577606		2401577607		2401577608		2401577609																	
		Sample Date: 10/7/2021		10/7/2021		10/7/2021		10/7/2021		10/7/2021		10/7/2021		10/7/2021		10/7/2021																	
		Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid																
		Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier																
GC/MS VOC																																	
<u>OSW-82608</u>																																	
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---												
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	44	2.0	ug/l	---	38	1.0	ug/l	---	18	1.0	ug/l	---								
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---								
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	2.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---								
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	7.4	2.0	ug/l	---	8.9	1.0	ug/l	---	4.7	1.0	ug/l	---				
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	4.1	2.0	ug/l	---	8.8	1.0	ug/l	---	2.1	1.0	ug/l	---				
<u>OSW-82608Sum</u>																																	
1,4-Dioxane	123-91-1	1.3	2.0	ug/l	J	ND	2.0	ug/l	---	1.1	2.0	ug/l	J	0.95	2.0	ug/l	J	0.92	2.0	ug/l	J	2.9	2.0	ug/l	---	4.8	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-157760-1

CADENA Verification Report: 2021-10-14

Analyses Performed By:
Eurofins TestAmerica
North Canton, Ohio

Report #43097R
Review Level: Tier III
Project: 30080642.701.02

DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-157760-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						VOC (Full Scan)	VOC (SIM)	MISC
240-157760-1	TRIP BLANK_100721	240-157760-1	Water	10/7/2021		X		
	SL-15_100721	240-157760-2	Water	10/7/2021		X	X	
	SL-14_100721	240-157760-3	Water	10/7/2021		X	X	
	SL-13_100721	240-157760-4	Water	10/7/2021		X	X	
	SL-7_100721	240-157760-5	Water	10/7/2021		X	X	
	SL-6_100721	240-157760-6	Water	10/7/2021		X	X	
	SL-5_100721	240-157760-7	Water	10/7/2021		X	X	
	SL-8_100721	240-157760-8	Water	10/7/2021		X	X	
	SL-9_100721	240-157760-9	Water	10/7/2021		X	X	
	SL-10_100721	240-157760-10	Water	10/7/2021		X	X	
	SL-11_100721	240-157760-11	Water	10/7/2021		X	X	
	SL-12_100721	240-157760-12	Water	10/7/2021		X	X	
	MH-1231_100721	240-157760-13	Water	10/7/2021		X	X	
	SL-2_100721	240-157760-14	Water	10/7/2021		X	X	
	SL-3_100721	240-157760-15	Water	10/7/2021		X	X	
	SL-4_100721	240-157760-16	Water	10/7/2021		X	X	
	DUP-01_100721	240-157760-17	Water	10/7/2021	SL-5_100721	X	X	

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260B and 8260B SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) 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 8260B/8260B-SIM	Water	14 days from collection to analysis (7 days if unpreserved)	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criterion.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample Locations	Initial/Continuing	Compound	Criteria
SL-5_100721	CCV %D	1,1-Dichloroethene	+33.9%
		cis-1,2-Dichloroethene	+24.9%
		Tetrachloroethene	+24.2%

DATA REVIEW

Sample Locations	Initial/Continuing	Compound	Criteria
		trans-1,2-Dichloroethene	+27.2%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01 ¹	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01 ¹	Non-detect	No Action
		Detect	
Initial Calibration	%RSD > 15% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD >90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D >90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

¹ RRF of 0.01 only applies to compounds which are typically poor responding compounds (i.e., ketones, 1,4-dioxane, etc.)

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within 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 REVIEW

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	Duplicate Result	RPD
SL-5_100721/DUP-01_100721	1,4-Dioxane	2.9	3.0	AC
	cis-1,2-Dichloroethene	44	40	9.5%
	Trichloroethene	7.4	7.2	AC
	Vinyl chloride	4.1	4.6	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. 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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260B/8260B-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

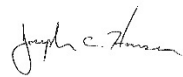
%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Joseph C. Houser

SIGNATURE:



DATE: October 19, 2021

PEER REVIEW: Andrew Korycinski

DATE: October 19, 2021



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-157760-1

Date Collected: 10/07/21 00:00

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 09:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/12/21 09:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 09:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 09:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 09:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/12/21 09:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		62 - 137		10/12/21 09:46	1
4-Bromofluorobenzene (Surr)	78		56 - 136		10/12/21 09:46	1
Toluene-d8 (Surr)	107		78 - 122		10/12/21 09:46	1
Dibromofluoromethane (Surr)	106		73 - 120		10/12/21 09:46	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-15_100721

Lab Sample ID: 240-157760-2

Date Collected: 10/07/21 09:55

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.3	J	2.0	0.86	ug/L			10/11/21 21:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	81		66 - 120		10/11/21 21:31	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 10:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/12/21 10:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 10:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 10:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 10:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/12/21 10:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		62 - 137		10/12/21 10:09	1
4-Bromofluorobenzene (Surr)	94		56 - 136		10/12/21 10:09	1
Toluene-d8 (Surr)	115		78 - 122		10/12/21 10:09	1
Dibromofluoromethane (Surr)	112		73 - 120		10/12/21 10:09	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-14_100721

Lab Sample ID: 240-157760-3

Date Collected: 10/07/21 10:10

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			10/11/21 21:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	81		66 - 120		10/11/21 21:55	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 10:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/12/21 10:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 10:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 10:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 10:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/12/21 10:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		62 - 137		10/12/21 10:31	1
4-Bromofluorobenzene (Surr)	84		56 - 136		10/12/21 10:31	1
Toluene-d8 (Surr)	108		78 - 122		10/12/21 10:31	1
Dibromofluoromethane (Surr)	117		73 - 120		10/12/21 10:31	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-13_100721

Lab Sample ID: 240-157760-4

Date Collected: 10/07/21 10:30

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.1	J	2.0	0.86	ug/L			10/11/21 22:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	81		66 - 120		10/11/21 22:18	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 10:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/12/21 10:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 10:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 10:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 10:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/12/21 10:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		62 - 137		10/12/21 10:54	1
4-Bromofluorobenzene (Surr)	81		56 - 136		10/12/21 10:54	1
Toluene-d8 (Surr)	110		78 - 122		10/12/21 10:54	1
Dibromofluoromethane (Surr)	106		73 - 120		10/12/21 10:54	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-7_100721

Lab Sample ID: 240-157760-5

Date Collected: 10/07/21 10:50

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.95	J	2.0	0.86	ug/L			10/11/21 22:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		66 - 120		10/11/21 22:42	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 15:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/12/21 15:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 15:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 15:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 15:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/12/21 15:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		62 - 137		10/12/21 15:47	1
4-Bromofluorobenzene (Surr)	78		56 - 136		10/12/21 15:47	1
Toluene-d8 (Surr)	107		78 - 122		10/12/21 15:47	1
Dibromofluoromethane (Surr)	98		73 - 120		10/12/21 15:47	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-6_100721

Lab Sample ID: 240-157760-6

Date Collected: 10/07/21 11:05

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.92	J	2.0	0.86	ug/L			10/11/21 23:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		66 - 120					10/11/21 23:06	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 16:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/12/21 16:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 16:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 16:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 16:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/12/21 16:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		62 - 137					10/12/21 16:09	1
4-Bromofluorobenzene (Surr)	95		56 - 136					10/12/21 16:09	1
Toluene-d8 (Surr)	126	S1+	78 - 122					10/12/21 16:09	1
Dibromofluoromethane (Surr)	118		73 - 120					10/12/21 16:09	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-5_100721

Lab Sample ID: 240-157760-7

Date Collected: 10/07/21 12:15

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.9		2.0	0.86	ug/L			10/12/21 00:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	81		66 - 120		10/12/21 00:42	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	2.0	U	2.0	0.98	ug/L			10/13/21 11:16	2
cis-1,2-Dichloroethene	44	J	2.0	0.92	ug/L			10/13/21 11:16	2
Tetrachloroethene	2.0	U	2.0	0.88	ug/L			10/13/21 11:16	2
trans-1,2-Dichloroethene	2.0	U	2.0	1.0	ug/L			10/13/21 11:16	2
Trichloroethene	7.4		2.0	0.88	ug/L			10/13/21 11:16	2
Vinyl chloride	4.1		2.0	0.90	ug/L			10/13/21 11:16	2

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		62 - 137		10/13/21 11:16	2
4-Bromofluorobenzene (Surr)	78		56 - 136		10/13/21 11:16	2
Toluene-d8 (Surr)	110		78 - 122		10/13/21 11:16	2
Dibromofluoromethane (Surr)	98		73 - 120		10/13/21 11:16	2

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-8_100721

Lab Sample ID: 240-157760-8

Date Collected: 10/07/21 12:45

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.8		2.0	0.86	ug/L			10/12/21 01:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		66 - 120					10/12/21 01:05	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 16:54	1
cis-1,2-Dichloroethene	38		1.0	0.46	ug/L			10/12/21 16:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 16:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 16:54	1
Trichloroethene	8.9		1.0	0.44	ug/L			10/12/21 16:54	1
Vinyl chloride	8.8		1.0	0.45	ug/L			10/12/21 16:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	75		62 - 137					10/12/21 16:54	1
4-Bromofluorobenzene (Surr)	81		56 - 136					10/12/21 16:54	1
Toluene-d8 (Surr)	94		78 - 122					10/12/21 16:54	1
Dibromofluoromethane (Surr)	86		73 - 120					10/12/21 16:54	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-9_100721

Lab Sample ID: 240-157760-9

Date Collected: 10/07/21 13:00

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			10/12/21 01:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	78		66 - 120					10/12/21 01:29	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 12:23	1
cis-1,2-Dichloroethene	18		1.0	0.46	ug/L			10/12/21 12:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 12:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 12:23	1
Trichloroethene	4.7		1.0	0.44	ug/L			10/12/21 12:23	1
Vinyl chloride	2.1		1.0	0.45	ug/L			10/12/21 12:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		62 - 137					10/12/21 12:23	1
4-Bromofluorobenzene (Surr)	92		56 - 136					10/12/21 12:23	1
Toluene-d8 (Surr)	90		78 - 122					10/12/21 12:23	1
Dibromofluoromethane (Surr)	88		73 - 120					10/12/21 12:23	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-10_100721

Lab Sample ID: 240-157760-10

Date Collected: 10/07/21 13:25

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.7		2.0	0.86	ug/L			10/12/21 01:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		66 - 120		10/12/21 01:53	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 11:13	1
cis-1,2-Dichloroethene	34		1.0	0.46	ug/L			10/12/21 11:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 11:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 11:13	1
Trichloroethene	7.5		1.0	0.44	ug/L			10/12/21 11:13	1
Vinyl chloride	4.6		1.0	0.45	ug/L			10/12/21 11:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	114		62 - 137		10/12/21 11:13	1
4-Bromofluorobenzene (Surr)	95		56 - 136		10/12/21 11:13	1
Toluene-d8 (Surr)	93		78 - 122		10/12/21 11:13	1
Dibromofluoromethane (Surr)	89		73 - 120		10/12/21 11:13	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-11_100721

Lab Sample ID: 240-157760-11

Date Collected: 10/07/21 13:45

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	3.1		2.0	0.86	ug/L			10/12/21 02:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		66 - 120		10/12/21 02:17	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 11:35	1
cis-1,2-Dichloroethene	31		1.0	0.46	ug/L			10/12/21 11:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 11:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 11:35	1
Trichloroethene	6.5		1.0	0.44	ug/L			10/12/21 11:35	1
Vinyl chloride	4.2		1.0	0.45	ug/L			10/12/21 11:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		62 - 137		10/12/21 11:35	1
4-Bromofluorobenzene (Surr)	95		56 - 136		10/12/21 11:35	1
Toluene-d8 (Surr)	94		78 - 122		10/12/21 11:35	1
Dibromofluoromethane (Surr)	90		73 - 120		10/12/21 11:35	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-12_100721

Lab Sample ID: 240-157760-12

Date Collected: 10/07/21 14:05

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.7	J	2.0	0.86	ug/L			10/12/21 02:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		66 - 120					10/12/21 02:41	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/12/21 11:57	1
cis-1,2-Dichloroethene	19		1.0	0.46	ug/L			10/12/21 11:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/12/21 11:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/12/21 11:57	1
Trichloroethene	4.0		1.0	0.44	ug/L			10/12/21 11:57	1
Vinyl chloride	2.3		1.0	0.45	ug/L			10/12/21 11:57	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		62 - 137					10/12/21 11:57	1
4-Bromofluorobenzene (Surr)	94		56 - 136					10/12/21 11:57	1
Toluene-d8 (Surr)	95		78 - 122					10/12/21 11:57	1
Dibromofluoromethane (Surr)	92		73 - 120					10/12/21 11:57	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: MH-1231_100721

Lab Sample ID: 240-157760-13

Date Collected: 10/07/21 14:45

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	11		2.0	0.86	ug/L			10/12/21 03:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		66 - 120					10/12/21 03:04	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	10	U	10	4.9	ug/L			10/12/21 12:45	10
cis-1,2-Dichloroethene	260		10	4.6	ug/L			10/12/21 12:45	10
Tetrachloroethene	10	U	10	4.4	ug/L			10/12/21 12:45	10
trans-1,2-Dichloroethene	10	U	10	5.1	ug/L			10/12/21 12:45	10
Trichloroethene	51		10	4.4	ug/L			10/12/21 12:45	10
Vinyl chloride	38		10	4.5	ug/L			10/12/21 12:45	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		62 - 137					10/12/21 12:45	10
4-Bromofluorobenzene (Surr)	94		56 - 136					10/12/21 12:45	10
Toluene-d8 (Surr)	92		78 - 122					10/12/21 12:45	10
Dibromofluoromethane (Surr)	91		73 - 120					10/12/21 12:45	10

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-2_100721

Lab Sample ID: 240-157760-14

Date Collected: 10/07/21 15:15

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	7.4		2.0	0.86	ug/L			10/12/21 03:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		66 - 120		10/12/21 03:28	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	2.5	U	2.5	1.2	ug/L			10/12/21 13:07	2.5
cis-1,2-Dichloroethene	91		2.5	1.2	ug/L			10/12/21 13:07	2.5
Tetrachloroethene	2.5	U	2.5	1.1	ug/L			10/12/21 13:07	2.5
trans-1,2-Dichloroethene	2.5	U	2.5	1.3	ug/L			10/12/21 13:07	2.5
Trichloroethene	20		2.5	1.1	ug/L			10/12/21 13:07	2.5
Vinyl chloride	14		2.5	1.1	ug/L			10/12/21 13:07	2.5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	115		62 - 137		10/12/21 13:07	2.5
4-Bromofluorobenzene (Surr)	93		56 - 136		10/12/21 13:07	2.5
Toluene-d8 (Surr)	92		78 - 122		10/12/21 13:07	2.5
Dibromofluoromethane (Surr)	92		73 - 120		10/12/21 13:07	2.5

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-3_100721

Lab Sample ID: 240-157760-15

Date Collected: 10/07/21 15:45

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	8.3		2.0	0.86	ug/L			10/12/21 03:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		66 - 120					10/12/21 03:52	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	2.5	ug/L			10/12/21 13:29	5
cis-1,2-Dichloroethene	140		5.0	2.3	ug/L			10/12/21 13:29	5
Tetrachloroethene	5.0	U	5.0	2.2	ug/L			10/12/21 13:29	5
trans-1,2-Dichloroethene	5.0	U	5.0	2.6	ug/L			10/12/21 13:29	5
Trichloroethene	25		5.0	2.2	ug/L			10/12/21 13:29	5
Vinyl chloride	17		5.0	2.3	ug/L			10/12/21 13:29	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		62 - 137					10/12/21 13:29	5
4-Bromofluorobenzene (Surr)	95		56 - 136					10/12/21 13:29	5
Toluene-d8 (Surr)	93		78 - 122					10/12/21 13:29	5
Dibromofluoromethane (Surr)	93		73 - 120					10/12/21 13:29	5

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: SL-4_100721

Lab Sample ID: 240-157760-16

Date Collected: 10/07/21 16:15

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	6.7		2.0	0.86	ug/L			10/12/21 04:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		66 - 120		10/12/21 04:16	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	2.5	U	2.5	1.2	ug/L			10/12/21 13:51	2.5
cis-1,2-Dichloroethene	97		2.5	1.2	ug/L			10/12/21 13:51	2.5
Tetrachloroethene	2.5	U	2.5	1.1	ug/L			10/12/21 13:51	2.5
trans-1,2-Dichloroethene	2.5	U	2.5	1.3	ug/L			10/12/21 13:51	2.5
Trichloroethene	17		2.5	1.1	ug/L			10/12/21 13:51	2.5
Vinyl chloride	11		2.5	1.1	ug/L			10/12/21 13:51	2.5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		62 - 137		10/12/21 13:51	2.5
4-Bromofluorobenzene (Surr)	94		56 - 136		10/12/21 13:51	2.5
Toluene-d8 (Surr)	94		78 - 122		10/12/21 13:51	2.5
Dibromofluoromethane (Surr)	92		73 - 120		10/12/21 13:51	2.5

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-157760-1

Client Sample ID: DUP-01

Lab Sample ID: 240-157760-17

Date Collected: 10/07/21 00:00

Matrix: Water

Date Received: 10/09/21 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	3.0		2.0	0.86	ug/L			10/12/21 04:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		66 - 120		10/12/21 04:40	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	2.0	U	2.0	0.98	ug/L			10/13/21 12:09	2
cis-1,2-Dichloroethene	40		2.0	0.92	ug/L			10/13/21 12:09	2
Tetrachloroethene	2.0	U	2.0	0.88	ug/L			10/13/21 12:09	2
trans-1,2-Dichloroethene	2.0	U	2.0	1.0	ug/L			10/13/21 12:09	2
Trichloroethene	7.2		2.0	0.88	ug/L			10/13/21 12:09	2
Vinyl chloride	4.6		2.0	0.90	ug/L			10/13/21 12:09	2

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	117		62 - 137		10/13/21 12:09	2
4-Bromofluorobenzene (Surr)	95		56 - 136		10/13/21 12:09	2
Toluene-d8 (Surr)	96		78 - 122		10/13/21 12:09	2
Dibromofluoromethane (Surr)	94		73 - 120		10/13/21 12:09	2

0-2/0.3

Chain of Custody Record

MICHIGAN 190

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

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Regulatory program: DW NPDES RCRA Other

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 Telephone: 248-994-2240
 Email: kristoffer.hinskey@arcadis.com

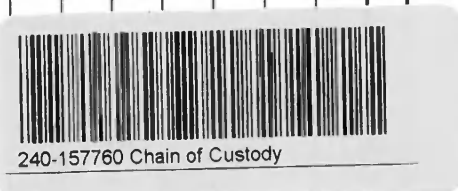
Site Contact: Julia McClafferty
 Telephone: 330-497-9396
 Lab Contact: Mike DeMonico

Company Name: Arcadis
 Address: 28550 Cabot Drive, Suite 500
 City/State/Zip: Novi, MI, 48377
 Phone: 248-994-2240

Project Name: Ford LTP Utility Corridor Sampling
 Project Number: 30080642.701.04
 PO # 30080642.701.04

Sampler Name: Andrew Banitt, Corey Pearson
 Method of Shipment/Carrier:
 Shipping/Tracking No:

Sample Identification	Sample Date	Sample Time	Matrix				Containers & Preservatives				Filtered Sample (Y/N)	Composite=C / Grab-Q	1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	COCs
			Air	Aqueous	Sediment	Solid	Other:	H2SO4	HNO3	HCl									
TRIP BLANK	---	---	X					1											1 of 2
SL-15_100721	10/7/21	0955	X					6											COCs
SL-14_100721	10/7/21	1010	X					6											
SL-13_100721	10/7/21	1030	X					6											
SL-7_100721	10/7/21	1050	X					6											
SL-6_100721	10/7/21	1105	X					6											
SL-5_100721	10/7/21	1215	X					6											
SL-8_100721	10/7/21	1245	X					6											
SL-9_100721	10/7/21	1300	X					6											
SL-10_100721	10/7/21	1325	X					6											



Possible Hazard Identification
 Non-Hazard Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments:
 Submit all results through Cadena at jtomala@cadenaco.com. Cadena #E205162
 Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
<i>Andrew Banitt</i>	Arcadis	10/8/21 1430	<i>[Signature]</i>	ETA	10/8/21 1435
<i>[Signature]</i>	ETA	10/8/21 1435	<i>[Signature]</i>	ETA	10/9/21 800

All Samples collected from sanitary sewers (contain sanitary waste)

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return to Client Disposal By Lab Archive For _____ Months



11/8/2021
Mr. Jim Tomalia
Arcadis U.S., Inc.
28550 Cabot Dr.
Suite 500
Novi MI 48377

Project Name: Ford LTP
Project #: 30080642.701.04
Workorder #: 2111093

Dear Mr. Jim Tomalia

The following report includes the data for the above referenced project for sample(s) received on 11/4/2021 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Jade White at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Jade White
Project Manager

WORK ORDER #: 2111093

Work Order Summary

CLIENT:	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	517-819-0356	P.O. #	30080642.701.04
FAX:		PROJECT #	30080642.701.04 Ford LTP
DATE RECEIVED:	11/04/2021	CONTACT:	Jade White
DATE COMPLETED:	11/08/2021		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	MH-1231_110221	TO-15	6.0 "Hg	10 psi
02A	SL-2_110221	TO-15	5.5 "Hg	10 psi
03A	SL-3_110221	TO-15	5.5 "Hg	10 psi
04A	SL-5_110221	TO-15	4.0 "Hg	10 psi
05A	SL-6_110221	TO-15	5.0 "Hg	10 psi
06A	SL-7_110221	TO-15	4.5 "Hg	10 psi
07A	SL-8_110221	TO-15	6.5 "Hg	10 psi
08A	SL-9_110221	TO-15	5.0 "Hg	10 psi
09A	SL-10_110221	TO-15	6.0 "Hg	10 psi
10A	SL-11_110221	TO-15	4.5 "Hg	10 psi
11A	SL-12_110221	TO-15	4.5 "Hg	10 psi
12A	SL-13_110221	TO-15	4.5 "Hg	10 psi
13A	SL-14_110221	TO-15	6.0 "Hg	10 psi
14A	SL-15_110221	TO-15	5.0 "Hg	10 psi
15A	SL-16_110221	TO-15	5.0 "Hg	10 psi
16A	Dup-01	TO-15	6.0 "Hg	10 psi
17A	Lab Blank	TO-15	NA	NA
18A	CCV	TO-15	NA	NA
19A	LCS	TO-15	NA	NA
19AA	LCSD	TO-15	NA	NA

CERTIFIED BY: 

 Technical Director

DATE: 11/08/21

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209221, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-21-17, UT NELAP – CA009332021-13, VA NELAP - 10615, WA NELAP - C935
 Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
 Accreditation number: CA300005-015, Effective date: 10/18/2021, Expiration date: 10/17/2022.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards
This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
 (916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
Arcadis U.S., Inc.
Workorder# 2111093

Sixteen 1 Liter Summa Canister (100% Certified) samples were received on November 04, 2021. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Dilution was performed on sample MH-1231_110221 due to the presence of high level target species.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1231_110221	Date/Time Analyzed:	11/6/21 08:10 AM
Lab ID:	2111093-01A	Dilution Factor:	8.40
Date/Time Collected:	11/2/21 02:20 PM	Instrument/Filename:	msdj.i / j110527
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	8.9	12	17	12 J
1,4-Dioxane	123-91-1	6.6	23	60	Not Detected
cis-1,2-Dichloroethene	156-59-2	7.0	12	17	880
Tetrachloroethene	127-18-4	7.2	21	28	7.3 J
trans-1,2-Dichloroethene	156-60-5	8.0	12	17	13 J
Trichloroethene	79-01-6	9.8	17	22	33
Vinyl Chloride	75-01-4	7.7	7.9	11	1300

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	94

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-2_110221	Date/Time Analyzed:	11/5/21 03:04 PM
Lab ID:	2111093-02A	Dilution Factor:	2.06
Date/Time Collected:	11/2/21 02:46 PM	Instrument/Filename:	msdj.i / j110506
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.2	3.0	4.1	Not Detected
1,4-Dioxane	123-91-1	1.6	5.6	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	3.0	4.1	11
Tetrachloroethene	127-18-4	1.8	5.2	7.0	3.0 J
trans-1,2-Dichloroethene	156-60-5	2.0	3.0	4.1	Not Detected
Trichloroethene	79-01-6	2.4	4.1	5.5	Not Detected
Vinyl Chloride	75-01-4	1.9	1.9	2.6	14

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	89

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-3_110221	Date/Time Analyzed:	11/5/21 03:37 PM
Lab ID:	2111093-03A	Dilution Factor:	2.06
Date/Time Collected:	11/2/21 03:09 PM	Instrument/Filename:	msdj.i / j110507
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.2	3.0	4.1	Not Detected
1,4-Dioxane	123-91-1	1.6	5.6	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	3.0	4.1	Not Detected
Tetrachloroethene	127-18-4	1.8	5.2	7.0	3.9 J
trans-1,2-Dichloroethene	156-60-5	2.0	3.0	4.1	Not Detected
Trichloroethene	79-01-6	2.4	4.1	5.5	Not Detected
Vinyl Chloride	75-01-4	1.9	1.9	2.6	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	90

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-5_110221	Date/Time Analyzed:	11/5/21 04:10 PM
Lab ID:	2111093-04A	Dilution Factor:	1.94
Date/Time Collected:	11/2/21 10:48 AM	Instrument/Filename:	msdj.i / j110508
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.0	2.8	3.8	Not Detected
1,4-Dioxane	123-91-1	1.5	5.2	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.8	3.8	Not Detected
Tetrachloroethene	127-18-4	1.7	4.9	6.6	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.8	2.8	3.8	Not Detected
Trichloroethene	79-01-6	2.3	3.8	5.2	Not Detected
Vinyl Chloride	75-01-4	1.8	1.8	2.5	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	91

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-6_110221	Date/Time Analyzed:	11/5/21 07:10 PM
Lab ID:	2111093-05A	Dilution Factor:	2.02
Date/Time Collected:	11/2/21 10:06 AM	Instrument/Filename:	msdj.i / j110513
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.1	3.0	4.0	Not Detected
1,4-Dioxane	123-91-1	1.6	5.4	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	3.0	4.0	Not Detected
Tetrachloroethene	127-18-4	1.7	5.1	6.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	3.0	4.0	Not Detected
Trichloroethene	79-01-6	2.4	4.0	5.4	Not Detected
Vinyl Chloride	75-01-4	1.8	1.9	2.6	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	91

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-7_110221	Date/Time Analyzed:	11/5/21 10:06 PM
Lab ID:	2111093-06A	Dilution Factor:	1.98
Date/Time Collected:	11/2/21 09:46 AM	Instrument/Filename:	msdj.i / j110516
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.1	2.9	3.9	Not Detected
1,4-Dioxane	123-91-1	1.6	5.4	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.9	3.9	Not Detected
Tetrachloroethene	127-18-4	1.7	5.0	6.7	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	2.9	3.9	Not Detected
Trichloroethene	79-01-6	2.3	3.9	5.3	Not Detected
Vinyl Chloride	75-01-4	1.8	1.9	2.5	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	88

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-8_110221	Date/Time Analyzed:	11/5/21 10:39 PM
Lab ID:	2111093-07A	Dilution Factor:	2.14
Date/Time Collected:	11/2/21 11:11 AM	Instrument/Filename:	msdj.i / j110517
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.3	3.1	4.2	Not Detected
1,4-Dioxane	123-91-1	1.7	5.8	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.8	3.1	4.2	Not Detected
Tetrachloroethene	127-18-4	1.8	5.4	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	2.0	3.1	4.2	Not Detected
Trichloroethene	79-01-6	2.5	4.2	5.8	Not Detected
Vinyl Chloride	75-01-4	2.0	2.0	2.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	90

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-9_110221	Date/Time Analyzed:	11/5/21 11:12 PM
Lab ID:	2111093-08A	Dilution Factor:	2.02
Date/Time Collected:	11/2/21 12:29 PM	Instrument/Filename:	msdj.i / j110518
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.1	3.0	4.0	Not Detected
1,4-Dioxane	123-91-1	1.6	5.4	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	3.0	4.0	Not Detected
Tetrachloroethene	127-18-4	1.7	5.1	6.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	3.0	4.0	Not Detected
Trichloroethene	79-01-6	2.4	4.0	5.4	Not Detected
Vinyl Chloride	75-01-4	1.8	1.9	2.6	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	90

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-10_110221	Date/Time Analyzed:	11/5/21 11:45 PM
Lab ID:	2111093-09A	Dilution Factor:	2.10
Date/Time Collected:	11/2/21 12:49 PM	Instrument/Filename:	msdj.i / j110519
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.2	3.1	4.2	Not Detected
1,4-Dioxane	123-91-1	1.6	5.7	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.8	3.1	4.2	Not Detected
Tetrachloroethene	127-18-4	1.8	5.3	7.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	2.0	3.1	4.2	Not Detected
Trichloroethene	79-01-6	2.4	4.2	5.6	Not Detected
Vinyl Chloride	75-01-4	1.9	2.0	2.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	90

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-11_110221	Date/Time Analyzed:	11/6/21 12:19 AM
Lab ID:	2111093-10A	Dilution Factor:	1.98
Date/Time Collected:	11/2/21 01:10 PM	Instrument/Filename:	msdj.i / j110520
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.1	2.9	3.9	Not Detected
1,4-Dioxane	123-91-1	1.6	5.4	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.9	3.9	Not Detected
Tetrachloroethene	127-18-4	1.7	5.0	6.7	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	2.9	3.9	Not Detected
Trichloroethene	79-01-6	2.3	3.9	5.3	Not Detected
Vinyl Chloride	75-01-4	1.8	1.9	2.5	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	90

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-12_110221	Date/Time Analyzed:	11/6/21 12:52 AM
Lab ID:	2111093-11A	Dilution Factor:	1.98
Date/Time Collected:	11/2/21 01:32 PM	Instrument/Filename:	msdj.i / j110521
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.1	2.9	3.9	Not Detected
1,4-Dioxane	123-91-1	1.6	5.4	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.9	3.9	10
Tetrachloroethene	127-18-4	1.7	5.0	6.7	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	2.9	3.9	Not Detected
Trichloroethene	79-01-6	2.3	3.9	5.3	2.5 J
Vinyl Chloride	75-01-4	1.8	1.9	2.5	14

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	88

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-13_110221	Date/Time Analyzed:	11/6/21 08:43 AM
Lab ID:	2111093-12A	Dilution Factor:	1.98
Date/Time Collected:	11/2/21 09:24 AM	Instrument/Filename:	msdj.i / j110528
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.1	2.9	3.9	Not Detected
1,4-Dioxane	123-91-1	1.6	5.4	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.9	3.9	Not Detected
Tetrachloroethene	127-18-4	1.7	5.0	6.7	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	2.9	3.9	Not Detected
Trichloroethene	79-01-6	2.3	3.9	5.3	Not Detected
Vinyl Chloride	75-01-4	1.8	1.9	2.5	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	92
Toluene-d8	2037-26-5	70-130	89

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-14_110221	Date/Time Analyzed:	11/6/21 01:25 AM
Lab ID:	2111093-13A	Dilution Factor:	2.10
Date/Time Collected:	11/2/21 09:02 AM	Instrument/Filename:	msdj.i / j110522
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.2	3.1	4.2	Not Detected
1,4-Dioxane	123-91-1	1.6	5.7	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.8	3.1	4.2	Not Detected
Tetrachloroethene	127-18-4	1.8	5.3	7.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	2.0	3.1	4.2	Not Detected
Trichloroethene	79-01-6	2.4	4.2	5.6	Not Detected
Vinyl Chloride	75-01-4	1.9	2.0	2.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	90

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-15_110221	Date/Time Analyzed:	11/6/21 01:58 AM
Lab ID:	2111093-14A	Dilution Factor:	2.02
Date/Time Collected:	11/2/21 08:39 AM	Instrument/Filename:	msdj.i / j110523
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.1	3.0	4.0	Not Detected
1,4-Dioxane	123-91-1	1.6	5.4	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	3.0	4.0	Not Detected
Tetrachloroethene	127-18-4	1.7	5.1	6.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	3.0	4.0	Not Detected
Trichloroethene	79-01-6	2.4	4.0	5.4	Not Detected
Vinyl Chloride	75-01-4	1.8	1.9	2.6	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	89

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-16_110221	Date/Time Analyzed:	11/6/21 02:32 AM
Lab ID:	2111093-15A	Dilution Factor:	2.02
Date/Time Collected:	11/2/21 03:40 PM	Instrument/Filename:	msdj.i / j110524
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.1	3.0	4.0	Not Detected
1,4-Dioxane	123-91-1	1.6	5.4	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	3.0	4.0	Not Detected
Tetrachloroethene	127-18-4	1.7	5.1	6.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	3.0	4.0	Not Detected
Trichloroethene	79-01-6	2.4	4.0	5.4	Not Detected
Vinyl Chloride	75-01-4	1.8	1.9	2.6	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	89

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Dup-01	Date/Time Analyzed:	11/6/21 03:05 AM
Lab ID:	2111093-16A	Dilution Factor:	2.10
Date/Time Collected:	11/2/21 12:00 AM	Instrument/Filename:	msdj.i / j110525
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.2	3.1	4.2	Not Detected
1,4-Dioxane	123-91-1	1.6	5.7	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.8	3.1	4.2	Not Detected
Tetrachloroethene	127-18-4	1.8	5.3	7.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	2.0	3.1	4.2	Not Detected
Trichloroethene	79-01-6	2.4	4.2	5.6	Not Detected
Vinyl Chloride	75-01-4	1.9	2.0	2.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	89

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Lab Blank	Date/Time Analyzed:	11/5/21 12:47 PM
Lab ID:	2111093-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j110505a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.0	1.5	2.0	Not Detected
1,4-Dioxane	123-91-1	0.79	2.7	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.84	1.5	2.0	Not Detected
Tetrachloroethene	127-18-4	0.86	2.5	3.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.95	1.5	2.0	Not Detected
Trichloroethene	79-01-6	1.2	2.0	2.7	Not Detected
Vinyl Chloride	75-01-4	0.92	0.94	1.3	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	90

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	CCV	Date/Time Analyzed:	11/5/21 10:27 AM
Lab ID:	2111093-18A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j110502
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	97
1,4-Dioxane	123-91-1	101
cis-1,2-Dichloroethene	156-59-2	101
Tetrachloroethene	127-18-4	113
trans-1,2-Dichloroethene	156-60-5	104
Trichloroethene	79-01-6	100
Vinyl Chloride	75-01-4	91

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	95

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCS	Date/Time Analyzed:	11/5/21 10:58 AM
Lab ID:	2111093-19A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j110503
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	100
1,4-Dioxane	123-91-1	102
cis-1,2-Dichloroethene	156-59-2	103
Tetrachloroethene	127-18-4	112
trans-1,2-Dichloroethene	156-60-5	106
Trichloroethene	79-01-6	102
Vinyl Chloride	75-01-4	93

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	95

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCSD	Date/Time Analyzed:	11/5/21 11:28 AM
Lab ID:	2111093-19AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j110504
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	103
1,4-Dioxane	123-91-1	102
cis-1,2-Dichloroethene	156-59-2	105
Tetrachloroethene	127-18-4	115
trans-1,2-Dichloroethene	156-60-5	107
Trichloroethene	79-01-6	101
Vinyl Chloride	75-01-4	96

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	98
Toluene-d8	2037-26-5	70-130	94

* % Recovery is calculated using unrounded analytical results.



DATA VERIFICATION REPORT

November 09, 2021

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2021 Utility Corridor Evaluation Vapor Testing
Project number: 30080642.701.04
Event Specific Scope of Work References: Sample COC
Laboratory: EUROFINS-FOLSOM
Laboratory submittal: 2111093
Sample date: 2021-11-02
Report received by CADENA: 2021-11-08
Initial Data Verification completed by CADENA: 2021-11-09
Number of Samples: 16
Sample Matrices: AIR
Test Categories: TO-15 GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) TO-15 Analysis

SDG #2111093

CADENA Verification Report: 2021-11-09

Analyses Performed By:
Eurofins Air Toxics
Folsom, California

Report #43418R
Review Level: Tier III
Project: 30080642.701.02

DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 2111093 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						TO-15 (Full Scan)	TO-15 (SIM)	MISC
2111093	MH-1231_110221_V	2111093-01A	Air	11/2/2021		X		
	SL-2_110221_V	2111093-02A	Air	11/2/2021		X		
	SL-3_110221_V	2111093-03A	Air	11/2/2021		X		
	SL-5_110221_V	2111093-04A	Air	11/2/2021		X		
	SL-6_110221_V	2111093-05A	Air	11/2/2021		X		
	SL-7_110221_V	2111093-06A	Air	11/2/2021		X		
	SL-8_110221_V	2111093-07A	Air	11/2/2021		X		
	SL-9_110221_V	2111093-08A	Air	11/2/2021		X		
	SL-10_110221_V	2111093-09A	Air	11/2/2021		X		
	SL-11_110221_V	2111093-10A	Air	11/2/2021		X		
	SL-12_110221_V	2111093-11A	Air	11/2/2021		X		
	SL-13_110221_V	2111093-12A	Air	11/2/2021		X		
	SL-14_110221_V	2111093-13A	Air	11/2/2021		X		
	SL-15_110221_V	2111093-14A	Air	11/2/2021		X		
	SL-16_110221_V	2111093-15A	Air	11/2/2021		X		
		DUP-01_110221_V	2111093-16A	Air	11/2/2021	SL-5_110221_V	X	

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Method TO-15 (Full Scan). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation	Return Canister Pressure
USEPA TO-15	Air	30 days from collection to analysis (Canister)	Ambient Temperature	< -2" Hg

All samples were analyzed within the specified holding time and canister return pressure / vacuum criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (30%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (30%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than 140% or less than 60% of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

5. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra. All identified compounds met the specified criteria.

6. Field Duplicate Sample Analysis

The field duplicate analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 35% for air 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 not greater than five times the RL, a control limit of three times the RL is applied to the difference between the duplicate sample results.

Results (in $\mu\text{g}/\text{m}^3$) for the field duplicate samples are summarized in the following table.

Sample ID / Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SL-5_110221_V/ DUP-01_110221_V	All compounds	U	U	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

Note: Dilution was performed on sample MH-1231_110221 due to the presence of high-level target species.

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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: TO-15 (Full Scan)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Canister return pressure (<-2"Hg)		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Field Duplicate Sample RPD		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

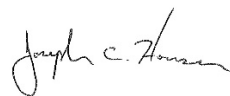
%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Joseph C. Houser

SIGNATURE:



DATE: November 16, 2021

PEER REVIEW: Andrew Korycinski

DATE: November 17, 2021



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



**NO CORRECTIONS/QUALIFIERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**



EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	MH-1231_110221	Date/Time Analyzed:	11/6/21 08:10 AM
Lab ID:	2111093-01A	Dilution Factor:	8.40
Date/Time Collected:	11/2/21 02:20 PM	Instrument/Filename:	msdj.i / j110527
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	8.9	12	17	12 J
1,4-Dioxane	123-91-1	6.6	23	60	Not Detected
cis-1,2-Dichloroethene	156-59-2	7.0	12	17	880
Tetrachloroethene	127-18-4	7.2	21	28	7.3 J
trans-1,2-Dichloroethene	156-60-5	8.0	12	17	13 J
Trichloroethene	79-01-6	9.8	17	22	33
Vinyl Chloride	75-01-4	7.7	7.9	11	1300

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	94

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-2_110221	Date/Time Analyzed:	11/5/21 03:04 PM
Lab ID:	2111093-02A	Dilution Factor:	2.06
Date/Time Collected:	11/2/21 02:46 PM	Instrument/Filename:	msdj.i / j110506
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.2	3.0	4.1	Not Detected
1,4-Dioxane	123-91-1	1.6	5.6	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	3.0	4.1	11
Tetrachloroethene	127-18-4	1.8	5.2	7.0	3.0 J
trans-1,2-Dichloroethene	156-60-5	2.0	3.0	4.1	Not Detected
Trichloroethene	79-01-6	2.4	4.1	5.5	Not Detected
Vinyl Chloride	75-01-4	1.9	1.9	2.6	14

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	89

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-3_110221	Date/Time Analyzed:	11/5/21 03:37 PM
Lab ID:	2111093-03A	Dilution Factor:	2.06
Date/Time Collected:	11/2/21 03:09 PM	Instrument/Filename:	msdj.i / j110507
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.2	3.0	4.1	Not Detected
1,4-Dioxane	123-91-1	1.6	5.6	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	3.0	4.1	Not Detected
Tetrachloroethene	127-18-4	1.8	5.2	7.0	3.9 J
trans-1,2-Dichloroethene	156-60-5	2.0	3.0	4.1	Not Detected
Trichloroethene	79-01-6	2.4	4.1	5.5	Not Detected
Vinyl Chloride	75-01-4	1.9	1.9	2.6	Not Detected

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	90

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-5_110221	Date/Time Analyzed:	11/5/21 04:10 PM
Lab ID:	2111093-04A	Dilution Factor:	1.94
Date/Time Collected:	11/2/21 10:48 AM	Instrument/Filename:	msdj.i / j110508
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.0	2.8	3.8	Not Detected
1,4-Dioxane	123-91-1	1.5	5.2	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.8	3.8	Not Detected
Tetrachloroethene	127-18-4	1.7	4.9	6.6	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.8	2.8	3.8	Not Detected
Trichloroethene	79-01-6	2.3	3.8	5.2	Not Detected
Vinyl Chloride	75-01-4	1.8	1.8	2.5	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	91

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-6_110221	Date/Time Analyzed:	11/5/21 07:10 PM
Lab ID:	2111093-05A	Dilution Factor:	2.02
Date/Time Collected:	11/2/21 10:06 AM	Instrument/Filename:	msdj.i / j110513
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.1	3.0	4.0	Not Detected
1,4-Dioxane	123-91-1	1.6	5.4	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	3.0	4.0	Not Detected
Tetrachloroethene	127-18-4	1.7	5.1	6.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	3.0	4.0	Not Detected
Trichloroethene	79-01-6	2.4	4.0	5.4	Not Detected
Vinyl Chloride	75-01-4	1.8	1.9	2.6	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	91

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-7_110221	Date/Time Analyzed:	11/5/21 10:06 PM
Lab ID:	2111093-06A	Dilution Factor:	1.98
Date/Time Collected:	11/2/21 09:46 AM	Instrument/Filename:	msdj.i / j110516
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.1	2.9	3.9	Not Detected
1,4-Dioxane	123-91-1	1.6	5.4	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.9	3.9	Not Detected
Tetrachloroethene	127-18-4	1.7	5.0	6.7	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	2.9	3.9	Not Detected
Trichloroethene	79-01-6	2.3	3.9	5.3	Not Detected
Vinyl Chloride	75-01-4	1.8	1.9	2.5	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	88

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-8_110221	Date/Time Analyzed:	11/5/21 10:39 PM
Lab ID:	2111093-07A	Dilution Factor:	2.14
Date/Time Collected:	11/2/21 11:11 AM	Instrument/Filename:	msdj.i / j110517
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.3	3.1	4.2	Not Detected
1,4-Dioxane	123-91-1	1.7	5.8	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.8	3.1	4.2	Not Detected
Tetrachloroethene	127-18-4	1.8	5.4	7.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	2.0	3.1	4.2	Not Detected
Trichloroethene	79-01-6	2.5	4.2	5.8	Not Detected
Vinyl Chloride	75-01-4	2.0	2.0	2.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	90

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-9_110221	Date/Time Analyzed:	11/5/21 11:12 PM
Lab ID:	2111093-08A	Dilution Factor:	2.02
Date/Time Collected:	11/2/21 12:29 PM	Instrument/Filename:	msdj.i / j110518
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.1	3.0	4.0	Not Detected
1,4-Dioxane	123-91-1	1.6	5.4	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	3.0	4.0	Not Detected
Tetrachloroethene	127-18-4	1.7	5.1	6.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	3.0	4.0	Not Detected
Trichloroethene	79-01-6	2.4	4.0	5.4	Not Detected
Vinyl Chloride	75-01-4	1.8	1.9	2.6	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	90

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-10_110221	Date/Time Analyzed:	11/5/21 11:45 PM
Lab ID:	2111093-09A	Dilution Factor:	2.10
Date/Time Collected:	11/2/21 12:49 PM	Instrument/Filename:	msdj.i / j110519
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.2	3.1	4.2	Not Detected
1,4-Dioxane	123-91-1	1.6	5.7	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.8	3.1	4.2	Not Detected
Tetrachloroethene	127-18-4	1.8	5.3	7.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	2.0	3.1	4.2	Not Detected
Trichloroethene	79-01-6	2.4	4.2	5.6	Not Detected
Vinyl Chloride	75-01-4	1.9	2.0	2.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	90

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-11_110221	Date/Time Analyzed:	11/6/21 12:19 AM
Lab ID:	2111093-10A	Dilution Factor:	1.98
Date/Time Collected:	11/2/21 01:10 PM	Instrument/Filename:	msdj.i / j110520
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.1	2.9	3.9	Not Detected
1,4-Dioxane	123-91-1	1.6	5.4	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.9	3.9	Not Detected
Tetrachloroethene	127-18-4	1.7	5.0	6.7	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	2.9	3.9	Not Detected
Trichloroethene	79-01-6	2.3	3.9	5.3	Not Detected
Vinyl Chloride	75-01-4	1.8	1.9	2.5	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	90

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-12_110221	Date/Time Analyzed:	11/6/21 12:52 AM
Lab ID:	2111093-11A	Dilution Factor:	1.98
Date/Time Collected:	11/2/21 01:32 PM	Instrument/Filename:	msdj.i / j110521
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.1	2.9	3.9	Not Detected
1,4-Dioxane	123-91-1	1.6	5.4	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.9	3.9	10
Tetrachloroethene	127-18-4	1.7	5.0	6.7	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	2.9	3.9	Not Detected
Trichloroethene	79-01-6	2.3	3.9	5.3	2.5 J
Vinyl Chloride	75-01-4	1.8	1.9	2.5	14

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	88

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-13_110221	Date/Time Analyzed:	11/6/21 08:43 AM
Lab ID:	2111093-12A	Dilution Factor:	1.98
Date/Time Collected:	11/2/21 09:24 AM	Instrument/Filename:	msdj.i / j110528
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.1	2.9	3.9	Not Detected
1,4-Dioxane	123-91-1	1.6	5.4	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.9	3.9	Not Detected
Tetrachloroethene	127-18-4	1.7	5.0	6.7	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	2.9	3.9	Not Detected
Trichloroethene	79-01-6	2.3	3.9	5.3	Not Detected
Vinyl Chloride	75-01-4	1.8	1.9	2.5	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	92
Toluene-d8	2037-26-5	70-130	89

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-14_110221	Date/Time Analyzed:	11/6/21 01:25 AM
Lab ID:	2111093-13A	Dilution Factor:	2.10
Date/Time Collected:	11/2/21 09:02 AM	Instrument/Filename:	msdj.i / j110522
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.2	3.1	4.2	Not Detected
1,4-Dioxane	123-91-1	1.6	5.7	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.8	3.1	4.2	Not Detected
Tetrachloroethene	127-18-4	1.8	5.3	7.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	2.0	3.1	4.2	Not Detected
Trichloroethene	79-01-6	2.4	4.2	5.6	Not Detected
Vinyl Chloride	75-01-4	1.9	2.0	2.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	90

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-15_110221	Date/Time Analyzed:	11/6/21 01:58 AM
Lab ID:	2111093-14A	Dilution Factor:	2.02
Date/Time Collected:	11/2/21 08:39 AM	Instrument/Filename:	msdj.i / j110523
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.1	3.0	4.0	Not Detected
1,4-Dioxane	123-91-1	1.6	5.4	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	3.0	4.0	Not Detected
Tetrachloroethene	127-18-4	1.7	5.1	6.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	3.0	4.0	Not Detected
Trichloroethene	79-01-6	2.4	4.0	5.4	Not Detected
Vinyl Chloride	75-01-4	1.8	1.9	2.6	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	89

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-16_110221	Date/Time Analyzed:	11/6/21 02:32 AM
Lab ID:	2111093-15A	Dilution Factor:	2.02
Date/Time Collected:	11/2/21 03:40 PM	Instrument/Filename:	msdj.i / j110524
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.1	3.0	4.0	Not Detected
1,4-Dioxane	123-91-1	1.6	5.4	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.7	3.0	4.0	Not Detected
Tetrachloroethene	127-18-4	1.7	5.1	6.8	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.9	3.0	4.0	Not Detected
Trichloroethene	79-01-6	2.4	4.0	5.4	Not Detected
Vinyl Chloride	75-01-4	1.8	1.9	2.6	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	89

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Dup-01	Date/Time Analyzed:	11/6/21 03:05 AM
Lab ID:	2111093-16A	Dilution Factor:	2.10
Date/Time Collected:	11/2/21 12:00 AM	Instrument/Filename:	msdj.i / j110525
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.2	3.1	4.2	Not Detected
1,4-Dioxane	123-91-1	1.6	5.7	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.8	3.1	4.2	Not Detected
Tetrachloroethene	127-18-4	1.8	5.3	7.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	2.0	3.1	4.2	Not Detected
Trichloroethene	79-01-6	2.4	4.2	5.6	Not Detected
Vinyl Chloride	75-01-4	1.9	2.0	2.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	89

Analysis Request /Canister Chain of Custody

For Laboratory Use Only

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
 Phone (800) 985-5955; Fax (916) 351-8279

PID: _____ Workorder #: **2111093**

Page 1 of 2
 Click links below to view:

[Canister Sampling Guide](#)
[Helium Shroud Video](#)

Client: <u>Ford</u>	PID: <u>NA</u>	Special Instructions/Notes: Report ONLY: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, 1,4-Dioxane, PCE, TCE and VC. Submit results through Cadena at jim.tomalia@cadena.com. Cadena #E205162. Level IV Reporting	Turnaround Time (Rush surcharges may apply) 24-hr TAT 5-Day Turnaround Time <u>11/3/21</u>		
Project Name: <u>Ford LTP</u>	P.O.# <u>30080642.701.04</u>				
Project Manager: <u>Kris Hinskey</u>					
Sampler: <u>Andrew Banitt, Sommer Guy</u>					
Site Name: <u>Ford LTP</u>					

Lab ID	Sample Identification	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Initial (in Hg)	Final (in Hg)	Lab Use Only		TO-15 (See Special Instructions/Notes)	Do Not Analyze
				Date	Time	Date	Time			Receipt	Final (psig) Gas: N ₂ / He		
01A	MH-1231_110221	1L1533	2103	11/2/2021	14:19	11/2/2021	14:20	-29	-6.5				
02A	SL-2_110221	1L2306	2121	11/2/2021	14:44	11/2/2021	14:46	-29	-6.5				
03A	SL-3_110221	1L3059	2103	11/2/2021	15:08	11/2/2021	15:09	-29	-6.5				
04A	SL-5_110221	1L2663	1824	11/2/2021	10:47	11/2/2021	10:48	-29	-4.5				
05A	SL-6_110221	1L3061	2035	11/2/2021	10:05	11/2/2021	10:06	-29	-5.5				
06A	SL-7_110221	1L2068	1938	11/2/2021	09:45	11/2/2021	09:46	-29	-5.0				
07A	SL-8_110221	1L2273	2050	11/2/2021	11:01	11/2/2021	11:11	-29	-7.0				
08A	SL-9_110221	1L3372	2103	11/2/2021	12:27	11/2/2021	12:29	-29	-5.0				
09A	SL-10_110221	1L2817	1910	11/2/2021	12:48	11/2/2021	12:49	-29	-6.5				
10A	SL-11_110221	1L3387	1922	11/2/2021	13:08	11/2/2021	13:10	-29	-5.0				
11A	SL-12_110221	1L2897	1922	11/2/2021	13:31	11/2/2021	13:32	-29	-5.0				
12A	SL-13_110221	1L3982	2108	11/2/2021	09:23	11/2/2021	09:24	-29	-5.0				
13A	SL-14_110221	1L2800	1845	11/2/2021	09:00	11/2/2021	09:02	-29	-8.0				
14A	SL-15_110221	1L3267	1912	11/2/2021	08:37	11/2/2021	08:39	-29	-6.0				
15A	SL-16_110221	1L3218	1946	11/2/2021	15:39	11/2/2021	15:40	-29.5	-6.0				

Relinquished by: (Signature/Affiliation) <i>[Signature]</i> Arcad.5	Date 11/2/21	Time 1700	Received by: (Signature/Affiliation) <i>[Signature]</i> Ford Trailer	Date 11/2/21	Time 1700
Relinquished by: (Signature/Affiliation) <i>[Signature]</i>	Date 11/3/21	Time 14:00	Received by: (Signature/Affiliation) <i>[Signature]</i>	Date 11/4/21	Time 1530
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only

Shipper Name: CAL Custody Seals Intact? Yes No None

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T Hotline (800) 467-4922

11/8/2021
Mr. Jim Tomalia
Arcadis U.S., Inc.
28550 Cabot Dr.
Suite 500
Novi MI 48377

Project Name: Ford LTP
Project #: 30080642.701.04
Workorder #: 2111094

Dear Mr. Jim Tomalia

The following report includes the data for the above referenced project for sample(s) received on 11/4/2021 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Jade White at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Jade White
Project Manager

WORK ORDER #: 2111094

Work Order Summary

CLIENT:	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	517-819-0356	P.O. #	30080642.701.04
FAX:		PROJECT #	30080642.701.04 Ford LTP
DATE RECEIVED:	11/04/2021	CONTACT:	Jade White
DATE COMPLETED:	11/08/2021		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SL-4_110221	TO-15	4.0 "Hg	10 psi
02A	SL-17_110221	TO-15	3.0 "Hg	10 psi
03A	SL-18_110221	TO-15	6.0 "Hg	10 psi
04A	Lab Blank	TO-15	NA	NA
04B	Lab Blank	TO-15	NA	NA
05A	CCV	TO-15	NA	NA
05B	CCV	TO-15	NA	NA
06A	LCS	TO-15	NA	NA
06AA	LCSD	TO-15	NA	NA
06B	LCS	TO-15	NA	NA
06BB	LCSD	TO-15	NA	NA

CERTIFIED BY: 

 Technical Director

DATE: 11/08/21

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209221, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-21-17, UT NELAP – CA009332021-13, VA NELAP - 10615, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-015, Effective date: 10/18/2021, Expiration date: 10/17/2022.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
 (916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
Arcadis U.S., Inc.
Workorder# 2111094

Three 1 Liter Summa Canister (100% Certified) samples were received on November 04, 2021. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-4_110221	Date/Time Analyzed:	11/5/21 10:58 PM
Lab ID:	2111094-01A	Dilution Factor:	1.94
Date/Time Collected:	11/2/21 04:55 PM	Instrument/Filename:	msdp.i / p110520
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.0	2.8	3.8	Not Detected
1,4-Dioxane	123-91-1	1.5	5.2	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.8	3.8	5.0
Tetrachloroethene	127-18-4	1.7	4.9	6.6	13
trans-1,2-Dichloroethene	156-60-5	1.8	2.8	3.8	Not Detected
Trichloroethene	79-01-6	2.3	3.8	5.2	Not Detected
Vinyl Chloride	75-01-4	1.8	1.8	2.5	3.2

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	105
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-17_110221	Date/Time Analyzed:	11/5/21 11:27 PM
Lab ID:	2111094-02A	Dilution Factor:	1.87
Date/Time Collected:	11/2/21 04:10 PM	Instrument/Filename:	msdp.i / p110521
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.0	2.7	3.7	Not Detected
1,4-Dioxane	123-91-1	1.5	5.0	13	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.7	3.7	Not Detected
Tetrachloroethene	127-18-4	1.6	4.7	6.3	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.8	2.7	3.7	Not Detected
Trichloroethene	79-01-6	2.2	3.7	5.0	620
Vinyl Chloride	75-01-4	1.7	1.8	2.4	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	110
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-18_110221	Date/Time Analyzed:	11/5/21 11:53 PM
Lab ID:	2111094-03A	Dilution Factor:	2.10
Date/Time Collected:	11/2/21 04:31 PM	Instrument/Filename:	msd3.i / 3110521
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.2	3.1	4.2	Not Detected
1,4-Dioxane	123-91-1	1.6	5.7	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.8	3.1	4.2	Not Detected
Tetrachloroethene	127-18-4	1.8	5.3	7.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	2.0	3.1	4.2	Not Detected
Trichloroethene	79-01-6	2.4	4.2	5.6	Not Detected
Vinyl Chloride	75-01-4	1.9	2.0	2.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	96
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Lab Blank	Date/Time Analyzed:	11/5/21 01:44 PM
Lab ID:	2111094-04A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p110506e
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.0	1.5	2.0	Not Detected
1,4-Dioxane	123-91-1	0.79	2.7	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.84	1.5	2.0	Not Detected
Tetrachloroethene	127-18-4	0.86	2.5	3.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.95	1.5	2.0	Not Detected
Trichloroethene	79-01-6	1.2	2.0	2.7	Not Detected
Vinyl Chloride	75-01-4	0.92	0.94	1.3	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	105
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	Lab Blank	Date/Time Analyzed:	11/5/21 12:44 PM
Lab ID:	2111094-04B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3110505c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.0	1.5	2.0	Not Detected
1,4-Dioxane	123-91-1	0.79	2.7	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.84	1.5	2.0	Not Detected
Tetrachloroethene	127-18-4	0.86	2.5	3.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.95	1.5	2.0	Not Detected
Trichloroethene	79-01-6	1.2	2.0	2.7	Not Detected
Vinyl Chloride	75-01-4	0.92	0.94	1.3	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	96
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	100

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	CCV	Date/Time Analyzed:	11/5/21 10:40 AM
Lab ID:	2111094-05A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p110502
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	98
1,4-Dioxane	123-91-1	100
cis-1,2-Dichloroethene	156-59-2	108
Tetrachloroethene	127-18-4	110
trans-1,2-Dichloroethene	156-60-5	102
Trichloroethene	79-01-6	102
Vinyl Chloride	75-01-4	89

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	110
4-Bromofluorobenzene	460-00-4	70-130	114
Toluene-d8	2037-26-5	70-130	97

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	CCV	Date/Time Analyzed:	11/5/21 11:07 AM
Lab ID:	2111094-05B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3110502
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	92
1,4-Dioxane	123-91-1	96
cis-1,2-Dichloroethene	156-59-2	98
Tetrachloroethene	127-18-4	108
trans-1,2-Dichloroethene	156-60-5	94
Trichloroethene	79-01-6	99
Vinyl Chloride	75-01-4	88

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	102

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCS	Date/Time Analyzed:	11/5/21 11:08 AM
Lab ID:	2111094-06A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p110503
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	102
1,4-Dioxane	123-91-1	101
cis-1,2-Dichloroethene	156-59-2	110
Tetrachloroethene	127-18-4	110
trans-1,2-Dichloroethene	156-60-5	106
Trichloroethene	79-01-6	100
Vinyl Chloride	75-01-4	91

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	108
4-Bromofluorobenzene	460-00-4	70-130	109
Toluene-d8	2037-26-5	70-130	92

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCSD	Date/Time Analyzed:	11/5/21 11:35 AM
Lab ID:	2111094-06AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdp.i / p110504
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	98
1,4-Dioxane	123-91-1	96
cis-1,2-Dichloroethene	156-59-2	106
Tetrachloroethene	127-18-4	108
trans-1,2-Dichloroethene	156-60-5	103
Trichloroethene	79-01-6	97
Vinyl Chloride	75-01-4	91

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	103
4-Bromofluorobenzene	460-00-4	70-130	108
Toluene-d8	2037-26-5	70-130	96

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCS	Date/Time Analyzed:	11/5/21 11:34 AM
Lab ID:	2111094-06B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3110503
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	94
1,4-Dioxane	123-91-1	102
cis-1,2-Dichloroethene	156-59-2	100
Tetrachloroethene	127-18-4	107
trans-1,2-Dichloroethene	156-60-5	95
Trichloroethene	79-01-6	100
Vinyl Chloride	75-01-4	86

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	93
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	103

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	LCSD	Date/Time Analyzed:	11/5/21 12:02 PM
Lab ID:	2111094-06BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd3.i / 3110504
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	91
1,4-Dioxane	123-91-1	98
cis-1,2-Dichloroethene	156-59-2	97
Tetrachloroethene	127-18-4	107
trans-1,2-Dichloroethene	156-60-5	93
Trichloroethene	79-01-6	98
Vinyl Chloride	75-01-4	86

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	91
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	102

* % Recovery is calculated using unrounded analytical results.



DATA VERIFICATION REPORT

November 09, 2021

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2021 Utility Corridor Evaluation Vapor Testing
Project number: 30080642.701.04
Event Specific Scope of Work References: Sample COC
Laboratory: EUROFINS-FOLSOM
Laboratory submittal: 2111094
Sample date: 2021-11-02
Report received by CADENA: 2021-11-08
Initial Data Verification completed by CADENA: 2021-11-09
Number of Samples: 3
Sample Matrices: AIR
Test Categories: TO-15 GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) TO-15 Analysis

SDG #2111094

CADENA Verification Report: 2021-11-09

Analyses Performed By:
Eurofins Air Toxics
Folsom, California

Report #43419R
Review Level: Tier III
Project: 30080642.701.02

DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 2111094 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						TO-15 (Full Scan)	TO-15 (SIM)	MISC
2111094	SL-4_110221_V	2111094-01A	Air	11/2/2021		X		
	SL-17_110221_V	2111094-02A	Air	11/2/2021		X		
	SL-18_110221_V	2111094-03A	Air	11/2/2021		X		

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Method TO-15 (Full Scan). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation	Return Canister Pressure
USEPA TO-15	Air	30 days from collection to analysis (Canister)	Ambient Temperature	< -2" Hg

All samples were analyzed within the specified holding time and canister return pressure / vacuum criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (30%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (30%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than 140% or less than 60% of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

5. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra. All identified compounds met the specified criteria.

6. Field Duplicate Sample Analysis

The field duplicate analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 35% for air 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 not greater than five times the RL, a control limit of three times the RL is applied to the difference between the duplicate sample results.

A field duplicate analysis was not performed on a sample location within this SDG.

7. System Performance and Overall Assessment

Note: Dilution was performed on sample MH-1231_110221 due to the presence of high-level target species.

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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: TO-15 (Full Scan)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Canister return pressure (<-2"Hg)		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Field Duplicate Sample RPD	X				X
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

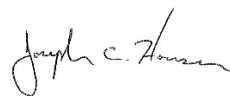
%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Joseph C. Houser

SIGNATURE:



DATE: November 16, 2021

PEER REVIEW: Andrew Korycinski

DATE: November 17, 2021



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



**NO CORRECTIONS/QUALIFIERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**



EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-4_110221	Date/Time Analyzed:	11/5/21 10:58 PM
Lab ID:	2111094-01A	Dilution Factor:	1.94
Date/Time Collected:	11/2/21 04:55 PM	Instrument/Filename:	msdp.i / p110520
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.0	2.8	3.8	Not Detected
1,4-Dioxane	123-91-1	1.5	5.2	14	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.8	3.8	5.0
Tetrachloroethene	127-18-4	1.7	4.9	6.6	13
trans-1,2-Dichloroethene	156-60-5	1.8	2.8	3.8	Not Detected
Trichloroethene	79-01-6	2.3	3.8	5.2	Not Detected
Vinyl Chloride	75-01-4	1.8	1.8	2.5	3.2

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	105
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-17_110221	Date/Time Analyzed:	11/5/21 11:27 PM
Lab ID:	2111094-02A	Dilution Factor:	1.87
Date/Time Collected:	11/2/21 04:10 PM	Instrument/Filename:	msdp.i / p110521
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.0	2.7	3.7	Not Detected
1,4-Dioxane	123-91-1	1.5	5.0	13	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.6	2.7	3.7	Not Detected
Tetrachloroethene	127-18-4	1.6	4.7	6.3	Not Detected
trans-1,2-Dichloroethene	156-60-5	1.8	2.7	3.7	Not Detected
Trichloroethene	79-01-6	2.2	3.7	5.0	620
Vinyl Chloride	75-01-4	1.7	1.8	2.4	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	110
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	99

EPA METHOD TO-15 GC/MS FULL SCAN
Ford LTP

Client ID:	SL-18_110221	Date/Time Analyzed:	11/5/21 11:53 PM
Lab ID:	2111094-03A	Dilution Factor:	2.10
Date/Time Collected:	11/2/21 04:31 PM	Instrument/Filename:	msd3.i / 3110521
Media:	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.2	3.1	4.2	Not Detected
1,4-Dioxane	123-91-1	1.6	5.7	15	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.8	3.1	4.2	Not Detected
Tetrachloroethene	127-18-4	1.8	5.3	7.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	2.0	3.1	4.2	Not Detected
Trichloroethene	79-01-6	2.4	4.2	5.6	Not Detected
Vinyl Chloride	75-01-4	1.9	2.0	2.7	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	96
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	101

Analysis Request /Canister Chain of Custody

For Laboratory Use Only

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
 Phone (800) 985-5955; Fax (916) 351-8279

PID: _____ Workorder #: 2111094

Click links below to view: *Page 1 of 1*
[Canister Sampling Guide](#)
[Helium Shroud Video](#)

Client:	Ford	PID:	NA	Special Instructions/Notes: Report ONLY: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, 1,4-Dioxane, PCE, TCE and VC. Submit results through Cadena at jim.tomalia@cadena.com. Cadena #E205162. Level IV Reporting	Turnaround Time (Rush surcharges may apply) 24-hr - 5 Day Turnaround Time
Project Name:	Ford LTP	P.O.#	30080642.701.04		
Project Manager:	Kris Hinskey				
Sampler:	Andrew Banitt, Sommer Guy				
Site Name:	Ford LTP				

Lab ID	Sample Identification	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Initial (in Hg)	Final (in Hg)	Lab Use Only		TO-15 (See Special Instructions/Notes)	Do Not Analyze
				Date	Time	Date	Time			Receipt	Final (psig) Gas: N ₂ /He		
01A	SL-4_110221	1L2471	1922	11/2/2021	16:54	11/2/2021	16:55	-29	-4.5			X	
02A	SL-17_110221	1L2224	1922	11/2/2021	16:09	11/2/2021	16:10	-29	-3.5			X	
03A	SL-18_110221	34002414	2105	11/2/2021	16:30	11/2/2021	16:31	-29	-6.0			X	
		1L2655	1910	-	-	-	-	-	-				X

Relinquished by: (Signature/Affiliation) <i>W. P. ...</i> Accadis	Date 11/2/21	Time 1700	Received by: (Signature/Affiliation) <i>Ford Trailer</i>	Date 11/2/21	Time 1700
Relinquished by: (Signature/Affiliation) <i>...</i>	Date 11/3/21	Time 14:00	Received by: (Signature/Affiliation) <i>...</i>	Date 11/4/21	Time 1032
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only

Shipper Name: *W. P. ...* Custody Seals Intact? Yes No None

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-159369-1

Client Project/Site: Ford LTP - Utility Corridor Sampling

For:

ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey



Authorized for release by:
11/11/2021 8:43:59 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.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.



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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

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.
U	Indicates the analyte was analyzed for but not detected.

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

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Job ID: 240-159369-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative 240-159369-1

Comments

No additional comments.

Receipt

The samples were received on 11/5/2021 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.5° C and 0.6° C.

GC/MS VOA

Method 8260B: The following sample was diluted due to the abundance of non-target analytes: SL-5_110221 (240-159369-7). Elevated reporting limits (RLs) are provided.

Method 8260B SIM: The Matrix spike/matrix spike duplicate (MS/MSD) samples for analytical batch 240-511974 did not analyze due to instrument failure.

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

VOA Prep

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



Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

- 1
- 2
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- 11
- 12
- 13
- 14

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-159369-1	TRIP BLANK	Water	11/02/21 00:00	11/05/21 10:00
240-159369-2	SL-15_110221	Water	11/02/21 08:30	11/05/21 10:00
240-159369-3	SL-14_110221	Water	11/02/21 08:50	11/05/21 10:00
240-159369-4	SL-13_110221	Water	11/02/21 09:15	11/05/21 10:00
240-159369-5	SL-7_110221	Water	11/02/21 09:40	11/05/21 10:00
240-159369-6	SL-6_110221	Water	11/02/21 10:05	11/05/21 10:00
240-159369-7	SL-5_110221	Water	11/02/21 10:35	11/05/21 10:00
240-159369-8	SL-8_110221	Water	11/02/21 11:05	11/05/21 10:00
240-159369-9	SL-9_110221	Water	11/02/21 12:25	11/05/21 10:00
240-159369-10	SL-10_110221	Water	11/02/21 12:40	11/05/21 10:00
240-159369-11	SL-11_110221	Water	11/02/21 13:05	11/05/21 10:00
240-159369-12	SL-12_110221	Water	11/02/21 13:25	11/05/21 10:00
240-159369-13	MH-1231_110221	Water	11/02/21 14:15	11/05/21 10:00
240-159369-14	SL-2_110221	Water	11/02/21 14:40	11/05/21 10:00
240-159369-15	SL-3_110221	Water	11/02/21 15:05	11/05/21 10:00
240-159369-16	SL-4_110221	Water	11/02/21 16:50	11/05/21 10:00
240-159369-17	SL-16_110221	Water	11/02/21 15:30	11/05/21 10:00
240-159369-18	SL-17_110221	Water	11/02/21 16:00	11/05/21 10:00
240-159369-19	SL-18_110221	Water	11/02/21 16:25	11/05/21 10:00
240-159369-20	DUP-01	Water	11/02/21 00:00	11/05/21 10:00



Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-159369-1

No Detections.

Client Sample ID: SL-15_110221

Lab Sample ID: 240-159369-2

No Detections.

Client Sample ID: SL-14_110221

Lab Sample ID: 240-159369-3

No Detections.

Client Sample ID: SL-13_110221

Lab Sample ID: 240-159369-4

No Detections.

Client Sample ID: SL-7_110221

Lab Sample ID: 240-159369-5

No Detections.

Client Sample ID: SL-6_110221

Lab Sample ID: 240-159369-6

No Detections.

Client Sample ID: SL-5_110221

Lab Sample ID: 240-159369-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.3		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	1.5	J	2.0	0.92	ug/L	2		8260B	Total/NA

Client Sample ID: SL-8_110221

Lab Sample ID: 240-159369-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.2		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	1.9		1.0	0.46	ug/L	1		8260B	Total/NA
Vinyl chloride	1.4		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: SL-9_110221

Lab Sample ID: 240-159369-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.2		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	2.1		1.0	0.46	ug/L	1		8260B	Total/NA
Vinyl chloride	1.3		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: SL-10_110221

Lab Sample ID: 240-159369-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.0		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	1.8		1.0	0.46	ug/L	1		8260B	Total/NA
Vinyl chloride	1.4		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: SL-11_110221

Lab Sample ID: 240-159369-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.5	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	1.1		1.0	0.46	ug/L	1		8260B	Total/NA
Vinyl chloride	1.1		1.0	0.45	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-12_110221

Lab Sample ID: 240-159369-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.0		1.0	0.46	ug/L	1		8260B	Total/NA
Vinyl chloride	0.50	J	1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: MH-1231_110221

Lab Sample ID: 240-159369-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	8.1		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	12		1.0	0.46	ug/L	1		8260B	Total/NA
Vinyl chloride	12		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: SL-2_110221

Lab Sample ID: 240-159369-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.46	J	1.0	0.46	ug/L	1		8260B	Total/NA
Trichloroethene	1.2		1.0	0.44	ug/L	1		8260B	Total/NA

Client Sample ID: SL-3_110221

Lab Sample ID: 240-159369-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	4.4		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	5.1		1.0	0.46	ug/L	1		8260B	Total/NA
Vinyl chloride	4.4		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: SL-4_110221

Lab Sample ID: 240-159369-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	3.6		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	3.7		1.0	0.46	ug/L	1		8260B	Total/NA
Vinyl chloride	2.6		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: SL-16_110221

Lab Sample ID: 240-159369-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	4.2		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	5.0		1.0	0.46	ug/L	1		8260B	Total/NA
Vinyl chloride	4.2		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: SL-17_110221

Lab Sample ID: 240-159369-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.9	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	4.5		1.0	0.46	ug/L	1		8260B	Total/NA
Vinyl chloride	3.5		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: SL-18_110221

Lab Sample ID: 240-159369-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	3.3		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	4.5		1.0	0.46	ug/L	1		8260B	Total/NA
Vinyl chloride	3.2		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: DUP-01

Lab Sample ID: 240-159369-20

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.6	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: DUP-01 (Continued)

Lab Sample ID: 240-159369-20

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.2		1.0	0.46	ug/L	1		8260B	Total/NA
Vinyl chloride	0.74	J	1.0	0.45	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton



Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-159369-1

Date Collected: 11/02/21 00:00

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 12:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/08/21 12:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 12:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 12:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 12:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/08/21 12:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		62 - 137		11/08/21 12:43	1
4-Bromofluorobenzene (Surr)	79		56 - 136		11/08/21 12:43	1
Toluene-d8 (Surr)	108		78 - 122		11/08/21 12:43	1
Dibromofluoromethane (Surr)	96		73 - 120		11/08/21 12:43	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-15_110221

Lab Sample ID: 240-159369-2

Date Collected: 11/02/21 08:30

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/08/21 21:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		66 - 120		11/08/21 21:00	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 13:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/08/21 13:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 13:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 13:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 13:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/08/21 13:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		62 - 137		11/08/21 13:05	1
4-Bromofluorobenzene (Surr)	86		56 - 136		11/08/21 13:05	1
Toluene-d8 (Surr)	105		78 - 122		11/08/21 13:05	1
Dibromofluoromethane (Surr)	99		73 - 120		11/08/21 13:05	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-14_110221

Lab Sample ID: 240-159369-3

Date Collected: 11/02/21 08:50

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/21 14:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		66 - 120		11/09/21 14:26	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 13:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/08/21 13:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 13:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 13:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 13:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/08/21 13:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		62 - 137		11/08/21 13:28	1
4-Bromofluorobenzene (Surr)	87		56 - 136		11/08/21 13:28	1
Toluene-d8 (Surr)	110		78 - 122		11/08/21 13:28	1
Dibromofluoromethane (Surr)	102		73 - 120		11/08/21 13:28	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-13_110221

Lab Sample ID: 240-159369-4

Date Collected: 11/02/21 09:15

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/21 14:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		66 - 120		11/09/21 14:50	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 13:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/08/21 13:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 13:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 13:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 13:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/08/21 13:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		62 - 137		11/08/21 13:50	1
4-Bromofluorobenzene (Surr)	76		56 - 136		11/08/21 13:50	1
Toluene-d8 (Surr)	107		78 - 122		11/08/21 13:50	1
Dibromofluoromethane (Surr)	95		73 - 120		11/08/21 13:50	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-7_110221

Lab Sample ID: 240-159369-5

Date Collected: 11/02/21 09:40

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/21 15:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		66 - 120		11/09/21 15:14	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 14:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/08/21 14:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 14:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 14:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 14:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/08/21 14:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		62 - 137		11/08/21 14:12	1
4-Bromofluorobenzene (Surr)	82		56 - 136		11/08/21 14:12	1
Toluene-d8 (Surr)	104		78 - 122		11/08/21 14:12	1
Dibromofluoromethane (Surr)	99		73 - 120		11/08/21 14:12	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-6_110221

Lab Sample ID: 240-159369-6

Date Collected: 11/02/21 10:05

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/21 16:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		66 - 120		11/09/21 16:25	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 14:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/08/21 14:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 14:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 14:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 14:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/08/21 14:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		62 - 137		11/08/21 14:34	1
4-Bromofluorobenzene (Surr)	89		56 - 136		11/08/21 14:34	1
Toluene-d8 (Surr)	107		78 - 122		11/08/21 14:34	1
Dibromofluoromethane (Surr)	99		73 - 120		11/08/21 14:34	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-5_110221

Lab Sample ID: 240-159369-7

Date Collected: 11/02/21 10:35

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.3		2.0	0.86	ug/L			11/09/21 16:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		66 - 120		11/09/21 16:49	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	2.0	U	2.0	0.98	ug/L			11/08/21 10:51	2
cis-1,2-Dichloroethene	1.5	J	2.0	0.92	ug/L			11/08/21 10:51	2
Tetrachloroethene	2.0	U	2.0	0.88	ug/L			11/08/21 10:51	2
trans-1,2-Dichloroethene	2.0	U	2.0	1.0	ug/L			11/08/21 10:51	2
Trichloroethene	2.0	U	2.0	0.88	ug/L			11/08/21 10:51	2
Vinyl chloride	2.0	U	2.0	0.90	ug/L			11/08/21 10:51	2

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		62 - 137		11/08/21 10:51	2
4-Bromofluorobenzene (Surr)	88		56 - 136		11/08/21 10:51	2
Toluene-d8 (Surr)	111		78 - 122		11/08/21 10:51	2
Dibromofluoromethane (Surr)	97		73 - 120		11/08/21 10:51	2

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-8_110221

Lab Sample ID: 240-159369-8

Date Collected: 11/02/21 11:05

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.2		2.0	0.86	ug/L			11/09/21 17:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		66 - 120		11/09/21 17:13	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/21 13:00	1
cis-1,2-Dichloroethene	1.9		1.0	0.46	ug/L			11/09/21 13:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/21 13:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/21 13:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/21 13:00	1
Vinyl chloride	1.4		1.0	0.45	ug/L			11/09/21 13:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		62 - 137		11/09/21 13:00	1
4-Bromofluorobenzene (Surr)	95		56 - 136		11/09/21 13:00	1
Toluene-d8 (Surr)	111		78 - 122		11/09/21 13:00	1
Dibromofluoromethane (Surr)	97		73 - 120		11/09/21 13:00	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-9_110221

Lab Sample ID: 240-159369-9

Date Collected: 11/02/21 12:25

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.2		2.0	0.86	ug/L			11/09/21 17:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		66 - 120					11/09/21 17:37	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 15:19	1
cis-1,2-Dichloroethene	2.1		1.0	0.46	ug/L			11/08/21 15:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 15:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 15:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 15:19	1
Vinyl chloride	1.3		1.0	0.45	ug/L			11/08/21 15:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		62 - 137					11/08/21 15:19	1
4-Bromofluorobenzene (Surr)	92		56 - 136					11/08/21 15:19	1
Toluene-d8 (Surr)	101		78 - 122					11/08/21 15:19	1
Dibromofluoromethane (Surr)	92		73 - 120					11/08/21 15:19	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-10_110221

Lab Sample ID: 240-159369-10

Date Collected: 11/02/21 12:40

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0		2.0	0.86	ug/L			11/09/21 18:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		66 - 120					11/09/21 18:01	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 15:42	1
cis-1,2-Dichloroethene	1.8		1.0	0.46	ug/L			11/08/21 15:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 15:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 15:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 15:42	1
Vinyl chloride	1.4		1.0	0.45	ug/L			11/08/21 15:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		62 - 137					11/08/21 15:42	1
4-Bromofluorobenzene (Surr)	85		56 - 136					11/08/21 15:42	1
Toluene-d8 (Surr)	103		78 - 122					11/08/21 15:42	1
Dibromofluoromethane (Surr)	86		73 - 120					11/08/21 15:42	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-11_110221

Lab Sample ID: 240-159369-11

Date Collected: 11/02/21 13:05

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.5	J	2.0	0.86	ug/L			11/09/21 18:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		66 - 120					11/09/21 18:25	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 16:04	1
cis-1,2-Dichloroethene	1.1		1.0	0.46	ug/L			11/08/21 16:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 16:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 16:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 16:04	1
Vinyl chloride	1.1		1.0	0.45	ug/L			11/08/21 16:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		62 - 137					11/08/21 16:04	1
4-Bromofluorobenzene (Surr)	87		56 - 136					11/08/21 16:04	1
Toluene-d8 (Surr)	106		78 - 122					11/08/21 16:04	1
Dibromofluoromethane (Surr)	89		73 - 120					11/08/21 16:04	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-12_110221

Lab Sample ID: 240-159369-12

Date Collected: 11/02/21 13:25

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/21 18:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		66 - 120		11/09/21 18:49	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 16:27	1
cis-1,2-Dichloroethene	1.0		1.0	0.46	ug/L			11/08/21 16:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 16:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 16:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 16:27	1
Vinyl chloride	0.50	J	1.0	0.45	ug/L			11/08/21 16:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		62 - 137		11/08/21 16:27	1
4-Bromofluorobenzene (Surr)	90		56 - 136		11/08/21 16:27	1
Toluene-d8 (Surr)	105		78 - 122		11/08/21 16:27	1
Dibromofluoromethane (Surr)	93		73 - 120		11/08/21 16:27	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: MH-1231_110221

Lab Sample ID: 240-159369-13

Date Collected: 11/02/21 14:15

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	8.1		2.0	0.86	ug/L			11/09/21 19:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		66 - 120		11/09/21 19:13	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 18:19	1
cis-1,2-Dichloroethene	12		1.0	0.46	ug/L			11/08/21 18:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 18:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 18:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 18:19	1
Vinyl chloride	12		1.0	0.45	ug/L			11/08/21 18:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		62 - 137		11/08/21 18:19	1
4-Bromofluorobenzene (Surr)	94		56 - 136		11/08/21 18:19	1
Toluene-d8 (Surr)	108		78 - 122		11/08/21 18:19	1
Dibromofluoromethane (Surr)	92		73 - 120		11/08/21 18:19	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-2_110221

Lab Sample ID: 240-159369-14

Date Collected: 11/02/21 14:40

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/21 19:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		66 - 120		11/09/21 19:37	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 18:41	1
cis-1,2-Dichloroethene	0.46	J	1.0	0.46	ug/L			11/08/21 18:41	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 18:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 18:41	1
Trichloroethene	1.2		1.0	0.44	ug/L			11/08/21 18:41	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/08/21 18:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		62 - 137		11/08/21 18:41	1
4-Bromofluorobenzene (Surr)	88		56 - 136		11/08/21 18:41	1
Toluene-d8 (Surr)	103		78 - 122		11/08/21 18:41	1
Dibromofluoromethane (Surr)	91		73 - 120		11/08/21 18:41	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-3_110221

Lab Sample ID: 240-159369-15

Date Collected: 11/02/21 15:05

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.4		2.0	0.86	ug/L			11/09/21 20:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		66 - 120		11/09/21 20:01	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 19:03	1
cis-1,2-Dichloroethene	5.1		1.0	0.46	ug/L			11/08/21 19:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 19:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 19:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 19:03	1
Vinyl chloride	4.4		1.0	0.45	ug/L			11/08/21 19:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		62 - 137		11/08/21 19:03	1
4-Bromofluorobenzene (Surr)	91		56 - 136		11/08/21 19:03	1
Toluene-d8 (Surr)	107		78 - 122		11/08/21 19:03	1
Dibromofluoromethane (Surr)	92		73 - 120		11/08/21 19:03	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-4_110221

Lab Sample ID: 240-159369-16

Date Collected: 11/02/21 16:50

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	3.6		2.0	0.86	ug/L			11/09/21 20:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		66 - 120					11/09/21 20:25	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 19:25	1
cis-1,2-Dichloroethene	3.7		1.0	0.46	ug/L			11/08/21 19:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 19:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 19:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 19:25	1
Vinyl chloride	2.6		1.0	0.45	ug/L			11/08/21 19:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		62 - 137					11/08/21 19:25	1
4-Bromofluorobenzene (Surr)	86		56 - 136					11/08/21 19:25	1
Toluene-d8 (Surr)	107		78 - 122					11/08/21 19:25	1
Dibromofluoromethane (Surr)	92		73 - 120					11/08/21 19:25	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-16_110221

Lab Sample ID: 240-159369-17

Date Collected: 11/02/21 15:30

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.2		2.0	0.86	ug/L			11/09/21 20:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		66 - 120					11/09/21 20:48	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 16:49	1
cis-1,2-Dichloroethene	5.0		1.0	0.46	ug/L			11/08/21 16:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 16:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 16:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 16:49	1
Vinyl chloride	4.2		1.0	0.45	ug/L			11/08/21 16:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		62 - 137					11/08/21 16:49	1
4-Bromofluorobenzene (Surr)	92		56 - 136					11/08/21 16:49	1
Toluene-d8 (Surr)	105		78 - 122					11/08/21 16:49	1
Dibromofluoromethane (Surr)	93		73 - 120					11/08/21 16:49	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-17_110221

Lab Sample ID: 240-159369-18

Date Collected: 11/02/21 16:00

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.9	J	2.0	0.86	ug/L			11/09/21 21:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		66 - 120					11/09/21 21:12	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 17:12	1
cis-1,2-Dichloroethene	4.5		1.0	0.46	ug/L			11/08/21 17:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 17:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 17:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 17:12	1
Vinyl chloride	3.5		1.0	0.45	ug/L			11/08/21 17:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		62 - 137					11/08/21 17:12	1
4-Bromofluorobenzene (Surr)	93		56 - 136					11/08/21 17:12	1
Toluene-d8 (Surr)	107		78 - 122					11/08/21 17:12	1
Dibromofluoromethane (Surr)	94		73 - 120					11/08/21 17:12	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-18_110221

Lab Sample ID: 240-159369-19

Date Collected: 11/02/21 16:25

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	3.3		2.0	0.86	ug/L			11/09/21 21:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		66 - 120		11/09/21 21:36	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 17:34	1
cis-1,2-Dichloroethene	4.5		1.0	0.46	ug/L			11/08/21 17:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 17:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 17:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 17:34	1
Vinyl chloride	3.2		1.0	0.45	ug/L			11/08/21 17:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		62 - 137		11/08/21 17:34	1
4-Bromofluorobenzene (Surr)	86		56 - 136		11/08/21 17:34	1
Toluene-d8 (Surr)	105		78 - 122		11/08/21 17:34	1
Dibromofluoromethane (Surr)	96		73 - 120		11/08/21 17:34	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: DUP-01

Lab Sample ID: 240-159369-20

Date Collected: 11/02/21 00:00

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.6	J	2.0	0.86	ug/L			11/09/21 22:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		66 - 120					11/09/21 22:00	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 17:56	1
cis-1,2-Dichloroethene	1.2		1.0	0.46	ug/L			11/08/21 17:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 17:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 17:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 17:56	1
Vinyl chloride	0.74	J	1.0	0.45	ug/L			11/08/21 17:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		62 - 137					11/08/21 17:56	1
4-Bromofluorobenzene (Surr)	98		56 - 136					11/08/21 17:56	1
Toluene-d8 (Surr)	106		78 - 122					11/08/21 17:56	1
Dibromofluoromethane (Surr)	98		73 - 120					11/08/21 17:56	1

Surrogate Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (62-137)	BFB (56-136)	TOL (78-122)	DBFM (73-120)
240-158842-M-3 MSD	Matrix Spike Duplicate	87	87	110	92
240-158842-N-3 MS	Matrix Spike	93	95	112	93
240-159369-1	TRIP BLANK	92	79	108	96
240-159369-2	SL-15_110221	93	86	105	99
240-159369-2 MS	SL-15_110221	98	98	116	94
240-159369-2 MSD	SL-15_110221	80	80	94	83
240-159369-3	SL-14_110221	96	87	110	102
240-159369-4	SL-13_110221	92	76	107	95
240-159369-5	SL-7_110221	94	82	104	99
240-159369-6	SL-6_110221	97	89	107	99
240-159369-7	SL-5_110221	95	88	111	97
240-159369-8	SL-8_110221	93	95	111	97
240-159369-9	SL-9_110221	92	92	101	92
240-159369-10	SL-10_110221	86	85	103	86
240-159369-11	SL-11_110221	90	87	106	89
240-159369-12	SL-12_110221	92	90	105	93
240-159369-13	MH-1231_110221	87	94	108	92
240-159369-14	SL-2_110221	91	88	103	91
240-159369-15	SL-3_110221	92	91	107	92
240-159369-16	SL-4_110221	90	86	107	92
240-159369-17	SL-16_110221	92	92	105	93
240-159369-18	SL-17_110221	92	93	107	94
240-159369-19	SL-18_110221	91	86	105	96
240-159369-20	DUP-01	94	98	106	98
LCS 240-511833/4	Lab Control Sample	95	93	113	98
LCS 240-512078/4	Lab Control Sample	89	90	108	92
MB 240-511833/6	Method Blank	94	83	106	95
MB 240-512078/6	Method Blank	86	81	100	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
 BFB = 4-Bromofluorobenzene (Surr)
 TOL = Toluene-d8 (Surr)
 DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		DCA (66-120)
240-159369-2	SL-15_110221	89
240-159369-3	SL-14_110221	95
240-159369-4	SL-13_110221	94
240-159369-5	SL-7_110221	90
240-159369-5 MS	SL-7_110221	92
240-159369-5 MSD	SL-7_110221	89
240-159369-6	SL-6_110221	88
240-159369-7	SL-5_110221	92
240-159369-8	SL-8_110221	94

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (66-120)
240-159369-9	SL-9_110221	90
240-159369-10	SL-10_110221	91
240-159369-11	SL-11_110221	91
240-159369-12	SL-12_110221	91
240-159369-13	MH-1231_110221	89
240-159369-14	SL-2_110221	91
240-159369-15	SL-3_110221	92
240-159369-16	SL-4_110221	89
240-159369-17	SL-16_110221	92
240-159369-18	SL-17_110221	93
240-159369-19	SL-18_110221	92
240-159369-20	DUP-01	94
LCS 240-511974/3	Lab Control Sample	91
LCS 240-512125/4	Lab Control Sample	93
MB 240-511974/4	Method Blank	92
MB 240-512125/5	Method Blank	91

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (10-150)
MRL 240-511974/5	Lab Control Sample	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-511833/6
Matrix: Water
Analysis Batch: 511833

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 10:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/08/21 10:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 10:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 10:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 10:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/08/21 10:29	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		62 - 137		11/08/21 10:29	1
4-Bromofluorobenzene (Surr)	83		56 - 136		11/08/21 10:29	1
Toluene-d8 (Surr)	106		78 - 122		11/08/21 10:29	1
Dibromofluoromethane (Surr)	95		73 - 120		11/08/21 10:29	1

Lab Sample ID: LCS 240-511833/4
Matrix: Water
Analysis Batch: 511833

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	10.8		ug/L		108	63 - 134
cis-1,2-Dichloroethene	10.0	10.4		ug/L		104	77 - 123
Tetrachloroethene	10.0	11.8		ug/L		118	76 - 123
trans-1,2-Dichloroethene	10.0	10.7		ug/L		107	75 - 124
Trichloroethene	10.0	8.69		ug/L		87	70 - 122
Vinyl chloride	10.0	10.1		ug/L		101	60 - 144

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		62 - 137
4-Bromofluorobenzene (Surr)	93		56 - 136
Toluene-d8 (Surr)	113		78 - 122
Dibromofluoromethane (Surr)	98		73 - 120

Lab Sample ID: 240-159369-2 MS
Matrix: Water
Analysis Batch: 511833

Client Sample ID: SL-15_110221
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	1.0	U	10.0	9.24		ug/L		92	56 - 135
cis-1,2-Dichloroethene	1.0	U	10.0	9.71		ug/L		97	66 - 128
Tetrachloroethene	1.0	U	10.0	9.25		ug/L		93	62 - 131
trans-1,2-Dichloroethene	1.0	U	10.0	9.61		ug/L		96	56 - 136
Trichloroethene	1.0	U	10.0	8.57		ug/L		86	61 - 124
Vinyl chloride	1.0	U	10.0	10.1		ug/L		101	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		62 - 137
4-Bromofluorobenzene (Surr)	98		56 - 136
Toluene-d8 (Surr)	116		78 - 122

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-159369-2 MS
Matrix: Water
Analysis Batch: 511833

Client Sample ID: SL-15_110221
Prep Type: Total/NA

<i>Surrogate</i>	<i>%Recovery</i>	<i>MS MS Qualifier</i>	<i>Limits</i>
<i>Dibromofluoromethane (Surr)</i>	94		73 - 120

Lab Sample ID: 240-159369-2 MSD
Matrix: Water
Analysis Batch: 511833

Client Sample ID: SL-15_110221
Prep Type: Total/NA

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MSD Result</i>	<i>MSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
1,1-Dichloroethene	1.0	U	10.0	9.67		ug/L		97	56 - 135	5	26
cis-1,2-Dichloroethene	1.0	U	10.0	9.32		ug/L		93	66 - 128	4	14
Tetrachloroethene	1.0	U	10.0	9.41		ug/L		94	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	10.0	9.38		ug/L		94	56 - 136	2	15
Trichloroethene	1.0	U	10.0	7.89		ug/L		79	61 - 124	8	15
Vinyl chloride	1.0	U	10.0	9.87		ug/L		99	43 - 157	3	24

<i>Surrogate</i>	<i>%Recovery</i>	<i>MSD MSD Qualifier</i>	<i>Limits</i>
<i>1,2-Dichloroethane-d4 (Surr)</i>	80		62 - 137
<i>4-Bromofluorobenzene (Surr)</i>	80		56 - 136
<i>Toluene-d8 (Surr)</i>	94		78 - 122
<i>Dibromofluoromethane (Surr)</i>	83		73 - 120

Lab Sample ID: MB 240-512078/6
Matrix: Water
Analysis Batch: 512078

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

<i>Analyte</i>	<i>MB Result</i>	<i>MB Qualifier</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/21 12:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/21 12:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/21 12:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/21 12:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/21 12:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/21 12:38	1

<i>Surrogate</i>	<i>%Recovery</i>	<i>MB MB Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>1,2-Dichloroethane-d4 (Surr)</i>	86		62 - 137		11/09/21 12:38	1
<i>4-Bromofluorobenzene (Surr)</i>	81		56 - 136		11/09/21 12:38	1
<i>Toluene-d8 (Surr)</i>	100		78 - 122		11/09/21 12:38	1
<i>Dibromofluoromethane (Surr)</i>	88		73 - 120		11/09/21 12:38	1

Lab Sample ID: LCS 240-512078/4
Matrix: Water
Analysis Batch: 512078

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

<i>Analyte</i>	<i>Spike Added</i>	<i>LCS Result</i>	<i>LCS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>
1,1-Dichloroethene	10.0	8.76		ug/L		88	63 - 134
cis-1,2-Dichloroethene	10.0	9.96		ug/L		100	77 - 123
Tetrachloroethene	10.0	9.58		ug/L		96	76 - 123
trans-1,2-Dichloroethene	10.0	9.73		ug/L		97	75 - 124
Trichloroethene	10.0	8.70		ug/L		87	70 - 122

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-512078/4
Matrix: Water
Analysis Batch: 512078

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vinyl chloride	10.0	9.99		ug/L		100	60 - 144

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	89		62 - 137
4-Bromofluorobenzene (Surr)	90		56 - 136
Toluene-d8 (Surr)	108		78 - 122
Dibromofluoromethane (Surr)	92		73 - 120

Lab Sample ID: 240-158842-M-3 MSD
Matrix: Water
Analysis Batch: 512078

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	87		62 - 137
4-Bromofluorobenzene (Surr)	87		56 - 136
Toluene-d8 (Surr)	110		78 - 122
Dibromofluoromethane (Surr)	92		73 - 120

Lab Sample ID: 240-158842-N-3 MS
Matrix: Water
Analysis Batch: 512078

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	93		62 - 137
4-Bromofluorobenzene (Surr)	95		56 - 136
Toluene-d8 (Surr)	112		78 - 122
Dibromofluoromethane (Surr)	93		73 - 120

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-511974/4
Matrix: Water
Analysis Batch: 511974

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/08/21 20:12	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		66 - 120		11/08/21 20:12	1

Lab Sample ID: LCS 240-511974/3
Matrix: Water
Analysis Batch: 511974

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	9.47		ug/L		95	80 - 122

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-511974/3
Matrix: Water
Analysis Batch: 511974

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

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	91		66 - 120

Lab Sample ID: MRL 240-511974/5
Matrix: Water
Analysis Batch: 511974

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	0.00100	0.00140	J	ng/uL		140	10 - 150

	MRL	MRL	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	93		10 - 150

Lab Sample ID: MB 240-512125/5
Matrix: Water
Analysis Batch: 512125

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/21 13:38	1

	MB	MB		Prepared	Analyzed	Dil Fac
Surrogate	%Recovery	Qualifier	Limits			
1,2-Dichloroethane-d4 (Surr)	91		66 - 120		11/09/21 13:38	1

Lab Sample ID: LCS 240-512125/4
Matrix: Water
Analysis Batch: 512125

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	93		66 - 120

Lab Sample ID: 240-159369-5 MS
Matrix: Water
Analysis Batch: 512125

Client Sample ID: SL-7_110221
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	2.0	U	10.0	9.49		ug/L		95	51 - 153

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	92		66 - 120

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-159369-5 MSD
Matrix: Water
Analysis Batch: 512125

Client Sample ID: SL-7_110221
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153	11	16
Surrogate	<i>MSD</i> %Recovery	<i>MSD</i> Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	89		66 - 120								

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QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

GC/MS VOA

Analysis Batch: 511833

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-159369-1	TRIP BLANK	Total/NA	Water	8260B	
240-159369-2	SL-15_110221	Total/NA	Water	8260B	
240-159369-3	SL-14_110221	Total/NA	Water	8260B	
240-159369-4	SL-13_110221	Total/NA	Water	8260B	
240-159369-5	SL-7_110221	Total/NA	Water	8260B	
240-159369-6	SL-6_110221	Total/NA	Water	8260B	
240-159369-7	SL-5_110221	Total/NA	Water	8260B	
240-159369-9	SL-9_110221	Total/NA	Water	8260B	
240-159369-10	SL-10_110221	Total/NA	Water	8260B	
240-159369-11	SL-11_110221	Total/NA	Water	8260B	
240-159369-12	SL-12_110221	Total/NA	Water	8260B	
240-159369-13	MH-1231_110221	Total/NA	Water	8260B	
240-159369-14	SL-2_110221	Total/NA	Water	8260B	
240-159369-15	SL-3_110221	Total/NA	Water	8260B	
240-159369-16	SL-4_110221	Total/NA	Water	8260B	
240-159369-17	SL-16_110221	Total/NA	Water	8260B	
240-159369-18	SL-17_110221	Total/NA	Water	8260B	
240-159369-19	SL-18_110221	Total/NA	Water	8260B	
240-159369-20	DUP-01	Total/NA	Water	8260B	
MB 240-511833/6	Method Blank	Total/NA	Water	8260B	
LCS 240-511833/4	Lab Control Sample	Total/NA	Water	8260B	
240-159369-2 MS	SL-15_110221	Total/NA	Water	8260B	
240-159369-2 MSD	SL-15_110221	Total/NA	Water	8260B	

Analysis Batch: 511974

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-159369-2	SL-15_110221	Total/NA	Water	8260B SIM	
MB 240-511974/4	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-511974/3	Lab Control Sample	Total/NA	Water	8260B SIM	
MRL 240-511974/5	Lab Control Sample	Total/NA	Water	8260B SIM	

Analysis Batch: 512078

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-159369-8	SL-8_110221	Total/NA	Water	8260B	
MB 240-512078/6	Method Blank	Total/NA	Water	8260B	
LCS 240-512078/4	Lab Control Sample	Total/NA	Water	8260B	
240-158842-M-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	
240-158842-N-3 MS	Matrix Spike	Total/NA	Water	8260B	

Analysis Batch: 512125

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-159369-3	SL-14_110221	Total/NA	Water	8260B SIM	
240-159369-4	SL-13_110221	Total/NA	Water	8260B SIM	
240-159369-5	SL-7_110221	Total/NA	Water	8260B SIM	
240-159369-6	SL-6_110221	Total/NA	Water	8260B SIM	
240-159369-7	SL-5_110221	Total/NA	Water	8260B SIM	
240-159369-8	SL-8_110221	Total/NA	Water	8260B SIM	
240-159369-9	SL-9_110221	Total/NA	Water	8260B SIM	
240-159369-10	SL-10_110221	Total/NA	Water	8260B SIM	
240-159369-11	SL-11_110221	Total/NA	Water	8260B SIM	
240-159369-12	SL-12_110221	Total/NA	Water	8260B SIM	

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QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

GC/MS VOA (Continued)

Analysis Batch: 512125 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-159369-13	MH-1231_110221	Total/NA	Water	8260B SIM	
240-159369-14	SL-2_110221	Total/NA	Water	8260B SIM	
240-159369-15	SL-3_110221	Total/NA	Water	8260B SIM	
240-159369-16	SL-4_110221	Total/NA	Water	8260B SIM	
240-159369-17	SL-16_110221	Total/NA	Water	8260B SIM	
240-159369-18	SL-17_110221	Total/NA	Water	8260B SIM	
240-159369-19	SL-18_110221	Total/NA	Water	8260B SIM	
240-159369-20	DUP-01	Total/NA	Water	8260B SIM	
MB 240-512125/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-512125/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-159369-5 MS	SL-7_110221	Total/NA	Water	8260B SIM	
240-159369-5 MSD	SL-7_110221	Total/NA	Water	8260B SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-159369-1

Date Collected: 11/02/21 00:00

Matrix: Water

Date Received: 11/05/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	511833	11/08/21 12:43	LEE	TAL CAN

Client Sample ID: SL-15_110221

Lab Sample ID: 240-159369-2

Date Collected: 11/02/21 08:30

Matrix: Water

Date Received: 11/05/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	511833	11/08/21 13:05	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	511974	11/08/21 21:00	CS	TAL CAN

Client Sample ID: SL-14_110221

Lab Sample ID: 240-159369-3

Date Collected: 11/02/21 08:50

Matrix: Water

Date Received: 11/05/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	511833	11/08/21 13:28	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	512125	11/09/21 14:26	CS	TAL CAN

Client Sample ID: SL-13_110221

Lab Sample ID: 240-159369-4

Date Collected: 11/02/21 09:15

Matrix: Water

Date Received: 11/05/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	511833	11/08/21 13:50	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	512125	11/09/21 14:50	CS	TAL CAN

Client Sample ID: SL-7_110221

Lab Sample ID: 240-159369-5

Date Collected: 11/02/21 09:40

Matrix: Water

Date Received: 11/05/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	511833	11/08/21 14:12	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	512125	11/09/21 15:14	CS	TAL CAN

Client Sample ID: SL-6_110221

Lab Sample ID: 240-159369-6

Date Collected: 11/02/21 10:05

Matrix: Water

Date Received: 11/05/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	511833	11/08/21 14:34	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	512125	11/09/21 16:25	CS	TAL CAN

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-5_110221

Lab Sample ID: 240-159369-7

Date Collected: 11/02/21 10:35

Matrix: Water

Date Received: 11/05/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		2	511833	11/08/21 10:51	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	512125	11/09/21 16:49	CS	TAL CAN

Client Sample ID: SL-8_110221

Lab Sample ID: 240-159369-8

Date Collected: 11/02/21 11:05

Matrix: Water

Date Received: 11/05/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	512078	11/09/21 13:00	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	512125	11/09/21 17:13	CS	TAL CAN

Client Sample ID: SL-9_110221

Lab Sample ID: 240-159369-9

Date Collected: 11/02/21 12:25

Matrix: Water

Date Received: 11/05/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	511833	11/08/21 15:19	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	512125	11/09/21 17:37	CS	TAL CAN

Client Sample ID: SL-10_110221

Lab Sample ID: 240-159369-10

Date Collected: 11/02/21 12:40

Matrix: Water

Date Received: 11/05/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	511833	11/08/21 15:42	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	512125	11/09/21 18:01	CS	TAL CAN

Client Sample ID: SL-11_110221

Lab Sample ID: 240-159369-11

Date Collected: 11/02/21 13:05

Matrix: Water

Date Received: 11/05/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	511833	11/08/21 16:04	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	512125	11/09/21 18:25	CS	TAL CAN

Client Sample ID: SL-12_110221

Lab Sample ID: 240-159369-12

Date Collected: 11/02/21 13:25

Matrix: Water

Date Received: 11/05/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	511833	11/08/21 16:27	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	512125	11/09/21 18:49	CS	TAL CAN

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: MH-1231_110221

Lab Sample ID: 240-159369-13

Date Collected: 11/02/21 14:15

Matrix: Water

Date Received: 11/05/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	511833	11/08/21 18:19	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	512125	11/09/21 19:13	CS	TAL CAN

Client Sample ID: SL-2_110221

Lab Sample ID: 240-159369-14

Date Collected: 11/02/21 14:40

Matrix: Water

Date Received: 11/05/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	511833	11/08/21 18:41	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	512125	11/09/21 19:37	CS	TAL CAN

Client Sample ID: SL-3_110221

Lab Sample ID: 240-159369-15

Date Collected: 11/02/21 15:05

Matrix: Water

Date Received: 11/05/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	511833	11/08/21 19:03	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	512125	11/09/21 20:01	CS	TAL CAN

Client Sample ID: SL-4_110221

Lab Sample ID: 240-159369-16

Date Collected: 11/02/21 16:50

Matrix: Water

Date Received: 11/05/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	511833	11/08/21 19:25	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	512125	11/09/21 20:25	CS	TAL CAN

Client Sample ID: SL-16_110221

Lab Sample ID: 240-159369-17

Date Collected: 11/02/21 15:30

Matrix: Water

Date Received: 11/05/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	511833	11/08/21 16:49	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	512125	11/09/21 20:48	CS	TAL CAN

Client Sample ID: SL-17_110221

Lab Sample ID: 240-159369-18

Date Collected: 11/02/21 16:00

Matrix: Water

Date Received: 11/05/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	511833	11/08/21 17:12	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	512125	11/09/21 21:12	CS	TAL CAN

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-18_110221

Lab Sample ID: 240-159369-19

Date Collected: 11/02/21 16:25

Matrix: Water

Date Received: 11/05/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	511833	11/08/21 17:34	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	512125	11/09/21 21:36	CS	TAL CAN

Client Sample ID: DUP-01

Lab Sample ID: 240-159369-20

Date Collected: 11/02/21 00:00

Matrix: Water

Date Received: 11/05/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	511833	11/08/21 17:56	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	512125	11/09/21 22:00	CS	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396



Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22
Kentucky (WW)	State	KY98016	12-31-21
Minnesota	NELAP	OH00048	12-31-21
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	03-31-22
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-23-22
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-18-10	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-22
West Virginia DEP	State	210	12-31-21

Eurofins TestAmerica Canton Sample Receipt Form/Narrative

Login # : 159369

Canton Facility

Client Acadis Site Name

Cooler unpacked by:

Cooler Received on 11/5/21 Opened on 11/5/21
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Trent

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # FKA Foam Box Client Cooler Box Other
Packing material used: Bubble Wrap Foam Plastic Bag None Other
COOLANT: Wet Ice Blue Ice Dry Ice Water None

- 1. Cooler temperature upon receipt
IR GUN# IR-14 (CF +0.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
IR GUN #IR-15 (CF +0.2°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
-Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
-Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? Yes No
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC157842
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 01042019 Yes No
17. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page

Samples processed by: [Signature]

COC wrong on # of vials for TB: 2 arrived. Will log P.

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT



November 11, 2021

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E205162
Project: Ford Livonia Transmission Plant - 2021 Utility Corridor Evalyation Vapor Testing
Project number: 30080642.701.04 EAT-WA04
Event Specific Scope of Work References: Sample COC
Laboratory: TestAmerica - North Canton
Laboratory submittal: 159369-1
Sample date: 2021-11-02
Report received by CADENA: 2021-11-11
Initial Data Verification completed by CADENA: 2021-11-11
Number of Samples:20
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary
Reportable Results Only

CADENA Project ID: E205162
Laboratory: ToxMetrics - North Canton
Laboratory Submitted: 10/09/11

Analyte	Cas No.	SI-10_110221			SI-11_110221			SI-12_110221			MH-1311_110221			SI-2_110221			SI-3_110221			SI-4_110221			SI-16_110221														
		Result	Limit	Units	Result	Limit	Units	Result	Limit	Units	Result	Limit	Units	Result	Limit	Units	Result	Limit	Units	Result	Limit	Units	Result	Limit	Units												
GC/MS VOC																																					
<u>Peak #262</u>																																					
1,1-Dichloroethane	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---								
cis-1,2-Dichloroethane	155-59-2	ND	1.0	ug/l	---	1.8	1.0	ug/l	---	1.1	1.0	ug/l	---	1.8	1.0	ug/l	---	12	1.0	ug/l	---	0.46	1.0	ug/l	J	5.1	1.0	ug/l	---	3.7	1.0	ug/l	---	5.0	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethane	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-06-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.2	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	1.4	1.0	ug/l	---	1.1	1.0	ug/l	---	0.50	1.0	ug/l	J	12	1.0	ug/l	---	ND	1.0	ug/l	---	4.4	1.0	ug/l	---	2.6	1.0	ug/l	---	4.2	1.0	ug/l	---
<u>Peak #263</u>																																					
1,4-Dioxane	123-95-1					2.0	2.0	ug/l	---	1.5	2.0	ug/l	J	ND	2.0	ug/l	---	8.1	2.0	ug/l	---	ND	2.0	ug/l	---	4.4	2.0	ug/l	---	3.6	2.0	ug/l	---	4.2	2.0	ug/l	---

Analytical Results Summary
Reportable Results Only

CADENA Project ID: E205162
Laboratory: Tuckermatica - North Canton
Laboratory Submitted: 10/09/11

Analyte	CAS No.	SI-17 110221			SI-18 110221			SI-15 110221			DUP-01			SI-14 110221			SI-13 110221			SI-7 110221			SI-6 110221			SI-5 110221			SI-8 110221			SI-9 110221							
		Result	Limit	Units	Result	Limit	Units	Result	Limit	Units	Result	Limit	Units	Result	Limit	Units	Result	Limit	Units	Result	Limit	Units	Result	Limit	Units	Result	Limit	Units	Result	Limit	Units								
GC/MS VOC																																							
<u>Peak #262</u>																																							
1,1-Dichloroethane	75-35-4	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	2.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l		
cis-1,2-Dichloroethane	155-59-2	4.5	1.0	ug/l	4.5	1.0	ug/l	ND	1.0	ug/l	2.2	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	1.5	2.0	ug/l	J	1.9	1.0	ug/l	2.1	1.0	ug/l	
Tetrachloroethane	127-18-4	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	2.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l		
trans-1,2-Dichloroethane	156-60-5	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	2.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l		
Trichloroethane	79-06-6	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	2.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l		
Vinyl chloride	75-01-4	3.5	1.0	ug/l	3.2	1.0	ug/l	ND	1.0	ug/l	0.74	1.0	ug/l	J	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	1.0	ug/l	ND	2.0	ug/l	1.4	1.0	ug/l	1.3	1.0	ug/l	
<u>Peak #263</u>																																							
1,4-Dioxane	123-95-1	1.9	2.0	ug/l	J	3.3	2.0	ug/l	ND	2.0	ug/l	1.6	2.0	ug/l	J	ND	2.0	ug/l	ND	2.0	ug/l	ND	2.0	ug/l	ND	2.0	ug/l	ND	2.0	ug/l	2.3	2.0	ug/l	2.2	2.0	ug/l	2.2	2.0	ug/l

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-159369-1

CADENA Verification Report: 2021-11-11

Analyses Performed By:
Eurofins TestAmerica
North Canton, Ohio

Report #43420R
Review Level: Tier III
Project: 30080642.701.02

DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-159369-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						VOC (Full Scan)	VOC (SIM)	MISC
240-159369-1	TRIP BLANKTB_110221	2401593691	Water	11/2/2021		X		
	SL-15_110221	2401593692	Water	11/2/2021		X	X	
	SL-14_110221	2401593693	Water	11/2/2021		X	X	
	SL-13_110221	2401593694	Water	11/2/2021		X	X	
	SL-7_110221	2401593695	Water	11/2/2021		X	X	
	SL-6_110221	2401593696	Water	11/2/2021		X	X	
	SL-5_110221	2401593697	Water	11/2/2021		X	X	
	SL-8_110221	2401593698	Water	11/2/2021		X	X	
	SL-9_110221	2401593699	Water	11/2/2021		X	X	
	SL-10_110221	24015936910	Water	11/2/2021		X	X	
	SL-11_110221	24015936911	Water	11/2/2021		X	X	
	SL-12_110221	24015936912	Water	11/2/2021		X	X	
	MH-1231_110221	24015936913	Water	11/2/2021		X	X	
	SL-2_110221	24015936914	Water	11/2/2021		X	X	
	SL-3_110221	24015936915	Water	11/2/2021		X	X	
	SL-4_110221	24015936916	Water	11/2/2021		X	X	
	SL-16_110221	24015936917	Water	11/2/2021		X	X	
	SL-17_110221	24015936918	Water	11/2/2021		X	X	
	SL-18_110221	24015936919	Water	11/2/2021		X	X	
	DUP-01_110221	24015936920	Water	11/2/2021	SL-5_110221	X	X	

DATA REVIEW

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 Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260B and 8260B SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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 analyte was analyzed for but was not detected above the level of the reported sample 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 result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte 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.
 - 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 REVIEW

VOLATILE ORGANIC COMPOUND (VOC) 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 8260B/8260B-SIM	Water	14 days from collection to analysis (7 days if unpreserved)	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criterion.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

DATA REVIEW

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 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	Duplicate Result	RPD
SL-5_110221/DUP-01_110221	1,4-Dioxane	2.3	1.6 J	AC
	cis-1,2-Dichloroethene	1.5 J	1.2	AC
	Vinyl chloride	2.0 U	0.74 J	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

The laboratory noted: Method 8260B: The following sample was diluted due to the abundance of non-target analytes: SL-5_110221 (240-159369-7). Elevated reporting limits (RLs) are provided.

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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260B/8260B-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

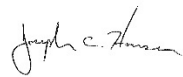
%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Joseph C. Houser

SIGNATURE:



DATE: November 16, 2021

PEER REVIEW: Andrew Korycinski

DATE: November 17, 2021



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



**NO CORRECTIONS/QUALIFIERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**



Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-159369-1

Date Collected: 11/02/21 00:00

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 12:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/08/21 12:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 12:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 12:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 12:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/08/21 12:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		62 - 137		11/08/21 12:43	1
4-Bromofluorobenzene (Surr)	79		56 - 136		11/08/21 12:43	1
Toluene-d8 (Surr)	108		78 - 122		11/08/21 12:43	1
Dibromofluoromethane (Surr)	96		73 - 120		11/08/21 12:43	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-15_110221

Lab Sample ID: 240-159369-2

Date Collected: 11/02/21 08:30

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/08/21 21:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		66 - 120		11/08/21 21:00	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 13:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/08/21 13:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 13:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 13:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 13:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/08/21 13:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		62 - 137		11/08/21 13:05	1
4-Bromofluorobenzene (Surr)	86		56 - 136		11/08/21 13:05	1
Toluene-d8 (Surr)	105		78 - 122		11/08/21 13:05	1
Dibromofluoromethane (Surr)	99		73 - 120		11/08/21 13:05	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-14_110221

Lab Sample ID: 240-159369-3

Date Collected: 11/02/21 08:50

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/21 14:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		66 - 120		11/09/21 14:26	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 13:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/08/21 13:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 13:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 13:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 13:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/08/21 13:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		62 - 137		11/08/21 13:28	1
4-Bromofluorobenzene (Surr)	87		56 - 136		11/08/21 13:28	1
Toluene-d8 (Surr)	110		78 - 122		11/08/21 13:28	1
Dibromofluoromethane (Surr)	102		73 - 120		11/08/21 13:28	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-13_110221

Lab Sample ID: 240-159369-4

Date Collected: 11/02/21 09:15

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/21 14:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		66 - 120		11/09/21 14:50	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 13:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/08/21 13:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 13:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 13:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 13:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/08/21 13:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		62 - 137		11/08/21 13:50	1
4-Bromofluorobenzene (Surr)	76		56 - 136		11/08/21 13:50	1
Toluene-d8 (Surr)	107		78 - 122		11/08/21 13:50	1
Dibromofluoromethane (Surr)	95		73 - 120		11/08/21 13:50	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-7_110221

Lab Sample ID: 240-159369-5

Date Collected: 11/02/21 09:40

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/21 15:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		66 - 120		11/09/21 15:14	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 14:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/08/21 14:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 14:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 14:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 14:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/08/21 14:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		62 - 137		11/08/21 14:12	1
4-Bromofluorobenzene (Surr)	82		56 - 136		11/08/21 14:12	1
Toluene-d8 (Surr)	104		78 - 122		11/08/21 14:12	1
Dibromofluoromethane (Surr)	99		73 - 120		11/08/21 14:12	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-6_110221

Lab Sample ID: 240-159369-6

Date Collected: 11/02/21 10:05

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/21 16:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		66 - 120		11/09/21 16:25	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 14:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/08/21 14:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 14:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 14:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 14:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/08/21 14:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		62 - 137		11/08/21 14:34	1
4-Bromofluorobenzene (Surr)	89		56 - 136		11/08/21 14:34	1
Toluene-d8 (Surr)	107		78 - 122		11/08/21 14:34	1
Dibromofluoromethane (Surr)	99		73 - 120		11/08/21 14:34	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-5_110221

Lab Sample ID: 240-159369-7

Date Collected: 11/02/21 10:35

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.3		2.0	0.86	ug/L			11/09/21 16:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		66 - 120		11/09/21 16:49	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	2.0	U	2.0	0.98	ug/L			11/08/21 10:51	2
cis-1,2-Dichloroethene	1.5	J	2.0	0.92	ug/L			11/08/21 10:51	2
Tetrachloroethene	2.0	U	2.0	0.88	ug/L			11/08/21 10:51	2
trans-1,2-Dichloroethene	2.0	U	2.0	1.0	ug/L			11/08/21 10:51	2
Trichloroethene	2.0	U	2.0	0.88	ug/L			11/08/21 10:51	2
Vinyl chloride	2.0	U	2.0	0.90	ug/L			11/08/21 10:51	2

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		62 - 137		11/08/21 10:51	2
4-Bromofluorobenzene (Surr)	88		56 - 136		11/08/21 10:51	2
Toluene-d8 (Surr)	111		78 - 122		11/08/21 10:51	2
Dibromofluoromethane (Surr)	97		73 - 120		11/08/21 10:51	2

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-8_110221

Lab Sample ID: 240-159369-8

Date Collected: 11/02/21 11:05

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.2		2.0	0.86	ug/L			11/09/21 17:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		66 - 120		11/09/21 17:13	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/21 13:00	1
cis-1,2-Dichloroethene	1.9		1.0	0.46	ug/L			11/09/21 13:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/21 13:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/21 13:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/21 13:00	1
Vinyl chloride	1.4		1.0	0.45	ug/L			11/09/21 13:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		62 - 137		11/09/21 13:00	1
4-Bromofluorobenzene (Surr)	95		56 - 136		11/09/21 13:00	1
Toluene-d8 (Surr)	111		78 - 122		11/09/21 13:00	1
Dibromofluoromethane (Surr)	97		73 - 120		11/09/21 13:00	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-9_110221

Lab Sample ID: 240-159369-9

Date Collected: 11/02/21 12:25

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.2		2.0	0.86	ug/L			11/09/21 17:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		66 - 120					11/09/21 17:37	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 15:19	1
cis-1,2-Dichloroethene	2.1		1.0	0.46	ug/L			11/08/21 15:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 15:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 15:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 15:19	1
Vinyl chloride	1.3		1.0	0.45	ug/L			11/08/21 15:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		62 - 137					11/08/21 15:19	1
4-Bromofluorobenzene (Surr)	92		56 - 136					11/08/21 15:19	1
Toluene-d8 (Surr)	101		78 - 122					11/08/21 15:19	1
Dibromofluoromethane (Surr)	92		73 - 120					11/08/21 15:19	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-10_110221

Lab Sample ID: 240-159369-10

Date Collected: 11/02/21 12:40

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0		2.0	0.86	ug/L			11/09/21 18:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		66 - 120					11/09/21 18:01	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 15:42	1
cis-1,2-Dichloroethene	1.8		1.0	0.46	ug/L			11/08/21 15:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 15:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 15:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 15:42	1
Vinyl chloride	1.4		1.0	0.45	ug/L			11/08/21 15:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		62 - 137					11/08/21 15:42	1
4-Bromofluorobenzene (Surr)	85		56 - 136					11/08/21 15:42	1
Toluene-d8 (Surr)	103		78 - 122					11/08/21 15:42	1
Dibromofluoromethane (Surr)	86		73 - 120					11/08/21 15:42	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-11_110221

Lab Sample ID: 240-159369-11

Date Collected: 11/02/21 13:05

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.5	J	2.0	0.86	ug/L			11/09/21 18:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		66 - 120		11/09/21 18:25	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 16:04	1
cis-1,2-Dichloroethene	1.1		1.0	0.46	ug/L			11/08/21 16:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 16:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 16:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 16:04	1
Vinyl chloride	1.1		1.0	0.45	ug/L			11/08/21 16:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		62 - 137		11/08/21 16:04	1
4-Bromofluorobenzene (Surr)	87		56 - 136		11/08/21 16:04	1
Toluene-d8 (Surr)	106		78 - 122		11/08/21 16:04	1
Dibromofluoromethane (Surr)	89		73 - 120		11/08/21 16:04	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-12_110221

Lab Sample ID: 240-159369-12

Date Collected: 11/02/21 13:25

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/21 18:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		66 - 120		11/09/21 18:49	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 16:27	1
cis-1,2-Dichloroethene	1.0		1.0	0.46	ug/L			11/08/21 16:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 16:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 16:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 16:27	1
Vinyl chloride	0.50	J	1.0	0.45	ug/L			11/08/21 16:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		62 - 137		11/08/21 16:27	1
4-Bromofluorobenzene (Surr)	90		56 - 136		11/08/21 16:27	1
Toluene-d8 (Surr)	105		78 - 122		11/08/21 16:27	1
Dibromofluoromethane (Surr)	93		73 - 120		11/08/21 16:27	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: MH-1231_110221

Lab Sample ID: 240-159369-13

Date Collected: 11/02/21 14:15

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	8.1		2.0	0.86	ug/L			11/09/21 19:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		66 - 120		11/09/21 19:13	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 18:19	1
cis-1,2-Dichloroethene	12		1.0	0.46	ug/L			11/08/21 18:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 18:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 18:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 18:19	1
Vinyl chloride	12		1.0	0.45	ug/L			11/08/21 18:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		62 - 137		11/08/21 18:19	1
4-Bromofluorobenzene (Surr)	94		56 - 136		11/08/21 18:19	1
Toluene-d8 (Surr)	108		78 - 122		11/08/21 18:19	1
Dibromofluoromethane (Surr)	92		73 - 120		11/08/21 18:19	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-2_110221

Lab Sample ID: 240-159369-14

Date Collected: 11/02/21 14:40

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/21 19:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		66 - 120		11/09/21 19:37	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 18:41	1
cis-1,2-Dichloroethene	0.46	J	1.0	0.46	ug/L			11/08/21 18:41	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 18:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 18:41	1
Trichloroethene	1.2		1.0	0.44	ug/L			11/08/21 18:41	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/08/21 18:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		62 - 137		11/08/21 18:41	1
4-Bromofluorobenzene (Surr)	88		56 - 136		11/08/21 18:41	1
Toluene-d8 (Surr)	103		78 - 122		11/08/21 18:41	1
Dibromofluoromethane (Surr)	91		73 - 120		11/08/21 18:41	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-3_110221

Lab Sample ID: 240-159369-15

Date Collected: 11/02/21 15:05

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.4		2.0	0.86	ug/L			11/09/21 20:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		66 - 120		11/09/21 20:01	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 19:03	1
cis-1,2-Dichloroethene	5.1		1.0	0.46	ug/L			11/08/21 19:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 19:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 19:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 19:03	1
Vinyl chloride	4.4		1.0	0.45	ug/L			11/08/21 19:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		62 - 137		11/08/21 19:03	1
4-Bromofluorobenzene (Surr)	91		56 - 136		11/08/21 19:03	1
Toluene-d8 (Surr)	107		78 - 122		11/08/21 19:03	1
Dibromofluoromethane (Surr)	92		73 - 120		11/08/21 19:03	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-4_110221

Lab Sample ID: 240-159369-16

Date Collected: 11/02/21 16:50

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	3.6		2.0	0.86	ug/L			11/09/21 20:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		66 - 120					11/09/21 20:25	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 19:25	1
cis-1,2-Dichloroethene	3.7		1.0	0.46	ug/L			11/08/21 19:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 19:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 19:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 19:25	1
Vinyl chloride	2.6		1.0	0.45	ug/L			11/08/21 19:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		62 - 137					11/08/21 19:25	1
4-Bromofluorobenzene (Surr)	86		56 - 136					11/08/21 19:25	1
Toluene-d8 (Surr)	107		78 - 122					11/08/21 19:25	1
Dibromofluoromethane (Surr)	92		73 - 120					11/08/21 19:25	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-16_110221

Lab Sample ID: 240-159369-17

Date Collected: 11/02/21 15:30

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.2		2.0	0.86	ug/L			11/09/21 20:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		66 - 120					11/09/21 20:48	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 16:49	1
cis-1,2-Dichloroethene	5.0		1.0	0.46	ug/L			11/08/21 16:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 16:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 16:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 16:49	1
Vinyl chloride	4.2		1.0	0.45	ug/L			11/08/21 16:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		62 - 137					11/08/21 16:49	1
4-Bromofluorobenzene (Surr)	92		56 - 136					11/08/21 16:49	1
Toluene-d8 (Surr)	105		78 - 122					11/08/21 16:49	1
Dibromofluoromethane (Surr)	93		73 - 120					11/08/21 16:49	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-17_110221

Lab Sample ID: 240-159369-18

Date Collected: 11/02/21 16:00

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.9	J	2.0	0.86	ug/L			11/09/21 21:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		66 - 120					11/09/21 21:12	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 17:12	1
cis-1,2-Dichloroethene	4.5		1.0	0.46	ug/L			11/08/21 17:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 17:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 17:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 17:12	1
Vinyl chloride	3.5		1.0	0.45	ug/L			11/08/21 17:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		62 - 137					11/08/21 17:12	1
4-Bromofluorobenzene (Surr)	93		56 - 136					11/08/21 17:12	1
Toluene-d8 (Surr)	107		78 - 122					11/08/21 17:12	1
Dibromofluoromethane (Surr)	94		73 - 120					11/08/21 17:12	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: SL-18_110221

Lab Sample ID: 240-159369-19

Date Collected: 11/02/21 16:25

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	3.3		2.0	0.86	ug/L			11/09/21 21:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		66 - 120		11/09/21 21:36	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 17:34	1
cis-1,2-Dichloroethene	4.5		1.0	0.46	ug/L			11/08/21 17:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 17:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 17:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 17:34	1
Vinyl chloride	3.2		1.0	0.45	ug/L			11/08/21 17:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		62 - 137		11/08/21 17:34	1
4-Bromofluorobenzene (Surr)	86		56 - 136		11/08/21 17:34	1
Toluene-d8 (Surr)	105		78 - 122		11/08/21 17:34	1
Dibromofluoromethane (Surr)	96		73 - 120		11/08/21 17:34	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - Utility Corridor Sampling

Job ID: 240-159369-1

Client Sample ID: DUP-01

Lab Sample ID: 240-159369-20

Date Collected: 11/02/21 00:00

Matrix: Water

Date Received: 11/05/21 10:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.6	J	2.0	0.86	ug/L			11/09/21 22:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		66 - 120					11/09/21 22:00	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/21 17:56	1
cis-1,2-Dichloroethene	1.2		1.0	0.46	ug/L			11/08/21 17:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 17:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/21 17:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/21 17:56	1
Vinyl chloride	0.74	J	1.0	0.45	ug/L			11/08/21 17:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		62 - 137					11/08/21 17:56	1
4-Bromofluorobenzene (Surr)	98		56 - 136					11/08/21 17:56	1
Toluene-d8 (Surr)	106		78 - 122					11/08/21 17:56	1
Dibromofluoromethane (Surr)	98		73 - 120					11/08/21 17:56	1

Appendix C

Email Dated December 8, 2021

Hinskey, Kristoffer

From: Hinskey, Kristoffer
Sent: Wednesday, December 8, 2021 11:57 AM
To: Schlaufman, Jeanne (EGLE)
Cc: Williams, Matthew (DEQ); Walton, Todd (T.M.); Pinter, Chuck (C.H.)
Subject: Follow Up to 12/7/2021 Meeting
Attachments: Figure - Hathaway and Stark.pdf; Figure - Plymouth and Stark.pdf

Hi Jeanne –

As discussed in the 12/7/2021 Meeting between Ford (Todd Walton and Chuck Pinter), EGLE (Jeanne Schlaufman and Matt Williams), and Arcadis (Kris Hinskey), below describes the current field activities associated with the offsite utility corridor assessment. Attached is also the recent vapor samples collected offsite.

- Vapor analytical results were received on 12/1/2021 for vapor samples collected at sanitary location SL-12, SL-19, SL-20, SL-21, and SL-22, refer to the attached Figure – Hathaway and Stark Roads
- Based on the data collected at SL-12 an exceedance of the unrestricted residential SSVIA criteria of vinyl chloride was identified, therefore Arcadis mobilized to the intersection on 12/7/2021 to clean, CCTV, and document lateral connections between SL-12 and SL-20.
- The remaining vapor analytical collected on Plymouth and Stark results were received on 12/7/2021. Exceedances of the Restricted Non-residential 12-hour Workday Exposure SSVIA Criteria were identified at sanitary location SL-16 and SAMH-1231, refer to Figure-Plymouth and Stark Road, therefore cleaning of the Plymouth Road sanitary line in between sanitary locations SL-3 and SL-17 will be conducted on 12/8/2021.
- Resampling of the locations where exceedances have been identified and delineation locations will be collected on Friday 12/10/2021.

Please let me know if you have any questions and look forward to continuing discussions during the meeting scheduled with Ford, EGLE, and Arcadis on January 4, 2022

Thank you

Kris Hinskey | Certified Project Manager II | kristoffer.hinskey@arcadis.com
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Be green, leave it on the screen.



CITY: Novi DIV: ENV DB: MG PIC: R. ELLIS PM: K. HINSKEY PROJECT NUMBER: 30080642.701.02 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet T:_ENV\Novi\Brighton_MIFord\GIS\docs\GEC\1Q_2021\Utility Corridor\Figure 1_manholesampling.mxd PLOTTED: 11/18/2021 3:41:56 PM BY: TYabrough

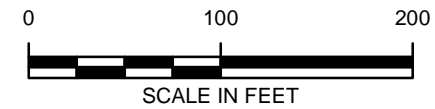


LEGEND

- SAMPLE LOCATION
- DELINEATION LOCATION
- SANITARY MANHOLE
- SANITARY SEWER LINE

NOTES:

SL = SAMPLE LOCATION



FORD LIVONIA TRANSMISSION PLANT

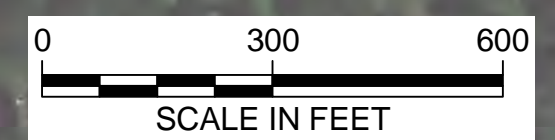
SANITARY SEWER VAPOR RESULTS



FIGURE

1

CITY: Novi; DIV: ENV; DE: MG; PIC: R. ELLIS; PM: K. HINSKEY; PROJECT NUMBER: 30090642; COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl; T: ENV\NewBrighton_MtFord\Livonia\GIS\Docs\GEC30_2021\Utility_Corridor\EGLE_Report\Figure 2_On-site_and_Off-site_Sanitary_Sewer_Layout.mxd; PLOTTED: 12/06/2021 5:31:39 PM; BY: P5101045



FORD MOTOR COMPANY
LIVONIA TRANSMISSION PLANT
LIVONIA, MICHIGAN

SANITARY SEWER VAPOR RESULTS



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