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Revitalizing Auto Communities Environmental Response (RACER) Trust

LOWER 1,4-DIOXANE PLUME NORTHEAST LOBE INVESTIGATION

Plant 2
Lansing, Michigan

February 3, 2017

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LOWER 1,4-DIOXANE NORTHEAST LOBE INVESTIGATION

Plant 2

Lansing, Michigan

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1 INTRODUCTION

Arcadis has prepared this Lower 1,4-Dioxane Northeast Lobe Investigation summary report on behalf of the Revitalizing Auto Communities Environmental Response (RACER) Trust in cooperation with the Michigan Department of Environmental Quality (MDEQ) for Plant 2 located in Lansing, Michigan. This report is intended as a follow-up to the *Lower 1,4-Dioxane Plume Toe Investigation* report (Arcadis, 2016a) and *Supplemental Lower 1,4-Dioxane Plume Toe Investigation* report (Arcadis, 2016b). The activities described below were completed to define the "northeast lobe" of the lower 1,4-dioxane plume and evaluate whether the plume sub-lobe is a result of leakage from the perched zone, or bifurcation of the lower 1,4-dioxane plume that migrates south from Plant 3. Additional details regarding the lower 1,4-dioxane plume are provided in the *RCRA Faculties Investigation (RFI) Phase 2 Supplemental Report* (Arcadis 2014a) and the *Corrective Measure Pre-Design Report – Lower 1,4-Dioxane Source Evaluation* (Arcadis 2014b).

Work completed was consistent with the scope described in the *RACER Lansing – Northeast Lobe Delineation – Revised* (Work Plan; Arcadis 2016c) provided to the MDEQ on October 31, 2016 and approved by MDEQ via an email on November 21, 2016. The location of the investigation area and an overview of the groundwater impacts associated with 1,4-dioxane are presented as **Figure 1**. The location of soil borings and monitoring well completed as part of this investigation are provided on **Figure 2**. The specific objectives of this investigation were as follows:

1. Delineate the northeast lobe located northeast of the Plant 2 LNAPL area.
2. Evaluate if the northeast lobe is related to leakage from the Plant 2 LNAPL area, or if the lower plume bifurcates as it migrates south from Plant 3 resulting in deep impacts observed beneath the Plant 2 LNAPL area.

1.1 Background

The stratigraphy at the Plant 2 LNAPL area consists of a shallow interbedded zone from ground surface to a depth of approximately 25 feet below ground surface (ft bgs), followed by a dense glacial till between approximately 25 and 40 ft bgs. Below the till confining unit is a dry interbedded vadose zone followed by weathered bedrock. The weathered bedrock is encountered at 60 to 70 feet below grade and consists of the interbedded sandstone and shales of the Saginaw Formation. The transition from weathered bedrock to competent bedrock is gradational and generally occurs between 75 and 85 feet bgs. A cross section around the Plant 2 LNAPL area is included as **Appendix A**. Groundwater is encountered in the interbedded perched zone at depths between 6 and 25 ft bgs, and in the weathered bedrock at approximately 60 to 65 feet below grade. Additional details, including cross-sections and output from the three-dimensional model, are available as part of the RCRA RFI Phase 2 reports (Arcadis 2013, 2014).

The main lower 1,4-dioxane plume on Plants 2 and 3 originates from the "coliseum" source area located in deep overburden in the southwestern portion of Plant 3 and migrates to the south-southeast within the deep overburden and weathered bedrock. The plume continues south from Plant 3, across Saginaw Road and terminates in the southern portion of Plant 2.

The 1,4-dioxane impacts within the perched zone are generally associated with the LNAPL area located within the central portion of Plant 2. The LNAPL consists chiefly of cutting oils, but in some areas the oils contain elevated concentrations of 1,1,1-trichloroethane (1,1,1-TCA) and other chlorinated solvents. Although never detected directly within LNAPL due to elevated detection limits, it is assumed that the 1,4-dioxane was an additive to the 1,1,1-TCA and is co-located with the 1,1,1-TCA in specific areas of the Plant 2 LNAPL plume. A dissolved phase 1,4-dioxane plume is located in the perched zone surrounding the Plant 2 LNAPL and extends east toward Plant 6.

The toe investigations (Arcadis 2016a, 2016b) were completed to look at the potential for leakage from the Plant 2 LNAPL area that may contribute to the core of the main lower 1,4-dioxane plume and may have resulted in an elevated concentration of 1,4-dioxane observed at well TW-14-02 at the southern extent of the lower plume. The concentration of 1,4-dioxane at TW-14-02 (2,500-3,200 µg/L) is an order of magnitude higher than observed anywhere else within the main lower 1,4-dioxane plume. The overall footprint and basis of the lower 1,4-dioxane plume is illustrated on a figure included as **Appendix B.**

The toe investigations showed the presence of 1,4-dioxane within the till confining unit and the deeper vadose zone and suggested the Plant 2 LNAPL area may contribute 1,4-dioxane to the weathered bedrock through spatially discontinuous leakage (Arcadis 2016a, 2016b). There are two areas where 1,4-dioxane in weathered bedrock migrates away the Plant 2 LNAPL area; the southeast lobe and the northeast lobe (**Figure 2**). The southeastern lobe was delineated to the 2016 emergency Part 201 Drinking Water (DW) Criteria of 7.2 micrograms per liter (µg/L) during the supplemental toe investigation (Arcadis 2016b).

The following scope of work was developed to delineate the northeastern lobe and further evaluate the connection of the 1,4-dioxane impacts beneath the Plant 2 LNAPL area to the main lower 1,4-dioxane plume.

1.2 Scope of Work

Investigation activities were conducted from November 28 to December 9, 2016. The soil borings, VAP sampling and monitoring well installation were completed using rotary sonic drilling techniques. The soil borings and monitoring well installed as part of these activities are shown on Figure 2. The boring logs are included as **Appendix C**.

Soil borings were completed on an adaptive 100 ft by 100 ft grid encompassing the northeast corner of RFI Area 5-2 and the southern perimeter of RFI Area 5-1. The VAP groundwater samples were submitted to Merit Analytical Laboratory in Lansing, Michigan and analyzed for volatile organic compounds (VOCs) using USEPA Method 8260 and 1,4-dioxane using USEPA Method 8260 SIM on a 24-hour turnaround. The results of the VAP sampling were used to adapt the sampling grid and limit the number of borings to only those required for delineation. A total of seven borings were required to complete the delineation of the northeast lobe:

- Upon encountering the weathered bedrock, at least two VAP samples were collected, one from near the weathered bedrock interface, and one or two samples from deeper within the weathered bedrock zone. Sampling consisted of a 4 ft sampling interval separated by two to five feet vertically.

  - At boring location SB-A5.1-MT122 weathered bedrock was encountered at shallower depth than the rest of the locations (55 feet bgs) and three VAP samples were collected to provide coverage over an adequate elevation range to assess potential migration.
  - At boring SB-A5.2-NM152 refusal was encountered on concrete at approximately 20 feet bgs. A new boring (SB-A5.2-NO150) was advanced approximately 25 feet to the southwest of SB-A5.2-NM152 to provide delineation to the east.
- Based on the results of the VAP sampling, monitoring well MW-16-85 was installed at boring SB-A5.1-MT152 to extend the existing sentinel monitoring well network and provide delineation to the northeast of the Plant 2 LNAPL area.

2 RESULTS

The investigation successfully delineated the northeast 1,4-dioxane lobe. The groundwater analytical data for the toe investigations is summarized on **Figure 3**, and the northeast lobe investigation analytical results are included as **Table 1**. The laboratory analytical reports for the groundwater samples are provided as **Appendix D**.

- 1,4-Dioxane was detected in two VAP samples; SB-A5.2-NO150 (7 µg/L) and SB-A5.1-MT132 (5 µg/L). Both results are below the 1,4-dioxane DW Criteria of 7.2 µg/L. Additional borings beyond the initial step outs were not required to complete the delineation.
- The VAP groundwater results at SB-A5.1-MT122 and SB-A5.2-MT132, as well as results from monitoring wells MW-13-45 and MW-16-82, did not indicate a connection to, or bifurcation of, the lower 1,4-dioxane plume north of the area that could be responsible for 1,4-dioxane impacts located beneath the Plant 2 LNAPL area.
- Benzene, ethylbenzene, toluene, and xylenes were detected in the deepest VAP interval of SB-A5.1-MT152 (77-82 feet bgs) and may be the result of cross-contamination. Benzene exceeded DW Criteria at 69 µg/L (DW Criteria: 5 µg/L).
  - Monitoring well MW-16-85 was installed at boring SB-A5.1-MT152 to provide a sentinel monitoring point for the northeast lobe. Well MW-16-85 was sampled during the fourth quarter 2016 monitoring event did not indicate the presence of other VOCs.

3 CONCLUSIONS

Based on the lower 1,4-dioxane toe investigations, as well as the northeast lobe investigation described above, the characterization of the lower 1,4-dioxane plume toe is complete. Arcadis offers the following conclusions:

- The northeast lobe is delineated to the northeast by the new monitoring well MW-16-85.
- The lower 1,4-dioxane plume does not bifurcate as it migrates south from Plant 3.
- Although some comingling may occur with the main plume west of the Plant 2 LNAPL area, the 1,4-dioxane mass in weathered bedrock beneath the Plant 2 LNAPL area appears primarily related to leakage from the perched zone beneath and immediately surrounding the LNAPL plume. This portion

of the weathered bedrock 1,4-dioxane impacts, and the corresponding northeast and southeast lobes, will be referred to as the “LNAPL area lower plume”.

- Based on weathered bedrock monitoring well results, leakage from the perched zone contributes 1,4-dioxane to weathered bedrock at a rate that results in concentrations between 100 and 300 µg/L beneath and adjacent to the Plant 2 LNAPL plume.
- The detailed characterization completed for the lower 1,4-dioxane toe suggests leakage from the Plant 2 LNAPL area is not responsible for the elevated concentrations of 1,4-dioxane observed at well TW-14-02.

The toe investigations indicate the lower 1,4-dioxane impacts, both the main lower 1,4-dioxane plume and LNAPL area lower plume, are not migrating at significant rates. Co-located samples completed in 2013 and 2016 suggest little to no further migration has occurred to the south or southeast since 2013 (Arcadis, 2016b). The weathered bedrock monitoring wells installed around the perimeter lower 1,4-dioxane impacts at Plant 2 will be used to further evaluate the stability of the plumes and monitor for migration as outlined in the revised IGMP (Arcadis, 2017). It is anticipated that a revised Corrective Measures Study (CMS) will be provided to the MDEQ in the second half of 2017. The revised CMS will consider the detailed characterization of the main and LNAPL area lower 1,4-dioxane plumes in the development and evaluation of alternative site remedies.

4 REFERENCES

Arcadis. 2013. Resource Conservation and Recovery Act Facility Investigation Phase 2 Activities Summary Report. RACER Trust, Lansing, Michigan Plants 2, 3, and 6. April.

Arcadis. 2014a. Resource Conservation and Recovery Act Facility Investigation Supplemental Phase 2 Activities Summary Report. RACER Trust, Lansing, Michigan Plants 2, 3, and 6. February 26.

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Arcadis. 2016a. Lower 1,4-Dioxane Plume Toe Investigation. RACER Trust, Lansing, Michigan Plant 2. March 11.

Arcadis. 2016b. Supplemental Lower 1,4-Dioxane Toe Investigation Report. RACER Trust, Lansing, Michigan Plant 2. September 21.

Arcadis. 2016c. “RACER Lansing - Northeast Lobe Delineation – Revised 10/31/16.” Message to the Michigan Department of Environmental Quality. October 31. E-mail.

Arcadis 2017.Revised Interim Groundwater Sampling Work Plan. RACER Trust, Plants 2, 3, & 6, Lansing, Michigan. January 20.

TABLES

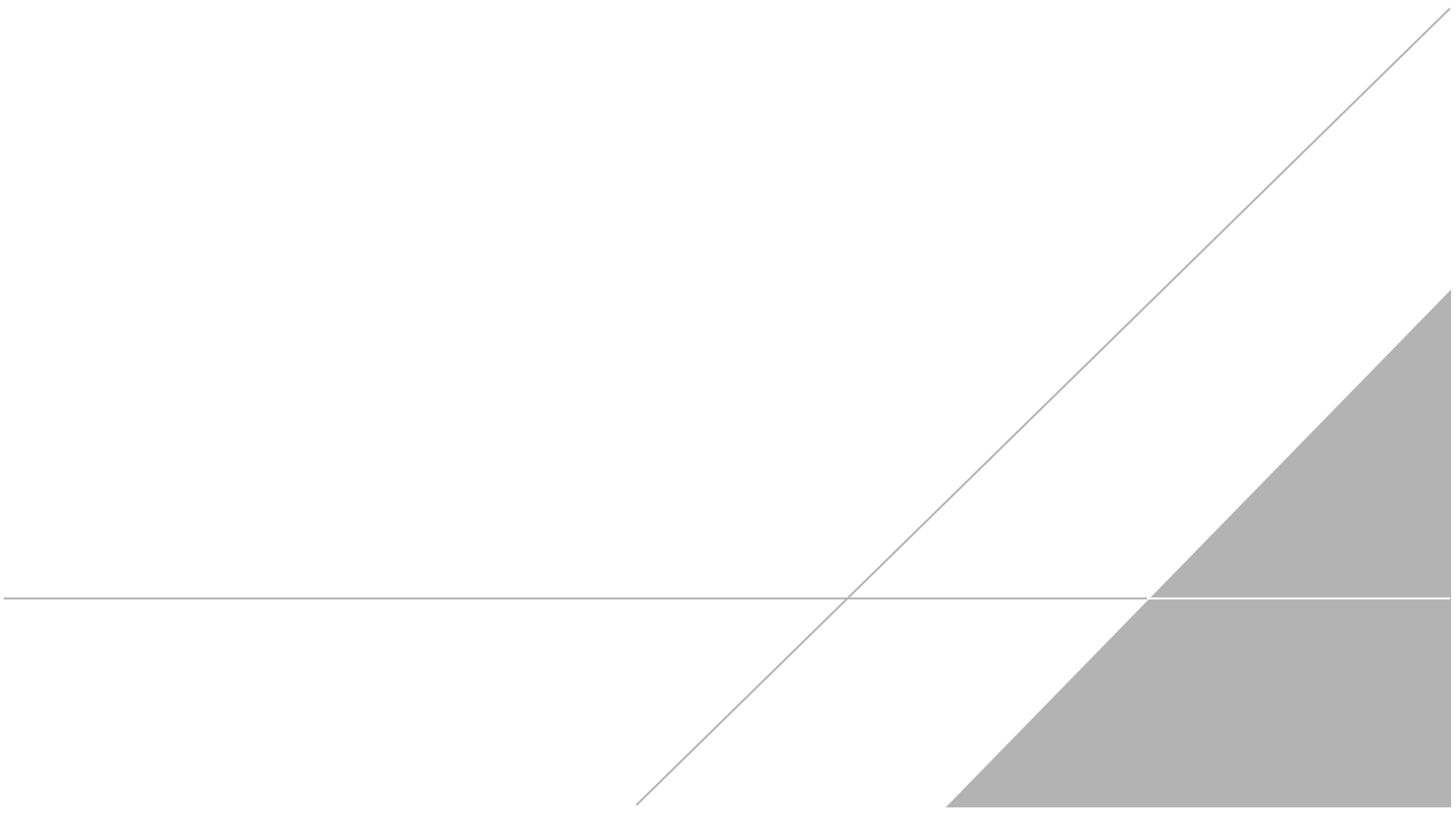

Table 1
Vertical Aquifer Profile Groundwater Analytical Results
Lower 1,4-Dioxane Northeast Lobe Investigation
RACER Lansing Plant 2
Lansing, Michigan

Location ID: Sample Depth (ft bgs): Date Collected: Sample Name:	MI GW (DEQ2013) RES DW [(a)]	MI GW (DEQ2013) GSI	Units	SB-A5.1-MT122 55 - 60 12/07/16 SB-A5.1-MT122_55-60_120716	SB-A5.1-MT122 63 - 68 12/08/16 SB-A5.1-MT122_63-68_120816	SB-A5.1-MT122 71 - 76 12/08/16 SB-A5.1-MT122_71-76_120816	SB-A5.1-MT132 67 - 72 11/28/16 SB-A5.1-MT132_67-72_112816	SB-A5.1-MT132 74 - 79 11/29/16 SB-A5.1-MT132_74-79_112916	SB-A5.1-MT142 70 - 75 11/30/16 SB-A5.1-MT142_70-75_113016	SB-A5.1-MT142 80 - 85 11/30/16 SB-A5.1-MT142_80-85_113016
Volatile Organics										
1,1,1,2-Tetrachloroethane	77	- -	ug/L	NA	<1	NA	<1	<1	<1	<1
1,2,3-Trichlorobenzene	- -	- -	ug/L	NA	<5	NA	<5	<5	<5	<5
1,2,3-Trichloropropane	42	- -	ug/L	NA	<1	NA	<1	<1	<1	<1
1,2,3-Trimethylbenzene	- -	- -	ug/L	NA	<1	NA	<1	<1	<1	<1
2-Phenylbutane (sec-Butylbenzene)	80	- -	ug/L	NA	<1	NA	<1	<1	<1	<1
Acrylonitrile	2.6	2	ug/L	NA	<2	NA	<2	<2	<2	<2
Bromobenzene	18	- -	ug/L	NA	<1	NA	<1	<1	<1	<1
Chlorobromomethane	- -	- -	ug/L	NA	<1	NA	<1	<1	<1	<1
Cymene (p-Isopropyltoluene)	- -	- -	ug/L	NA	<5	NA	<5	<5	<5	<5
Dibromomethane	80	- -	ug/L	NA	<5	NA	<5	<5	<5	<5
Ethyl ether	10	- -	ug/L	NA	<10	NA	<10	<10	<10	<10
Iodomethane	- -	- -	ug/L	NA	<1	NA	<1	<1	<1	<1
N-Butylbenzene	80	- -	ug/L	NA	<1	NA	<1	<1	<1	<1
N-Propylbenzene	80	- -	ug/L	NA	<1	NA	<1	<1	<1	<1
tert-Butylbenzene	80	- -	ug/L	NA	<1	NA	<1	<1	<1	<1
Tetrahydrofuran	95	11,000	ug/L	NA	<90	NA	<90	<90	<90	<90
trans-1,4-Dichloro-2-butene	- -	- -	ug/L	NA	<1	NA	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane (DBCP)	0.2	- -	ug/L	NA	<5	NA	<5	<5	<5	<5
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	NA	<1	NA	<1	<1	<1	<1
1,2-Dichlorobenzene	600	13	ug/L	NA	<1	NA	<1	<1	<1	<1
1,4-Dichlorobenzene	75	17	ug/L	NA	<1	NA	<1	<1	<1	<1
1,4-Dioxane	7.2	2,800	ug/L	<3	<3	<3 [<3]	**5**	<3	<3	<3
1,1,1-Trichloroethane	200	89	ug/L	NA	<1	NA	<1	<1	<1	<1
2-Hexanone	1,000	- -	ug/L	NA	<50	NA	<50	<50	<50	<50
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	NA	<1	NA	<1	<1	<1	<1
Acetone	730	1,700	ug/L	NA	<50	NA	<50	<50	<50	<50
1,1,2-Trichloroethane	5	330	ug/L	NA	<1	NA	<1	<1	<1	<1
Bromodichloromethane	80	- -	ug/L	NA	<1	NA	**2**	<1	<1	<1
1,1-Dichloroethane	880	740	ug/L	NA	<1	NA	<1	<1	<1	<1
Bromoform	80	- -	ug/L	NA	<1	NA	<1	<1	<1	<1
1,1-Dichloroethene	7	130	ug/L	NA	<1	NA	<1	<1	<1	<1
Bromomethane (Methyl bromide)	10	35	ug/L	NA	<5	NA	<5	<5	<5	<5
1,2-Dichloroethane	5	360	ug/L	NA	<1	NA	<1	<1	<1	<1
Carbon disulfide	800	- -	ug/L	NA	<5	NA	<5	<5	<5	<5
Carbon tetrachloride	5	45	ug/L	NA	<1	NA	<1	<1	<1	<1
cis-1,2-Dichloroethene	70	620	ug/L	NA	<1	NA	<1	<1	<1	<1
Chlorobenzene	100	25	ug/L	NA	<1	NA	<1	<1	<1	<1
trans-1,2-Dichloroethene	100	1,500	ug/L	NA	<1	NA	<1	<1	<1	<1
Chloroform (Trichloromethane)	80	350	ug/L	NA	<1	NA	**14**	**2**	**1**	**1**
Trichloroethene	5	200	ug/L	NA	<1	NA	<1	<1	<1	<1
Chloromethane (Methyl chloride)	260	- -	ug/L	NA	<5	NA	<5	<5	<5	<5
Tetrachloroethene	5	60	ug/L	NA	<1	NA	<1	<1	<1	<1
cis-1,3-Dichloropropene	- -	- -	ug/L	NA	<1	NA	<1	<1	<1	<1
Vinyl chloride	2	13	ug/L	NA	<1	NA	<1	<1	<1	<1
2-Methylnaphthalene	260	19	ug/L	NA	<5	NA	<5	<5	<5	<5
Chloroethane	430	1,100	ug/L	NA	<5	NA	<5	<5	<5	<5
Dichlorodifluoromethane (CFC-12)	1,700	- -	ug/L	NA	<5	NA	<5	<5	<5	<5
Benzene	5	200	ug/L	NA	<1	NA	<1	<1	<1	**2**
Ethylbenzene	74	18	ug/L	NA	<1	NA	<1	<1	<1	<1

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Methylene chloride	5	1,500	ug/L	NA	<5	NA	<5	<5	<5	<5
Styrene	100	80	ug/L	NA	<1	NA	<1	<1	<1	<1
Toluene	790	270	ug/L	NA	<1	NA	<1	<1	<1	<1
trans-1,3-Dichloropropene	- -	- -	ug/L	NA	<1	NA	<1	<1	<1	<1
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	NA	<5	NA	<5	<5	<5	<5
Trichlorofluoromethane (CFC-11)	2,600	- -	ug/L	NA	<1	NA	<1	<1	<1	<1
Naphthalene	520	11	ug/L	NA	<5	NA	<5	<5	<5	<5
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	NA	**32**	NA	<25	<25	<25	<25
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	- -	ug/L	NA	<50	NA	<50	<50	<50	<50
1,2,4-Trichlorobenzene	70	99	ug/L	NA	<5	NA	<5	<5	<5	<5
1,2,4-Trimethylbenzene	63	17	ug/L	NA	<1	NA	<1	<1	<1	<1
1,3,5-Trimethylbenzene	72	45	ug/L	NA	<1	NA	<1	<1	<1	<1
1,2-Dichloropropane	5	230	ug/L	NA	<1	NA	<1	<1	<1	<1
1,3-Dichlorobenzene	6.6	28	ug/L	NA	<1	NA	<1	<1	<1	<1
Dibromochloromethane	80	- -	ug/L	NA	<5	NA	<5	<5	<5	<5
Isopropyl benzene	800	28	ug/L	NA	<5	NA	<5	<5	<5	<5
o-Xylene	- -	- -	ug/L	NA	<1	NA	<1	<1	<1	<1
m&p-Xylene	- -	- -	ug/L	NA	<2	NA	<2	<2	<2	<2
Hexachloroethane	7.3	6.7	ug/L	NA	<5	NA	<5	<5	<5	<5
Total-Xylenes	280	41	ug/L	NA	<3	NA	<3	<3	<3	<3

Notes:
Bold indicates result exceeding laboratory method detection limits, but below MDEQ Part 201 Generic Cleanup Criteria.
Shading indicates result exceeding one or more MDEQ Part 201 Generic Cleanup Criteria.
Data shown in [ ] represent duplicate sample analytical results.
[a] - Sample exceeds Residential Drinking Water Criteria.
- - = Not listed in the MDEQ Criteria Tables.
< = less than
µg/L = micrograms per liter

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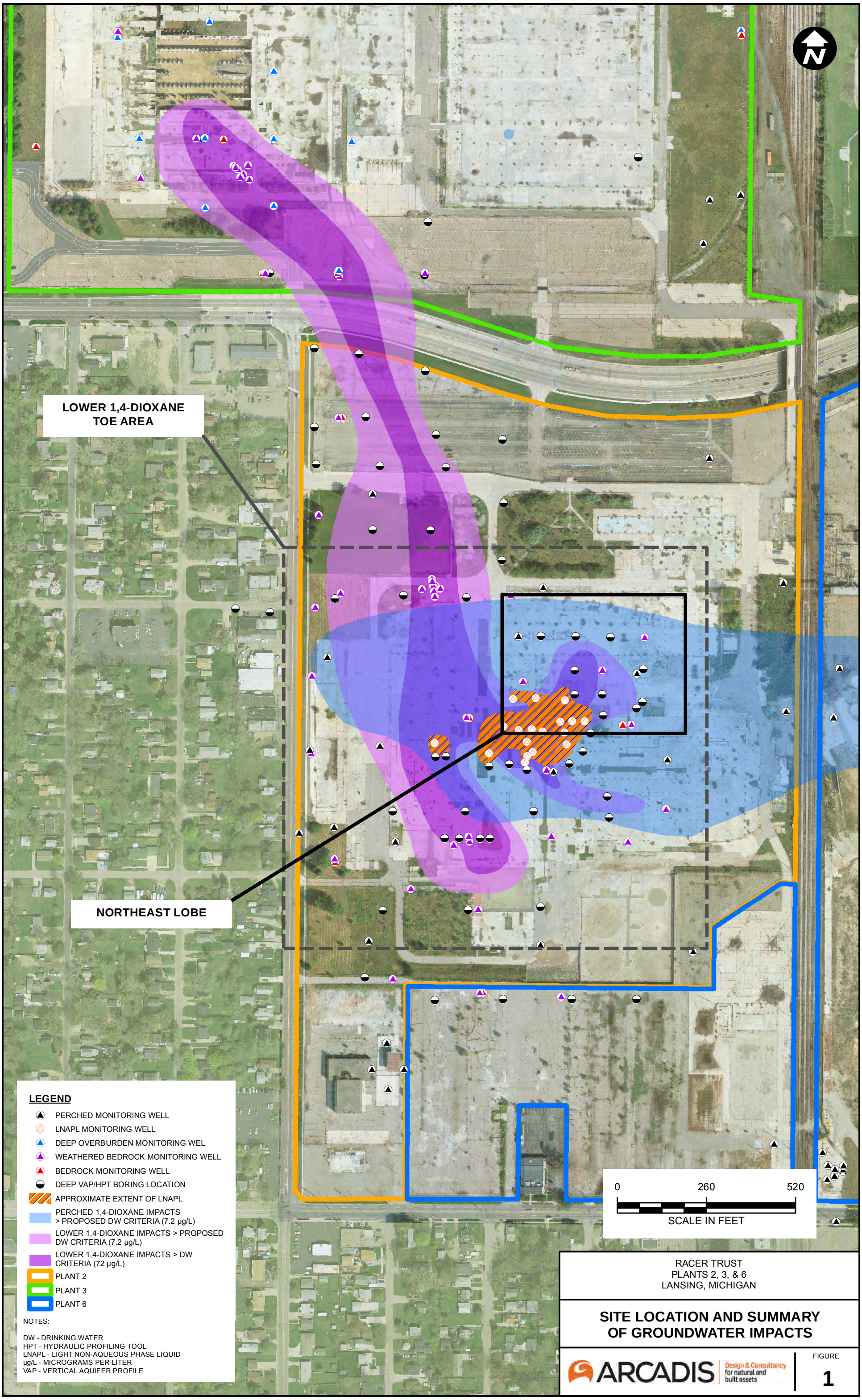
Location ID: Sample Depth (ft bgs): Date Collected: Sample Name:	MI GW (DEQ2013) RES DW [(a)]	MI GW (DEQ2013) GSI	Units	SB-A5.1-MT152 70 - 75 12/02/16 SB-A5.1-MT152_70-75_120216	SB-A5.1-MT152 77 - 82 12/02/16 SB-A5.1-MT152_77-82_120216	SB-A5.2-ND152 65 - 70 12/05/16 SB-A5.2-ND152_65-70_120516	SB-A5.2-ND152 72 - 77 12/05/16 SB-A5.2-ND152_72-77_120516	SB-A5.2-NO150 65 - 70 12/06/16 SB-A5.2-NO150_65-70_120616	SB-A5.2-NO150 72 - 77 12/07/16 SB-A5.2-NO150_72-77_120716
Volatile Organics									
1,1,1,2-Tetrachloroethane	77	- -	ug/L	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	- -	- -	ug/L	<5	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	42	- -	ug/L	<1	<1	<1	<1	<1	<1
1,2,3-Trimethylbenzene	- -	- -	ug/L	<1	<1	<1	<1	<1	<1
2-Phenylbutane (sec-Butylbenzene)	80	- -	ug/L	<1	<1	<1	<1	<1	<1
Acrylonitrile	2.6	2	ug/L	<2	<2	<2	<2	<2	<2
Bromobenzene	18	- -	ug/L	<1	<1	<1	<1	<1	<1
Chlorobromomethane	- -	- -	ug/L	<1	<1	<1	<1	<1	<1
Cymene (p-Isopropyltoluene)	- -	- -	ug/L	<5	<5	<5	<5	<5	<5
Dibromomethane	80	- -	ug/L	<5	<5	<5	<5	<5	<5
Ethyl ether	10	- -	ug/L	<10	<10	<10	<10	<10	<10
Iodomethane	- -	- -	ug/L	<1	<1	<1	<1	<1	<1
N-Butylbenzene	80	- -	ug/L	<1	<1	<1	<1	<1	<1
N-Propylbenzene	80	- -	ug/L	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	80	- -	ug/L	<1	<1	<1	<1	<1	<1
Tetrahydrofuran	95	11,000	ug/L	<90	<90	<90	<90	<90	<90
trans-1,4-Dichloro-2-butene	- -	- -	ug/L	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane (DBCP)	0.2	- -	ug/L	<5	<5	<5	<5	<5	<5
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	600	13	ug/L	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	75	17	ug/L	<1	<1	<1	<1	<1	<1
1,4-Dioxane	7.2	2,800	ug/L	<3	<3	<3	<3	<3	**7**
1,1,1-Trichloroethane	200	89	ug/L	<1	<1	<1	<1	<1	<1
2-Hexanone	1,000	- -	ug/L	<50	<50	<50	<50	<50	<50
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	<1	<1	<1	<1	<1	<1
Acetone	730	1,700	ug/L	<50	<50	<50	<50	<50	<50
1,1,2-Trichloroethane	5	330	ug/L	<1	<1	<1	<1	<1	<1
Bromodichloromethane	80	- -	ug/L	<1	<1	**3**	**4**	<1	<1
1,1-Dichloroethane	880	740	ug/L	<1	<1	<1	<1	<1	<1
Bromoform	80	- -	ug/L	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	7	130	ug/L	<1	<1	<1	<1	<1	<1
Bromomethane (Methyl bromide)	10	35	ug/L	<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	5	360	ug/L	<1	<1	<1	<1	<1	<1
Carbon disulfide	800	- -	ug/L	<5	<5	<5	<5	<5	<5
Carbon tetrachloride	5	45	ug/L	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	70	620	ug/L	<1	<1	<1	<1	<1	<1
Chlorobenzene	100	25	ug/L	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	100	1,500	ug/L	<1	<1	<1	<1	<1	<1
Chloroform (Trichloromethane)	80	350	ug/L	<1	**1**	**16**	**17**	**1**	**2**
Trichloroethene	5	200	ug/L	<1	<1	<1	<1	<1	<1
Chloromethane (Methyl chloride)	260	- -	ug/L	<5	<5	<5	<5	<5	<5
Tetrachloroethene	5	60	ug/L	<1	<1	<1	<1	<1	<1
cis-1,3-Dichloropropene	- -	- -	ug/L	<1	<1	<1	<1	<1	<1
Vinyl chloride	2	13	ug/L	<1	<1	<1	<1	<1	<1
2-Methylnaphthalene	260	19	ug/L	<5	<5	<5	<5	<5	<5
Chloroethane	430	1,100	ug/L	<5	<5	<5	<5	<5	<5
Dichlorodifluoromethane (CFC-12)	1,700	- -	ug/L	<5	<5	<5	<5	<5	<5
Benzene	5	200	ug/L	<1	**69** [a]	<1	<1	<1	<1
Ethylbenzene	74	18	ug/L	<1	**5**	<1	<1	<1	<1

Table 1
Vertical Aquifer Profile Groundwater Analytical Results
Lower 1,4-Dioxane Northeast Lobe Investigation
RACER Lansing Plant 2
Lansing, Michigan

Location ID: Sample Depth (ft bgs): Date Collected: Sample Name:	MI GW (DEQ2013) RES DW [(a)]	MI GW (DEQ2013) GSI	Units	SB-A5.1-MT152 70 - 75 12/02/16 SB-A5.1-MT152_70-75_120216	SB-A5.1-MT152 77 - 82 12/02/16 SB-A5.1-MT152_77-82_120216	SB-A5.2-ND152 65 - 70 12/05/16 SB-A5.2-ND152_65-70_120516	SB-A5.2-ND152 72 - 77 12/05/16 SB-A5.2-ND152_72-77_120516	SB-A5.2-NO150 65 - 70 12/06/16 SB-A5.2-NO150_65-70_120616	SB-A5.2-NO150 72 - 77 12/07/16 SB-A5.2-NO150_72-77_120716
Methylene chloride	5	1,500	ug/L	<5	<5	<5	<5	<5	<5
Styrene	100	80	ug/L	<1	**2**	<1	<1	<1	<1
Toluene	790	270	ug/L	<1	**33**	<1	<1	<1	<1
trans-1,3-Dichloropropene	- -	- -	ug/L	<1	<1	<1	<1	<1	<1
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	<5	<5	<5	<5	<5	<5
Trichlorofluoromethane (CFC-11)	2,600	- -	ug/L	<1	<1	<1	<1	<1	<1
Naphthalene	520	11	ug/L	<5	<5	<5	<5	<5	<5
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	<25	<25	<25	<25	<25	70
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	- -	ug/L	<50	<50	<50	<50	<50	<50
1,2,4-Trichlorobenzene	70	99	ug/L	<5	<5	<5	<5	<5	<5
1,2,4-Trimethylbenzene	63	17	ug/L	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	72	45	ug/L	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	5	230	ug/L	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	6.6	28	ug/L	<1	<1	<1	<1	<1	<1
Dibromochloromethane	80	- -	ug/L	<5	<5	<5	<5	<5	<5
Isopropyl benzene	800	28	ug/L	<5	<5	<5	<5	<5	<5
o-Xylene	- -	- -	ug/L	<1	**3**	<1	<1	<1	<1
m&p-Xylene	- -	- -	ug/L	<2	**3**	<2	<2	<2	<2
Hexachloroethane	7.3	6.7	ug/L	<5	<5	<5	<5	<5	<5
Total-Xylenes	280	41	ug/L	<3	**6**	<3	<3	<3	<3

Notes:
Bold indicates result exceeding laboratory method detection limits, but below MDEQ Part 201 Generic Cleanup Criteria.
Shading indicates result exceeding one or more MDEQ Part 201 Generic Cleanup Criteria.
Data shown in [ ] represent duplicate sample analytical results.
[a] - Sample exceeds Residential Drinking Water Criteria.
- - = Not listed in the MDEQ Criteria Tables.
< = less than
µg/L = micrograms per liter

FIGURES



RACER TRUST
PLANTS 2, 3, & 6
LANSING, MICHIGAN

SITE LOCATION AND SUMMARY OF GROUNDWATER IMPACTS

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FIGURE
1

CITY: Novi DIV: ENV DB: TRY PIC: D. KAIDING PM: R. CHRISTENSEN TM: K. TEMPLIN TR: J. SALING PROJECT NUMBER: B0064479.2015/B0064480.2015 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
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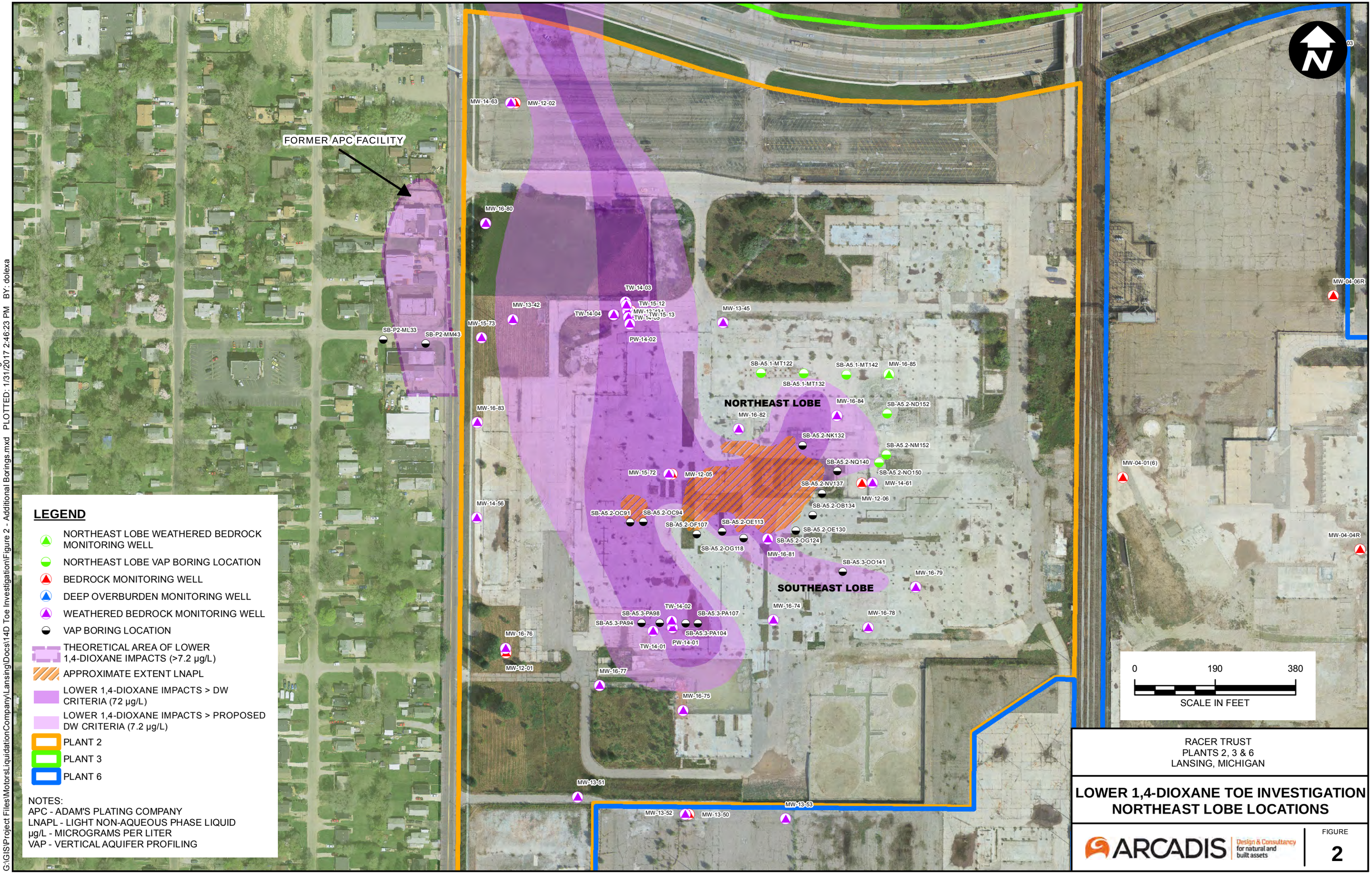

LEGEND

- NORTHEAST LOBE WEATHERED BEDROCK MONITORING WELL
- NORTHEAST LOBE VAP BORING LOCATION
- BEDROCK MONITORING WELL
- DEEP OVERBURDEN MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL
- VAP BORING LOCATION
- THEORETICAL AREA OF LOWER 1,4-DIOXANE IMPACTS (>7.2 µg/L)
- APPROXIMATE EXTENT LNAPL
- LOWER 1,4-DIOXANE IMPACTS > DW CRITERIA (72 µg/L)
- LOWER 1,4-DIOXANE IMPACTS > PROPOSED DW CRITERIA (7.2 µg/L)
- PLANT 2
- PLANT 3
- PLANT 6

NOTES:
APC - ADAM'S PLATING COMPANY
LNAPL - LIGHT NON-AQUEOUS PHASE LIQUID
µg/L - MICROGRAMS PER LITER
VAP - VERTICAL AQUIFER PROFILING

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

LOWER 1,4-DIOXANE TOE INVESTIGATION
NORTHEAST LOBE LOCATIONS

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FIGURE
2

CITY: Novi DIV: ENV DB: TRY PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
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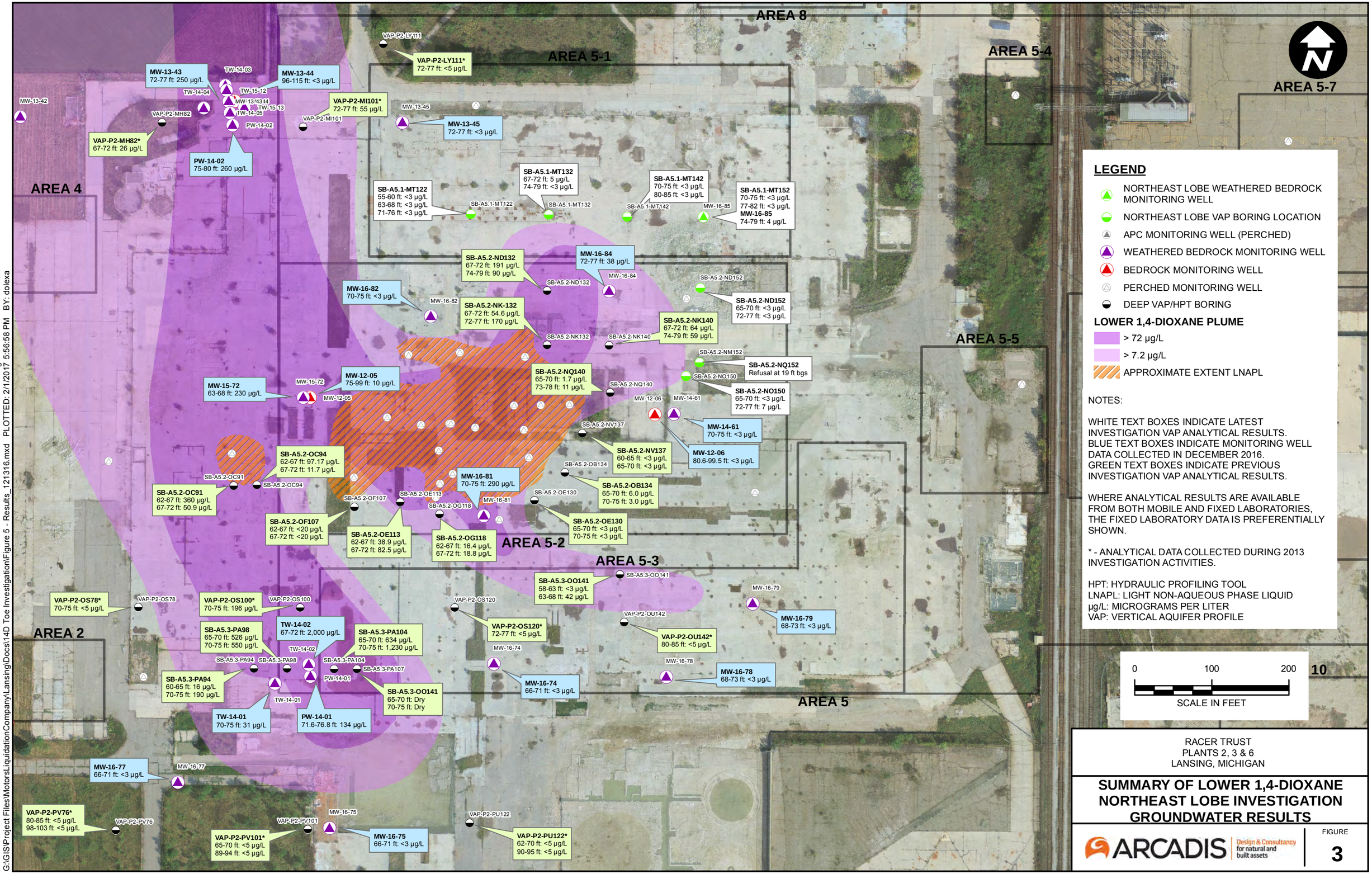

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RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

SUMMARY OF LOWER 1,4-DIOXANE NORTHEAST LOBE INVESTIGATION GROUNDWATER RESULTS

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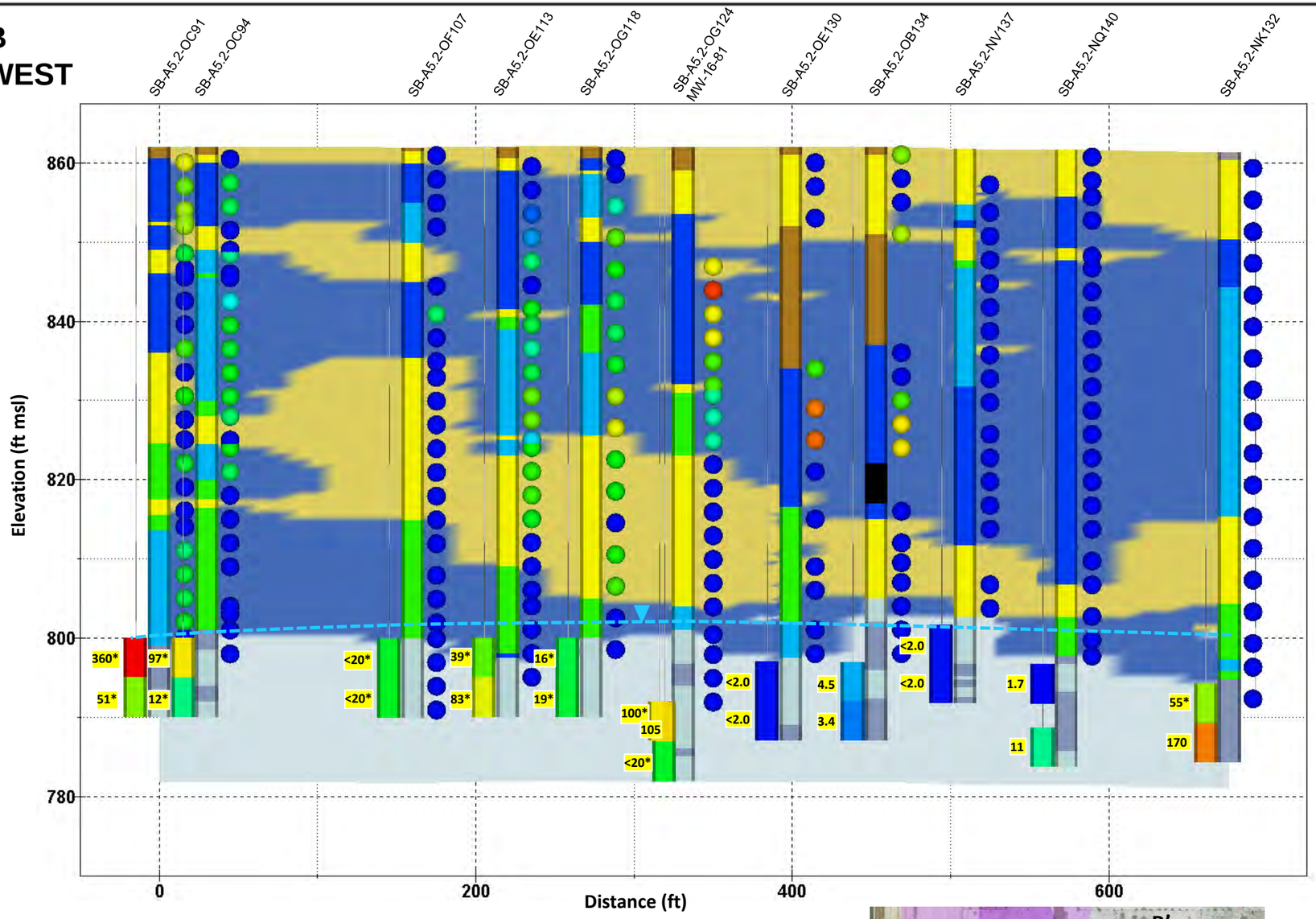
FIGURE
3

APPENDIX A

Plant 2 LNAPL Area Cross-Section



LEGEND

STRATIGRAPHY

- TOPSOIL/ASPHALT/CONCRETE
- FILL
- GRAVELLY SAND
- SAND
- SILTY SAND
- SILTY/SANDY/GRAVELLY CLAY
- CLAY
- PEAT
- BEDROCK (PRIMARILY SANDSTONE)
- BEDROCK (PRIMARILY SHALE)
- NO RECOVERY

HYDROSTRATIGRAPHY

- More Permeable
- Less Permeable
- Bedrock
- Approximate Bedrock Water Table
- Soil Sample Result
- Groundwater Sample Result

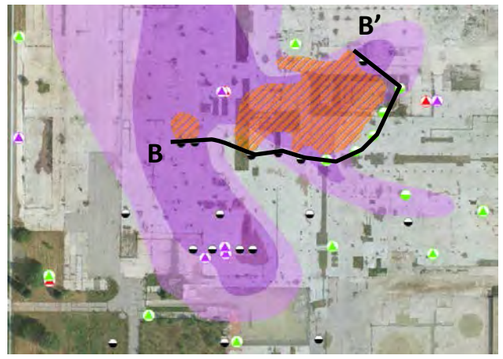
1,4-Dioxane: 5,000 ug/kg; 1,000 ug/kg; 100 ug/kg; 10 ug/kg; 1 ug/kg

1,4-Dioxane: 5,000 ug/L; 1,000 ug/L; 100 ug/L; 10 ug/L; 1 ug/L

NOTE:

1. Soil and groundwater concentrations provided in parts per billion
   - µg/L – micrograms per liter
   - µg/kg – micrograms per kilogram
2. Monitoring well results provided by GC-MS Method 8260 and represent most recent sampling event (June 2016)
3. VAP samples analyzed via GC-MS Method 8260 unless otherwise noted.
4. * - VAP sample analyzed via DSITMS Method 8265
5. Soil samples are provided by DSITMS Method 8265 or GC-MS Method 8260C. Results bias low. Results could potentially be two to four times higher if analyzed using standard Method 8260-SIM.

VAP – Vertical aquifer profiling
DSITMS – Direct ion trap mass spectrometry
GC-MS – Gas chromatography-mass spectrometry
ft msl – feet above mean sea level



RACER LANSING
PLANT 2
LANSING, MICHIGAN

CROSS SECTION B-B'

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FIGURE
A-1

APPENDIX B

Summary of Lower 1,4-Dioxane Plume

NOTES:

CONCENTRATION OF 1,4-DIOXANE PROVIDED IN MICROGRAMS PER LITER (µg/L)

MONITORING WELL SAMPLES COLLECTED IN JUNE 2016

VAP SAMPLES COLLECTED OVER MULTIPLE MOBILIZATIONS, PRIMARILY IN 2013 (INITIAL DELINEATION) AND 2015-2016 (TOE INVESTIGATIONS)

VALUE INDICATED FOR VAP SAMPLES IS MAXIMUM CONCENTRATION DETECTED IF MULTIPLE SAMPLES WERE COLLECTED AT THAT LOCATION

** - ALTHOUGH INITIALLY NON-DETECT WHEN SAMPLED IN 2013, INCREASING CONCENTRATIONS SIDE GRADIENT SUGGEST THESE LOCATIONS COULD NOW BE IMPACTED

LEGEND

- VAP BORING LOCATIONS
- BEDROCK MONITORING WELL
- DEEP OVERBURDEN MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL
- 85 µg/L CONTOUR (NOT DEFINED)
- 7.2 µg/L CONTOUR (NOT DEFINED)
- PLANT 2
- PLANT 3
- PLANT 6

0 200 400

SCALE IN FEET

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

LOWER 1,4-DIOXANE CONCENTRATIONS AND ISOCONTOURS SEPTEMBER 2016

ARCADIS Design & Consultancy for natural and built assets

FIGURE B-1

CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
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APPENDIX C

Boring Logs

Date Start: 12/07/2016
Date Finish: 12/08/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 77.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.1-MT122**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Low 30 F, Sunny

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0 / 0							(0.0 - 1.0') CONCRETE		
				0.0			(1.0 - 4.0') SAND, fine to medium, subround, well sorted; moist; yellowish brown (10YR 5/4).		
				0.0					
							(4.0 - 9.0') CLAY, low plasticity, slow dilatancy; trace silt; trace sand, fine, subround; medium stiff; moist; grayish brown (10YR 5/2).		
5 / -5	1	0.0-10.0'	10.0	0.0					
				0.0					
				0.0			(9.0 - 10.0') CLAY, high plasticity, slow dilatancy; trace sand, fine, subround; stiff; moist; brown (10YR 5/3).		
10 / -10							(10.0 - 14.0') SAND, very fine to fine, subround; trace to little silt; poorly sorted; moist; yellowish brown (10YR 5/4).		Borehole backfilled with Bentonite.
				0.0					
				0.0					
							(14.0 - 16.0') SAND, fine to coarse, subround to subangular; trace silt; trace granules, subround to subangular; poorly sorted; moist ; grayish brown (10YR 5/2).		
15 / -15	2	10.0.-20.0'	10.0	0.0					
							(16.0 - 23.0') CLAY, high plasticity, slow dilatancy; trace silt, trace sand, fine, subround; medium stiff; moist ; dark gray (10YR 4/1).		
				0.0					
				0.0					
20 / -20									

Remarks: bgs = below ground surface

ARCADIS Design & Consultancy for natural and built assets

Date Start: 12/07/2016
Date Finish: 12/08/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 77.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.1-MT122**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Low 30 F, Sunny

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
				0.0					
				0.0			(23.0 - 27.5') CLAY, low plasticity, slow to no dilatancy; some silt; trace sand, fine, subround; stiff; moist; gray (10YR 6/1).		
25 -25	3	20.0-30.0'	10.0	0.0					
				0.0					
				0.0			(27.5 - 30.0') SAND, medium to coarse, subround; poorly sorted; moist; brown (10YR 5/3).		
30 -30				0.0			(30.0 - 45.0') CLAY, medium plasticity, slow dilatancy; little to some silt; trace sand, coarse to granules, subangular; medium stiff; moist; gray (10YR 5/1).		Borehole backfilled with Bentonite.
				0.0					
				0.0					
35 -35	4	30.0-40.0'	10.0	0.0					
				0.0					
				0.0					
40 -40				0.0					

Remarks: bgs = below ground surface

ARCADIS Design & Consultancy for natural and built assets

Date Start: 12/07/2016
Date Finish: 12/08/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 77.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.1-MT122**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Low 30 F, Sunny

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
				0.0					
45 -45	5	40.0-50.0'	10.0	0.0			(45.0 - 50.0') SAND, very fine to fine, subround; trace granules to small pebbles, subround; moist; grayish brown (10YR 5/2).		
				0.0					
				0.0					
50 -50				0.0			(50.0 - 55.0') SILT and CLAY, no plasticity; trace granules to small pebbles, subround; dry; dark gray (10YR 4/1).		
				0.0					
55 -55	6	50.0-60.0'	10.0	0.0			(55.0 - 59.0') SANDSTONE, trace shale, very fine, weathered; light gray (10YR 7/1).		
				0.0					
				0.0			(59.0 - 61.0') SHALE, weathered; dark gray (10YR 3/1).		Borehole backfilled with Bentonite.
60 -60				0.0			(61.0 - 74.0') SANDSTONE, weathered, very fine; light gray (10YR 7/1).		
				0.0					

Remarks: bgs = below ground surface

ARCADIS Design & Consultancy for natural and built assets

Date Start: 12/07/2016
Date Finish: 12/08/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 77.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.1-MT122**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Low 30 F, Sunny

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
65 -65	7	60.0-70.0'	10.0	0.0					
				0.0					
				0.0					
70 -70	8	70.0-77.0	7.0	0.0					
				0.0					
75 -75				0.0			(74.0 - 77.0') SANDSTONE and SHALE, interbedded, very fine, weathered; light gray to dark gray (10YR 7/1 - 3/1). VAP samples at 55-60', 63-68' and 71-76' bgs.		
							End of boring at 77' bgs.		
80 -80									
85 -85									

ARCADIS Design & Consultancy for natural and built assets

Remarks: bgs = below ground surface

Date Start: 11/28/2016
Date Finish: 11/29/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 79.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.1-MT132**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Low 40 F, Cloudy

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0 / 0							(0.0 - 1.0') CONCRETE		
				0.0			(1.0 - 4.0') SAND, fine to medium, subround, well sorted; dry; yellowish brown (10YR 5/4).		
				0.0			(4.0 - 7.5') SAND, fine, subround; some silt; trace pebbles, small to medium, subround; poorly sorted; moist; brown (10YR 4/3).		
5 / -5	1	0.0-10.0'	10.0	0.0					
				8.0			(7.5 - 8.0') SAND, fine to medium, subround; some silt; trace granules, subround; well sorted; moist; dark grayish brown (10YR 4/2).		
				0.0			(8.0 - 10.0') SAND, fine to medium, subround; little granules to small pebbles, subround; well sorted; moist; yellowish brown (10YR 5/6).		
10 / -10				0.0			(10.0 - 11.0') CLAY, low plasticity, slow dilatancy; trace sand, fine to medium, subround; trace granules, subround; moist; soft; dark gray (10YR 4/1). NOTE: slight odor.		Borehole backfilled with Bentonite.
				0.0			(11.0 - 12.0') SAND, fine to medium, subround, trace silt; well sorted; moist; yellowish brown (10YR 5/6).		
				3.9			(12.0 - 20.0') CLAY, some silt, medium to high plasticity, slow dilatancy; trace sand, fine, subround; stiff; moist; gray (5YR 5/1).		
15 / -15	2	10.0.-20.0'	10.0	0.0					
				0.0					
				0.0					
20 / -20									

Remarks: bgs = below ground surface
NA = not analyzed

ARCADIS Design & Consultancy for natural and built assets

Date Start: 11/28/2016
Date Finish: 11/29/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 79.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.1-MT132**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Low 40 F, Cloudy

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
				0.0			(20.0 - 22.0') SAND, fine to medium, subangular; trace granules, subangular; well sorted; moist; dark graish brown (10YR 4/3).		
				0.0			(22.0 - 23.0') SAND, medium to coarse, subangular; trace small to medium pebbles, subangular; poorly sorted; moist, gray (10YR 4/1).		
25 -25	3	20.0-30.0'	10.0	0.0			(23.0 - 27.0') CLAY, high plasticity, slow dilatancy; trace sand, fine to medium, subangular; stiff; moist; gray (5YR 5/1).		
				0.0			(27.0 - 29.0') SAND, medium, subround to subangular; well sorted; moist; dark yellowish brown (10YR 4/4).		
				0.0			(29.0 - 31.0') CLAY and SILT, low plasticity, slow dilatancy, trace small pebbles, subround to subangular, stiff; gray (5YR 5/1).		
30 -30				0.0			(31.0 - 32.0') SAND, medium, subround to subangular; well sorted; moist; dark yellowish brown (10YR 4/4).		Borehole backfilled with Bentonite.
				NA			(32.0 - 36.0') CLAY, low plasticity, low dilatancy; some silt; stiff; moist; dark gray (5YR 4/1).		
35 -35	4	30.0-40.0'	10.0	NA					
				NA			(36.0 - 39.0') SILT, little clay, low plasticity; trace sand, fine, subangular; dark gray (5YR 4/1).		
				NA			(39.0 - 44.0') CLAY, low plasticity; little silt, trace sand, fine, subround; trace graules, subround; stiff; dark gray (5YR 4/1).		
40 -40				0.0					

Remarks: bgs = below ground surface
NA = not analyzed

ARCADIS Design & Consultancy for natural and built assets

Date Start: 11/28/2016
Date Finish: 11/29/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 79.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.1-MT132**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Low 40 F, Cloudy

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
				0.0					
45 -45	5	40.0-50.0'	10.0	0.0			(44.0 - 48.0') SILT, some clay, low plasticity, slow dilatancy; trace sand, fine, subangular; trace granules to medium pebbles, subangular; stiff; dark gray (5YR 4/1).		
				0.0					
				0.0			(48.0 - 55.0') CLAY, medium plasticity, slow dilatancy; little silt; trace sand, fine, subangular; stiff; moist; dark gray (5YR 4/1).		
50 -50				0.0					
				0.0					Borehole backfilled with Bentonite.
55 -55	6	50.0-60.0'	10.0	0.0			(55.0 - 60.0') SAND, fine to medium, subround to subangular; well sorted; moist; gray (10YR 5/1).		
				0.0					
				0.0					
60 -60				NA			(60.0 - 67.0') SILT, some pebbles, small to medium, subround to subangular; little clay, low plasticity; stiff; moist; gray (10YR 4/1).		
				NA					

Remarks: bgs = below ground surface
NA = not analyzed

ARCADIS Design & Consultancy for natural and built assets

Date Start: 11/28/2016
Date Finish: 11/29/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 79.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.1-MT132**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Low 40 F, Cloudy

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
65 -65	7	60.0-70.0'	10.0	NA					
				NA			(67.0 - 68.0') SANDSTONE, weathered; wet; light gray (10YR 4/1).		
							(68.0 - 70.0') SHALE, interbedded sandstone, weathered; dark gray (10YR 4/1).		
				NA					
70 -70							(70.0 - 79.0') SANDSTONE and SHALE, weathered; wet; dark gray (10YR 4/1).		
				NA					Borehole backfilled with Bentonite.
				NA					
75 -75	8	70.0-79.0	9.0	NA			VAP samples at 67-72' and 74-79' bgs.		
				NA					
				NA					
							End of boring at 79' bgs.		
80 -80									
85 -85									

Remarks: bgs = below ground surface
NA = not analyzed

Date Start: 12/01/2016
Date Finish: 12/02/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 85.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.1-MT142**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Mid 50 F, Sunny

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0 / 0							(0.0 - 1.0') CONCRETE		
				0.0			(1.0 - 7.0') NO RECOvERY		
				0.0					
5 / -5	1	0.0-10.0'	10.0	0.0					
				0.0			(7.0 - 12.0') SAND, fine to medium, subround to subangular; well sorted; wet; dark brown (10YR 3/3). NOTE: Large asphalt chunks.		
				0.0					
10 / -10									Borehole backfilled with Bentonite.
				0.0			(12.0 - 17.5') CLAY, low plasticity, slow dilatancy; some silt; trace small pebbles, subround; trace sand, fine, subround; stiff; moist; gray (10YR 5/1).		
				0.0					
15 / -15	2	10.0.-20.0'	10.0	0.0					
				0.0			(17.5 - 19.0') CLAY, high plasticity, slow dilatancy; trace sand; fine; stiff; moist; gray (10YR 5/1).		
				0.0			(19.0 - 21.5') SAND, very fine to medium, subround; little silt; trace clay; poorly sorted; wet; dark grayish brown (10YR 5/2).		
20 / -20									

Remarks: bgs = below ground surface

ARCADIS Design & Consultancy for natural and built assets

Date Start: 12/01/2016
Date Finish: 12/02/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 85.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.1-MT142**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Mid 50 F, Sunny

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
				0.0					
				0.0			(21.5 - 24.0') CLAY and SILT, medium plasticity, slow dilatancy; trace sand, fine, subround; medium stiff; gray (10YR 5/1).		
25 -25	3	20.0-30.0'	10.0	0.0			(24.0 - 27.0') SAND, very fine to medium, subround; little sitt; trace clay; poorly sorted; wet; dark grayish brown (10YR 5/2).		
				0.0			(27.0 - 31.0') SILT and CLAY, medium plasticity, slow dilatancy; trace granules, subround; medium stiff; most; gray (10YR 5/1).		
				0.0					
30 -30				0.0			(31.0 - 37.0') CLAY, low plasticity, slow dilatancy; some silt; trace small pebbles, subround to subangular; stiff; moist; gray (10YR 5/1).		Borehole backfilled with Bentonite.
				0.0					
35 -35	4	30.0-40.0'	10.0	0.0					
				0.0			(37.0 - 38.5') SAND, very fine to fine, subround; some silt; well sorted; moist; grayish brown (10YR 5/2).		
				0.0			(38.5 - 41.0') SILT, some clay, no plasticity, slow dilatancy; trace sand, fine to medium, subround; stiff; moist; grayish brown (10YR 5/2).		
40 -40									
				0.0			(41.0 - 48.0') CLAY, low plasticity, slow dilatancy; little silt; stiff; moist; gray (10YR 5/1).		

ARCADIS Design & Consultancy for natural and built assets

Remarks: bgs = below ground surface

Date Start: 12/01/2016
Date Finish: 12/02/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 85.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.1-MT142**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Mid 50 F, Sunny

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
				0.0					
45 -45	5	40.0-50.0'	10.0	0.0					
				0.0					
				0.0			(48.0 - 52.0') SILT, low plasticity, slow dilatancy; little clay; trace small pebbles, subround; stiff; moist; gray (10YR 5/1).		
50 -50				0.0					
				0.0			(52.0 - 57.0') CLAY, high plasticity, slow dilatancy; little silt; stiff; gray (10YR 5/1).		Borehole backfilled with Bentonite.
55 -55	6	50.0-60.0'	10.0	0.0					
				0.0			(57.0 - 59.5') SAND, very fine to fine, subround; trace sandstone fragments; well sorted; moist; grayish brown (10YR 5/2).		
				0.0					
60 -60				0.0			(59.5 - 70.0') CLAY and SILT, low plasticity, slow dilatancy; little to trace granules to small pebbles, subround; stiff; wet; dark gray (10YR 4/1).		
				0.0					

ARCADIS Design & Consultancy for natural and built assets

Remarks: bgs = below ground surface

Date Start: 12/01/2016
Date Finish: 12/02/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 85.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.1-MT142**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Mid 50 F, Sunny

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
65 -65	7	60.0-70.0'	10.0	0.0					
				0.0					
				0.0					
70 -70				0.0			(70.0 - 72.0') SANDSTONE, weathered; wet; light gray (10YR 4/1).		
		70.0-75.0'					(72.0 - 73.0') SHALE, interbedded sandstone, weathered; wet; light gray (10YR 4/1).		
	8		7.0	0.0			(73.0 - 75.0') SANDSTONE, weathered; wet; light gray (10YR 7/1).		Borehole backfilled with Bentonite.
75 -75				0.0			(75.0 - 78.0') SANDSTONE and SHALE, weathered; wet; light gray (10YR 7/1).		
				0.0					
				0.0			(78.0 - 83.0') SANDSTONE; little interbedded shale; moist; weathered; dark gray (10YR 4/1).		
80 -80	9	75.0-85.0'	5.0	0.0					
				0.0					
				0.0			(83.0 - 85.0') SHALE; little interbedded sandstone; weathered; dark gray (10YR 4/1). VAP samples at 70-75' and 80-85' bgs.		
85 -85							End of boring at 85' bgs.		

ARCADIS Design & Consultancy for natural and built assets

Remarks: bgs = below ground surface

Date Start: 12/01/2016
Date Finish: 12/02/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 82.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.1-MT152/MW-16-85**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Low 30 F, Rain

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0 / 0							(0.0 - 1.0') CONCRETE		
				0.0			(1.0 - 3.0') SAND, fine to medium, subround; trace granules to small pebbles, subround; well sorted; moist; yellowish brown (10YR 5/4).		
				0.0			(3.0 - 4.0') SILT and CLAY, no plasticity, slow dilatancy; trace sand, fine, subround; stiff; gray (10YR 5/1).		
							(4.0 - 5.0') SAND, fine to medium, subround to subangular; little silt; well sorted; moist; brown (10YR 5/3).		
5 / -5	1	0.0-10.0'	10.0	0.0			(5.0 - 7.0') SAND, medium to coarse, subround to subangular; well sorted; moist; dark brown (10YR 3/3).		
				0.0			(7.0 - 10.0') CLAY, low plasticity, slow dilatancy; some silt, stiff; moist; grayish brown (10YR 5/2).		
				0.0					
10 / -10				0.0			(10.0 - 15.0') CLAY and SILT, low plasticity, slow dilatancy; trace sand, fine to coarse, subround; trace granules to medium pebbles, subround; moist; stiff; gray (10YR 5/1).		
				0.0					
15 / -15	2	10.0.-20.0'	10.0	0.0			(15.0 - 19.0') SAND, fine to medium, subround; trace granules to small pebbles, subround; well sorted; moist; yellowish brown (10YR 5/4).		
				0.0					
				0.0			(19.0 - 20.0') SILT and CLAY, low plasticity, slow to no dilatancy; trace sand, fine to medium, subround; trace granules to small pebbles, subround; moist; stiff; grayish brown (10YR 5/2).		
20 / -20									

Remarks: bgs = below ground surface

ARCADIS Design & Consultancy for natural and built assets

Date Start: 12/01/2016
Date Finish: 12/02/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 82.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.1-MT152/MW-16-85**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Low 30 F, Rain

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
					0.0			(20.0 - 25.0') SAND, very fine to fine, subround; little silt; well sorted; moist; grayish brown (10YR 5/2).		
					0.0					
25	-25	3	20.0-30.0'	10.0	0.0			(25.0 - 31.0') SILT and CLAY, low to no plasticity, slow dilatancy; trace sand, fine; trace granules to small pebbles, subround; moist; stiff; grayish brown (10YR 5/2).		
					0.0					
					0.0					
30	-30				0.0			(31.0 - 55.0') CLAY, medium plasticity, slow dilatancy; some silt; trace sand, fine, subround; trace pebbles, small to medium, subround; moist; stiff; gray (10YR 5/1).		
					0.0					
35	-35	4	30.0-40.0'	10.0	0.0					Bentonite Seal (0-72' bgs)
					0.0					2" PVC well casing (0-74' bgs)
					0.0					
40	-40				0.0					

ARCADIS Design & Consultancy for natural and built assets

Remarks: bgs = below ground surface

Date Start: 12/01/2016
Date Finish: 12/02/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 82.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.1-MT152/MW-16-85**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Low 30 F, Rain

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
				0.0					
45 -45	5	40.0-50.0'	10.0	0.0					
				0.0					
				0.0					
50 -50				0.0					
				0.0					
55 -55	6	50.0-60.0'	10.0	0.0			(55.0 - 60.0') SILT and CLAY, low plasticity, slow dilatancy; trace granules to small pebbles, subround; moist; stiff; gray (10YR 6/1).		
				0.0					
				0.0					
60 -60				0.0			(60.0 - 63.0') CLAY, medium to high plasticity, slow dilatancy; stiff; moist; gray (10YR 5/1).		
				0.0			(63.0 - 66.0') CLAY and SILT, no to low plasticity, slow dilatancy; little sand, coarse to medium pebbles, subround to subangular; stiff; moist; dark gray (10YR 4/1).		

Remarks: bgs = below ground surface

ARCADIS Design & Consultancy for natural and built assets

Date Start: 12/01/2016
Date Finish: 12/02/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 82.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.1-MT152/MW-16-85**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Low 30 F, Rain

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
65 / -65	7	60.0-70.0'	10.0	0.0					
				0.0			(66.0 - 69.0') SAND, very fine to fine, subround to subangular; trace silt, trace granules, subround to subangular; moist; light gray (10YR 7/1).		
				0.0			(69.0 - 70.0') CLAY and SILT, low plasticity, slow dilatancy; stiff; moist; gray (10YR 5/1).		
70 / -70							(70.0 - 72.0') SANDSTONE, weathered; wet; light gray (10YR 7/1).		
				0.0			(72.0 - 74.0') SHALE and interbedded SANDSTONE, weathered; dry to moist; dark gray (10YR 4/1).		
	8	70.0-77.0'	7.0	0.0			(74.0 - 77.0') SANDSTONE and interbedded SHALE, weathered; dry to moist; light gray (10YR 7/1).		
75 / -75				0.0					Sand Pack (72-80' bgs)
				0.0			(77.0 - 82.0') SANDSTONE, weathered; moist; light gray (10YR 7/1).		2" stainless steel, 10 slot well screen (74-79' bgs)
	9	77.0-82.0'	5.0	0.0			VAP samples at 70-75' and 77-82' bgs.		
80 / -80				0.0					
							End of boring at 82' bgs.		
85 / -85									

Remarks: bgs = below ground surface

ARCADIS Design & Consultancy for natural and built assets

Date Start: 12/05/2016
Date Finish: 12/05/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 77.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.2-ND152**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Low 30 F, Cloudy

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0 / 0							(0.0 - 1.0') CONCRETE		
				0.0			(1.0 - 3.0') CLAY, some silt, low to medium plasticity, slow dilatancy; trace sand, fine to medium, subround; stiff; moist; gray (10YR 5/1).		
				0.0			(3.0 - 5.0') SAND, fine to medium, subround; trace silt; poorly sorted; moist; brown (10YR 5/4).		
5 / -5	1	0.0-10.0'	10.0	0.0			(5.0 - 8.0') SILT and CLAY, low plasticity, slow dilatancy; trace sand, fine, subround; stiff; moist; grayish brown (10YR 5/2).		
				0.0			(8.0 - 10.0') SAND, fine to medium, subround to subangular; trace granules, subround; well sorted; moist; yellowish brown (10YR 5/4).		
10 / -10				0.0			(10.0 - 12.0') SAND, fine to medium, subround to subangular; little clay, trace silt; trace granules, subround; poorly sorted; moist; gray (10YR 5/1).		Borehole backfilled with Bentonite.
				0.0			(12.0 - 20.0') CLAY and SILT, low plasticity, slow dilatancy; trace granules to large pebbles, subround; stiff; moist; gray (10YR 5/1).		
15 / -15	2	10.0.-20.0'	10.0	0.0					
				0.0					
				0.0					
20 / -20									

Remarks: bgs = below ground surface

ARCADIS Design & Consultancy for natural and built assets

Date Start: 12/05/2016
Date Finish: 12/05/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 77.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.2-ND152**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Low 30 F, Cloudy

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
				0.0			(20.0 - 25.0') SILT, some clay, low plasticity, slow dilatancy; trace sand, fine, subround; medium stiff; moist; gray (10YR 6/1).		
				0.0					
25 -25	3	20.0-30.0'	10.0	0.0			(25.0 - 26.0') SAND, very fine to fine, subround; trace silt; well sorted; moist; light brownish gray (10YR 6/2).		
							(26.0 - 27.0') SILT and CLAY, low plasticity, slow dilatancy; trace sand, fine; trace granules, subround; medium stiff; moist; gray (10YR 5/1).		
				0.0			(27.0 - 28.0') SAND, fine to medium; trace granules to small pebbles, subround; well sorted; moist; light brownish gray (10YR 6/2).		
							(28.0 - 31.0') SILT, low plasticity, slow dilatancy, some sand, fine, subround; trace clay; medium stiff; moist; gray (10YR 5/1).		
				0.0					
30 -30				0.0			(31.0 - 32.0') SAND, medium to coarse, subround to subangular; trace granules, subround; well sorted; moist; dark grayish brown (10YR 4/2).		Borehole backfilled with Bentonite.
							(32.0 - 34.0') SILT, some clay, no plasticity, slow dilatancy, trace sand, fine, subround; medium stiff; moist; gray (10YR 5/1).		
				0.0					
							(34.0 - 59.0') CLAY, high plasticity, slow dilatancy, little silt; trace granules to small pebbles, subround; stiff; moist; gray (10YR 6/1).		
35 -35	4	30.0-40.0'	10.0	0.0					
				0.0					
				0.0					
40 -40									
				0.0					

Remarks: bgs = below ground surface

ARCADIS Design & Consultancy for natural and built assets

Date Start: 12/05/2016
Date Finish: 12/05/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 77.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.2-ND152**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Low 30 F, Cloudy

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
45 -45	5	40.0-50.0'	10.0	0.0 0.0 0.0 0.0					
50 -50	6	50.0-60.0'	10.0	0.0 0.0 0.0 0.0 0.0					Borehole backfilled with Bentonite.
60 -60				0.0 0.0			(59.0 - 61.0') SILT, some clay, low plasticity, no dilatancy; soft; moist; gray (10YR 5/1). (61.0 - 64.0') SAND, very fine to fine, little silt; well sorted, subround to subangular; light gray (10YR 7/1).		

Remarks: bgs = below ground surface

ARCADIS Design & Consultancy for natural and built assets

Date Start: 12/05/2016
Date Finish: 12/05/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 77.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.2-ND152**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Low 30 F, Cloudy

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
65 -65	7	60.0-70.0'	10.0	0.0			(64.0 - 65.0') SILT, some clay, no plasticity, no dilatancy; trace sand, fine, subround, trace granules to small pebbles, subround; stiff; moist; gray (10YR 5/1).		
							(65.0 - 68.5') SANDSTONE, weathered, very fine; dry; light gray (10YR 7/1).		
				0.0					
				0.0			(68.5 - 71.0') SHALE, weathered; dry; very dark gray (10YR 3/1).		
70 -70				0.0			(71.0 - 74.0') SANDSTONE, weathered, very fine; light gray (10YR 7/1).		Borehole backfilled with Bentonite.
	8	70.0-77.0'	7.0	0.0			VAP samples at 65-70' and 72-77' bgs.		
							(74.0 - 77.0') SANDSTONE and SHALE, interbedded, weathered; moist; dark gray (10YR 3/1).		
75 -75				0.0					
				0.0			End of boring at 77' bgs.		
80 -80									
85 -85									

Remarks: bgs = below ground surface

ARCADIS Design & Consultancy for natural and built assets

Date Start: 12/05/2016
Date Finish: 12/05/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 20.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.2-NM152**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Low 30 F, Cloudy

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0 / 0							(0.0 - 1.0') CONCRETE		
				NA			(1.0 - 10.0') SAND, fine to medium, subround to subangular; trace silt, trace granules to medium bebbles, subround; moist; brown. NOTE: Fill material.		
				NA					
5 / -5	1	0.0-10.0'	5.0	NA					
				NA					
				NA					
10 / -10				4.6			(10.0 - 12.0') Fill material; cobbles.		Borehole backfilled with Bentonite.
				8.7			(12.0 - 19.0') SAND, very fine to medium; poorly sorted; moist; grayish brown (10YR 5/2). NOTE: Black staining; strong odor.		
15 / -15	2	10.0.-20.0'	NA	8.9					
				10.1					
				10.3			(19.0 - 20.0') CONCRETE		
20 / -20							Refusal at 20' bgs.		

ARCADIS Design & Consultancy for natural and built assets

Remarks: bgs = below ground surface

Refusal at 20' bgs.

Date Start: 12/06/2016
Date Finish: 12/07/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 77.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.2-NO150**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Low 30 F, Cloudy

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0 / 0							(0.0 - 1.0') CONCRETE		
				0.0			(1.0 - 5.0') SAND, fine to medium, subround; trace granules, subround; well sorted; brown (10YR 5/3).		
				0.0					
5 / -5	1	0.0-10.0'	10.0	0.0			(5.0 - 12.0') CLAY, medium plasticity, slow dilatancy; some silt; trace sand, fine, subround; medium stiff; moist; grayish brown (10YR 5/2).		
				0.0					
				0.0					
10 / -10				0.0					Borehole backfilled with Bentonite.
				0.0			(12.0 - 13.0') CLAY, medium plasticity; trace silt; trace sand, fine to coarse, subround; stiff; moist; grayish brown (10YR 5/2).		
				0.0			(13.0 - 15.0') SILT, no to low plasticity; some sand, fine to coarse, subround; stiff; wet; grayish brown (10YR 5/2).		
15 / -15	2	10.0.-20.0'	10.0	0.0			(15.0 - 25.0') SILT, no to low plasticity; little clay; trace sand, fine, subround; trace pebbles, small to medium, subround; stiff; moist; grayish brown (10YR 5/2).		
				0.0					
				0.0					
20 / -20									

Remarks: bgs = below ground surface

ARCADIS Design & Consultancy for natural and built assets

Date Start: 12/06/2016
Date Finish: 12/07/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 77.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.2-NO150**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Low 30 F, Cloudy

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
					0.0					
					0.0					
25	-25	3	20.0-30.0'	10.0	0.0			(25.0 - 29.0') CLAY, high plasticity, no dilatancy; trace silt; medium soft; moist; grayish brown (10YR 5/2).		
					0.0					
					0.0			(29.0 - 30.0') SAND, very fine to fine, subround to subangular; trace silt; well sorted; moist; light brownish gray (10YR 6/2).		
30	-30							(30.0 - 34.0') SAND, very fine to fine, subround to subangular; some silt; trace granules to small pebbles, subround; poorly sorted; moist; grayish brown (10YR 5/2).		Borehole backfilled with Bentonite.
					0.0					
					0.0					
					0.0			(34.0 - 58.0') CLAY, low to medium plasticity; little silt; trace granules to small pebbles, subround; stiff; moist; gray (10YR 6/1).		
35	-35	4	30.0-40.0'	10.0	0.0					
					0.0					
					0.0					
40	-40									
					0.0					

Remarks: bgs = below ground surface

Date Start: 12/06/2016
Date Finish: 12/07/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 77.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.2-NO150**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Low 30 F, Cloudy

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
45 -45	5	40.0-50.0'	10.0	0.0 0.0 0.0 0.0					
50 -50				0.0 0.0 0.0 0.0					Borehole backfilled with Bentonite.
55 -55	6	50.0-60.0'	10.0	0.0 0.0 0.0					
60 -60				0.0 0.0			(58.0 - 61.0') SAND, very fine to fine, subround to subangular; little to trace silt; well sorted; moist; light gray (10YR 7/1). (61.0 - 61.5') SILT and CLAY, no plasticity, slow dilatancy; stiff; moist. (61.5 - 63.5') SAND, fine to coarse, subround to subangular; little granules to small pebbles, subround to subangular; poorly sorted; moist. (63.5 - 66.0') CLAY and SILT, low to no plasticity; trace granules to small pebbles,		

Remarks: bgs = below ground surface

ARCADIS Design & Consultancy for natural and built assets

Date Start: 12/06/2016
Date Finish: 12/07/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 77.0
Surface Elevation: NA

Descriptions By: S. Presswood

Well/Boring ID: **SB-A5.2-NO150**

Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: Low 30 F, Cloudy

DEPTH (feet bgs.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
65 -65	7	60.0-70.0'	10.0	0.0			subround; stiff; moist; dark gray (10YR 4/1).		
							(66.0 - 67.0') SANDSTONE, weathered, fine; light gray (10YR 7/1).		
				0.0			(67.0 - 70.0') SHALE, weathered; dry; dark gray (10YR 4/1).		
				0.0					
70 -70							(70.0 - 72.0') SANDSTONE, weathered, very fine; light gray (10YR 7/1).		Borehole backfilled with Bentonite.
				0.0					
							(72.0 - 73.0') SHALE, weathered; dry; dark gray (10YR 4/1).		
	8	70.0-77.0'	7.0	0.0			(73.0 - 77.0') SHALE and SANDSTONE, interbedded, weathered; dry; gray (10YR 4/1).		
75 -75				0.0			VAP samples at 65-70' and 72-77' bgs.		
				0.0					
							End of boring at 77' bgs.		
80 -80									
85 -85									

ARCADIS Design & Consultancy for natural and built assets

Remarks: bgs = below ground surface

APPENDIX D

Merit Laboratories Analytical Reports

Analytical Laboratory Report

Report ID: S77825.01(01)
Generated on 11/30/2016

Report to

Attention: Kristen Padron
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 313-971-6728 FAX: 248-994-2241
Email: Kristen.Padron@arcadis.com

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S77825.01-S77825.02
Project: B0064479.2016.00102
Collected Date: 11/28/2016 - 11/29/2016
Submitted Date/Time: 11/29/2016 16:14
Sampled by: Severin Presswood
P.O. #: B0064479.2016.00102

Table of Contents

Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S77825.01	SB-A5.1-MT132_67-72	Liquid	11/28/16 16:00
S77825.02	SB-A5.1-MT132_74-79	Liquid	11/29/16 10:40

Analytical Laboratory Report

Lab Sample ID: S77825.01
Sample Tag: SB-A5.1-MT132_67-72
Collected Date/Time: 11/28/2016 16:00
Matrix: Liquid
COC Reference: 92173

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	11/30/16 10:30	JML		
Organics - Volatiles								
1,4-Dioxane*	5	ug/L	3	SW8260B - SIM	11/29/16 21:24	JGH	123-91-1	
Volatile Organics - DEQ List								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	11/30/16 01:03	JGH	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	11/30/16 01:03	JGH	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:03	JGH	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:03	JGH	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	11/30/16 01:03	JGH	107-13-1	
2-Butanone (MEK)	Not detected	ug/L	25	SW5030C/8260C	11/30/16 01:03	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:03	JGH	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:03	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:03	JGH	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:03	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:03	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	11/30/16 01:03	JGH	109-99-9	
Chloroform	14	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	11/30/16 01:03	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	11/30/16 01:03	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	78-87-5	
Bromodichloromethane	2	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	75-27-4	
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:03	JGH	74-95-3	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	127-18-4	
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	110-57-6	

Lab Sample ID: S77825.01 (continued)
Sample Tag: SB-A5.1-MT132_67-72

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (continued)								
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:03	JGH	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	106-93-4	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	630-20-6	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	11/30/16 01:03	JGH		
o-Xylene*	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:03	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:03	JGH	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:03	JGH	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:03	JGH	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:03	JGH	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:03	JGH	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:03	JGH	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:03	JGH	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:03	JGH	91-57-6	

Analytical Laboratory Report

Lab Sample ID: S77825.02
Sample Tag: SB-A5.1-MT132_74-79
Collected Date/Time: 11/29/2016 10:40
Matrix: Liquid
COC Reference: 92173

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	11/30/16 10:30	JML		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	3	SW8260B - SIM	11/29/16 21:45	JGH	123-91-1	
Volatile Organics - DEQ List								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	11/30/16 01:24	JGH	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	11/30/16 01:24	JGH	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:24	JGH	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:24	JGH	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	11/30/16 01:24	JGH	107-13-1	
2-Butanone (MEK)	Not detected	ug/L	25	SW5030C/8260C	11/30/16 01:24	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:24	JGH	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:24	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:24	JGH	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:24	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:24	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	11/30/16 01:24	JGH	109-99-9	
Chloroform	2	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	11/30/16 01:24	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	11/30/16 01:24	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	75-27-4	
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:24	JGH	74-95-3	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	127-18-4	
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	110-57-6	

Lab Sample ID: S77825.02 (continued)
Sample Tag: SB-A5.1-MT132_74-79

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (continued)								
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:24	JGH	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	106-93-4	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	630-20-6	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	11/30/16 01:24	JGH		
o-Xylene*	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:24	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:24	JGH	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 01:24	JGH	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:24	JGH	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:24	JGH	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:24	JGH	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:24	JGH	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:24	JGH	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 01:24	JGH	91-57-6	

Merit Laboratories, Inc.

2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # _____ OF _____

92173

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Kristen Padron
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr.
CITY: Novi STATE: MI ZIP CODE: 48377 ~~48377~~
PHONE NO.: 313-971-6728 FAX NO.: P.O. NO.:
E-MAIL ADDRESS: Kristen.Padron@arcadis.com QUOTE NO.:

INVOICE TO

CONTACT NAME: ☐ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: B006479.2016.00102
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Severin Pressward / Jason Pond

TURNAROUND TIME REQUIRED ☒ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☐ OTHER _____

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER _____

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other _____

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOCs 8260 SIMS	1-4 Dioxane 8260 SIMS
7782501	11-28	1600	SB-AS.1-MT132-67-72	L	3		X						X	X
.02	~~11-28~~ 11-29	1040	SB-AS.1-MT132-74-79	L	3		X						X	X

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Severin Pressward / Arcadis ☒ Sampler DATE: 11-29-16 TIME: 1552
RECEIVED BY: SIGNATURE/ORGANIZATION: Isaac Hunt DATE: 11/29/16 TIME: 1552
RELINQUISHED BY: SIGNATURE/ORGANIZATION: DATE: TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: TIME:

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Isaac Hunt DATE: 11/29/16 TIME: 1614
RECEIVED BY: SIGNATURE/ORGANIZATION: M. Chilcote DATE: 11/29/16 TIME: 1614

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS

NOTES: TEMP. ON ARRIVAL 5.8

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S77849.01(01)
Generated on 12/01/2016

Report to

Attention: Kristen Padron
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 313-971-6728 FAX: 248-994-2241
Email: Kristen.Padron@arcadis.com

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S77849.01-S77849.03
Project: B0064479.2016.00102
Collected Date: 11/30/2016
Submitted Date/Time: 11/30/2016 15:00
Sampled by: Severin Presswood
P.O. #: B0064479.2016.00102

Table of Contents

Maya Murshak
Technical Director

Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S77849.01	SB-A5.1-MT142_70-75	Liquid	11/30/16 10:30
S77849.02	SB-A5.1-MT142_80-85	Liquid	11/30/16 14:45
S77849.03	Trip Blank	Liquid	11/30/16 00:01

Analytical Laboratory Report

Lab Sample ID: S77849.01
Sample Tag: SB-A5.1-MT142_70-75
Collected Date/Time: 11/30/2016 10:30
Matrix: Liquid
COC Reference: 92174

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	12/01/16 08:30	JML		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	3	SW8260B - SIM	11/30/16 17:24	JGH	123-91-1	
Volatile Organics - DEQ List								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	11/30/16 23:22	JGH	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	11/30/16 23:22	JGH	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:22	JGH	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:22	JGH	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	11/30/16 23:22	JGH	107-13-1	
2-Butanone (MEK)	Not detected	ug/L	25	SW5030C/8260C	11/30/16 23:22	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:22	JGH	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:22	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:22	JGH	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:22	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:22	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	11/30/16 23:22	JGH	109-99-9	
Chloroform	1	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	11/30/16 23:22	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	11/30/16 23:22	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	75-27-4	
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:22	JGH	74-95-3	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	127-18-4	
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	110-57-6	

Lab Sample ID: S77849.01 (continued)
Sample Tag: SB-A5.1-MT142_70-75

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (continued)								
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:22	JGH	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	106-93-4	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	630-20-6	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	11/30/16 23:22	JGH		
o-Xylene*	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:22	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:22	JGH	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:22	JGH	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:22	JGH	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:22	JGH	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:22	JGH	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:22	JGH	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:22	JGH	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:22	JGH	91-57-6	

Analytical Laboratory Report

Lab Sample ID: S77849.02
Sample Tag: SB-A5.1-MT142_80-85
Collected Date/Time: 11/30/2016 14:45
Matrix: Liquid
COC Reference: 92174

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	12/01/16 08:30	JML		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	3	SW8260B - SIM	11/30/16 17:48	JGH	123-91-1	
Volatile Organics - DEQ List								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	11/30/16 23:44	JGH	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	11/30/16 23:44	JGH	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:44	JGH	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:44	JGH	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	11/30/16 23:44	JGH	107-13-1	
2-Butanone (MEK)	Not detected	ug/L	25	SW5030C/8260C	11/30/16 23:44	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:44	JGH	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:44	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:44	JGH	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:44	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:44	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	11/30/16 23:44	JGH	109-99-9	
Chloroform	1	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	11/30/16 23:44	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	11/30/16 23:44	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	56-23-5	
Benzene	2	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	75-27-4	
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:44	JGH	74-95-3	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	127-18-4	
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	110-57-6	

Lab Sample ID: S77849.02 (continued)
Sample Tag: SB-A5.1-MT142_80-85

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (continued)								
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:44	JGH	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	106-93-4	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	630-20-6	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	11/30/16 23:44	JGH		
o-Xylene*	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:44	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:44	JGH	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:44	JGH	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:44	JGH	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:44	JGH	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:44	JGH	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:44	JGH	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:44	JGH	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:44	JGH	91-57-6	

Analytical Laboratory Report

Lab Sample ID: S77849.03
Sample Tag: Trip Blank
Collected Date/Time: 11/30/2016 00:01
Matrix: Liquid
COC Reference: 92174

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.4	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	12/01/16 08:30	JML		
Organics - Volatiles								
Volatile Organics - DEQ List								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	11/30/16 23:00	JGH	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	11/30/16 23:00	JGH	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:00	JGH	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:00	JGH	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	11/30/16 23:00	JGH	107-13-1	
2-Butanone (MEK)	Not detected	ug/L	25	SW5030C/8260C	11/30/16 23:00	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:00	JGH	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:00	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:00	JGH	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:00	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:00	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	11/30/16 23:00	JGH	109-99-9	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	11/30/16 23:00	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	11/30/16 23:00	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	75-27-4	
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:00	JGH	74-95-3	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	127-18-4	
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	110-57-6	
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:00	JGH	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	106-93-4	

Lab Sample ID: S77849.03 (continued)
Sample Tag: Trip Blank

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	630-20-6	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	11/30/16 23:00	JGH		
o-Xylene*	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:00	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:00	JGH	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	11/30/16 23:00	JGH	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:00	JGH	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:00	JGH	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:00	JGH	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:00	JGH	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:00	JGH	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	11/30/16 23:00	JGH	91-57-6	

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # _____ OF _____

92174

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Kristen Patron
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr Suite 500
CITY: Novi | STATE: MI | ZIP CODE: 48377
PHONE NO.: 313-971-6728 | FAX NO.: | P.O. NO.:
E-MAIL ADDRESS: Kristen.Patron@arcadis.com | QUOTE NO.:

INVOICE TO

CONTACT NAME: | ☐ SAME
COMPANY:
ADDRESS:
CITY: | STATE: | ZIP CODE:
PHONE NO.: | E-MAIL ADDRESS:

PROJECT NO./NAME: B0064479.2016.~~0102~~ 00102
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Severin Presswood / Severin Presswood

TURNAROUND TIME REQUIRED ☒ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☐ OTHER _____

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER _____

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other _____

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOC's 8260 SIMS	1-4 dioxane 8260 SIMS
77849.01	11-30	1030	SB-AS.1-MT142_70-75	L	3		X						X	X
.02	11-30	1445	SB-AS.1-MT142_80-85	L	3		X						X	X
.03	11-30	NA	Trip Blank	L	1									

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Severin Presswood / Arcadis ☒ Sampler — DATE: 11-30-16 — TIME: 1500
RECEIVED BY: SIGNATURE/ORGANIZATION: [signature] — DATE: 11/30/16 — TIME: 1500
RELINQUISHED BY: SIGNATURE/ORGANIZATION: — DATE: — TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION: — DATE: — TIME:

RELINQUISHED BY: SIGNATURE/ORGANIZATION: [signature] — DATE: 11/30/16 — TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION: [signature] — DATE: 11/30/16 — TIME: 1500

SEAL NO. | SEAL INTACT YES ☐ NO ☐ | INITIALS
SEAL NO. | SEAL INTACT YES ☐ NO ☐ | INITIALS

NOTES: | TEMP. ON ARRIVAL: 4.4

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S77916.01(01)
Generated on 12/05/2016

Report to

Attention: Kristen Padron
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 313-971-6728 FAX: 248-994-2241
Email: Kristen.Padron@arcadis.com

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S77916.01-S77916.03
Project: B0064479.2016.00102
Collected Date: 12/02/2016
Submitted Date/Time: 12/02/2016 14:39
Sampled by: Severin Presswood
P.O. #: B0064479.2016.00102

Table of Contents

Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S77916.01	SB-A5.1-MT152_70-75	Liquid	12/02/16 08:20
S77916.02	SB-A5.1-MT152_77-82	Liquid	12/02/16 11:20
S77916.03	Trip blank	Liquid	12/02/16 00:01

Analytical Laboratory Report

Lab Sample ID: S77916.01
Sample Tag: SB-A5.1-MT152_70-75
Collected Date/Time: 12/02/2016 08:20
Matrix: Liquid
COC Reference: 92175

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	9.6	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	>2	STD Units		N/A	12/05/16 10:00	JML		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	3	SW8260B - SIM	12/02/16 15:59	JGH	123-91-1	
Volatile Organics - DEQ List								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	12/02/16 17:51	JGH	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	12/02/16 17:51	JGH	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:51	JGH	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:51	JGH	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	12/02/16 17:51	JGH	107-13-1	
2-Butanone (MEK)	Not detected	ug/L	25	SW5030C/8260C	12/02/16 17:51	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:51	JGH	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:51	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:51	JGH	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:51	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:51	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	12/02/16 17:51	JGH	109-99-9	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	12/02/16 17:51	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	12/02/16 17:51	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	75-27-4	
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:51	JGH	74-95-3	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	127-18-4	
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	110-57-6	

Lab Sample ID: S77916.01 (continued)
Sample Tag: SB-A5.1-MT152_70-75

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (continued)								
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:51	JGH	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	106-93-4	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	630-20-6	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	12/02/16 17:51	JGH		
o-Xylene*	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:51	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:51	JGH	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:51	JGH	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:51	JGH	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:51	JGH	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:51	JGH	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:51	JGH	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:51	JGH	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:51	JGH	91-57-6	

Analytical Laboratory Report

Lab Sample ID: S77916.02
Sample Tag: SB-A5.1-MT152_77-82
Collected Date/Time: 12/02/2016 11:20
Matrix: Liquid
COC Reference: 92175

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	9.6	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	12/05/16 10:00	JML		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	3	SW8260B - SIM	12/02/16 15:39	JGH	123-91-1	
Volatile Organics - DEQ List								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	12/02/16 18:13	JGH	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	12/02/16 18:13	JGH	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	12/02/16 18:13	JGH	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	12/02/16 18:13	JGH	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	12/02/16 18:13	JGH	107-13-1	
2-Butanone (MEK)	Not detected	ug/L	25	SW5030C/8260C	12/02/16 18:13	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	12/02/16 18:13	JGH	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	12/02/16 18:13	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	12/02/16 18:13	JGH	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	12/02/16 18:13	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	12/02/16 18:13	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	12/02/16 18:13	JGH	109-99-9	
Chloroform	1	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	12/02/16 18:13	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	12/02/16 18:13	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	56-23-5	
Benzene	69	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	75-27-4	
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	12/02/16 18:13	JGH	74-95-3	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	10061-01-5	
Toluene	33	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	127-18-4	
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	110-57-6	

Lab Sample ID: S77916.02 (continued)
Sample Tag: SB-A5.1-MT152_77-82

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (continued)								
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	12/02/16 18:13	JGH	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	106-93-4	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	630-20-6	
Ethylbenzene	5	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	100-41-4	
p,m-Xylene*	3	ug/L	2	SW5030C/8260C	12/02/16 18:13	JGH		
o-Xylene*	3	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	95-47-6	
Styrene	2	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	12/02/16 18:13	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	12/02/16 18:13	JGH	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 18:13	JGH	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	12/02/16 18:13	JGH	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	12/02/16 18:13	JGH	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/02/16 18:13	JGH	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/02/16 18:13	JGH	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	12/02/16 18:13	JGH	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	12/02/16 18:13	JGH	91-57-6	

Analytical Laboratory Report

Lab Sample ID: S77916.03
Sample Tag: Trip blank
Collected Date/Time: 12/02/2016 00:01
Matrix: Liquid
COC Reference: 92175

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	9.6	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	12/05/16 10:00	JML		
Organics - Volatiles								
Volatile Organics - DEQ List								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	12/02/16 17:29	JGH	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	12/02/16 17:29	JGH	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:29	JGH	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:29	JGH	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	12/02/16 17:29	JGH	107-13-1	
2-Butanone (MEK)	Not detected	ug/L	25	SW5030C/8260C	12/02/16 17:29	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:29	JGH	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:29	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:29	JGH	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:29	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:29	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	12/02/16 17:29	JGH	109-99-9	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	12/02/16 17:29	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	12/02/16 17:29	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	75-27-4	
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:29	JGH	74-95-3	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	127-18-4	
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	110-57-6	
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:29	JGH	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	106-93-4	

Lab Sample ID: S77916.03 (continued)
Sample Tag: Trip blank

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	630-20-6	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	12/02/16 17:29	JGH		
o-Xylene*	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:29	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:29	JGH	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/02/16 17:29	JGH	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:29	JGH	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:29	JGH	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:29	JGH	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:29	JGH	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:29	JGH	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	12/02/16 17:29	JGH	91-57-6	

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
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www.meritlabs.com

C.O.C. PAGE # 1 OF 1

92175

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Kristen Padron
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 313-971-6728 FAX NO.: P.O. NO.:
E-MAIL ADDRESS: Kristen.Padron@arcadis.com QUOTE NO.:

INVOICE TO

CONTACT NAME: ☐ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: B0064479.2016.00102
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Severin Pressword / Severin Pressword

TURNAROUND TIME REQUIRED ☒ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOC 8260 SIMS	1-4 dioxane 8260 SIMS
77916.01	12-02	820	SB-A5.1-MT152_70-75	L	3		X						X	X
.02	12-02	1120	SB-A5.1-MT152_77-82	L	3		X						X	X
.03		N/A	trip blank	L	1								X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Severin Pressword / Arcadis ☒ Sampler DATE: 12-02-16 TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: 12-02-16 TIME: 14:35
RELINQUISHED BY: SIGNATURE/ORGANIZATION: DATE: TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: TIME:

RELINQUISHED BY: SIGNATURE/ORGANIZATION: DATE: TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: TIME:

SEAL NO.: SEAL INTACT YES ☐ NO ☐ INITIALS:
SEAL NO.: SEAL INTACT YES ☐ NO ☐ INITIALS:

NOTES: TEMP. ON ARRIVAL 9.6

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S77956.01(01)
Generated on 12/06/2016

Report to

Attention: Kristen Padron
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 313-971-6728 FAX: 248-994-2241
Email: Kristen.Padron@arcadis.com

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Addtional Contacts: Alex Villhauer, Randy Christensen, Patrick Curry, Jesse Wright

Report Summary

Lab Sample ID(s): S77956.01-S77956.03
Project: B0064479.2016.00102
Collected Date: 12/05/2016
Submitted Date/Time: 12/05/2016 16:45
Sampled by: Severin Presswood
P.O. #: B0064479.2016.00102

Table of Contents

Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S77956.01	SB-A5.2-ND152_65-70	Liquid	12/05/16 12:10
S77956.02	SB-A5.2-ND152_72-77	Liquid	12/05/16 00:01
S77956.03	Trip Blank	Liquid	12/05/16 00:01

Analytical Laboratory Report

Lab Sample ID: S77956.01
Sample Tag: SB-A5.2-ND152_65-70
Collected Date/Time: 12/05/2016 12:10
Matrix: Liquid
COC Reference: 85509

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	>2	STD Units		N/A	12/06/16 10:00	JML		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	3	SW8260B - SIM	12/05/16 17:49	JGH	123-91-1	
Volatile Organics - DEQ List								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	12/05/16 18:35	JGH	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	12/05/16 18:35	JGH	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:35	JGH	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:35	JGH	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	12/05/16 18:35	JGH	107-13-1	
2-Butanone (MEK)	Not detected	ug/L	25	SW5030C/8260C	12/05/16 18:35	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:35	JGH	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:35	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:35	JGH	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:35	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:35	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	12/05/16 18:35	JGH	109-99-9	
Chloroform	16	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	12/05/16 18:35	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	12/05/16 18:35	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	78-87-5	
Bromodichloromethane	3	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	75-27-4	
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:35	JGH	74-95-3	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	127-18-4	
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	110-57-6	

Lab Sample ID: S77956.01 (continued)
Sample Tag: SB-A5.2-ND152_65-70

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (continued)								
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:35	JGH	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	106-93-4	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	630-20-6	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	12/05/16 18:35	JGH		
o-Xylene*	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:35	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:35	JGH	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:35	JGH	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:35	JGH	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:35	JGH	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:35	JGH	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:35	JGH	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:35	JGH	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:35	JGH	91-57-6	

Lab Sample ID: S77956.02
Sample Tag: SB-A5.2-ND152_72-77
Collected Date/Time: 12/05/2016 00:01
Matrix: Liquid
COC Reference: 85509

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	12/06/16 10:00	JML		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	3	SW8260B - SIM	12/05/16 18:09	JGH	123-91-1	
Volatile Organics - DEQ List								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	12/05/16 18:13	JGH	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	12/05/16 18:13	JGH	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:13	JGH	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:13	JGH	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	12/05/16 18:13	JGH	107-13-1	
2-Butanone (MEK)	Not detected	ug/L	25	SW5030C/8260C	12/05/16 18:13	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:13	JGH	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:13	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:13	JGH	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:13	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:13	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	12/05/16 18:13	JGH	109-99-9	
Chloroform	17	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	12/05/16 18:13	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	12/05/16 18:13	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	78-87-5	
Bromodichloromethane	4	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	75-27-4	
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:13	JGH	74-95-3	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	127-18-4	
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	110-57-6	

Lab Sample ID: S77956.02 (continued)
Sample Tag: SB-A5.2-ND152_72-77

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (continued)								
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:13	JGH	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	106-93-4	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	630-20-6	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	12/05/16 18:13	JGH		
o-Xylene*	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:13	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:13	JGH	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 18:13	JGH	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:13	JGH	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:13	JGH	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:13	JGH	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:13	JGH	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:13	JGH	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	12/05/16 18:13	JGH	91-57-6	

Analytical Laboratory Report

Lab Sample ID: S77956.03
Sample Tag: Trip Blank
Collected Date/Time: 12/05/2016 00:01
Matrix: Liquid
COC Reference: 85509

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	5.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	12/06/16 10:00	JML		
Organics - Volatiles								
Volatile Organics - DEQ List								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	12/05/16 17:51	JGH	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	12/05/16 17:51	JGH	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	12/05/16 17:51	JGH	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	12/05/16 17:51	JGH	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	12/05/16 17:51	JGH	107-13-1	
2-Butanone (MEK)	Not detected	ug/L	25	SW5030C/8260C	12/05/16 17:51	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	12/05/16 17:51	JGH	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	12/05/16 17:51	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	12/05/16 17:51	JGH	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	12/05/16 17:51	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	12/05/16 17:51	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	12/05/16 17:51	JGH	109-99-9	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	12/05/16 17:51	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	12/05/16 17:51	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	75-27-4	
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	12/05/16 17:51	JGH	74-95-3	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	127-18-4	
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	110-57-6	
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	12/05/16 17:51	JGH	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	106-93-4	

Lab Sample ID: S77956.03 (continued)
Sample Tag: Trip Blank

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	630-20-6	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	12/05/16 17:51	JGH		
o-Xylene*	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	12/05/16 17:51	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	12/05/16 17:51	JGH	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/05/16 17:51	JGH	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	12/05/16 17:51	JGH	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	12/05/16 17:51	JGH	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/05/16 17:51	JGH	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/05/16 17:51	JGH	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	12/05/16 17:51	JGH	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	12/05/16 17:51	JGH	91-57-6	

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
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www.meritlabs.com

C.O.C. PAGE # 1 OF 1

85509

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Kristen Padron
COMPANY: Arcadis US
ADDRESS: 28550 Cabot Dr.
CITY: Novi | STATE: MI | ZIP CODE: 48377
PHONE NO.: 313-971-6728 | FAX NO.: | P.O. NO.:
E-MAIL ADDRESS: Kristen.Padron@arcadis.com | QUOTE NO.:

INVOICE TO

CONTACT NAME: ☐ SAME
COMPANY:
ADDRESS:
CITY: | STATE: | ZIP CODE:
PHONE NO.: | E-MAIL ADDRESS:

PROJECT NO./NAME: B00644 79.2016.00102
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Severin Pressnall / Remi Pual

TURNAROUND TIME REQUIRED ☒ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES
Project Locations
☐ Detroit ☐ New York
☐ Other
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOC 8260 SIMS	1-4 dioxane 8260 SIMS
77956.01	12-05	1210	SB-A5.2-~~MW~~NO152_65-70	L	3		X						X	X
.02	12-05		SB-A5.2-NO152_72-77	L	3		X						X	X
.03	N/A	N/A	trip blank	L	1								X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Severin Pressnall / Arcadis ☒ Sampler — DATE: 12/05/16 TIME: 16:27
RECEIVED BY: SIGNATURE/ORGANIZATION: Isaiah Mutchler — DATE: 12/05/16 TIME: 16:27
RELINQUISHED BY: SIGNATURE/ORGANIZATION: — DATE: TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION: — DATE: TIME:

RELINQUISHED BY: SIGNATURE/ORGANIZATION: David Mutchler — DATE: 12/05/16 TIME: 16:45
RECEIVED BY: SIGNATURE/ORGANIZATION: M Allcate — DATE: 12/5/16 TIME: 1645

SEAL NO.: SEAL INTACT YES ☐ NO ☐ INITIALS:
SEAL NO.: SEAL INTACT YES ☐ NO ☐ INITIALS:

NOTES: TEMP. ON ARRIVAL: 5.9

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.16.12

Analytical Laboratory Report

Report ID: S77973.01(01)
Generated on 12/07/2016

Report to

Attention: Kristen Padron
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 313-971-6728 FAX: 248-994-2241
Email: Kristen.Padron@arcadis.com

Report produced by

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2680 East Lansing Drive
East Lansing, MI 48823

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Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Addtional Contacts: Alex Villhauer, Randy Christensen, Patrick Curry, Jesse Wright

Report Summary

Lab Sample ID(s): S77973.01-S77973.02
Project: B0064479.2016.00102
Collected Date: 12/06/2016
Submitted Date/Time: 12/06/2016 15:14
Sampled by: Severin Presswood
P.O. #: B0064479.2016.00102

Table of Contents

Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S77973.01	SB-A5.2-NO150_65-70	Liquid	12/06/16 12:15
S77973.02	Trip Blank	Liquid	12/06/16 00:01

Analytical Laboratory Report

Lab Sample ID: S77973.01
Sample Tag: SB-A5.2-NO150_65-70
Collected Date/Time: 12/06/2016 12:15
Matrix: Liquid
COC Reference: 85510

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	12/07/16 09:30	JML		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	3	SW8260B - SIM	12/06/16 15:40	JGH	123-91-1	
Volatile Organics - DEQ List								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	12/06/16 19:31	JGH	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	12/06/16 19:31	JGH	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:31	JGH	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:31	JGH	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	12/06/16 19:31	JGH	107-13-1	
2-Butanone (MEK)	Not detected	ug/L	25	SW5030C/8260C	12/06/16 19:31	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:31	JGH	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:31	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:31	JGH	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:31	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:31	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	12/06/16 19:31	JGH	109-99-9	
Chloroform	1	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	12/06/16 19:31	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	12/06/16 19:31	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	75-27-4	
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:31	JGH	74-95-3	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	127-18-4	
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	110-57-6	

Lab Sample ID: S77973.01 (continued)
Sample Tag: SB-A5.2-NO150_65-70

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (continued)								
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:31	JGH	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	106-93-4	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	630-20-6	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	12/06/16 19:31	JGH		
o-Xylene*	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:31	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:31	JGH	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:31	JGH	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:31	JGH	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:31	JGH	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:31	JGH	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:31	JGH	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:31	JGH	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:31	JGH	91-57-6	

Analytical Laboratory Report

Lab Sample ID: S77973.02
Sample Tag: Trip Blank
Collected Date/Time: 12/06/2016 00:01
Matrix: Liquid
COC Reference: 85510

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	6.0	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	12/07/16 09:30	JML		
Organics - Volatiles								
Volatile Organics - DEQ List								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	12/06/16 19:09	JGH	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	12/06/16 19:09	JGH	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:09	JGH	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:09	JGH	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	12/06/16 19:09	JGH	107-13-1	
2-Butanone (MEK)	Not detected	ug/L	25	SW5030C/8260C	12/06/16 19:09	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:09	JGH	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:09	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:09	JGH	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:09	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:09	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	12/06/16 19:09	JGH	109-99-9	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	12/06/16 19:09	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	12/06/16 19:09	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	75-27-4	
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:09	JGH	74-95-3	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	127-18-4	
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	110-57-6	
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:09	JGH	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	106-93-4	

Lab Sample ID: S77973.02 (continued)
Sample Tag: Trip Blank

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	630-20-6	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	12/06/16 19:09	JGH		
o-Xylene*	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:09	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:09	JGH	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/06/16 19:09	JGH	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:09	JGH	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:09	JGH	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:09	JGH	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:09	JGH	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:09	JGH	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	12/06/16 19:09	JGH	91-57-6	

Merit Laboratories, Inc.

2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

85510

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Kristen Padron
COMPANY: Arcadis US
ADDRESS: 28550 Cabot Dr, Suite 500
CITY: Novi | STATE: MI | ZIP CODE: 48377
PHONE NO.: 313-971-6728 | FAX NO. | P.O. NO.
E-MAIL ADDRESS: Kristen.Padron@arcadis.com | QUOTE NO.

INVOICE TO

CONTACT NAME | ☐ SAME
COMPANY
ADDRESS
CITY | STATE | ZIP CODE
PHONE NO. | E-MAIL ADDRESS

PROJECT NO./NAME: B0064479.2016.00102
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Severin Presswood / Severin Presswood

TURNAROUND TIME REQUIRED ☒ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	ANALYSIS: VOC 8260 SIMS	1-4 dioxane 8260 sims
77973.01	12-06	1215	SB-A52-N0150_65-70	L	3		X						X	X
.02	NA	NA	Trip Blank	L	1								X	

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other

Special Instructions

RELINQUISHED BY: SIGNATURE/ORGANIZATION	☒ Sampler	DATE	TIME
Severin Presswood / Arcadis		12-06-16	3:14 pm
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
M Chilcote		12/6/16	1514
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME

SEAL NO. | SEAL INTACT YES ☐ NO ☐ | INITIALS
SEAL NO. | SEAL INTACT YES ☐ NO ☐ | INITIALS

NOTES: TEMP. ON ARRIVAL 6.0

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S78038.01(01)
Generated on 12/08/2016

Report to

Attention: Kristen Padron
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 313-971-6728 FAX: 248-994-2241
Email: Kristen.Padron@arcadis.com

Report produced by

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2680 East Lansing Drive
East Lansing, MI 48823

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Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Addtional Contacts: Alex Villhauer, Randy Christensen, Patrick Curry, Jesse Wright

Report Summary

Lab Sample ID(s): S78038.01-S78038.03
Project: B0064479.2016.00102
Collected Date: 12/07/2016
Submitted Date/Time: 12/07/2016 17:45
Sampled by: Severin Presswood
P.O. #: B0064479.2016.00102

Table of Contents

Maya Murshak
Technical Director

Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S78038.01	SB-A5.2-NO150_72-77	Liquid	12/07/16 11:30
S78038.02	SB-A5.1-MT122_55-60	Liquid	12/07/16 16:05
S78038.03	Trip Blank	Liquid	12/07/16 00:01

Analytical Laboratory Report

Lab Sample ID: S78038.01
Sample Tag: SB-A5.2-NO150_72-77
Collected Date/Time: 12/07/2016 11:30
Matrix: Liquid
COC Reference: 094969

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.5	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	12/08/16 10:00	JML		
Organics - Volatiles								
1,4-Dioxane*	7	ug/L	3	SW8260B - SIM	12/07/16 18:11	JGH	123-91-1	
Volatile Organics - DEQ List								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	12/07/16 19:54	IKM	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	12/07/16 19:54	IKM	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:54	IKM	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:54	IKM	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	12/07/16 19:54	IKM	107-13-1	
2-Butanone (MEK)	70	ug/L	25	SW5030C/8260C	12/07/16 19:54	IKM	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:54	IKM	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:54	IKM	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:54	IKM	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:54	IKM	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:54	IKM	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	12/07/16 19:54	IKM	109-99-9	
Chloroform	2	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	12/07/16 19:54	IKM	108-10-1	
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	12/07/16 19:54	IKM	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	75-27-4	
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:54	IKM	74-95-3	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	127-18-4	
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	110-57-6	

Lab Sample ID: S78038.01 (continued)
Sample Tag: SB-A5.2-NO150_72-77

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (continued)								
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:54	IKM	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	106-93-4	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	630-20-6	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	12/07/16 19:54	IKM		
o-Xylene*	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:54	IKM	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:54	IKM	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:54	IKM	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:54	IKM	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:54	IKM	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:54	IKM	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:54	IKM	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:54	IKM	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:54	IKM	91-57-6	

Analytical Laboratory Report

Lab Sample ID: S78038.02
Sample Tag: SB-A5.1-MT122_55-60
Collected Date/Time: 12/07/2016 16:05
Matrix: Liquid
COC Reference: 094969

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.5	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	12/08/16 10:00	JML		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	3	SW8260B - SIM	12/07/16 18:35	JGH	123-91-1	
Volatile Organics - DEQ List								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	12/07/16 20:16	JGH	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	12/07/16 20:16	JGH	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	12/07/16 20:16	JGH	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	12/07/16 20:16	JGH	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	12/07/16 20:16	JGH	107-13-1	
2-Butanone (MEK)	31	ug/L	25	SW5030C/8260C	12/07/16 20:16	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	12/07/16 20:16	JGH	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	12/07/16 20:16	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	12/07/16 20:16	JGH	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	12/07/16 20:16	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	12/07/16 20:16	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	12/07/16 20:16	JGH	109-99-9	
Chloroform	8	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	12/07/16 20:16	JGH	108-10-1	S
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	12/07/16 20:16	JGH	591-78-6	S
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	56-23-5	S
Benzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	71-43-2	S
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	107-06-2	S
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	79-01-6	S
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	78-87-5	S
Bromodichloromethane	2	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	75-27-4	S
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	12/07/16 20:16	JGH	74-95-3	S
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	10061-01-5	S
Toluene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	108-88-3	S
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	10061-02-6	S
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	79-00-5	S
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	127-18-4	S

S-Surrogate recovery outside of control limits

Lab Sample ID: S78038.02 (continued)
Sample Tag: SB-A5.1-MT122_55-60

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (continued)								
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	110-57-6	
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	12/07/16 20:16	JGH	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	106-93-4	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	630-20-6	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	12/07/16 20:16	JGH		
o-Xylene*	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	12/07/16 20:16	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	12/07/16 20:16	JGH	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 20:16	JGH	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	12/07/16 20:16	JGH	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	12/07/16 20:16	JGH	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/07/16 20:16	JGH	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/07/16 20:16	JGH	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	12/07/16 20:16	JGH	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	12/07/16 20:16	JGH	91-57-6	
Volatile Organics - DEQ List (Replicate 01)								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	12/08/16 14:11	JGH	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	12/08/16 14:11	JGH	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:11	JGH	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:11	JGH	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	12/08/16 14:11	JGH	107-13-1	
2-Butanone (MEK)	27	ug/L	25	SW5030C/8260C	12/08/16 14:11	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:11	JGH	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:11	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:11	JGH	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:11	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:11	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	156-60-5	

Lab Sample ID: S78038.02 (continued)
Sample Tag: SB-A5.1-MT122_55-60

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (Replicate 01) (continued)								
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	12/08/16 14:11	JGH	109-99-9	
Chloroform	7	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	12/08/16 14:11	JGH	108-10-1	S
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	12/08/16 14:11	JGH	591-78-6	S
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	56-23-5	S
Benzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	71-43-2	S
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	107-06-2	S
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	79-01-6	S
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	78-87-5	S
Bromodichloromethane	2	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	75-27-4	S
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:11	JGH	74-95-3	S
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	10061-01-5	S
Toluene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	108-88-3	S
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	10061-02-6	S
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	79-00-5	S
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	127-18-4	S
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	110-57-6	
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:11	JGH	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	106-93-4	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	630-20-6	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	12/08/16 14:11	JGH		
o-Xylene*	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:11	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:11	JGH	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:11	JGH	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:11	JGH	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:11	JGH	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:11	JGH	120-82-1	

S-Surrogate recovery outside of control limits

Lab Sample ID: S78038.02 (continued)
Sample Tag: SB-A5.1-MT122_55-60

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (Replicate 01) (continued)								
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:11	JGH	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:11	JGH	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:11	JGH	91-57-6	

Analytical Laboratory Report

Lab Sample ID: S78038.03
Sample Tag: Trip Blank
Collected Date/Time: 12/07/2016 00:01
Matrix: Liquid
COC Reference: 094969

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	5.5	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	12/08/16 10:00	JML		
Organics - Volatiles								
Volatile Organics - DEQ List								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	12/07/16 19:32	IKM	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	12/07/16 19:32	IKM	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:32	IKM	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:32	IKM	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	12/07/16 19:32	IKM	107-13-1	
2-Butanone (MEK)	Not detected	ug/L	25	SW5030C/8260C	12/07/16 19:32	IKM	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:32	IKM	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:32	IKM	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:32	IKM	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:32	IKM	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:32	IKM	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	12/07/16 19:32	IKM	109-99-9	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	12/07/16 19:32	IKM	108-10-1	
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	12/07/16 19:32	IKM	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	75-27-4	
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:32	IKM	74-95-3	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	127-18-4	
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	110-57-6	
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:32	IKM	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	106-93-4	

Lab Sample ID: S78038.03 (continued)
Sample Tag: Trip Blank

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	630-20-6	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	12/07/16 19:32	IKM		
o-Xylene*	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:32	IKM	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:32	IKM	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/07/16 19:32	IKM	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:32	IKM	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:32	IKM	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:32	IKM	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:32	IKM	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:32	IKM	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	12/07/16 19:32	IKM	91-57-6	

Merit Laboratories, Inc.

2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # _____ OF _____

094969

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Kristen Padron
COMPANY: Arcadis US
ADDRESS: 28550 Cabot Dr. Suite 500
CITY: Novi | STATE: MI | ZIP CODE: 48377
PHONE NO.: 313-971-6728 | FAX NO.: | P.O. NO.:
E-MAIL ADDRESS: Kristen.Padron@arcadis.com | QUOTE NO.:

INVOICE TO

CONTACT NAME: ☐ SAME
COMPANY:
ADDRESS:
CITY: | STATE: | ZIP CODE:
PHONE NO.: | E-MAIL ADDRESS:

PROJECT NO./NAME: B0064479.2016.00102
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Severin Presswood / [signature]

TURNAROUND TIME REQUIRED ☒ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☐ OTHER _____

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER _____

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other _____

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1-4 dioxane 8260 SIMS	VOC 8260 SIMS
78038.01	12-07	1130	~~NO~~ SB-A5.2-N0150_72-77	L	3		X						X	X
.02	12-07	1605	SB-A5.1-MT122_55-60	L	3		X						X	X
.03			trip blank											X

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Kristen Padron / Arcadis	☒ Sampler	DATE: 12-07	TIME: 545pm
RECEIVED BY: SIGNATURE/ORGANIZATION: [signature]		DATE: 12/07/16	TIME: 17:45
RELINQUISHED BY: SIGNATURE/ORGANIZATION:		DATE:	TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION:		DATE:	TIME:

RELINQUISHED BY: SIGNATURE/ORGANIZATION:		DATE:	TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION:		DATE:	TIME:

SEAL NO. | SEAL INTACT YES ☐ NO ☐ | INITIALS
SEAL NO. | SEAL INTACT YES ☐ NO ☐ | INITIALS

NOTES: TEMP. ON ARRIVAL 5.5

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S78046.01(01)
Generated on 12/09/2016

Report to

Attention: Kristen Padron
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 313-971-6728 FAX: 248-994-2241
Email: Kristen.Padron@arcadis.com

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Addtional Contacts: Alex Villhauer, Randy Christensen, Patrick Curry, Jesse Wright

Report Summary

Lab Sample ID(s): S78046.01-S78046.04
Project: B0064479.2016.00102
Collected Date: 12/08/2016
Submitted Date/Time: 12/08/2016 12:32
Sampled by: Severin Presswood
P.O. #: B0064479.2016.00102

Table of Contents

Maya Murshak
Technical Director

Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (4 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S78046.01	SB-A5.1-MT122_63-68	Liquid	12/08/16 09:00
S78046.02	SB-A5.1-MT122_71-76	Liquid	12/08/16 00:01
S78046.03	Trip Blank	Liquid	12/08/16 00:01
S78046.04	Dup-01	Liquid	12/08/16 00:01

Analytical Laboratory Report

Lab Sample ID: S78046.01
Sample Tag: SB-A5.1-MT122_63-68
Collected Date/Time: 12/08/2016 09:00
Matrix: Liquid
COC Reference: 094971

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	12/09/16 10:20	JML		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	3	SW8260B - SIM	12/08/16 16:34	JGH	123-91-1	
Volatile Organics - DEQ List								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	12/08/16 14:32	JGH	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	12/08/16 14:32	JGH	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:32	JGH	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:32	JGH	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	12/08/16 14:32	JGH	107-13-1	
2-Butanone (MEK)	32	ug/L	25	SW5030C/8260C	12/08/16 14:32	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:32	JGH	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:32	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:32	JGH	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:32	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:32	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	12/08/16 14:32	JGH	109-99-9	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	12/08/16 14:32	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	12/08/16 14:32	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	75-27-4	
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:32	JGH	74-95-3	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	127-18-4	
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	110-57-6	

Lab Sample ID: S78046.01 (continued)
Sample Tag: SB-A5.1-MT122_63-68

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (continued)								
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:32	JGH	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	106-93-4	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	630-20-6	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	12/08/16 14:32	JGH		
o-Xylene*	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:32	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:32	JGH	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:32	JGH	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:32	JGH	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:32	JGH	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:32	JGH	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:32	JGH	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:32	JGH	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:32	JGH	91-57-6	

Analytical Laboratory Report

Lab Sample ID: S78046.02
Sample Tag: SB-A5.1-MT122_71-76
Collected Date/Time: 12/08/2016 00:01
Matrix: Liquid
COC Reference: 094971

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	12/09/16 10:20	JML		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	3	SW8260B - SIM	12/08/16 15:52	JGH	123-91-1	
Volatile Organics - DEQ List								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	12/08/16 14:53	JGH	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	12/08/16 14:53	JGH	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:53	JGH	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:53	JGH	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	12/08/16 14:53	JGH	107-13-1	
2-Butanone (MEK)	Not detected	ug/L	25	SW5030C/8260C	12/08/16 14:53	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:53	JGH	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:53	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:53	JGH	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:53	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:53	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	12/08/16 14:53	JGH	109-99-9	
Chloroform	2	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	12/08/16 14:53	JGH	108-10-1	S
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	12/08/16 14:53	JGH	591-78-6	S
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	56-23-5	S
Benzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	71-43-2	S
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	107-06-2	S
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	79-01-6	S
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	78-87-5	S
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	75-27-4	S
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:53	JGH	74-95-3	S
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	10061-01-5	S
Toluene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	108-88-3	S
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	10061-02-6	S
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	79-00-5	S
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	127-18-4	S

S-Surrogate recovery outside of control limits

Lab Sample ID: S78046.02 (continued)
Sample Tag: SB-A5.1-MT122_71-76

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (continued)								
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	110-57-6	
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:53	JGH	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	106-93-4	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	630-20-6	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	12/08/16 14:53	JGH		
o-Xylene*	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:53	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:53	JGH	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 14:53	JGH	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:53	JGH	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:53	JGH	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:53	JGH	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:53	JGH	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:53	JGH	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 14:53	JGH	91-57-6	
Volatile Organics - DEQ List (Replicate 01)								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	12/09/16 12:50	JGH	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	12/09/16 12:50	JGH	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	12/09/16 12:50	JGH	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	12/09/16 12:50	JGH	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	12/09/16 12:50	JGH	107-13-1	
2-Butanone (MEK)	Not detected	ug/L	25	SW5030C/8260C	12/09/16 12:50	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	12/09/16 12:50	JGH	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	12/09/16 12:50	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	12/09/16 12:50	JGH	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	12/09/16 12:50	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	12/09/16 12:50	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	156-60-5	

Lab Sample ID: S78046.02 (continued)
Sample Tag: SB-A5.1-MT122_71-76

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (Replicate 01) (continued)								
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	12/09/16 12:50	JGH	109-99-9	
Chloroform	2	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	12/09/16 12:50	JGH	108-10-1	S
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	12/09/16 12:50	JGH	591-78-6	S
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	56-23-5	S
Benzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	71-43-2	S
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	107-06-2	S
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	79-01-6	S
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	78-87-5	S
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	75-27-4	S
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	12/09/16 12:50	JGH	74-95-3	S
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	10061-01-5	S
Toluene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	108-88-3	S
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	10061-02-6	S
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	79-00-5	S
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	127-18-4	S
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	110-57-6	S
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	12/09/16 12:50	JGH	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	106-93-4	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	630-20-6	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	12/09/16 12:50	JGH		
o-Xylene*	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	12/09/16 12:50	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	12/09/16 12:50	JGH	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 12:50	JGH	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	12/09/16 12:50	JGH	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	12/09/16 12:50	JGH	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/09/16 12:50	JGH	120-82-1	

S-Surrogate recovery outside of control limits

Lab Sample ID: S78046.02 (continued)
Sample Tag: SB-A5.1-MT122_71-76

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (Replicate 01) (continued)								
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/09/16 12:50	JGH	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	12/09/16 12:50	JGH	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	12/09/16 12:50	JGH	91-57-6	

Analytical Laboratory Report

Lab Sample ID: S78046.03
Sample Tag: Trip Blank
Collected Date/Time: 12/08/2016 00:01
Matrix: Liquid
COC Reference: 094971

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.4	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	12/09/16 10:20	JML		
Organics - Volatiles								
Volatile Organics - DEQ List								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	12/08/16 13:49	JGH	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	12/08/16 13:49	JGH	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	12/08/16 13:49	JGH	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	12/08/16 13:49	JGH	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	12/08/16 13:49	JGH	107-13-1	
2-Butanone (MEK)	Not detected	ug/L	25	SW5030C/8260C	12/08/16 13:49	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 13:49	JGH	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	12/08/16 13:49	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 13:49	JGH	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 13:49	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	12/08/16 13:49	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	12/08/16 13:49	JGH	109-99-9	
Chloroform	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	12/08/16 13:49	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	12/08/16 13:49	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	75-27-4	
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 13:49	JGH	74-95-3	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	127-18-4	
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	110-57-6	
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 13:49	JGH	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	106-93-4	

Lab Sample ID: S78046.03 (continued)
Sample Tag: Trip Blank

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (continued)								
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	630-20-6	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	12/08/16 13:49	JGH		
o-Xylene*	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 13:49	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 13:49	JGH	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 13:49	JGH	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 13:49	JGH	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 13:49	JGH	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 13:49	JGH	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 13:49	JGH	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 13:49	JGH	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 13:49	JGH	91-57-6	

Analytical Laboratory Report

Lab Sample ID: S78046.04
Sample Tag: Dup-01
Collected Date/Time: 12/08/2016 00:01
Matrix: Liquid
COC Reference: 094971

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	12/09/16 10:20	JML		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	3	SW8260B - SIM	12/08/16 16:13	JGH	123-91-1	
Volatile Organics - DEQ List								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	12/08/16 15:14	JGH	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	12/08/16 15:14	JGH	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	12/08/16 15:14	JGH	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	12/08/16 15:14	JGH	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	12/08/16 15:14	JGH	107-13-1	
2-Butanone (MEK)	Not detected	ug/L	25	SW5030C/8260C	12/08/16 15:14	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 15:14	JGH	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	12/08/16 15:14	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 15:14	JGH	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 15:14	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	12/08/16 15:14	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	12/08/16 15:14	JGH	109-99-9	
Chloroform	2	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	12/08/16 15:14	JGH	108-10-1	S
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	12/08/16 15:14	JGH	591-78-6	S
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	56-23-5	S
Benzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	71-43-2	S
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	107-06-2	S
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	79-01-6	S
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	78-87-5	S
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	75-27-4	S
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 15:14	JGH	74-95-3	S
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	10061-01-5	S
Toluene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	108-88-3	S
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	10061-02-6	S
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	79-00-5	S
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	127-18-4	S

S-Surrogate recovery outside of control limits

Lab Sample ID: S78046.04 (continued)
Sample Tag: Dup-01

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (continued)								
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	110-57-6	
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 15:14	JGH	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	106-93-4	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	630-20-6	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	12/08/16 15:14	JGH		
o-Xylene*	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 15:14	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 15:14	JGH	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/08/16 15:14	JGH	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 15:14	JGH	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	12/08/16 15:14	JGH	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 15:14	JGH	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 15:14	JGH	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 15:14	JGH	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	12/08/16 15:14	JGH	91-57-6	
Volatile Organics - DEQ List (Replicate 01)								
Diethyl ether*	Not detected	ug/L	10	SW5030C/8260C	12/09/16 13:10	JGH	60-29-7	
Acetone	Not detected	ug/L	50	SW5030C/8260C	12/09/16 13:10	JGH	67-64-1	
Methyl iodide*	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	74-88-4	
Carbon disulfide	Not detected	ug/L	5	SW5030C/8260C	12/09/16 13:10	JGH	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	5	SW5030C/8260C	12/09/16 13:10	JGH	1634-04-4	
Acrylonitrile	Not detected	ug/L	2	SW5030C/8260C	12/09/16 13:10	JGH	107-13-1	
2-Butanone (MEK)	Not detected	ug/L	25	SW5030C/8260C	12/09/16 13:10	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	5	SW5030C/8260C	12/09/16 13:10	JGH	75-71-8	
Chloromethane*	Not detected	ug/L	5	SW5030C/8260C	12/09/16 13:10	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	75-01-4	
Bromomethane	Not detected	ug/L	5	SW5030C/8260C	12/09/16 13:10	JGH	74-83-9	
Chloroethane	Not detected	ug/L	5	SW5030C/8260C	12/09/16 13:10	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	5	SW5030C/8260C	12/09/16 13:10	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	156-60-5	

Lab Sample ID: S78046.04 (continued)
Sample Tag: Dup-01

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (Replicate 01) (continued)								
1,1-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	156-59-2	
Tetrahydrofuran*	Not detected	ug/L	90	SW5030C/8260C	12/09/16 13:10	JGH	109-99-9	
Chloroform	2	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	67-66-3	
Bromochloromethane	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	50	SW5030C/8260C	12/09/16 13:10	JGH	108-10-1	S
2-Hexanone	Not detected	ug/L	50	SW5030C/8260C	12/09/16 13:10	JGH	591-78-6	S
Carbon tetrachloride	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	56-23-5	S
Benzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	71-43-2	S
1,2-Dichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	107-06-2	S
Trichloroethene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	79-01-6	S
1,2-Dichloropropane	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	78-87-5	S
Bromodichloromethane	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	75-27-4	S
Dibromomethane	Not detected	ug/L	5	SW5030C/8260C	12/09/16 13:10	JGH	74-95-3	S
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	10061-01-5	S
Toluene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	108-88-3	S
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	10061-02-6	S
1,1,2-Trichloroethane	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	79-00-5	S
Tetrachloroethene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	127-18-4	S
trans-1,4-Dichloro-2-butene*	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	110-57-6	S
Dibromochloromethane	Not detected	ug/L	5	SW5030C/8260C	12/09/16 13:10	JGH	124-48-1	
1,2-Dibromoethane	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	106-93-4	
Chlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	630-20-6	
Ethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	100-41-4	
p,m-Xylene*	Not detected	ug/L	2	SW5030C/8260C	12/09/16 13:10	JGH		
o-Xylene*	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	5	SW5030C/8260C	12/09/16 13:10	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	96-18-4	
n-Propylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	103-65-1	
Bromobenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	108-67-8	
tert-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	95-63-6	
sec-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	135-98-8	
p-Isopropyltoluene	Not detected	ug/L	5	SW5030C/8260C	12/09/16 13:10	JGH	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	526-73-8	
n-Butylbenzene	Not detected	ug/L	1	SW5030C/8260C	12/09/16 13:10	JGH	104-51-8	
Hexachloroethane	Not detected	ug/L	5	SW5030C/8260C	12/09/16 13:10	JGH	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	ug/L	5	SW5030C/8260C	12/09/16 13:10	JGH	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/09/16 13:10	JGH	120-82-1	

S-Surrogate recovery outside of control limits

Lab Sample ID: S78046.04 (continued)
Sample Tag: Dup-01

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics - DEQ List (Replicate 01) (continued)								
1,2,3-Trichlorobenzene	Not detected	ug/L	5	SW5030C/8260C	12/09/16 13:10	JGH	87-61-6	
Naphthalene	Not detected	ug/L	5	SW5030C/8260C	12/09/16 13:10	JGH	91-20-3	
2-Methylnaphthalene	Not detected	ug/L	5	SW5030C/8260C	12/09/16 13:10	JGH	91-57-6	

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C.O.C. PAGE # 1 OF 1

094971

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Kristen Padron
COMPANY: Arcadis US
ADDRESS: 28550 Cabot Dr Suite 500
CITY: Novi | STATE: MI | ZIP CODE: 48377
PHONE NO.: 313-971-6728 | FAX NO.: | P.O. NO.:
E-MAIL ADDRESS: Kristen.Padron@arcadis.com | QUOTE NO.:

INVOICE TO

CONTACT NAME: ☐ SAME
COMPANY:
ADDRESS:
CITY: | STATE: | ZIP CODE:
PHONE NO.: | E-MAIL ADDRESS:

PROJECT NO./NAME: B006447.2016.00102
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Severin Presswood / Severin Presswood

TURNAROUND TIME REQUIRED ☒ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOC 8260 SIMS	1-4 dioxane 8260 SIMS	Special Instructions
780460 1	12-08	900	SB-A5.1-MT122-63-68	L	3		X						X	X	
.02	12-08		SB-A5.1-MT122_71-76	L	3		X						X	X	
.03	NA	NA	Trip Blank	L	1								X		
.04	NA	NA	DUP-01	L	3		X						X	X	Duplicate Sample

RELINQUISHED BY: SIGNATURE/ORGANIZATION	☒ Sampler	DATE	TIME
Severin Presswood / Arcadis		12-08-16	12:10
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
[signature]		12-08-16	12:10
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
[signature]	12.08.16	12:32
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME
[signature]	12.08.16	12:32

SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS

NOTES: TEMP. ON ARRIVAL 3.4

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

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