RPS

Formerly GaiaTech

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Confidential

January 19, 2018

Mr. Ken Kates
Controller
Avtech Tyee
6500 Merrill Creek Parkway
Everett, WA 98203

Re: 1-Year Groundwater Performance Monitoring Program – 4th Quarter 2017
Former Tyee Aircraft McKechnie Group Facility
3008 100th Street SW, Everett, WA
Project #164854.440.00

Dear Mr. Kates:

GaiaTech Incorporated (dba RPS) was retained to conduct a quarterly monitoring program at the Former Tyee Aircraft McKechnie Group Facility located 3008 100th Street SW in Everett, WA (the "Site"). Project activities were conducted in accordance with the approved proposal dated February 13, 2017, unless otherwise noted herein.

Background

Tyee Aircraft (Tyee) operated the Site from 1965 through 2009. Currently, the Site is operated as the Washington Aerospace Training & Research Center (an aerospace career training facility). Tyee operated the Site as a manufacturing facility for machined and formed aluminum stainless steel structural parts for the aerospace industry. Subsequent to cessation of activities, RPS performed subsurface investigation activities and identified soil impacts (from total petroleum hydrocarbons [TPH] and trichloroethene [TCE]) and chlorinated solvent impacts to groundwater at the Site.

To address the identified subsurface impacts, the Site was enrolled in the Washington Department of Ecology (WDOE) Voluntary Cleanup Program (Cleanup Site ID 1217). As part of the ongoing activities performed at the Site, RPS has evaluated groundwater conditions since 2009. During the most recent groundwater sampling event in November 2017, the following impacts were identified:

- Vinyl chloride exceedances of the Method A, Method B Noncancer, and Method B Cancer GCLs in groundwater from well MW-3 (on west side near septic tank) and vinyl chloride exceedances of the Method A and Method B cancer GCLs in groundwater obtained from wells MW-2 (northwest corner of the building) and MW-4 (south of the oil storage area).

The groundwater monitoring performed at the Site had identified intermittent increases in chlorinated solvent concentrations in groundwater which appear to be correlated with rises in the seasonal groundwater table. The rise in groundwater level appears to release residual chlorinated solvent

compounds from the vadose zone and capillary fringe within the soil source areas before the soil remediation.

Following discussions with the WDOE, remedial actions were performed to address the potential source of soil impacts by removing TPH and reducing the chlorinated solvent concentrations in soil (which should cause a subsequent reduction in chlorinated solvent levels in groundwater). TPH impacts to soil were excavated from the Site in 2016. Soil sampling confirmed the successful removal of TPH-impacted soils. TCE impacted soils located south and southwest of the main building were treated by injection of emulsified zero valent iron (eZVI) in these areas. Confirmatory soil sampling of the TCE impacted soil areas will be performed in the first quarter 2018. The goal of the eZVI injection is to reduce the amount of available chlorinated solvent present in in soil (and, therefore, available to migrate to the groundwater). Injection of eZVI was performed in September 2016 at eight injection points. The injection points were installed surrounding areas with the highest previously identified concentrations of vinyl chloride in soil and included GP-7 (directly north of MW-4) and GP-12 (directly south of MW-3). During remediation, a total of 350 and 190 gallons of eZVI were injected in the area surrounding GP-7 and GP-12, respectively.

Following the active soil remedial efforts (injection activities) of September 2016, a 1-year groundwater performance monitoring program has been implemented in order to determine groundwater concentrations of chlorinated solvents and evaluate the natural attenuation capability of the shallow aquifer at the Site (to decrease groundwater concentrations to levels below the WDOE-approved site-specific cleanup groundwater criteria).

Completed Scope of Work

RPS performed the fourth sampling event of the four quarterly performance monitoring events between December 5, 2017 and December 7, 2017.

Each of the nine monitoring wells (MW-1 through MW-9) was gauged to determine the depth to water and purged using low flow sampling protocol. During purging, detection equipment measured temperature, pH, oxidation/reduction (redox) potential, turbidity, specific conductance, and dissolved oxygen as geochemical indicators prior to collecting groundwater samples. Groundwater samples were collected only after the geochemical indicators stabilized to less than a 10% change between successive readings. Collected samples were placed in laboratory provided bottles and delivered under strict chain-of-custody protocol to a WDOE-accredited analytical testing laboratory. Requested chemical analyses adhered to U.S. Environmental Protection Agency (US EPA) methods and satisfied Practical Quantification Limits (PQL) established in the WDOE Method A GCLs.

The table below summarizes the groundwater elevations measured during the fourth quarter 2017 monitoring event:

Well ID	Reference Elevation of Measuring Point	Depth to Water Gauged 02/21/17	Total Well Depth	Groundwater Elevation 12/05/17
MW-1	598.60	7.35	15	591.25
MW-2	598.56	6.27	15	592.29
MW-3	599.03	4.34	15	594.69
MW-4	601.36	6.78	30	594.58
MW-5	600.80	6.02	22	594.78
MW-6	599.82	4.63	17	595.19
MW-7[3]	600.53	19.08	50	581.45
MW-8	599.66	6.10	20	593.56
MW-9	597.25	6.72	20	590.53

Notes:
(1) Reference elevation of measuring point and groundwater elevation are relative to North American Vertical Datum of 1988.
(2) All values expressed in feet.
(3) Well MW-7 is a deep monitoring well

Groundwater samples were collected for analysis of VOCs using US EPA Method 8260B. Bi-annually, groundwater samples are analyzed for additional secondary geochemical indicators including: (a) alkalinity; (b) methane, (c) nitrate; (d) manganese; and (e) sulfate. Groundwater samples for the fourth quarter were analyzed for these additional parameters.

Low flow sampling attempts to purge groundwater from the well at a rate no faster than the shallow aquifer formation would yield groundwater over the screened section of the permanent well. To achieve that condition in the field, actual flow rates needed were generally less than 300 ml/min. Field purging data is summarized as follows:

Well ID	Purge Time (min)	Purge Volume (gal)	Average Purge Rate (ml/min)
MW-1	15	0.43	109
MW-2	30	0.93	117
MW-3	18	0.76	159
MW-4	74	1.51	77
MW-5	65	1.64	96
MW-6	21	1.01	183
MW-7	15	0.28	70
MW-8	19	0.38	76
MW-9	52	1.26	92

Groundwater VOC Results

The VOC results of historical and current groundwater sampling events are summarized in the attached Table 1. In general, vinyl chloride is the primary VOC identified in the impacted groundwater at the Site. The presence of vinyl chloride has historically been identified in groundwater at MW-2, MW-3, and MW-4. Concentrations of vinyl chloride have been the highest in MW-3, which exhibited the highest concentration detected during the June 2016 sampling event at a concentration of 380 micrograms per

liter (µg/L). Vinyl chloride was detected at 37 µg/L in the 4th quarter 2017, which represents a decrease of 90% since the eZVI soil remediation was performed. Vinyl chloride in well MW-2 was identified at 0.85 µg/L, which is a decrease of 43% in concentration since June 2016. The concentration of vinyl chloride in MW-4 was identified at 4.5 µg/L, an increase from the 1.5 µg/L identified the 3rd quarter. However, well MW-4 has shown an overall decrease in concentration as compared to the highest concentration detected (6.5 µg/L) during the first sampling event in February 2010.

Groundwater monitoring conducted prior to the soil remediation activities has also historically identified the presence of cis-1,2-dichloroethene in well MW-3. Cis-1,2-dichloroethene was identified during the previous monitoring event (August 2017) at a concentration of 56 µg/L. During the 4th quarter sampling event for 2017, this compound was identified at a decreased concertation of 2.9 µg/L and is below the WDOE groundwater cleanup levels and the site specific cleanup levels. Cis-1,2-dichlorethene was not detected above the method detection limit (MDL) at any of the other monitoring well locations. The occurrence of VOC impacted groundwater at the associated well is shown on Figure 1. Charts depicting historic concentration trends of vinyl chloride are provided for each well. Additionally, a chart depicting concentrations of cis-1,2-dichloroethene is provided for monitoring well MW-3. These charts are provided in the attachments. A copy of the laboratory report for this sampling quarter is also provided in the attachments.

Other than the above mentioned VOCs, all other VOCs were at concentrations below laboratory reporting limits, or at concentrations that were equal to or less than the respective WDOE Method A GCLs. Additionally, no analytes were detected above the MDL in MW-7 (on-site deep well) which suggests that the shallow groundwater impact has not migrated to the deeper aquifer system. The lack of impact present in the deeper groundwater system suggests that impact is isolated to the shallow groundwater and the VOC-impacted groundwater has a low probability of migrating off-site.

Groundwater Flow Direction

During the 4th quarter 2017 sampling event, the groundwater flow direction was toward the north-northeast. Historically, groundwater flow direction has generally been towards the northeast. The hydraulic gradient at the site is low, which indicates groundwater beneath the Site is slow-moving. This also suggests there is a low probability of impacted groundwater migrating off-site. The shallow groundwater flow direction is depicted on Figure 2.

Groundwater Secondary Geochemical Results

The secondary geochemical indicator parameters are summarized in the attached Table 2. The concentrations of these secondary indicator parameters, coupled with the reduction in the concentrations of VOC parameters indicate that the groundwater conditions are favorable for the continued biodegradation of VOCs.

Iron (II) - Groundwater collected during the 4th quarter groundwater sampling activities, was inadvertently not analyzed for iron.

Methane – Under appropriate conditions, vinyl chloride is reduced to ethene, which may be further reduced to ethane or methane. The concentrations of methane were 1.0 mg/L at well MW-2, 1.7 mg/L at well MW-3, and 0.74 mg/L at well MW-4. These concentrations indicate that the groundwater conditions of these areas were reductive and conducive to continuous breakdown of cis-1,2-DCE; however, the methane at such concentrations in the area of wells MW-2 and MW-3 could slow the process of vinyl chloride being oxidized naturally.

Nitrate – The presence of nitrate is a substrate for microbial respiration if oxygen is depleted. The concentrations of nitrate were less than 0.15 mg/L at well MW-2 and MW-3 and 0.2 at well MW-4. These concentrations indicate that the groundwater conditions of these areas were reductive and amenable to de-chlorination.

Sulfate – The presence of sulfate is a substrate for microbial respiration. The concentrations of sulfate were 1.9 mg/L at well MW-2, and less than 2.6 mg/L at wells MW-3 and MW-4. These concentrations indicate that groundwater conditions were reductive.

Natural Attenuation

RPS performed a natural attenuation evaluation using the US Environmental Protection Agency (EPA) BIOCHLOR Natural Attenuation Decision Support System to determine if the groundwater plume is stable or shrinking and determine the projected concentrations in 5 years. The BIOCHLOR model used the following inputs to calculate concentrations from the source area located at MW-3 and MW-4:

Advection
- Seepage Velocity: 62078.7 ft/yr
  - Hydraulic Conductivity: 0.1 cm/sec
  - Hydraulic Gradient: 0.3 ft/ft
  - Effective Porosity: 0.5

Disperson
- Alpha x: 14 ft (estimated as 10% of plume length)

Adsorption
- Soil Bulk Density: 1.7 kg/L
- Fraction Organic Carbon: 0.001
- Partition Coefficient (vinyl chloride): 18.6 (L/kg)

Biotransformation
- First Order Decay Coefficient:
  Vinyl Chloride to Ethene: Half-life (yrs): 0.12

General
- Simulation Time: 5 yr
- Modeled Area Width: 213 ft
  - Modeled Area Length: 326 ft
  - Zone 1 Length: 326 ft

Source Area:
- Source Thickness in Saturated Zone: 7 ft
- Width: 10 ft
- Vinyl Chloride Concentration: 0.037 mg/L when modeling MW-3 source area and 0.0045 mg/L when modeling MW-4 source area

Field Data for Comparison:

- MW-3 source area
  - MW-3: 0.037 mg/L at 0 ft
  - MW-2: 0.00085 mg/L at 140 ft
  - MW-9: 0.0 mg/L at 326 ft
  - MW-1: 0.0 mg/L at 236 ft
- MW-4 source area
  - MW-4: 0.0045 mg/L at 0 ft
  - MW-3: 0.037 mg/L at 170 ft
  - MW-2: 0.00085 mg/L at 280 ft
  - MW-1: 0.0 mg/L at 343 ft
  - MW-9: 0.0 mg/L at 340 ft

Conclusions and Recommendations

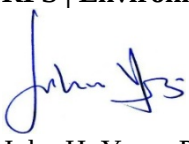
The results of the 5 year run for MW-3 indicate the concentration at this well will be 0.0136 mg/L, which is above the state standard for vinyl chloride. The results of the 5 year run for MW-4 indicate the concentration at the well will be 0.0017 mg/L below the state standard. No off-site migration will occur.

Based on the concentrations of vinyl chloride, cis-1,2-DCE, and US EPA BIOCHLOR modeling, the groundwater plume is stable and/or shrinking, indicating no active resource of contamination present at the Site. This Site could be qualified for natural attenuation. It is recommended to discuss alternatives for regulatory site closure with the WDOE.

Please do not hesitate to call if there are any questions or concerns with this quarterly status report.

Sincerely,

RPS | Environmental Risk



John H. Yang, PG
Senior Vice President

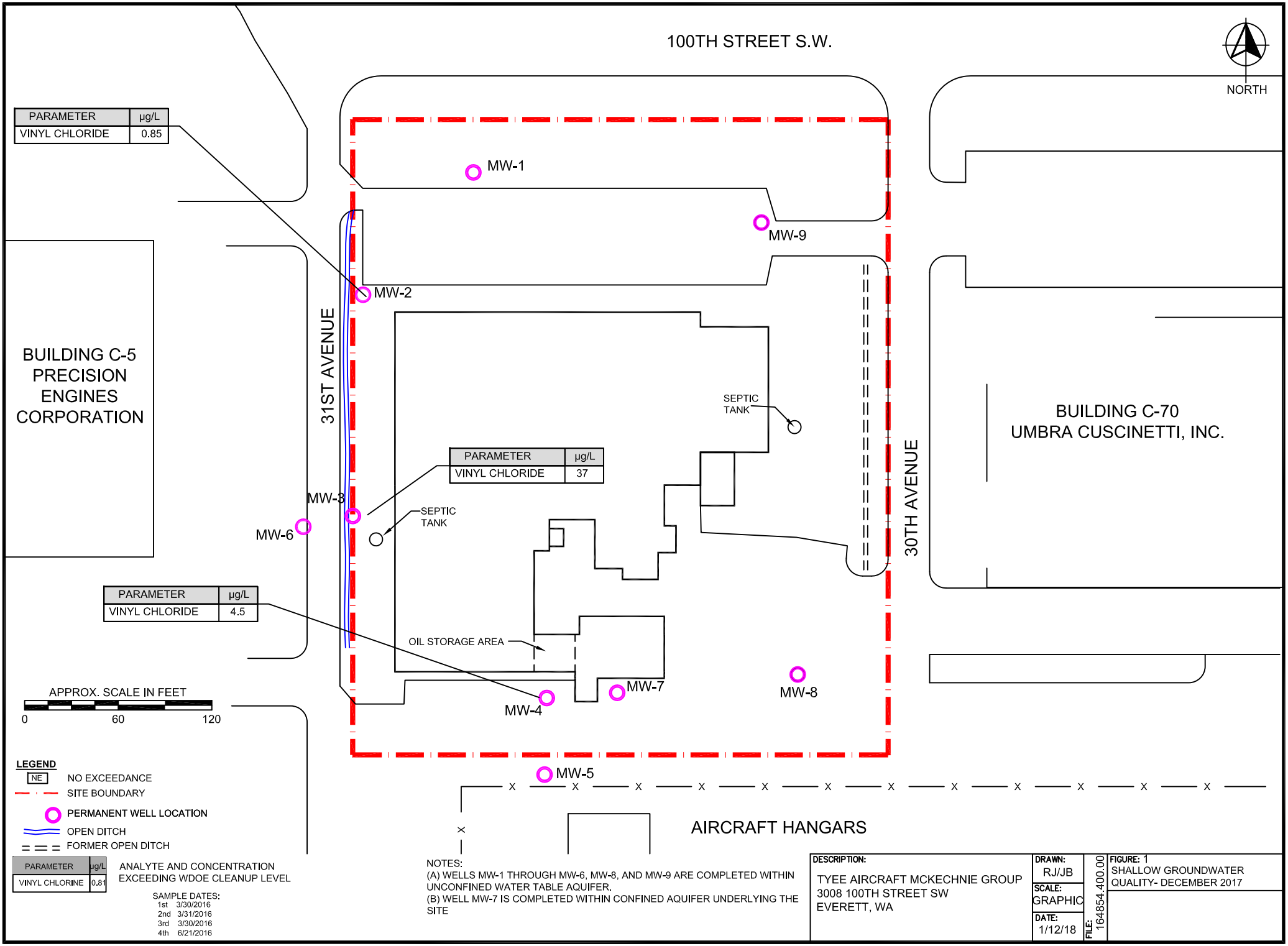
Attachments:

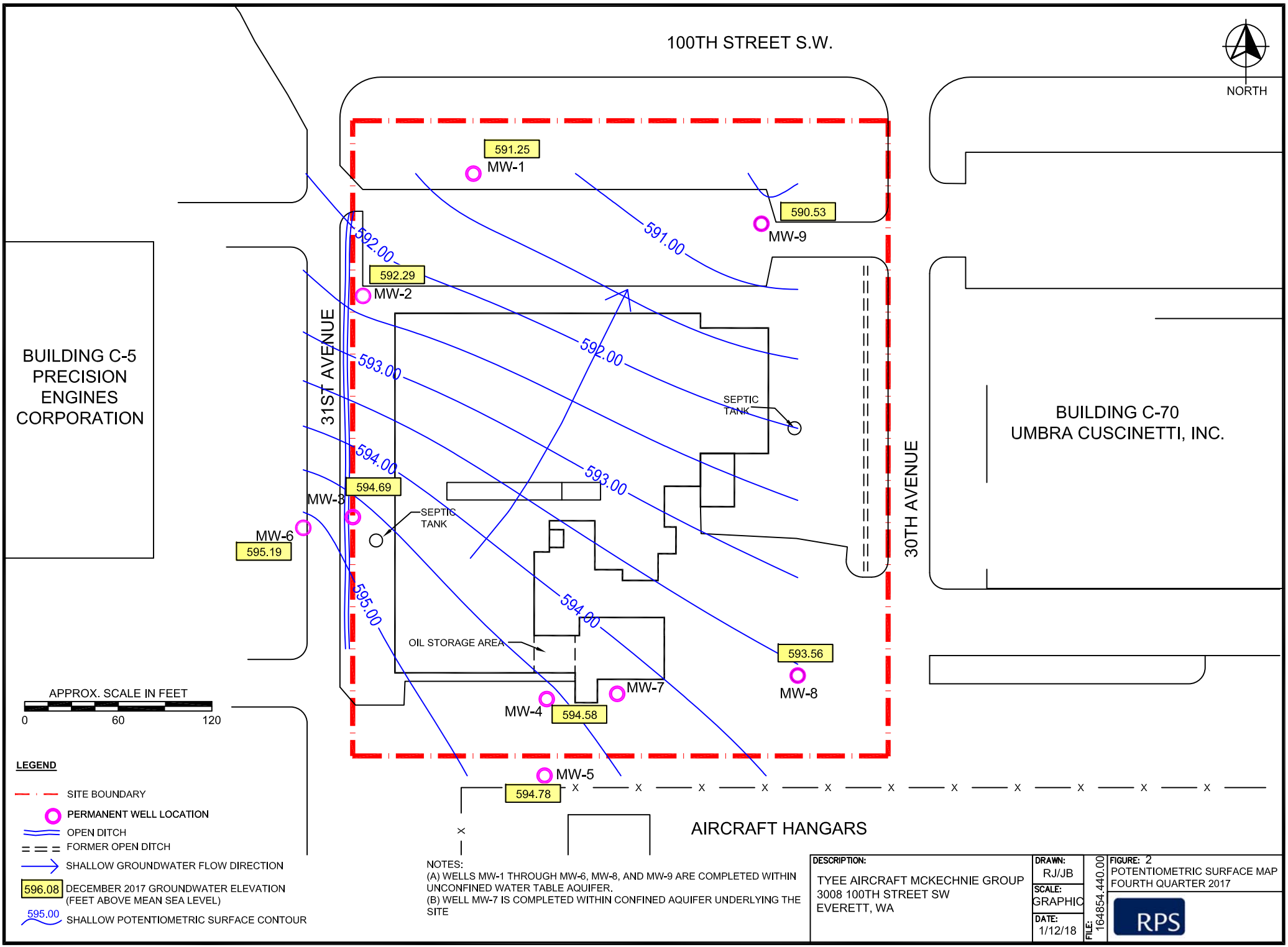
Figure 1 Shallow Groundwater Quality
Figure 2 Shallow Potentiometric Surface Map

Table 1 Groundwater Analytical Results Summary
Table 2 Secondary Geochemical Indicators in Groundwater

A - Monitoring Well Line Charts
B - Laboratory Report of Analysis
C – Natural Attenuation Evaluation

Attachments


100TH STREET S.W.
NORTH
PARAMETER | µg/L
VINYL CHLORIDE | 0.85
MW-1
MW-9
MW-2
BUILDING C-5
PRECISION
ENGINES
CORPORATION
31ST AVENUE
SEPTIC
TANK
BUILDING C-70
UMBRA CUSCINETTI, INC.
PARAMETER | µg/L
VINYL CHLORIDE | 37
MW-3
MW-6
SEPTIC
TANK
30TH AVENUE
PARAMETER | µg/L
VINYL CHLORIDE | 4.5
OIL STORAGE AREA
MW-7
MW-8
MW-4
APPROX. SCALE IN FEET
0
60
120
MW-5
AIRCRAFT HANGARS
LEGEND
NE
NO EXCEEDANCE
SITE BOUNDARY
PERMANENT WELL LOCATION
OPEN DITCH
FORMER OPEN DITCH
PARAMETER | µg/L
VINYL CHLORINE | 0.81
ANALYTE AND CONCENTRATION
EXCEEDING WDOE CLEANUP LEVEL
SAMPLE DATES:
1st 3/30/2016
2nd 3/31/2016
3rd 3/30/2016
4th 6/21/2016
NOTES:
(A) WELLS MW-1 THROUGH MW-6, MW-8, AND MW-9 ARE COMPLETED WITHIN UNCONFINED WATER TABLE AQUIFER.
(B) WELL MW-7 IS COMPLETED WITHIN CONFINED AQUIFER UNDERLYING THE SITE
DESCRIPTION:
TYEE AIRCRAFT MCKECHNIE GROUP
3008 100TH STREET SW
EVERETT, WA
DRAWN: RJ/JB
SCALE: GRAPHIC
DATE: 1/12/18
FILE: 164854.400.00
FIGURE: 1
SHALLOW GROUNDWATER
QUALITY- DECEMBER 2017



NOTES:
(A) WELLS MW-1 THROUGH MW-6, MW-8, AND MW-9 ARE COMPLETED WITHIN UNCONFINED WATER TABLE AQUIFER.
(B) WELL MW-7 IS COMPLETED WITHIN CONFINED AQUIFER UNDERLYING THE SITE

DESCRIPTION:
TYEE AIRCRAFT MCKECHNIE GROUP
3008 100TH STREET SW
EVERETT, WA

DRAWN: RJ/JB
SCALE: GRAPHIC
DATE: 1/12/18
FILE: 164854.440.00

FIGURE: 2
POTENTIOMETRIC SURFACE MAP
FOURTH QUARTER 2017

RPS

Table 1
Groundwater Analytical Results

Sample Identification	WDOE Groundwater Cleanup Levels			Site-specific Cleanup Level for Groundwater (Revised RI/FS October 2011)	MW-1											
Date Sampled	Method A	Method B (Noncancer)	Method B (Cancer)		2/12/2010	9/3/2010	12/20/2012	10/14/2014	9/16/2015	12/15/2015	3/30/2016	6/21/2016	2/22/2017	5/23/2017	8/24/2017	12/6/2017
VOCs, USEPA Method 8260	µg/L				µg/L											
Acetone	NE	7,200	NE	NE	6.3	7	<50	<25	<25	<25	<25	<25	<25	<25	<25	<25
2-Butanone (Methyl ethyl ketone)	NE	4,800	NE	NE	<5	<5	<50	<25	<25	85	<10	<10	<10	<10	<10	<10
Carbon disulfide	NE	800	NE	NE	<1	<1	NA	6.4	2.7	<2	<2	<2	<2	<2	<2	<2
Chloroethane	NE	NE	NE	15	<1	<1	<5	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroform	NE	80	1.41	NE	**4.3**	<1	<5	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethane	NE	1,600	7.68	NE	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,2-Dichloroethene (total)	NE	72	NE	72	<2	<2	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2
cis-1,2-Dichloroethene	NE	16	NE	80	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
trans-1,2-Dichloroethene	NE	160	NE	NE	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
Isopropylbenzene (Cumene)	NE	800	NE	NE	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
p-Isopropyltoluene	NE	NE	NE	NE	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
Toluene	1,000	1,000	640	NE	<1	<1	<5	<2	<2	<2	<2	<2	<2	<2	<2	<2
Trichloroethene	5	4	0.54	NE	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
Vinyl chloride	0.2	24	0.029	0.2	<1	<1	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Xylenes (total)	1,000	1,600	NE	NE	<3	<3	<3	<2	<2	<2	<2	<2	<2	<2	<2	<2

Notes:
Samples analyzed at ALS Laboratory Group in Everett, Washington and
ESC Lab Sciences in Mount Juliet, Tennessee.
Only detected analytes are listed.
Cleanup Levels adapted from WDOE Cleanup Level and Risk Calculation website.
VOCs = Volatile organic compounds; RCRA = Resource Conservation and Recovery Act.
NA = not analyzed; NE = no established Cleanup Level.
µg/L is equivalent to parts per billion (ppb); mg/L is equivalent to parts per million (ppm).
Bold/Shaded Value = Concentration exceeds WDOE Method A or and/or the site specific cleanup levels established in the Revised RI/FS, dated October 2011 Method B Groundwater Cleanup Level.

Prepared by: JM
Checked by: EW

Table 1
Groundwater Analytical Results

Sample Identification	WDOE Groundwater Cleanup Levels			Site-specific Cleanup Level for Groundwater (Revised RI/FS October 2011)	MW-2											
Date Sampled	Method A	Method B (Noncancer)	Method B (Cancer)		2/12/2010	9/3/2010	12/20/2012	10/14/2014	9/17/2015	12/16/2015	3/30/2016	6/21/2016	2/22/2017	5/23/2017	8/24/2017	12/6/2017
VOCs, USEPA Method 8260	µg/L				µg/L											
Acetone	NE	7,200	NE	NE	<5	<5	<50	<25	<25	<25	<25	<25	<25	<25	<25	<25
2-Butanone (Methyl ethyl ketone)	NE	4,800	NE	NE	<5	<5	<50	<25	<25	120	<10	<10	<10	<10	<10	<10
Carbon disulfide	NE	800	NE	NE	<1	<1	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroethane	NE	NE	NE	15	<1	<1	<5	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroform	NE	80	1.41	NE	<1	<1	<5	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethane	NE	1,600	7.68	NE	1.3	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,2-Dichloroethene (total)	NE	72	NE	72	<2	<2	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2
cis-1,2-Dichloroethene	NE	16	NE	80	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
trans-1,2-Dichloroethene	NE	160	NE	NE	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
Isopropylbenzene (Cumene)	NE	800	NE	NE	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
p-Isopropyltoluene	NE	NE	NE	NE	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
Toluene	1,000	1,000	640	NE	<1	<1	<5	<2	<2	<2	<2	<2	<2	<2	<2	<2
Trichloroethene	5	4	0.54	NE	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
Vinyl chloride	0.2	24	0.029	0.2	<1	<1	<1	**1.2**	**0.81**	**0.37**	**1.3**	**1.5**	**0.94**	**1.4**	**1.2**	**0.85**
Xylenes (total)	1,000	1,600	NE	NE	<3	<3	<3	<1	<2	<2	<2	<2	<2	<2	<2	<2

Notes:
Samples analyzed at ALS Laboratory Group in Everett, Washington and
ESC Lab Sciences in Mount Juliet, Tennessee.
Only detected analytes are listed.
Cleanup Levels adapted from WDOE Cleanup Level and Risk Calculation website.
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µg/L is equivalent to parts per billion (ppb); mg/L is equivalent to parts per million (ppm).
Bold/Shaded Value = Concentration exceeds WDOE Method A or and/or the site specific cleanup levels established in the Revised RI/FS, dated October Method B Groundwater Cleanup Level.

Prepared by: JM
Checked by: EW

Table 1
Groundwater Analytical Results

Sample Identification	WDOE Groundwater Cleanup Levels			Site-specific Cleanup Level for Groundwater (Revised RI/FS October 2011)	MW-3											
Date Sampled	Method A	Method B (Noncancer)	Method B (Cancer)		2/12/2010	9/3/2010	12/20/2012	10/14/2014	9/17/2015	12/16/2015	3/31/2016	6/21/2016	2/22/2017	5/23/2017	8/24/2017	12/6/2017
VOCs, USEPA Method 8260	µg/L				µg/L											
Acetone	NE	7,200	NE	NE	<5	<5	<50	<25	<25	<25	<25	<25	<25	<25	<25	<25
2-Butanone (Methyl ethyl ketone)	NE	4,800	NE	NE	<5	<5	<50	<25	<25	94	<10	<10	<10	<10	<10	<10
Carbon disulfide	NE	800	NE	NE	<1	1.3	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroethane	NE	NE	NE	15	<1	<1	<5	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroform	NE	80	1.41	NE	<1	<1	<5	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethane	NE	1,600	7.68	NE	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,2-Dichloroethene (total)	NE	72	NE	72	3.7	**209**	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2
cis-1,2-Dichloroethene	NE	16	NE	80	3.6	**199**	**62**	**320**	**95**	5.3	**120**	**330**	**92**	**87**	**56**	2.9
trans-1,2-Dichloroethene	NE	160	NE	NE	<1	10.4	4.9	28	14	<2	13	48	9.8	12	8.0	<2
Isopropylbenzene (Cumene)	NE	800	NE	NE	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
p-Isopropyltoluene	NE	NE	NE	NE	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
Toluene	1,000	1,000	640	NE	<1	<1	<5	<2	<2	<2	<2	<2	<2	<2	<2	<2
Trichloroethene	5	4	0.54	NE	<1	1.4	<1	<2	<2	<2	2.8	7.9	<2	<2	<2	<2
Vinyl chloride	0.2	24	0.029	0.2	**8.7**	**70.3**	**33**	**220**	**180**	**56**	**100**	**380**	**110**	**99**	**100**	**37**
Xylenes (total)	1,000	1,600	NE	NE	<3	<3	<3	<2	<2	<2	<2	<2	<2	<2	<2	<2

Notes:
Samples analyzed at ALS Laboratory Group in Everett, Washington and
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NA = not analyzed; NE = no established Cleanup Level.
µg/L is equivalent to parts per billion (ppb); mg/L is equivalent to parts per million (ppm).
Bold/Shaded Value = Concentration exceeds WDOE Method A or and/or the site specific cleanup levels established in the Revised RI/FS, dated October Method B Groundwater Cleanup Level.

Prepared by: JM
Checked by: EW

Table 1
Groundwater Analytical Results

Sample Identification	WDOE Groundwater Cleanup Levels			Site-specific Cleanup Level for Groundwater (Revised RI/FS October 2011)	MW-4											
Date Sampled	Method A	Method B (Noncancer)	Method B (Cancer)		2/12/2010	9/3/2010	12/20/2012	10/14/2014	9/16/2015	12/15/2015	3/30/2016	6/21/2016	2/22/2017	5/23/2017	8/24/2017	12/5/2017
VOCs, USEPA Method 8260	µg/L				µg/L											
Acetone	NE	7,200	NE	NE	5.3	<5	<50	<25	<25	<25	<25	<25	<25	<25	<25	<25
2-Butanone (Methyl ethyl ketone)	NE	4,800	NE	NE	<5	<5	<50	<25	<25	360	<10	<10	<10	<10	<10	<10
Carbon disulfide	NE	800	NE	NE	<1	<1	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroethane	NE	NE	NE	15	<1	<1	<5	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroform	NE	80	1.41	NE	<1	<1	<5	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethane	NE	1,600	7.68	NE	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,2-Dichloroethene (total)	NE	72	NE	72	<2	<2	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2
cis-1,2-Dichloroethene	NE	16	NE	80	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
trans-1,2-Dichloroethene	NE	160	NE	NE	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
Isopropylbenzene (Cumene)	NE	800	NE	NE	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
p-Isopropyltoluene	NE	NE	NE	NE	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
Toluene	1,000	1,000	640	NE	<1	<1	<5	<2	<2	<2	<2	<2	<2	<2	<2	<2
Trichloroethene	5	4	0.54	NE	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
Vinyl chloride	0.2	24	0.029	0.2	**6.5**	**4.1**	**1.2**	**4.8**	**4.0**	**2.2**	**1.6**	**0.59**	**1.9**	**0.33**	**1.5**	**4.5**
Xylenes (total)	1,000	1,600	NE	NE	<3	<3	<3	<2	<2	<2	<2	<2	<2	<2	<2	<2

Notes:
Samples analyzed at ALS Laboratory Group in Everett, Washington and
ESC Lab Sciences in Mount Juliet, Tennessee.
Only detected analytes are listed.
Cleanup Levels adapted from WDOE Cleanup Level and Risk Calculation website.
VOCs = Volatile organic compounds; RCRA = Resource Conservation and Recovery Act.
NA = not analyzed; NE = no established Cleanup Level.
µg/L is equivalent to parts per billion (ppb); mg/L is equivalent to parts per million (ppm).
Bold/Shaded Value = Concentration exceeds WDOE Method A or and/or the site specific cleanup levels established in the Revised RI/FS, dated October Method B Groundwater Cleanup Level.

Prepared by: JM
Checked by: EW

Table 1
Groundwater Analytical Results

Sample Identification	WDOE Groundwater Cleanup Levels			Site-specific Cleanup Level for Groundwater (Revised RI/FS October 2011)	MW-5									
Date Sampled	**Method A**	**Method B (Noncancer)**	**Method B (Cancer)**		**12/20/2012**	**10/14/2014**	**9/16/2015**	**12/15/2015**	**3/30/2016**	**6/21/2016**	**2/22/2017**	**5/23/2017**	**8/24/2017**	**12/5/2017**
VOCs, USEPA Method 8260	**µg/L**				**µg/L**									
Acetone	NE	7,200	NE	NE	<50	<25	<25	<25	<25	<25	<25	<25	<25	<25
2-Butanone (Methyl ethyl ketone)	NE	4,800	NE	NE	<50	<25	<25	110	<10	<10	<10	<10	<10	<10
Carbon disulfide	NE	800	NE	NE	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroethane	NE	NE	NE	15	<5	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroform	NE	80	1.41	NE	<5	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethane	NE	1,600	7.68	NE	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,2-Dichloroethene (total)	NE	72	NE	72	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2
cis-1,2-Dichloroethene	NE	16	NE	80	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
trans-1,2-Dichloroethene	NE	160	NE	NE	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
Isopropylbenzene (Cumene)	NE	800	NE	NE	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
p-Isopropyltoluene	NE	NE	NE	NE	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
Toluene	1,000	1,000	640	NE	<5	<2	<2	<2	<2	<2	<2	<2	<2	<2
Trichloroethene	5	4	0.54	NE	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
Vinyl chloride	0.2	24	0.029	0.2	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Xylenes (total)	1,000	1,600	NE	NE	<3	<2	<2	<2	<2	<2	<2	<2	<2	<2

Notes:
Samples analyzed at ALS Laboratory Group in Everett, Washington and
ESC Lab Sciences in Mount Juliet, Tennessee.
Only detected analytes are listed.
Cleanup Levels adapted from WDOE Cleanup Level and Risk Calculation website.
VOCs = Volatile organic compounds; RCRA = Resource Conservation and Recovery Act.
NA = not analyzed; NE = no established Cleanup Level.
µg/L is equivalent to parts per billion (ppb); mg/L is equivalent to parts per million (ppm).
Bold/Shaded Value = Concentration exceeds WDOE Method A or and/or the site specific cleanup levels established in the Revised RI/FS, dated October Method B Groundwater Cleanup Level.

Prepared by: JM
Checked by: EW

Table 1
Groundwater Analytical Results

Sample Identification	WDOE Groundwater Cleanup Levels			Site-specific Cleanup Level for Groundwater (Revised RI/FS October 2011)	MW-6									
Date Sampled	Method A	Method B (Noncancer)	Method B (Cancer)		12/20/2012	10/14/2014	9/16/2015	12/15/2015	3/31/2016	6/21/2016	2/22/2017	5/23/2017	8/24/2017	12/6/2017
VOCs, USEPA Method 8260	µg/L				µg/L									
Acetone	NE	7,200	NE	NE	<50	<25	<25	<25	<25	<25	<25	<25	<25	<25
2-Butanone (Methyl ethyl ketone)	NE	4,800	NE	NE	<50	<25	<25	71	<10	<10	<10	<10	<10	<10
Carbon disulfide	NE	800	NE	NE	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroethane	NE	NE	NE	15	<5	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroform	NE	80	1.41	NE	<5	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethane	NE	1,600	7.68	NE	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,2-Dichloroethene (total)	NE	72	NE	72	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2
cis-1,2-Dichloroethene	NE	16	NE	80	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
trans-1,2-Dichloroethene	NE	160	NE	NE	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
Isopropylbenzene (Cumene)	NE	800	NE	NE	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
p-Isopropyltoluene	NE	NE	NE	NE	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
Toluene	1,000	1,000	640	NE	<5	<2	<2	<2	<2	<2	<2	<2	<2	<2
Trichloroethene	5	4	0.54	NE	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2
Vinyl chloride	0.2	24	0.029	0.2	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Xylenes (total)	1,000	1,600	NE	NE	<3	<2	<2	<2	<2	<2	<2	<2	<2	<2

Notes:
Samples analyzed at ALS Laboratory Group in Everett, Washington and
ESC Lab Sciences in Mount Juliet, Tennessee.
Only detected analytes are listed.
Cleanup Levels adapted from WDOE Cleanup Level and Risk Calculation website.
VOCs = Volatile organic compounds; RCRA = Resource Conservation and Recovery Act.
NA = not analyzed; NE = no established Cleanup Level.
µg/L is equivalent to parts per billion (ppb); mg/L is equivalent to parts per million (ppm).
Bold/Shaded Value = Concentration exceeds WDOE Method A or and/or the site specific cleanup levels established in the Revised RI/FS, dated October Method B Groundwater Cleanup Level.

Prepared by: JM
Checked by: EW

Table 1
Groundwater Analytical Results

Sample Identification	WDOE Groundwater Cleanup Levels			Site-specific Cleanup Level for Groundwater (Revised RI/FS October 2011)	MW-7								
Date Sampled	Method A	Method B (Noncancer)	Method B (Cancer)		10/17/2014	9/16/2015	12/15/2015	3/30/2016	6/21/2016	2/23/2017	5/24/2017	8/24/2017	12/5/2017
VOCs, USEPA Method 8260	**µg/L**				**µg/L**								
Acetone	NE	7,200	NE	NE	<25	<25	<25	<25	<25	<25	<25	<25	<25
2-Butanone (Methyl ethyl ketone)	NE	4,800	NE	NE	<25	<25	39	<10	<10	<10	<10	<10	<10
Carbon disulfide	NE	800	NE	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroethane	NE	NE	NE	15	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroform	NE	80	1.41	NE	**2.7**	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethane	NE	1,600	7.68	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,2-Dichloroethene (total)	NE	72	NE	72	<2	<2	<2	<2	<2	<2	<2	<2	<2
cis-1,2-Dichloroethene	NE	16	NE	80	<2	<2	<2	<2	<2	<2	<2	<2	<2
trans-1,2-Dichloroethene	NE	160	NE	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
Isopropylbenzene (Cumene)	NE	800	NE	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
p-Isopropyltoluene	NE	NE	NE	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
Toluene	1,000	1,000	640	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
Trichloroethene	5	4	0.54	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
Vinyl chloride	0.2	24	0.029	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Xylenes (total)	1,000	1,600	NE	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2

Notes:
Samples analyzed at ALS Laboratory Group in Everett, Washington and
ESC Lab Sciences in Mount Juliet, Tennessee.
Only detected analytes are listed.
Cleanup Levels adapted from WDOE Cleanup Level and Risk Calculation website.
VOCs = Volatile organic compounds; RCRA = Resource Conservation and Recovery Act.
NA = not analyzed; NE = no established Cleanup Level.
µg/L is equivalent to parts per billion (ppb); mg/L is equivalent to parts per million (ppm).
Bold/Shaded Value = Concentration exceeds WDOE Method A or and/or the site specific cleanup levels established in the Revised RI/FS, dated October Method B Groundwater Cleanup Level.

Table 1
Groundwater Analytical Results

Sample Identification	WDOE Groundwater Cleanup Levels			Site-specific Cleanup Level for Groundwater (Revised RI/FS October 2011)	MW-8								
Date Sampled	Method A	Method B (Noncancer)	Method B (Cancer)		10/17/2014	9/16/2015	12/15/2015	3/30/2016	6/21/2016	2/22/2017	5/24/2017	8/24/2017	12/6/2017
VOCs, USEPA Method 8260	**µg/L**				**µg/L**								
Acetone	NE	7,200	NE	NE	<25	<25	<25	<25	<25	<25	<25	<25	<25
2-Butanone (Methyl ethyl ketone)	NE	4,800	NE	NE	<25	<25	92	10	<10	<10	<10	<10	<10
Carbon disulfide	NE	800	NE	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroethane	NE	NE	NE	15	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroform	NE	80	1.41	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethane	NE	1,600	7.68	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,2-Dichloroethene (total)	NE	72	NE	72	<2	<2	<2	<2	<2	<2	<2	<2	<2
cis-1,2-Dichloroethene	NE	16	NE	80	<2	<2	<2	<2	<2	<2	<2	<2	<2
trans-1,2-Dichloroethene	NE	160	NE	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
Isopropylbenzene (Cumene)	NE	800	NE	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
p-Isopropyltoluene	NE	NE	NE	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
Toluene	1,000	1,000	640	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
Trichloroethene	5	4	0.54	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
Vinyl chloride	0.2	24	0.029	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Xylenes (total)	1,000	1,600	NE	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2

Notes:
Samples analyzed at ALS Laboratory Group in Everett, Washington and
ESC Lab Sciences in Mount Juliet, Tennessee.
Only detected analytes are listed.
Cleanup Levels adapted from WDOE Cleanup Level and Risk Calculation website.
VOCs = Volatile organic compounds; RCRA = Resource Conservation and Recovery Act.
NA = not analyzed; NE = no established Cleanup Level.
µg/L is equivalent to parts per billion (ppb); mg/L is equivalent to parts per million (ppm).
Bold/Shaded Value = Concentration exceeds WDOE Method A or and/or the site specific cleanup levels established in the Revised RI/FS, dated October Method B Groundwater Cleanup Level.

Prepared by: JM
Checked by: EW

Table 1
Groundwater Analytical Results

Sample Identification	WDOE Groundwater Cleanup Levels			Site-specific Cleanup Level for Groundwater (Revised RI/FS October 2011)	MW-9								
Date Sampled	Method A	Method B (Noncancer)	Method B (Cancer)		10/17/2014	9/15/2015	12/14/2015	3/30/2016	6/21/2016	2/22/2017	5/23/2017	8/24/2017	12/7/2017
VOCs, USEPA Method 8260	**µg/L**				**µg/L**								
Acetone	NE	7,200	NE	NE	<25	<25	<25	<25	<25	<25	<25	<25	<25
2-Butanone (Methyl ethyl ketone)	NE	4,800	NE	NE	<25	<25	120	<10	<10	<10	<10	<10	<10
Carbon disulfide	NE	800	NE	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroethane	NE	NE	NE	15	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroform	NE	80	1.41	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethane	NE	1,600	7.68	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,2-Dichloroethene (total)	NE	72	NE	72	<2	<2	<2	<2	<2	<2	<2	<2	<2
cis-1,2-Dichloroethene	NE	16	NE	80	<2	<2	<2	<2	<2	<2	<2	<2	<2
trans-1,2-Dichloroethene	NE	160	NE	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
Isopropylbenzene (Cumene)	NE	800	NE	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
p-Isopropyltoluene	NE	NE	NE	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
Toluene	1,000	1,000	640	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
Trichloroethene	5	4	0.54	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2
Vinyl chloride	0.2	24	0.029	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Xylenes (total)	1,000	1,600	NE	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2

Notes:
Samples analyzed at ALS Laboratory Group in Everett, Washington and
ESC Lab Sciences in Mount Juliet, Tennessee.
Only detected analytes are listed.
Cleanup Levels adapted from WDOE Cleanup Level and Risk Calculation website.
VOCs = Volatile organic compounds; RCRA = Resource Conservation and Recovery Act.
NA = not analyzed; NE = no established Cleanup Level.
µg/L is equivalent to parts per billion (ppb); mg/L is equivalent to parts per million (ppm).
Bold/Shaded Value = Concentration exceeds WDOE Method A or and/or the site specific cleanup levels established in the Revised RI/FS, dated October Method B Groundwater Cleanup Level.

Prepared by: JM
Checked by: EW

Table 2
Secondary Geochemical Indicators in Groundwater

Sample Identification	WDOE Groundwater Cleanup Levels			Site-specific Cleanup Level for Groundwater (Revised RI/FS October 2011)	MW-1										
Date Sampled	Method A	Method B (Noncancer)	Method B (Cancer)		2/12/2010	9/3/2010	12/20/2012	10/14/2014	9/16/2015	12/15/2015	6/21/2016	2/22/2017	5/23/2017	8/24/2017	12/6/2017
Dissolved RCRA Metals, USEPA Method 200.8	**µg/l**				**µg/l**										
Manganese	NE	2,240	NE	NE	NA	NA	NA	**4,200**	NA	**8,600**	NA	NA	**8,400**	NA	**9,300**
Other Parameters (Method in parentheses)	**mg/l**				**mg/l**										
Alkalinity (USEPA SM2320B)	NE	NE	NE	NE	NA	NA	NA	180	NA	280	260	NA	270	NA	320
Iron (Colorimetric, Hach test kit)	NE	NE	NE	NE	NA	NA	NA	3.1	NA	1.3	NA	NA	2.7	NA	NA
Methane (USEPA RSK 175)	NE	NE	NE	NE	NA	NA	NA	2.6	NA	3.5	6.7	NA	2.8	NA	0.56
Nitrate (USEPA 300.0)	NE	25,600	NE	NE	NA	NA	NA	<0.15	NA	2.8	<0.15	NA	0.47	NA	0.27
Sulfate (USEPA 300.0)	NE	NE	NE	NE	NA	NA	NA	<0.26	NA	<0.26	<0.26	NA	<0.26	NA	<0.26

Notes:
Samples analyzed at ALS Laboratory Group in Everett, Washington and
ESC Lab Sciences in Mount Juliet, Tennessee.
Only detected analytes are listed.
Cleanup Levels adapted from WDOE Cleanup Level and Risk Calculation website.
and Groundwater Cleanup Levels adapted from Table 720-1 of Chapter 173-340-900
The Site-Specific Cleanup Levels for groundwater are as established in the Revised RI/FS, dated October 2011
VOCs = Volatile organic compounds; RCRA = Resource Conservation and Recovery Act.
NA = not analyzed; NE = no established Cleanup Level.
µg/l is equivalent to parts per billion (ppb); mg/l is equivalent to parts per million (ppm).
Bold/Shaded Value

Prepared by: JM
Checked by: EW

Table 2
Secondary Geochemical Indicators in Groundwater

Sample Identification	WDOE Groundwater Cleanup Levels			Site-specific Cleanup Level for Groundwater (Revised RI/FS October 2011)	MW-2										
Date Sampled	Method A	Method B (Noncancer)	Method B (Cancer)		2/12/2010	9/3/2010	12/20/2012	10/14/2014	9/17/2015	12/16/2015	6/21/2016	2/22/2017	5/23/2017	8/24/2017	12/6/2017
Dissolved RCRA Metals, USEPA Method 200.8	**µg/l**				**µg/l**										
Manganese	NE	2,240	NE	NE	NA	NA	NA	**3,700**	NA	**4,200**	**4,200**	NA	**4,400**	NA	**3,500**
Other Parameters (Method in parentheses)	**mg/l**				**mg/l**										
Alkalinity (USEPA SM2320B)	NE	NE	NE	NE	NA	NA	NA	150	NA	180	160	NA	140	NA	130
Iron (Colorimetric, Hach test kit)	NE	NE	NE	NE	NA	NA	NA	1.2	NA	1	NE	NA	1.1	NA	NA
Methane (USEPA RSK 175)	NE	NE	NE	NE	NA	NA	NA	6.8	NA	15	13.0	NA	3.6	NA	1.0
Nitrate (USEPA 300.0)	NE	25,600	NE	NE	NA	NA	NA	0.2	NA	<0.15	<0.15	NA	<0.15	NA	<0.15
Sulfate (USEPA 300.0)	NE	NE	NE	NE	NA	NA	NA	0.86	NA	<0.26	<0.26	NA	<0.26	NA	1.9

Notes:
Samples analyzed at ALS Laboratory Group in Everett, Washington and
ESC Lab Sciences in Mount Juliet, Tennessee.
Only detected analytes are listed.
Cleanup Levels adapted from WDOE Cleanup Level and Risk Calculation website.
and Groundwater Cleanup Levels adapted from Table 720-1 of Chapter 173-340-900
The Site-Specific Cleanup Levels for groundwater are as established in the Revised RI/FS, dated October 2011
VOCs = Volatile organic compounds; RCRA = Resource Conservation and Recovery Act.
NA = not analyzed; NE = no established Cleanup Level.
µg/l is equivalent to parts per billion (ppb); mg/l is equivalent to parts per million (ppm).
Bold/Shaded Value

Prepared by: JM
Checked by: EW

Table 2
Secondary Geochemical Indicators in Groundwater

Sample Identification	WDOE Groundwater Cleanup Levels			Site-specific Cleanup Level for Groundwater (Revised RI/FS October 2011)	MW-3										
Date Sampled	Method A	Method B (Noncancer)	Method B (Cancer)		2/12/2010	9/3/2010	12/20/2012	10/14/2014	9/17/2015	12/16/2015	6/21/2016	2/22/2017	5/23/2017	8/24/2017	12/6/2017
Dissolved RCRA Metals, USEPA Method 200.8	**µg/l**				**µg/l**										
Manganese	NE	2,240	NE	NE	NA	NA	NA	**17,000**	NA	**17,000**	**20,000**	NA	**17,000**	NA	**13,000**
Other Parameters (Method in parentheses)	**mg/l**				**mg/l**										
Alkalinity (USEPA SM2320B)	NE	NE	NE	NE	NA	NA	NA	820	NA	850	770	NA	760	NA	790
Iron (Colorimetric, Hach test kit)	NE	NE	NE	NE	NA	NA	NA	3.0	NA	1.6	NA	NA	1.9	NA	NA
Methane (USEPA RSK 175)	NE	NE	NE	NE	NA	NA	NA	3.5	NA	8.7	10.0	NA	3.0	NA	1.7
Nitrate (USEPA 300.0)	NE	25,600	NE	NE	NA	NA	NA	<0.15	NA	<0.15	<0.15	NA	<0.15	NA	<0.15
Sulfate (USEPA 300.0)	NE	NE	NE	NE	NA	NA	NA	<0.26	NA	<0.26	<0.26	NA	<0.26	NA	<0.26

Notes:
Samples analyzed at ALS Laboratory Group in Everett, Washington and
ESC Lab Sciences in Mount Juliet, Tennessee.
Only detected analytes are listed.
Cleanup Levels adapted from WDOE Cleanup Level and Risk Calculation website.
and Groundwater Cleanup Levels adapted from Table 720-1 of Chapter 173-340-900
The Site-Specific Cleanup Levels for groundwater are as established in the Revised RI/FS, dated October 2011
VOCs = Volatile organic compounds; RCRA = Resource Conservation and Recovery Act.
NA = not analyzed; NE = no established Cleanup Level.
µg/l is equivalent to parts per billion (ppb); mg/l is equivalent to parts per million (ppm).
Bold/Shaded Value

Prepared by: JM
Checked by: EW

Table 2
Secondary Geochemical Indicators in Groundwater

Sample Identification	WDOE Groundwater Cleanup Levels			Site-specific Cleanup Level for Groundwater (Revised RI/FS October 2011)	MW-4										
Date Sampled	**Method A**	**Method B (Noncancer)**	**Method B (Cancer)**		**2/12/2010**	**9/3/2010**	**12/20/2012**	**10/14/2014**	**9/16/2015**	**12/15/2015**	**6/21/2016**	**2/22/2017**	**5/23/2017**	**8/24/2017**	**12/5/2017**
Dissolved RCRA Metals, USEPA Method 200.8	**µg/l**				**µg/l**										
Manganese	NE	2,240	NE	NE	NA	NA	NA	1,000	NA	1,400	1,100	NA	1,300	NA	1,300
Other Parameters (Method in parentheses)	**mg/l**				**mg/l**										
Alkalinity (USEPA SM2320B)	NE	NE	NE	NE	NA	NA	NA	600	NA	540	520	NA	500	NA	490
Iron (Colorimetric, Hach test kit)	NE	NE	NE	NE	NA	NA	NA	2.7	NA	1.2	NA	NA	1.6	NA	NA
Methane (USEPA RSK 175)	NE	NE	NE	NE	NA	NA	NA	0.70	NA	2.6	0.3	NA	0.16	NA	0.74
Nitrate (USEPA 300.0)	NE	25,600	NE	NE	NA	NA	NA	0.19	NA	<0.15	<0.15	NA	0.18	NA	0.20
Sulfate (USEPA 300.0)	NE	NE	NE	NE	NA	NA	NA	<0.26	NA	<0.26	<0.26	NA	0.42	NA	<0.26

Notes:
Samples analyzed at ALS Laboratory Group in Everett, Washington and
ESC Lab Sciences in Mount Juliet, Tennessee.
Only detected analytes are listed.
Cleanup Levels adapted from WDOE Cleanup Level and Risk Calculation website.
and Groundwater Cleanup Levels adapted from Table 720-1 of Chapter 173-340-900
The Site-Specific Cleanup Levels for groundwater are as established in the Revised RI/FS, dated October 2011
VOCs = Volatile organic compounds; RCRA = Resource Conservation and Recovery Act.
NA = not analyzed; NE = no established Cleanup Level.
µg/l is equivalent to parts per billion (ppb); mg/l is equivalent to parts per million (ppm).
Bold/Shaded Value

Table 2
Secondary Geochemical Indicators in Groundwater

Sample Identification	WDOE Groundwater Cleanup Levels			Site-specific Cleanup Level for Groundwater (Revised RI/FS October 2011)	MW-5								
Date Sampled	**Method A**	**Method B (Noncancer)**	**Method B (Cancer)**		**12/20/2012**	**10/14/2014**	**9/16/2015**	**12/15/2015**	**6/21/2016**	**2/22/2017**	**5/23/2017**	**8/24/2017**	**12/5/2017**
Dissolved RCRA Metals, USEPA Method 200.8	**µg/l**				**µg/l**								
Manganese	NE	2,240	NE	NE	NA	**15,000**	NA	**18,000**	**16,000**	NA	**17,000**	NA	**15,000**
Other Parameters (Method in parentheses)	**mg/l**				**mg/l**								
Alkalinity (USEPA SM2320B)	NE	NE	NE	NE	NA	680	NA	780	600	NA	710	NA	650
Iron (Colorimetric, Hach test kit)	NE	NE	NE	NE	NA	1.8	NA	1.6	NA	NA	1.5	NA	NA
Methane (USEPA RSK 175)	NE	NE	NE	NE	NA	1.2	NA	3.9	10.0	NA	2.1	NA	0.81
Nitrate (USEPA 300.0)	NE	25,600	NE	NE	NA	<0.15	NA	<0.15	<0.15	NA	0.17	NA	0.29
Sulfate (USEPA 300.0)	NE	NE	NE	NE	NA	0.98	NA	<0.26	<0.26	NA	0.27	NA	<0.26

Notes:
Samples analyzed at ALS Laboratory Group in Everett, Washington and
ESC Lab Sciences in Mount Juliet, Tennessee.
Only detected analytes are listed.
Cleanup Levels adapted from WDOE Cleanup Level and Risk Calculation website.
and Groundwater Cleanup Levels adapted from Table 720-1 of Chapter 173-340-900
The Site-Specific Cleanup Levels for groundwater are as established in the Revised RI/FS, dated October 2011
VOCs = Volatile organic compounds; RCRA = Resource Conservation and Recovery Act.
NA = not analyzed; NE = no established Cleanup Level.
µg/l is equivalent to parts per billion (ppb); mg/l is equivalent to parts per million (ppm).
Bold/Shaded Value

Table 2
Secondary Geochemical Indicators in Groundwater

Sample Identification	WDOE Groundwater Cleanup Levels			Site-specific Cleanup Level for Groundwater (Revised RI/FS October 2011)	MW-6								
Date Sampled	**Method A**	**Method B (Noncancer)**	**Method B (Cancer)**		**12/20/2012**	**10/14/2014**	**9/16/2015**	**12/15/2015**	**6/21/2016**	**2/22/2017**	**5/23/2017**	**8/24/2017**	**12/6/2017**
Dissolved RCRA Metals, USEPA Method 200.8	**µg/l**				**µg/l**								
Manganese	NE	2,240	NE	NE	NA	**3,500**	NA	**5,200**	**4,500**	NA	**4,100**	NA	**4,400**
Other Parameters (Method in parentheses)	**mg/l**				**mg/l**								
Alkalinity (USEPA SM2320B)	NE	NE	NE	NE	NA	250	NA	290	260	NA	250	NA	230
Iron (Colorimetric, Hach test kit)	NE	NE	NE	NE	NA	2.1	NA	1	NA	NA	1.2	NA	NA
Methane (USEPA RSK 175)	NE	NE	NE	NE	NA	0.89	NA	2.8	1.8	NA	0.3	NA	0.23
Nitrate (USEPA 300.0)	NE	25,600	NE	NE	NA	<0.15	NA	<0.15	<0.15	NA	<0.15	NA	0.4
Sulfate (USEPA 300.0)	NE	NE	NE	NE	NA	2.3	NA	1.5	1.7	NA	1.4	NA	9.2

Notes:
Samples analyzed at ALS Laboratory Group in Everett, Washington and
ESC Lab Sciences in Mount Juliet, Tennessee.
Only detected analytes are listed.
Cleanup Levels adapted from WDOE Cleanup Level and Risk Calculation website.
and Groundwater Cleanup Levels adapted from Table 720-1 of Chapter 173-340-900
The Site-Specific Cleanup Levels for groundwater are as established in the Revised RI/FS, dated October 2011
VOCs = Volatile organic compounds; RCRA = Resource Conservation and Recovery Act.
NA = not analyzed; NE = no established Cleanup Level.
µg/l is equivalent to parts per billion (ppb); mg/l is equivalent to parts per million (ppm).
Bold/Shaded Value

Table 2
Secondary Geochemical Indicators in Groundwater

Sample Identification	WDOE Groundwater Cleanup Levels			Site-specific Cleanup Level for Groundwater (Revised RI/FS October 2011)	MW-7							
Date Sampled	**Method A**	**Method B (Noncancer)**	**Method B (Cancer)**		**10/17/2014**	**9/16/2015**	**12/15/2015**	**6/21/2016**	**2/23/2017**	**5/24/2017**	**8/24/2017**	**12/5/2017**
Dissolved RCRA Metals, USEPA Method 200.8	**µg/l**				**µg/l**							
Manganese	NE	2,240	NE	NE	520	NA	290	**1,300**	NA	390	NA	300
Other Parameters (Method in parentheses)	**mg/l**				**mg/l**							
Alkalinity (USEPA SM2320B)	NE	NE	NE	NE	460	NA	580	720	NA	570	NA	590
Iron (Colorimetric, Hach test kit)	NE	NE	NE	NE	0.6	NA	0.6	NA	NA	0	NA	NA
Methane (USEPA RSK 175)	NE	NE	NE	NE	0.050	NA	0.26	0.3	NA	0.34	NA	0.66
Nitrate (USEPA 300.0)	NE	25,600	NE	NE	<0.15	NA	<0.15	<0.15	NA	<0.15	NA	0.27
Sulfate (USEPA 300.0)	NE	NE	NE	NE	10	NA	5.2	0.8	NA	4.4	NA	3.1

Notes:
Samples analyzed at ALS Laboratory Group in Everett, Washington and
ESC Lab Sciences in Mount Juliet, Tennessee.
Only detected analytes are listed.
Cleanup Levels adapted from WDOE Cleanup Level and Risk Calculation website.
and Groundwater Cleanup Levels adapted from Table 720-1 of Chapter 173-340-900
The Site-Specific Cleanup Levels for groundwater are as established in the Revised RI/FS, dated October 2011
VOCs = Volatile organic compounds; RCRA = Resource Conservation and Recovery Act.
NA = not analyzed; NE = no established Cleanup Level.
µg/l is equivalent to parts per billion (ppb); mg/l is equivalent to parts per million (ppm).
Bold/Shaded Value

Table 2
Secondary Geochemical Indicators in Groundwater

Sample Identification	WDOE Groundwater Cleanup Levels			Site-specific Cleanup Level for Groundwater (Revised RI/FS October 2011)	MW-8							
Date Sampled	**Method A**	**Method B (Noncancer)**	**Method B (Cancer)**		**10/17/2014**	**9/16/2015**	**12/15/2015**	**6/21/2016**	**2/22/2017**	**5/24/2017**	**8/24/2017**	**12/6/2017**
Dissolved RCRA Metals, USEPA Method 200.8	**µg/l**				**µg/l**							
Manganese	NE	2,240	NE	NE	**4,500**	NA	**9,900**	**7,900**	NA	**9,100**	NA	**12,000**
Other Parameters (Method in parentheses)	**mg/l**				**mg/l**							
Alkalinity (USEPA SM2320B)	NE	NE	NE	NE	200	NA	300	180	NA	220	NA	370
Iron (Colorimetric, Hach test kit)	NE	NE	NE	NE	0.9	NA	1.2	NA	NA	2	NA	NA
Methane (USEPA RSK 175)	NE	NE	NE	NE	0.56	NA	3.3	2.1	NA	1.4	NA	1.6
Nitrate (USEPA 300.0)	NE	25,600	NE	NE	0.42	NA	<0.15	<0.15	NA	0.2	NA	<0.15
Sulfate (USEPA 300.0)	NE	NE	NE	NE	4.9	NA	<0.26	0.31	NA	0.29	NA	<0.26

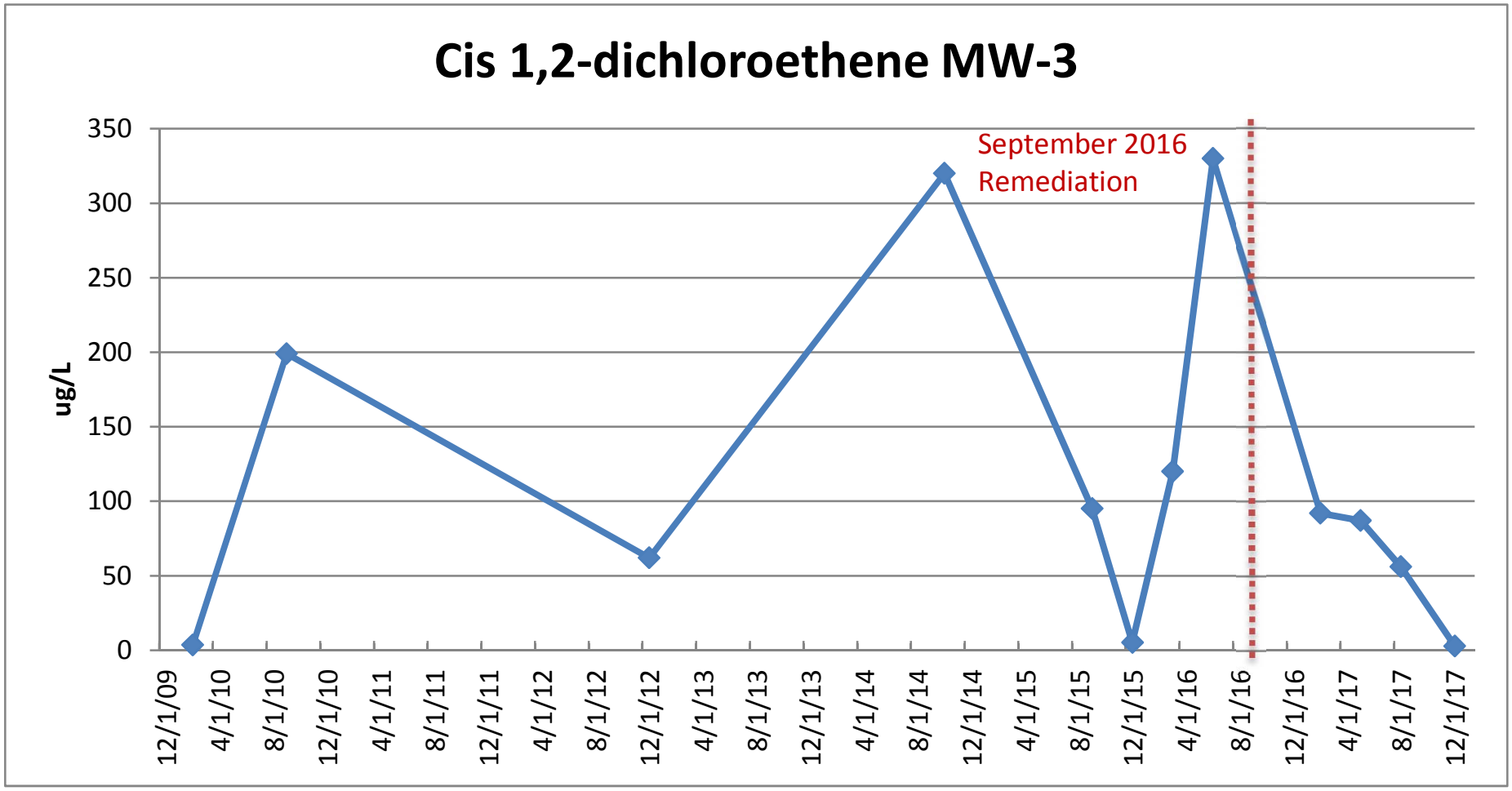
Notes:
Samples analyzed at ALS Laboratory Group in Everett, Washington and
ESC Lab Sciences in Mount Juliet, Tennessee.
Only detected analytes are listed.
Cleanup Levels adapted from WDOE Cleanup Level and Risk Calculation website.
and Groundwater Cleanup Levels adapted from Table 720-1 of Chapter 173-340-900
The Site-Specific Cleanup Levels for groundwater are as established in the Revised RI/FS, dated October 2011
VOCs = Volatile organic compounds; RCRA = Resource Conservation and Recovery Act.
NA = not analyzed; NE = no established Cleanup Level.
µg/l is equivalent to parts per billion (ppb); mg/l is equivalent to parts per million (ppm).
Bold/Shaded Value

Table 2
Secondary Geochemical Indicators in Groundwater

Sample Identification	WDOE Groundwater Cleanup Levels			Site-specific Cleanup Level for Groundwater (Revised RI/FS October 2011)	MW-9							
Date Sampled	**Method A**	**Method B (Noncancer)**	**Method B (Cancer)**		**10/17/2014**	**9/15/2015**	**12/14/2015**	**6/21/2016**	**2/22/2017**	**5/23/2017**	**8/24/2017**	**12/7/2017**
Dissolved RCRA Metals, USEPA Method 200.8	**µg/l**				**µg/l**							
Manganese	NE	2,240	NE	NE	400	NA	460	520	NA	730	NA	320
Other Parameters (Method in parentheses)	**mg/l**				**mg/l**							
Alkalinity (USEPA SM2320B)	NE	NE	NE	NE	280	NA	290	270	NA	280	NA	230
Iron (Colorimetric, Hach test kit)	NE	NE	NE	NE	0.8	NA	0	NA	NA	0	NA	NA
Methane (USEPA RSK 175)	NE	NE	NE	NE	<0.01	NA	0.017	<0.01	NA	<0.01	NA	<0.010
Nitrate (USEPA 300.0)	NE	25,600	NE	NE	1.2	NA	1.1	6.3	NA	0.37	NA	4.8
Sulfate (USEPA 300.0)	NE	NE	NE	NE	32	NA	8.8	9.1	NA	3.6	NA	10.0

Notes:
Samples analyzed at ALS Laboratory Group in Everett, Washington and
ESC Lab Sciences in Mount Juliet, Tennessee.
Only detected analytes are listed.
Cleanup Levels adapted from WDOE Cleanup Level and Risk Calculation website.
and Groundwater Cleanup Levels adapted from Table 720-1 of Chapter 173-340-900
The Site-Specific Cleanup Levels for groundwater are as established in the Revised RI/FS, dated October 2011
VOCs = Volatile organic compounds; RCRA = Resource Conservation and Recovery Act.
NA = not analyzed; NE = no established Cleanup Level.
µg/l is equivalent to parts per billion (ppb); mg/l is equivalent to parts per million (ppm).
Bold/Shaded Value

A – Line Charts


Cis 1,2-dichloroethene MW-3
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300
250
200
150
100
50
0
September 2016
Remediation
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4/1/10
8/1/10
12/1/10
4/1/11
8/1/11
12/1/11
4/1/12
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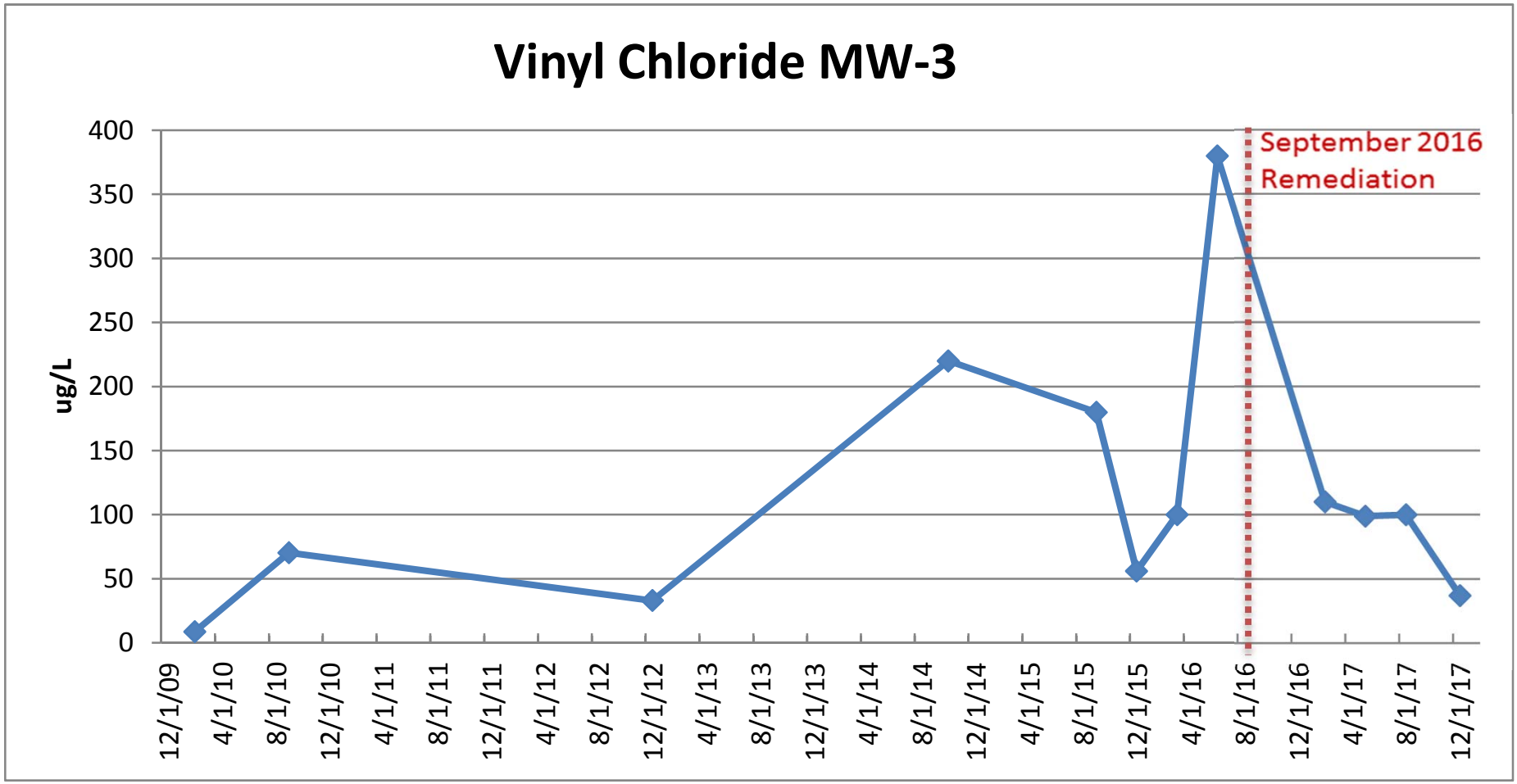
12/1/17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ug/L
400
350
300
250
200
150
100
50
0
September 2016
Remediation
12/1/09
4/1/10
8/1/10
12/1/10
4/1/11
8/1/11
12/1/11
4/1/12
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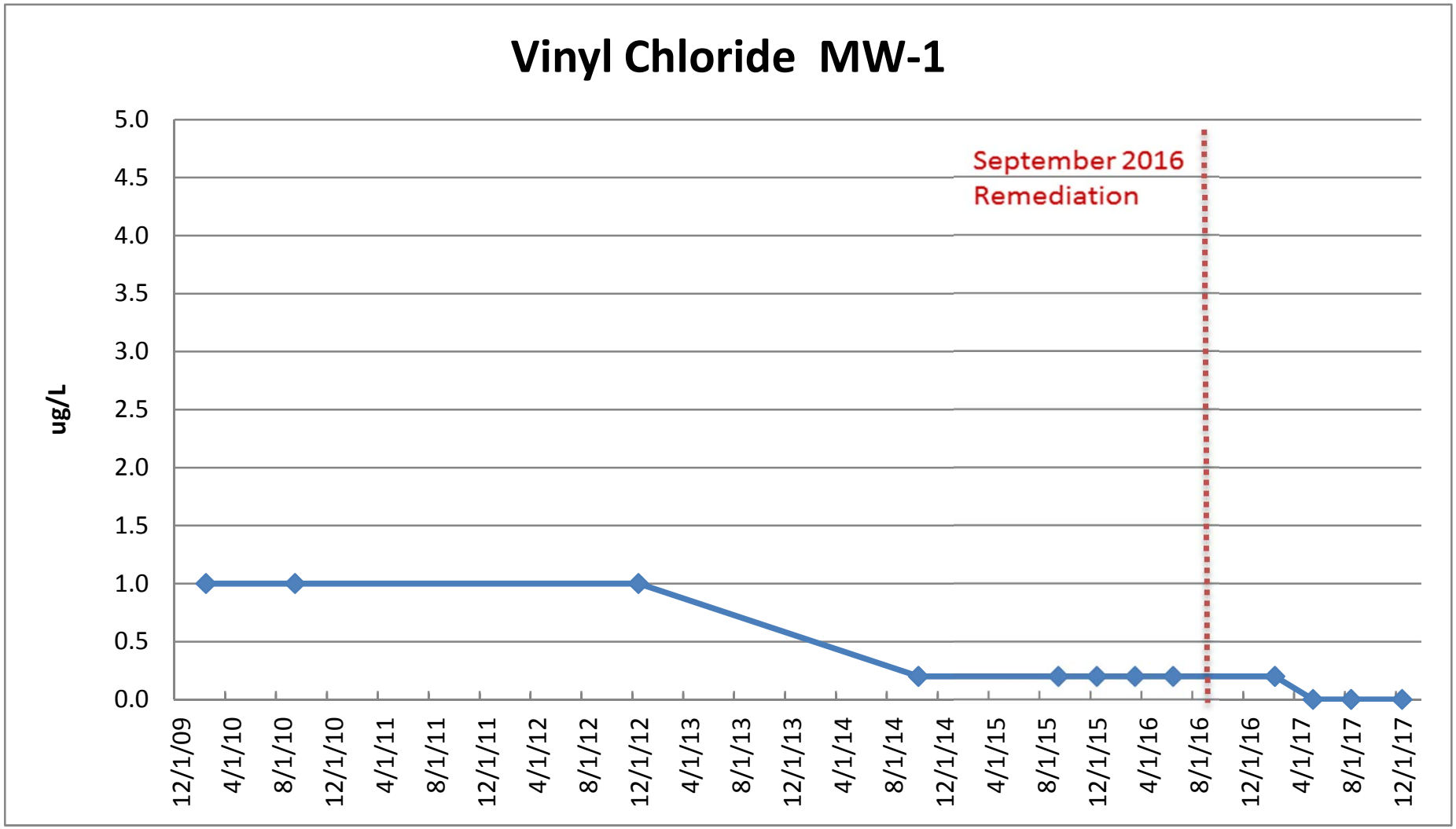
12/1/17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4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
September 2016
Remediation
12/1/09
4/1/10
8/1/10
12/1/10
4/1/11
8/1/11
12/1/11
4/1/12
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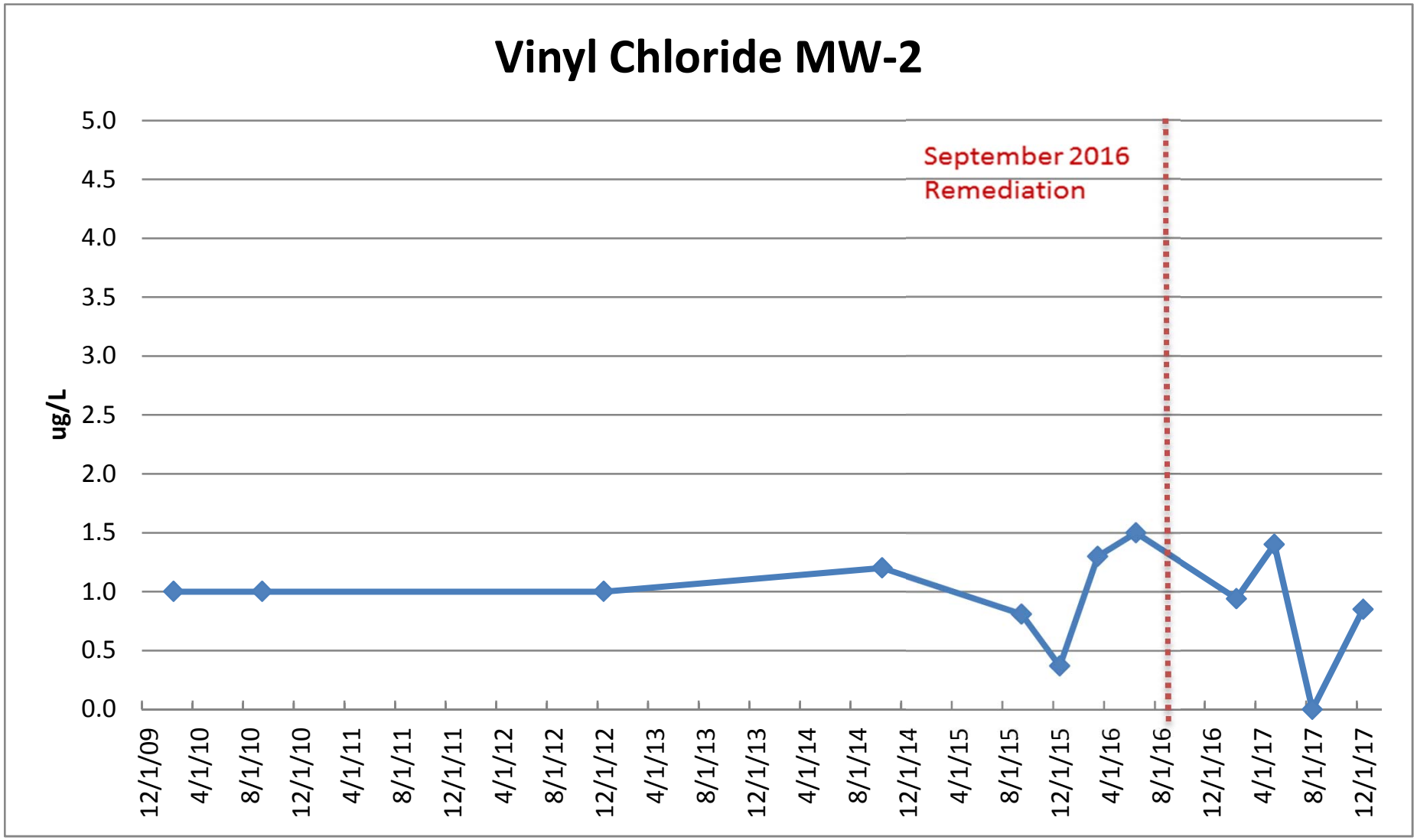
12/1/17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4.5
4.0
3.5
3.0
2.5
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1.5
1.0
0.5
0.0
September 2016
Remediation
12/1/09
4/1/10
8/1/10
12/1/10
4/1/11
8/1/11
12/1/11
4/1/12
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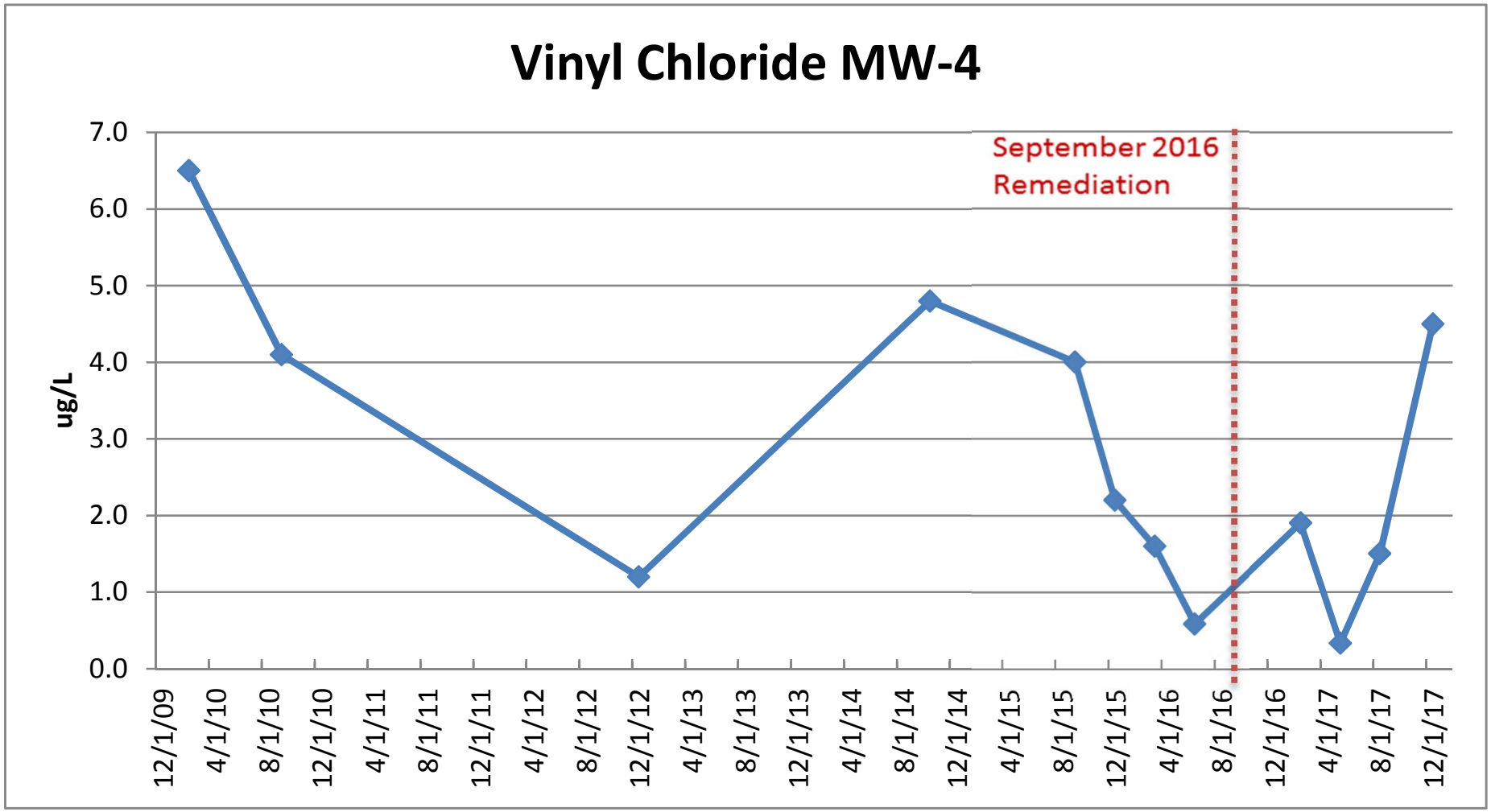
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ug/L
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
September 2016
Remediation
12/1/09
4/1/10
8/1/10
12/1/10
4/1/11
8/1/11
12/1/11
4/1/12
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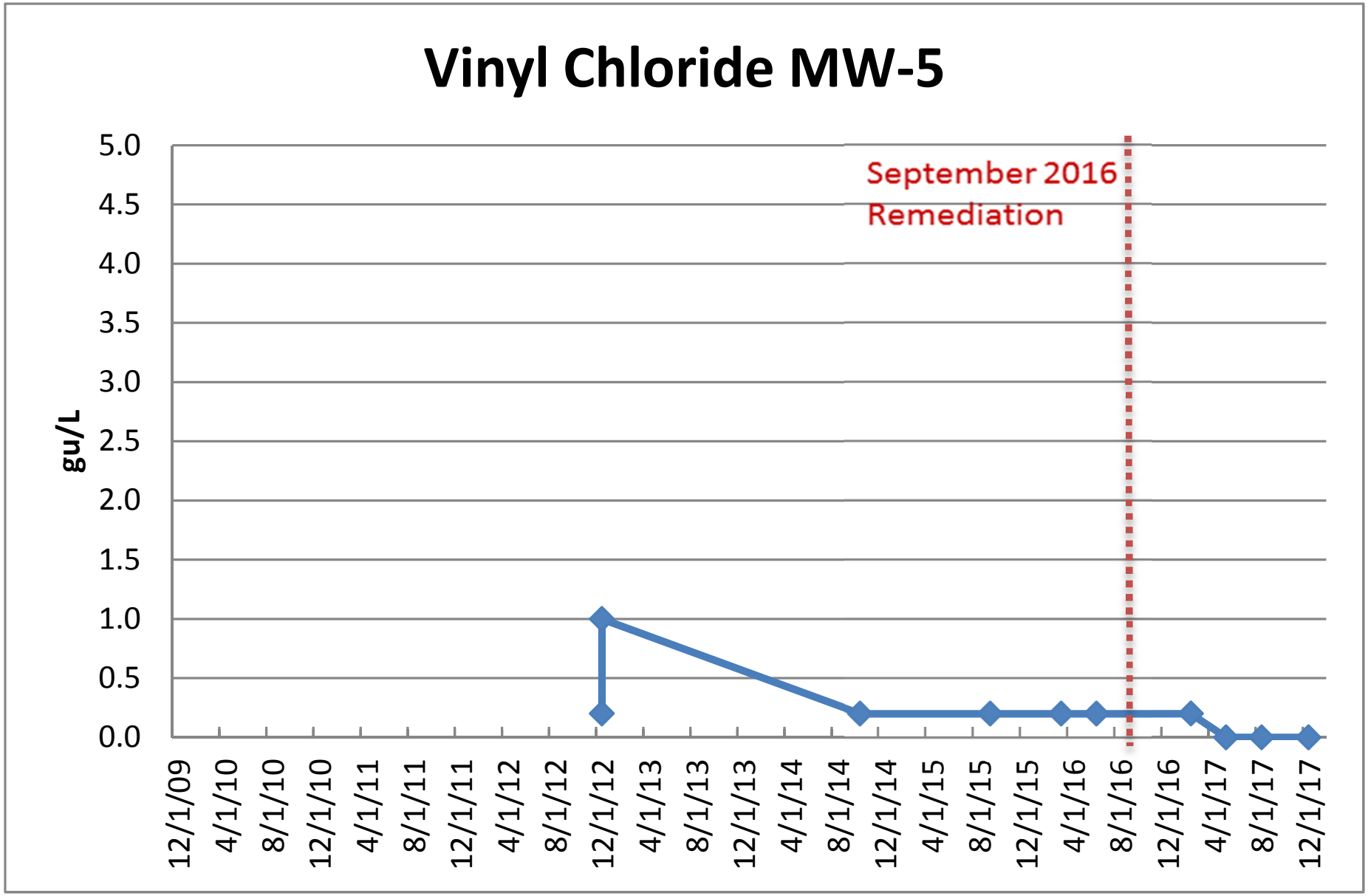
12/1/17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4.5
4.0
3.5
3.0
2.5
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0.5
0.0
September 2016
Remediation
12/1/09
4/1/10
8/1/10
12/1/10
4/1/11
8/1/11
12/1/11
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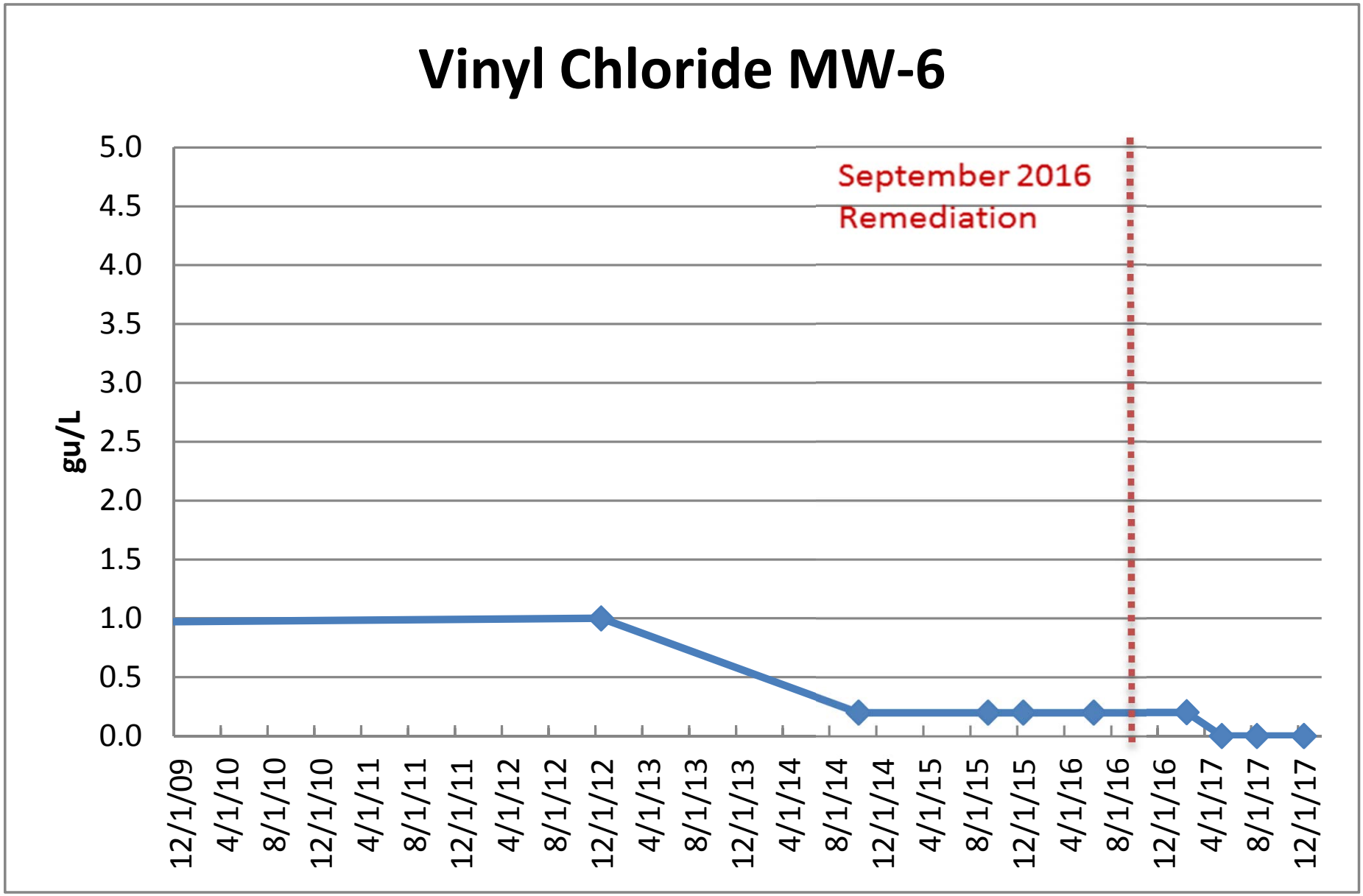
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gu/L
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3.0
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1.0
0.5
0.0
September 2016
Remediation
12/1/09
4/1/10
8/1/10
12/1/10
4/1/11
8/1/11
12/1/11
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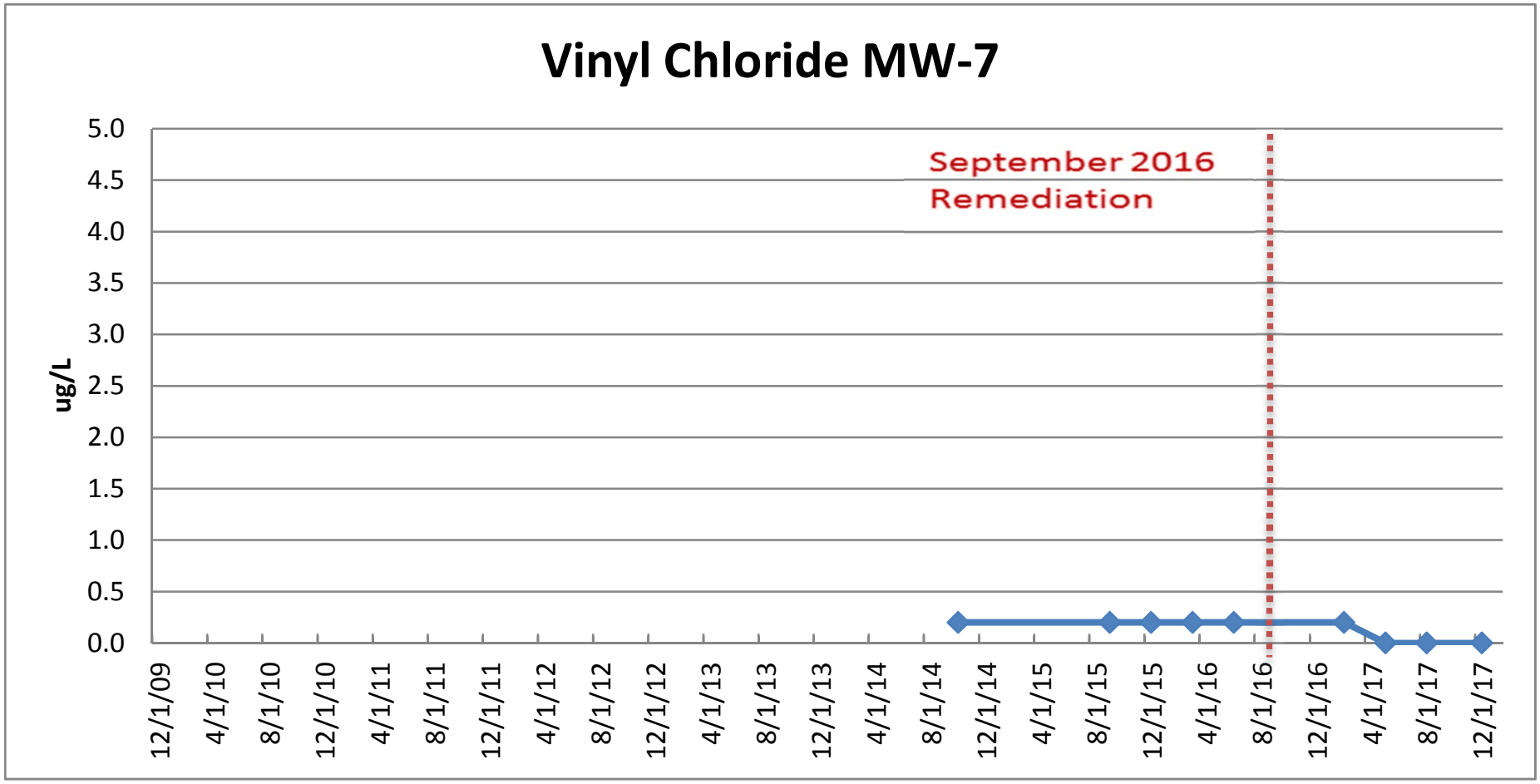
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4.5
4.0
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0.5
0.0
September 2016
Remediation
12/1/09
4/1/10
8/1/10
12/1/10
4/1/11
8/1/11
12/1/11
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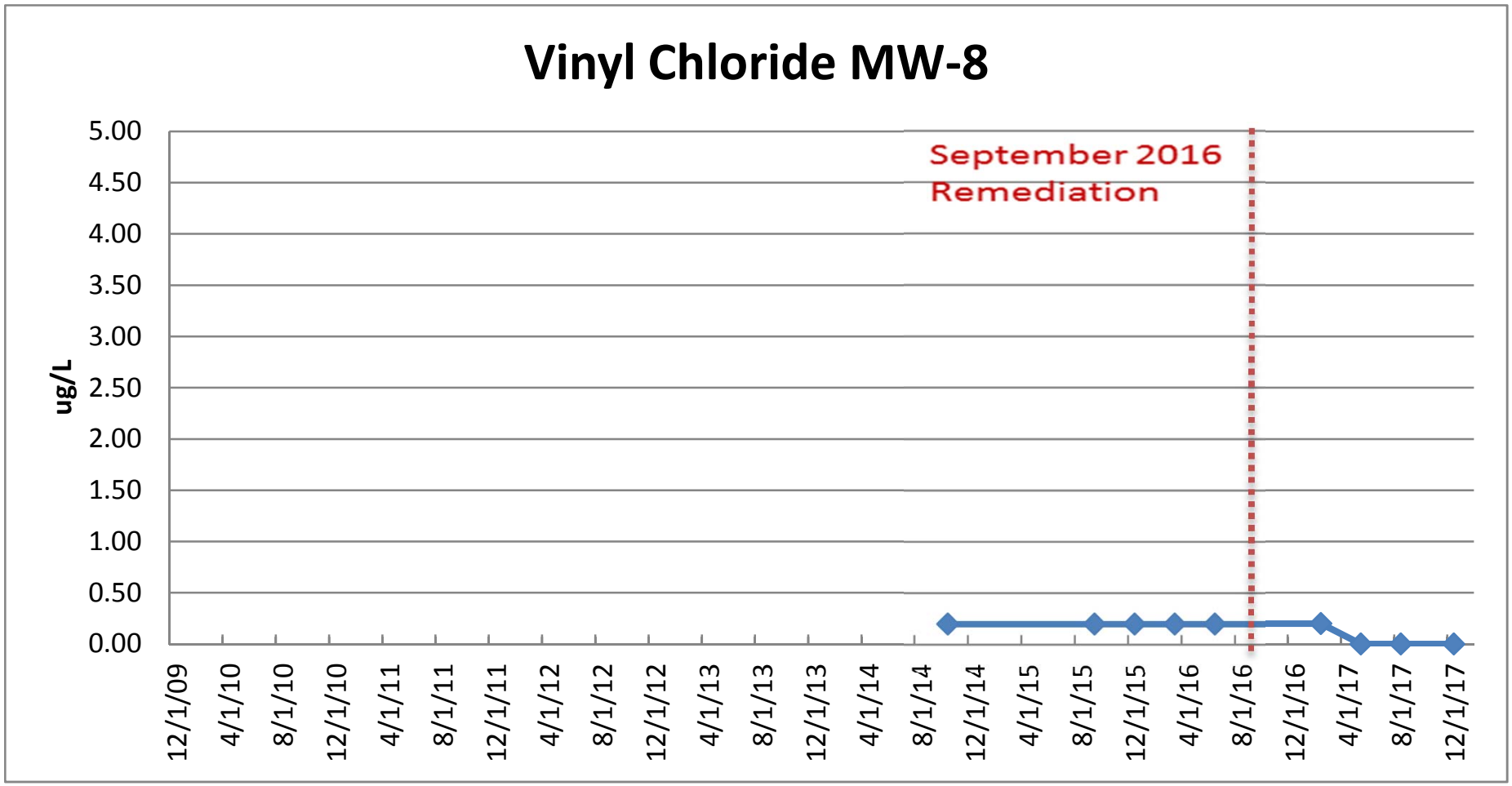
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4.50
4.00
3.50
3.00
2.50
2.00
1.50
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0.50
0.00
September 2016
Remediation
12/1/09
4/1/10
8/1/10
12/1/10
4/1/11
8/1/11
12/1/11
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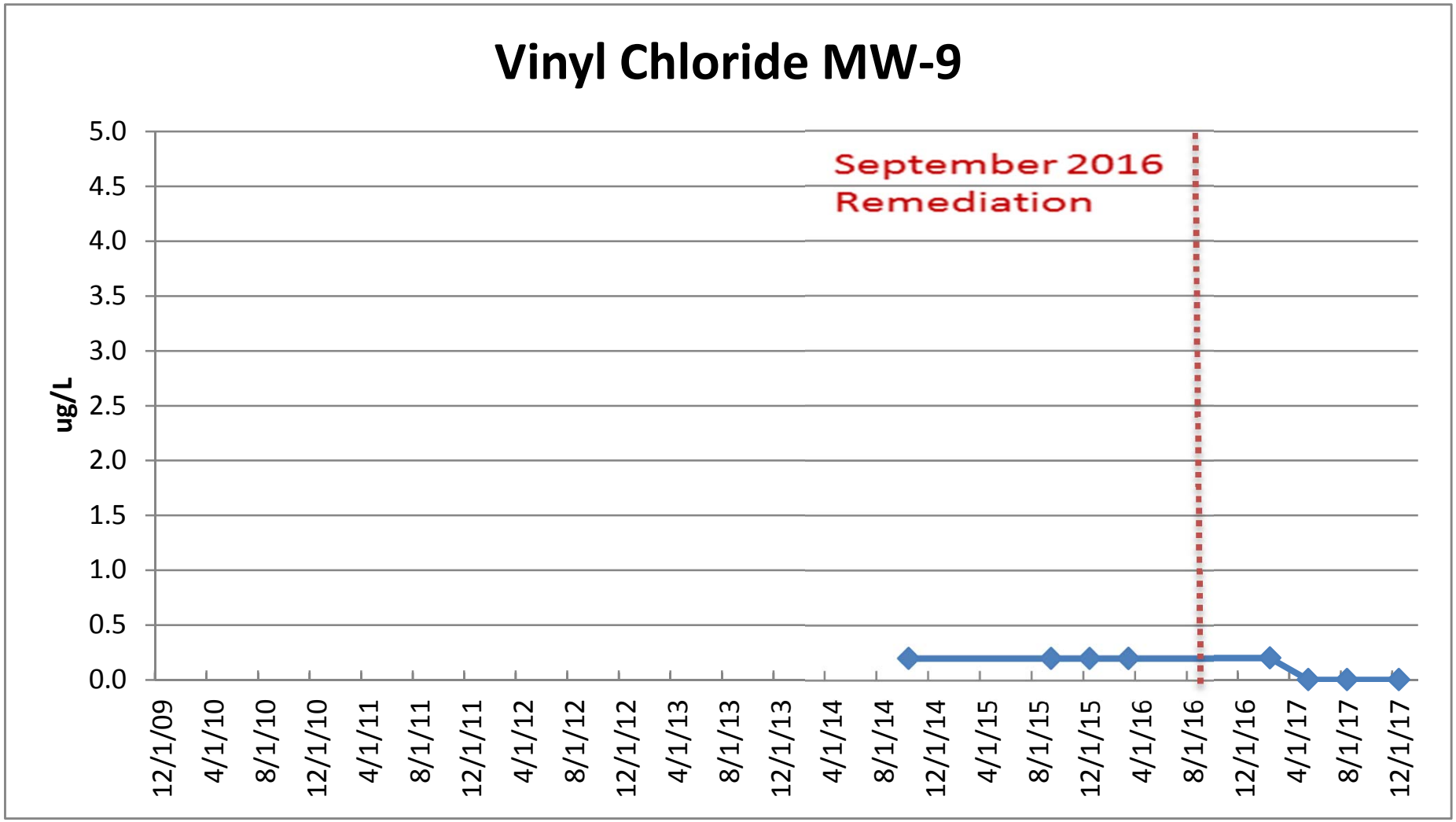
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0.0
September 2016
Remediation
12/1/09
4/1/10
8/1/10
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4/1/17
8/1/17
12/1/17

B - Laboratory Report of Analysis

December 20, 2017

Mr. Larry Bertsch
RPS GaiaTech
135 South LaSalle Street, Suite 3500
Chicago, IL 60603

Dear Mr. Bertsch,

On December 7th, 10 samples were received by our laboratory and assigned our laboratory project number EV17120050. The project was identified as your Tyee 4Q 2017. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rick Bagan
Laboratory Director

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE:	12/20/2017
		ALS JOB#:	EV17120050
		ALS SAMPLE#:	EV17120050-01
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/6/2017 4:47:00 PM
CLIENT SAMPLE ID	MW-1	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dichlorodifluoromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Vinyl Chloride	EPA-8260	U	0.20	1	UG/L	12/12/2017	DLC
Bromomethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Carbon Tetrachloride	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trichlorofluoromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Carbon Disulfide	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Acetone	EPA-8260	U	25	1	UG/L	12/12/2017	DLC
1,1-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Methylene Chloride	EPA-8260	U	5.0	1	UG/L	12/12/2017	DLC
Acrylonitrile	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Methyl T-Butyl Ether	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trans-1,2-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Butanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Cis-1,2-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2,2-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromochloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloroform	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,1-Trichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Dibromomethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromodichloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trans-1,3-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
4-Methyl-2-Pentanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Toluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Cis-1,3-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,2-Trichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Hexanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
1,3-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Tetrachloroethylene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE: ALS JOB#: ALS SAMPLE#:	12/20/2017 EV17120050 EV17120050-01
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/6/2017 4:47:00 PM
CLIENT SAMPLE ID	MW-1	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dibromochloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dibromoethane	EPA-8260	U	0.010	1	UG/L	12/12/2017	DLC
Chlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,1,2-Tetrachloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Ethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
m,p-Xylene	EPA-8260	U	4.0	1	UG/L	12/12/2017	DLC
Styrene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
o-Xylene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromoform	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Isopropylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,2,2-Tetrachloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,3-Trichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
N-Propyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Chlorotoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,3,5-Trimethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
4-Chlorotoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
T-Butyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,4-Trimethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
S-Butyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
P-Isopropyltoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,3-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,4-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
N-Butylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dibromo 3-Chloropropane	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
1,2,4-Trichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Hexachlorobutadiene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Naphthalene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,3-Trichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Methane	RSK-175	**0.56**	0.010	1	MG/L	12/11/2017	CCN
Nitrate	EPA-300.0	**0.27**	0.15	1	MG/L	12/07/2017	GAP
Sulfate	EPA-300.0	U	0.26	1	MG/L	12/07/2017	GAP
Manganese	EPA-200.8	**9300**	20	10	UG/L	12/08/2017	RAL
Alkalinity	SM2320B	**320**	2.0	1	MG/L	12/14/2017	OSE

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE:	12/20/2017
		ALS JOB#:	EV17120050
		ALS SAMPLE#:	EV17120050-01
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/6/2017 4:47:00 PM
CLIENT SAMPLE ID	MW-1	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
1,2-Dichloroethane-d4	EPA-8260	**112**	12/12/2017	DLC
Toluene-d8	EPA-8260	**99.1**	12/12/2017	DLC
4-Bromofluorobenzene	EPA-8260	**87.9**	12/12/2017	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE: ALS JOB#: ALS SAMPLE#:	12/20/2017 EV17120050 EV17120050-02
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/6/2017 3:36:00 PM
CLIENT SAMPLE ID	MW-2	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dichlorodifluoromethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Chloromethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Vinyl Chloride	EPA-8260	**0.85**	0.20	1	UG/L	12/14/2017	DLC
Bromomethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Chloroethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Carbon Tetrachloride	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Trichlorofluoromethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Carbon Disulfide	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Acetone	EPA-8260	U	25	1	UG/L	12/14/2017	DLC
1,1-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Methylene Chloride	EPA-8260	U	5.0	1	UG/L	12/14/2017	DLC
Acrylonitrile	EPA-8260	U	10	1	UG/L	12/14/2017	DLC
Methyl T-Butyl Ether	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Trans-1,2-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,1-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
2-Butanone	EPA-8260	U	10	1	UG/L	12/14/2017	DLC
Cis-1,2-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
2,2-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Bromochloromethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Chloroform	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,1,1-Trichloroethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,1-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,2-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Benzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Trichloroethene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,2-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Dibromomethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Bromodichloromethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Trans-1,3-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
4-Methyl-2-Pentanone	EPA-8260	U	10	1	UG/L	12/14/2017	DLC
Toluene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Cis-1,3-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,1,2-Trichloroethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
2-Hexanone	EPA-8260	U	10	1	UG/L	12/14/2017	DLC
1,3-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Tetrachloroethylene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE: ALS JOB#: ALS SAMPLE#:	12/20/2017 EV17120050 EV17120050-02
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/6/2017 3:36:00 PM
CLIENT SAMPLE ID	MW-2	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dibromochloromethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,2-Dibromoethane	EPA-8260	U	0.010	1	UG/L	12/14/2017	DLC
Chlorobenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,1,1,2-Tetrachloroethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Ethylbenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
m,p-Xylene	EPA-8260	U	4.0	1	UG/L	12/14/2017	DLC
Styrene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
o-Xylene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Bromoform	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Isopropylbenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,1,2,2-Tetrachloroethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,2,3-Trichloropropane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Bromobenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
N-Propyl Benzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
2-Chlorotoluene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,3,5-Trimethylbenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
4-Chlorotoluene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
T-Butyl Benzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,2,4-Trimethylbenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
S-Butyl Benzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
P-Isopropyltoluene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,3-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,4-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
N-Butylbenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,2-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,2-Dibromo 3-Chloropropane	EPA-8260	U	10	1	UG/L	12/14/2017	DLC
1,2,4-Trichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Hexachlorobutadiene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Naphthalene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,2,3-Trichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Methane	RSK-175	**1.0**	0.010	1	MG/L	12/11/2017	CCN
Nitrate	EPA-300.0	U	0.15	1	MG/L	12/07/2017	GAP
Sulfate	EPA-300.0	**1.9**	0.26	1	MG/L	12/07/2017	GAP
Manganese	EPA-200.8	**3500**	10	5	UG/L	12/08/2017	RAL
Alkalinity	SM2320B	**130**	2.0	1	MG/L	12/14/2017	OSE

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE:	12/20/2017
		ALS JOB#:	EV17120050
		ALS SAMPLE#:	EV17120050-02
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/6/2017 3:36:00 PM
CLIENT SAMPLE ID	MW-2	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
1,2-Dichloroethane-d4	EPA-8260	**99.2**	12/14/2017	DLC
Toluene-d8	EPA-8260	**98.4**	12/14/2017	DLC
4-Bromofluorobenzene	EPA-8260	**94.6**	12/14/2017	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE:	12/20/2017
		ALS JOB#:	EV17120050
		ALS SAMPLE#:	EV17120050-03
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/6/2017 12:28:00 PM
CLIENT SAMPLE ID	MW-3	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dichlorodifluoromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Vinyl Chloride	EPA-8260	**37**	2.0	10	UG/L	12/14/2017	DLC
Bromomethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Carbon Tetrachloride	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trichlorofluoromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Carbon Disulfide	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Acetone	EPA-8260	U	25	1	UG/L	12/12/2017	DLC
1,1-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Methylene Chloride	EPA-8260	U	5.0	1	UG/L	12/12/2017	DLC
Acrylonitrile	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Methyl T-Butyl Ether	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trans-1,2-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Butanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Cis-1,2-Dichloroethene	EPA-8260	**2.9**	2.0	1	UG/L	12/12/2017	DLC
2,2-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromochloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloroform	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,1-Trichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Dibromomethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromodichloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trans-1,3-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
4-Methyl-2-Pentanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Toluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Cis-1,3-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,2-Trichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Hexanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
1,3-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Tetrachloroethylene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE: ALS JOB#: ALS SAMPLE#:	12/20/2017 EV17120050 EV17120050-03
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/6/2017 12:28:00 PM
CLIENT SAMPLE ID	MW-3	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dibromochloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dibromoethane	EPA-8260	U	0.010	1	UG/L	12/12/2017	DLC
Chlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,1,2-Tetrachloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Ethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
m,p-Xylene	EPA-8260	U	4.0	1	UG/L	12/12/2017	DLC
Styrene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
o-Xylene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromoform	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Isopropylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,2,2-Tetrachloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,3-Trichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
N-Propyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Chlorotoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,3,5-Trimethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
4-Chlorotoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
T-Butyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,4-Trimethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
S-Butyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
P-Isopropyltoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,3-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,4-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
N-Butylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dibromo 3-Chloropropane	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
1,2,4-Trichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Hexachlorobutadiene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Naphthalene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,3-Trichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Methane	RSK-175	**1.7**	0.010	1	MG/L	12/11/2017	CCN
Nitrate	EPA-300.0	U	0.15	1	MG/L	12/07/2017	GAP
Sulfate	EPA-300.0	U	0.26	1	MG/L	12/07/2017	GAP
Manganese	EPA-200.8	**13000**	40	20	UG/L	12/08/2017	RAL
Alkalinity	SM2320B	**790**	2.0	1	MG/L	12/14/2017	OSE

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE:	12/20/2017
		ALS JOB#:	EV17120050
		ALS SAMPLE#:	EV17120050-03
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/6/2017 12:28:00 PM
CLIENT SAMPLE ID	MW-3	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
1,2-Dichloroethane-d4	EPA-8260	**116**	12/12/2017	DLC
1,2-Dichloroethane-d4 10X Dilution	EPA-8260	**104**	12/14/2017	DLC
Toluene-d8	EPA-8260	**96.6**	12/12/2017	DLC
Toluene-d8 10X Dilution	EPA-8260	**97.0**	12/14/2017	DLC
4-Bromofluorobenzene	EPA-8260	**87.9**	12/12/2017	DLC
4-Bromofluorobenzene 10X Dilution	EPA-8260	**94.8**	12/14/2017	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE: ALS JOB#: ALS SAMPLE#:	12/20/2017 EV17120050 EV17120050-04
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/5/2017 12:40:00 PM
CLIENT SAMPLE ID	MW-4	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dichlorodifluoromethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Chloromethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Vinyl Chloride	EPA-8260	**4.5**	0.20	1	UG/L	12/14/2017	DLC
Bromomethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Chloroethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Carbon Tetrachloride	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Trichlorofluoromethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Carbon Disulfide	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Acetone	EPA-8260	U	25	1	UG/L	12/14/2017	DLC
1,1-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Methylene Chloride	EPA-8260	U	5.0	1	UG/L	12/14/2017	DLC
Acrylonitrile	EPA-8260	U	10	1	UG/L	12/14/2017	DLC
Methyl T-Butyl Ether	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Trans-1,2-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,1-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
2-Butanone	EPA-8260	U	10	1	UG/L	12/14/2017	DLC
Cis-1,2-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
2,2-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Bromochloromethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Chloroform	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,1,1-Trichloroethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,1-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,2-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Benzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Trichloroethene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,2-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Dibromomethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Bromodichloromethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Trans-1,3-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
4-Methyl-2-Pentanone	EPA-8260	U	10	1	UG/L	12/14/2017	DLC
Toluene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Cis-1,3-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,1,2-Trichloroethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
2-Hexanone	EPA-8260	U	10	1	UG/L	12/14/2017	DLC
1,3-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Tetrachloroethylene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE: ALS JOB#: ALS SAMPLE#:	12/20/2017 EV17120050 EV17120050-04
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/5/2017 12:40:00 PM
CLIENT SAMPLE ID	MW-4	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dibromochloromethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,2-Dibromoethane	EPA-8260	U	0.010	1	UG/L	12/14/2017	DLC
Chlorobenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,1,1,2-Tetrachloroethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Ethylbenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
m,p-Xylene	EPA-8260	U	4.0	1	UG/L	12/14/2017	DLC
Styrene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
o-Xylene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Bromoform	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Isopropylbenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,1,2,2-Tetrachloroethane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,2,3-Trichloropropane	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Bromobenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
N-Propyl Benzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
2-Chlorotoluene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,3,5-Trimethylbenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
4-Chlorotoluene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
T-Butyl Benzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,2,4-Trimethylbenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
S-Butyl Benzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
P-Isopropyltoluene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,3-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,4-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
N-Butylbenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,2-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,2-Dibromo 3-Chloropropane	EPA-8260	U	10	1	UG/L	12/14/2017	DLC
1,2,4-Trichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Hexachlorobutadiene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Naphthalene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
1,2,3-Trichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/14/2017	DLC
Methane	RSK-175	**0.74**	0.010	1	MG/L	12/11/2017	CCN
Nitrate	EPA-300.0	**0.20**	0.15	1	MG/L	12/07/2017	GAP
Sulfate	EPA-300.0	U	0.26	1	MG/L	12/07/2017	GAP
Manganese	EPA-200.8	**1300**	2.0	1	UG/L	12/08/2017	RAL
Alkalinity	SM2320B	**490**	2.0	1	MG/L	12/14/2017	OSE

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE: ALS JOB#: ALS SAMPLE#:	12/20/2017 EV17120050 EV17120050-04
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/5/2017 12:40:00 PM
CLIENT SAMPLE ID	MW-4	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
1,2-Dichloroethane-d4	EPA-8260	**102**	12/14/2017	DLC
Toluene-d8	EPA-8260	**98.9**	12/14/2017	DLC
4-Bromofluorobenzene	EPA-8260	**94.9**	12/14/2017	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE: ALS JOB#: ALS SAMPLE#:	12/20/2017 EV17120050 EV17120050-05
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/5/2017 2:45:00 PM
CLIENT SAMPLE ID	MW-5	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dichlorodifluoromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Vinyl Chloride	EPA-8260	U	0.20	1	UG/L	12/12/2017	DLC
Bromomethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Carbon Tetrachloride	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trichlorofluoromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Carbon Disulfide	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Acetone	EPA-8260	U	25	1	UG/L	12/12/2017	DLC
1,1-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Methylene Chloride	EPA-8260	U	5.0	1	UG/L	12/12/2017	DLC
Acrylonitrile	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Methyl T-Butyl Ether	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trans-1,2-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Butanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Cis-1,2-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2,2-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromochloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloroform	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,1-Trichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Dibromomethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromodichloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trans-1,3-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
4-Methyl-2-Pentanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Toluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Cis-1,3-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,2-Trichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Hexanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
1,3-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Tetrachloroethylene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE: ALS JOB#: ALS SAMPLE#:	12/20/2017 EV17120050 EV17120050-05
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/5/2017 2:45:00 PM
CLIENT SAMPLE ID	MW-5	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dibromochloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dibromoethane	EPA-8260	U	0.010	1	UG/L	12/12/2017	DLC
Chlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,1,2-Tetrachloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Ethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
m,p-Xylene	EPA-8260	U	4.0	1	UG/L	12/12/2017	DLC
Styrene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
o-Xylene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromoform	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Isopropylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,2,2-Tetrachloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,3-Trichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
N-Propyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Chlorotoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,3,5-Trimethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
4-Chlorotoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
T-Butyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,4-Trimethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
S-Butyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
P-Isopropyltoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,3-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,4-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
N-Butylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dibromo 3-Chloropropane	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
1,2,4-Trichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Hexachlorobutadiene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Naphthalene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,3-Trichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Methane	RSK-175	**0.81**	0.010	1	MG/L	12/11/2017	CCN
Nitrate	EPA-300.0	**0.29**	0.15	1	MG/L	12/07/2017	GAP
Sulfate	EPA-300.0	U	0.26	1	MG/L	12/07/2017	GAP
Manganese	EPA-200.8	**15000**	40	20	UG/L	12/08/2017	RAL
Alkalinity	SM2320B	**650**	2.0	1	MG/L	12/14/2017	OSE

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE:	12/20/2017
		ALS JOB#:	EV17120050
		ALS SAMPLE#:	EV17120050-05
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/5/2017 2:45:00 PM
CLIENT SAMPLE ID	MW-5	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
1,2-Dichloroethane-d4	EPA-8260	**118**	12/12/2017	DLC
Toluene-d8	EPA-8260	**102**	12/12/2017	DLC
4-Bromofluorobenzene	EPA-8260	**87.6**	12/12/2017	DLC

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE: ALS JOB#: ALS SAMPLE#:	12/20/2017 EV17120050 EV17120050-06
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/6/2017 1:52:00 PM
CLIENT SAMPLE ID	MW-6	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dichlorodifluoromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Vinyl Chloride	EPA-8260	U	0.20	1	UG/L	12/12/2017	DLC
Bromomethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Carbon Tetrachloride	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trichlorofluoromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Carbon Disulfide	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Acetone	EPA-8260	U	25	1	UG/L	12/12/2017	DLC
1,1-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Methylene Chloride	EPA-8260	U	5.0	1	UG/L	12/12/2017	DLC
Acrylonitrile	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Methyl T-Butyl Ether	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trans-1,2-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Butanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Cis-1,2-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2,2-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromochloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloroform	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,1-Trichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Dibromomethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromodichloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trans-1,3-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
4-Methyl-2-Pentanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Toluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Cis-1,3-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,2-Trichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Hexanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
1,3-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Tetrachloroethylene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE: ALS JOB#: ALS SAMPLE#:	12/20/2017 EV17120050 EV17120050-06
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/6/2017 1:52:00 PM
CLIENT SAMPLE ID	MW-6	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dibromochloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dibromoethane	EPA-8260	U	0.010	1	UG/L	12/12/2017	DLC
Chlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,1,2-Tetrachloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Ethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
m,p-Xylene	EPA-8260	U	4.0	1	UG/L	12/12/2017	DLC
Styrene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
o-Xylene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromoform	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Isopropylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,2,2-Tetrachloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,3-Trichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
N-Propyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Chlorotoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,3,5-Trimethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
4-Chlorotoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
T-Butyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,4-Trimethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
S-Butyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
P-Isopropyltoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,3-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,4-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
N-Butylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dibromo 3-Chloropropane	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
1,2,4-Trichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Hexachlorobutadiene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Naphthalene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,3-Trichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Methane	RSK-175	**0.23**	0.010	1	MG/L	12/11/2017	CCN
Nitrate	EPA-300.0	**0.40**	0.15	1	MG/L	12/07/2017	GAP
Sulfate	EPA-300.0	**9.2**	0.26	1	MG/L	12/07/2017	GAP
Manganese	EPA-200.8	**4400**	10	5	UG/L	12/08/2017	RAL
Alkalinity	SM2320B	**230**	2.0	1	MG/L	12/14/2017	OSE

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE: ALS JOB#: ALS SAMPLE#:	12/20/2017 EV17120050 EV17120050-06
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/6/2017 1:52:00 PM
CLIENT SAMPLE ID	MW-6	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
1,2-Dichloroethane-d4	EPA-8260	**117**	12/12/2017	DLC
Toluene-d8	EPA-8260	**99.3**	12/12/2017	DLC
4-Bromofluorobenzene	EPA-8260	**89.7**	12/12/2017	DLC

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE: ALS JOB#: ALS SAMPLE#:	12/20/2017 EV17120050 EV17120050-07
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/5/2017 4:30:00 PM
CLIENT SAMPLE ID	MW-7	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dichlorodifluoromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Vinyl Chloride	EPA-8260	U	0.20	1	UG/L	12/12/2017	DLC
Bromomethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Carbon Tetrachloride	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trichlorofluoromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Carbon Disulfide	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Acetone	EPA-8260	U	25	1	UG/L	12/12/2017	DLC
1,1-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Methylene Chloride	EPA-8260	U	5.0	1	UG/L	12/12/2017	DLC
Acrylonitrile	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Methyl T-Butyl Ether	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trans-1,2-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Butanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Cis-1,2-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2,2-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromochloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloroform	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,1-Trichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Dibromomethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromodichloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trans-1,3-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
4-Methyl-2-Pentanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Toluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Cis-1,3-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,2-Trichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Hexanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
1,3-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Tetrachloroethylene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE: ALS JOB#: ALS SAMPLE#:	12/20/2017 EV17120050 EV17120050-07
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/5/2017 4:30:00 PM
CLIENT SAMPLE ID	MW-7	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dibromochloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dibromoethane	EPA-8260	U	0.010	1	UG/L	12/12/2017	DLC
Chlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,1,2-Tetrachloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Ethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
m,p-Xylene	EPA-8260	U	4.0	1	UG/L	12/12/2017	DLC
Styrene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
o-Xylene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromoform	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Isopropylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,2,2-Tetrachloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,3-Trichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
N-Propyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Chlorotoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,3,5-Trimethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
4-Chlorotoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
T-Butyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,4-Trimethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
S-Butyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
P-Isopropyltoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,3-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,4-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
N-Butylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dibromo 3-Chloropropane	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
1,2,4-Trichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Hexachlorobutadiene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Naphthalene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,3-Trichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Methane	RSK-175	**0.66**	0.010	1	MG/L	12/11/2017	CCN
Nitrate	EPA-300.0	**0.27**	0.15	1	MG/L	12/07/2017	GAP
Sulfate	EPA-300.0	**3.1**	0.26	1	MG/L	12/07/2017	GAP
Manganese	EPA-200.8	**300**	2.0	1	UG/L	12/08/2017	RAL
Alkalinity	SM2320B	**590**	2.0	1	MG/L	12/14/2017	OSE

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE:	12/20/2017
		ALS JOB#:	EV17120050
		ALS SAMPLE#:	EV17120050-07
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/5/2017 4:30:00 PM
CLIENT SAMPLE ID	MW-7	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
1,2-Dichloroethane-d4	EPA-8260	**118**	12/12/2017	DLC
Toluene-d8	EPA-8260	**97.9**	12/12/2017	DLC
4-Bromofluorobenzene	EPA-8260	**86.6**	12/12/2017	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE: ALS JOB#: ALS SAMPLE#:	12/20/2017 EV17120050 EV17120050-08
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/6/2017 9:29:00 AM
CLIENT SAMPLE ID	MW-8	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dichlorodifluoromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Vinyl Chloride	EPA-8260	U	0.20	1	UG/L	12/12/2017	DLC
Bromomethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Carbon Tetrachloride	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trichlorofluoromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Carbon Disulfide	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Acetone	EPA-8260	U	25	1	UG/L	12/12/2017	DLC
1,1-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Methylene Chloride	EPA-8260	U	5.0	1	UG/L	12/12/2017	DLC
Acrylonitrile	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Methyl T-Butyl Ether	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trans-1,2-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Butanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Cis-1,2-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2,2-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromochloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloroform	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,1-Trichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Dibromomethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromodichloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trans-1,3-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
4-Methyl-2-Pentanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Toluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Cis-1,3-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,2-Trichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Hexanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
1,3-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Tetrachloroethylene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE: ALS JOB#: ALS SAMPLE#:	12/20/2017 EV17120050 EV17120050-08
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/6/2017 9:29:00 AM
CLIENT SAMPLE ID	MW-8	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dibromochloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dibromoethane	EPA-8260	U	0.010	1	UG/L	12/12/2017	DLC
Chlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,1,2-Tetrachloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Ethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
m,p-Xylene	EPA-8260	U	4.0	1	UG/L	12/12/2017	DLC
Styrene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
o-Xylene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromoform	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Isopropylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,2,2-Tetrachloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,3-Trichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
N-Propyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Chlorotoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,3,5-Trimethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
4-Chlorotoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
T-Butyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,4-Trimethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
S-Butyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
P-Isopropyltoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,3-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,4-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
N-Butylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dibromo 3-Chloropropane	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
1,2,4-Trichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Hexachlorobutadiene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Naphthalene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,3-Trichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Methane	RSK-175	**1.6**	0.010	1	MG/L	12/11/2017	CCN
Nitrate	EPA-300.0	U	0.15	1	MG/L	12/07/2017	GAP
Sulfate	EPA-300.0	U	0.26	1	MG/L	12/07/2017	GAP
Manganese	EPA-200.8	**12000**	40	20	UG/L	12/08/2017	RAL
Alkalinity	SM2320B	**370**	2.0	1	MG/L	12/14/2017	OSE

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE:	12/20/2017
		ALS JOB#:	EV17120050
		ALS SAMPLE#:	EV17120050-08
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/6/2017 9:29:00 AM
CLIENT SAMPLE ID	MW-8	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
1,2-Dichloroethane-d4	EPA-8260	**119**	12/12/2017	DLC
Toluene-d8	EPA-8260	**101**	12/12/2017	DLC
4-Bromofluorobenzene	EPA-8260	**87.5**	12/12/2017	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE: ALS JOB#: ALS SAMPLE#:	12/20/2017 EV17120050 EV17120050-09
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/7/2017 1:10:00 PM
CLIENT SAMPLE ID	MW-9	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dichlorodifluoromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Vinyl Chloride	EPA-8260	U	0.20	1	UG/L	12/12/2017	DLC
Bromomethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Carbon Tetrachloride	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trichlorofluoromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Carbon Disulfide	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Acetone	EPA-8260	U	25	1	UG/L	12/12/2017	DLC
1,1-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Methylene Chloride	EPA-8260	U	5.0	1	UG/L	12/12/2017	DLC
Acrylonitrile	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Methyl T-Butyl Ether	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trans-1,2-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Butanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Cis-1,2-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2,2-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromochloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloroform	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,1-Trichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Dibromomethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromodichloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trans-1,3-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
4-Methyl-2-Pentanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Toluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Cis-1,3-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,2-Trichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Hexanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
1,3-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Tetrachloroethylene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE: ALS JOB#: ALS SAMPLE#:	12/20/2017 EV17120050 EV17120050-09
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/7/2017 1:10:00 PM
CLIENT SAMPLE ID	MW-9	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dibromochloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dibromoethane	EPA-8260	U	0.010	1	UG/L	12/12/2017	DLC
Chlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,1,2-Tetrachloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Ethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
m,p-Xylene	EPA-8260	U	4.0	1	UG/L	12/12/2017	DLC
Styrene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
o-Xylene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromoform	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Isopropylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,2,2-Tetrachloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,3-Trichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
N-Propyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Chlorotoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,3,5-Trimethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
4-Chlorotoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
T-Butyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,4-Trimethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
S-Butyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
P-Isopropyltoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,3-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,4-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
N-Butylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dibromo 3-Chloropropane	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
1,2,4-Trichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Hexachlorobutadiene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Naphthalene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,3-Trichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Methane	RSK-175	U	0.010	1	MG/L	12/11/2017	CCN
Nitrate	EPA-300.0	**4.8**	0.15	1	MG/L	12/07/2017	GAP
Sulfate	EPA-300.0	**10**	0.26	1	MG/L	12/07/2017	GAP
Manganese	EPA-200.8	**320**	2.0	1	UG/L	12/08/2017	RAL
Alkalinity	SM2320B	**230**	2.0	1	MG/L	12/14/2017	OSE

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE:	12/20/2017
		ALS JOB#:	EV17120050
		ALS SAMPLE#:	EV17120050-09
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/7/2017 1:10:00 PM
CLIENT SAMPLE ID	MW-9	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
1,2-Dichloroethane-d4	EPA-8260	**118**	12/12/2017	DLC
Toluene-d8	EPA-8260	**98.9**	12/12/2017	DLC
4-Bromofluorobenzene	EPA-8260	**86.7**	12/12/2017	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE: ALS JOB#: ALS SAMPLE#:	12/20/2017 EV17120050 EV17120050-10
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/7/2017 1:10:00 PM
CLIENT SAMPLE ID	MW-9 DUP	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dichlorodifluoromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Vinyl Chloride	EPA-8260	U	0.20	1	UG/L	12/12/2017	DLC
Bromomethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Carbon Tetrachloride	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trichlorofluoromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Carbon Disulfide	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Acetone	EPA-8260	U	25	1	UG/L	12/12/2017	DLC
1,1-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Methylene Chloride	EPA-8260	U	5.0	1	UG/L	12/12/2017	DLC
Acrylonitrile	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Methyl T-Butyl Ether	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trans-1,2-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Butanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Cis-1,2-Dichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2,2-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromochloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Chloroform	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,1-Trichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trichloroethene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Dibromomethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromodichloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Trans-1,3-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
4-Methyl-2-Pentanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
Toluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Cis-1,3-Dichloropropene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,2-Trichloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Hexanone	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
1,3-Dichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Tetrachloroethylene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE: ALS JOB#: ALS SAMPLE#:	12/20/2017 EV17120050 EV17120050-10
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/7/2017 1:10:00 PM
CLIENT SAMPLE ID	MW-9 DUP	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dibromochloromethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dibromoethane	EPA-8260	U	0.010	1	UG/L	12/12/2017	DLC
Chlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,1,2-Tetrachloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Ethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
m,p-Xylene	EPA-8260	U	4.0	1	UG/L	12/12/2017	DLC
Styrene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
o-Xylene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromoform	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Isopropylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,1,2,2-Tetrachloroethane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,3-Trichloropropane	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Bromobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
N-Propyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
2-Chlorotoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,3,5-Trimethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
4-Chlorotoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
T-Butyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,4-Trimethylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
S-Butyl Benzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
P-Isopropyltoluene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,3-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,4-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
N-Butylbenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2-Dibromo 3-Chloropropane	EPA-8260	U	10	1	UG/L	12/12/2017	DLC
1,2,4-Trichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Hexachlorobutadiene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Naphthalene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
1,2,3-Trichlorobenzene	EPA-8260	U	2.0	1	UG/L	12/12/2017	DLC
Methane	RSK-175	U	0.010	1	MG/L	12/11/2017	CCN
Nitrate	EPA-300.0	**4.6**	0.15	1	MG/L	12/07/2017	GAP
Sulfate	EPA-300.0	**10**	0.26	1	MG/L	12/07/2017	GAP
Manganese	EPA-200.8	**310**	2.0	1	UG/L	12/08/2017	RAL
Alkalinity	SM2320B	**280**	2.0	1	MG/L	12/14/2017	OSE

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE: ALS JOB#: ALS SAMPLE#:	12/20/2017 EV17120050 EV17120050-10
CLIENT CONTACT:	Larry Bertsch	DATE RECEIVED:	12/07/2017
CLIENT PROJECT:	Tyee 4Q 2017	COLLECTION DATE:	12/7/2017 1:10:00 PM
CLIENT SAMPLE ID	MW-9 DUP	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
1,2-Dichloroethane-d4	EPA-8260	**116**	12/12/2017	DLC
Toluene-d8	EPA-8260	**98.3**	12/12/2017	DLC
4-Bromofluorobenzene	EPA-8260	**86.9**	12/12/2017	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE:	12/20/2017
		ALS SDG#:	EV17120050
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Larry Bertsch		
CLIENT PROJECT:	Tyee 4Q 2017		

LABORATORY BLANK RESULTS

MB-120717W - Batch 123086 - Water by EPA-8260

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Dichlorodifluoromethane	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Chloromethane	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Vinyl Chloride	EPA-8260	U	UG/L	0.20	12/07/2017	DLC
Bromomethane	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Chloroethane	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Carbon Tetrachloride	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Trichlorofluoromethane	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Carbon Disulfide	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Acetone	EPA-8260	U	UG/L	25	12/07/2017	DLC
1,1-Dichloroethene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Methylene Chloride	EPA-8260	U	UG/L	5.0	12/07/2017	DLC
Acrylonitrile	EPA-8260	U	UG/L	10	12/07/2017	DLC
Methyl T-Butyl Ether	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Trans-1,2-Dichloroethene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
1,1-Dichloroethane	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
2-Butanone	EPA-8260	U	UG/L	10	12/07/2017	DLC
Cis-1,2-Dichloroethene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
2,2-Dichloropropane	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Bromochloromethane	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Chloroform	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
1,1,1-Trichloroethane	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
1,1-Dichloropropene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
1,2-Dichloroethane	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Benzene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Trichloroethene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
1,2-Dichloropropane	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Dibromomethane	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Bromodichloromethane	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Trans-1,3-Dichloropropene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
4-Methyl-2-Pentanone	EPA-8260	U	UG/L	10	12/07/2017	DLC
Toluene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Cis-1,3-Dichloropropene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
1,1,2-Trichloroethane	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
2-Hexanone	EPA-8260	U	UG/L	10	12/07/2017	DLC
1,3-Dichloropropane	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Tetrachloroethylene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Dibromochloromethane	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
1,2-Dibromoethane	EPA-8260	U	UG/L	0.010	12/07/2017	DLC
Chlorobenzene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC

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CERTIFICATE OF ANALYSIS

CLIENT: RPS GaiaTech
135 South LaSalle Street, Suite 3500
Chicago, IL 60603
CLIENT CONTACT: Larry Bertsch
CLIENT PROJECT: Tyee 4Q 2017

DATE: 12/20/2017
ALS SDG#: EV17120050
WDOE ACCREDITATION: C601

LABORATORY BLANK RESULTS

MB-120717W - Batch 123086 - Water by EPA-8260

1,1,1,2-Tetrachloroethane	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Ethylbenzene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
m,p-Xylene	EPA-8260	U	UG/L	4.0	12/07/2017	DLC
Styrene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
o-Xylene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Bromoform	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Isopropylbenzene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
1,1,2,2-Tetrachloroethane	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
1,2,3-Trichloropropane	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Bromobenzene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
N-Propyl Benzene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
2-Chlorotoluene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
1,3,5-Trimethylbenzene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
4-Chlorotoluene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
T-Butyl Benzene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
1,2,4-Trimethylbenzene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
S-Butyl Benzene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
P-Isopropyltoluene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
1,3-Dichlorobenzene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
1,4-Dichlorobenzene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
N-Butylbenzene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
1,2-Dichlorobenzene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
1,2-Dibromo 3-Chloropropane	EPA-8260	U	UG/L	10	12/07/2017	DLC
1,2,4-Trichlorobenzene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Hexachlorobutadiene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
Naphthalene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC
1,2,3-Trichlorobenzene	EPA-8260	U	UG/L	2.0	12/07/2017	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

MBLK-R306979 - Batch R306979 - Water by RSK-175

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Methane	RSK-175	U	MG/L	0.010	12/11/2017	CCN

U - Analyte analyzed for but not detected at level above reporting limit.

MBLK-R306795 - Batch R306795 - Water by EPA-300.0

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Nitrate	EPA-300.0	U	MG/L	0.15	12/07/2017	GAP
Sulfate	EPA-300.0	U	MG/L	0.26	12/07/2017	GAP

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CERTIFICATE OF ANALYSIS

CLIENT:	RPS GaiaTech 135 South LaSalle Street, Suite 3500 Chicago, IL 60603	DATE:	12/20/2017
		ALS SDG#:	EV17120050
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Larry Bertsch		
CLIENT PROJECT:	Tyee 4Q 2017		

LABORATORY BLANK RESULTS

MBLK-R306795 - Batch R306795 - Water by EPA-300.0

U - Analyte analyzed for but not detected at level above reporting limit.

MB-120717W - Batch 123092 - Water by EPA-200.8

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Manganese	EPA-200.8	U	UG/L	2.0	12/08/2017	RAL

U - Analyte analyzed for but not detected at level above reporting limit.

MBLK-307661 - Batch R307661 - Water by SM2320B

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Alkalinity	SM2320B	U	MG/L	2.0	12/14/2017	OSE

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT: RPS GaiaTech
135 South LaSalle Street, Suite 3500
Chicago, IL 60603
CLIENT CONTACT: Larry Bertsch
CLIENT PROJECT: Tyee 4Q 2017

DATE: 12/20/2017
ALS SDG#: EV17120050
WDOE ACCREDITATION: C601

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 123086 - Water by EPA-8260

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
1,1-Dichloroethene - BS	EPA-8260	**101**			72.5	136	12/07/2017	DLC
1,1-Dichloroethene - BSD	EPA-8260	**102**	**1**		72.5	136	12/07/2017	DLC
Benzene - BS	EPA-8260	**96.6**			74.7	143	12/07/2017	DLC
Benzene - BSD	EPA-8260	**97.4**	**1**		74.7	143	12/07/2017	DLC
Trichloroethene - BS	EPA-8260	**103**			74.4	141	12/07/2017	DLC
Trichloroethene - BSD	EPA-8260	**105**	**2**		74.4	141	12/07/2017	DLC
Toluene - BS	EPA-8260	**106**			71.7	139	12/07/2017	DLC
Toluene - BSD	EPA-8260	**107**	**1**		71.7	139	12/07/2017	DLC
Chlorobenzene - BS	EPA-8260	**104**			73	131	12/07/2017	DLC
Chlorobenzene - BSD	EPA-8260	**105**	**1**		73	131	12/07/2017	DLC

ALS Test Batch ID: R306979 - Water by RSK-175

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Methane - BS	RSK-175	**96.1**			80	120	12/11/2017	CCN
Methane - BSD	RSK-175	**94.5**	**2**		80	120	12/11/2017	CCN

ALS Test Batch ID: R306795 - Water by EPA-300.0

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Nitrate - BS	EPA-300.0	**93.0**			80	120	12/07/2017	GAP
Nitrate - BSD	EPA-300.0	**92.0**	**1**		80	120	12/07/2017	GAP
Sulfate - BS	EPA-300.0	**92.5**			80	120	12/07/2017	GAP
Sulfate - BSD	EPA-300.0	**92.0**	**1**		80	120	12/07/2017	GAP

ALS Test Batch ID: 123092 - Water by EPA-200.8

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Manganese - BS	EPA-200.8	**105**			82.2	110	12/08/2017	RAL
Manganese - BSD	EPA-200.8	**97.9**	**7**		82.2	110	12/08/2017	RAL

ALS Test Batch ID: R307661 - Water by SM2320B

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Alkalinity - BS	SM2320B	**102**			92	108	12/14/2017	OSE

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CERTIFICATE OF ANALYSIS

APPROVED BY

Laboratory Director

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Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only): EV1712 0050

Date 12/7/17 Page 1 Of 1

PROJECT ID: TYEE 4Q 2017
REPORT TO COMPANY: RPS GaiaTech
PROJECT MANAGER: Larry Bertsch
ADDRESS: 135 South LaSalle ST. STE 3500
Chicago, IL 60603
PHONE: 1-312-541-4200 P.O. #:
E-MAIL: larry.bertsch@RPSGroup.com
INVOICE TO COMPANY:
ATTENTION:
ADDRESS:

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	TYPE	LAB#	NWTPH-HCID	NWTPH-DX	NWTPH-GX	BTEX by EPA 8021 ☐ BTEX by EPA 8260 ☐	MTBE by EPA 8021 ☐ MTBE by EPA 8260 ☐	Halogenated Volatiles by EPA 8260	Volatile Organic Compounds by EPA 8260	EDB / EDC by EPA 8260 SIM (water)	EDB / EDC by EPA 8260 (soil)	Semivolatile Organic Compounds by EPA 8270	Polycyclic Aromatic Hydrocarbons (PAH) by EPA 8270 SIM	PCB by EPA 8082 ☐ Pesticides by EPA 8081 ☐	Metals-MTCA-5 ☐ RCRA-8 ☐ Pri Pol ☐ TAL ☐	Metals Other (Specify)	TCLP-Metals ☐ VOA ☐ Semi-Vol ☐ Pest ☐ Herbs ☐
1. MW-1	12/6/17	1647	GW	1							X								
2. MW-2	12/6/17	1536		2															
3. MW-3	12/6/17	1228		3															
4. MW-4	12/5/17	1240		4															
5. MW-5	12/5/17	1445		5															
6. MW-6	12/6/17	1352		6															
7. MW-7	12/5/17	1630		7															
8. MW-8	12/6/17	0929		8															
9. MW-9	12/7/17	1310	GW	9							X								
10. MW-9 Dup	12/7/17	1310	GW	10							X								

OTHER (Specify)

ALKALINITY	SULFATE	NITRATE	METHANE	MANGANESE (Total)			NUMBER OF CONTAINERS	RECEIVED IN GOOD CONDITION?
X	X	X	X	X			8	
							8	
							8	
							8	
							8	
							8	
							8	
							8	
X	X	X	X	X			~~16~~ 8	
X	X	X	X	X			8	

SPECIAL INSTRUCTIONS

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: Jason Downey RPS 12/7/17 1452
   Received By: Ken Kemp ALS 12/7/17 14:52
2. Relinquished By: _____
   Received By: _____

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis: (10) Standard | 5 | 3 | 2 | 1 | SAME DAY

Fuels & Hydrocarbon Analysis: 5 Standard | 3 | 1 | SAME DAY

OTHER: Specify: _____

*Turnaround request less than standard may incur Rush Charges

C - Natural Attenuation Evaluation

BIOCHLOR Natural Attenuation Decision Support System

Version 2.2
Excel 2000

Tyee
Everet, WA
Run Name

Data Input Instructions:
115 → 1. Enter value directly....or
or
0.02 → 2. Calculate by filling in gray cells. Press Enter, then C
(To restore formulas, hit "Restore Formulas" button)
Variable* → Data used directly in model.

Test if Biotransformation is Occurring → Natural Attenuation

TYPE OF CHLORINATED SOLVENT: Ethenes ◉ Ethanes ○

1. ADVECTION

Seepage Velocity*	Vs	62078.7	(ft/yr)
or			
Hydraulic Conductivity	K	1.0E-01	(cm/sec)
Hydraulic Gradient	i	0.3	(ft/ft)
Effective Porosity	n	0.5	(-)

2. DISPERSION

Alpha x*	14	(ft)	Calc.
(Alpha y) / (Alpha x)*	0.1	(-)	
(Alpha z) / (Alpha x)*	1.E-99	(-)	

3. ADSORPTION

Retardation Factor* → R
or

Soil Bulk Density, rho	1.7	(kg/L)		
FractionOrganicCarbon, foc	1.0E-3	(-)		
Partition Coefficient	Koc			
PCE	0	(L/kg)	1.00	(-)
TCE	0	(L/kg)	1.00	(-)
DCE	0	(L/kg)	1.00	(-)
VC	19	(L/kg)	1.06	(-)
ETH	0	(L/kg)	1.00	(-)
Common R (used in model)* =			**1.00**	

4. BIOTRANSFORMATION

-1st Order Decay Coefficient*

Zone 1	λ (1/yr)	half-life (yrs)	Yield
PCE → TCE	0.000		0.79
TCE → DCE	0.000		0.74
DCE → VC	0.000		0.64
VC → ETH	5.775	0.12	0.45

Zone 2	λ (1/yr)	half-life (yrs)
PCE → TCE	0.000	
TCE → DCE	0.000	
DCE → VC	0.000	
VC → ETH	5.775	0.12

λ HELP

5. GENERAL

Simulation Time*	5	(yr)	
Modeled Area Width*	213	(ft)	
Modeled Area Length*	326	(ft)	
Zone 1 Length*	326	(ft)	
Zone 2 Length*	0	(ft)	Zone 2= L - Zone 1

6. SOURCE DATA

TYPE: Decaying Single Planar

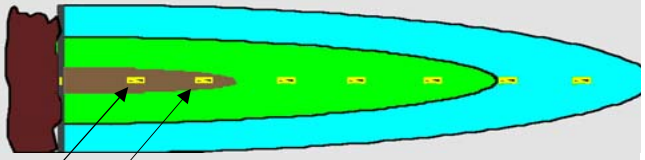
Source Options

Source Thickness in Sat. Zone* 7 (ft)

Width* (ft) Y1: 10

Conc. (mg/L)*	C1	k_s* (1/yr)
PCE	.0	0.2
TCE	.0	0.2
DCE	.0	0.2
VC	.037	0.2
ETH	0	0.2

Vertical Plane Source: Determine Source Well Location and Input Solvent Concentrations



View of Plume Looking Down

Observed Centerline Conc. at Monitoring Wells

7. FIELD DATA FOR COMPARISON

PCE Conc. (mg/L)	.0	.0	.0	.0								
TCE Conc. (mg/L)	.0	.0	.0	.0								
DCE Conc. (mg/L)	.0	.0	.0	.0								
VC Conc. (mg/L)	0.0	.001	.0	.0								
ETH Conc. (mg/L)	0.0	.0	.0	.0								
Distance from Source (ft)	0	140	326	236								
Date Data Collected	2017											

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE | RUN ARRAY | Help | Restore | RESET | SEE | Paste

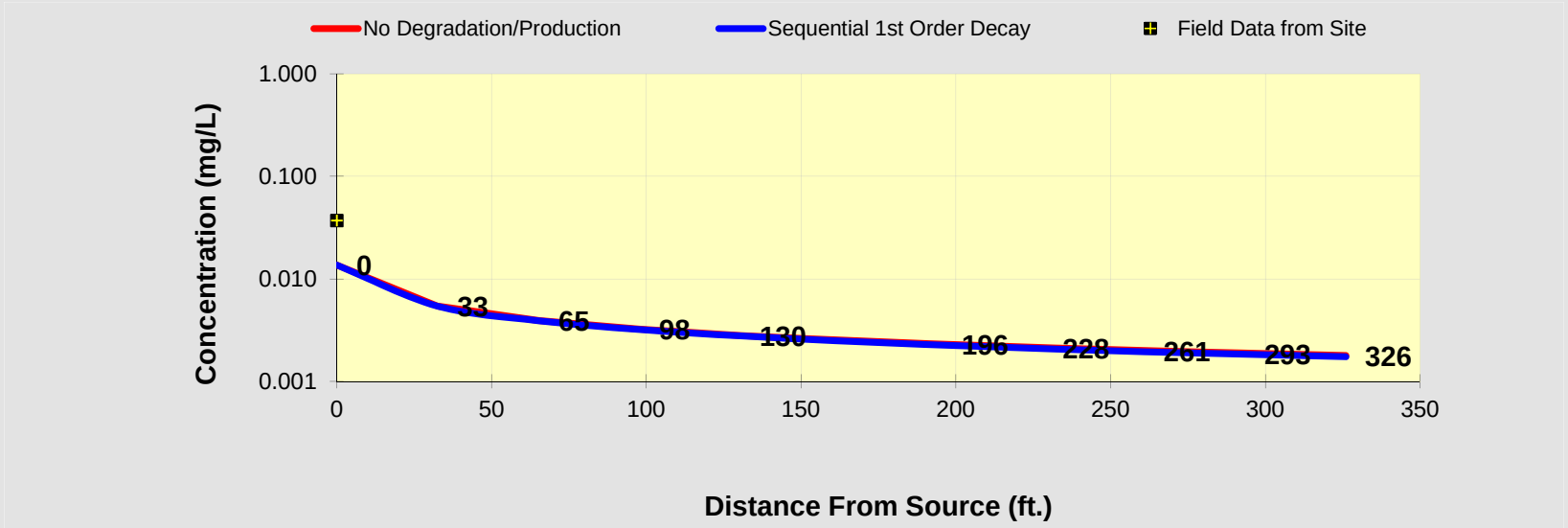
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

VC	0	33	65	98	130	163	196	228	261	293	326
No Degradation	0.014	0.005	0.004	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002
Biotransformation	0.0136	0.005	0.004	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.002

Monitoring Well Locations (ft)

	0	140	326	236							
Field Data from Site	0.037	0.001	0.000	0.000							



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

5.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

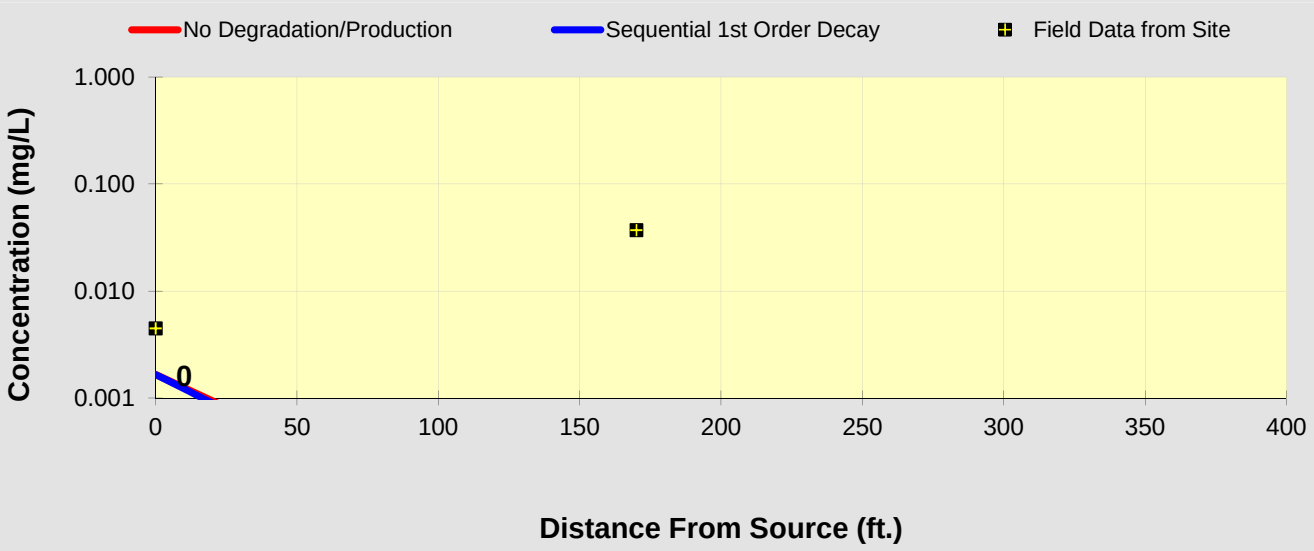
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

VC	0	33	65	98	130	163	196	228	261	293	326
No Degradation	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Biotransformation	0.0017	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Monitoring Well Locations (ft)

	0	170	280	343	340						
Field Data from Site	0.005	0.037	0.001	0.000	0.000						



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

5.0 Years

Log ⟺ Linear

Return to Input

To All

To Array