



Mr. Peter Quackenbush
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Michigan Department of Environmental Quality
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Subject:

Fourth Quarter 2014 Groundwater Monitoring Summary
RACER Lansing - Plants 2, 3, and 6
Lansing, Michigan

Dear Mr. Quackenbush,

The purpose of this correspondence is to summarize the fourth quarter 2014 groundwater monitoring activities completed at RACER Lansing – Plants 2, 3 & 6 (Site). ARCADIS of Michigan, LLC (ARCADIS) and PM Environmental (PME) completed the fourth quarter 2014 gauging and groundwater monitoring activities as part of the on-going Resource Conservation and Recovery Act (RCRA) Corrective Action, between December 1 and December 12, 2014. The activities completed during the fourth quarter event constitute a semi-annual monitoring event and include:

- Site-wide groundwater elevation survey.
- Semi-annual groundwater sampling.
- Annual storm sewer sampling.

All monitoring activities were completed in accordance with the approved Revised Interim Groundwater Monitoring Work Plan dated November 14, 2014. Monitoring well locations for Plants 2, 3 & 6 are included on Figures 1 thru 6. Storm sewer sampling locations for Plants 2, 3, & 6 are included in Attachment 1.

Imagine the result

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Site Activities

Site-wide static groundwater elevation measurements were collected from a total of 156 wells on December 1 and 2, 2014. Prior to starting the gauging activities, wells were screened for the presence of vapor phase VOCs using a photoionization detector (PID). Light non-aqueous phase liquid (LNAPL) gauging was completed at a total of 16 wells. The groundwater elevation and LNAPL thicknesses are summarized on Tables 1 and 2, respectively.

Between December 1 and December 12, 2014 a total of 97 monitoring wells were sampled and the samples were analyzed for one or more of the following:

- Target compound list (TCL) volatile organic compounds (VOCs) using USEPA Method SW8260B.
- 1,4-Dioxane using Method SW8260B-SIM.
- Select metals (arsenic, nickel, lead, vanadium, chromium, and copper) utilizing Method SW6020A. Samples were submitted for dissolved and total metals analysis if turbidity could not be stabilized below 10 nephelometric turbidity units (NTUs).
- Metals (antimony, arsenic, barium, boron, cadmium, chromium, cobalt, copper, lead, manganese, mercury (Method 7471B), nickel, selenium, silver, vanadium, and zinc) using Method SW6020A. Samples were submitted for both dissolved and total metals analysis if turbidity could not be stabilized below 10 NTUs.
- Chromium VI was analyzed at CH-14-RO and MW-91-2 using Method SW6020A.
- Semi-volatile organic compounds (SVOCs) using Method SW8270D.

Additionally, on January 15, 2015, monitoring wells MW-12-05 and MW-13-44 were resampled and submitted for analysis of 1,4-dioxane using Method SW8260B-SIM to confirm results from the December 2014 sampling event.

On December 2, 2014, a total of 8 storm sewer samples were collected and analyzed for the following:

- TCL VOCs using USEPA Method SW8260B.
- 1,4-Dioxane using Method SW8260B-SIM.
- TAL Metals (antimony, arsenic, barium, boron, cadmium, chromium, hexavalent chromium, cobalt, copper, lead, manganese, mercury [Method 7471B], nickel, selenium, silver, vanadium, and zinc) using Method SW6020A.

Groundwater samples were collected utilizing low-flow groundwater sampling methods using a submersible pump. Storm sewer samples were collected utilizing a peristaltic pump. Both sets of samples were submitted under chain of custody protocol to Merit Laboratories (Merit) located in Lansing, Michigan. Groundwater low-flow sampling logs are included as Attachment 2.

Results

The results of the fourth quarter 2014 event are generally consistent with previous sampling events. Of the 97 wells scheduled to be sampled, two wells (MW-14-68 and MW-14-69) located on Plant 6 could not be sampled because they were dry. These wells were dry during the third quarter event as well. Both wells were installed within zones of questionable saturation to verify the lower zones on Plant 6 are not migration zones for 1,4-dioxane.

Analytical results for each well are provided on Table 3. Exceedances of the Part 201 Residential Drinking Water (DW) Criteria are illustrated on Figures 1 thru 6. Results of the fourth quarter sampling event are summarized below.

- VOCs and SVOCs exceeding DW Criteria include bis(2-Ethylhexyl)phthalate (DEHP), 1,4-dioxane, 1,1-dichloroethene, vinyl chloride, benzene, and ethylbenzene. This is consistent with previous groundwater investigation and monitoring results. Previous correspondence with Merit has indicated that the persistent low-level phthalates detected in groundwater at the Site are associated with laboratory cross-contamination.

- Metals that exceed DW Criteria include arsenic, lead, manganese, nickel, and vanadium throughout the Site see Figures 1 thru 6. This is consistent with previous groundwater investigation and monitoring results. The concentrations of iron in the test wells PW-14-01, PW-14-02, and PW-14-03 are above aesthetic DW Criteria (0.3 mg/L), while PW-14-01 and PW-14-03 also exceed health-based DW criteria (5.6 mg/L). The test wells were sampled as part of a continuing pre-engineering baseline evaluation of the lower 1,4-dioxane plume.

There were several detections of monitoring parameters within new and existing monitoring wells worth noting:

- MW-12-05 and MW-13-44 – Bedrock wells located along the axis of the lower 1,4-dioxane plume. These wells have not previously had detections of 1,4-dioxane. The December results indicated concentrations of 7 µg/L and 6 µg/L at these locations, respectively. Upon resampling, analytical results indicated concentrations of 1,4-dioxane at 6 µg/L for MW-12-05, and less than 5 µg/L at MW-13-44. Both results are below current and proposed DW Criteria.
- MW-14-58 – A new well located within the perched zone near the western Plant 2 property boundary – 1,4-dioxane was detected at 58 µg/L, up from 25 µg/L in the third quarter. As noted during the third quarter 2014 sampling event, this detection could be associated with the perched plume at Plant 2, or the Adam's Plating (APC) facility located 400 feet to the northwest. Seasonal trends and plume stability at this location will be evaluated when sufficient samples (minimum 4) have been collected at this location.
- PW-14-01, PW-14-02 and PW-14-03 – Hydraulic testing wells located along the axis of the lower 1,4-dioxane plume were sampled as part of the fourth quarter event and indicate concentrations of 1,4-dioxane between 300 and 580 µg/L.
- MW-13-42 – An existing weathered bedrock monitoring well located west of the lower 1,4-dioxane plume. 1,4-Dioxane was detected at a concentration of 11 µg/L near western Plant 2 property boundary.
- MW-14-56 – A new weathered bedrock well located near the Plant 2 property boundary. Nickel was observed at a concentration of 0.683 mg/L in excess of

the DW Criteria (0.1 mg/L). The nickel concentration at this location during the 3rd quarter 2014 sampling event was 0.053 mg/L.

- Various metals, primarily arsenic, nickel, lead, and vanadium, were detected above criteria near the property boundaries at several other monitoring well locations similar to previous sampling events. As stated in the Preliminary Geochemical and Plume Stability Assessment (ARCADIS, 2014) metals impacts appear stable, are spatially limited, and appear to be a result of minor shifts in Site geochemistry.

No immediate action is recommended based on the fourth quarter 2014 groundwater monitoring data. Monitoring at all these locations will continue per the approved Interim Groundwater Monitoring Plan (revised November 14, 2014) and constituent trends and plume stability will be evaluated over time. A comprehensive annual groundwater monitoring report and updated plume stability assessment will be prepared following the first quarter 2015 sampling event as outlined in the approved monitoring plan. Validated laboratory analytical reports will be provided at that time.

Annual 2014 Storm Sewer Sampling Event

The results of the storm sewer sampling event are similar to previous sampling events. Of the 8 locations, two were unable to be sampled. P6-MH2-NE was dry and ESC-1 had too low of a flow at the time of sampling. ESC-2 was sampled in place of ESC-1. Detections of storm sewer parameters compared to Part 201 Groundwater Surface Water Interface (GSI) Criteria include:

- P6-MH2-SW - Near southern outfall at Plant 6. Xylenes exceeded GSI with 57 µg/L (up from 14 µg/L in September 2013), but did not exceed at the down gradient location ESC-2. Ethylbenzene was also detected at both locations, but did not exceed GSI Criteria. As outlined in the RFI Supplemental Report (ARCADIS, 2014b), a conservative storm water dilution factor of 6X is estimated for the storm sewer between Plant 6 and Grand River indicating that sporadic GSI exceedances at this location are unlikely to reach the GSI compliance point.
- Plant 2 1,4-Dioxane - 1,4-Dioxane was detected at the P2-MH-NW (discharge from Plant 2 to Plant 3), P3-MH-S, and at P2 outfall on Plant 3 at

concentrations ranging from 7 to 14 µg/L. GSI Criteria for 1,4-dioxane is 2,800 µg/L.

- P2-MH-NW – 1,1-Dichloroethane (DCA) was detected at 2 µg/L. 1,1-DCA was not detected at the Plant 2 Outfall at the Plant 3 sample location. The GSI Criteria for 1,1-DCA is 740 µg/L.
- Inorganics, including arsenic, barium, boron, chromium, copper, lead, manganese, nickel, and zinc were detected on all three Plants, but all below GSI criteria.

A summary of the fourth quarter storm sewer sampling results, as well as historical sampling results, are included on a table included as part of Attachment 1. Results of the storm sewer sampling are consistent with previous events and no immediate action is recommended. Monitoring at these locations will continue per the approved Interim Groundwater Monitoring Plan. The next storm sewer sampling event is planned for fourth quarter 2015.

If you should have any questions regarding the enclosed data please do not hesitate to contact me at 810.225.1926 or via email at patrick.curry@arcadis-us.com.

Sincerely,



Patrick J. Curry, CPG
Senior Geologist

Copies:

Dave Favero, RACER
Grant Trigger, RACER
Randy Seida, Westside Water
Alec Malvetis, City of Lansing
Angie Goodman, LBWL
Cheryl Loudon, LBWL
David Love, Ingham County Drain Commission
Lansing Public Library

Enclosures:

Table 1 – Summary of Groundwater Elevations – December 2014

Table 2 – Summary of LNAPL Thicknesses – December 2014

Table 3 – Summary of Fourth Quarter 2014 Groundwater Analytical Data – December 2014

Figure 1 – Fourth Quarter 2014 Shallow Drinking Water Exceedances Plant 2 and W. Plant 6

Figure 2 – Fourth Quarter 2014 Lower Drinking Water Exceedances Plant 2 and W. Plant 6

Figure 3 – Fourth Quarter 2014 Shallow Drinking Water Exceedances Plant 3

Figure 4 – Fourth Quarter 2014 Lower Drinking Water Exceedances Plant 3

Figure 5 – Fourth Quarter 2014 Shallow Drinking Water Exceedances E. Plant 6

Figure 6 – Fourth Quarter 2014 Lower Drinking Water Exceedances E. Plant 6

Attachment 1 – Fourth Quarter 2014 Storm Sewer Sampling Locations and Analytical Results

Attachment 2 – Fourth Quarter 2014 Groundwater Sampling Logs

Tables

TABLE 1
SUMMARY OF GROUNDWATER ELEVATIONS
DECEMBER 2014

RACER Lansing
Plants 2, 3, and 6

Well ID:	Date Collected:	Screened Interval - Top (ft bgs)	Screened Interval - Bottom (ft bgs):	Reference Elevation (ft toc):	Ground Surface Elevation (ft msl):	Total Well Depth (ft toc):	Depth to Water (ft toc):	Groundwater Elevation (ft msl):
Plant 2								
LMW-12-01	12/1/2014	7	12	864.91	862.14	14.75	10.46	854.45
LMW-12-02	12/1/2014	5	10	865.25	862.17	12.90	7.75	857.50
LMW-12-03D	12/1/2014	17.3	22.3	864.99	862.08	--	22.52	851.76*
LMW-12-03S	12/1/2014	4	9	864.93	862.06	11.75	8.01	856.92
LMW-12-04	12/1/2014	16	21	864.94	862.12	23.66	11.24	853.70
LMW-12-05	12/1/2014	7	12	865.03	862.17	--	12.56	863.41*
LMW-12-06	12/1/2014	4	9	865.02	862.15	11.97	7.47	857.55
LMW-12-07	12/1/2014	4	9	864.13	861.50	--	5.98	863.52*
LMW-12-08	12/1/2014	8	13	864.40	861.56	--	10.56	861.39*
LMW-14-12D	12/15/2014	18	23	864.59	862.11	25.0	24.62	852.27*
LMW-14-13D	12/15/2014	17.5	22.5	865.03	862.06	24.6	11.62	853.41
LMW-14-14D	12/15/2014	18	23	864.89	861.90	25.2	13.79	851.10
LMW-14-15D	12/15/2014	18	23	865.11	861.66	25.0	22.59	852.41*
MW-01(2)	12/1/2014	10	20	875.79	876.10	15.90	9.14	866.65
MW-02(2)	12/1/2014	12	22	875.96	876.20	21.20	10.45	865.51
MW-03(2)	12/1/2014	12	22	876.70	876.79	19.51	9.51	867.19
MW-12-01	12/1/2014	87	110	867.94	865.46	111.11	82.80	785.14
MW-12-02	12/1/2014	87	110	853.91	851.88	94.80	73.39	780.52
MW-12-05	12/1/2014	75	99	865.19	862.23	102.00	78.93	786.26
MW-12-06	12/1/2014	80.6	99.5	864.64	861.69	88.80	75.80	788.84
MW-12-07	12/1/2014	10	15	872.11	869.21	17.70	7.53	864.58
MW-12-08	12/1/2014	19	24	864.53	861.55	27.40	7.28	857.25
MW-12-09	12/1/2014	14	19	863.54	860.63	24.60	14.49	849.05
MW-12-17	12/1/2014	9.5	14.5	875.47	875.83	14.00	8.30	867.17
MW-12-18	12/1/2014	28	33	866.43	864.19	34.80	24.50	841.93
MW-13-42	12/1/2014	70	75	861.61	860.03	76.76	76.13	785.48
MW-13-43	12/1/2014	72	77	863.82	860.97	79.84	71.55	792.27
MW-13-44	12/1/2014	96	115	864.24	861.03	119.40	83.51	780.73
MW-13-45	12/1/2014	72	77	863.80	861.54	78.40	70.63	793.17
MW-13-51	12/1/2014	77	87	875.34	872.51	89.80	76.36	798.98
MW-14-54	12/2/2014	14	19	865.21	862.21	--	14.97	850.24
MW-14-55	12/1/2014	13	18	864.17	861.73	20.10	17.75	846.42
MW-14-56	12/1/2014	71	76	863.27	860.56	79.00	75.39	787.88
MW-14-57	12/1/2014	15	20	863.97	861.10	21.45	14.40	849.57
MW-14-58	12/1/2014	22	27	863.12	860.12	29.94	14.79	848.33
MW-14-59	12/1/2014	12	17	864.61	861.80	18.89	8.37	856.24
MW-14-60	12/1/2014	15	20	864.65	861.80	23.53	13.64	851.01
MW-14-61	12/1/2014	70	75	865.51	862.30	77.60	73.63	791.88
MW-14-62	12/2/2014	12	17	865.17	862.25	19.60	6.62	858.55
MW-14-63	12/1/2014	68	73	854.64	851.68	76.75	72.45	782.19
P2-MW-01	12/1/2014	31	36	858.00	858.35	35.80	15.00	843.00
P2-MW-02	12/1/2014	31	41	872.24	872.70	40.20	37.43	834.81
P2-MW-03	12/1/2014	27	32	854.18	854.66	27.21	9.70	844.48
P2-MW-04	12/1/2014	26	36	862.28	862.59	35.71	11.00	851.28
P2-SB-03	12/1/2014	14	19	863.89	861.03	22.30	18.20	845.69
P2-SB-06	12/1/2014	24	29	866.06	862.09	33.50	19.19	846.87
P2-SB-20	12/1/2014	8	13	864.46	861.12	16.30	9.16	855.30
PMW-01	12/1/2014	2.59	7.59	860.85	861.33	--	6.10	856.71*
PMW-02	12/1/2014	2.59	7.59	861.12	861.50	--	1.45	860.68*
PMW-03	12/1/2014	1.2	6.2	861.59	862.12	--	2.60	860.90*
PW-14-01	12/1/2014	71.6	76.8	864.97	862.38	81.80	68.72	796.25
PW-14-02	12/1/2014	75	80	863.91	861.17	85.15	71.50	792.41

TABLE 1
SUMMARY OF GROUNDWATER ELEVATIONS
DECEMBER 2014

RACER Lansing
Plants 2, 3, and 6

Well ID:	Date Collected:	Screened Interval - Top (ft bgs)	Screened Interval - Bottom (ft bgs):	Reference Elevation (ft toc):	Ground Surface Elevation (ft msl):	Total Well Depth (ft toc):	Depth to Water (ft toc):	Groundwater Elevation (ft msl):
Plant 3								
CH-14-RO	12/1/2014	7	12	866.44	863.68	14.81	9.18	857.26
LMW-12-09	12/1/2014	3	8	863.22	860.40	10.75	4.93	858.29
LMW-12-10	12/1/2014	14	19	866.82	863.60	--	18.85	857.59*
LMW-12-11	12/1/2014	15	20	866.53	863.53	22.85	13.93	852.60
MW-02-01(3)	12/1/2014	59	69	865.54	863.35	72.11	55.02	810.52
MW-02-02(3)	12/1/2014	74	84	862.70	863.11	83.89	68.08	794.62
MW-02-03(3)	12/1/2014	79	89	859.63	859.90	89.14	65.88	793.75
MW-02-04(3)	12/1/2014	76	86	862.61	862.93	84.31	66.07	796.54
MW-04(3)	12/1/2014	10.5	15.5	859.40	859.79	15.73	4.27	855.13
MW-04-01(3)	12/1/2014	95	105	862.61	862.93	104.53	54.32	808.29
MW-04-02(3)	12/1/2014	126	136	861.09	861.26	132.30	67.65	793.44
MW-04-03(3)	12/1/2014	80	90	860.72	861.00	87.38	67.14	793.58
MW-04-04(3)	12/1/2014	72	82	855.72	856.11	81.52	61.74	793.98
MW-05(3)	12/1/2014	10	15	859.02	859.79	15.24	4.45	854.57
MW-06(3)	12/1/2014	6.5	11.5	859.52	859.79	11.53	3.59	855.93
MW-12-04	12/1/2014	77	100	844.08	844.26	100.00	52.61	791.47
MW-12-19	12/1/2014	5	10	859.55	859.96	8.91	Dry	--
MW-12-20	12/1/2014	75	80	864.20	861.45	80.80	70.53	793.67
MW-12-21	12/2/2014	70	75	864.50	861.45	78.03	68.45	796.05
MW-13-22	12/2/2014	89	94	864.37	861.50	96.22	73.11	791.26
MW-13-23	12/2/2014	69	74	864.31	861.45	77.53	73.07	791.24
MW-13-24	12/1/2014	69	74	864.35	861.48	78.46	68.78	795.57
MW-13-25	12/1/2014	67	72	863.77	860.49	76.35	69.66	794.11
MW-13-26	12/2/2014	72	77	863.95	861.67	79.19	68.76	795.19
MW-13-27	12/2/2014	67	72	864.50	861.54	75.87	70.60	793.90
MW-13-28	12/2/2014	99	115.5	864.42	861.61	116.70	73.87	790.55
MW-13-29	12/1/2014	68	73	862.81	859.81	77.43	70.40	792.41
MW-13-30	12/2/2014	72	77	864.53	861.66	79.75	70.93	793.60
MW-13-31	12/1/2014	5	10	861.27	858.36	12.79	9.53	851.74
MW-13-32	12/1/2014	5	10	860.11	857.32	12.64	7.64	852.47
MW-13-33	12/1/2014	12	17	860.71	857.69	19.19	11.21	849.50
MW-13-34	12/2/2014	74	79	853.92	851.82	79.97	70.49	783.43
MW-13-37	12/1/2014	97	112	866.02	863.75	114.50	74.81	791.21
MW-13-38	12/1/2014	107	124	866.47	863.71	126.30	75.54	790.93
MW-13-39B	12/1/2014	97	112	860.20	857.33	105.40	68.91	791.29
MW-13-40	12/1/2014	72	77	862.67	859.69	78.08	66.30	796.37
MW-13-41	12/1/2014	77	82	866.38	863.68	84.73	66.49	799.89
MW-13-46	12/2/2014	68	73	854.54	852.12	74.62	68.64	785.90
MW-13-47	12/2/2014	99	119	853.74	851.89	113.60	69.93	783.81
MW-13-48	12/2/2014	65	70	854.83	852.17	73.03	61.05	793.78
MW-13-49	12/2/2014	73	78	853.01	850.55	81.62	70.52	782.49
MW-14-64	12/1/2014	95	103.6	864.56	861.77	--	73.62	790.94
MW-14-65	12/1/2014	5	10	866.34	863.71	13.22	6.87	859.47
MW-19	12/1/2014	55	65	859.74	859.92	64.29	55.30	804.44
MW-22	12/1/2014	52.5	62.5	859.69	860.08	63.41	54.30	805.39
MW-23	12/1/2014	52	62	859.45	859.76	61.41	53.39	806.06
MW-88-1	12/1/2014	103.5	140	858.75	859.06	137.25	71.61	787.14
MW-91-2	12/1/2014	68	78	863.62	863.88	76.50	62.90	800.72

TABLE 1
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DECEMBER 2014

RACER Lansing
Plants 2, 3, and 6

Well ID:	Date Collected:	Screened Interval - Top (ft bgs)	Screened Interval - Bottom (ft bgs):	Reference Elevation (ft toc):	Ground Surface Elevation (ft msl):	Total Well Depth (ft toc):	Depth to Water (ft toc):	Groundwater Elevation (ft msl):
MW-91-3	12/1/2014	105	117	860.81	859.35	119.00	71.94	788.87
MW-91-4	12/1/2014	116	132.5	855.59	855.93	130.61	63.38	792.21
MW-91-5	12/1/2014	112.5	128	860.61	861.20	126.45	67.49	793.12
MW-91-6	12/2/2014	82	98	851.84	852.22	96.01	66.31	785.53
P3-SB-07	12/1/2014	11	16	866.84	863.63	19.63	9.74	857.10
P3-SB-28	12/1/2014	8	13	866.43	863.63	10.35	5.63	860.80
PW-14-03	12/1/2014	79.6	84.6	864.31	861.55	105.20	76.07	788.24
UNK-09	12/1/2014	11	16	859.42	860.02	15.28	2.99	856.43
UNK-10	12/1/2014	11	16	859.34	860.05	15.33	3.52	855.82
UNK-11	12/1/2014	6.5	11.5	859.91	860.17	11.74	5.02	854.89
UNK-13	12/1/2014	11	16	859.11	859.91	14.97	4.15	854.96
UNK-14	12/1/2014	10.4	15.4	859.32	859.70	14.74	3.46	855.86
UNK-15	12/1/2014	11	16	859.56	859.94	15.64	3.32	856.24
Plant 6								
MW-02-01(6)	12/2/2014	35	45	865.54	863.35	41.10	27.71	837.83
MW-02-02(6)	12/1/2014	35	45	868.04	868.41	43.42	30.25	837.79
MW-02-03(6)	12/2/2014	35	45	869.54	869.97	44.67	31.03	838.51
MW-03-01	12/2/2014	28	33	861.37	861.88	33.30	23.83	837.54
MW-03-02	12/2/2014	30	40	864.52	864.76	39.30	23.30	841.22
MW-03-04	12/2/2014	33	43	865.28	865.53	42.70	22.95	842.33
MW-03-05	12/1/2014	35	45	868.90	869.14	--	--	NA
MW-03-06	12/1/2014	30	40	870.45	870.80	40.63	36.38	834.07
MW-03-07	12/2/2014	30	40	866.88	867.02	40.50	26.89	839.99
MW-03-08	12/1/2014	35	45	869.03	869.39	--	--	NA
MW-04-01(6)	12/2/2014	78	88	866.85	867.15	87.90	76.40	790.45
MW-04-04R	12/1/2014	82	110	873.31	870.64	--	82.80	790.51
MW-04-05(6)	12/2/2014	20	30	858.33	858.87	29.65	10.05	848.28
MW-04-06R	12/2/2014	74	99.5	861.56	858.59	78.50	72.00	789.56
MW-12-09	12/1/2014	14	19	863.54	860.63	--	--	NA
MW-12-10	12/2/2014	8	13	860.89	858.82	18.00	11.38	849.51
MW-12-11	12/1/2014	13	18	857.26	857.68	16.85	5.49	851.77
MW-12-12	12/1/2014	13	18	874.34	874.61	17.28	8.18	866.16
MW-12-13	12/1/2014	18.5	23.5	882.60	880.51	25.46	10.43	872.17
MW-12-14	12/1/2014	25	30	872.56	869.28	32.11	25.38	847.18
MW-12-15	12/1/2014	18	23	865.23	865.49	22.71	20.32	844.91
MW-12-16	12/1/2014	28	33	864.24	864.73	32.22	23.96	840.28
MW-13-35	12/1/2014	25	30	864.81	865.23	25.53	24.71	840.10
MW-13-36R	12/1/2014	5.5	10.5	878.04	875.28	12.99	5.20	872.84
MW-13-50	12/1/2014	85	107	872.85	869.93	109.90	86.71	786.14
MW-13-52	12/1/2014	70	80	872.50	869.84	81.57	79.50	793.00
MW-13-53	12/1/2014	73	83	875.56	873.10	85.50	74.54	801.02
MW-14-66	12/1/2014	14	19	877.85	874.73	22.27	5.68	872.17
MW-14-67	12/1/2014	13	18	877.76	875.07	20.86	5.91	871.85
MW-14-68	12/1/2014	36	41	878.44	875.42	44.09	Dry	--
MW-14-69	12/1/2014	41	46	883.62	880.72	49.02	49.01	834.61
MW-14-70	12/1/2014	16	21	882.79	880.08	23.29	10.85	871.94
MWBP-10-UST5-6	12/1/2014	28	38	867.70	867.99	36.50	31.50	836.20
MWBP-11-UST1-4	12/1/2014	9	19	868.66	869.07	11.30	2.91	865.75
MWBP-12A-UST1-4	12/1/2014	28	38	869.74	869.96	36.77	31.84	837.90
MWBP-12-UST1-4	12/1/2014	15	25	870.02	870.58	11.30	6.91	863.11
MWBP-12-UST5-6	12/1/2014	28	38	NS	NS	35.50	33.16	NA
MWBP-13A-UST1-4	12/1/2014	28	38	869.99	870.10	38.06	33.36	836.63
P6-MW-01	12/1/2014	23	28	870.10	866.87	31.19	29.82	840.28
P6-SB-07	12/1/2014	15	20	877.36	874.36	23.68	7.80	869.56
P6-SB-18	12/1/2014	3	8	878.46	874.60	12.21	4.66	873.80
P6-SB-21	12/1/2014	3	8	874.20	870.92	11.14	2.77	871.43
P6-SB-32	12/1/2014	7	12	877.79	873.79	16.49	8.16	869.63

TABLE 1
SUMMARY OF GROUNDWATER ELEVATIONS
DECEMBER 2014

RACER Lansing
Plants 2, 3, and 6

<i>Well ID:</i>	<i>Date Collected:</i>	<i>Screened Interval - Top (ft bgs)</i>	<i>Screened Interval - Bottom (ft bgs):</i>	<i>Reference Elevation (ft toc):</i>	<i>Ground Surface Elevation (ft msl):</i>	<i>Total Well Depth (ft toc):</i>	<i>Depth to Water (ft toc):</i>	<i>Groundwater Elevation (ft msl):</i>
P6-SB-35	12/1/2014	3	8	877.76	874.28	11.99	4.09	873.67
P6-SB-37	12/1/2014	5	10	878.12	874.32	13.95	5.55	872.57
SME-MW-02	12/2/2014	33	38	869.30	NS	37.25	33.90	835.40

Note:

*Groundwater elevations have been corrected for the presence of LNAPL using a measured LNAPL density of 0.8995 g/mL

-- not collected or not available

ft bgs - feet below ground surface

ft msl - feet above mean sea level

ft toc - feet below top of casing

ID - identification

NA - not applicable

NS - not surveyed

TABLE 2
SUMMARY OF LNAPL THICKNESS
DECEMBER 2014

RACER Lansing
Plants 2 and 3

Well ID:	Date Collected:	Reference Elevation (TOC):	Ground Surface Elevation (ft msl):	Total Well Depth (ft. below TOC):	Depth to Water (ft. below TOC):	Depth to LNAPL (ft. below TOC):	Calc. Thickness LNAPL (ft)	Groundwater Elevation (ft msl):
LMW-12-01	12/1/2014	864.91	862.14	14.75	10.46	NP	NP	854.45
LMW-12-02	12/1/2014	865.25	862.17	12.9	7.75	NP	NP	857.50
LMW-12-03D	12/1/2014	864.99	862.08	NM	22.52	10.33	12.19	853.43*
LMW-12-03S	12/1/2014	864.93	862.06	11.75	8.01	NP	NP	856.92
LMW-12-04	12/1/2014	864.94	862.12	23.66	11.24	NP	NP	853.70
LMW-12-05	12/1/2014	865.03	862.17	NM	12.56	12.16	0.40	852.83*
LMW-12-06	12/1/2014	865.02	862.15	11.97	7.47	NP	NP	857.55
LMW-12-07	12/1/2014	864.13	861.50	NM	5.98	5.97	0.01	858.16*
LMW-12-08	12/1/2014	864.40	861.56	NM	10.56	8.39	2.17	855.79*
LMW-12-09	12/1/2014	863.22	860.4	10.75	4.93	NP	NP	858.29
LMW-12-10	12/1/2014	866.82	863.6	NM	18.85	10.69	8.16	855.31*
LMW-12-11	12/1/2014	866.53	855.28	22.85	13.93	NP	NP	852.60
LMW-14-12D	12/15/2014	864.59	862.11	25	24.62	10.95	13.67	852.27*
LMW-14-13D	12/15/2014	865.03	862.06	24.57	11.62	NP	NP	853.41
LMW-14-14D	12/15/2014	864.89	861.9	25.2	13.79	NP	NP	851.10
LMW-14-15D	12/15/2014	865.11	861.66	25	22.59	11.59	11.00	852.41*
P2-SB-37	12/1/2014	865.90	861.90	13.95	5.55	NP	NP	860.35
PMW-01	12/1/2014	860.848	861.33	NM	6.10	2.18	3.92	858.27*
PMW-02	12/1/2014	861.12	861.50	NM	1.45	1.12	0.33	859.97*
PMW-03	12/1/2014	861.589	862.12	NM	2.60	2.12	0.48	859.42*

Note:

*Groundwater elevations have been corrected for the presence of LNAPL using a measured LNAPL density of 0.8995 g/mL

Calc. - calculated

ft. msl - feet above mean sea level

NM - not measured

ft. - feet

TOC - top of casing

NP - no product

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:	Units	MI GW (DEQ2013) RES DW ^(a)	MI GW (DEQ2013) GSI ^(b)	CH-14-RO 12/08/14 CH-14-RO_120814	MW-01(2) 12/03/14 MW-01(2)_120314	MW-02-02(3) 12/05/14 MW-02-02(3)_120514	MW-02-03(6) 12/10/14 MW-02-03(6)_121014	MW-02-04(3) 12/05/14 MW-02-04(3)_120514	MW-03(2) 12/04/14 MW-03(2)_120414	MW-03-01 12/05/14 MW-03-01_120514	MW-03-04 12/10/14 MW-03-04_121014	MW-03-06 12/09/14 MW-03-06_120914	MW-03-08 12/11/14 MW-03-08_121114	MW-04-01(6) 12/10/14 MW-04-01(6)_121014
Field														
Conductance, specific	mS/cm	--	--	1.241	5.798	3.210	8.337	4.208	7.138	14.65	1.688	12.95	1.820	1.214
Dissolved oxygen (DO), field	mg/L	--	--	1.01	0.64	0.15	1.82	0.28	0.62	0.82	1.68	5.94	1.91	2.41
Oxidation reduction potential (ORP), field	millivolts	--	--	253.9	20.9	-100.80	-30.10	-65.30	61.5	-33.30	-52.40	-4.70	-57.90	-13.20
pH	s.u.	--	--	7.04	6.60	6.80	6.83	6.92	6.54	6.77	7.13	6.96	7.28	6.91
Temperature, field	Deg C	--	--	8.08	8.61	12.78	8.65	11.63	8.90	10.97	11.20	8.33	10.25	10.29
Turbidity (field)	NTU	--	--	5.55	8.95	20.12	189	255.0	2.58	5.8	36.3	7.3	154	70.2
Volatile Organics														
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	0.2	--	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
1,2-Dibromoethane (Ethylene dibromide)	ug/L	0.05	5.7	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	600	13	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
1,4-Dichlorobenzene	ug/L	75	17	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
1,4-Dioxane	ug/L	8.5	2,800	NA	NA	<5 [<5]	16 ^a	<5	NA	<5 [<5]	37 ^a	7	<5	<5
1,1,1-Trichloroethane	ug/L	200	89	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
2-Hexanone	ug/L	1,000	--	NA	<10	<10 [<10]	<10	<10	<10 [<10]	<10 [<10]	<10	<10	<10	<10
1,1,2,2-Tetrachloroethane	ug/L	8.5	78	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Acetone	ug/L	730	1,700	NA	<10	<10 [<10]	<10	<10	<10 [<10]	<10 [<10]	<10	<10	<10	<10
1,1,2-Trichloroethane	ug/L	5	330	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Bromodichloromethane	ug/L	80	--	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	880	740	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Bromoform	ug/L	80	--	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	7	130	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Bromomethane (Methyl bromide)	ug/L	10	35	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	5	360	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Carbon disulfide	ug/L	800	--	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Carbon tetrachloride	ug/L	5	45	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	70	620	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Chlorobenzene	ug/L	100	25	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	100	1,500	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Chloroform (Trichloromethane)	ug/L	80	350	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Trichloroethene	ug/L	5	200	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	2	<1
Chloromethane (Methyl chloride)	ug/L	260	--	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Tetrachloroethene	ug/L	5	60	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
cis-1,3-Dichloropropene	ug/L	--	--	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Vinyl chloride	ug/L	2	13	NA	<1	<1 [<1]	2	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Chloroethane	ug/L	430	1,100	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Dichlorodifluoromethane (CFC-12)	ug/L	1,700	--	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Benzene	ug/L	5	200	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Methyl acetate	ug/L	--	--	NA	<10	<10 [<10]	<10	<10	<10 [<10]	<10 [<10]	<10	<10	<10	<10
Ethylbenzene	ug/L	74	18	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Methylene chloride	ug/L	5	1,500	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Styrene	ug/L	100	80	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Toluene	ug/L	790	270	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	--	--	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Methyl tert butyl ether (MTBE)	ug/L	40	7,100	NA	18	<1 [<1]	<1	<1	4 [4]	<1 [<1]	<1	<1	<1	<1
Trichlorofluoromethane (CFC-11)	ug/L	2,600	--	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Trifluorotrichloroethane (Freon 113)	ug/L	170,000	32	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	13,000	2,200	NA	<10	<10 [<10]	<10	<10	<10 [<10]	<10 [<10]	<10	<10	<10	<10
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	1,800	--	NA	<10	<10 [<10]	<10	<10	<10 [<10]	<10 [<10]	<10	<10	<10	<10
1,2,4-Trichlorobenzene	ug/L	70	99	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
1,2-Dichloropropane	ug/L	5	230	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	6.6	28	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Cyclohexane	ug/L	--	--	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Methyl cyclohexane	ug/L	--	--	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Dibromochloromethane	ug/L	80	--	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
Isopropyl benzene	ug/L	800	28	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
o-Xylene	ug/L	--	--	NA	<1	<1 [<1]	<1	<1	<1 [<1]	<1 [<1]	<1	<1	<1	<1
m&p-Xylene	ug/L	--	--	NA	<2	<2 [<2]	<2	<2	<2 [<2]	<2 [<2]	<2	<2	<2	<2
Total Xylene	ug/L	280	41	NA	<3	<3 [<3]	<3	<3	<3 [<3]	<3 [<3]	<3	<3	<3	<3

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:		MI GW (DEQ2013) RES DW ^(a)	MI GW (DEQ2013) GSI ^(b)	CH-14-RO 12/08/14 CH-14-RO_120814	MW-01(2) 12/03/14 MW-01(2)_120314	MW-02-02(3) 12/05/14 MW-02-02(3)_120514	MW-02-03(6) 12/10/14 MW-02-03(6)_121014	MW-02-04(3) 12/05/14 MW-02-04(3)_120514	MW-03(2) 12/04/14 MW-03(2)_120414	MW-03-01 12/05/14 MW-03-01_120514	MW-03-04 12/10/14 MW-03-04_121014	MW-03-06 12/09/14 MW-03-06_120914	MW-03-08 12/11/14 MW-03-08_121114	MW-04-01(6) 12/10/14 MW-04-01(6)_121014
Semivolatile Organics														
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/L	120	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/L	73	11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/L	730	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/L	370	380	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	ug/L	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/L	7.7	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/L	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/L	1,800	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/L	45	18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	ug/L	260	19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/L	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/L	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/L	20	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	ug/L	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/L	1.1	0.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ug/L	520	11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/L	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/L	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/L	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/L	150	7.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/L	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/L	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/L	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/L	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	ug/L	43	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	ug/L	1,300	38	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	ug/L	52	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/L	1,500	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/L	3	7.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/L	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	ug/L	2.1	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	ug/L	5	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	ug/L	1.5	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	ug/L	1	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	ug/L	1	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Biphenyl (1,1-Biphenyl)	ug/L	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/L	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	ug/L	2	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	6	25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	ug/L	1,200	67	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/L	5,800	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/L	85	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	ug/L	1.6	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	ug/L	2	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/L	--	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	ug/L	5,500	110	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/L	73,000	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	ug/L	880	9.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	ug/L	130	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	ug/L	210	1.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	ug/L	880	12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	ug/L	1	0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/L	15	0.053	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/L	50	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/L	7.3	6.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	ug/L	2	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/L	770	1,300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/L	3.4	180	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/L	5	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:		MI GW (DEQ2013) RES DW ^(a)	MI GW (DEQ2013) GSI ^(b)	CH-14-RO 12/08/14 CH-14-RO_120814	MW-01(2) 12/03/14 MW-01(2)_120314	MW-02-02(3) 12/05/14 MW-02-02(3)_120514	MW-02-03(6) 12/10/14 MW-02-03(6)_121014	MW-02-04(3) 12/05/14 MW-02-04(3)_120514	MW-03(2) 12/04/14 MW-03(2)_120414	MW-03-01 12/05/14 MW-03-01_120514	MW-03-04 12/10/14 MW-03-04_121014	MW-03-06 12/09/14 MW-03-06_120914	MW-03-08 12/11/14 MW-03-08_121114	MW-04-01(6) 12/10/14 MW-04-01(6)_121014
N-Nitrosodiphenylamine	ug/L	270	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/L	1	2.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	ug/L	52	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	ug/L	4,400	450	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	ug/L	140	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics														
Iron	mg/L	0.3	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/L	0.006	0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/L	0.01	0.01	<0.002	0.002	NA	0.070 ^{ab}	NA	<0.002 [<<0.002]	0.018 [0.017] ^{ab}	NA	0.016 ^{ab}	NA	NA
Barium	mg/L	2	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Boron	mg/L	0.5	7.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/L	0.005	0.0045	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/L	- -	0.16	15.1 ^b	<0.005	NA	0.008	NA	<0.005 [<<0.005]	<0.005 [<<0.005]	NA	0.008	NA	NA
Chromium VI (hexavalent)	mg/L	0.1	0.011	16.4 ^{ab}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	mg/L	0.04	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/L	1	0.02	0.005	0.006	NA	0.014	NA	<0.005 [<<0.005]	<0.005 [<<0.005]	NA	<0.005	NA	NA
Lead	mg/L	0.004	0.044	<0.003	<0.003	NA	0.006 ^a	NA	<0.003 [<<0.003]	<0.003 [<<0.003]	NA	<0.003	NA	NA
Manganese	mg/L	0.05	4.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/L	0.002	0.0000013	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	mg/L	0.1	0.12	0.039	0.019	NA	0.050	NA	0.032 [0.032]	0.005 [<0.005]	NA	0.032	NA	NA
Selenium	mg/L	0.05	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	mg/L	0.034	0.0002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/L	0.0045	0.027	<0.005	<0.005	NA	<0.005	NA	<0.005 [<0.005]	0.007 [0.008] ^a	NA	<0.005	NA	NA
Zinc	mg/L	2.4	0.26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered														
Antimony (dissolved)	mg/L	0.006	0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic (dissolved)	mg/L	0.01	0.01	NA	NA	NA	0.033 ^{ab}	NA	NA	NA	NA	NA	NA	NA
Barium (dissolved)	mg/L	2	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium (dissolved)	mg/L	0.005	0.0045	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium Total	mg/L	- -	0.16	NA	NA	NA	<0.005	NA	NA	NA	NA	NA	NA	NA
Cobalt (dissolved)	mg/L	0.04	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	mg/L	1	0.02	NA	NA	NA	<0.005	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	mg/L	0.004	0.044	NA	NA	NA	<0.003	NA	NA	NA	NA	NA	NA	NA
Manganese (dissolved)	mg/L	0.05	4.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury (dissolved)	mg/L	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	mg/L	0.1	0.12	NA	NA	NA	0.045	NA	NA	NA	NA	NA	NA	NA
Selenium (dissolved)	mg/L	0.05	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver (dissolved)	mg/L	0.034	0.0002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	mg/L	0.0045	0.027	NA	NA	NA	<0.005	NA	NA	NA	NA	NA	NA	NA
Zinc (dissolved)	mg/L	2.4	0.26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:		Units	MW-04-04R 12/09/14	MW-04-05(6) 12/04/14	MW-04-06R 12/04/14	MW-05(3) 12/08/14	MW-06(3) 12/09/14	MW-12-01 12/08/14	MW-12-02 12/03/14	MW-12-05 12/11/14	MW-12-05 01/15/15	MW-12-06 12/11/14	MW-12-09 12/09/14	MW-12-11 12/04/14	MW-12-12 12/05/14
Field			MW-04-04R_120914	MW-04-05(6)_120414	MW-04-06R_120414	MW-05(3)_120814	MW-06(3)_120914	MW-12-01_120814	MW-12-02_120314	MW-12-05_121114	MW-12-05_011515	MW-12-06_121114	MW-12-09_120914	MW-12-11_120414	MW-12-12_120514
Conductance, specific	mS/cm	1.057		10.49	3.840	1.996	0.458	1.973	1.076	3.691	3.593	0.868	3.498	6.503	3.844
Dissolved oxygen (DO), field	mg/L	2.31		0.20	0.26	3.42	2.67	0.36	0.24	0.55	1.62	0.52	0.43	0.60	0.44
Oxidation reduction potential (ORP), field	millivolts	-67.00		-50.20	-160.10	219.0	211.8	-42.50	-136.80	-58.10	-7.8	-90.70	-21.70	68.0	-25.50
pH	s.u.	7.06		7.37	7.48	7.18	7.45	7.01	7.31	8.72	7.04	7.11	6.99	7.23	6.91
Temperature, field	Deg C	11.18		11.83	10.07	6.16	5.25	8.57	8.82	8.11	12.02	11.76	11.63	3.88	11.31
Turbidity (field)	NTU	29.3		4.3	41.8	8.25	4.67	163	38.3	20.31	8.74	7.77	NA	3.7	352
Volatile Organics															
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
1,2-Dibromoethane (Ethylene dibromide)	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
1,4-Dichlorobenzene	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
1,4-Dioxane	ug/L	NA		NA	NA	NA	NA	<5	<5	7	6	<5	<5	NA	NA
1,1,1-Trichloroethane	ug/L	NA		<1	NA	<1	21	<1	<1	<1	NA	<1	<1	<1	<1
2-Hexanone	ug/L	NA		<10	NA	<10	<10	<10	<10	<10	NA	<10	<10	<10	<10
1,1,2,2-Tetrachloroethane	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Acetone	ug/L	NA		<10	NA	<10	<10	<10	<10	<10	NA	<10	<10	<10	<10
1,1,2-Trichloroethane	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Bromodichloromethane	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	NA		<1	NA	<1	3	<1	<1	<1	NA	<1	<1	<1	<1
Bromoform	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Bromomethane (Methyl bromide)	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Carbon disulfide	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Carbon tetrachloride	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	NA		1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Chlorobenzene	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Chloroform (Trichloromethane)	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Trichloroethene	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Chloromethane (Methyl chloride)	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Tetrachloroethene	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
cis-1,3-Dichloropropene	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Vinyl chloride	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Chloroethane	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Dichlorodifluoromethane (CFC-12)	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Benzene	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Methyl acetate	ug/L	NA		<10	NA	<10	<10	<10	<10	<10	NA	<10	<10	<10	<10
Ethylbenzene	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Methylene chloride	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Styrene	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Toluene	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Methyl tert butyl ether (MTBE)	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Trichlorofluoromethane (CFC-11)	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Trifluorotrichloroethane (Freon 113)	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	NA		<10	NA	<10	<10	<10	<10	<10	NA	<10	<10	<10	<10
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	NA		<10	NA	<10	<10	<10	<10	<10	NA	<10	<10	<10	<10
1,2,4-Trichlorobenzene	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
1,2-Dichloropropane	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Cyclohexane	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Methyl cyclohexane	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Dibromochloromethane	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
Isopropyl benzene	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
o-Xylene	ug/L	NA		<1	NA	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1
m&p-Xylene	ug/L	NA		<2	NA	<2	<2	<2	<2	<2	NA	<2	<2	<2	<2
Total Xylene	ug/L	NA		<3	NA	<3	<3	<3	<3	<3	NA	<3	<3	<3	<3

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:		MW-04-04R 12/09/14	MW-04-05(6) 12/04/14	MW-04-06R 12/04/14	MW-05(3) 12/08/14	MW-06(3) 12/09/14	MW-12-01 12/08/14	MW-12-02 12/03/14	MW-12-05 12/11/14	MW-12-05 01/15/15	MW-12-06 12/11/14	MW-12-09 12/09/14	MW-12-11 12/04/14	MW-12-12 12/05/14
	Units	MW-04-04R_120914	MW-04-05(6)_120414	MW-04-06R_120414	MW-05(3)_120814	MW-06(3)_120914	MW-12-01_120814	MW-12-02_120314	MW-12-05_121114	MW-12-05_011515	MW-12-06_121114	MW-12-09_120914	MW-12-11_120414	MW-12-12_120514
Semivolatile Organics														
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Biphenyl (1,1-Biphenyl)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:		MW-04-04R 12/09/14	MW-04-05(6) 12/04/14	MW-04-06R 12/04/14	MW-05(3) 12/08/14	MW-06(3) 12/09/14	MW-12-01 12/08/14	MW-12-02 12/03/14	MW-12-05 12/11/14	MW-12-05 01/15/15	MW-12-06 12/11/14	MW-12-09 12/09/14	MW-12-11 12/04/14	MW-12-12 12/05/14
	Units	MW-04-04R 120914	MW-04-05(6) 120414	MW-04-06R 120414	MW-05(3) 120814	MW-06(3) 120914	MW-12-01 120814	MW-12-02 120314	MW-12-05 121114	MW-12-05 011515	MW-12-06 121114	MW-12-09 120914	MW-12-11 120414	MW-12-12 120514
N-Nitrosodiphenylamine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics														
Iron	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/L	0.043 [0.044] ^{ab}	<0.002	0.023 ^{ab}	<0.002	NA	NA	NA	NA	NA	NA	NA	0.004	0.002
Barium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Boron	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/L	<0.005 [<0.005]	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	<0.005	0.147
Chromium VI (hexavalent)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/L	<0.005 [<0.005]	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	<0.005	0.015
Lead	mg/L	<0.003 [<0.003]	<0.003	<0.003	0.004	NA	NA	NA	NA	NA	NA	NA	<0.003	0.012 ^a
Manganese	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	mg/L	<0.005 [<0.005]	<0.005	<0.005	0.005	NA	NA	NA	NA	NA	NA	NA	0.005	0.684 ^{ab}
Selenium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/L	<0.005 [<0.005]	0.006 ^a	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	<0.005	0.006 ^a
Zinc	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered														
Antimony (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic (dissolved)	mg/L	0.034 [0.033] ^{ab}	NA	0.020 ^{ab}	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.002
Barium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium Total	mg/L	<0.005 [<0.005]	NA	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.014
Cobalt (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	mg/L	<0.005 [<0.005]	NA	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005
Lead (dissolved)	mg/L	<0.003 [<0.003]	NA	<0.003	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.003
Manganese (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	mg/L	<0.005 [<0.005]	NA	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.675 ^{ab}
Selenium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	mg/L	<0.005 [<0.005]	NA	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005
Zinc (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:		MW-12-13 12/05/14	MW-12-16 12/03/14	MW-12-18 12/08/14	MW-12-20 12/03/14	MW-12-21 12/03/14	MW-13-22 12/03/14	MW-13-23 12/02/14	MW-13-24 12/03/14	MW-13-25 12/04/14	MW-13-26 12/02/14	MW-13-28 12/03/14	MW-13-29 12/04/14	MW-13-30 12/02/14	MW-13-31 12/04/14
	Units	MW-12-13_120514	MW-12-16_120314	MW-12-18_120814	MW-12-20_120314	MW-12-21_120314	MW-13-22_120314	MW-13-23_120214	MW-13-24_120314	MW-13-25_120414	MW-13-26_120214	MW-13-28_120314	MW-13-29_120414	MW-13-30_120214	MW-13-31_120414
Field															
Conductance, specific	mS/cm	1.485	2.182	2.903	1.280	2.401	1.703	1.877	2.504	3.321	1.893	1.088	2.457	1.689	1.076
Dissolved oxygen (DO), field	mg/L	3.44	0.88	0.31	1.18	1.18	1.98	3.31	8.59	1.33	0.65	0.56	1.90	0.47	0.27
Oxidation reduction potential (ORP), field	millivolts	72.5	-7.00	0.2	-62.60	-1.20	-248.80	61.3	-56.90	-33.70	-46.40	33.6	35.7	-17.50	89.5
pH	s.u.	7.56	7.52	6.87	6.97	6.22	6.92	6.81	7.19	6.84	6.76	8.31	6.50	6.66	6.66
Temperature, field	Deg C	8.49	5.05	7.94	7.10	5.05	7.13	11.91	11.74	9.28	11.46	11.53	5.87	9.54	8.20
Turbidity (field)	NTU	9.7	7.1	8.24	460	177	7.14	70.5	9.62	8.05	4.99	47.07	50.3	11.2	9.65
Volatile Organics															
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
1,2-Dibromoethane (Ethylene dibromide)	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
1,2-Dichlorobenzene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
1,4-Dichlorobenzene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
1,4-Dioxane	ug/L	<5 [<5]	NA	NA	<5	410 Y ^a	181 ^a	<5	<5	13 ^a	<5	<5	15 ^a	<5	NA
1,1,1-Trichloroethane	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
2-Hexanone	ug/L	<10 [<10]	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA
1,1,2,2-Tetrachloroethane	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Acetone	ug/L	<10 [<10]	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA
1,1,2-Trichloroethane	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Bromodichloromethane	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
1,1-Dichloroethane	ug/L	<1 [<1]	<1	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Bromoform	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
1,1-Dichloroethene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Bromomethane (Methyl bromide)	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
1,2-Dichloroethane	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Carbon disulfide	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Carbon tetrachloride	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
cis-1,2-Dichloroethene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Chlorobenzene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
trans-1,2-Dichloroethene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Chloroform (Trichloromethane)	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Trichloroethene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Chloromethane (Methyl chloride)	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Tetrachloroethene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
cis-1,3-Dichloropropene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Vinyl chloride	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Chloroethane	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Dichlorodifluoromethane (CFC-12)	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Benzene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Methyl acetate	ug/L	<10 [<10]	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA
Ethylbenzene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Methylene chloride	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Styrene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Toluene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
trans-1,3-Dichloropropene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Methyl tert butyl ether (MTBE)	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Trichlorofluoromethane (CFC-11)	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Trifluorotrichloroethane (Freon 113)	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	<10 [<10]	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	<10 [<10]	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA
1,2,4-Trichlorobenzene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
1,2-Dichloropropane	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
1,3-Dichlorobenzene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Cyclohexane	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Methyl cyclohexane	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Dibromochloromethane	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
Isopropyl benzene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
o-Xylene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA
m&p-Xylene	ug/L	<2 [<2]	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NA
Total Xylene	ug/L	<3 [<3]	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	NA

TABLE 3
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DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:		MW-12-13 12/05/14	MW-12-16 12/03/14	MW-12-18 12/08/14	MW-12-20 12/03/14	MW-12-21 12/03/14	MW-13-22 12/03/14	MW-13-23 12/02/14	MW-13-24 12/03/14	MW-13-25 12/04/14	MW-13-26 12/02/14	MW-13-28 12/03/14	MW-13-29 12/04/14	MW-13-30 12/02/14	MW-13-31 12/04/14
	Units	MW-12-13_120514	MW-12-16_120314	MW-12-18_120814	MW-12-20_120314	MW-12-21_120314	MW-13-22_120314	MW-13-23_120214	MW-13-24_120314	MW-13-25_120414	MW-13-26_120214	MW-13-28_120314	MW-13-29_120414	MW-13-30_120214	MW-13-31_120414
Semivolatile Organics															
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Biphenyl (1,1-Biphenyl)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:		MW-12-13 12/05/14	MW-12-16 12/03/14	MW-12-18 12/08/14	MW-12-20 12/03/14	MW-12-21 12/03/14	MW-13-22 12/03/14	MW-13-23 12/02/14	MW-13-24 12/03/14	MW-13-25 12/04/14	MW-13-26 12/02/14	MW-13-28 12/03/14	MW-13-29 12/04/14	MW-13-30 12/02/14	MW-13-31 12/04/14
	Units	MW-12-13_120514	MW-12-16_120314	MW-12-18_120814	MW-12-20_120314	MW-12-21_120314	MW-13-22_120314	MW-13-23_120214	MW-13-24_120314	MW-13-25_120414	MW-13-26_120214	MW-13-28_120314	MW-13-29_120414	MW-13-30_120214	MW-13-31_120414
N-Nitrosodiphenylamine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics															
Iron	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/L	<0.002 [<0.002]	0.023 ^{ab}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.002 [<0.002]
Barium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Boron	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/L	0.006 [<0.005]	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.008 [0.008]
Chromium VI (hexavalent)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/L	<0.005 [<0.005]	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.007 [0.006]
Lead	mg/L	<0.003 [<0.003]	0.004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.003 [0.003]
Manganese	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	mg/L	0.014 [0.012]	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.049 [0.051]
Selenium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/L	<0.005 [<0.005]	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005 [<0.005]
Zinc	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered															
Antimony (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium Total	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:		Units	MW-13-32 12/04/14	MW-13-33 12/04/14	MW-13-34 12/05/14	MW-13-35 12/03/14	MW-13-36R 12/08/14	MW-13-38 12/08/14	MW-13-39B 12/04/14	MW-13-40 12/05/14	MW-13-41 12/08/14	MW-13-42 12/11/14	MW-13-43 12/05/14	MW-13-44 12/06/14	MW-13-44 01/15/15
MW-13-32_120414			MW-13-33_120414		MW-13-34_120514	MW-13-35_120314	MW-13-36R_120814	MW-13-38_120814	MW-13-39B_120414	MW-13-40_120514	MW-13-41_120814	MW-13-42_121114	MW-13-43_120514	MW-13-44_120614	MW-13-44_011515
Field															
Conductance, specific	mS/cm	1.523	0.772	2.055	1.919	1.926	2.473	1.293	6.682	5.707	NA	NA	1.342	1.394	
Dissolved oxygen (DO), field	mg/L	1.20	2.70	1.01	1.03	0.55	1.35	0.26	0.67	0.92	NA	NA	0.24	10.25	
Oxidation reduction potential (ORP), field	millivolts	116.6	170.8	-50.30	-1.40	24.5	-55.30	-179.80	-45.60	-14.60	NA	NA	34.4	67.3	
pH	s.u.	6.90	7.71	6.99	7.10	12.11	6.32	7.57	6.92	7.02	NA	NA	8.72	7.93	
Temperature, field	Deg C	8.52	9.95	5.74	8.75	9.83	2.86	8.52	10.66	4.54	NA	NA	10.47	9.78	
Turbidity (field)	NTU	9.61	4.72	692	7.2	61.2	8.36	15.0	144.2	7.28	NA	NA	9.48	26.9	
Volatile Organics															
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
1,2-Dibromoethane (Ethylene dibromide)	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
1,2-Dichlorobenzene	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
1,4-Dichlorobenzene	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
1,4-Dioxane	ug/L	NA	NA	49 ^a	NA	NA	<5	NA	<5	11 ^a	11 ^a	350 Y ^a	6	<5	
1,1,1-Trichloroethane	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
2-Hexanone	ug/L	NA	NA	<10	NA	NA	<10	NA	<10	<10	<10	<10	<10	<10	NA
1,1,2,2-Tetrachloroethane	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Acetone	ug/L	NA	NA	<10	NA	NA	<10	NA	<10	<10	<10	<10	14	<10	NA
1,1,2-Trichloroethane	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Bromodichloromethane	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
1,1-Dichloroethane	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Bromoform	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
1,1-Dichloroethene	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Bromomethane (Methyl bromide)	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
1,2-Dichloroethane	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Carbon disulfide	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Carbon tetrachloride	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
cis-1,2-Dichloroethene	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Chlorobenzene	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
trans-1,2-Dichloroethene	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Chloroform (Trichloromethane)	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Trichloroethene	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Chloromethane (Methyl chloride)	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Tetrachloroethene	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
cis-1,3-Dichloropropene	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Vinyl chloride	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Chloroethane	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Dichlorodifluoromethane (CFC-12)	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Benzene	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Methyl acetate	ug/L	NA	NA	<10	NA	NA	<10	NA	<10	<10	<10	<10	<10	<10	NA
Ethylbenzene	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Methylene chloride	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Styrene	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Toluene	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
trans-1,3-Dichloropropene	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Methyl tert butyl ether (MTBE)	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Trichlorofluoromethane (CFC-11)	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Trifluorotrichloroethane (Freon 113)	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	NA	NA	<10	NA	NA	<10	NA	<10	<10	<10	<10	<10	<10	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	NA	NA	<10	NA	NA	<10	NA	<10	<10	<10	<10	<10	<10	NA
1,2,4-Trichlorobenzene	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
1,2-Dichloropropane	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
1,3-Dichlorobenzene	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Cyclohexane	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Methyl cyclohexane	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Dibromochloromethane	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
Isopropyl benzene	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
o-Xylene	ug/L	NA	NA	<1	NA	NA	<1	NA	<1	<1	<1	<1	<1	<1	NA
m&p-Xylene	ug/L	NA	NA	<2	NA	NA	<2	NA	<2	<2	<2	<2	<2	<2	NA
Total Xylene	ug/L	NA	NA	<3	NA	NA	<3	NA	<3	<3	<3	<3	<3	<3	NA

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:	Units	MW-13-32 12/04/14 MW-13-32_120414	MW-13-33 12/04/14 MW-13-33_120414	MW-13-34 12/05/14 MW-13-34_120514	MW-13-35 12/03/14 MW-13-35_120314	MW-13-36R 12/08/14 MW-13-36R_120814	MW-13-38 12/08/14 MW-13-38_120814	MW-13-39B 12/04/14 MW-13-39B_120414	MW-13-40 12/05/14 MW-13-40_120514	MW-13-41 12/08/14 MW-13-41_120814	MW-13-42 12/11/14 MW-13-42_121114	MW-13-43 12/05/14 MW-13-43_120514	MW-13-44 12/06/14 MW-13-44_120614	MW-13-44 01/15/15 MW-13-44_011515
Semivolatile Organics														
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Biphenyl (1,1-Biphenyl)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:	Units	MW-13-32 12/04/14 MW-13-32_120414	MW-13-33 12/04/14 MW-13-33_120414	MW-13-34 12/05/14 MW-13-34_120514	MW-13-35 12/03/14 MW-13-35_120314	MW-13-36R 12/08/14 MW-13-36R_120814	MW-13-38 12/08/14 MW-13-38_120814	MW-13-39B 12/04/14 MW-13-39B_120414	MW-13-40 12/05/14 MW-13-40_120514	MW-13-41 12/08/14 MW-13-41_120814	MW-13-42 12/11/14 MW-13-42_121114	MW-13-43 12/05/14 MW-13-43_120514	MW-13-44 12/06/14 MW-13-44_120614	MW-13-44 01/15/15 MW-13-44_011515
N-Nitrosodiphenylamine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics														
Iron	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/L	<0.002	<0.002 [<0.002]	NA	0.003	0.002	NA	0.002 [0.002]	0.020 ^{ab}	0.014 ^{ab}	NA	NA	NA	NA
Barium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Boron	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/L	0.156	<0.005 [<0.005]	NA	<0.005	<0.005	NA	<0.005 [<0.005]	0.006	<0.005	NA	NA	NA	NA
Chromium VI (hexavalent)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/L	0.014	<0.005 [<0.005]	NA	<0.005	0.009	NA	<0.005 [<0.005]	0.009	<0.005	NA	NA	NA	NA
Lead	mg/L	0.004	<0.003 [<0.003]	NA	0.005 ^a	0.006 ^a	NA	<0.003 [<0.003]	<0.003	<0.003	NA	NA	NA	NA
Manganese	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	mg/L	1.41 ^{ab}	<0.005 [<0.005]	NA	0.006	0.009	NA	<0.005 [<0.005]	0.019	0.021	NA	NA	NA	NA
Selenium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/L	<0.005	<0.005 [<0.005]	NA	0.005 ^a	0.013 ^a	NA	<0.005 [<0.005]	0.006 ^a	<0.005	NA	NA	NA	NA
Zinc	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered														
Antimony (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic (dissolved)	mg/L	NA	NA	NA	NA	0.002	NA	NA	0.013 ^{ab}	NA	NA	NA	NA	NA
Barium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium Total	mg/L	NA	NA	NA	NA	<0.005	NA	NA	<0.005	NA	NA	NA	NA	NA
Cobalt (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	mg/L	NA	NA	NA	NA	<0.005	NA	NA	<0.005	NA	NA	NA	NA	NA
Lead (dissolved)	mg/L	NA	NA	NA	NA	<0.003	NA	NA	<0.003	NA	NA	NA	NA	NA
Manganese (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	mg/L	NA	NA	NA	NA	0.007	NA	NA	0.016	NA	NA	NA	NA	NA
Selenium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	mg/L	NA	NA	NA	NA	0.011 ^a	NA	NA	<0.005	NA	NA	NA	NA	NA
Zinc (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:		MW-13-45 12/09/14 MW-13-45_120914	MW-13-46 12/04/14 MW-13-46_120414	MW-13-47 12/05/14 MW-13-47_120514	MW-13-48 12/05/14 MW-13-48_120514	MW-13-49 12/05/14 MW-13-49_120514	MW-13-50 12/04/14 MW-13-50_120414	MW-13-51 12/04/14 MW-13-51_120414	MW-13-52 12/05/14 MW-13-52_120514	MW-13-53 12/05/14 MW-13-53_120514	MW-14-54 12/12/14 MW-14-54_121214	MW-14-55 12/08/14 MW-14-55_120814	MW-14-56 12/09/14 MW-14-56_120914	MW-14-57 12/10/14 MW-14-57_121014	MW-14-58 12/10/14 MW-14-58_121014
Field															
Conductance, specific	mS/cm	NA	1.910	1.678	2.198	1.675	0.987	1.440	1.169	1.089	1.927	0.889	5.012	NA	5.458
Dissolved oxygen (DO), field	mg/L	NA	1.49	1.55	0.69	1.60	0.40	0.77	0.35	0.75	0.43	5.39	2.15	NA	0.16
Oxidation reduction potential (ORP), field	millivolts	NA	-8.40	-93.70	-36.10	-42.00	-27.80	-2.20	-27.80	7.8	27.5	57.5	-0.600	NA	-79.80
pH	s.u.	NA	6.65	7.01	6.82	6.00	6.78	6.73	6.66	6.71	7.90	6.92	7.55	NA	6.67
Temperature, field	Deg C	NA	5.06	6.82	7.59	5.23	7.60	6.75	7.10	7.43	9.49	7.51	6.48	NA	10.72
Turbidity (field)	NTU	NA	379	7.55	4.85	7.95	1.65	32.8	12.9	9.34	7.35	41.9	49.2	NA	39.33
Volatile Organics															
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
1,2-Dibromoethane (Ethylene dibromide)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
1,4-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
1,4-Dioxane	ug/L	38 ^a	<5	<5	136 ^a	<5	<5	<5	<5	<5	<5	<5	6	<5 [<5]	58 ^a
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	<1	13 [13]	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10 [<10]	<10
1,1,2,2-Tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
Acetone	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<37 X	<10	<10	<10 [<10]	<10
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
Bromodichloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2 [2]	<1
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
Bromomethane (Methyl bromide)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
1,2-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
cis-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
Chlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
Chloroform (Trichloromethane)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
Trichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
Chloromethane (Methyl chloride)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
Tetrachloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	5	<1	<1 [<1]	<1
cis-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
Dichlorodifluoromethane (CFC-12)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
Benzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	22 ^a	<1	<1	<1 [<1]	<1
Methyl acetate	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10 [<10]	<10
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	37 ^b	<1	<1	<1 [<1]	<1
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	34	<1	<1	<1 [<1]	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
Methyl tert butyl ether (MTBE)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
Trichlorofluoromethane (CFC-11)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
Trifluorotrichloroethane (Freon 113)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10 [<10]	<10
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10 [<10]	<10
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
Cyclohexane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<13 X	<1	<1	<1 [<1]	<1
Methyl cyclohexane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	6	<1	<1	<1 [<1]	<1
Dibromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1
Isopropyl benzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	<1	<1 [<1]	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	28	<1	<1	<1 [<1]	<1
m&p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	239	<2	<2	<2 [<2]	<2
Total Xylene	ug/L	<3	<3	<3	<3	<3	<3	<3	<3	<3	267 ^u	<3	<3	<3 [<3]	<3

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:		MW-13-45 12/09/14 MW-13-45_120914	MW-13-46 12/04/14 MW-13-46_120414	MW-13-47 12/05/14 MW-13-47_120514	MW-13-48 12/05/14 MW-13-48_120514	MW-13-49 12/05/14 MW-13-49_120514	MW-13-50 12/04/14 MW-13-50_120414	MW-13-51 12/04/14 MW-13-51_120414	MW-13-52 12/05/14 MW-13-52_120514	MW-13-53 12/05/14 MW-13-53_120514	MW-14-54 12/12/14 MW-14-54_121214	MW-14-55 12/08/14 MW-14-55_120814	MW-14-56 12/09/14 MW-14-56_120914	MW-14-57 12/10/14 MW-14-57_121014	MW-14-58 12/10/14 MW-14-58_121014
Semivolatile Organics															
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
2,4,6-Trichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
2,4-Dichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
2,4,5-Trichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
2,4-Dimethylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	13	<1	<1	<1 [<1]	<1
2,4-Dinitrophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
2,4-Dinitrotoluene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
2,6-Dinitrotoluene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
2-Chloronaphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
2-Chlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
2-Methylnaphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
2-Methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
2-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
2-Nitrophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
3&4-Methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
3,3'-Dichlorobenzidine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Naphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
3-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
4,6-Dinitro-2-methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
4-Bromophenyl phenyl ether	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
4-Chloro-3-methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
4-Chloroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
4-Chlorophenyl phenyl ether	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
4-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
4-Nitrophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Anthracene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Acenaphthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Acenaphthylene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Acetophenone	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Atrazine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Benzaldehyde	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Benzo(a)anthracene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Benzo(a)pyrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Benzo(b)fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Benzo(g,h,i)perylene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Benzo(k)fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Biphenyl (1,1-Biphenyl)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
bis(2-Chloroethoxy)methane	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
bis(2-Chloroethyl)ether	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<2	8 ^a	<2	<2 [3 B]	<2
Butyl benzylphthalate (BBP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Caprolactam	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Carbazole	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Chrysene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Dibenz(a,h)anthracene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<2	<2	<2	<2 [<2]	<2
Dibenzofuran	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Diethyl phthalate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Dimethyl phthalate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<2	<2	<2	<2 [<2]	<2
Di-n-butylphthalate (DBP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Di-n-octyl phthalate (DnOP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Fluorene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Hexachlorobenzene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Hexachlorobutadiene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Hexachlorocyclopentadiene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Hexachloroethane	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Indeno(1,2,3-cd)pyrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Isophorone	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Nitrobenzene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
N-Nitrosodi-n-propylamine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:		MW-13-45 12/09/14	MW-13-46 12/04/14	MW-13-47 12/05/14	MW-13-48 12/05/14	MW-13-49 12/05/14	MW-13-50 12/04/14	MW-13-51 12/04/14	MW-13-52 12/05/14	MW-13-53 12/05/14	MW-14-54 12/12/14	MW-14-55 12/08/14	MW-14-56 12/09/14	MW-14-57 12/10/14	MW-14-58 12/10/14
	Units	MW-13-45_120914	MW-13-46_120414	MW-13-47_120514	MW-13-48_120514	MW-13-49_120514	MW-13-50_120414	MW-13-51_120414	MW-13-52_120514	MW-13-53_120514	MW-14-54_121214	MW-14-55_120814	MW-14-56_120914	MW-14-57_121014	MW-14-58_121014
N-Nitrosodiphenylamine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Pentachlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Phenanthrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Phenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	<1	<1	<1 [<1]	<1
Pyrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1 [<1]	<1
Inorganics															
Iron	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	<0.005	<0.005	<0.005 [<0.005]	<0.005
Arsenic	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.002	<0.002	0.003	<0.002 [<0.002]	0.005
Barium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.018	0.082	0.036	0.023 [0.024]	0.114
Boron	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.09	0.04	0.08	0.31 [0.32]	0.15
Cadmium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0005	<0.0005	<0.0005	<0.0005 [<0.0005]	<0.0005
Chromium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	<0.005	0.057	<0.005 [<0.005]	<0.005
Chromium VI (hexavalent)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	<0.005	0.010	<0.005 [<0.005]	<0.005
Copper	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	<0.005	0.008	<0.005 [0.054]	<0.005
Lead	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.003	<0.003	<0.003	<0.003 [<0.003]	<0.003
Manganese	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.026	0.016	0.333 ^a	0.079 [0.078] ^a	0.782 ^a
Mercury	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0002	<0.0002	<0.0002	<0.0002 [<0.0002]	<0.0002
Nickel	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.012	0.005	0.683 ^{ab}	0.009 [0.008]	0.015
Selenium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	<0.005	<0.005	<0.005 [<0.005]	<0.005
Silver	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0005	<0.0005	<0.0005	<0.0005 [<0.0005]	<0.0005
Vanadium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	<0.005	<0.005	<0.005 [<0.005]	<0.005
Zinc	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	0.006	0.015	<0.005 [<0.005]	<0.005
Inorganics-Filtered															
Antimony (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	<0.005	NA	<0.005
Arsenic (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.002	0.004	NA	0.005
Barium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.078	0.036	NA	0.107
Cadmium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0005	<0.0005	NA	<0.0005
Chromium Total	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	0.057	NA	<0.005
Cobalt (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	0.009	NA	<0.005
Copper (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.005	0.007	NA	<0.005
Lead (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.003	<0.003	NA	<0.003
Manganese (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.007	0.328 ^a	NA	0.762 ^a
Mercury (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0002	<0.0002	NA	<0.0002
Nickel (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.005	0.665 ^{ab}	NA	0.015
Selenium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	<0.005	NA	<0.005
Silver (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0005	<0.0005	NA	<0.0005
Vanadium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	<0.005	NA	<0.005
Zinc (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.010	0.014	NA	<0.005

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:		MW-14-59 12/10/14	MW-14-60 12/10/14	MW-14-61 12/10/14	MW-14-62 12/11/14	MW-14-63 12/03/14	MW-14-64 12/03/14	MW-14-65 12/09/14	MW-14-66 12/09/14	MW-14-67 12/08/14	MW-14-68 12/01/14	MW-14-69 12/01/14	MW-14-70 12/05/14	MW-19 12/09/14	MW-22 12/08/14	MW-23 12/08/14
	Units	MW-14-59_121014	MW-14-60_121014	MW-14-61_121014	MW-14-62_121114	MW-14-63_120314	MW-14-64_120314	MW-14-65_120914	MW-14-66_120914	MW-14-67_120814	Dry	Dry	MW-14-70_120514	MW-19_120914	MW-22_120814	MW-23_120814
Field																
Conductance, specific	mS/cm	1.157	1.246	1.157	0.983	1.083	1.582	1.066	1.187	1.868	NA	NA	1.552	1.132	2.152	1.269
Dissolved oxygen (DO), field	mg/L	0.37	0.25	0.96	0.25	0.25	0.26	1.21	0.85	0.91	NA	NA	0.45	4.18	1.56	1.04
Oxidation reduction potential (ORP), field	millivolts	-0.400	-51.80	19.2	-52.60	-60.30	-63.90	199.7	-74.90	147.5	NA	NA	42.2	219.3	28.3	49.8
pH	s.u.	6.89	7.27	6.58	11.93	7.05	7.04	7.21	7.41	7.53	NA	NA	7.45	7.18	7.18	7.23
Temperature, field	Deg C	7.06	9.05	3.21	9.29	8.13	9.59	7.32	8.92	9.66	NA	NA	7.85	6.76	12.36	9.75
Turbidity (field)	NTU	3.56	4.25	39.9	9.87	66.6	31.2	80.2	3.1	3.4	NA	NA	8.2	220	39.21	5.19
Volatile Organics																
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
1,2-Dibromoethane (Ethylene dibromide)	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
1,4-Dichlorobenzene	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
1,4-Dioxane	ug/L	280 Y ^a	178 ^a	9 ^a	230 Y ^a	<5	<5	<5	<5	<5	NA	NA	<5	<5	<5	<5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<50 Y	<10	<10	<10	<10	<10	NA	NA	<10	<10	<10	<10
1,1,2,2-Tetrachloroethane	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Acetone	ug/L	<10	<10	<10	<50 Y	<10	<10	<10	<10	<10	NA	NA	<10	<10	<10	<10
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Bromodichloromethane	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	15	<1	<1	252 Y	<1	<1	<1	1	<1	NA	NA	<1	<1	<1	<1
Bromoform	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	34 ^a	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Bromomethane (Methyl bromide)	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Chlorobenzene	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Chloroform (Trichloromethane)	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Trichloroethene	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Chloromethane (Methyl chloride)	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Tetrachloroethene	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
cis-1,3-Dichloropropene	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Vinyl chloride	ug/L	<1	3 ^a	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Chloroethane	ug/L	<1	19	<1	12 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Dichlorodifluoromethane (CFC-12)	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Benzene	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Methyl acetate	ug/L	<10	<10	<10	<50 Y	<10	<10	<10	<10	<10	NA	NA	<10	<10	<10	<10
Ethylbenzene	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Methylene chloride	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Toluene	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Methyl tert butyl ether (MTBE)	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Trichlorofluoromethane (CFC-11)	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Trifluorotrichloroethane (Freon 113)	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	<10	<10	<10	<50 Y	<10	<10	<10	<10	<10	NA	NA	<10	<10	<10	<10
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	<10	<10	<10	<50 Y	<10	<10	<10	<10	<10	NA	NA	<10	<10	<10	<10
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
1,2-Dichloropropane	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Cyclohexane	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Methyl cyclohexane	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Dibromochloromethane	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
Isopropyl benzene	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<5 Y	<1	<1	<1	<1	<1	NA	NA	<1	<1	<1	<1
m&p-Xylene	ug/L	<2	<2	<2	<10 Y	<2	<2	<2	<2	<2	NA	NA	<2	<2	<2	<2
Total Xylene	ug/L	<3	<3	<3	<15 Y	<3	<3	<3	<3	<3	NA	NA	<3	<3	<3	<3

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:		MW-14-59 12/10/14	MW-14-60 12/10/14	MW-14-61 12/10/14	MW-14-62 12/11/14	MW-14-63 12/03/14	MW-14-64 12/03/14	MW-14-65 12/09/14	MW-14-66 12/09/14	MW-14-67 12/08/14	MW-14-68 12/01/14	MW-14-69 12/01/14	MW-14-70 12/05/14	MW-19 12/09/14	MW-22 12/08/14	MW-23 12/08/14
	Units	MW-14-59_121014	MW-14-60_121014	MW-14-61_121014	MW-14-62_121114	MW-14-63_120314	MW-14-64_120314	MW-14-65_120914	MW-14-66_120914	MW-14-67_120814	Dry	Dry	MW-14-70_120514	MW-19_120914	MW-22_120814	MW-23_120814
Semivolatile Organics																
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
2,4,6-Trichlorophenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
2,4-Dichlorophenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
2,4,5-Trichlorophenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
2,4-Dimethylphenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
2,4-Dinitrophenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
2,4-Dinitrotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
2,6-Dinitrotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
2-Chloronaphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
2-Chlorophenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
2-Methylnaphthalene	ug/L	<1	<1	<1	1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
2-Methylphenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
2-Nitroaniline	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
2-Nitrophenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
3&4-Methylphenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
3,3'-Dichlorobenzidine	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Naphthalene	ug/L	<1	<1	<1	1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
3-Nitroaniline	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
4-Bromophenyl phenyl ether	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
4-Chloro-3-methylphenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
4-Chloroaniline	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
4-Nitroaniline	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
4-Nitrophenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Anthracene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Acenaphthene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Acenaphthylene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Acetophenone	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Atrazine	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Benzaldehyde	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Benzo(a)anthracene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Benzo(a)pyrene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Benzo(b)fluoranthene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Benzo(g,h,i)perylene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Benzo(k)fluoranthene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Biphenyl (1,1-Biphenyl)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
bis(2-Chloroethyl)ether	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	<2	6 B ^a	<2	2 B	3	<2	<2	3	<2	NA	NA	<2	NA	NA	NA
Butyl benzylphthalate (BBP)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Caprolactam	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Carbazole	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Chrysene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Dibenz(a,h)anthracene	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	NA	NA	<2	NA	NA	NA
Dibenzofuran	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Diethyl phthalate	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Dimethyl phthalate	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	NA	NA	<2	NA	NA	NA
Di-n-butylphthalate (DBP)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Di-n-octyl phthalate (DnOP)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Fluoranthene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Fluorene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Hexachlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Hexachlorobutadiene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Hexachlorocyclopentadiene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Hexachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Indeno(1,2,3-cd)pyrene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Isophorone	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Nitrobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:		MW-14-59 12/10/14	MW-14-60 12/10/14	MW-14-61 12/10/14	MW-14-62 12/11/14	MW-14-63 12/03/14	MW-14-64 12/03/14	MW-14-65 12/09/14	MW-14-66 12/09/14	MW-14-67 12/08/14	MW-14-68 12/01/14	MW-14-69 12/01/14	MW-14-70 12/05/14	MW-19 12/09/14	MW-22 12/08/14	MW-23 12/08/14
	Units	MW-14-59_121014	MW-14-60_121014	MW-14-61_121014	MW-14-62_121114	MW-14-63_120314	MW-14-64_120314	MW-14-65_120914	MW-14-66_120914	MW-14-67_120814	Dry	Dry	MW-14-70_120514	MW-19_120914	MW-22_120814	MW-23_120814
N-Nitrosodiphenylamine	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Pentachlorophenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Phenanthrene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Phenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Pyrene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA	<1	NA	NA	NA
Inorganics																
Iron	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	<0.005	NA	NA	NA
Arsenic	mg/L	0.003	<0.002	0.019 ^{ab}	0.006	<0.002	0.008	0.003	0.002	<0.002	NA	NA	<0.002	NA	NA	NA
Barium	mg/L	0.111	0.344	0.248	0.020	0.098	0.124	0.103	0.034	NA	NA	NA	0.073	NA	NA	NA
Boron	mg/L	0.24	0.31	0.10	0.31	0.08	0.09	<0.04	0.10	NA	NA	NA	0.05	NA	NA	NA
Cadmium	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA	NA	<0.0005	NA	NA	NA
Chromium	mg/L	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	0.021	<0.005	<0.005	NA	NA	0.006	NA	NA	NA
Chromium VI (hexavalent)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	<0.005	NA	NA	NA
Copper	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.041 ^b	<0.005	0.026 ^b	NA	NA	0.008	NA	NA	NA
Lead	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.003	<0.003	<0.003	NA	NA	<0.003	NA	NA	NA
Manganese	mg/L	0.576 ^a	0.330 ^a	0.049	0.007	0.135 ^a	0.073 ^a	0.177 ^a	0.743 ^a	NA	NA	NA	0.194 ^a	NA	NA	NA
Mercury	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	NA	NA	NA	<0.0002	NA	NA	NA
Nickel	mg/L	0.016	0.010	0.009	<0.005	0.010	0.008	0.029	0.009	0.010	NA	NA	0.042	NA	NA	NA
Selenium	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	<0.005	NA	NA	NA
Silver	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA	NA	<0.0005	NA	NA	NA
Vanadium	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.016 ^a	<0.005	<0.005	NA	NA	<0.005	NA	NA	NA
Zinc	mg/L	<0.005	<0.005	<0.005	<0.005	0.008	<0.005	0.029	0.007	NA	NA	NA	<0.005	NA	NA	NA
Inorganics-Filtered																
Antimony (dissolved)	mg/L	NA	NA	<0.005	NA	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic (dissolved)	mg/L	NA	NA	0.016 ^{ab}	NA	<0.002	0.009	<0.002	NA	NA	NA	NA	NA	NA	NA	NA
Barium (dissolved)	mg/L	NA	NA	0.240	NA	0.099	0.126	0.059	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium (dissolved)	mg/L	NA	NA	<0.0005	NA	<0.0005	<0.0005	<0.0005	NA	NA	NA	NA	NA	NA	NA	NA
Chromium Total	mg/L	NA	NA	<0.005	NA	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt (dissolved)	mg/L	NA	NA	<0.005	NA	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	mg/L	NA	NA	<0.005	NA	<0.005	<0.005	0.006	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	mg/L	NA	NA	<0.003	NA	<0.003	<0.003	<0.003	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (dissolved)	mg/L	NA	NA	0.048	NA	0.113 ^a	0.067 ^a	0.069 ^a	NA	NA	NA	NA	NA	NA	NA	NA
Mercury (dissolved)	mg/L	NA	NA	<0.0002	NA	<0.0002	<0.0002	<0.0002	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	mg/L	NA	NA	0.007	NA	<0.005	0.007	0.014	NA	NA	NA	NA	NA	NA	NA	NA
Selenium (dissolved)	mg/L	NA	NA	<0.005	NA	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA
Silver (dissolved)	mg/L	NA	NA	<0.0005	NA	<0.0005	<0.0005	<0.0005	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	mg/L	NA	NA	<0.005	NA	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA
Zinc (dissolved)	mg/L	NA	NA	<0.005	NA	0.007	<0.005	0.013	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:	Units	MW-91-2 12/08/14 MW-91-2_120814	MW-91-5 12/03/14 MW-91-5_120314	MW-91-6 12/04/14 MW-91-6_120414	MWBP-10-UST5-6 12/08/14 MWBP-10-UST5-6_120814	MWBP-11-UST1-4 12/12/14 MWBP-11-UST1-4_121214	MWBP-12A-UST1-4 12/12/14 MWBP-12A-UST1-4_121214	MWBP-12-UST1-4 12/12/14 MWBP-12-UST1-4_121214	P2-MW-04 12/09/14 P2-MW-04_120914	P2-SB-20 12/09/14 P2-SB-20_120914	P6-MH2-SW 12/02/14 P6-MH2-SW_120214	P6-SB-18 12/08/14 P6-SB-18_120814	P6-SB-32 12/11/14 P6-SB-32_121114
Field													
Conductance, specific	mS/cm	1.533	0.225	1.988	4.370	0.952	3.930	3.169	0.790	0.304	NA	0.400	1.936
Dissolved oxygen (DO), field	mg/L	1.25	1.31	0.48	0.43	3.65	0.79	0.39	6.36	0.66	NA	2.91	0.47
Oxidation reduction potential (ORP), field	millivolts	69.3	-87.00	-51.20	48.8	123.4	-27.10	-16.10	55.2	43.2	NA	56.2	-56.20
pH	s.u.	7.15	7.14	6.84	6.76	11.07	6.72	6.62	7.31	9.23	NA	10.78	6.89
Temperature, field	Deg C	4.86	10.28	10.79	7.16	6.31	10.86	8.09	8.43	9.65	NA	6.35	7.10
Turbidity (field)	NTU	5.84	8.19	9.04	8.35	39.95	7.9	2.56	6.12	27.7	NA	8.2	88
Volatile Organics													
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
1,2-Dibromoethane (Ethylene dibromide)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
1,4-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
1,4-Dioxane	ug/L	<5	<5	<5	<5	NA	NA	NA	11 ^a [11] ^a	<5	<5	NA	NA
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10	<10 [<10]	<10	<10	NA	<1,000 Y
1,1,2,2-Tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Acetone	ug/L	<10	<10	<10	<10	<10	<10	<10	<10 [<10]	<10	<10	NA	<1,000 Y
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Bromodichloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Bromomethane (Methyl bromide)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
1,2-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
cis-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Chlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Chloroform (Trichloromethane)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Trichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Chloromethane (Methyl chloride)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Tetrachloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
cis-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Dichlorodifluoromethane (CFC-12)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Benzene	ug/L	<1	<1	<1	<1	<1	<1	123 ^a	<1 [<1]	<1	<1	NA	<100 Y
Methyl acetate	ug/L	<10	<10	<10	<10	<10	<10	<10	<10 [<10]	<10	<10	NA	<1,000 Y
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	10	NA	<100 Y
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Methyl tert butyl ether (MTBE)	ug/L	<1	<1	<1	2	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Trichlorofluoromethane (CFC-11)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Trifluorotrichloroethane (Freon 113)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	<10	<10	<10	<10	<10	<10	<10	<10 [<10]	<10	<10	NA	<1,000 Y
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	<10	<10	<10	<10	<10	<10	<10	<10 [<10]	<10	<10	NA	<1,000 Y
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Cyclohexane	ug/L	<1	<1	<1	<1	<1	<1	3	<1 [<1]	<1	<1	NA	<100 Y
Methyl cyclohexane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Dibromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
Isopropyl benzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	<1	NA	<100 Y
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1 [<1]	<1	11	NA	700 Y
m&p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2	<2 [<2]	<2	46	NA	1,600 Y
Total Xylene	ug/L	<3	<3	<3	<3	<3	<3	<3	<3 [<3]	<3	57 ^b	NA	2,300 Y ^{ab}

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:	Units	MW-91-2 12/08/14 MW-91-2_120814	MW-91-5 12/03/14 MW-91-5_120314	MW-91-6 12/04/14 MW-91-6_120414	MWBP-10-UST5-6 12/08/14 MWBP-10-UST5-6_120814	MWBP-11-UST1-4 12/12/14 MWBP-11-UST1-4_121214	MWBP-12A-UST1-4 12/12/14 MWBP-12A-UST1-4_121214	MWBP-12-UST1-4 12/12/14 MWBP-12-UST1-4_121214	P2-MW-04 12/09/14 P2-MW-04_120914	P2-SB-20 12/09/14 P2-SB-20_120914	P6-MH2-SW 12/02/14 P6-MH2-SW_120214	P6-SB-18 12/08/14 P6-SB-18_120814	P6-SB-32 12/11/14 P6-SB-32_121114	
Semivolatile Organics														
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2,4,6-Trichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2,4-Dichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2,4,5-Trichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2,4-Dimethylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2,4-Dinitrophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2,4-Dinitrotoluene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2,6-Dinitrotoluene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2-Chloronaphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2-Chlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2-Methylnaphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2-Methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2-Nitrophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
3&4-Methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
3,3'-Dichlorobenzidine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
3-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
4,6-Dinitro-2-methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
4-Bromophenyl phenyl ether	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
4-Chloro-3-methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
4-Chloroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
4-Chlorophenyl phenyl ether	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
4-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
4-Nitrophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Anthracene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Acenaphthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Acenaphthylene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Acetophenone	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Atrazine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Benzaldehyde	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo(a)anthracene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo(a)pyrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo(b)fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo(g,h,i)perylene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo(k)fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Biphenyl (1,1-Biphenyl)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
bis(2-Chloroethoxy)methane	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
bis(2-Chloroethyl)ether	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Butyl benzylphthalate (BBP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Caprolactam	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Carbazole	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Chrysene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Dibenz(a,h)anthracene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Dibenzofuran	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Diethyl phthalate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Dimethyl phthalate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Di-n-butylphthalate (DBP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Di-n-octyl phthalate (DnOP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Fluorene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Hexachlorobenzene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Hexachlorobutadiene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Hexachlorocyclopentadiene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Hexachloroethane	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Indeno(1,2,3-cd)pyrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Isophorone	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Nitrobenzene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
N-Nitrosodi-n-propylamine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:		MW-91-2 12/08/14	MW-91-5 12/03/14	MW-91-6 12/04/14	MWBP-10-UST5-6 12/08/14	MWBP-11-UST1-4 12/12/14	MWBP-12A-UST1-4 12/12/14	MWBP-12-UST1-4 12/12/14	P2-MW-04 12/09/14	P2-SB-20 12/09/14	P6-MH2-SW 12/02/14	P6-SB-18 12/08/14	P6-SB-32 12/11/14
	Units	MW-91-2_120814	MW-91-5_120314	MW-91-6_120414	MWBP-10-UST5-6_120814	MWBP-11-UST1-4_121214	MWBP-12A-UST1-4_121214	MWBP-12-UST1-4_121214	P2-MW-04_120914	P2-SB-20_120914	P6-MH2-SW_120214	P6-SB-18_120814	P6-SB-32_121114
N-Nitrosodiphenylamine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics													
Iron	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	NA	NA
Arsenic	mg/L	0.008	NA	NA	0.003	0.028 ^{ab}	0.014 ^{ab}	0.015 ^{ab}	0.004 [0.004]	NA	0.002	0.005	0.019 ^{ab}
Barium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.046	NA	NA
Boron	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.26	NA	NA
Cadmium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0005	NA	NA
Chromium	mg/L	0.007	NA	NA	0.005	<0.005	<0.005	<0.005	<0.005 [<0.005]	NA	<0.005	<0.005	<0.005
Chromium VI (hexavalent)	mg/L	<0.01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	NA	NA
Copper	mg/L	<0.005	NA	NA	<0.005	0.012	<0.005	<0.005	0.007 [0.007]	NA	<0.005	0.037 ^b	<0.005
Lead	mg/L	0.004	NA	NA	<0.003	0.005 ^a	<0.003	0.004	<0.003 [<0.003]	NA	<0.003	0.200 ^{ab}	<0.003
Manganese	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.022	NA	NA
Mercury	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0002	NA	NA
Nickel	mg/L	<0.005	NA	NA	<0.005	<0.005	0.013	0.007	0.005 [0.005]	NA	<0.005	<0.005	0.010
Selenium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	NA	NA
Silver	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0005	NA	NA
Vanadium	mg/L	<0.005	NA	NA	<0.005	<0.005	<0.005	0.009 ^a	<0.005 [<0.005]	NA	<0.005	0.016 ^a	<0.005
Zinc	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.013	NA	NA
Inorganics-Filtered													
Antimony (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic (dissolved)	mg/L	NA	NA	NA	NA	0.028 ^{ab}	NA	NA	NA	NA	NA	NA	0.017 ^{ab}
Barium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium Total	mg/L	NA	NA	NA	NA	<0.005	NA	NA	NA	NA	NA	NA	<0.005
Cobalt (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	mg/L	NA	NA	NA	NA	0.007	NA	NA	NA	NA	NA	NA	<0.005
Lead (dissolved)	mg/L	NA	NA	NA	NA	<0.003	NA	NA	NA	NA	NA	NA	<0.003
Manganese (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	mg/L	NA	NA	NA	NA	<0.005	NA	NA	NA	NA	NA	NA	0.011
Selenium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	mg/L	NA	NA	NA	NA	<0.005	NA	NA	NA	NA	NA	NA	<0.005
Zinc (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:		P6-SB-35 12/08/14 P6-SB-35_120814	P6-SB-37 12/08/14 P6-SB-37_120814	PW-14-01 12/11/14 PW-14-01_121114	PW-14-02 12/06/14 PW-14-02_120614	PW-14-03 12/04/14 PW-14-03_120414	UNK-09 12/09/14 UNK-09_120914	UNK-10 12/09/14 UNK-10_120914	UNK-11 12/09/14 UNK-11_120914
Field	Units								
Conductance, specific	mS/cm	0.397	0.462	1.679	NA	2.709	0.768	0.738	0.842
Dissolved oxygen (DO), field	mg/L	3.78	2.00	1.12	NA	0.47	0.69	1.18	1.55
Oxidation reduction potential (ORP), field	millivolts	53.2	73.4	-71.60	NA	-85.10	307.4	206.1	196.9
pH	s.u.	10.80	10.73	7.16	NA	6.79	5.29	7.48	7.15
Temperature, field	Deg C	7.90	8.42	4.17	NA	11.86	3.15	6.48	6.80
Turbidity (field)	NTU	5.8	6.1	7.69	NA	8.92	9.14	8.96	186
Volatile Organics									
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
1,2-Dibromoethane (Ethylene dibromide)	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
1,2-Dichlorobenzene	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
1,4-Dichlorobenzene	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
1,4-Dioxane	ug/L	NA	NA	350 Y ^a	580 Y ^a	360 Y ^a	NA	NA	NA
1,1,1-Trichloroethane	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
2-Hexanone	ug/L	NA	NA	<10	<10	<10	NA	<10	<10
1,1,2,2-Tetrachloroethane	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Acetone	ug/L	NA	NA	<10	<10	<10	NA	<10	<10
1,1,2-Trichloroethane	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Bromodichloromethane	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
1,1-Dichloroethane	ug/L	NA	NA	<1	<1	<1	NA	<1	1
Bromoform	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
1,1-Dichloroethene	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Bromomethane (Methyl bromide)	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
1,2-Dichloroethane	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Carbon disulfide	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Carbon tetrachloride	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
cis-1,2-Dichloroethene	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Chlorobenzene	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
trans-1,2-Dichloroethene	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Chloroform (Trichloromethane)	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Trichloroethene	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Chloromethane (Methyl chloride)	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Tetrachloroethene	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
cis-1,3-Dichloropropene	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Vinyl chloride	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Chloroethane	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Dichlorodifluoromethane (CFC-12)	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Benzene	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Methyl acetate	ug/L	NA	NA	<10	<10	<10	NA	<10	<10
Ethylbenzene	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Methylene chloride	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Styrene	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Toluene	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
trans-1,3-Dichloropropene	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Methyl tert butyl ether (MTBE)	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Trichlorofluoromethane (CFC-11)	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Trifluorotrichloroethane (Freon 113)	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	NA	NA	<10	<10	<10	NA	<10	<10
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	NA	NA	<10	<10	<10	NA	<10	<10
1,2,4-Trichlorobenzene	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
1,2-Dichloropropane	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
1,3-Dichlorobenzene	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Cyclohexane	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Methyl cyclohexane	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Dibromochloromethane	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
Isopropyl benzene	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
o-Xylene	ug/L	NA	NA	<1	<1	<1	NA	<1	<1
m&p-Xylene	ug/L	NA	NA	<2	<2	<2	NA	<2	<2
Total Xylene	ug/L	NA	NA	<3	<3	<3	NA	<3	<3

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:		P6-SB-35 12/08/14 P6-SB-35_120814	P6-SB-37 12/08/14 P6-SB-37_120814	PW-14-01 12/11/14 PW-14-01_121114	PW-14-02 12/06/14 PW-14-02_120614	PW-14-03 12/04/14 PW-14-03_120414	UNK-09 12/09/14 UNK-09_120914	UNK-10 12/09/14 UNK-10_120914	UNK-11 12/09/14 UNK-11_120914
Semivolatile Organics									
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Biphenyl (1,1-Biphenyl)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 3
SUMMARY OF 4TH QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:		P6-SB-35 12/08/14	P6-SB-37 12/08/14	PW-14-01 12/11/14	PW-14-02 12/06/14	PW-14-03 12/04/14	UNK-09 12/09/14	UNK-10 12/09/14	UNK-11 12/09/14
	Units	P6-SB-35_120814	P6-SB-37_120814	PW-14-01_121114	PW-14-02_120614	PW-14-03_120414	UNK-09_120914	UNK-10_120914	UNK-11_120914
N-Nitrosodiphenylamine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics									
Iron	mg/L	NA	NA	11.4 ^a	4.78 ^a	19.9 ^a	NA	NA	NA
Antimony	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/L	0.009	0.005	NA	NA	NA	0.008	0.003	NA
Barium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Boron	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/L	0.011	0.016	NA	NA	NA	<0.005	<0.005	NA
Chromium VI (hexavalent)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/L	0.005	0.007	NA	NA	NA	<0.005	<0.005	NA
Lead	mg/L	<0.003	<0.003	NA	NA	NA	<0.003	<0.003	NA
Manganese	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	mg/L	<0.005	<0.005	NA	NA	NA	<0.005	<0.005	NA
Selenium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Silver	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/L	0.022 ^a	0.027 ^a	NA	NA	NA	<0.005	<0.005	NA
Zinc	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered									
Antimony (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Barium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Chromium Total	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Mercury (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Selenium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Silver (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Zinc (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 3
SUMMARY OF 4th QUARTER 2014 GROUNDWATER ANALYTICAL DATA
DECEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Table Notes:

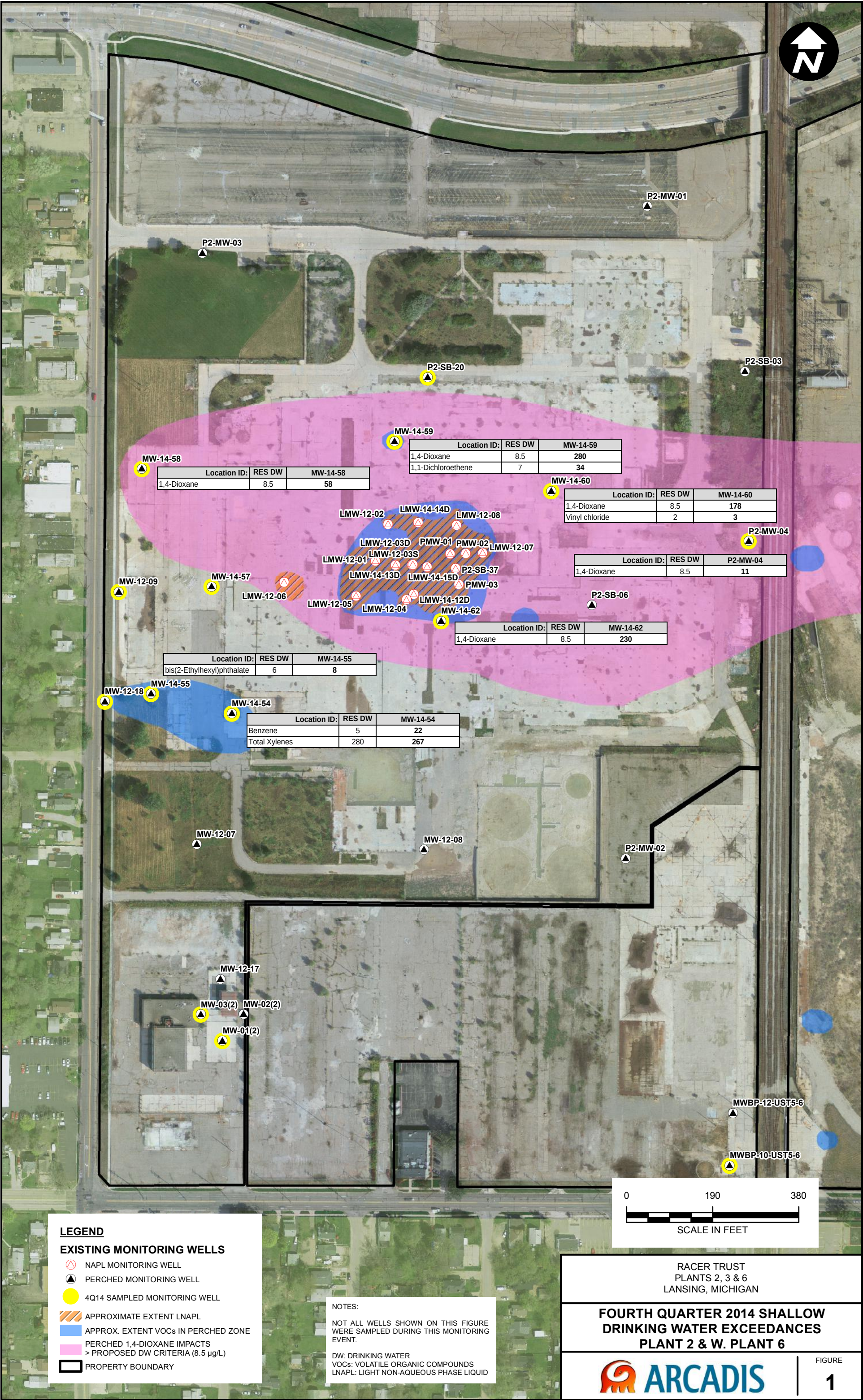
- Shading indicates result exceeding one or more MDEQ Part 201 Generic Cleanup Criteria and Screening Levels, Dated December 30, 2013.
- Bold fonts represent data where detections were noted above the MDL but below MDEQ Part 201 Generic Cleanup Criteria.
- Data shown in [] represent duplicate sample analytical results.
- = Not listed in the MDEQ Criteria Tables.
- mS/cm - milli Siemens per centimeter
- mg/L - milligrams per liter
- s.u. - standard unit
- Deg. C. - degrees celcius
- NTU - Nephelometric Turbidity Unit
- ug/L - micrograms per liter
- a - Sample exceeds Residential Drinking Water Criteria. 1,4-Dioxane includes the proposed drinking water criteria of 8.5 ug/L.
- b - Sample exceeds Groundwater Surface Water Interface Criteria
- NA - Not Analyzed during the 4th Quarter 2014 Sampling Event

Lab and Validation Data Qualifiers:

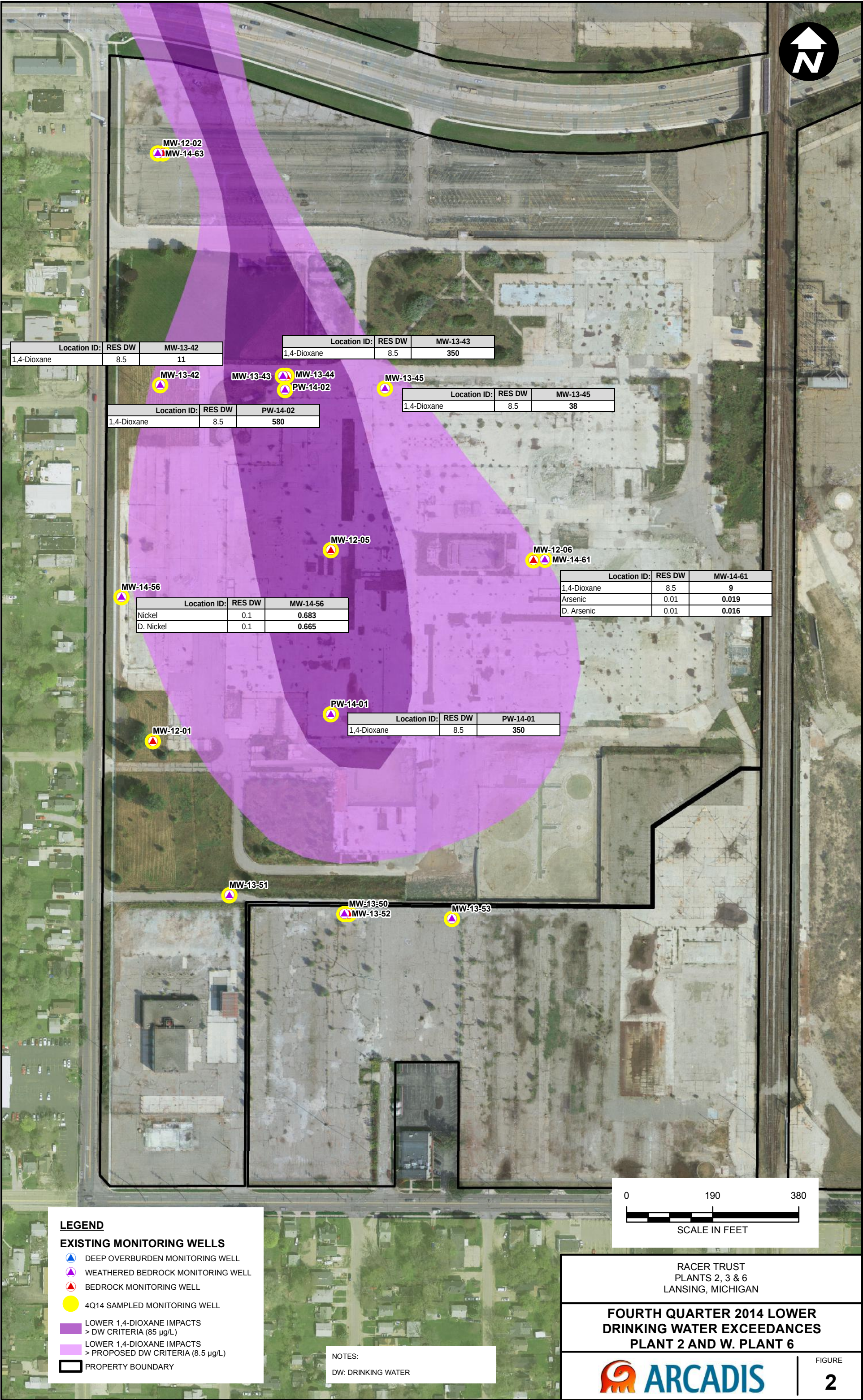
- B = Compounds also found in associated method blank.
- X = Elevated reporting limit due to matrix interference.
- Y = Elevated reporting limit due to high target concentration.

Figures

CITY: Novi DIV: ENV DB: TRY PIC: PM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl G:\GIS\Project Files\MotorsLiqudationCompany\Lansing\Docs\working\4Q14 Exceedances.mxd PLOTTED: 2/26/2015 4:54:08 PM BY: dolera



CITY: Novi DIV: ENV DB: TRY PIC: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
G:\GIS\Project Files\MotorsLiqudationCompany\Lansing\Docs\working\4Q14 Exceedances.mxd PLOTTED: 2/26/2015 4:54:08 PM BY: doloxa



RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

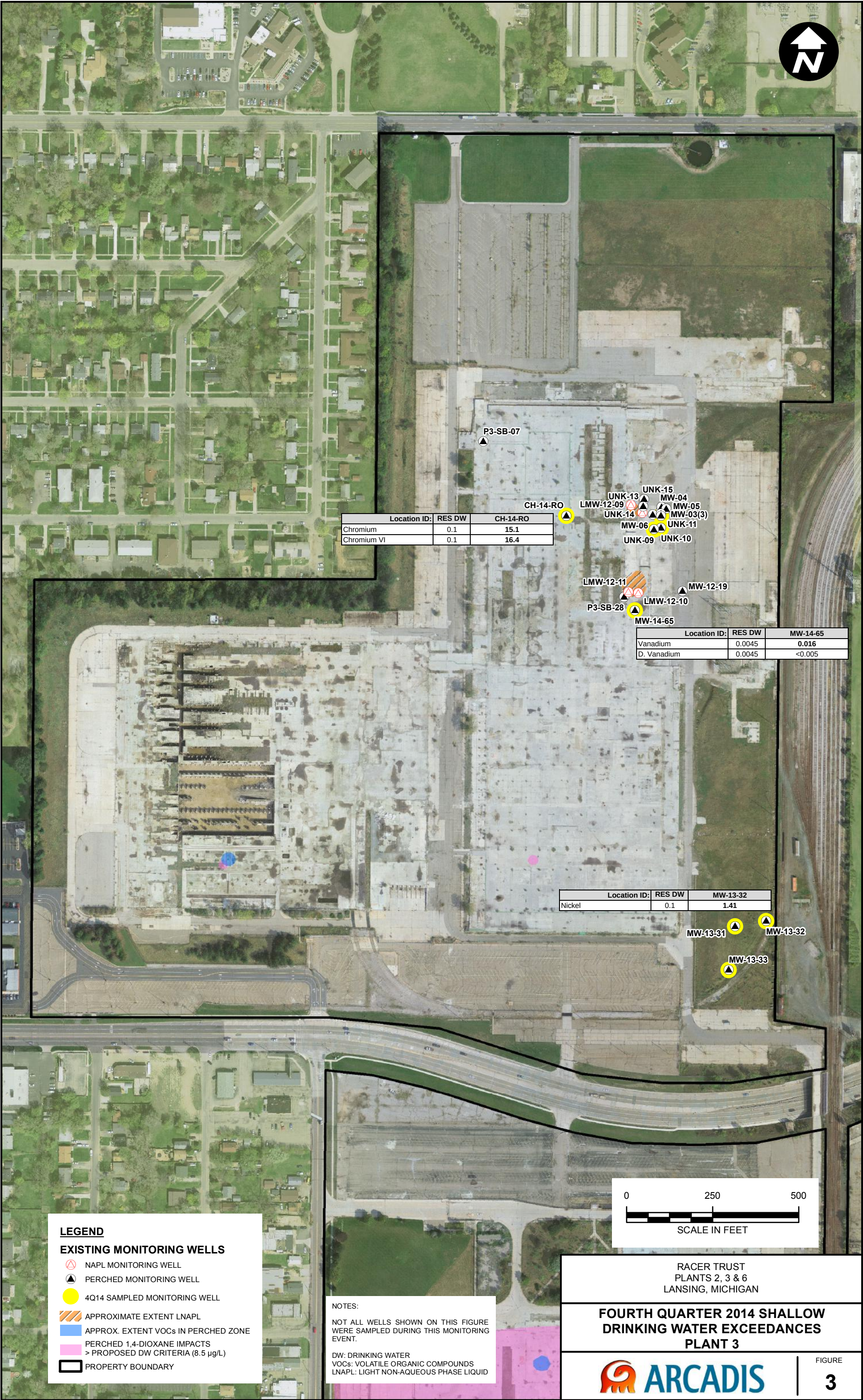
**FOURTH QUARTER 2014 LOWER
DRINKING WATER EXCEEDANCES
PLANT 2 AND W. PLANT 6**



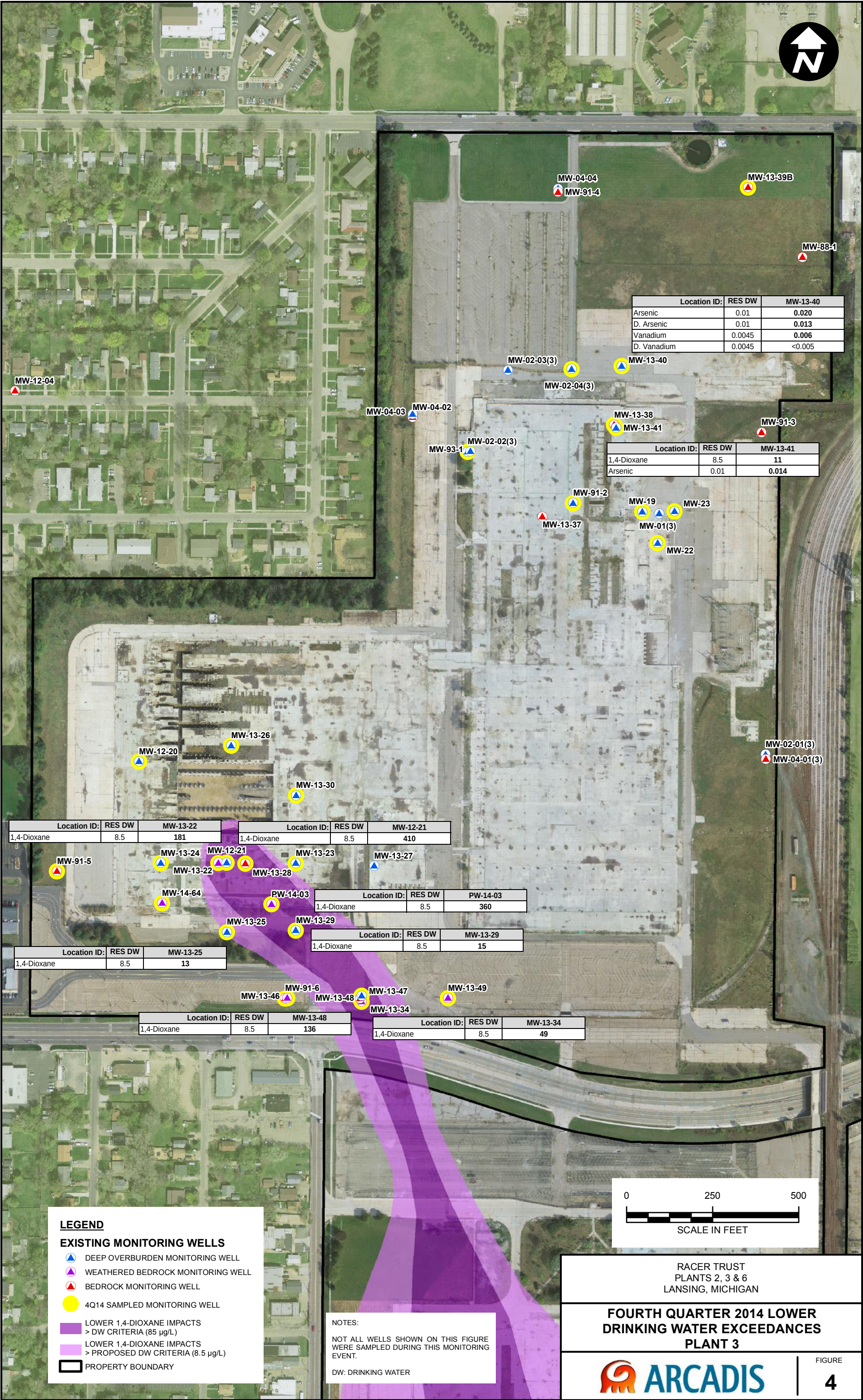
FIGURE

2

CITY: Novi DIV: ENV DB: TRY PIC: PM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
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CITY: Novi DIV: ENV DB: TRY PIC: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
G:\GIS\Project Files\MotorsLiqudationCompany\Lansing\Docs\working\4Q14 Exceedances.mxd PLOTTED: 2/26/2015 4:54:08 PM BY: dolaxa



RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

**FOURTH QUARTER 2014 LOWER
DRINKING WATER EXCEEDANCES
PLANT 3**



FIGURE

4

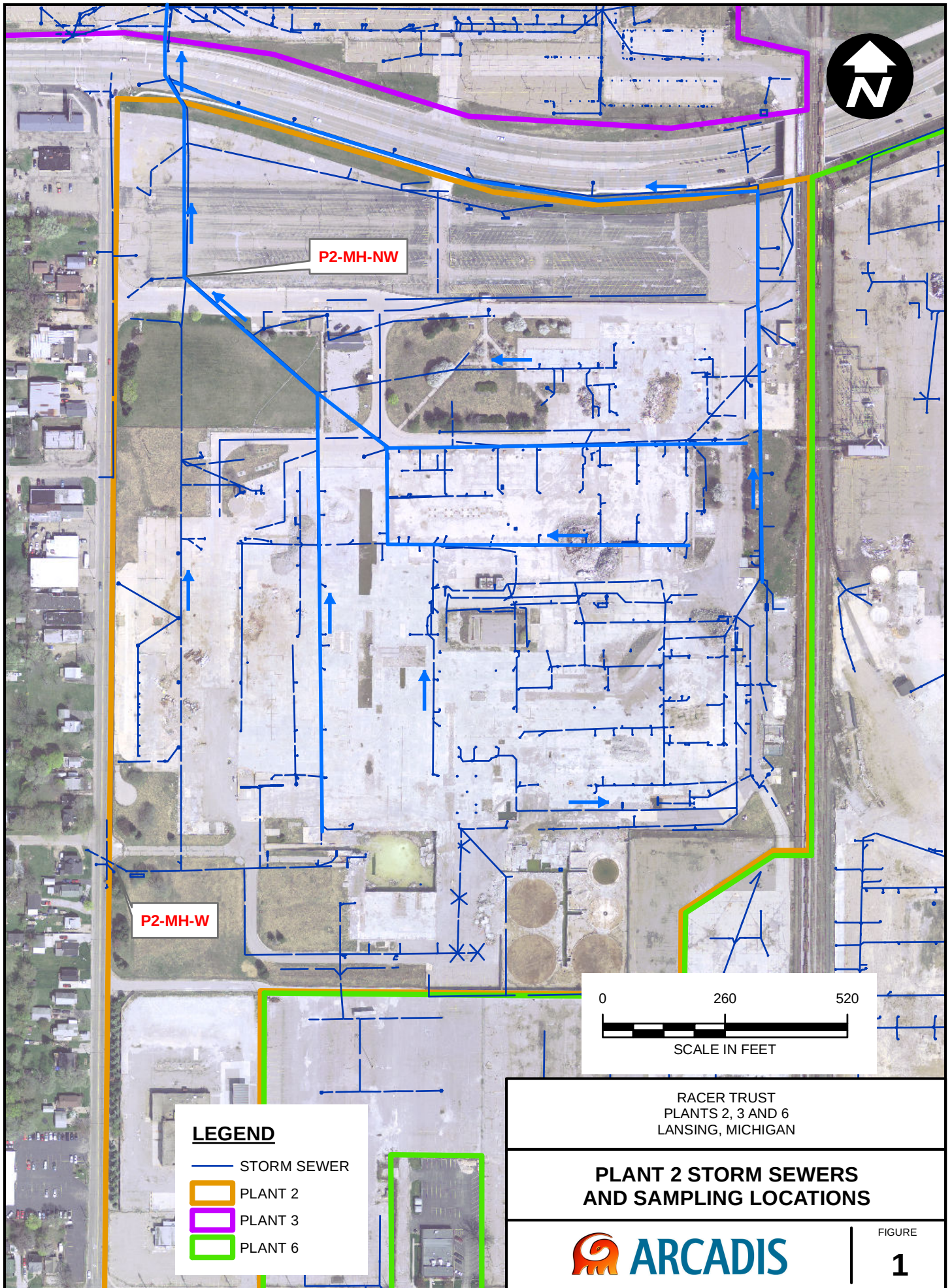
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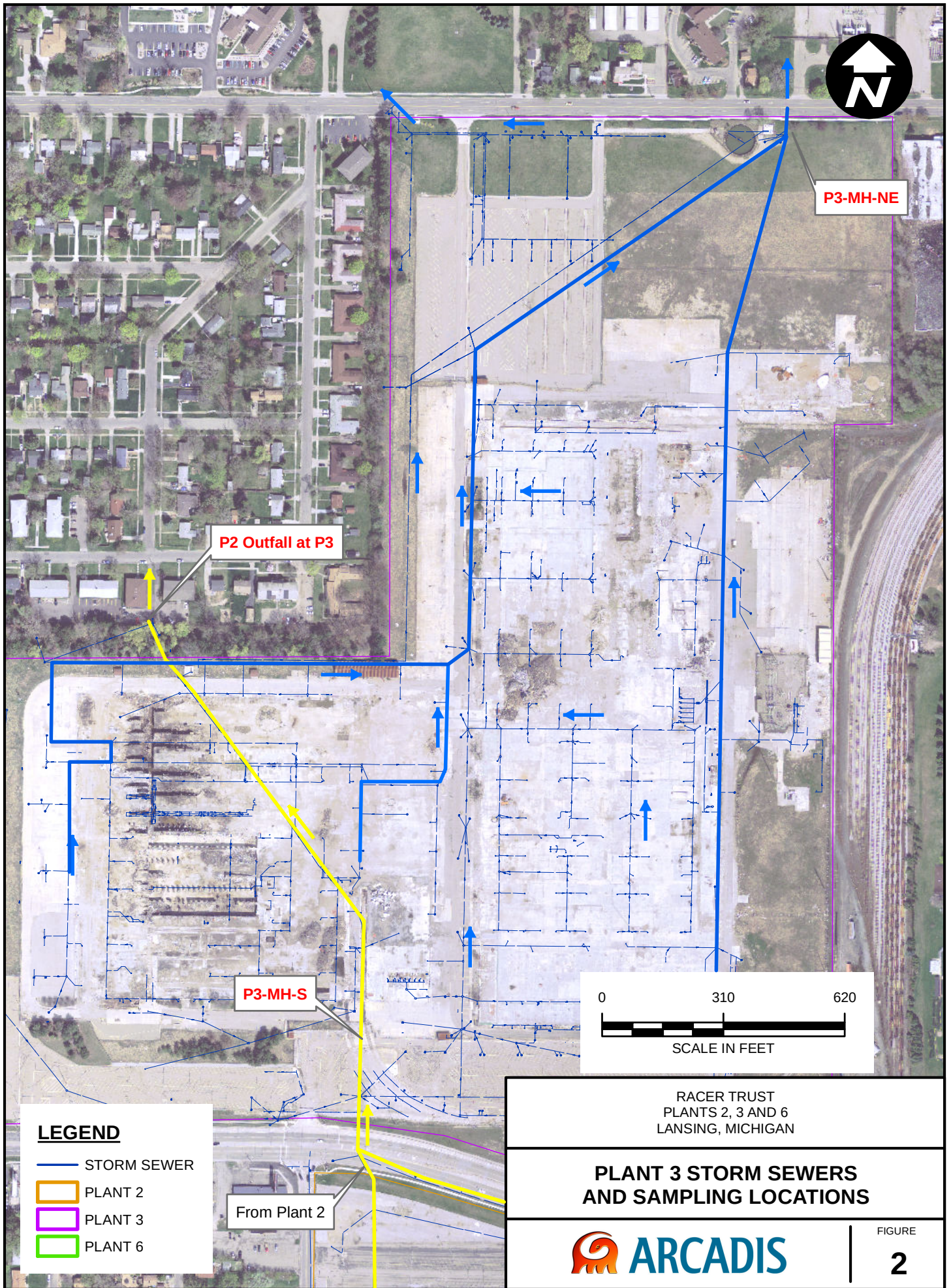


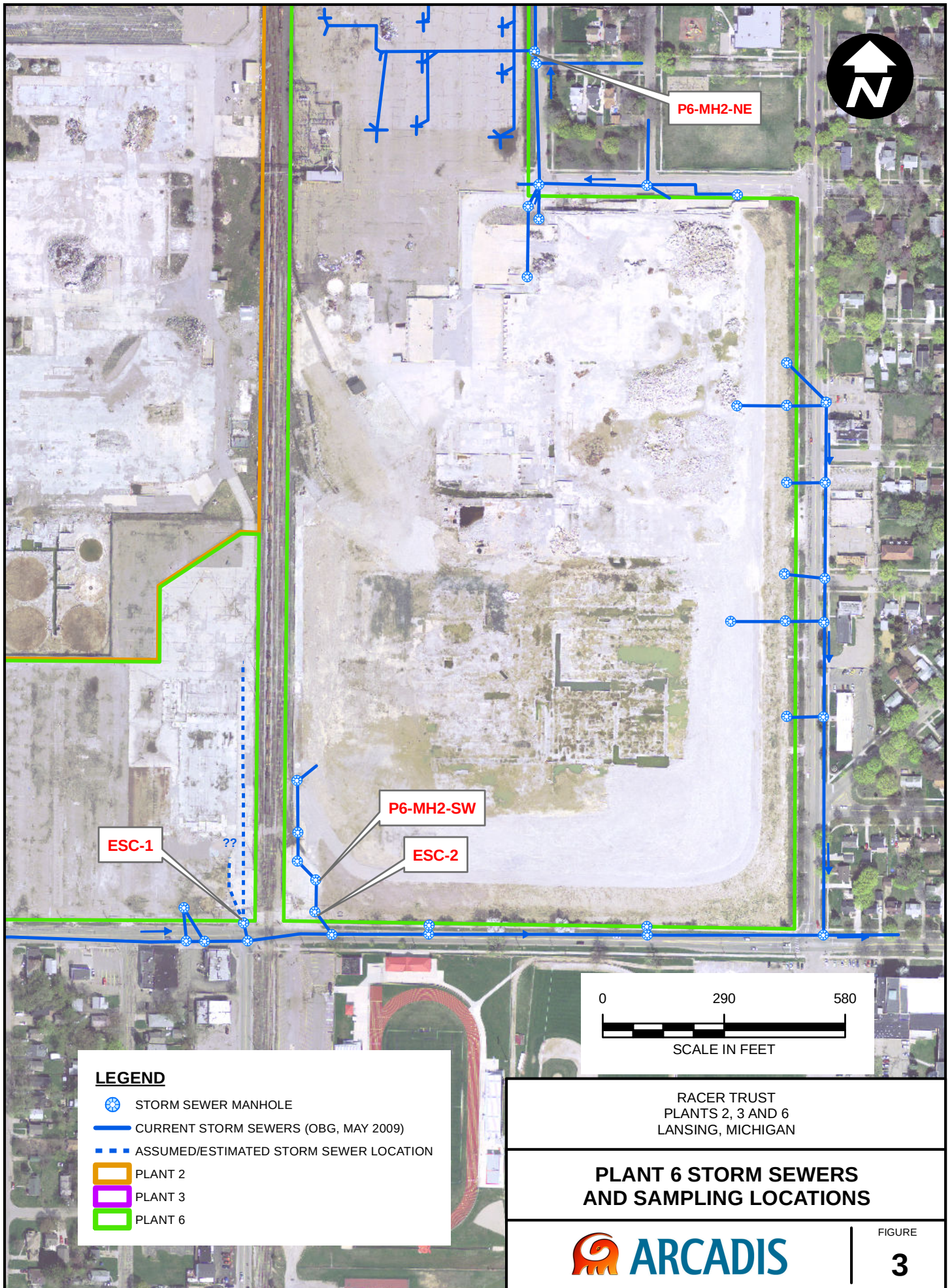


Attachment 1

Fourth Quarter 2014 Storm Sewer
Sampling Locations and Analytical
Results







Summary of Storm Sewer Groundwater Sampling Results RACER Plants 2, 3 and 6 - Lansing, Michigan

Location ID:	Units	Groundwater Surface Water Interface Criteria (DEQ 2012)	Plant 2												Plant 3											
			P2-MH-NW					P2-MH-W		P2 Outfall @ P3					P3-MH-NE					P3-MH-S						
			11/6/12 ^t	1/18/13	5/17/13	9/3/13	12/2/14	9/3/13	12/2/14	11/7/12 ^t	1/18/13	5/17/13	9/3/13	12/2/14	11/7/12 ^t	1/18/13	5/17/13	9/3/13	12/2/14	11/7/12 ^t	1/18/13	5/17/13	9/3/13	12/2/14		
Volatile Organics (7)																										
Acetone	ug/L	1,700	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		
1,4-Dioxane (X)	ug/L	2,800	25	18	26	21	14	<5	<5	17	10	15	10	7	<5	<5	<5	<5	<5	<5	12	15	14	12		
1,1-Dichloroethane	ug/L	740	1	1	2	2	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
1,1,1- Trichloroethane	ug/L	89	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
Benzene (X)	ug/L	200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
cis-1,2-Dichloroethene	ug/L	620	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
Ethylbenzene	ug/L	18	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
Methyl cyclohexane	ug/L	--	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
Toluene	ug/L	270	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
Xylene (total)	ug/L	41	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		
Semivolatile Organics (7)																										
Benzo(a)anthracene	ug/L	--	<1	<1	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--		
Benzo(a)pyrene	ug/L	--	<1	<1	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--		
Benzo(b)fluoranthene	ug/L	--	<1	<1	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--		
Benzo(g,h,i)perylene	ug/L	--	<1	<1	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--		
Benzo(k)fluoranthene	ug/L	--	<1	<1	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--		
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	25	<1	<1	1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	1	<1	<1	--	<1	1	<1	<1	--		
Carbazole	ug/L	10 (M); 4.0	<1	<1	<1	<1	<1	1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--		
Chrysene	ug/L	--	<1	<1	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--		
2,4-Dimethylphenol	ug/L	380	<1	<1	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--		
Dimethyl phthalate	ug/L	--	<1	<1	<1	6	6	4	--	3	<1	<1	5	--	<1	<1	<1	5	--	3	<1	<1	5	--		
Di-n-butylphthalate (DBP)	ug/L	9.7	<1	<1	1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	1	<1	<1	--	<1	<1	<1	<1	--		
Fluoranthene	ug/L	1.6	<1	<1	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--		
Indeno(1,2,3-cd)pyrene	ug/L	ID	<1	<1	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--		
Napthalene	ug/L	11	<1	<1	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--		
Phenanthrene	ug/L	2	<1	<1	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--		
Pyrene	ug/L	ID	<1	<1	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	--		
Total PCBs	ug/L	0.2	--	--	--	--	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Inorganics (7)																										
Antimony (X)	mg/L	0.13	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005		
Arsenic	mg/L	0.01	0.007	0.003	0.004	0.007	0.004	<0.002	<0.002	0.003	<0.002	0.002	0.004	0.004	0.005	<0.002	<0.002	0.003	<0.002	0.002	0.002	0.003	0.005	0.016		
Barium (G)	mg/L	1.2	0.06	0.075	0.072	0.068	0.060	0.047	0.054	0.10	0.103	0.107	0.115	0.104	0.14	0.059	0.078	0.081	0.069	0.16	0.1	0.111	0.108	0.219		
Boron (X)	mg/L	7.2	0.33	0.23	0.2	0.27	0.19	0.11	0.09	0.25	0.16	0.15	0.19	0.14	0.33	0.2	0.23	0.28	0.20	0.12	0.19	0.15	0.22	0.16		
Cadmium (G, X)	mg/L	0.0045	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005		
Chromium (See Note 2.)	mg/L	0.011	<0.002	<0.010	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.010	<0.005	<0.005	<0.005	0.012	<0.010	<0.005	<0.005	<0.005	<0.002	<0.010	<0.005	<0.005	0.009		
Cobalt	mg/L	0.1	<0.002	<0.010	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.010	<0.005	<0.005	<0.005	0.006	<0.010	<0.005	<0.005	<0.005	<0.002	<0.010	<0.005	<0.005	<0.005		
Copper (G)	mg/L	0.02	0.003	0.003	<0.004	<0.005	<0.005	0.008	0.008	0.003	0.002	<0.004	<0.005	<0.005	0.052	0.003	<0.004	0.005	<0.005	0.002	0.002	<0.004	0.014	0.013		
Lead (G, X)	mg/L	0.044	0.003	0.005	0.005	<0.003	<0.003	<0.003	<0.003	0.004	<0.002	0.008	<0.003	<0.003	0.039	<0.002	0.004	<0.003	<0.003	0.003	<0.002	0.009	<0.003	0.009		
Manganese (G, X)	mg/L	4.5	0.032	0.132	0.065	0.044	0.057	0.033	0.045	0.043	0.055	0.087	0.048	0.157	0.884	0.028	0.09	0.051	0.035	0.136	0.144	0.146	0.095	0.231		
Mercury	mg/L	0.0000013	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
Nickel (G)	mg/L	0.12	0.003	<0.010	<0.005	0.008	<0.005	0.013	0.007	0.002	<0.010	<0.005	0.010	<0.005	0.043	<0.010	0.018	0.017	0.009	0.004	<0.010	<0.005	0.009	0.006		
Selenium	mg/L	0.005	0.001	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.002	<0.005	<0.005	<0.005	<0.001	<0.002	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005		
Vanadium	mg/L	0.027	<0.002	<0.002	<0.004	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.004	<0.005	<0.005	0.011	<0.002	<0.004	<0.005	<0.005	<0.002	<0.002	<0.004	<0.005	<0.005		
Zinc (G)	mg/L	0.26	0.02	0.028	0.20	0.01	0.016	<0.005	<0.005	<0.010	<0.010	0.009	0.006	0.025	0.28	<0.010	0.018	0.014	0.011	0.02	0.01	0.016	0.01	0.125		

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Summary of Storm Sewer Groundwater Sampling Results RACER Plants 2, 3 and 6 - Lansing, Michigan

Location ID: Date Collected:	Units	Groundwater Surface Water Interface Criteria (DEQ 2012)	Plant 6															
			P6-MH-SW			P6-MH2-SW*				P6-MH-NE				P6-MH2-NE		ESC-1		ESC-2
			11/6/12†	5/17/13	12/2/14	1/18/13	5/17/13	9/3/13	12/2/14	11/7/12†	1/18/13	5/17/13	12/2/14	9/3/13	12/2/14	5/17/13	12/2/14	12/2/14
Volatile Organics (7)																		
Acetone	ug/L	1,700	<10	<10	Not	22	<10	<10	<10	<10	<10	<10	Not	11	Dry-	<10	No Flow-	<10
1,4-Dioxane (X)	ug/L	2,800	<5	<5	scheduled	<5	<5	<5	<5	<5	<5	<5	scheduled	<5	No	<5	No	<5
1,1-Dichloroethane	ug/L	740	<1	<1	for	<1	<1	<1	<1	<1	<1	<1	for	<1	Sample	<1	Sample	<1
1,1,1-Trichloroethane	ug/L	89	<1	<1	sampling	<1	<1	<1	<1	<1	<1	<1	sampling	<1	Collected	<1	Collected	<1
Benzene (X)	ug/L	200	<1	<1	--	<1	<1	<1	<1	<1	2	<1	--	<1	--	<1	--	<1
cis-1,2-Dichloroethene	ug/L	620	<1	<1	--	<1	<1	<1	<1	1	1	<1	--	<1	--	<1	--	<1
Ethylbenzene	ug/L	18	5	5	--	10	3	2	10	<1	<1	<1	--	<1	--	<1	--	6
Methyl cyclohexane	ug/L	--	<1	<1	--	<1	<1	<1	<1	<1	1	<1	--	<1	--	<1	--	<1
Toluene	ug/L	270	<1	<1	--	<1	<1	<1	<1	<1	1	<1	--	<1	--	<1	--	<1
Xylene (total)	ug/L	41	30	37	--	64	22	14	57	<2	3	<2	--	<2	--	<2	--	39
Semivolatile Organics (7)																		
Benzo(a)anthracene	ug/L	--	4	<1	--	<1	<1	<1	--	<1	<1	<1	--	<1	--	<1	--	--
Benzo(a)pyrene	ug/L	--	4	<1	--	<1	<1	<1	--	<1	<1	<1	--	<1	--	<1	--	--
Benzo(b)fluoranthene	ug/L	--	4	<1	--	<1	<1	<1	--	<1	<1	<1	--	<1	--	<1	--	--
Benzo(g,h,i)perylene	ug/L	--	3	<1	--	<1	<1	<1	--	<1	<1	<1	--	<1	--	<1	--	--
Benzo(k)fluoranthene	ug/L	--	4	<1	--	<1	<1	<1	--	<1	<1	<1	--	<1	--	<1	--	--
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	25	2	<1	--	1	<1	<1	--	1	2	<1	--	<1	--	<1	--	--
Carbazole	ug/L	10 (M); 4.0	<1	<1	--	<1	<1		--	<1	<1	<1	--	<1	--	<1	--	--
Chrysene	ug/L	--	4	<1	--	<1	<1	<1	--	<1	<1	<1	--	<1	--	<1	--	--
2,4-Dimethylphenol	ug/L	380	<1	<1	--	<1	<1		--	<1	<1	<1	--	5	--	<1	--	--
Dimethyl phthalate	ug/L	--	<1	<1	--	<1	<1	6	--	8	<1	<1	--	6	--	<1	--	--
Di-n-butylphthalate (DBP)	ug/L	9.7	1	<1	--	1	<1	<1	--	2	2	1	--	<1	--	<1	--	--
Fluoranthene	ug/L	1.6	8	<1	--	<1	<1	<1	--	<1	<1	<1	--	<1	--	<1	--	--
Indeno(1,2,3-cd)pyrene	ug/L	ID	2	<1	--	<1	<1	<1	--	<1	<1	<1	--	<1	--	<1	--	--
Napthalene	ug/L	11	<1	<1	--	<1	<1	<1	--	<1	1	2	--	<1	--	<1	--	--
Phenanthrene	ug/L	2	4	<1	--	<1	<1	<1	--	<1	<1	<1	--	<1	--	<1	--	--
Pyrene	ug/L	ID	7	<1	--	<1	<1	<1	--	<1	<1	<1	--	<1	--	<1	--	--
Total PCBs	ug/L	0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Inorganics (7)																		
Antimony (X)	mg/L	0.13	0.007	<0.005	--	0.002	<0.005	<0.005	<0.005	0.004	0.004	<0.005	--	<0.005	--	<0.005	--	<0.005
Arsenic	mg/L	0.01	0.014	0.003	--	0.003	0.004	0.005	0.002	0.009	0.006	0.011	--	0.011	--	<0.002	--	0.005
Barium (G)	mg/L	1.2	0.14	0.041	--	0.049	0.044	0.058	0.046	0.18	0.177	0.195	--	0.069	--	0.016	--	0.057
Boron (X)	mg/L	7.2	0.31	0.2	--	0.26	0.19	0.29	0.26	0.16	0.13	0.14	--	0.21	--	<0.05	--	0.25
Cadmium (G, X)	mg/L	0.0045	0.0013	<0.0005	--	<0.001	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	--	<0.0005	--	<0.0005	--	<0.0005
Chromium (See Note 2.)	mg/L	0.011	0.027	<0.005	--	<0.010	<0.005	<0.005	<0.005	<0.002	<0.010	<0.005	--	<0.005	--	<0.005	--	0.006
Cobalt	mg/L	0.1	0.004	<0.005	--	<0.010	<0.005	<0.005	<0.005	<0.002	<0.010	<0.005	--	<0.005	--	<0.005	--	<0.005
Copper (G)	mg/L	0.02	0.118	<0.004	--	0.006	0.01	0.015	0.015	<0.002	<0.002	<0.004	--	0.014	--	0.015	--	0.007
Lead (G, X)	mg/L	0.044	0.417	<0.003	--	0.011	0.005	<0.003	<0.003	0.003	<0.002	0.008	--	<0.003	--	0.004	--	0.011
Manganese (G, X)	mg/L	4.5	1.81	0.021	--	0.075	0.044	0.02	0.22	0.386	0.341	0.491	--	0.099	--	0.008	--	0.118
Mercury	mg/L	0.0000013	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	--	<0.0001	--	<0.0001
Nickel (G)	mg/L	0.12	0.013	<0.005	--	<0.010	<0.005	0.008	<0.005	0.003	<0.010	<0.005	--	0.008	--	<0.005	--	<0.005
Selenium	mg/L	0.005	0.006	<0.005	--	0.006	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	--	0.006	--	<0.005	--	<0.005
Vanadium	mg/L	0.027	0.014	<0.004	--	0.004	<0.004	<0.005	<0.005	0.004	0.003	0.007	--	0.008	--	<0.004	--	<0.004
Zinc (G)	mg/L	0.26	0.42	<0.005	--	0.03	0.011	<0.005	0.013	0.03	0.025	0.007	--	0.008	--	0.01	--	0.045

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Summary of Storm Sewer Groundwater Sampling Results RACER Plants 2, 3 and 6 - Lansing, Michigan

Notes:

- 1. GSI Criteria obtained from the MDEQ Part 201 generic cleanup Table 1, dated September 28, 2012.
- 2. The total chromium data is compared to the cleanup criteria for Chromium VI.
- 3. **Bold** and gray shading denotes a result above of the Groundwater Surface Water Interface Criteria.
- 4. - - indicates criteria is not developed.
- 5. *- Same storm sewer as P6-MH-SW but collected from next structure downgradient, immediately before the stormceptor
- 6. † - Turbid sample; submitted for total metals
- 7. Green shading - The January 18, 2013 samples for P3-MH-S and P3-MH-NE were inadvertantly labeled with the same name, It is therefore unclear which result goes with which sample. Results will be confirmed during follow-up sampling events.
- 8. Only those constituents of concern (COCs) with detections are listed. If a COC is not listed then the lab results showed non-detect.

MDEQ Criteria Footnotes: (as revised September 28, 2012)

(G) Groundwater surface water interface (GSI) criterion depends on the water hardness of the receiving surface water. The final chronic value (FCV) for the protection of aquatic life was calculated based on the average of readily available published hardness values calculated to be 257 mg/L. The generic GSI criterion is the lesser of the calculated FCV, the wildlife value (WV), and the surface water human nondrinking water value (HNDV).

(X) The GSI criterion is not protective for surface water that is used as a drinking water source. ID = Insufficient data to develop a criterion.
- - = Not listed in the MDEQ Criteria Tables.

Acronyms and Abbreviations:

GSI = Groundwater Surface Water Interface
mg/L = milligrams per liter
NA = Not analyzed
ND = Not detected
ug/L = micrograms per liter

Table 10 - Summary of Storm Sewer Groundwater Sampling Results.xlsx



Attachment 2

Fourth Quarter 2014 Groundwater
Sampling Logs



Low-Flow Groundwater Sampling Log

Project:	Lansing-Plant 2	Site Location:	East Lansing, MI	
Project No:	B0064479.0014.00603	Well ID:	MW-01(2)	Sample ID: MW-01(2)_120314
Sample Date:	12/3/2014	Duplicate:	N/A	Other QC: N/A
Sample Time:	3:00 PM	Weather:	Cold Sunny Windy 34 F	

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	N/A	N/A
Casing Material:	PVC sch 40	Screen Interval:	10.0 to 20.0 ft bgs	
Casing Diameter:	2 in	Pump Intake Depth:	Initial: 13.0 ft bmp Final: 13.0 ft bmp	
Measured Well Depth:	15.9 ft bmp	Purge Time:	1:35 PM	to 2:55 PM
Depth to Water:	9.03 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
1:35 PM	0	90	0.1	10.93	6.65	5.179	98.6	2.68	81.60	9.45
1:40 PM	5	90	0.2	10.45	6.63	5.181	82.2	2.22	84.80	9.49
1:45 PM	10	90	0.3	10.28	6.62	5.163	78.5	2.34	91.30	9.74
1:50 PM	15	90	0.4	10.52	6.62	5.138	74.6	2.37	89.20	9.90
1:55 PM	20	90	0.5	10.08	6.62	5.172	71.9	2.43	81.30	9.95
2:00 PM	25	65	0.7	9.15	6.61	5.267	65.2	5.26	79.90	9.92
2:05 PM	30	65	0.7	8.73	6.60	5.338	59.7	1.80	60.90	9.97
2:10 PM	35	65	0.8	8.74	6.59	5.409	52.8	1.43	32.90	9.97
2:15 PM	40	65	1.0	8.75	6.59	5.437	51.1	1.36	26.70	10.00
2:20 PM	45	65	0.9	8.86	6.59	5.568	35.3	1.10	23.60	10.01
2:25 PM	50	65	1.0	8.80	6.60	5.600	31.5	0.97	20.60	10.05
2:30 PM	55	65	1.2	8.78	6.60	5.641	28.8	0.89	16.20	10.07
2:35 PM	60	65	1.3	8.63	6.60	5.680	26.1	0.83	13.20	10.10
2:40 PM	65	65	1.4	8.75	6.60	5.707	22.7	0.81	10.20	10.11
2:45 PM	70	65	1.4	8.67	6.61	5.747	21.3	0.78	9.04	10.16
2:50 PM	75	65	1.6	8.77	6.61	5.747	21.1	0.76	8.65	10.19
2:55 PM	80	65	1.8	8.61	6.60	5.798	20.9	0.64	8.95	10.21



Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: clear Odor: No Appearance: clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs	40 mL CG	1	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Canadium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Cliff Walls

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	SU	standard units
ft	feet	HCL	hydrochloric acid							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 2 **Site Location:** East Lansing, MI
Project No: B0064479.0014.00603 **Well ID:** MW-03(2) **Sample ID:** MW-03(2)_120414
Sample Date: 12/4/2014 **Duplicate:** DUP_2_120414 **Other QC:** N/A
Sample Time: 12:05 PM **Weather:** Cold|Sunny 27 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** N/A N/A
Casing Material: PVC sch 40 **Screen Interval:** 12.0 to 22.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 14.0 ft bmp Final: 14.0 ft bmp
Measured Well Depth: 19.51 ft bmp **Purge Time:** 11:30 AM to 12:00 PM
Depth to Water: 9.63 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
11:30 AM	0	75	0.1	10.49	6.45	7.828	75.6	1.67	11.60	9.70
11:35 AM	5	75	0.2	9.34	6.51	7.669	64.0	1.21	9.04	9.70
11:40 AM	10	75	0.3	8.97	6.55	7.561	62.0	0.95	7.80	9.70
11:45 AM	15	75	0.4	8.73	6.55	7.440	61.5	0.75	5.96	9.70
11:50 AM	20	75	0.5	8.71	6.55	7.347	61.6	0.67	5.25	9.70
11:55 AM	25	75	0.7	8.60	6.54	7.249	61.7	0.65	4.21	9.70
12:00 PM	30	75	0.8	8.90	6.54	7.138	61.5	0.62	2.58	9.70

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs	40 mL CG	2	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Cadmium, Chromium, and Copper	125 mL PE	2	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Cliff Walls

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	SU	standard units
ft	feet	HCL	hydrochloric acid							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 2 **Site Location:** East Lansing, MI
Project No: B0064479.0014.00603 **Well ID:** MW-12-01 **Sample ID:** MW-12-01_120814
Sample Date: 12/8/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 11:50 AM **Weather:** Cold|Cloudy 33 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** N/A N/A
Casing Material: Welded Steel **Screen Interval:** 87.0 to 110.0 ft bgs
Casing Diameter: 4 in **Pump Intake Depth:** Initial: 92.0 ft bmp Final: 92.0 ft bmp
Measured Well Depth: N/A **Purge Time:** 11:10 AM to 11:45 AM
Depth to Water: 82.6 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
11:10 AM	0	90	0.1	8.44	7.04	1.971	-38.3	1.60	156.00	82.60
11:15 AM	5	90	0.2	8.42	7.03	1.973	-37.2	0.92	170.00	82.60
11:20 AM	10	90	0.3	8.40	7.02	1.972	-36.7	0.66	165.00	82.60
11:25 AM	15	90	0.4	8.51	7.02	1.971	-38.4	0.51	168.00	82.60
11:30 AM	20	90	0.6	8.56	7.02	1.972	-39.7	0.45	165.00	82.60
11:35 AM	25	90	0.7	8.56	6.99	1.973	-40.5	0.39	167.00	82.60
11:40 AM	30	90	0.7	8.60	7.02	1.973	-41.3	0.37	163.00	82.60
11:45 AM	35	90	0.8	8.57	7.01	1.973	-42.5	0.36	163.00	82.60

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** cloudy

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Cliff Walls

Signature:

Abbreviations:

C	degrees Celsius	ft	feet	gal	gallons	mg/L	milligrams per liter	mS/cm	millisiemens per centimeter	N/A	not available
CG	clear glass	ft bgs	feet below ground surface	HCL	hydrochloric acid	mL/min	milliliters per minute	mV	millivolts	NTU	nephelometric turbidity units
F	degrees Fahrenheit	ft bmp	feet below measuring point							ppm	parts per million
										SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 2 **Site Location:** East Lansing, MI
Project No: B0064479.0014.00603 **Well ID:** MW-12-02 **Sample ID:** MW-12-02_120314
Sample Date: 12/3/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 12:10 PM **Weather:** Cold|Cloudy|Windy 31 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** N/A N/A
Casing Material: Welded Steel **Screen Interval:** 87.0 to 110.0 ft bgs
Casing Diameter: 4 in **Pump Intake Depth:** Initial: 80.0 ft bmp Final: 80.0 ft bmp
Measured Well Depth: 94.8 ft bmp **Purge Time:** 11:35 AM to 12:05 PM
Depth to Water: 72.9 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
11:35 AM	0	90	0.1	8.63	7.56	1.009	-147.9	1.37	76.10	72.95
11:40 AM	4	90	0.2	8.55	7.49	1.024	-156.1	0.68	66.20	72.90
11:45 AM	9	90	0.2	8.32	7.40	1.036	-139.2	0.44	56.20	72.90
11:50 AM	14	90	0.4	8.36	7.37	1.040	-141.1	0.37	49.70	72.90
11:55 AM	19	90	0.5	8.52	7.32	1.057	-140.8	0.30	42.20	72.90
12:00 PM	24	90	0.6	8.72	7.35	1.070	-138.5	0.22	39.90	72.90
12:05 PM	29	90	0.7	8.82	7.31	1.076	-136.8	0.24	38.30	72.90

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Cliff Walls

Signature:

Abbreviations:

C	degrees Celsius	ft	feet	gal	gallons	mg/L	milligrams per liter	mS/cm	millisiemens per centimeter	N/A	not available
CG	clear glass	ft bgs	feet below ground surface	HCL	hydrochloric acid	mL/min	milliliters per minute	mV	millivolts	NTU	nephelometric turbidity units
F	degrees Fahrenheit	ft bmp	feet below measuring point							ppm	parts per million
										SU	standard units
										TOC	top of casing

Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 2	Site Location: East Lansing, MI	
Project No: B0064479.0014.00603	Well ID: MW-12-05	Sample ID: MW-12-05_121114
Sample Date: 12/11/2014	Duplicate: N/A	Other QC: N/A
Sample Time: 3:55 PM	Weather: Cloudy Cold 28 F	

Instrument Identification

Purge Method: Bladder Pump	Water Quality Meters: YSI	Turbidity Meter
Measuring Point: TOC	Serial #: 05J2007	1329
Casing Material: Welded Steel	Screen Interval: 75.0 to 99.0 ft bgs	
Casing Diameter: 4 in	Pump Intake Depth: Initial: 88 ft bmp Final: 88 ft bmp	
Measured Well Depth: 102 ft bmp	Purge Time: 2:25 PM to 3:50 PM	
Depth to Water: 77.44 ft bmp	PID Reading: 0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
2:50 PM	0	100	0.1	6.54	10.10	3.713	-38.5	1.13	85.06	77.73
2:55 PM	5	50	0.8	6.50	9.93	3.700	-41.3	0.92	80.30	77.73
3:01 PM	12	50	0.9	6.70	10.18	3.695	-43.7	0.95	56.30	77.73
3:05 PM	16	50	0.9	6.83	10.17	3.690	-46.8	0.98	54.16	N/A
3:10 PM	21	50	1.0	6.73	10.06	3.696	-47.4	1.03	38.84	77.82
3:16 PM	26	50	1.0	6.77	9.68	3.684	-50.8	0.93	34.33	77.73
3:20 PM	31	50	1.1	6.75	9.55	3.693	-51.5	0.89	31.91	7.84
3:25 PM	36	50	1.1	6.79	9.48	3.690	-52.0	0.85	26.01	77.85
3:30 PM	40	50	1.2	6.72	9.28	3.693	-53.9	0.81	24.42	77.85
3:35 PM	46	50	1.3	7.84	8.86	3.687	-56.0	0.68	20.10	77.86
3:40 PM	50	50	1.3	8.00	8.77	3.692	-57.4	0.56	19.77	77.95
3:45 PM	55	50	1.4	8.25	8.77	3.686	-57.3	0.56	20.34	77.95
3:50 PM	60	50	1.4	8.11	8.72	3.691	-58.1	0.55	20.31	77.94

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Brendan O'Leary

Signature:



Abbreviations:

C	degrees Celsius	ft	feet	gal	gallons	mg/L	milligrams per liter	mS/cm	millisiemens per centimeter	N/A	not available
CG	clear glass	ft bgs	feet below ground surface	HCL	hydrochloric acid	mL/min	milliliters per minute	mV	millivolts	NTU	nephelometric turbidity units
F	degrees Fahrenheit	ft bmp	feet below measuring point							ppm	parts per million
										SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 2 **Site Location:** East Lansing, MI
Project No: B0064479.0014.00603 **Well ID:** MW-12-06 **Sample ID:** MW-12-06_121114
Sample Date: 12/11/2014 **Duplicate:** String was not recognized as a valid DateTime. **Other QC:** N/A
Sample Time: 2:45 PM **Weather:** Cold|Snowing|Windy 31 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** N/A N/A
Casing Material: **Screen Interval:** N/A
Casing Diameter: **Pump Intake Depth:** Initial: 82.0 ft bmp Final: 82.0 ft bmp
Measured Well Depth: N/A **Purge Time:** 1:55 PM to 2:40 PM
Depth to Water: 78.45 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
1:55 PM	0	100	0.1	1.06	7.19	0.867	-80.3	5.53	27.20	78.50
2:00 PM	5	100	0.2	11.40	7.13	0.865	-82.4	4.31	25.30	78.50
2:05 PM	10	100	0.3	11.69	7.16	0.868	-87.3	1.98	11.90	78.50
2:10 PM	15	100	0.4	11.80	7.15	0.869	-89.1	1.17	8.94	78.50
2:15 PM	20	100	0.6	11.87	7.14	0.867	-90.2	1.00	7.25	78.50
2:20 PM	25	100	0.7	11.84	7.13	0.868	-90.3	0.83	14.90	78.50
2:25 PM	30	100	0.8	11.76	7.13	0.869	-90.4	0.77	13.50	78.50
2:30 PM	35	100	0.9	11.85	7.12	0.867	-90.6	0.54	9.62	78.50
2:35 PM	40	100	1.0	11.80	7.12	0.869	-90.6	0.51	8.36	78.50
2:40 PM	45	100	100.0	11.76	7.11	0.868	-90.7	0.52	7.77	78.50

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Cliff Walls

Signature: 

Abbreviations:

C	degrees Celsius	ft	feet	gal	gallons	mg/L	milligrams per liter	mS/cm	millisiemens per centimeter	N/A	not available
CG	clear glass	ft bgs	feet below ground surface	HCL	hydrochloric acid	mL/min	milliliters per minute	mV	millivolts	NTU	nephelometric turbidity units
F	degrees Fahrenheit	ft bmp	feet below measuring point							ppm	parts per million
										SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 2 **Site Location:** East Lansing, MI
Project No: B0064479.0014.00603 **Well ID:** MW-12-09 **Sample ID:** MW-12-09_120914
Sample Date: 12/9/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 3:15 PM **Weather:** Cold|Cloudy 35 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** N/A N/A
Casing Material: PVC sch 40 **Screen Interval:** 14.0 to 19.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 20 ft bmp Final: 20 ft bmp
Measured Well Depth: 24.6 ft bmp **Purge Time:** 2:12 PM to 3:06 PM
Depth to Water: 14.56 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
2:17 PM	0	150	0.2	12.07	7.01	3.511	2.1	0.38	744.20	14.54
2:22 PM	4	150	0.3	11.89	7.02	3.517	-0.3	0.35	731.20	14.54
2:25 PM	7	150	0.5	11.75	7.03	3.517	-7.7	0.38	454.50	14.54
2:30 PM	13	150	0.6	10.32	7.09	3.449	-11.5	0.52	245.80	14.54
2:30 PM	13	150	0.8	11.41	7.04	3.458	-14.2	0.68	149.30	14.54
2:35 PM	17	150	1.0	11.63	7.04	3.475	-15.8	1.13	112.10	14.54
2:46 PM	29	150	1.2	11.55	7.08	3.497	19.7	0.48	95.20	14.57
2:50 PM	33	150	1.3	11.69	7.08	3.501	-20.0	0.45	87.95	14.57
2:55 PM	37	150	1.5	11.67	7.07	3.501	-20.3	0.47	52.72	14.59
3:00 PM	42	150	1.6	11.66	7.03	3.497	-21.3	0.48	39.52	14.54
3:06 PM	48	150	1.8	11.49	7.00	3.495	-21.7	0.48	38.43	14.54

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Brendan O'Leary

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 2 **Site Location:** East Lansing, MI
Project No: B0064479.0014.00603 **Well ID:** MW-12-18 **Sample ID:** MW-12-18_120814
Sample Date: 12/8/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 1:40 PM **Weather:** Cold|Cloudy 33 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** N/A N/A
Casing Material: PVC sch 40 **Screen Interval:** 28.0 to 33.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 30.0 ft bmp Final: 30.0 ft bmp
Measured Well Depth: N/A **Purge Time:** 12:45 PM to 2:10 PM
Depth to Water: 24.52 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
12:45 PM	0	80	0.1	10.16	7.00	2.827	-1.5	1.96	95.90	24.79
12:50 PM	5	80	0.2	9.78	7.00	2.845	-4.6	1.72	22.50	24.79
12:55 PM	10	80	0.3	8.92	6.97	2.846	-3.7	0.96	14.50	24.80
1:00 PM	15	80	0.4	8.56	6.95	2.848	-2.8	0.78	12.30	24.80
1:05 PM	20	80	0.6	8.25	6.92	2.849	-1.7	0.66	11.80	24.80
2:10 PM	85	80	0.7	8.12	6.90	2.851	-0.5	0.56	12.30	24.80
1:15 PM	30	80	0.7	7.96	6.88	2.869	0.2	0.46	11.80	24.80
1:20 PM	35	80	0.8	8.02	6.88	2.879	0.1	0.41	8.99	24.80
1:25 PM	40	80	1.0	7.95	6.88	2.893	0.1	0.34	8.54	24.80
1:30 PM	45	80	1.0	7.89	6.87	2.901	0.3	0.33	8.25	24.80
1:35 PM	50	80	1.2	7.94	6.87	2.903	0.2	0.31	8.24	24.80

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Cliff Walls

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 2 **Site Location:** East Lansing, MI
Project No: B0064479.0014.00603 **Well ID:** MW-13-42 **Sample ID:** MW-13-42_121114
Sample Date: 12/11/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 11:10 AM **Weather:** Cloudy|Cold 38 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 1958 2852
Casing Material: **Screen Interval:** 70.0 to 75.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 76.85 ft bmp Final: 76.85 ft bmp
Measured Well Depth: 76.85 ft bmp **Purge Time:** 1:30 PM to 11:05 AM
Depth to Water: 75.82 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
1:30 PM	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	75.82
3:00 PM	90	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	75.90
8:55 AM	1165	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	75.68
11:05 AM	8495	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	75.70

Collected Sample Condition

Color: brown **Odor:** No **Appearance:** cloudy

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: Not enough water to sample. Bailed three well volumes and took sample.

Technician: Brendan O'Leary

Signature: 

Abbreviations:

CG	clear glass	ft	feet	ft bmp	feet below measuring point	HCL	hydrochloric acid	N/A	not available	ppm	parts per million
F	degrees Fahrenheit	ft bgs	feet below ground surface							PVC sch	polyvinyl chloride
										40	Schedule 40
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 2 **Site Location:** East Lansing, MI
Project No: B0064479.0014.00603 **Well ID:** MW-13-44 **Sample ID:** MW-13-44_120614
Sample Date: 12/6/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 3:05 PM **Weather:** Cold|Cloudy 30 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** N/A N/A
Casing Material: Welded Steel **Screen Interval:** 96.0 to 115.0 ft bgs
Casing Diameter: 4 in **Pump Intake Depth:** Initial: 90.0 ft bmp Final: 90.0 ft bmp
Measured Well Depth: N/A **Purge Time:** 2:15 PM to 3:00 PM
Depth to Water: 83.4 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
2:15 PM	0	100	0.1	10.61	8.74	1.352	101.2	2.84	14.80	83.70
2:20 PM	5	100	0.2	10.53	8.73	1.357	56.4	1.35	14.10	83.82
2:25 PM	10	100	0.3	10.87	8.73	1.338	45.3	0.68	13.80	83.93
2:30 PM	15	100	0.4	10.95	8.74	1.342	40.3	0.48	12.80	84.00
2:35 PM	20	100	0.5	11.00	8.74	1.341	38.5	0.40	11.20	84.05
2:40 PM	25	100	0.7	11.06	8.74	1.336	37.4	0.35	11.40	84.10
2:45 PM	30	100	0.7	10.99	8.74	1.338	36.2	0.29	10.20	84.15
2:50 PM	35	100	0.7	11.11	8.74	1.337	34.4	0.26	10.50	84.23
2:55 PM	40	100	0.9	10.89	8.71	1.342	35.3	0.24	9.88	84.35
3:00 PM	45	100	1.1	10.47	8.72	1.342	34.4	0.24	9.48	84.35

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Cliff Walls

Signature:

Abbreviations:

C	degrees Celsius	ft	feet	gal	gallons	mg/L	milligrams per liter	mS/cm	millisiemens per centimeter	N/A	not available
CG	clear glass	ft bgs	feet below ground surface	HCL	hydrochloric acid	mL/min	milliliters per minute	mV	millivolts	NTU	nephelometric turbidity units
F	degrees Fahrenheit	ft bmp	feet below measuring point							ppm	parts per million
										SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 2 **Site Location:** East Lansing, MI
Project No: B0064479.0014.00603 **Well ID:** MW-13-45 **Sample ID:** MW-13-45_120914
Sample Date: 12/9/2014 **Duplicate:** N/A **Other QC:** MS/MSD
Sample Time: 11:10 AM **Weather:** Cold|Cloudy|Scattered Showers 30 F

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	N/A	N/A
Casing Material:	Sch. 40 PVC	Screen Interval:	72.0 to 77.0 ft bgs	
Casing Diameter:	2 in	Pump Intake Depth:	Initial: 75.0 ft bmp Final: 75.0 ft bmp	
Measured Well Depth:	N/A	Purge Time:	10:30 AM	to 11:05 AM
Depth to Water:	71.60 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
10:30 AM	0	100	0.1	7.99	6.91	1.352	-22.8	2.91	7.62	70.31
10:35 AM	5	100	0.2	8.32	7.03	1.374	-36.9	2.01	6.32	70.39
10:40 AM	10	100	0.3	8.37	7.07	1.384	-40.2	1.45	6.41	70.35
10:45 AM	15	100	0.4	8.59	7.07	1.390	-41.5	0.97	6.25	70.34
10:50 AM	20	100	0.5	8.58	7.08	1.398	-41.2	0.75	5.38	70.34
10:55 AM	25	100	0.6	8.61	7.06	1.400	-40.2	0.67	5.21	70.34
11:00 AM	30	100	0.8	8.66	7.06	1.403	-39.1	0.64	5.23	70.34
11:05 AM	35	100	0.7	8.61	7.05	1.403	-37.6	0.61	5.33	70.33

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	2	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: microseep

Technician: Cliff Walls

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC	sch polyvinyl chloride		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	40	Schedule 40		
ft	feet	HCL	hydrochloric acid					SU	standard units		



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 2 **Site Location:** East Lansing, MI
Project No: B0064479.0014.00603 **Well ID:** MW-13-51 **Sample ID:** MW-13-51_120414
Sample Date: 12/4/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 2:05 PM **Weather:** Cold|Cloudy 27 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** N/A N/A
Casing Material: Sch. 40 PVC **Screen Interval:** 77.0 to 87.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 83.0 ft bmp Final: 83.0 ft bmp
Measured Well Depth: 89.80 ft bmp **Purge Time:** 1:35 PM to 2:00 PM
Depth to Water: 76.23 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
1:35 PM	0	80	0.1	7.98	6.83	1.434	-8.7	1.80	40.60	76.95
1:40 PM	5	80	0.2	7.25	6.80	1.443	-6.6	1.32	40.90	76.90
1:45 PM	10	80	0.3	7.00	6.76	1.443	-4.1	0.96	39.50	76.90
1:50 PM	15	80	0.4	7.07	6.74	1.438	-3.3	0.83	36.30	76.90
1:55 PM	20	80	0.5	6.87	6.74	1.442	-3.3	0.77	34.30	76.94
2:00 PM	25	80	0.6	6.75	6.73	1.440	-2.2	0.77	32.80	76.94

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Cliff Walls

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC	sch polyvinyl chloride		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	40	Schedule 40		
ft	feet	HCL	hydrochloric acid					SU	standard units		



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 2 **Site Location:** East Lansing, MI
Project No: B0064479.0014.00603 **Well ID:** MW-14-54 **Sample ID:** MW-14-54_121214
Sample Date: 12/12/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 9:55 AM **Weather:** Cold|Cloudy 31 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** N/A N/A
Casing Material: **Screen Interval:** N/A
Casing Diameter: **Pump Intake Depth:** Initial: 16.5 ft bmp Final: 16.5 ft bmp
Measured Well Depth: N/A **Purge Time:** 9:10 AM to 9:50 AM
Depth to Water: 15.39 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
9:10 AM	0	120	0.1	10.28	7.91	2.265	25.8	2.40	49.10	15.49
9:15 AM	5	120	0.2	10.57	7.90	2.263	26.4	1.83	19.40	15.49
9:20 AM	10	120	0.3	10.46	7.86	2.251	26.4	1.17	11.69	15.49
9:25 AM	15	120	0.5	10.20	7.89	2.196	25.8	1.01	12.10	15.49
9:30 AM	20	120	0.7	10.07	7.60	2.128	25.4	0.76	9.85	15.49
9:35 AM	25	120	0.7	10.15	7.89	2.086	25.3	0.67	9.58	15.49
9:40 AM	30	120	0.8	9.94	7.90	1.968	25.7	0.46	8.62	15.49
9:45 AM	35	120	0.9	9.66	7.91	1.927	26.6	0.46	7.65	15.49
9:50 AM	40	120	1.0	9.49	7.90	1.927	27.5	0.43	7.35	15.49

Collected Sample Condition

Color: yellow **Odor:** Yes **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
SVOCs	1 L AG	1	None	N/A
Metals	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Cliff Walls

Signature:

Abbreviations:

AG	amber glass	ft	feet	HCL	hydrochloric acid	mL/min	milliliters per minute	N/A	not available	ppm	parts per million
C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons							SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project:	Lansing-Plant 2	Site Location:	East Lansing, MI	
Project No:	B0064479.0014.00603	Well ID:	MW-14-55	Sample ID: MW-14-55_120814
Sample Date:	12/8/2014	Duplicate:	N/A	Other QC: N/A
Sample Time:	4:10 PM	Weather:	Cold Cloudy 36 F	

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	N/A	N/A
Casing Material:		Screen Interval:	N/A	
Casing Diameter:		Pump Intake Depth:	Initial: 20.0 ft bmp Final: 20.0 ft bmp	
Measured Well Depth:	N/A	Purge Time:	2:20 PM	to 4:05 PM
Depth to Water:	17.70 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
2:20 PM	0	75	0.2	9.86	7.11	0.819	53.6	6.37	1000.00	17.79
2:25 PM	5	75	0.2	9.41	7.10	0.805	51.2	6.28	1000.00	17.80
2:30 PM	10	75	0.3	8.62	7.06	0.762	52.1	6.30	1000.00	17.86
2:35 PM	15	75	0.4	8.20	7.00	0.784	54.4	6.13	1000.00	17.86
2:40 PM	20	75	0.6	7.91	6.95	0.783	56.8	6.06	1000.00	17.86
2:45 PM	25	75	0.7	7.85	6.91	0.783	58.6	5.90	1000.00	17.86
2:50 PM	30	75	0.7	7.62	6.92	0.784	58.0	5.80	496.00	17.86
2:55 PM	35	75	0.9	7.92	6.93	0.786	57.5	5.76	298.00	17.86
3:00 PM	40	75	0.9	7.94	6.95	0.788	56.7	5.73	222.00	17.86
3:05 PM	45	75	1.1	7.98	6.96	0.788	56.4	5.67	163.00	17.86
3:10 PM	50	75	1.2	7.93	6.96	0.789	56.4	5.72	129.00	17.86
3:15 PM	55	75	1.3	N/A	N/A	N/A	N/A	N/A	106.00	17.86
3:15 PM	55	75	1.4	7.82	6.95	0.790	56.8	5.68	90.50	17.86
3:20 PM	60	75	1.4	7.79	6.94	0.791	57.1	5.62	80.30	17.86
3:25 PM	65	75	1.5	7.80	6.97	0.794	56.6	5.61	75.20	17.86
3:30 PM	70	75	1.6	7.79	6.96	0.798	56.6	5.61	60.90	17.86
3:35 PM	75	75	1.7	7.93	6.96	0.803	56.4	5.40	63.30	17.86
3:40 PM	80	75	1.8	8.03	6.97	0.814	55.8	5.41	55.50	17.86
3:45 PM	85	75	1.9	8.03	6.98	0.826	55.4	5.34	54.60	17.86
3:50 PM	90	75	2.1	7.95	6.96	0.839	55.8	5.31	51.30	17.86
3:55 PM	95	75	2.2	7.79	6.96	0.855	56.1	5.34	46.40	17.86
4:00 PM	100	75	2.3	7.66	6.96	0.870	55.6	5.35	43.90	17.86
4:05 PM	105	75	2.4	7.51	6.92	0.889	57.5	5.39	41.90	17.86



Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: clear Odor: No Appearance: NA

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
SVOCs	1 L AG	1	None	N/A
Metals	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Cliff Walls

Signature: 

Abbreviations:

AG	amber glass	ft	feet	HCL	hydrochloric acid	mL/min	milliliters per minute	N/A	not available	ppm	parts per million
C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons							SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 2 **Site Location:** East Lansing, MI
Project No: B0064479.0014.00603 **Well ID:** MW-14-56 **Sample ID:** MW-14-56_120914
Sample Date: 12/9/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 12:00 PM **Weather:** Cold|Cloudy 35 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 1958 2852
Casing Material: **Screen Interval:** N/A
Casing Diameter: **Pump Intake Depth:** Initial: 73.5 ft bmp Final: 73.5 ft bmp
Measured Well Depth: 79.0 ft bmp **Purge Time:** 10:54 AM to 12:00 PM
Depth to Water: 75.45 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
10:54 AM	0	50	0.1	7.83	7.25	4.963	-2.4	2.70	162.40	75.45
11:00 AM	7	50	0.1	7.67	7.37	4.977	-17.3	2.26	159.20	76.03
11:05 AM	11	50	0.2	7.43	7.53	4.980	-15.4	2.27	141.00	76.04
11:10 AM	16	50	0.2	7.32	7.58	4.982	-14.7	2.27	110.70	76.12
11:20 AM	26	50	0.3	6.87	7.76	4.992	-8.6	2.33	98.24	76.18
11:26 AM	32	50	0.4	6.68	7.77	5.000	-5.3	2.35	87.39	76.19
11:30 AM	36	50	0.4	6.65	7.75	4.999	-3.9	2.34	81.84	76.21
11:37 AM	44	50	0.5	6.60	7.73	5.001	-2.2	2.31	70.10	76.24
11:40 AM	46	50	0.5	6.55	7.70	5.004	-1.5	2.28	60.20	72.42
11:50 AM	57	50	0.6	6.45	7.57	5.010	-1.0	2.25	51.70	76.49
11:55 AM	62	50	0.6	6.25	7.59	5.018	-0.3	2.25	48.28	72.51
12:00 PM	66	50	0.7	6.48	7.55	5.012	-0.6	2.15	49.20	72.58

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
SVOCs	1 L AG	1	None	N/A
Metals	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Brendan O'Leary

Signature:

Abbreviations:

AG	amber glass	ft	feet	HCL	hydrochloric acid	mL/min	milliliters per minute	N/A	not available	ppm	parts per million
C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons							SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project:	Lansing-Plant 2	Site Location:	East Lansing, MI	
Project No:	B0064479.0014.00603	Well ID:	MW-14-57	Sample ID: MW-14-57_121014
Sample Date:	12/10/2014	Duplicate:	DUP_3_121014	Other QC: N/A
Sample Time:	1:40 PM	Weather:	Cold Cloudy 30 F	

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	05J2007	1329
Casing Material:		Screen Interval:	N/A	
Casing Diameter:		Pump Intake Depth:	Initial: 17 ft bmp Final: 17 ft bmp	
Measured Well Depth:	21.45 ft bmp	Purge Time:	12:30 PM	to 1:39 PM
Depth to Water:	14.55 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
12:30 PM	0	100	0.1	11.59	7.27	1.375	57.3	0.99	250.30	14.55
12:35 PM	4	100	0.2	12.01	7.24	1.261	44.5	0.48	184.20	14.55
12:40 PM	10	100	0.3	12.24	7.23	0.350	20.6	0.35	177.50	14.55
12:45 PM	14	100	0.4	12.37	7.23	1.117	-7.2	0.28	112.30	14.55
12:50 PM	20	100	0.5	12.48	7.23	1.100	-11.0	0.25	80.47	14.55
12:55 PM	25	100	0.6	12.33	7.24	1.095	-12.8	0.23	N/A	14.55
1:00 PM	30	100	0.8	12.47	7.26	1.054	-18.7	0.20	34.43	14.55
1:07 PM	37	100	0.9	12.50	7.27	1.042	-19.9	0.19	27.67	14.55
1:11 PM	40	100	1.0	12.52	7.28	1.034	-20.9	0.20	29.76	14.55
1:15 PM	45	100	1.1	12.48	7.31	1.027	-22.6	0.19	N/A	14.55
1:20 PM	49	100	1.2	12.63	7.31	1.017	-23.7	0.16	23.11	14.55
1:25 PM	54	100	1.3	12.41	7.33	1.012	-23.6	0.19	17.52	14.55
1:30 PM	60	100	1.4	12.54	7.33	1.007	-24.2	0.18	10.86	14.55
1:35 PM	64	100	1.5	12.48	7.34	1.005	-24.1	0.18	8.77	14.55
1:39 PM	68	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A



Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: clear Odor: No Appearance: clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	2	HCL	N/A
SVOCs	1 L AG	2	None	N/A
Metals	125 mL PE	2	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Brendan O'Leary

Signature: 

Abbreviations:

AG	amber glass	ft	feet	HCL	hydrochloric acid	mL/min	milliliters per minute	N/A	not available	ppm	parts per million
C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons							SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 2 **Site Location:** East Lansing, MI
Project No: B0064479.0014.00603 **Well ID:** MW-14-58 **Sample ID:** MW-14-58_121014
Sample Date: 12/10/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 10:40 AM **Weather:** Cloudy|Cold 31 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 1958 2852
Casing Material: **Screen Interval:** N/A
Casing Diameter: **Pump Intake Depth:** Initial: 24.5 ft bmp Final: 24.5 ft bmp
Measured Well Depth: 29.94 ft bmp **Purge Time:** 9:34 AM to 10:35 AM
Depth to Water: 14.84 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
9:34 AM	0	100	0.1	10.74	6.54	6.078	-35.2	2.68	498.10	14.84
9:40 AM	6	100	0.2	10.65	6.57	6.226	-55.6	0.43	362.60	14.95
9:45 AM	11	100	0.3	10.77	6.56	6.304	-61.6	1.05	166.00	14.89
9:50 AM	17	100	0.4	10.96	6.56	6.325	-64.5	0.46	123.40	14.89
9:55 AM	22	100	0.5	10.93	6.58	6.152	-68.6	0.23	115.40	14.89
10:01 AM	28	100	0.6	10.76	6.59	6.088	-69.4	0.22	98.38	14.91
10:05 AM	32	100	0.7	10.73	6.60	5.947	-71.0	0.21	91.39	14.91
10:18 AM	44	100	0.8	10.85	6.82	5.856	-72.8	0.20	51.80	14.91
10:25 AM	51	100	1.0	10.77	6.66	5.543	-78.4	0.16	37.18	14.92
10:30 AM	57	100	1.1	10.71	6.66	5.467	-79.3	0.17	39.66	14.92
10:35 AM	61	100	1.2	10.72	6.67	5.458	-79.8	0.16	39.33	14.92

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
SVOCS	1 L AG	1	None	N/A
Metals	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Brendan O'Leary

Signature:

Abbreviations:

AG	amber glass	ft	feet	HCL	hydrochloric acid	mL/min	milliliters per minute	N/A	not available	ppm	parts per million
C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride Schedule 40
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	SU	standard units
F	degrees Fahrenheit	gal	gallons							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 2 **Site Location:** East Lansing, MI
Project No: B0064479.0014.00603 **Well ID:** MW-14-59 **Sample ID:** MW-14-59_121014
Sample Date: 12/10/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 11:50 AM **Weather:** Cold|Cloudy|Windy 31 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** N/A N/A
Casing Material: **Screen Interval:** N/A
Casing Diameter: **Pump Intake Depth:** Initial: 12.5 ft bmp Final: 12.5 ft bmp
Measured Well Depth: N/A **Purge Time:** 10:55 AM to 11:45 AM
Depth to Water: 8.62 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
10:55 AM	0	90	0.1	7.79	6.90	1.143	-0.8	1.71	8.42	9.10
11:00 AM	5	90	0.2	7.36	6.95	1.160	-3.1	1.29	7.35	9.00
11:05 AM	10	90	0.3	6.88	6.89	1.158	-0.6	1.20	4.21	9.00
11:10 AM	15	90	0.4	6.72	6.85	1.156	1.8	1.11	4.02	9.00
11:15 AM	20	90	0.6	6.48	6.81	1.158	3.9	0.52	4.21	9.00
11:20 AM	25	90	0.7	6.45	6.79	1.157	4.0	0.48	4.28	9.00
11:25 AM	30	90	0.8	6.44	6.80	1.156	4.3	0.42	3.83	9.00
11:30 AM	35	90	0.9	6.55	6.84	1.153	1.6	0.32	3.58	9.00
11:35 AM	40	90	0.9	6.82	N/A	1.156	0.8	0.40	3.47	9.00
11:40 AM	45	90	1.0	6.98	6.88	1.156	0.0	0.39	3.25	9.00
11:45 AM	50	90	1.1	7.06	6.89	1.157	-0.4	0.37	3.56	9.00

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
SVOCs	1 L AG	1	None	N/A
Metals	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Cliff Walls

Signature:

Abbreviations:

AG	amber glass	ft	feet	HCL	hydrochloric acid	mL/min	milliliters per minute	N/A	not available	ppm	parts per million
C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride Schedule 40
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	SU	standard units
F	degrees Fahrenheit	gal	gallons							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 2 **Site Location:** East Lansing, MI
Project No: B0064479.0014.00603 **Well ID:** MW-14-60 **Sample ID:** MW-14-60_121014
Sample Date: 12/10/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 2:15 PM **Weather:** Cold|Cloudy|Windy 31 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** N/A N/A
Casing Material: **Screen Interval:** N/A
Casing Diameter: **Pump Intake Depth:** Initial: 18.0 ft bmp Final: 18.0 ft bmp
Measured Well Depth: N/A **Purge Time:** 1:20 PM to 2:10 PM
Depth to Water: 13.81 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
1:20 PM	0	120	0.1	7.53	7.31	1.210	1.0	3.36	45.70	13.98
1:25 PM	5	120	0.2	7.94	7.31	1.228	-23.7	2.19	33.30	13.99
1:30 PM	10	120	0.3	8.80	7.30	1.227	-37.5	0.83	22.10	14.00
1:35 PM	15	120	0.4	9.10	7.33	1.227	-41.4	0.54	17.20	14.00
1:40 PM	20	120	0.6	9.26	7.31	1.233	-48.1	0.38	15.30	14.00
1:45 PM	25	120	0.7	9.20	7.30	1.234	-50.0	0.34	14.40	14.00
1:50 PM	30	120	0.7	8.97	7.29	1.240	-50.8	0.35	11.40	14.00
1:55 PM	35	120	0.8	9.00	7.29	1.238	-50.8	0.30	11.30	14.00
2:00 PM	40	120	0.9	8.97	7.27	1.239	-50.9	0.27	7.84	14.00
2:05 PM	45	120	1.0	9.12	7.27	1.241	-51.6	0.24	4.65	14.00
2:10 PM	50	120	1.2	9.05	7.27	1.246	-51.8	0.25	4.25	14.00

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
SVOCS	1 L AG	1	None	N/A
Metals	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Cliff Walls

Signature: 

Abbreviations:

AG	amber glass	ft	feet	HCL	hydrochloric acid	mL/min	milliliters per minute	N/A	not available	ppm	parts per million
C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch 40	polyvinyl chloride Schedule 40
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	SU	standard units
F	degrees Fahrenheit	gal	gallons							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project:	Lansing-Plant 2	Site Location:	East Lansing, MI	
Project No:	B0064479.0014.00603	Well ID:	MW-14-61	Sample ID: MW-14-61_121014
Sample Date:	12/10/2014	Duplicate:	N/A	Other QC: N/A
Sample Time:	4:40 PM	Weather:	Cold Cloudy Windy 31 F	

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	N/A	N/A
Casing Material:		Screen Interval:	N/A	
Casing Diameter:		Pump Intake Depth:	Initial: 75.0 ft bmp Final: 75.0 ft bmp	
Measured Well Depth:	N/A	Purge Time:	3:20 PM	to 4:35 PM
Depth to Water:	72.97 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
3:20 PM	0	80	0.1	7.03	67.00	1.228	35.0	5.16	502.00	72.97
3:25 PM	5	80	0.2	6.64	6.86	1.233	23.6	2.90	436.00	72.95
3:30 PM	10	120	0.4	6.06	6.84	1.234	19.7	1.93	299.00	72.97
3:35 PM	15	80	0.4	5.87	6.84	1.217	15.4	1.47	209.00	72.97
3:40 PM	20	80	0.5	5.50	6.86	1.216	10.9	1.22	163.00	1,509.00
3:45 PM	25	80	0.7	5.32	6.64	1.200	9.6	1.26	140.00	72.97
3:50 PM	30	80	0.8	5.14	6.81	1.195	111.0	1.14	124.00	72.97
3:55 PM	35	80	0.9	4.98	6.77	1.189	10.9	1.02	96.40	72.97
4:00 PM	40	80	1.0	4.59	6.75	1.190	11.8	1.06	83.60	72.97
4:05 PM	45	80	1.1	4.48	6.74	1.183	11.3	1.01	77.50	72.97
4:10 PM	50	80	1.2	4.43	6.71	1.170	14.5	1.00	73.50	72.97
4:15 PM	55	80	1.4	3.80	6.78	1.176	10.9	1.02	61.10	72.97
4:20 PM	60	80	1.4	3.64	6.63	1.165	17.9	1.01	53.70	72.97
4:25 PM	65	80	1.5	3.54	6.63	1.161	18.3	0.96	44.10	72.97
4:30 PM	70	80	1.7	3.29	6.62	1.162	19.5	0.95	40.60	72.97
4:35 PM	75	80	1.7	3.21	6.58	1.157	19.2	0.96	39.90	72.97



Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: clear Odor: No Appearance: cloudy

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
SVOCs	1 L AG	1	None	N/A
Metals	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Cliff Walls

Signature: 

Abbreviations:

AG	amber glass	ft	feet	HCL	hydrochloric acid	mL/min	milliliters per minute	N/A	not available	ppm	parts per million
C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons							SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project:	Lansing-Plant 2	Site Location:	East Lansing, MI	
Project No:	B0064479.0014.00603	Well ID:	MW-14-62	Sample ID: MW-14-62_121114
Sample Date:	12/11/2014	Duplicate:	N/A	Other QC: N/A
Sample Time:	11:56 AM	Weather:	Sunny Windy 26 F	

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	05J2007	4191
Casing Material:		Screen Interval:	N/A	
Casing Diameter:		Pump Intake Depth:	Initial: 17.0 ft bmp Final: 17.0 ft bmp	
Measured Well Depth:	19.60 ft bmp	Purge Time:	10:30 AM	to 11:55 AM
Depth to Water:	6.93 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
10:30 AM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10:35 AM	6	100	0.1	8.97	11.93	0.988	-59.9	0.16	116.00	6.98
10:40 AM	10	100	0.2	9.09	11.93	0.985	-59.4	0.17	104.00	6.98
10:45 AM	16	100	0.3	9.12	11.93	0.986	-58.9	0.22	99.20	6.98
10:50 AM	21	100	0.4	9.23	11.93	0.985	-58.4	0.22	96.10	6.98
10:55 AM	26	100	0.5	9.28	11.93	0.986	-57.9	0.20	82.10	6.98
11:00 AM	30	100	0.6	9.18	11.93	0.987	-57.4	0.24	74.30	6.98
11:05 AM	35	100	0.7	9.16	11.93	0.986	-56.7	0.16	62.30	6.98
11:10 AM	40	100	0.8	0.99	11.93	0.986	-55.9	0.19	52.80	9.02
11:15 AM	45	100	0.9	8.94	11.94	0.988	-55.1	0.17	49.90	6.98
11:20 AM	51	100	1.0	9.32	11.94	0.980	-56.3	0.22	40.60	6.98
11:25 AM	56	100	1.1	9.36	11.93	0.980	-55.4	0.23	38.30	6.98
11:30 AM	60	100	1.2	9.41	11.93	0.980	-54.9	0.24	30.60	6.98
11:35 AM	65	100	1.3	9.35	11.93	0.981	-54.5	0.25	26.40	6.98
11:40 AM	70	100	1.4	9.29	11.93	0.983	-53.9	0.25	15.10	6.98
11:45 AM	75	100	1.5	9.28	11.93	0.982	-53.6	0.25	9.58	6.98
11:50 AM	80	100	1.6	9.32	11.93	0.982	-53.1	0.25	9.12	6.98
11:55 AM	86	100	1.7	9.29	11.93	0.983	-52.6	0.25	9.87	6.98



Low-Flow Groundwater Sampling Log

Collected Sample Condition

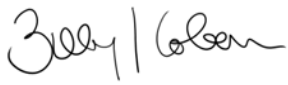
Color: clear Odor: No Appearance: cloudy

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
SVOCs	1 L AG	1	None	N/A
Metals	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Bill Cobern

Signature: 

Abbreviations:

AG	amber glass	ft	feet	HCL	hydrochloric acid	mL/min	milliliters per minute	N/A	not available	ppm	parts per million
C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons							SU	standard units
										TOC	top of casing

Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 2	Site Location: East Lansing, MI	
Project No: B0064479.0014.00603	Well ID: MW-14-63	Sample ID: MW-14-63_120314
Sample Date: 12/3/2014	Duplicate: N/A	Other QC: N/A
Sample Time: 10:35 AM	Weather: Cold Cloudy Windy 32 F	

Instrument Identification

Purge Method: Bladder Pump	Water Quality Meters: YSI	Turbidity Meter
Measuring Point: TOC	Serial #: N/A	N/A
Casing Material:	Screen Interval: N/A	
Casing Diameter:	Pump Intake Depth: Initial: 74.0 ft bmp Final: 74.0 ft bmp	
Measured Well Depth: 76.75 ft bmp	Purge Time: 9:35 AM to 10:30 AM	
Depth to Water: 71.95 ft bmp	PID Reading: 0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
9:35 AM	0	80	0.2	7.94	7.14	1.099	-42.5	1.23	56.40	72.35
9:40 AM	4	80	0.2	7.63	7.12	1.093	-43.2	0.99	34.60	72.50
9:45 AM	9	80	0.2	8.35	7.09	1.088	-43.1	0.97	66.80	72.55
9:50 AM	14	80	0.3	8.74	7.06	1.085	-45.9	0.41	164.00	71.55
9:55 AM	19	80	0.4	8.86	7.08	1.084	-50.6	0.32	176.00	71.71
10:00 AM	24	80	0.6	8.74	7.08	1.084	-53.1	0.35	210.00	71.70
10:05 AM	29	80	0.7	8.85	7.07	1.076	-59.0	0.27	181.00	71.70
10:10 AM	34	80	0.7	8.90	7.07	1.079	-61.2	0.24	155.00	71.71
10:15 AM	39	80	0.8	8.72	7.07	1.080	-62.7	0.23	112.00	71.65
10:20 AM	44	80	0.9	8.57	7.06	1.079	-63.5	0.18	73.30	71.68
10:25 AM	49	80	1.1	8.22	7.05	1.084	-61.9	0.26	71.60	71.65
10:30 AM	54	80	1.2	8.13	7.05	1.083	-60.3	0.25	66.60	71.65

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** cloudy

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
SVOCs	1 L AG	1	None	N/A
Metals	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
 Sampling Remarks: N/A

Technician: Cliff Walls

Signature: 

Abbreviations:

AG	amber glass	ft	feet	HCL	hydrochloric acid	mL/min	milliliters per minute	N/A	not available	ppm	parts per million
C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons							SU	standard units
										TOC	top of casing

Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 2	Site Location: East Lansing, MI	
Project No: B0064479.0014.00603	Well ID: P2-MW-04	Sample ID: P2-MW-04_120914
Sample Date: 12/9/2014	Duplicate: DUP_2_120914	Other QC: N/A
Sample Time: 12:45 PM	Weather: Cold Cloudy Scattered Showers 31 F	

Instrument Identification

Purge Method: Bladder Pump	Water Quality Meters: YSI	Turbidity Meter
Measuring Point: TOC	Serial #: N/A	N/A
Casing Material: PVC sch 40	Screen Interval: 26.0 to 36.0 ft bgs	
Casing Diameter: 2 in	Pump Intake Depth: Initial: 18.5 ft bmp	Final: 18.5 ft bmp
Measured Well Depth: N/A	Purge Time: 12:15 PM	to 12:40 PM
Depth to Water: 11.89 ft bmp	PID Reading: 0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
12:15 PM	0	90	0.1	10.08	7.52	0.819	67.3	7.11	19.90	12.21
12:20 PM	5	90	0.2	9.20	7.49	0.810	57.9	7.23	14.40	12.00
12:25 PM	10	90	0.3	8.75	7.43	0.792	56.1	6.83	9.25	12.00
12:30 PM	15	90	0.4	8.46	7.37	0.785	55.9	6.67	6.88	12.00
12:35 PM	20	90	0.5	8.49	7.36	0.784	55.9	6.70	6.47	12.00
12:40 PM	25	90	0.6	8.43	7.31	0.790	55.2	6.36	6.12	12.00

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	2	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Cadmium, Chromium, and Copper	125 mL PE	2	HNO3	N/A

Comments

General Comments: N/A
 Sampling Remarks: microseep

Technician: Cliff Walls

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch 40	polyvinyl chloride Schedule 40
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	SU	standard units
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	TOC	top of casing
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 2 **Site Location:** East Lansing, MI
Project No: B0064479.0014.00603 **Well ID:** P2-SB-20 **Sample ID:** P2-SB-20_010715
Sample Date: 1/7/2015 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 9:35 AM **Weather:** Cold|Cloudy|Scattered Showers|Snowing 30 F

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	N/A	N/A
Casing Material:	PVC sch 40	Screen Interval:	8.0 to 13.0 ft bgs	
Casing Diameter:	2 in	Pump Intake Depth:	Initial: 12.5 ft bmp Final: 12.5 ft bmp	
Measured Well Depth:	N/A	Purge Time:	8:35 AM	to 9:30 AM
Depth to Water:	9.61 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
8:35 AM	0	100	0.1	9.42	8.90	0.392	51.3	2.42	34.00	10.80
8:40 AM	5	100	0.2	9.20	8.90	0.388	48.3	2.33	22.30	11.00
8:45 AM	10	100	0.3	9.20	8.96	0.379	45.0	2.11	23.40	N/A
8:50 AM	15	100	0.4	9.39	9.05	0.363	41.8	1.66	25.50	N/A
8:55 AM	20	100	0.6	9.43	9.11	0.350	41.1	1.50	20.30	N/A
9:00 AM	25	100	0.7	9.54	9.14	0.335	41.3	1.18	27.10	N/A
9:05 AM	30	100	0.8	9.71	9.18	0.326	40.9	1.02	27.70	N/A
9:10 AM	35	100	0.9	9.61	9.15	0.320	43.0	0.89	25.60	N/A
9:15 AM	40	100	1.0	9.61	9.21	0.316	42.3	0.89	27.30	N/A
9:20 AM	45	100	1.1	9.60	9.20	0.312	43.3	0.72	27.10	N/A
9:25 AM	50	100	1.2	9.60	9.23	0.307	42.8	0.65	26.80	N/A
9:30 AM	55	100	1.4	9.65	9.23	0.304	43.2	0.66	27.70	N/A

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: water below top of pump, so no readings for DTW

Technician: Cliff Walls

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 2 **Site Location:** East Lansing, MI
Project No: B0064479.0014.00603 **Well ID:** PW-14-01 **Sample ID:** PW-14-01_121114
Sample Date: 12/11/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 9:40 AM **Weather:** Sunny 24 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: **Screen Interval:** N/A
Casing Diameter: **Pump Intake Depth:** Initial: 74.0 ft bmp Final: 74.0 ft bmp
Measured Well Depth: 81.80 ft bmp **Purge Time:** 9:00 AM to 9:40 AM
Depth to Water: 68.15 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
9:00 AM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9:05 AM	4	100	0.1	7.91	7.19	1.727	-40.3	2.88	13.60	68.22
9:10 AM	10	100	0.2	6.97	7.21	1.743	-54.3	2.96	13.10	68.20
9:15 AM	14	100	0.3	6.20	7.22	1.730	-65.9	2.30	12.40	68.23
9:20 AM	19	100	0.4	4.62	7.22	1.745	-74.5	1.97	9.27	68.25
9:25 AM	24	100	0.5	4.49	7.16	1.721	-70.1	1.47	9.02	68.25
9:30 AM	29	100	0.6	4.17	7.13	1.691	-66.9	1.18	8.25	68.25
9:35 AM	35	100	0.7	4.25	7.14	1.681	-69.1	1.13	8.18	68.25
9:40 AM	39	100	0.8	4.17	7.16	1.679	-71.6	1.12	7.69	68.25

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
Iron Only	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Bill Cobern

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	TOC	top of casing
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 2 **Site Location:** East Lansing, MI
Project No: B0064479.0014.00603 **Well ID:** PW-14-02 **Sample ID:** PW-14-02_120614
Sample Date: 12/6/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 4:15 PM **Weather:** Cloudy|Sunny 37 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** N/A N/A
Casing Material: **Screen Interval:** N/A
Casing Diameter: **Pump Intake Depth:** Initial: 80.0 ft bmp Final: 80.0 ft bmp
Measured Well Depth: N/A **Purge Time:** 3:35 PM to 4:10 PM
Depth to Water: 71.00 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
3:35 PM	0	80	0.1	11.27	6.91	2.934	-26.6	2.78	4.95	71.15
3:40 PM	5	80	0.2	10.85	6.85	3.067	-29.5	1.89	3.55	71.10
3:45 PM	10	80	0.3	10.57	6.83	3.111	-35.1	0.86	3.22	71.10
3:50 PM	15	80	0.4	10.41	6.83	3.132	-37.2	0.65	2.21	71.10
3:55 PM	20	80	0.4	10.25	6.82	3.139	-40.1	0.52	4.38	71.10
4:00 PM	25	80	0.6	10.23	6.68	3.141	-40.6	0.44	4.25	71.10
4:05 PM	30	80	0.7	10.16	6.83	3.146	-45.6	0.42	4.25	71.10
4:10 PM	35	80	0.8	9.99	6.83	3.153	-46.1	0.42	4.20	71.10

Collected Sample Condition

Color: clear **Odor:** Yes **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
Iron Only	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Cliff Walls

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	TOC	top of casing
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** CH-14-RO **Sample ID:** CH-14-RO_120814
Sample Date: 12/8/2014 **Duplicate:** String was not recognized as a valid DateTime. **Other QC:** N/A
Sample Time: 1:55 PM **Weather:** Cloudy|Windy 34 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: PVC sch 40 **Screen Interval:** 7.0 to 12.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 12.0 ft bmp Final: 12.0 ft bmp
Measured Well Depth: 14.81 ft bmp **Purge Time:** 1:15 PM to 1:55 PM
Depth to Water: 9.42 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
1:15 PM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	9.42
1:20 PM	4	100	0.1	8.62	7.07	1.254	279.1	1.30	4.41	9.75
1:25 PM	10	100	0.2	8.44	7.06	1.251	274.2	1.14	5.58	9.72
1:30 PM	14	100	0.3	8.30	7.05	1.251	269.8	1.05	5.69	9.72
1:35 PM	19	100	0.4	8.20	7.05	1.249	266.8	0.96	6.46	9.72
1:40 PM	24	100	0.5	8.15	7.05	1.245	263.9	0.85	5.76	9.72
1:45 PM	30	100	0.6	8.12	7.05	1.246	260.0	0.92	5.83	9.72
1:50 PM	35	100	0.7	8.07	7.04	1.244	258.6	0.96	4.69	9.72
1:55 PM	39	100	0.8	8.08	7.04	1.241	253.9	1.01	5.55	9.72

Collected Sample Condition

Color: green **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
Hexavalent Chromium	125 mL PE	1	None	N/A
Select Metals: Arsenic, Nickel, Lead, Canadium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Bill Cobern

Signature:

Abbreviations:

C	degrees Celsius	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	TOC	top of casing
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch 40	polyvinyl chloride Schedule 40		
ft	feet	HNO3	nitric acid	mV	millivolts	PE	polyethylene	SU	standard units		
ft bgs	feet below ground surface	mg/L	milligrams per liter								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-02-02(3) **Sample ID:** MW-02-02(3)_120514
Sample Date: 12/5/2014 **Duplicate:** DUP_6_120514 **Other QC:** N/A
Sample Time: 2:10 PM **Weather:** Cloudy|Cold 35 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 1329
Casing Material: PVC sch 40 **Screen Interval:** 74.0 to 84.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 80 ft bmp Final: 80 ft bmp
Measured Well Depth: 83.39 ft bmp **Purge Time:** 1:11 PM to 2:05 PM
Depth to Water: 68.30 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
1:11 PM	0	125	0.1	12.48	6.82	3.124	-72.4	0.49	152.30	68.30
1:16 PM	6	125	0.3	12.36	6.81	3.116	-75.2	0.35	56.65	69.10
1:21 PM	11	125	3.3	12.43	6.80	3.091	-85.3	0.25	51.09	69.25
1:24 PM	13	125	0.5	12.37	6.80	3.087	-88.7	0.23	30.21	69.25
1:30 PM	19	125	5.8	12.53	6.80	3.097	95.4	0.22	34.45	69.55
1:35 PM	24	125	0.7	12.65	6.80	3.112	-97.0	0.19	30.72	69.55
1:40 PM	29	125	0.8	12.65	6.80	3.121	-97.7	0.16	30.74	69.62
1:48 PM	38	125	1.0	12.69	6.80	3.142	-98.9	0.15	31.95	69.68
1:50 PM	40	125	1.6	12.75	6.80	3.187	-100.8	0.15	24.45	69.82
1:55 PM	44	125	1.2	12.68	6.80	3.201	-100.8	0.15	20.97	69.93
2:00 PM	49	125	1.3	12.75	6.80	3.205	-100.7	0.15	20.40	69.96
2:05 PM	54	125	1.4	12.78	6.80	3.210	-100.8	0.15	20.12	69.98

Collected Sample Condition

Color: clear **Odor:** Yes **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	2	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Brendan O'Leary

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-02-04(3) **Sample ID:** MW-02-04(3)_120514
Sample Date: 12/5/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 10:35 AM **Weather:** Cold|Cloudy 34 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 2852
Casing Material: PVC sch 40 **Screen Interval:** 76.0 to 86.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 12.5 ft bmp Final: 12.5 ft bmp
Measured Well Depth: 84.31 ft bmp **Purge Time:** 9:45 AM to 10:35 AM
Depth to Water: 65.66 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
9:47 AM	0	50	0.1	11.44	6.83	3.758	-45.9	15.20	234.10	65.66
9:50 AM	3	50	0.1	11.54	6.86	3.801	-58.1	0.77	295.20	66.72
9:56 AM	9	50	0.2	11.78	6.90	4.007	-68.7	0.41	324.60	66.72
10:02 AM	15	50	0.2	11.70	6.91	4.046	-69.2	0.36	366.10	66.65
10:05 AM	17	50	0.3	11.47	6.91	4.091	-67.4	0.38	418.80	66.66
10:11 AM	24	50	0.3	11.56	6.91	4.101	-68.2	0.51	420.20	66.65
10:13 AM	25	50	0.4	11.50	6.91	4.125	-66.3	0.54	404.00	66.67
10:15 AM	28	50	0.4	11.71	6.92	4.139	-67.1	0.30	346.20	66.67
10:21 AM	33	50	0.5	11.62	6.92	4.167	-68.0	0.30	314.60	66.67
10:25 AM	38	50	0.5	11.52	6.93	4.195	-65.0	0.30	273.50	66.67
10:29 AM	41	50	0.6	11.57	6.92	4.204	-65.9	0.29	265.00	66.67
10:35 AM	48	50	0.6	11.63	6.92	4.208	-65.3	0.28	255.00	66.67

Collected Sample Condition

Color: brown **Odor:** Yes **Appearance:** turbid

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Brendan O'Leary

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								

Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3	Site Location: East Lansing, MI	
Project No: B0064480.0014.00603	Well ID: MW-05(3)	Sample ID: MW-05(3)_120814
Sample Date: 12/8/2014	Duplicate: N/A	Other QC: N/A
Sample Time: 4:31 PM	Weather: Cloudy Windy 33 F	

Instrument Identification

Purge Method: Bladder Pump	Water Quality Meters: YSI	Turbidity Meter
Measuring Point: TOC	Serial #: 05J2007	4191
Casing Material: PVC sch 40	Screen Interval: 10.0 to 15.0 ft bgs	
Casing Diameter: 2 in	Pump Intake Depth: Initial: 12.0 ft bmp	Final: 12.0 ft bmp
Measured Well Depth: 15.24 ft bmp	Purge Time: 3:45 PM	to 4:30 PM
Depth to Water: 4.38 ft bmp	PID Reading: 0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
3:45 PM	0	50	0.0	N/A	N/A	N/A	N/A	N/A	N/A	4.38
3:50 PM	5	50	0.1	9.15	7.26	1.996	220.7	3.91	18.70	4.70
3:55 PM	9	50	0.1	6.29	7.19	1.999	216.3	3.45	10.21	4.70
4:00 PM	15	50	0.2	6.27	7.19	1.999	216.8	3.43	9.92	4.70
4:05 PM	19	50	0.2	6.20	7.18	2.000	217.2	3.45	9.82	4.70
4:10 PM	24	50	0.3	6.17	7.18	2.000	217.4	3.46	8.99	4.70
4:15 PM	30	50	0.3	6.13	7.18	1.999	218.4	3.43	7.97	4.70
4:20 PM	35	50	0.4	6.15	7.18	1.997	218.6	3.48	8.58	4.70
4:25 PM	39	50	0.4	6.13	7.18	1.998	218.8	3.43	8.54	4.70
4:30 PM	44	50	0.5	6.16	7.18	1.996	219.0	3.42	8.25	4.70

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

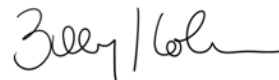
Parameter	Container	# of Containers	Preservative	Comments
VOCs	40 mL CG	1	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Cadmium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Bill Cobern

Signature:



Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	SU	standard units
ft	feet	HCL	hydrochloric acid							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-06(3) **Sample ID:** MW-06(3)_120914
Sample Date: 12/9/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 1:05 PM **Weather:** Cloudy 34 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: PVC sch 40 **Screen Interval:** 6.5 to 11.5 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 9.0 ft bmp Final: 9.0 ft bmp
Measured Well Depth: 11.53 ft bmp **Purge Time:** 12:35 PM to 1:05 PM
Depth to Water: 3.65 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
12:35 PM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	3.65
12:40 PM	5	100	0.1	5.39	7.45	0.457	216.1	2.90	6.87	3.84
12:45 PM	11	100	0.2	5.37	7.45	0.457	214.7	2.85	6.16	3.84
12:50 PM	16	100	0.3	5.36	7.45	0.457	213.9	2.79	5.84	3.84
12:55 PM	21	100	0.4	5.35	7.45	0.457	213.6	2.71	4.92	3.84
1:00 PM	26	100	0.5	5.30	7.45	0.458	212.6	2.67	4.09	3.84
1:05 PM	30	100	0.6	5.25	7.45	0.458	211.8	2.67	4.67	3.84

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Bill Cobern

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								

Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3	Site Location: East Lansing, MI	
Project No: B0064480.0014.00603	Well ID: MW-12-20	Sample ID: MW-12-20_120314
Sample Date: 12/3/2014	Duplicate: N/A	Other QC: N/A
Sample Time: 1:55 PM	Weather: Cloudy Windy 34 F	

Instrument Identification

Purge Method: Bladder Pump	Water Quality Meters: YSI	Turbidity Meter
Measuring Point: TOC	Serial #: 05J2007	4191
Casing Material: PVC sch 40	Screen Interval: 75.0 to 80.0 ft bgs	
Casing Diameter: 2 in	Pump Intake Depth: Initial: 79.0 ft bmp Final: 79.0 ft bmp	
Measured Well Depth: 80.80 ft bmp	Purge Time: 1:05 PM to 1:55 PM	
Depth to Water: 69.90 ft bmp	PID Reading: 0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
1:05 PM	0	50	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1:10 PM	5	50	0.1	9.58	6.99	1.375	-78.4	2.06	999.00	70.35
1:15 PM	9	50	0.1	9.35	6.98	1.375	-77.1	1.87	999.00	70.69
1:20 PM	14	50	0.2	8.99	6.99	1.368	-75.4	1.68	999.00	69.78
1:25 PM	19	50	0.2	8.28	6.98	1.356	-72.5	1.50	778.00	70.83
1:30 PM	25	50	0.3	7.04	6.97	1.302	-66.5	1.23	506.00	70.97
1:35 PM	29	50	0.3	7.15	6.97	1.290	-64.7	1.25	499.00	71.07
1:40 PM	34	50	0.4	7.00	6.97	1.298	-63.9	1.22	487.00	71.16
1:45 PM	40	50	0.4	7.16	6.97	1.294	-62.8	1.21	474.00	71.27
1:50 PM	44	50	0.5	7.08	6.97	1.285	-62.3	1.19	469.00	71.39
1:55 PM	49	50	0.5	7.10	6.97	1.280	-62.6	1.18	460.00	71.48

Collected Sample Condition

Color: white **Odor:** No **Appearance:** turbid

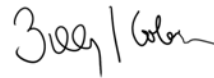
Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: Didn't meet maximum drawdown requirement, drawdown didn't stabilize

Technician: Bill Cobern

Signature:



Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-12-21 **Sample ID:** MW-12-21_120314
Sample Date: 12/3/2014 **Duplicate:** N/A **Other QC:** Field Blank
Sample Time: 10:26 AM **Weather:** Cloudy 30 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: PVC sch 40 **Screen Interval:** 70.0 to 75.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 76.0 ft bmp Final: 76.0 ft bmp
Measured Well Depth: 78.03 ft bmp **Purge Time:** 9:20 AM to 10:25 AM
Depth to Water: 67.95 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
9:25 AM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	67.95
9:30 AM	5	50	0.1	396.00	6.32	2.321	86.9	1.66	541.00	68.23
9:35 AM	10	50	0.1	3.43	6.29	2.386	89.9	1.64	495.00	68.46
9:40 AM	15	50	0.2	3.24	6.27	2.395	91.1	1.62	424.00	68.75
9:45 AM	20	50	0.2	2.94	6.26	2.412	93.8	1.65	404.00	68.92
9:50 AM	25	50	0.3	2.53	6.20	2.411	93.4	1.32	374.00	69.04
9:55 AM	30	50	0.3	2.43	6.20	2.412	89.6	1.34	321.00	69.09
10:00 AM	35	50	0.4	2.27	6.19	2.406	70.4	1.21	201.00	69.16
10:05 AM	40	50	0.4	2.08	6.19	2.406	16.6	1.14	193.00	69.29
10:10 AM	45	50	0.5	1.84	6.19	2.405	3.3	1.20	178.00	69.37
10:15 AM	50	50	0.5	1.65	6.20	2.404	0.5	1.17	169.00	69.45
10:20 AM	55	50	0.6	1.51	6.21	2.401	-1.1	1.19	179.00	69.52
10:25 AM	60	50	0.6	1.42	6.22	2.401	-1.2	1.18	177.00	69.62

Collected Sample Condition

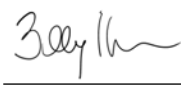
Color: clear **Odor:** No **Appearance:** cloudy

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: Didn't meet maximum drawdown requirement, drawdown didn't stabilize

Technician: Bill Cobern

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-13-22 **Sample ID:** MW-13-22_120314
Sample Date: 12/3/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 12:15 PM **Weather:** Cloudy|Windy 33 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: PVC sch 40 **Screen Interval:** 89.0 to 94.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 93.0 ft bmp Final: 93.0 ft bmp
Measured Well Depth: 96.22 ft bmp **Purge Time:** 11:30 AM to 12:15 PM
Depth to Water: 72.72 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
11:30 AM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	72.72
11:35 AM	6	100	0.1	5.96	7.13	1.712	-226.4	3.99	56.60	72.73
11:40 AM	10	100	0.2	6.03	7.10	1.709	-228.1	3.64	54.10	72.73
11:45 AM	16	100	0.3	6.24	7.02	1.706	-234.0	3.31	34.60	72.73
11:50 AM	20	100	0.4	6.62	7.01	1.700	-235.9	2.69	26.20	72.73
11:55 AM	26	100	0.5	6.81	6.98	1.698	-238.3	2.47	19.60	72.73
12:00 PM	31	100	0.6	6.91	6.97	1.699	-240.6	2.32	14.30	72.73
12:05 PM	36	100	0.7	7.10	6.96	1.699	-241.5	2.14	9.63	72.73
12:10 PM	41	100	0.8	7.16	6.93	1.702	-246.7	1.99	8.23	72.73
12:15 PM	46	100	0.9	7.13	6.92	1.703	-248.8	1.98	7.14	72.73

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Bill Cobern

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-13-23 **Sample ID:** MW-13-23_120214
Sample Date: 12/2/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 4:00 PM **Weather:** Cold|Sunny|Windy 31 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 1329
Casing Material: PVC sch 40 **Screen Interval:** 69.0 to 74.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 75.0 ft bmp Final: 75.0 ft bmp
Measured Well Depth: 77.53 ft bmp **Purge Time:** 3:15 PM to 3:55 PM
Depth to Water: 72.80 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
3:15 PM	0	125	0.2	10.42	6.87	1.838	36.2	5.05	126.00	73.28
3:20 PM	5	125	0.2	10.75	6.89	1.839	40.5	5.07	115.00	73.40
3:25 PM	10	125	0.2	11.38	6.93	1.858	50.1	5.39	177.00	73.65
3:30 PM	15	125	0.4	11.53	6.97	1.866	55.2	5.55	190.00	73.60
3:35 PM	20	125	0.5	11.73	6.99	1.862	57.8	5.61	110.00	73.89
3:40 PM	25	125	0.6	11.67	6.93	1.863	59.1	4.88	77.40	74.08
3:45 PM	30	125	0.7	11.70	6.86	1.866	60.4	3.64	74.30	74.18
3:50 PM	35	125	0.8	11.81	6.82	1.872	61.0	3.39	71.70	74.50
3:55 PM	40	125	0.8	11.91	6.81	1.877	61.3	3.31	70.50	74.58

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** cloudy

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Cliff Walls

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-13-24 **Sample ID:** MW-13-24_120314
Sample Date: 12/3/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 2:00 PM **Weather:** Cloudy|Cold 33 F

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	05J2007	2852
Casing Material:	PVC sch 40	Screen Interval:	69.0 to 74.0 ft bgs	
Casing Diameter:	2 in	Pump Intake Depth:	Initial: 71.5 ft bmp Final: 71.5 ft bmp	
Measured Well Depth:	78.46 ft bmp	Purge Time:	12:16 PM	to 1:54 PM
Depth to Water:	89.23 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
12:16 PM	0	160	0.2	11.78	7.20	2.155	-2.1	8.47	36.80	69.23
12:25 PM	8	160	0.8	11.82	7.19	2.220	-13.5	8.01	116.10	70.31
12:34 PM	18	160	2.0	11.72	7.24	2.323	-8.4	8.59	109.30	70.32
12:41 PM	25	160	2.3	11.78	7.19	2.360	-45.9	8.42	50.13	74.10
12:47 PM	30	11.9	2.5	11.89	7.20	2.417	-50.1	8.66	45.74	74.00
12:54 PM	37	160	2.6	11.71	7.20	2.426	-49.3	8.66	43.72	74.30
12:59 PM	42	160	2.8	11.71	7.19	2.439	-50.9	8.61	36.72	74.10
1:04 PM	47	160	2.9	11.73	7.21	2.444	51.2	8.62	28.30	74.20
1:14 PM	58	160	3.0	11.75	7.21	2.459	-53.2	8.61	23.29	74.10
1:26 PM	69	160	3.3	11.77	7.21	2.470	-52.2	8.62	17.87	74.10
1:38 PM	82	160	4.0	11.84	7.22	2.484	55.7	8.61	15.97	74.10
1:48 PM	91	160	4.4	11.74	7.21	2.495	-58.7	8.63	11.52	74.10
1:54 PM	97	160	2.5	11.74	7.19	2.504	-56.9	8.59	9.62	74.10

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Brendan O'Leary

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-13-25 **Sample ID:** MW-13-25_120414
Sample Date: 12/4/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 11:00 AM **Weather:** Sunny 30 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: PVC sch 40 **Screen Interval:** 67.0 to 72.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 75.0 ft bmp Final: 75.0 ft bmp
Measured Well Depth: 76.35 ft bmp **Purge Time:** 10:20 AM to 11:00 AM
Depth to Water: 69.54 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
10:20 AM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	69.54
10:25 AM	4	100	0.1	9.38	7.03	4.104	-50.0	1.69	21.10	69.65
10:30 AM	10	100	0.2	9.09	6.99	3.982	-48.9	1.59	14.60	69.60
10:35 AM	14	100	0.3	9.17	6.96	3.735	-45.5	1.45	12.20	69.58
10:40 AM	19	100	0.4	9.20	6.94	3.570	-43.1	1.37	9.27	69.56
10:45 AM	25	100	0.5	9.23	6.91	3.438	-40.8	1.35	8.36	69.56
10:50 AM	30	100	0.6	9.26	6.88	3.325	-36.5	1.31	8.11	69.56
10:55 AM	34	100	0.7	9.37	6.86	3.323	-35.8	1.32	8.36	69.56
11:00 AM	39	100	0.8	9.28	6.84	3.321	-33.7	1.33	8.05	69.56

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Bill Cobern

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-13-26 **Sample ID:** MW-13-26_120214
Sample Date: 12/2/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 3:18 PM **Weather:** Sunny|Windy 34 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: PVC sch 40 **Screen Interval:** 72.0 to 77.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 76.0 ft bmp Final: 76.0 ft bmp
Measured Well Depth: 79.19 ft bmp **Purge Time:** 2:20 PM to 3:15 PM
Depth to Water: 68.48 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
2:24 PM	0	150	0.0	N/A	N/A	N/A	N/A	N/A	N/A	68.48
2:25 PM	0	150	0.2	11.55	6.78	1.822	-28.2	0.94	9.16	68.60
2:30 PM	5	150	0.3	11.64	6.79	1.833	-37.0	0.65	5.59	68.61
2:35 PM	11	150	0.5	11.70	6.78	1.837	-40.0	0.75	4.76	68.60
2:40 PM	15	150	0.5	11.70	6.78	1.875	-41.2	0.58	3.46	68.58
2:45 PM	21	150	0.8	11.75	6.77	1.863	-42.6	0.65	3.25	68.59
2:50 PM	25	150	0.9	11.63	6.77	1.866	-45.1	0.62	3.43	68.59
2:55 PM	30	150	1.1	11.57	6.77	1.869	-46.1	0.62	3.45	68.59
3:01 PM	37	150	1.2	11.60	6.76	1.877	-46.6	0.54	4.07	68.60
3:05 PM	40	150	1.4	11.53	6.75	1.891	-47.3	0.64	3.55	68.60
3:11 PM	46	150	1.4	11.60	6.76	1.891	-46.5	0.62	4.91	68.60
3:15 PM	50	150	1.6	11.46	6.76	1.893	-46.4	0.65	4.99	68.61

Collected Sample Condition

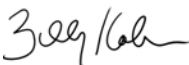
Color: clear **Odor:** No **Appearance:** NA

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Bill Cobern

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-13-28 **Sample ID:** MW-13-28_120314
Sample Date: 12/3/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 11:15 AM **Weather:** Cloudy|Cold 33 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 2852
Casing Material: Welded Steel **Screen Interval:** 99.0 to 115.5 ft bgs
Casing Diameter: 4 in **Pump Intake Depth:** Initial: 108 ft bmp Final: 108 ft bmp
Measured Well Depth: 116.7 ft bmp **Purge Time:** 10:06 AM to 11:09 AM
Depth to Water: 73.30 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
10:06 AM	0	100	0.1	10.40	8.36	1.140	81.6	1.87	116.00	73.30
10:15 AM	9	100	0.3	10.76	8.36	1.140	62.7	0.57	101.20	73.57
10:19 AM	14	100	0.4	10.79	8.36	1.140	57.1	0.56	63.82	73.57
10:30 AM	24	100	0.5	11.12	8.32	1.126	41.3	0.58	52.01	73.59
10:35 AM	29	100	0.6	11.10	8.32	1.124	41.4	0.57	50.85	57.59
10:39 AM	34	100	0.7	11.30	8.32	1.117	45.4	0.57	44.45	57.60
10:50 AM	45	100	1.0	11.52	8.33	1.095	58.1	0.58	57.28	57.60
10:58 AM	53	100	1.1	11.47	8.33	1.093	50.3	0.58	45.56	57.60
11:01 AM	55	100	1.2	11.39	8.32	1.091	38.2	0.57	55.27	57.60
11:05 AM	59	100	1.3	11.53	8.32	1.089	34.5	0.56	50.14	57.60
11:09 AM	63	100	1.5	11.53	8.31	1.088	33.6	0.56	47.07	57.60

Collected Sample Condition

Color: clear **Odor:** Yes **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Brendan O'Leary

Signature:

Abbreviations:

C	degrees Celsius	ft	feet	gal	gallons	mg/L	milligrams per liter	mS/cm	millisiemens per centimeter	N/A	not available
CG	clear glass	ft bgs	feet below ground surface	HCL	hydrochloric acid	mL/min	milliliters per minute	mV	millivolts	NTU	nephelometric turbidity units
F	degrees Fahrenheit	ft bmp	feet below measuring point							ppm	parts per million
										SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-13-29 **Sample ID:** MW-13-29_120414
Sample Date: 12/4/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 12:07 PM **Weather:** Sunny 30 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: PVC sch 40 **Screen Interval:** 68.0 to 73.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 76.0 ft bmp Final: 76.0 ft bmp
Measured Well Depth: 77.43 ft bmp **Purge Time:** 11:35 AM to 12:05 PM
Depth to Water: 69.26 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
11:35 AM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	69.26
11:40 AM	5	100	0.1	6.30	6.48	2.456	35.3	2.20	54.10	69.27
11:45 AM	10	100	0.2	6.21	6.49	2.456	35.1	2.17	51.20	69.27
11:50 AM	14	100	0.3	6.16	6.50	2.455	35.2	2.15	50.40	69.27
11:55 AM	19	100	0.4	6.04	6.50	2.458	35.5	2.08	49.80	69.27
12:00 PM	25	100	0.5	5.93	6.50	2.459	35.8	1.97	50.60	69.27
12:05 PM	30	100	0.6	5.87	6.50	2.457	35.7	1.90	50.30	69.27

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** cloudy

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Bill Cobern

Signature:

Bill Cobern

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-13-30 **Sample ID:** MW-13-30_120214
Sample Date: 12/2/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 2:40 PM **Weather:** Sunny|Windy|Cold 31 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 1329
Casing Material: PVC sch 40 **Screen Interval:** 72.0 to 77.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 75.0 ft bmp Final: 75.0 ft bmp
Measured Well Depth: 79.75 ft bmp **Purge Time:** 2:00 PM to 2:35 PM
Depth to Water: 70.71 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
2:00 PM	0	110	0.1	8.52	6.61	1.506	-9.5	2.11	14.70	71.50
2:05 PM	5	110	0.2	8.85	6.67	1.515	-15.1	1.07	13.30	71.60
2:10 PM	10	110	0.2	9.10	6.67	1.551	-14.8	0.89	12.60	71.69
2:15 PM	15	110	0.3	9.30	6.66	1.623	-17.6	0.62	11.60	71.71
2:20 PM	20	110	0.4	9.43	6.66	1.638	-17.7	0.54	12.60	71.90
2:25 PM	25	110	0.4	9.44	6.66	1.664	-17.0	0.54	11.60	72.00
2:30 PM	30	110	0.4	9.49	6.65	1.681	-17.3	0.50	11.60	72.10
2:35 PM	35	110	0.5	9.54	6.66	1.689	-17.5	0.47	11.20	72.20

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Cliff Walls

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-13-31 **Sample ID:** MW-13-31_120414
Sample Date: 12/4/2014 **Duplicate:** DUP_4_120414 **Other QC:** N/A
Sample Time: 10:00 AM **Weather:** Cloudy|Cold 28 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 2852
Casing Material: PVC sch 40 **Screen Interval:** 5.0 to 10.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 8 ft bmp Final: 8 ft bmp
Measured Well Depth: 12.79 ft bmp **Purge Time:** 9:26 AM to 9:59 AM
Depth to Water: 9.64 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
9:26 AM	0	50	0.5	8.14	6.63	1.073	77.4	0.43	154.60	9.64
9:30 AM	4	50	0.1	8.23	6.65	1.075	78.0	0.41	101.40	9.64
9:36 AM	11	50	0.2	8.15	6.64	1.078	82.5	0.36	52.54	9.66
9:41 AM	16	50	0.3	8.19	6.65	1.077	85.2	0.47	27.77	9.62
9:44 AM	18	50	0.4	8.13	6.65	1.080	87.5	0.34	22.31	9.62
9:50 AM	25	50	0.4	8.14	6.65	1.078	88.7	0.29	14.82	9.63
9:55 AM	29	50	0.5	8.20	6.66	1.077	89.5	0.29	12.77	9.63
9:59 AM	34	50	0.6	8.20	6.66	1.076	89.5	0.27	9.65	9.63

Collected Sample Condition

Color: clear **Odor:** Yes **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
Select Metals: Arsenic, Nickel, Lead, Cadmium, Chromium, and Copper	125 mL PE	2	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Brendan O'Leary

Signature:

Abbreviations:

C	degrees Celsius	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	TOC	top of casing
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch 40	polyvinyl chloride Schedule 40		
ft	feet	HNO3	nitric acid	mV	millivolts	PE	polyethylene	SU	standard units		
ft bgs	feet below ground surface	mg/L	milligrams per liter								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-13-32 **Sample ID:** MW-13-32_120414
Sample Date: 12/4/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 11:45 AM **Weather:** Cold|Cloudy 28 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 2852
Casing Material: PVC sch 40 **Screen Interval:** 5.0 to 10.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 8 ft bmp Final: 8 ft bmp
Measured Well Depth: 12.64 ft bmp **Purge Time:** 10:50 AM to 11:40 AM
Depth to Water: 7.80 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
10:50 AM	0	50	0.1	7.15	6.83	1.489	131.1	2.57	104.00	7.62
10:55 AM	6	50	0.2	7.35	6.86	1.489	130.6	1.27	83.76	9.62
10:59 AM	10	50	0.2	7.50	6.82	1.500	131.2	0.98	52.25	7.93
11:05 AM	16	50	0.2	7.78	6.87	1.497	134.9	1.19	40.37	8.01
11:09 AM	20	50	0.3	7.84	6.86	1.497	136.6	1.31	37.36	8.03
11:15 AM	25	50	0.3	8.34	6.87	1.497	7.3	1.83	22.10	8.02
11:20 AM	31	50	0.4	8.39	6.89	0.001	133.1	1.81	16.31	8.03
11:24 AM	35	50	0.4	8.59	6.89	1.498	127.5	1.77	25.98	8.05
11:32 AM	43	50	0.5	8.59	6.84	1.497	123.6	1.69	10.17	8.02
11:35 AM	45	50	0.5	8.52	6.84	1.514	116.2	1.26	11.68	8.03
11:40 AM	50	50	0.6	8.52	6.90	1.523	116.6	1.20	9.61	8.03

Collected Sample Condition

Color: clear **Odor:** Yes **Appearance:** cloudy

Parameter	Container	# of Containers	Preservative	Comments
Select Metals: Arsenic, Nickel, Lead, Cadmium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Brendan O'Leary

Signature:

Abbreviations:

C	degrees Celsius	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	TOC	top of casing
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch 40	polyvinyl chloride Schedule 40	uS/cm	microsiemens per centimeter
ft	feet	HNO3	nitric acid	mV	millivolts	PE	polyethylene	SU	standard units		
ft bgs	feet below ground surface	mg/L	milligrams per liter								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-13-33 **Sample ID:** MW-13-33_120414
Sample Date: 12/4/2014 **Duplicate:** DUP_5_120414 **Other QC:** N/A
Sample Time: 1:40 PM **Weather:** Cold|Cloudy 28 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 2852
Casing Material: PVC sch 40 **Screen Interval:** 12.0 to 17.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 15 ft bmp Final: 15 ft bmp
Measured Well Depth: 19.19 ft bmp **Purge Time:** 12:55 PM to 1:40 PM
Depth to Water: 12.04 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
12:56 PM	0	50	0.1	9.95	10.95	0.791	169.1	4.81	110.00	12.30
1:01 PM	5	50	0.2	9.88	10.49	0.774	169.7	3.04	27.23	13.46
1:05 PM	8	50	0.2	9.93	9.23	0.765	169.1	2.94	17.40	13.80
1:10 PM	13	50	0.3	9.96	8.67	0.764	168.9	2.93	11.37	14.01
1:15 PM	18	50	0.3	9.92	811.00	0.762	168.9	2.88	10.86	14.61
1:24 PM	28	50	0.4	10.03	7.83	0.763	169.4	2.84	7.93	14.78
1:31 PM	35	50	0.4	10.11	7.74	0.765	170.3	2.77	7.13	14.88
1:35 PM	38	50	0.5	10.00	7.72	0.770	170.7	2.72	6.72	14.93
1:40 PM	43	50	0.6	9.95	7.71	0.772	170.8	2.70	4.72	14.97

Collected Sample Condition

Color: clear **Odor:** Yes **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
Select Metals: Arsenic, Nickel, Lead, Canadium, Chromium, and Copper	125 mL PE	2	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: Groundwater level did not stabilize.

Technician: Brendan O'Leary

Signature:

Abbreviations:

C	degrees Celsius	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	TOC	top of casing
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride		
ft	feet	HNO3	nitric acid	mV	millivolts	PE	polyethylene	40	Schedule 40		
ft bgs	feet below ground surface	mg/L	milligrams per liter					SU	standard units		



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-13-34 **Sample ID:** MW-13-34_120514
Sample Date: 12/5/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 12:35 PM **Weather:** Cloudy 34 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: PVC sch 40 **Screen Interval:** 74.0 to 79.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 77.0 ft bmp Final: 77.0 ft bmp
Measured Well Depth: 79.97 ft bmp **Purge Time:** 11:45 AM to 12:35 PM
Depth to Water: 70.25 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
11:45 AM	0	50	0.0	N/A	N/A	N/A	N/A	N/A	N/A	70.25
11:50 AM	4	50	0.1	6.92	7.11	1.962	-52.6	2.45	869.00	70.58
11:55 AM	9	50	0.1	6.76	7.11	1.970	-52.5	2.29	887.00	70.58
12:00 PM	15	50	0.2	6.64	7.09	1.976	-52.1	2.19	821.00	70.58
12:05 PM	19	50	0.2	6.28	7.07	1.996	-51.8	2.04	796.00	70.58
12:10 PM	24	50	0.3	6.24	7.06	1.999	-51.5	1.84	771.00	70.58
12:15 PM	30	50	0.3	6.10	7.04	2.011	-51.2	1.54	771.00	70.58
12:20 PM	34	50	0.4	5.84	7.02	2.035	-50.6	1.26	712.00	70.58
12:25 PM	40	50	0.4	5.81	7.01	2.041	-50.4	1.04	752.00	70.58
12:30 PM	44	50	0.5	5.76	7.00	2.050	-50.3	1.02	717.00	70.58
12:35 PM	49	50	0.5	5.74	6.99	2.055	-50.3	1.01	692.00	70.58

Collected Sample Condition

Color: brown **Odor:** No **Appearance:** turbid

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: Drawdown stabilized at 50 ml/min

Technician: Bill Cobern

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-13-38 **Sample ID:** MW-13-38_120814
Sample Date: 12/8/2014 **Duplicate:** N/A **Other QC:** Field Blank
Sample Time: 9:55 AM **Weather:** Cloudy 30 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: Welded Steel **Screen Interval:** 107.0 to 124.0 ft bgs
Casing Diameter: 4 in **Pump Intake Depth:** Initial: 110.0 ft bmp Final: 110.0 ft bmp
Measured Well Depth: 126.30 ft bmp **Purge Time:** 9:05 AM to 9:55 AM
Depth to Water: 75.08 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
9:05 AM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	75.08
9:10 AM	6	100	0.1	2.24	5.77	2.374	-4.3	6.40	23.10	75.25
9:15 AM	10	100	0.2	2.45	5.82	2.403	-12.5	4.98	18.90	75.18
9:20 AM	16	100	0.3	2.59	5.91	2.422	-17.9	3.93	12.20	75.15
9:25 AM	20	100	0.4	2.68	6.03	2.445	-23.4	2.03	10.60	75.15
9:30 AM	26	100	0.5	2.68	6.10	2.454	-31.5	1.81	9.92	75.15
9:35 AM	31	100	0.6	2.66	6.16	2.463	-38.5	1.68	9.15	75.15
9:40 AM	35	100	0.7	2.70	6.21	2.466	-45.8	1.44	8.63	75.15
9:45 AM	40	100	0.8	2.75	6.25	2.471	-50.5	1.40	8.12	75.15
9:50 AM	46	100	0.9	2.81	6.30	2.472	-54.3	1.38	8.03	75.15
9:55 AM	51	100	1.0	2.86	6.32	2.473	-55.3	1.35	8.36	75.15

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: Field Blank collected prior to sampling this well

Technician: Bill Cobern

Signature:

Abbreviations:

C	degrees Celsius	ft	feet	gal	gallons	mg/L	milligrams per liter	mS/cm	millisiemens per centimeter	N/A	not available
CG	clear glass	ft bgs	feet below ground surface	HCL	hydrochloric acid	mL/min	milliliters per minute	mV	millivolts	NTU	nephelometric turbidity units
F	degrees Fahrenheit	ft bmp	feet below measuring point							ppm	parts per million
										SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-13-39B **Sample ID:** MW-13-39B_120414
Sample Date: 12/4/2014 **Duplicate:** DUP_7_120414 **Other QC:** N/A
Sample Time: 3:50 PM **Weather:** Cold|Cloudy 28 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 2852
Casing Material: Welded Steel **Screen Interval:** 97.0 to 112.0 ft bgs
Casing Diameter: 4 in **Pump Intake Depth:** Initial: 103 ft bmp Final: 103 ft bmp
Measured Well Depth: 105.40 ft bmp **Purge Time:** 2:40 PM to 3:45 PM
Depth to Water: 69.74 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
2:40 PM	0	100	0.1	9.09	7.67	1.278	-150.9	0.78	79.30	69.01
2:45 PM	5	100	0.2	8.88	7.66	1.280	-164.3	0.57	68.77	89.02
2:50 PM	9	100	0.3	8.66	7.65	1.289	-168.6	0.69	53.55	69.09
2:55 PM	14	100	0.4	8.87	7.66	1.292	175.1	0.43	41.30	89.09
3:01 PM	21	100	0.5	8.75	7.67	1.296	-175.6	0.38	37.48	89.11
3:05 PM	25	100	0.6	8.74	7.65	1.275	-174.4	0.32	27.34	89.13
3:10 PM	29	100	0.7	9.00	7.65	1.294	-173.8	0.32	21.95	89.11
3:14 PM	33	100	0.8	8.82	7.63	1.297	-176.5	0.31	20.12	89.11
3:21 PM	40	100	0.9	8.53	7.64	1.296	-171.8	0.28	19.81	89.11
3:25 PM	44	100	1.0	8.55	7.64	1.294	-173.1	0.26	18.65	89.11
3:30 PM	49	100	1.1	8.54	7.61	1.293	-175.5	0.23	17.22	89.11
3:34 PM	53	100	1.2	8.73	7.59	1.292	-178.8	0.28	15.50	89.11
3:40 PM	59	100	1.3	8.65	7.61	1.293	-177.1	0.26	15.79	89.11
3:45 PM	64	100	1.4	8.52	7.57	1.293	-179.8	0.26	15.00	89.11

Collected Sample Condition

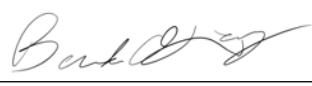
Color: clear **Odor:** Yes **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
Select Metals: Arsenic, Nickel, Lead, Cadmium, Chromium, and Copper	125 mL PE	2	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Brendan O'Leary

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mL/min	milliliters per minute	mV	millivolts	NTU	nephelometric turbidity units
F	degrees Fahrenheit	ft bmp	feet below measuring point	mg/L	milligrams per liter	mS/cm	millisiemens per centimeter	N/A	not available	PE	polyethylene
ft	feet	gal	gallons							ppm	parts per million
										SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-13-40 **Sample ID:** MW-13-40_120514
Sample Date: 12/5/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 12:00 PM **Weather:** Cold|Cloudy 38 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 2852
Casing Material: Sch 40 PVC **Screen Interval:** 72.0 to 77.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 74.5 ft bmp Final: 74.5 ft bmp
Measured Well Depth: 78.08 ft bmp **Purge Time:** 11:10 AM to 11:30 AM
Depth to Water: 66.82 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
11:27 AM	0	100	0.1	10.63	6.88	6.345	43.6	1.86	193.60	67.25
11:30 AM	25923	100	0.2	10.71	6.90	6.466	8.9	0.89	184.20	67.26
11:35 AM	9	100	0.3	10.64	6.91	6.526	-17.4	0.75	189.00	67.82
11:40 AM	13	100	0.4	10.78	6.91	6.556	-29.9	0.73	168.30	67.91
11:45 AM	18	100	0.5	10.56	6.92	6.613	-36.6	0.69	152.10	69.21
11:51 AM	24	0.1	0.6	10.64	6.92	6.639	-43.6	0.69	143.30	69.25
11:55 AM	29	100	0.7	10.66	6.92	6.682	-45.6	0.67	144.20	69.53

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** cloudy

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Canadium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Brendan O'Leary

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	SU	standard units
ft	feet	HCL	hydrochloric acid							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-13-41 **Sample ID:** MW-13-41_120814
Sample Date: 12/8/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 11:20 AM **Weather:** Cloudy|Windy 33 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: Sch 40 PVC **Screen Interval:** 77.0 to 82.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 82.0 ft bmp Final: 82.0 ft bmp
Measured Well Depth: 84.73 ft bmp **Purge Time:** 10:35 AM to 11:20 AM
Depth to Water: 65.92 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
10:35 AM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	65.92
10:40 AM	6	100	0.1	7.86	7.06	5.391	42.0	3.24	36.70	66.08
10:45 AM	10	100	0.2	7.06	7.06	5.448	28.7	2.81	15.30	65.97
10:50 AM	16	100	0.3	6.32	7.06	5.483	19.2	2.39	8.41	65.95
10:55 AM	21	100	0.4	5.93	7.05	5.484	13.1	2.07	5.69	65.95
11:00 AM	25	100	0.5	5.65	7.05	5.487	8.8	1.87	6.98	65.95
11:05 AM	31	100	0.6	4.53	7.03	5.643	-12.0	0.92	5.62	65.95
11:10 AM	36	100	0.7	4.53	7.02	5.664	-13.0	0.91	5.69	65.95
11:15 AM	41	100	0.8	4.50	7.02	5.699	-14.1	0.89	5.22	65.95
11:20 AM	45	100	0.9	4.54	7.02	5.707	-14.6	0.92	7.28	65.95

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Cadmium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Bill Cobern

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC	sch polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	SU	standard units
ft	feet	HCL	hydrochloric acid							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-13-46 **Sample ID:** MW-13-46_120414
Sample Date: 12/4/2014 **Duplicate:** N/A **Other QC:** MS/MSD
Sample Time: 3:15 PM **Weather:** Sunny 34 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: **Screen Interval:** 68.0 to 73.0 ft bgs
Casing Diameter: **Pump Intake Depth:** Initial: 73.0 ft bmp Final: 73.0 ft bmp
Measured Well Depth: 74.62 ft bmp **Purge Time:** 2:30 PM to 3:15 PM
Depth to Water: 68.58 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
2:30 PM	0	50	0.0	N/A	N/A	N/A	N/A	N/A	N/A	68.58
2:35 PM	5	50	0.1	7.59	6.69	1.896	-18.4	2.07	684.00	68.90
2:40 PM	11	50	0.1	7.24	6.69	1.901	-18.0	2.05	604.00	68.90
2:45 PM	16	50	0.2	7.24	6.69	1.901	-18.4	1.99	504.00	68.90
2:50 PM	20	50	0.2	6.93	6.68	1.914	-18.3	2.10	442.00	68.90
2:55 PM	25	50	0.3	6.02	6.65	1.899	-9.6	1.61	404.00	68.90
3:00 PM	31	50	0.3	5.15	6.65	1.906	-9.7	1.50	386.00	68.90
3:05 PM	35	50	0.4	5.11	6.65	1.905	-9.3	1.48	379.00	68.90
3:10 PM	40	50	0.4	5.11	6.65	1.908	-8.6	1.49	382.00	68.90
3:15 PM	45	50	0.5	5.06	6.65	1.910	-8.4	1.49	379.00	68.90

Collected Sample Condition

Color: brown **Odor:** No **Appearance:** turbid

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: Drawdown stabilized within .33' at a flow rate of 50 ml/min

Technician: Bill Cobern

Signature:

Abbreviations:

C	degrees Celsius	ft	feet	gal	gallons	mg/L	milligrams per liter	mS/cm	millisiemens per centimeter	N/A	not available
CG	clear glass	ft bgs	feet below ground surface	HCL	hydrochloric acid	mL/min	milliliters per minute	mV	millivolts	NTU	nephelometric turbidity units
F	degrees Fahrenheit	ft bmp	feet below measuring point							ppm	parts per million
										SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-13-47 **Sample ID:** MW-13-47_120514
Sample Date: 12/5/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 11:10 AM **Weather:** Cloudy 33 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: Welded Steel **Screen Interval:** 99.0 to 119.0 ft bgs
Casing Diameter: **Pump Intake Depth:** Initial: 100.0 ft bmp Final: 100.0 ft bmp
Measured Well Depth: 113.60 ft bmp **Purge Time:** 10:30 AM to 11:10 AM
Depth to Water: 69.70 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
10:30 AM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	69.70
10:35 AM	5	100	0.1	6.79	7.21	1.644	-91.2	5.93	11.60	69.71
10:40 AM	10	100	0.2	6.76	7.06	1.664	-91.5	2.85	9.23	69.71
10:45 AM	15	100	0.3	6.77	7.05	1.666	-91.7	2.50	8.89	69.71
10:50 AM	19	100	0.4	6.78	7.04	1.670	-92.4	2.18	7.59	69.71
10:55 AM	24	100	0.5	6.80	7.03	1.672	-93.2	1.82	8.62	69.71
11:00 AM	30	100	0.6	6.80	7.02	1.675	-93.3	1.59	8.14	69.71
11:05 AM	35	100	0.7	6.82	7.02	1.677	-93.5	1.53	8.16	69.71
11:10 AM	39	100	0.8	6.82	7.01	1.678	-93.7	1.55	7.55	69.71

Collected Sample Condition

Color: dark orange **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Bill Cobern

Signature:

Abbreviations:

C	degrees Celsius	ft	feet	gal	gallons	mg/L	milligrams per liter	mS/cm	millisiemens per centimeter	N/A	not available
CG	clear glass	ft bgs	feet below ground surface	HCL	hydrochloric acid	mL/min	milliliters per minute	mV	millivolts	NTU	nephelometric turbidity units
F	degrees Fahrenheit	ft bmp	feet below measuring point							ppm	parts per million
										SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-13-48 **Sample ID:** MW-13-48_120514
Sample Date: 12/5/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 1:40 PM **Weather:** Cloudy 35 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: **Screen Interval:** 65.0 to 70.0 ft bgs
Casing Diameter: **Pump Intake Depth:** Initial: 70.0 ft bmp Final: 70.0 ft bmp
Measured Well Depth: 73.03 ft bmp **Purge Time:** 1:05 PM to 1:40 PM
Depth to Water: 60.85 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
1:05 PM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	60.85
1:10 PM	5	100	0.1	7.92	6.83	2.213	-29.9	1.05	7.21	60.85
1:15 PM	9	100	0.2	7.79	6.83	2.207	-31.4	0.84	6.63	60.85
1:20 PM	14	100	0.3	7.76	6.82	2.201	-32.6	0.74	7.84	60.85
1:25 PM	19	100	0.4	7.71	6.83	2.199	-33.5	0.72	6.94	60.85
1:30 PM	25	100	0.5	7.72	6.82	2.195	-34.5	0.70	6.36	60.85
1:35 PM	29	100	0.6	7.70	6.82	2.194	-35.5	0.70	5.81	60.85
1:40 PM	34	100	0.7	7.59	6.82	2.198	-36.1	0.69	4.85	60.85

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Bill Cobern

Signature:

Bill Cobern

Abbreviations:

C	degrees Celsius	ft	feet	gal	gallons	mg/L	milligrams per liter	mS/cm	millisiemens per centimeter	N/A	not available
CG	clear glass	ft bgs	feet below ground surface	HCL	hydrochloric acid	mL/min	milliliters per minute	mV	millivolts	NTU	nephelometric turbidity units
F	degrees Fahrenheit	ft bmp	feet below measuring point							ppm	parts per million
										SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-13-49 **Sample ID:** MW-13-49_120514
Sample Date: 12/5/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 9:40 AM **Weather:** Cloudy 32 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: **Screen Interval:** 73.0 to 78.0 ft bgs
Casing Diameter: **Pump Intake Depth:** Initial: 79.0 ft bmp Final: 79.0 ft bmp
Measured Well Depth: 81.62 ft bmp **Purge Time:** 9:05 AM to 9:40 AM
Depth to Water: 70.34 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
9:05 AM	0	50	0.0	N/A	N/A	N/A	N/A	N/A	N/A	70.34
9:10 AM	4	50	0.1	7.41	6.11	1.674	-56.9	3.09	21.20	71.33
9:15 AM	10	50	0.1	6.24	6.05	1.676	-49.1	2.14	18.60	70.94
9:20 AM	14	50	0.2	5.89	6.02	1.680	-45.3	1.86	11.90	70.67
9:25 AM	19	50	0.2	5.69	6.01	1.680	-44.0	1.72	9.21	70.67
9:30 AM	25	50	0.3	5.53	6.01	1.677	-43.8	1.66	8.22	70.66
9:35 AM	29	50	0.3	5.40	6.00	1.676	-42.6	1.62	8.11	70.65
9:40 AM	34	50	0.4	5.23	6.00	1.675	-42.0	1.60	7.95	70.64

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: Drawdown stabilized at 50 ml/min

Technician: Bill Cobern

Signature:

Bill Cobern

Abbreviations:

C	degrees Celsius	ft	feet	gal	gallons	mg/L	milligrams per liter	mS/cm	millisiemens per centimeter	N/A	not available
CG	clear glass	ft bgs	feet below ground surface	HCL	hydrochloric acid	mL/min	milliliters per minute	mV	millivolts	NTU	nephelometric turbidity units
F	degrees Fahrenheit	ft bmp	feet below measuring point							ppm	parts per million
										SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-14-64 **Sample ID:** MW-14-64_120314
Sample Date: 12/3/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 4:20 PM **Weather:** Cold|Cloudy 37 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 1329
Casing Material: **Screen Interval:** N/A
Casing Diameter: **Pump Intake Depth:** Initial: 99 ft bmp Final: 99 ft bmp
Measured Well Depth: 0 ft bmp **Purge Time:** 3:16 PM to 4:10 PM
Depth to Water: 73.14 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
3:16 PM	0	150	0.2	0.00	7.46	1.636	-188.6	7.76	3.45	73.33
3:22 PM	6	150	0.3	10.56	7.19	1.600	-143.7	0.67	317.10	73.34
3:29 PM	14	150	0.5	10.46	7.15	1.588	-118.3	0.59	275.00	73.34
3:34 PM	19	150	0.6	10.00	7.11	1.578	-88.4	0.70	202.50	73.34
3:39 PM	24	150	0.8	10.04	7.10	1.576	-87.2	0.57	124.40	73.34
3:44 PM	29	150	1.0	10.06	7.09	1.579	-79.5	0.42	94.07	73.34
3:50 PM	34	150	1.2	9.81	7.08	1.583	-786.6	0.38	69.13	73.34
3:55 PM	40	150	1.5	9.78	7.07	1.581	-73.0	0.33	38.85	73.34
4:00 PM	44	150	1.6	9.65	7.06	1.582	-65.3	0.29	33.00	73.34
4:05 PM	49	150	1.8	9.66	7.06	1.581	-67.8	0.27	30.23	73.34
4:10 PM	55	150	2.0	9.59	7.04	1.582	-63.9	0.26	31.20	73.34

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
SVOCs	1 L AG	1	None	N/A
Metals	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: turbidity did not reach <10 ntu, collected a filtered sample or metals.

Technician: Brendan O'Leary

Signature:

Abbreviations:

AG	amber glass	ft	feet	HCL	hydrochloric acid	mL/min	milliliters per minute	N/A	not available	ppm	parts per million
C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch 40	polyvinyl chloride Schedule 40
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	SU	standard units
F	degrees Fahrenheit	gal	gallons							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-14-65 **Sample ID:** MW-14-65_120914
Sample Date: 12/9/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 8:20 AM **Weather:** Cloudy|Cold 35 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 1329
Casing Material: **Screen Interval:** N/A
Casing Diameter: **Pump Intake Depth:** Initial: 10 ft bmp Final: 10 ft bmp
Measured Well Depth: 13.22 ft bmp **Purge Time:** 9:45 AM to 10:23 AM
Depth to Water: 6.75 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
9:45 AM	0	125	0.1	6.86	6.09	1.045	266.4	1.97	953.20	6.75
9:52 AM	6	125	0.2	6.98	6.38	1.051	252.2	1.46	195.20	8.75
9:55 AM	9	125	0.3	7.00	6.87	1.059	231.4	1.34	92.98	9.02
10:00 AM	15	125	0.4	7.00	6.95	1.058	222.2	1.30	76.71	9.11
10:05 AM	20	125	0.5	7.06	7.08	1.055	209.3	1.34	74.30	9.13
10:10 AM	24	125	0.6	7.14	7.17	1.056	208.2	1.32	75.20	9.44
10:14 AM	29	125	0.7	7.32	7.20	1.064	202.7	1.23	77.30	9.51
10:23 AM	37	125	0.8	7.32	7.21	1.066	199.7	1.21	80.20	6.97

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
Metals	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: Initially sampled on 12/08/14 at 1025. Well pumped dry. Wait for recharge. DTW was 10.02 at 1500. Sampled the next morning. DTW was 7.01.

Technician: Brendan O'Leary

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	SU	standard units
ft	feet	HCL	hydrochloric acid							TOC	top of casing

Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3	Site Location: East Lansing, MI	
Project No: B0064480.0014.00603	Well ID: MW-19	Sample ID: MW-19_120914
Sample Date: 12/9/2014	Duplicate: N/A	Other QC: N/A
Sample Time: 2:55 PM	Weather: Cloudy 33 F	

Instrument Identification

Purge Method: Bladder Pump	Water Quality Meters: YSI	Turbidity Meter
Measuring Point: TOC	Serial #: 05J2007	4919
Casing Material: PVC sch 40	Screen Interval: 55.0 to 65.0 ft bgs	
Casing Diameter: 2 in	Pump Intake Depth: Initial: 62.0 ft bmp	Final: 62.0 ft bmp
Measured Well Depth: 64.29 ft bmp	Purge Time: 1:50 PM	to 2:55 PM
Depth to Water: 54.70 ft bmp	PID Reading: 0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
1:50 PM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	54.70
1:55 PM	5	100	0.1	9.13	7.75	0.469	210.4	5.82	879.00	55.03
2:00 PM	11	100	0.2	8.41	7.74	0.470	212.3	5.84	773.00	55.01
2:05 PM	15	100	0.3	8.13	7.72	0.473	212.7	5.67	732.00	54.99
2:10 PM	21	100	0.4	7.94	7.69	0.505	215.2	5.58	673.00	54.99
2:15 PM	25	100	0.5	7.76	7.62	0.585	217.6	5.44	608.00	54.99
2:20 PM	30	100	0.6	7.61	7.52	0.685	220.6	5.27	489.00	54.99
2:25 PM	35	100	0.7	7.48	7.46	0.822	222.7	5.00	384.00	54.99
2:30 PM	41	100	0.8	7.36	7.39	0.965	224.2	4.59	274.00	54.99
2:35 PM	45	100	0.9	6.90	7.22	1.009	221.4	4.48	266.00	54.99
2:40 PM	51	100	1.0	6.83	7.21	1.099	220.6	4.41	248.00	54.99
2:45 PM	55	100	1.1	6.80	7.19	1.109	220.7	4.32	228.00	54.99
2:50 PM	60	100	1.2	6.81	7.18	1.111	220.2	4.21	209.00	54.99
2:55 PM	66	100	1.3	6.76	7.18	1.132	219.3	4.18	220.00	54.99

Collected Sample Condition

Color: brown **Odor:** No **Appearance:** turbid

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Bill Cobern

Signature:



Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-22 **Sample ID:** MW-22_120814
Sample Date: 12/8/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 4:40 PM **Weather:** Cloudy|Cold 32 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 1329
Casing Material: PVC sch 40 **Screen Interval:** 52.5 to 62.5 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 57 ft bmp Final: 57 ft bmp
Measured Well Depth: 63.41 ft bmp **Purge Time:** 4:21 PM to 4:35 PM
Depth to Water: 53.84 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
4:22 PM	0	100	0.1	12.29	7.18	2.158	33.0	1.71	51.68	53.83
4:25 PM	3	100	0.2	12.38	7.21	2.157	31.6	1.56	37.58	53.81
4:30 PM	7	100	0.3	12.48	7.20	2.157	30.1	1.54	41.80	53.82
4:35 PM	13	100	0.4	12.36	7.18	2.152	28.3	1.56	39.21	53.87

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
Select Metals: Arsenic, Nickel, Lead, Canadium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Brendan O'Leary

Signature:

Abbreviations:

C	degrees Celsius	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	TOC	top of casing
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride		
ft	feet	HNO3	nitric acid	mV	millivolts	PE	polyethylene	40	Schedule 40		
ft bgs	feet below ground surface	mg/L	milligrams per liter					SU	standard units		



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-23 **Sample ID:** MW-23_120814
Sample Date: 12/8/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 3:10 PM **Weather:** Cloudy|Windy 34 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: **Screen Interval:** 52.0 to 62.0 ft bgs
Casing Diameter: **Pump Intake Depth:** Initial: 59.0 ft bmp Final: 59.0 ft bmp
Measured Well Depth: 61.41 ft bmp **Purge Time:** 2:40 PM to 3:10 PM
Depth to Water: 52.69 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
2:40 PM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	52.69
2:45 PM	4	100	0.1	9.67	7.23	1.272	75.3	1.65	22.20	52.85
2:50 PM	10	100	0.2	9.72	7.23	1.271	66.9	1.44	9.32	52.79
2:55 PM	14	100	0.3	9.72	7.23	1.271	58.7	1.22	8.23	52.75
3:00 PM	19	100	0.4	9.66	7.23	1.272	52.9	1.15	7.19	52.75
3:05 PM	25	100	0.5	9.73	7.23	1.269	45.9	1.11	5.61	52.75
3:10 PM	29	100	0.6	9.75	7.23	1.269	49.8	1.04	5.19	52.75

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Bill Cobern

Signature:

Bill Cobern

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-91-2 **Sample ID:** MW-91-2_120814
Sample Date: 12/8/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 12:35 PM **Weather:** Cloudy|Windy 34 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: PVC sch 40 **Screen Interval:** 68.0 to 78.0 ft bgs
Casing Diameter: 4 in **Pump Intake Depth:** Initial: 74.0 ft bmp Final: 74.0 ft bmp
Measured Well Depth: 76.50 ft bmp **Purge Time:** 11:55 AM to 12:35 PM
Depth to Water: 62.35 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
11:55 AM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	62.35
12:00 PM	4	100	0.1	5.41	7.17	1.534	90.7	1.79	7.66	62.48
12:05 PM	9	100	0.2	5.12	7.16	1.529	77.6	1.25	8.12	62.40
12:10 PM	14	100	0.3	5.04	7.16	1.530	75.0	1.27	7.17	62.40
12:15 PM	19	100	0.4	4.99	7.15	1.531	73.8	1.25	6.68	62.40
12:20 PM	24	100	0.5	4.97	7.14	1.532	72.8	1.27	6.18	62.40
12:25 PM	29	100	0.6	4.96	7.15	1.531	71.7	1.29	5.45	62.40
12:30 PM	35	100	0.7	4.91	7.15	1.531	70.3	1.28	6.51	62.40
12:35 PM	39	100	0.8	4.86	7.15	1.533	69.3	1.25	5.84	62.40

Collected Sample Condition

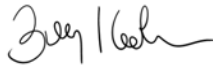
Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Canadium, Chromium, and Copper	125 mL PE	1	HNO3	N/A
Hexavalent Chromium	125 mL PE	1	None	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Bill Cobern

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	SU	standard units
ft	feet	HCL	hydrochloric acid							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-91-5 **Sample ID:** MW-91-5_120314
Sample Date: 12/3/2014 **Duplicate:** N/A **Other QC:** Equipment Blank
Sample Time: 3:30 PM **Weather:** Sunny|Windy 34 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: PVC sch 40 **Screen Interval:** 112.5 to 128.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 120.0 ft bmp Final: 120.0 ft bmp
Measured Well Depth: 126.45 ft bmp **Purge Time:** 2:45 PM to 3:30 PM
Depth to Water: 66.85 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
2:45 PM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	66.85
2:50 PM	4	100	0.1	9.64	7.24	0.254	-85.5	3.67	73.50	66.90
2:55 PM	10	100	0.2	9.78	7.22	0.250	-84.3	3.22	61.30	66.90
3:00 PM	14	100	0.3	9.99	7.19	0.244	-86.4	2.60	53.30	66.90
3:05 PM	20	100	0.4	10.18	7.16	0.236	-88.1	1.78	40.40	66.90
3:10 PM	25	100	0.5	10.29	7.16	0.233	-87.6	1.59	26.40	66.90
3:15 PM	30	100	0.6	10.30	7.15	0.230	-88.3	1.42	11.90	66.90
3:20 PM	34	100	0.7	10.23	7.14	0.226	-88.2	1.32	8.36	66.90
3:25 PM	39	100	0.8	10.31	7.14	0.225	-87.8	1.25	8.21	66.90
3:30 PM	44	100	0.9	10.28	7.14	0.225	-87.0	1.31	8.19	66.90

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: Collected Equipment Blank EB-0004_120314 after decon

Technician: Bill Cobern

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** MW-91-6 **Sample ID:** MW-91-6_120414
Sample Date: 12/4/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 1:50 PM **Weather:** Cloudy 32 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: PVC sch 40 **Screen Interval:** 82.0 to 98.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 82.0 ft bmp Final: 82.0 ft bmp
Measured Well Depth: 96.01 ft bmp **Purge Time:** 1:00 PM to 1:50 PM
Depth to Water: 66.27 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
1:00 PM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	66.27
1:05 PM	5	100	0.1	10.83	7.23	1.655	-92.4	0.90	32.60	66.48
1:10 PM	9	100	0.2	10.89	7.03	1.779	-69.2	0.71	22.30	66.38
1:15 PM	15	100	0.3	11.02	6.98	1.821	-63.9	0.70	29.60	66.38
1:20 PM	20	100	0.4	11.09	6.95	1.866	-60.4	0.65	22.80	66.38
1:25 PM	24	100	0.5	11.09	6.92	1.900	-60.5	0.59	19.80	66.38
1:30 PM	29	100	0.6	11.08	6.91	1.920	-57.8	0.52	11.90	66.38
1:35 PM	35	100	0.7	11.00	6.88	1.943	-55.6	0.46	10.20	66.38
1:40 PM	40	100	0.8	10.97	6.86	1.964	-52.2	0.48	9.18	66.38
1:45 PM	45	100	0.9	10.88	6.85	1.980	-51.1	0.49	9.36	66.38
1:50 PM	49	100	1.0	10.79	6.84	1.988	-51.2	0.48	9.04	66.38

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: Well obstructed at 82 feet

Technician: Bill Cobern

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** PW-14-03 **Sample ID:** PW-14-03_120414
Sample Date: 12/4/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 9:45 AM **Weather:** Sunny 28 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: **Screen Interval:** N/A
Casing Diameter: **Pump Intake Depth:** Initial: 90.0 ft bmp Final: 90.0 ft bmp
Measured Well Depth: 94.24 ft bmp **Purge Time:** 8:45 AM to 9:45 AM
Depth to Water: 76.00 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cum'l Time (min)	Flow Rate (mL/min)	Cum'l Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
9:45 AM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	76.00
8:50 AM	-54	100	0.1	8.38	6.78	2.673	-86.0	2.49	11.20	76.09
8:55 AM	-50	100	0.2	10.08	6.78	2.633	-84.9	1.65	12.90	76.08
9:00 AM	-44	100	0.3	10.44	6.78	2.667	-84.6	1.29	13.90	76.07
9:05 AM	-39	100	0.4	10.98	6.78	2.676	-84.8	1.08	16.20	76.07
9:10 AM	-34	N/A	0.5	11.46	6.78	2.692	-85.3	0.74	11.60	76.06
9:15 AM	-29	100	0.6	11.60	6.78	2.692	-85.4	0.68	11.20	76.06
9:20 AM	-24	100	0.7	11.73	6.78	2.698	-85.5	0.57	9.23	76.06
9:25 AM	-20	100	0.8	11.76	6.78	2.701	-85.4	0.52	9.15	76.06
9:30 AM	-15	100	0.9	11.90	6.79	2.700	-85.5	0.51	10.90	76.05
9:35 AM	-9	100	1.0	11.82	6.79	2.711	-85.0	0.48	9.21	76.05
9:40 AM	-4	100	1.1	11.89	6.79	2.708	-85.2	0.48	8.56	76.05
9:45 AM	0	100	1.2	11.86	6.79	2.709	-85.1	0.47	8.92	76.05

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
Iron Only	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Bill Cobern

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	TOC	top of casing
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** UNK-09 **Sample ID:** UNK-09_120914
Sample Date: 12/9/2014 **Duplicate:** N/A **Other QC:** MS/MSD
Sample Time: 9:16 AM **Weather:** Cloudy 32 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: PVC sch 40 **Screen Interval:** 11.0 to 16.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 12.0 ft bmp Final: 12.0 ft bmp
Measured Well Depth: 15.28 ft bmp **Purge Time:** 8:20 AM to 9:15 AM
Depth to Water: 2.82 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
8:20 AM	0	50	0.0	N/A	N/A	N/A	N/A	N/A	N/A	2.82
8:25 AM	5	50	0.1	7.44	5.53	0.779	322.7	1.07	29.60	3.36
8:30 AM	9	50	0.1	6.52	5.26	0.783	341.6	0.99	25.10	3.31
8:35 AM	14	50	0.2	6.05	5.06	0.782	351.3	0.89	22.90	3.28
8:40 AM	20	50	0.2	5.62	4.96	0.783	355.8	0.81	18.60	3.22
8:45 AM	25	50	0.3	5.34	4.86	0.779	358.6	0.83	14.50	3.19
8:50 AM	29	50	0.3	5.01	4.86	0.779	357.9	0.84	11.10	3.14
8:55 AM	34	50	0.4	4.73	4.87	0.778	353.9	0.83	11.10	3.14
9:00 AM	39	50	0.4	3.34	5.23	0.768	312.6	0.70	9.36	3.14
9:05 AM	44	50	0.5	3.29	5.25	0.768	311.1	0.69	9.28	3.14
9:10 AM	49	50	0.5	3.22	5.25	0.768	310.9	0.69	9.19	3.14
9:15 AM	54	50	0.6	3.15	5.29	0.768	307.4	0.69	9.14	3.14

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
Select Metals: Arsenic, Nickel, Lead, Cadmium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: Drawdown stabilized within .33' at a flow rate of 50 ml/min

Technician: Bill Cobern

Signature:

Abbreviations:

C	degrees Celsius	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	TOC	top of casing
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch 40	polyvinyl chloride Schedule 40		
ft	feet	HNO3	nitric acid	mV	millivolts	PE	polyethylene	SU	standard units		
ft bgs	feet below ground surface	mg/L	milligrams per liter								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** UNK-10 **Sample ID:** UNK-10_120914
Sample Date: 12/9/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 10:30 AM **Weather:** Cloudy 33 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: PVC sch 40 **Screen Interval:** 11.0 to 16.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 12.0 ft bmp Final: 12.0 ft bmp
Measured Well Depth: 15.33 ft bmp **Purge Time:** 9:50 AM to 10:30 AM
Depth to Water: 3.73 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
9:50 AM	0	50	0.0	N/A	N/A	N/A	N/A	N/A	N/A	3.73
9:55 AM	5	50	0.1	7.97	7.46	0.744	211.6	1.81	9.15	4.29
10:00 AM	9	50	0.1	7.50	7.49	0.743	210.3	1.57	14.30	4.15
10:05 AM	15	50	0.2	7.29	7.49	0.742	209.9	1.35	12.90	4.04
10:10 AM	20	50	0.2	7.07	7.48	0.742	209.6	1.20	9.18	4.06
10:15 AM	24	50	0.3	6.87	7.48	0.741	209.0	1.19	9.36	4.06
10:20 AM	30	50	0.3	6.74	7.48	0.741	208.7	1.23	9.05	4.05
10:25 AM	35	50	0.4	6.65	7.48	0.739	207.6	1.19	8.95	4.04
10:30 AM	39	50	0.4	6.48	7.48	0.738	206.1	1.18	8.96	4.04

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs	40 mL CG	1	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Cadmium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: Drawdown stabilized within .33' at 50 ml/min

Technician: Bill Cobern

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	SU	standard units
ft	feet	HCL	hydrochloric acid							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 3 **Site Location:** East Lansing, MI
Project No: B0064480.0014.00603 **Well ID:** UNK-11 **Sample ID:** UNK-11_120914
Sample Date: 12/9/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 11:55 AM **Weather:** Cloudy 34 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: PVC sch 40 **Screen Interval:** 6.5 to 11.5 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 10.0 ft bmp Final: 10.0 ft bmp
Measured Well Depth: 11.74 ft bmp **Purge Time:** 11:10 AM to 11:55 AM
Depth to Water: 5.15 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
11:10 AM	0	50	0.0	N/A	N/A	N/A	N/A	N/A	N/A	5.15
11:15 AM	5	50	0.1	8.91	7.18	0.838	205.5	1.44	263.00	5.29
11:20 AM	10	50	0.1	7.47	7.17	0.839	199.8	1.88	245.00	5.45
11:25 AM	16	50	0.2	7.38	7.16	0.840	199.4	1.89	236.00	5.67
11:30 AM	21	50	0.2	7.26	7.16	0.841	199.0	1.92	226.00	5.82
11:35 AM	25	50	0.3	7.14	7.16	0.842	198.5	1.82	219.00	6.06
11:40 AM	31	50	0.3	6.99	7.16	0.843	198.0	1.75	202.00	6.23
11:45 AM	35	50	0.4	6.95	7.16	0.842	197.7	1.69	198.00	6.51
11:50 AM	41	50	0.4	6.86	7.16	0.844	197.2	1.59	194.00	6.79
11:55 AM	45	50	0.5	6.80	7.15	0.842	196.9	1.55	186.00	7.07

Collected Sample Condition

Color: brown **Odor:** No **Appearance:** cloudy

Parameter	Container	# of Containers	Preservative	Comments
VOCs	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: Didn't meet maximum drawdown requirement at 50 ml/min

Technician: Bill Cobern

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project:	Lansing-Plant 6	Site Location:	East Lansing, MI	
Project No:	B0064481.0014.00603	Well ID:	MW-02-03(6)	Sample ID: MW-02-03(6)_121014
Sample Date:	12/10/2014	Duplicate:	N/A	Other QC: N/A
Sample Time:	10:05 AM	Weather:	Cloudy Cold Windy 25 F	

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	1793	4448
Casing Material:	PVC sch 40	Screen Interval:	35.0 to 45.0 ft bgs	
Casing Diameter:	2 in	Pump Intake Depth:	Initial: 83 ft bmp Final: 83 ft bmp	
Measured Well Depth:	N/A	Purge Time:	8:29 AM	to 10:05 AM
Depth to Water:	31.35 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
8:30 AM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	30.39
8:30 AM	1	100	0.0	10.79	6.80	8.412	-59.9	1.07	1000.00	31.91
8:35 AM	6	100	0.0	9.54	6.80	8.450	-56.7	0.93	1000.00	32.04
8:40 AM	10	100	0.0	8.61	6.81	8.413	-52.1	0.72	745.00	32.22
8:45 AM	15	80	0.3	8.15	6.80	8.422	-50.2	0.68	521.00	32.28
8:50 AM	20	80	0.3	7.65	6.81	8.405	-48.4	0.57	9835.00	32.58
8:55 AM	25	80	0.3	6.34	6.82	8.448	-45.6	0.59	798.00	32.71
9:00 AM	30	80	0.3	6.07	6.83	8.441	-43.6	0.59	743.00	32.89
9:05 AM	35	80	0.3	6.15	6.82	8.425	-42.6	0.62	760.00	33.06
9:10 AM	40	80	0.3	6.55	6.83	8.398	-40.7	0.68	652.00	33.29
9:15 AM	45	80	0.3	6.78	6.84	8.405	-40.1	0.82	578.00	33.43
9:25 AM	55	80	0.3	6.83	6.84	8.400	-40.3	0.82	542.00	33.45
9:30 AM	60	80	0.3	7.33	6.84	8.379	-39.7	1.03	510.00	33.48
9:35 AM	66	80	0.5	8.38	6.84	8.367	-37.0	1.10	352.00	33.87
9:40 AM	70	80	0.5	8.39	6.81	8.363	-36.2	1.12	354.00	33.98
9:45 AM	76	80	0.5	8.66	6.85	8.374	-33.0	1.46	302.00	34.45
9:50 AM	81	80	0.5	8.49	6.84	8.388	-32.6	1.51	310.00	34.61
9:55 AM	86	80	0.5	8.65	6.84	8.361	-32.1	1.50	301.00	34.87
10:00 AM	91	80	0.5	8.56	6.83	8.339	-30.5	1.58	208.00	34.88
10:05 AM	96	80	0.5	8.65	6.83	8.337	-30.1	1.82	189.00	34.87



Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: clear Odor: No Appearance: cloudy

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Canadium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: need lock, filter sample

Technician: Steve Stelter

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	SU	standard units
ft	feet	HCL	hydrochloric acid							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project:	Lansing-Plant 6	Site Location:	East Lansing, MI	
Project No:	B0064481.0014.00603	Well ID:	MW-03-01	Sample ID: MW-03-01_120514
Sample Date:	12/5/2014	Duplicate:	DUP_8_120514	Other QC: N/A
Sample Time:	10:45 AM	Weather:	Cloudy Cold 30 F	

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	1793	4448
Casing Material:	PVC sch 40	Screen Interval:	28.0 to 33.0 ft bgs	
Casing Diameter:	2 in	Pump Intake Depth:	Initial: 30 ft bmp Final: 30 ft bmp	
Measured Well Depth:	N/A	Purge Time:	9:05 AM	to 10:45 AM
Depth to Water:	23.82 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
9:05 AM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	23.51
9:10 AM	5	80	0.0	11.96	6.99	7.172	-46.7	9.19	145.00	23.60
9:16 AM	10	80	0.0	12.27	6.72	14.210	-45.2	3.86	175.00	23.95
9:20 AM	15	80	0.3	12.06	6.70	14.470	-43.6	2.67	171.00	23.99
9:25 AM	20	80	0.3	11.60	6.69	14.600	-40.5	2.40	145.00	23.97
9:30 AM	24	80	0.3	10.86	6.70	14.620	-39.0	1.97	93.00	24.01
9:35 AM	29	80	0.3	11.22	6.71	14.550	-37.9	1.76	72.30	24.02
9:40 AM	35	80	0.3	10.60	6.72	14.590	37.2	1.38	71.00	24.02
9:45 AM	39	80	0.3	10.59	6.72	14.580	-36.2	1.06	49.80	24.06
9:50 AM	44	80	0.5	10.78	6.73	14.560	-36.9	0.91	31.50	24.07
9:56 AM	51	80	0.5	10.79	6.73	14.600	-35.1	0.78	27.30	24.04
10:00 AM	54	80	0.5	11.14	6.71	14.580	-35.4	0.78	20.10	24.05
10:05 AM	59	80	0.5	11.36	6.67	14.570	-34.2	0.75	14.30	24.07
10:10 AM	64	80	0.5	10.72	6.66	14.680	-33.5	0.84	16.60	24.09
10:15 AM	70	80	0.5	10.56	6.74	14.670	-33.5	0.85	17.20	24.06
10:20 AM	74	80	0.8	10.31	6.75	14.710	-33.2	0.85	12.60	24.07
10:25 AM	79	80	0.8	10.21	6.76	14.690	-33.2	0.85	12.40	24.08
10:30 AM	84	80	0.8	10.25	6.78	14.630	-31.8	0.77	10.30	24.07
10:35 AM	89	80	0.8	10.90	6.77	14.640	-32.2	0.77	7.60	24.09
10:40 AM	94	80	1.0	10.75	6.77	14.630	-32.7	0.84	6.20	24.10
10:45 AM	99	80	1.0	10.97	6.77	14.650	-33.3	0.82	5.80	24.10



Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: clear Odor: No Appearance: cloudy

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Canadium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: need lock on risor

Technician: Steve Stelter

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	SU	standard units
ft	feet	HCL	hydrochloric acid							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 6 **Site Location:** East Lansing, MI
Project No: B0064481.0014.00603 **Well ID:** MW-03-04 **Sample ID:** MW-03-04_121014
Sample Date: 12/10/2014 **Duplicate:** N/A **Other QC:** MS/MSD
Sample Time: 12:50 PM **Weather:** Cloudy|Cold|Windy 28 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 1793 4448
Casing Material: PVC sch 40 **Screen Interval:** 33.0 to 43.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 37 ft bmp Final: 37 ft bmp
Measured Well Depth: N/A **Purge Time:** 10:56 AM to 12:50 PM
Depth to Water: 23.31 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
10:56 AM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	22.96
11:00 AM	4	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	23.22
11:05 AM	9	100	0.0	12.36	7.49	1.236	-34.3	7.85	85.00	23.44
11:10 AM	14	80	0.0	11.61	7.04	1.707	-68.1	2.41	128.00	23.53
11:15 AM	19	80	0.3	12.34	7.07	1.702	-68.7	2.22	123.00	23.58
11:20 AM	24	80	0.5	12.47	7.15	1.711	-69.2	2.03	104.00	23.52
11:25 AM	29	80	0.5	12.85	7.11	1.707	-67.9	1.74	87.00	23.54
11:30 AM	34	80	0.5	12.32	7.15	1.729	-69.3	1.80	95.90	23.44
11:35 AM	40	80	0.8	12.50	7.14	1.714	-67.3	1.69	74.00	23.45
11:40 AM	44	80	0.8	12.76	7.08	1.710	-66.3	1.69	71.00	23.41
11:45 AM	50	80	0.8	12.81	7.10	1.712	-67.2	1.27	58.00	23.40
11:50 AM	54	80	1.0	12.77	7.10	1.712	-67.5	1.25	61.00	23.40
11:55 AM	59	80	0.8	12.83	7.14	1.712	-68.8	1.31	78.10	23.40
12:00 PM	64	80	1.0	12.81	7.16	1.711	-68.3	1.32	69.30	23.40
12:05 PM	69	80	0.8	12.30	7.13	1.726	-67.2	1.35	68.30	23.40
12:10 PM	74	80	1.0	11.57	7.03	1.725	-63.0	1.46	43.20	23.40
12:15 PM	79	80	1.0	11.63	7.03	1.700	-61.5	1.39	67.30	23.40
12:20 PM	85	80	1.0	11.91	7.03	1.697	-58.9	1.25	62.10	23.40
12:25 PM	89	80	1.0	12.28	7.09	1.696	-57.5	1.26	52.30	23.41
12:30 PM	94	80	1.0	12.49	7.14	1.695	-57.1	1.21	51.00	23.41
12:35 PM	100	80	1.0	12.40	7.10	1.702	-60.1	1.29	54.20	23.40
12:40 PM	105	80	1.3	11.34	7.06	1.697	-55.2	1.65	38.30	23.40
12:45 PM	109	80	1.3	11.01	7.07	1.695	-54.1	1.70	35.60	23.40
12:50 PM	114	80	1.3	11.20	7.13	1.688	-52.4	1.68	36.30	23.40



Low-Flow Groundwater Sampling Log

Collected Sample Condition

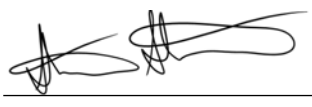
Color: clear Odor: No Appearance: clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: need lock, filter sample

Technician: Steve Stelter

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project:	Lansing-Plant 6	Site Location:	East Lansing, MI		
Project No:	B0064481.0014.00603	Well ID:	MW-03-06	Sample ID:	MW-03-06_120914
Sample Date:	12/9/2014	Duplicate:	N/A	Other QC:	N/A
Sample Time:	3:50 PM	Weather:	Cloudy Cold 30 F		

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	1793	4448
Casing Material:	PVC sch 40	Screen Interval:	30.0 to 40.0 ft bgs	
Casing Diameter:	2 in	Pump Intake Depth:	Initial: 38 ft bmp Final: 38 ft bmp	
Measured Well Depth:	N/A	Purge Time:	2:02 PM	to 3:50 PM
Depth to Water:	36.30 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
2:02 PM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	36.14
2:10 PM	8	80	0.0	11.16	6.85	10.930	-52.0	9.40	381.00	36.25
2:15 PM	13	80	0.0	10.96	6.77	12.410	-45.4	4.11	307.00	36.48
2:20 PM	19	60	0.0	10.92	6.74	12.630	-37.0	1.33	310.00	36.58
2:25 PM	23	60	0.3	11.10	6.75	1.270	-31.6	1.28	148.00	36.60
2:30 PM	28	60	0.3	11.08	6.75	12.770	-29.8	1.27	123.00	36.61
2:35 PM	33	60	0.3	11.08	6.76	12.780	-28.4	1.35	82.00	36.67
2:45 PM	43	60	0.3	10.55	6.81	12.830	-24.2	2.93	69.20	36.72
2:50 PM	48	60	0.3	10.60	6.81	12.840	-21.4	3.21	62.30	36.75
3:00 PM	58	60	0.3	10.26	6.84	12.890	-17.8	3.90	54.30	36.78
3:05 PM	63	60	0.3	9.93	6.87	12.880	-14.9	4.36	40.30	36.79
3:10 PM	68	60	0.5	9.65	6.88	12.890	-13.4	5.16	32.90	36.82
3:15 PM	73	60	0.5	8.79	6.92	12.690	-12.2	5.66	31.30	36.85
3:20 PM	78	60	0.5	9.03	6.93	12.860	-10.6	5.57	28.30	36.89
3:25 PM	83	60	0.5	8.95	6.94	12.880	-10.5	5.71	25.90	36.92
3:30 PM	88	60	0.5	8.79	6.95	12.900	-9.8	5.91	19.40	36.94
3:35 PM	93	60	0.8	8.71	6.96	12.900	-9.5	5.91	14.90	36.96
3:40 PM	98	60	0.8	8.67	6.96	12.890	-7.9	5.84	9.85	36.97
3:45 PM	103	60	0.8	8.73	6.96	12.900	-5.6	5.88	8.60	37.00
3:50 PM	108	60	0.8	8.33	6.96	12.950	-4.7	5.94	7.30	37.02



Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: clear Odor: No Appearance: cloudy

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Canadium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: good

Technician: Steve Stelter

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	SU	standard units
ft	feet	HCL	hydrochloric acid							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project:	Lansing-Plant 6	Site Location:	East Lansing, MI	
Project No:	B0064481.0014.00603	Well ID:	MW-03-08	Sample ID: MW-03-08_121114
Sample Date:	12/11/2014	Duplicate:	N/A	Other QC: N/A
Sample Time:	1:55 PM	Weather:	Cold Sunny 30 F	

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	1793	4448
Casing Material:	PVC sch 40	Screen Interval:	35.0 to 45.0 ft bgs	
Casing Diameter:	2 in	Pump Intake Depth:	Initial: 40 ft bmp Final: 40 ft bmp	
Measured Well Depth:	N/A	Purge Time:	11:57 AM	to 1:55 PM
Depth to Water:	33.65 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
11:57 AM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	33.40
12:20 PM	23	100	0.0	9.10	7.50	1007.000	-69.5	N/A	1000.00	33.76
12:25 PM	28	100	0.3	9.60	7.35	1.935	-67.8	2.53	1000.00	33.78
12:30 PM	34	80	0.3	10.04	7.35	1.942	-69.7	1.75	687.00	33.95
12:35 PM	38	80	0.3	10.33	7.36	1.927	-72.2	1.29	650.00	33.95
12:40 PM	43	50	0.3	10.62	7.36	1.908	-76.4	1.13	601.00	34.01
12:45 PM	48	50	0.3	10.89	7.35	1.890	-74.9	1.06	401.00	34.00
12:50 PM	53	50	0.3	11.66	7.35	1.883	-75.9	1.12	368.00	34.03
12:55 PM	58	50	0.3	11.98	7.33	1.881	-77.3	1.16	360.00	34.01
1:00 PM	63	50	0.3	12.36	7.33	1.873	-77.6	1.20	350.00	34.01
1:05 PM	68	50	0.5	12.39	7.33	1.868	-76.9	1.23	325.00	34.00
1:10 PM	73	50	0.5	12.33	7.32	1.864	-75.7	1.33	302.00	34.01
1:15 PM	79	50	0.5	12.41	7.31	1.859	-74.0	1.32	143.00	34.01
1:20 PM	83	50	0.5	13.58	7.30	1.851	-73.0	1.37	127.00	34.01
1:25 PM	89	50	0.5	14.06	7.29	1.841	-72.5	1.38	114.00	34.01
1:30 PM	93	50	0.5	12.40	7.30	1.858	-70.7	1.60	198.00	34.01
1:35 PM	99	50	0.5	11.28	7.27	1.833	-64.4	1.80	196.00	34.01
1:40 PM	104	50	0.8	10.85	7.26	1.822	-62.0	1.83	186.00	34.01
1:45 PM	108	50	0.8	10.35	7.27	1.826	-60.4	1.91	187.00	34.01
1:50 PM	113	50	0.8	10.36	7.27	1.819	-59.7	1.87	174.00	34.01
1:55 PM	118	50	0.8	10.25	7.28	1.820	-57.9	1.91	154.00	34.01



Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: clear Odor: No Appearance: turbid

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: need lock

Technician: Steve Stelter

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 6 **Site Location:** East Lansing, MI
Project No: B0064481.0014.00603 **Well ID:** MW-04-01(6) **Sample ID:** MW-04-01(6)_121014
Sample Date: 12/10/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 3:55 PM **Weather:** Cloudy|Cold|Windy 25 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 1793 4448
Casing Material: PVC sch 40 **Screen Interval:** 78.0 to 88.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 80 ft bmp Final: 80 ft bmp
Measured Well Depth: 76.18 ft bmp **Purge Time:** 2:27 PM to 3:25 PM
Depth to Water: 0 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
2:27 PM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	75.94
2:45 PM	18	100	0.0	12.05	6.96	1.252	-27.4	5.22	210.00	76.33
2:50 PM	24	100	0.3	12.28	6.80	1.237	-21.4	2.94	235.00	76.26
2:55 PM	29	100	0.3	10.83	6.85	1.239	-20.0	2.35	210.00	76.28
3:00 PM	33	100	0.3	10.80	6.76	1.227	-18.5	1.71	185.00	76.33
3:05 PM	38	100	0.3	10.84	6.83	1.230	-19.6	1.78	124.00	76.33
3:10 PM	43	100	0.5	10.50	6.87	1.228	-22.7	1.61	117.00	76.33
3:15 PM	48	100	0.5	10.48	6.93	1.227	-22.6	1.72	110.00	76.33
3:20 PM	54	100	0.5	10.65	6.83	1.255	-19.7	1.89	119.00	76.33
3:25 PM	28858	100	0.5	10.41	6.89	1.241	-15.0	1.98	103.00	76.33
3:40 PM	73	100	0.8	10.31	6.92	1.224	-11.5	2.40	87.30	76.33
3:45 PM	78	100	0.8	10.18	6.93	1.224	-12.3	2.31	78.30	76.33
3:50 PM	83	100	0.8	10.20	6.91	1.213	-13.1	2.40	71.30	76.33
3:55 PM	88	100	1.0	10.29	6.91	1.214	-13.2	2.41	70.20	76.33

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** cloudy

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: good

Technician: Steve Stelter

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	mg/L	milligrams per liter	mV	millivolts	ppm	parts per million	TOC	top of casing
CG	clear glass	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	PVC sch 40	polyvinyl chloride Schedule 40		
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project:	Lansing-Plant 6	Site Location:	East Lansing, MI	
Project No:	B0064481.0014.00603	Well ID:	MW-04-04R	Sample ID: MW-04-04R_120914
Sample Date:	12/9/2014	Duplicate:	DUP_10_120914	Other QC: N/A
Sample Time:	12:00 PM	Weather:	Cloudy Cold 30 F	

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	1793	4448
Casing Material:	Welded Steel	Screen Interval:	82.0 to 110.0 ft bgs	
Casing Diameter:		Pump Intake Depth:	Initial: 90 ft bmp Final: 90 ft bmp	
Measured Well Depth:	N/A	Purge Time:	10:22 AM	to 12:00 PM
Depth to Water:	82.42 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
10:22 AM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	82.41
10:35 AM	13	100	0.0	10.37	7.16	1.115	75.6	7.62	65.00	82.42
10:45 AM	24	100	0.0	10.31	7.06	1.117	-67.5	6.77	52.00	N/A
10:50 AM	29	80	0.3	11.85	7.08	1.113	-63.2	4.78	22.10	82.48
11:00 AM	39	100	0.3	11.32	7.06	1.130	60.5	5.14	22.60	82.48
11:05 AM	43	80	0.3	10.94	7.01	1.107	-55.3	4.16	21.10	82.50
11:10 AM	48	100	0.3	10.99	7.02	1.109	-55.6	4.11	22.50	82.48
11:15 AM	54	100	0.3	11.05	7.02	1.110	55.8	4.12	20.60	82.48
11:20 AM	59	100	0.3	11.27	7.03	1.114	-54.7	3.02	20.30	82.50
11:25 AM	63	100	0.5	11.05	7.01	1.111	-56.1	2.53	20.30	82.50
11:30 AM	69	100	0.5	10.99	7.01	1.107	-56.3	2.38	24.50	82.50
11:35 AM	74	100	0.5	10.94	7.02	1.100	-57.7	2.46	25.30	82.50
11:40 AM	78	100	0.8	10.42	7.02	1.078	-61.6	2.40	22.30	82.50
11:45 AM	83	100	0.8	10.70	7.03	1.072	-64.7	2.34	21.30	82.50
11:50 AM	88	100	0.8	10.79	7.05	1.065	-66.4	2.33	28.30	82.50
11:55 AM	93	100	1.0	10.99	7.06	1.059	-67.4	2.32	31.30	82.50
12:00 PM	99	100	1.0	11.18	7.06	1.057	-67.0	2.31	29.30	82.50



Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: clear Odor: No Appearance: clear

Parameter	Container	# of Containers	Preservative	Comments
Select Metals: Arsenic, Nickel, Lead, Cadmium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: good

Technician: Steve Stelter

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mL/min	milliliters per minute	mV	millivolts	NTU	nephelometric turbidity units
F	degrees Fahrenheit	ft bmp	feet below measuring point	mg/L	milligrams per liter	mS/cm	millisiemens per centimeter	N/A	not available	PE	polyethylene
ft	feet	gal	gallons							ppm	parts per million
										SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project:	Lansing-Plant 6	Site Location:	East Lansing, MI	
Project No:	B0064481.0014.00603	Well ID:	MW-04-05(6)	Sample ID: MW-04-05(6)_120414
Sample Date:	12/4/2014	Duplicate:	N/A	Other QC: N/A
Sample Time:	3:30 PM	Weather:	Cold Sunny 30 F	

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	1793	4448
Casing Material:	PVC sch 40	Screen Interval:	20.0 to 30.0 ft bgs	
Casing Diameter:	2 in	Pump Intake Depth:	Initial: 25 ft bmp Final: 25 ft bmp	
Measured Well Depth:	29.65 ft bmp	Purge Time:	2:02 PM	to 3:27 PM
Depth to Water:	10.39 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
2:02 PM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	9.85
2:05 PM	4	80	0.0	11.14	7.03	6.321	-62.5	4.39	89.00	9.38
2:10 PM	8	80	0.0	12.36	6.97	9.647	-49.4	3.97	101.00	10.02
2:15 PM	13	80	0.3	12.52	7.00	9.940	-51.2	1.99	86.60	11.15
2:20 PM	18	80	0.3	12.33	7.08	10.110	-50.8	0.97	28.40	11.38
2:25 PM	23	80	0.3	11.52	7.14	10.340	-50.1	0.83	24.70	11.40
2:30 PM	28	80	0.3	11.41	7.21	10.300	-50.0	0.52	19.60	11.42
2:35 PM	33	80	0.3	11.62	7.28	10.280	-51.1	0.36	17.50	11.45
2:40 PM	38	80	0.3	11.34	7.36	10.370	-49.4	0.32	15.20	11.46
2:45 PM	43	80	0.5	10.44	7.45	10.420	-48.6	0.30	10.30	11.46
2:50 PM	48	80	0.5	10.89	7.48	10.330	-49.3	0.26	10.60	11.46
2:55 PM	53	80	0.5	11.47	7.50	10.360	-49.2	0.27	9.50	11.47
3:00 PM	58	80	0.5	11.69	7.49	10.370	-49.8	0.27	7.60	11.51
3:05 PM	64	80	0.8	11.93	7.47	10.370	-50.5	0.30	6.15	11.54
3:10 PM	68	80	1.0	12.20	7.45	10.390	-50.0	0.27	5.20	11.58
3:15 PM	73	80	1.0	12.26	7.43	10.430	-50.5	0.23	4.10	11.61
3:20 PM	78	80	1.3	11.87	7.41	10.500	-50.3	0.23	5.10	11.63
3:27 PM	85	80	1.3	11.83	7.37	10.490	-50.2	0.20	4.30	11.66



Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: clear Odor: No Appearance: cloudy

Parameter	Container	# of Containers	Preservative	Comments
VOCs	40 mL CG	1	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Canadium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: need lock

Technician: Steve Stelter

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	SU	standard units
ft	feet	HCL	hydrochloric acid							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project:	Lansing-Plant 6	Site Location:	East Lansing, MI		
Project No:	B0064481.0014.00603	Well ID:	MW-04-06R	Sample ID:	MW-04-06R_120414
Sample Date:	12/4/2014	Duplicate:	N/A	Other QC:	N/A
Sample Time:	1:20 PM	Weather:	Sunny Cold 30 F		

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	1793	4448
Casing Material:	Welded Steel	Screen Interval:	74.0 to 99.5 ft bgs	
Casing Diameter:		Pump Intake Depth:	Initial: 75 ft bmp Final: 75 ft bmp	
Measured Well Depth:	78.5 ft bmp	Purge Time:	11:07 AM	to 1:20 PM
Depth to Water:	72.08 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
11:07 AM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	72.08
11:30 AM	22	100	0.3	10.11	7.34	3.917	-145.1	8.56	81.50	72.11
11:35 AM	28	80	0.3	10.25	7.44	3.831	-174.6	1.70	85.60	72.11
11:40 AM	32	80	0.3	10.16	7.46	3.824	-152.9	1.36	74.30	72.11
11:45 AM	37	80	0.3	10.30	7.49	3.818	-165.2	1.19	72.30	72.11
11:50 AM	43	80	0.5	10.02	7.51	3.809	-168.2	0.74	61.90	72.11
11:55 AM	47	80	0.8	10.01	7.53	N/A	-177.7	0.57	58.10	72.11
12:00 PM	52	80	0.8	10.43	7.53	3.787	-179.6	0.37	51.30	72.11
12:05 PM	57	80	0.8	9.88	7.54	3.816	-178.4	0.32	39.20	72.11
12:10 PM	62	80	1.0	9.76	7.54	3.810	-178.1	0.30	36.90	72.11
12:15 PM	67	80	1.0	9.77	7.53	3.795	-175.3	0.27	41.30	72.11
12:20 PM	72	80	1.0	9.99	7.47	3.786	-176.1	0.22	41.70	72.11
12:30 PM	83	80	1.3	10.03	7.47	3.807	-179.7	0.24	32.90	72.11
12:35 PM	88	80	1.3	9.65	7.47	3.813	-174.3	0.24	40.10	72.11
12:41 PM	94	80	1.3	9.48	7.48	3.827	-169.5	0.24	36.10	72.11
12:45 PM	97	80	1.5	9.52	7.48	3.820	-171.7	0.24	39.20	72.11
12:50 PM	102	80	1.5	9.53	7.51	3.828	-164.2	0.27	40.10	72.11
12:56 PM	109	80	1.5	9.58	7.54	3.823	-176.3	0.30	40.20	72.11
1:00 PM	112	80	1.8	9.53	7.50	3.826	-166.3	0.25	42.60	72.11
1:06 PM	119	80	1.8	9.75	7.50	3.817	-166.1	0.26	42.20	72.11
1:10 PM	123	80	1.8	10.11	7.47	3.840	-151.3	0.26	43.60	72.11
1:15 PM	128	80	1.8	10.03	7.47	3.840	-160.3	0.25	41.60	72.11
1:20 PM	132	80	2.0	10.07	7.48	3.840	-160.1	0.26	41.80	72.11



Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: clear Odor: No Appearance: clear

Parameter	Container	# of Containers	Preservative	Comments
Select Metals: Arsenic, Nickel, Lead, Canadium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: filter sample

Technician: Steve Stelter

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mL/min	milliliters per minute	mV	millivolts	NTU	nephelometric turbidity units
F	degrees Fahrenheit	ft bmp	feet below measuring point	mg/L	milligrams per liter	mS/cm	millisiemens per centimeter	N/A	not available	PE	polyethylene
ft	feet	gal	gallons							ppm	parts per million
										SU	standard units
										TOC	top of casing

Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 6	Site Location: East Lansing, MI	
Project No: B0064481.0014.00603	Well ID: MW-12-11	Sample ID: MW-12-11_120414
Sample Date: 12/4/2014	Duplicate: N/A	Other QC: N/A
Sample Time: 9:35 AM	Weather: Cold Sunny 30 F	

Instrument Identification

Purge Method: Bladder Pump	Water Quality Meters: YSI	Turbidity Meter
Measuring Point: TOC	Serial #: 1793	4448
Casing Material: PVC sch 40	Screen Interval: 13.0 to 18.0 ft bgs	
Casing Diameter: 2 in	Pump Intake Depth: Initial: 8.0 ft bmp	Final: 8 ft bmp
Measured Well Depth: 16.85 ft bmp	Purge Time: 8:25 AM	to 9:33 AM
Depth to Water: 5.62 ft bmp	PID Reading: 0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
8:25 AM	0	100	0.0	5.28	7.34	3.309	66.7	9.32	21.00	5.89
8:30 AM	5	100	0.0	6.67	7.03	6.127	64.9	4.94	24.00	5.89
8:35 AM	10	100	0.3	7.35	6.98	6.233	64.8	2.50	18.90	5.90
8:40 AM	16	80	0.3	7.06	7.00	6.362	87.6	1.20	14.60	6.18
8:45 AM	21	80	0.3	6.99	7.04	6.390	68.8	0.77	10.30	6.05
8:50 AM	25	80	0.3	6.02	7.06	6.485	69.4	0.78	9.60	6.04
8:55 AM	31	80	0.5	4.99	7.10	6.500	71.0	0.74	6.74	5.98
9:00 AM	35	80	0.5	4.08	7.18	6.503	71.5	0.70	5.90	5.97
9:05 AM	40	80	0.5	3.99	7.20	6.470	70.9	0.66	4.70	5.99
9:10 AM	45	80	0.5	3.90	7.20	6.474	70.2	0.62	5.30	6.01
9:15 AM	50	80	0.5	4.15	7.21	6.449	69.1	0.65	4.20	6.00
9:21 AM	56	80	0.8	4.59	7.19	6.420	69.0	0.71	4.10	6.00
9:25 AM	60	80	0.8	4.49	7.20	6.483	68.2	0.67	4.30	6.01
9:33 AM	69	80	1.0	3.88	7.23	6.503	68.0	0.60	3.70	6.02

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs	40 mL CG	1	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Cadmium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: no lock on risor

Technician: Steve Stelter

Signature:



Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	SU	standard units
ft	feet	HCL	hydrochloric acid							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project:	Lansing-Plant 6	Site Location:	East Lansing, MI	
Project No:	B0064481.0014.00603	Well ID:	MW-12-12	Sample ID: MW-12-12_120514
Sample Date:	12/5/2014	Duplicate:	N/A	Other QC: N/A
Sample Time:	12:30 PM	Weather:	Cloudy Cold 30 F	

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	1793	4448
Casing Material:	PVC sch 40	Screen Interval:	13.0 to 18.0 ft bgs	
Casing Diameter:	2 in	Pump Intake Depth:	Initial: 16 ft bmp Final: 16 ft bmp	
Measured Well Depth:	N/A	Purge Time:	11:15 AM	to 12:30 PM
Depth to Water:	8.43 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
11:15 AM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	7.45
11:20 AM	4	60	0.0	11.87	6.76	3.921	-23.5	12.36	1000.00	8.14
11:25 AM	10	50	0.0	12.31	6.69	4.658	-19.4	1.27	1000.00	8.66
11:30 AM	15	50	0.0	12.93	6.73	4.589	-22.8	0.59	1000.00	8.84
11:35 AM	19	50	0.3	13.10	6.73	4.565	-23.4	0.59	870.00	8.95
11:40 AM	24	50	0.3	13.22	6.76	4.493	-25.4	0.55	514.00	9.01
11:46 AM	30	50	0.3	13.18	6.78	4.341	26.4	0.57	579.00	9.04
11:50 AM	34	50	0.3	13.11	6.77	4.282	-26.5	0.56	520.00	9.09
11:55 AM	39	50	0.3	13.15	6.77	4.258	-26.5	0.54	611.00	9.11
12:00 PM	44	50	0.3	13.07	6.79	4.241	-26.8	0.54	523.00	9.18
12:05 PM	49	50	0.3	11.08	6.83	3.934	-24.4	0.50	475.00	9.34
12:10 PM	54	50	0.3	11.04	6.84	3.902	-24.5	0.49	417.00	9.44
12:15 PM	59	50	0.3	11.02	6.84	3.867	-24.0	0.46	425.00	9.48
12:20 PM	64	50	0.3	11.03	6.85	3.832	-24.1	0.46	369.00	9.52
12:25 PM	69	50	0.3	11.15	6.88	3.812	-24.8	0.43	382.00	9.62
12:30 PM	75	50	0.3	11.31	6.91	3.844	-25.5	0.44	352.00	9.87



Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: brown Odor: No Appearance: turbid

Parameter	Container	# of Containers	Preservative	Comments
VOCs	40 mL CG	1	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Canadium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: need lock / filter sample

Technician: Steve Stelter

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	SU	standard units
ft	feet	HCL	hydrochloric acid							TOC	top of casing

Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 6	Site Location: East Lansing, MI	
Project No: B0064481.0014.00603	Well ID: MW-12-13	Sample ID: MW-12-13_120514
Sample Date: 12/5/2014	Duplicate: DUP_9_120514	Other QC: N/A
Sample Time: 4:35 PM	Weather: Cloudy Cold 30 F	

Instrument Identification

Purge Method: Bladder Pump	Water Quality Meters: YSI	Turbidity Meter
Measuring Point: TOC	Serial #: 1793	4448
Casing Material: PVC sch 40	Screen Interval: 18.5 to 23.5 ft bgs	
Casing Diameter: 2 in	Pump Intake Depth: Initial: 15 ft bmp	Final: 15 ft bmp
Measured Well Depth: N/A	Purge Time: 3:36 PM	to 4:35 PM
Depth to Water: 10.08 ft bmp	PID Reading: 0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
3:36 PM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	9.68
3:40 PM	4	80	0.0	8.81	7.75	0.000	54.6	6.51	41.00	9.85
3:45 PM	9	100	0.0	10.21	7.54	1.478	59.6	5.47	24.30	10.67
3:50 PM	14	100	0.3	10.26	7.49	1.484	61.3	4.54	14.30	10.62
3:55 PM	19	100	0.3	9.94	7.51	1.492	60.8	4.35	21.60	10.58
3:59 PM	24	100	0.5	9.06	7.52	1.498	63.5	4.48	19.20	10.61
4:05 PM	29	100	0.5	8.53	7.52	1.491	66.1	4.16	14.20	10.68
4:10 PM	34	100	0.5	8.33	7.54	1.488	67.6	3.80	11.30	10.69
4:15 PM	39	100	0.5	8.25	7.55	1.489	68.8	3.67	10.30	10.71
4:20 PM	44	100	0.8	8.41	7.57	1.482	67.5	3.65	10.20	10.71
4:25 PM	49	100	0.8	8.48	7.57	1.485	70.7	3.45	9.50	10.74
4:30 PM	54	100	1.0	8.46	7.55	1.485	72.2	3.41	8.20	10.75
4:35 PM	59	100	1.0	8.49	7.56	1.485	72.5	3.44	9.70	10.75

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Canadium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: well good

Technician: Steve Stelter

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	SU	standard units
ft	feet	HCL	hydrochloric acid							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project:	Lansing-Plant 6	Site Location:	East Lansing, MI	
Project No:	B0064481.0014.00603	Well ID:	MW-12-16	Sample ID: MW-12-16_120314
Sample Date:	12/3/2014	Duplicate:	N/A	Other QC: MS/MSD
Sample Time:	3:52 PM	Weather:	Cloudy Cold Windy 30 F	

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	1793	4448
Casing Material:	PVC sch 40	Screen Interval:	28.0 to 33.0 ft bgs	
Casing Diameter:	2 in	Pump Intake Depth:	Initial: 25 ft bmp Final: 25 ft bmp	
Measured Well Depth:	32.22 ft bmp	Purge Time:	2:22 PM	to 3:52 PM
Depth to Water:	23.47 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
2:22 PM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	23.47
2:25 PM	3	100	0.0	7.93	7.44	1.790	22.1	11.46	147.00	23.51
2:30 PM	8	100	0.0	9.12	7.25	2.098	14.4	2.00	47.10	23.48
2:35 PM	13	100	0.3	7.28	7.20	2.230	6.4	1.13	36.00	23.49
2:40 PM	18	100	0.3	6.70	7.22	2.243	2.7	0.54	35.60	23.49
2:45 PM	23	100	0.3	6.13	7.26	2.248	-0.7	0.39	29.60	23.49
2:50 PM	28	100	0.3	5.49	7.30	2.232	-3.7	0.33	28.30	23.49
2:55 PM	34	100	0.3	5.86	7.32	2.225	-4.3	0.32	21.30	23.49
3:00 PM	38	100	0.5	5.27	7.36	2.224	-5.7	0.28	19.70	23.49
3:05 PM	43	100	0.5	5.28	7.41	2.231	-4.3	0.29	17.20	23.49
3:10 PM	49	100	0.5	5.02	7.46	2.225	-3.9	0.37	14.10	23.49
3:15 PM	53	100	0.8	4.89	7.50	2.213	-3.7	0.42	11.60	23.49
3:20 PM	58	100	0.8	4.82	7.53	2.205	-3.2	0.51	11.80	23.49
3:25 PM	63	100	0.8	4.89	7.58	2.198	-3.2	0.58	9.25	23.49
3:30 PM	68	100	1.0	4.93	7.54	2.197	-3.3	0.62	8.90	23.49
3:35 PM	73	100	1.0	5.08	7.53	2.187	-4.9	0.83	7.20	23.49
3:41 PM	80	100	1.0	5.11	7.52	2.190	-5.9	0.84	8.30	23.49
3:45 PM	83	100	1.3	5.08	7.50	2.185	-6.7	0.87	6.50	23.49
3:52 PM	90	100	1.3	5.05	7.52	2.182	-7.0	0.88	7.10	23.49



Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: clear Odor: No Appearance: clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs	40 mL CG	1	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Cadmium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: no lock on well riser.

Technician: Steve Stelter

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	SU	standard units
ft	feet	HCL	hydrochloric acid							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project:	Lansing-Plant 6	Site Location:	East Lansing, MI	
Project No:	B0064481.0014.00603	Well ID:	MW-13-35	Sample ID: MW-13-35_120314
Sample Date:	12/3/2014	Duplicate:	N/A	Other QC: N/A
Sample Time:	12:05 PM	Weather:	Cloudy Cold 27 F	

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	1793	4448
Casing Material:		Screen Interval:	25.0 to 30.0 ft bgs	
Casing Diameter:		Pump Intake Depth:	Initial: 26.00 ft bmp Final: 26.00 ft bmp	
Measured Well Depth:	25.53 ft bmp	Purge Time:	10:07 AM	to 12:05 PM
Depth to Water:	24.15 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
10:07 AM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	24.15
10:09 AM	2	100	0.0	8.33	7.03	2.240	123.6	3.42	149.00	24.18
10:16 AM	9	100	0.3	8.59	7.15	2.231	101.1	2.09	130.00	24.18
10:20 AM	13	100	0.3	8.46	7.22	2.237	93.3	1.82	125.00	24.18
10:25 AM	19	100	0.3	7.88	7.28	2.230	86.4	1.73	110.00	24.18
10:30 AM	23	100	0.3	7.81	7.35	2.211	75.9	1.52	93.00	24.18
10:37 AM	31	100	0.3	8.01	7.38	2.188	65.9	1.50	94.00	24.18
10:40 AM	33	100	0.5	8.05	7.43	2.162	52.7	1.49	66.50	24.18
10:45 AM	39	100	0.5	8.16	7.44	2.147	48.4	1.33	61.30	24.17
10:50 AM	43	100	0.5	8.57	7.26	2.129	39.2	1.23	47.30	24.17
10:56 AM	50	100	0.5	8.66	7.46	2.083	28.5	1.17	33.90	24.18
11:01 AM	55	100	0.5	8.60	7.47	2.079	25.4	1.32	31.30	24.17
11:14 AM	67	100	0.5	8.58	7.47	2.072	23.8	1.30	30.50	24.17
11:20 AM	73	100	0.8	8.51	7.47	2.040	16.3	1.30	21.00	24.17
11:32 AM	86	100	0.8	8.44	7.46	2.005	12.3	1.25	20.40	24.17
11:40 AM	93	100	0.8	8.56	7.39	1.972	8.9	1.27	14.90	24.17
11:45 AM	99	100	1.0	8.68	7.35	1.971	8.0	1.22	11.30	24.17
11:50 AM	103	100	1.5	9.15	7.13	1.941	2.6	1.01	9.30	24.17
11:55 AM	108	100	1.5	9.12	7.10	1.937	2.4	1.12	7.90	24.17
12:00 PM	114	100	1.5	8.76	7.10	1.925	-0.4	1.02	8.10	24.17
12:05 PM	118	100	2.0	8.75	7.10	1.919	-1.4	1.03	7.20	24.17



Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: clear Odor: No Appearance: cloudy

Parameter	Container	# of Containers	Preservative	Comments
Select Metals: Arsenic, Nickel, Lead, Cadmium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Steve Stelter

Signature: _____

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mL/min	milliliters per minute	mV	millivolts	NTU	nephelometric turbidity units
F	degrees Fahrenheit	ft bmp	feet below measuring point	mg/L	milligrams per liter	mS/cm	millisiemens per centimeter	N/A	not available	PE	polyethylene
ft	feet	gal	gallons							ppm	parts per million
										SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project:	Lansing-Plant 6	Site Location:	East Lansing, MI	
Project No:	B0064481.0014.00603	Well ID:	MW-13-36R	Sample ID: MW-13-36R_120814
Sample Date:	12/8/2014	Duplicate:	N/A	Other QC: N/A
Sample Time:	10:45 AM	Weather:	Cloudy Cold 30 F	

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	1793	4448
Casing Material:		Screen Interval:	5.5 to 10.5 ft bgs	
Casing Diameter:		Pump Intake Depth:	Initial: 10 ft bmp Final: 10 ft bmp	
Measured Well Depth:	N/A	Purge Time:	9:28 AM	to 10:45 AM
Depth to Water:	6.17 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
9:28 AM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	6.18
9:30 AM	2	0.8	0.0	9.16	11.63	1.123	148.3	2.44	1000.00	6.17
9:40 AM	12	100	0.3	9.18	11.91	0.936	115.1	11.48	752.00	6.18
9:45 AM	17	100	0.3	8.17	11.86	1.843	109.7	1.22	319.00	6.18
9:50 AM	22	100	0.3	8.43	11.86	1.867	98.2	0.57	210.00	6.18
9:55 AM	27	100	0.3	8.57	11.93	1.878	86.7	0.52	172.00	6.18
10:00 AM	32	100	0.3	8.70	11.90	1.890	78.0	0.51	132.00	6.18
10:10 AM	42	100	0.5	8.81	12.00	1.906	66.0	0.53	101.00	6.18
10:15 AM	47	100	0.5	8.95	11.97	1.915	65.1	0.56	97.00	6.18
10:20 AM	52	100	0.5	9.06	12.05	1.920	47.5	0.54	87.00	6.18
10:25 AM	57	100	0.5	9.22	12.06	1.924	45.0	0.55	71.00	6.18
10:30 AM	63	100	0.5	9.21	12.08	1.929	37.9	0.56	63.20	6.18
10:35 AM	68	100	0.8	9.45	12.09	1.926	31.1	0.54	51.40	6.18
10:40 AM	72	100	0.8	9.72	12.11	1.924	26.8	0.55	67.20	6.18
10:45 AM	77	100	1.0	9.83	12.11	1.926	24.5	0.55	61.20	6.18



Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: clear Odor: No Appearance: turbid

Parameter	Container	# of Containers	Preservative	Comments
Select Metals: Arsenic, Nickel, Lead, Cadmium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: good

Technician: Steve Stelter

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mL/min	milliliters per minute	mV	millivolts	NTU	nephelometric turbidity units
F	degrees Fahrenheit	ft bmp	feet below measuring point	mg/L	milligrams per liter	mS/cm	millisiemens per centimeter	N/A	not available	PE	polyethylene
ft	feet	gal	gallons							ppm	parts per million
										SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 6 **Site Location:** East Lansing, MI
Project No: B0064481.0014.00603 **Well ID:** MW-13-50 **Sample ID:** MW-13-50_120414
Sample Date: 12/4/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 3:40 PM **Weather:** Sunny|Cold 27 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** N/A N/A
Casing Material: Welded Steel **Screen Interval:** 85.0 to 107.0 ft bgs
Casing Diameter: **Pump Intake Depth:** Initial: 93.0 ft bmp Final: 93.0 ft bmp
Measured Well Depth: 109.9 ft bmp **Purge Time:** 3:00 PM to 3:35 PM
Depth to Water: 86.55 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
3:00 PM	0	125	0.1	8.49	6.88	0.970	-25.5	3.14	22.20	86.80
3:35 PM	35	125	0.2	9.08	6.88	0.980	-28.6	1.40	10.70	86.95
3:10 PM	10	125	0.4	9.06	6.88	0.989	-29.5	0.82	7.50	86.99
3:15 PM	15	125	0.5	8.87	6.87	0.991	-29.3	0.73	7.35	87.00
3:20 PM	20	125	0.6	7.98	6.84	0.995	-27.2	0.52	6.14	87.02
3:25 PM	25	125	0.8	7.52	6.78	0.992	-24.2	0.38	2.38	87.03
3:30 PM	30	125	0.9	7.69	6.77	0.987	-25.2	0.34	1.35	87.08
3:35 PM	35	125	0.9	7.60	6.78	0.987	-27.8	0.40	1.65	87.12

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Cliff Walls

Signature:

Abbreviations:

C	degrees Celsius	ft	feet	gal	gallons	mg/L	milligrams per liter	mS/cm	millisiemens per centimeter	N/A	not available
CG	clear glass	ft bgs	feet below ground surface	HCL	hydrochloric acid	mL/min	milliliters per minute	mV	millivolts	NTU	nephelometric turbidity units
F	degrees Fahrenheit	ft bmp	feet below measuring point							ppm	parts per million
										SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 6 **Site Location:** East Lansing, MI
Project No: B0064481.0014.00603 **Well ID:** MW-13-52 **Sample ID:** MW-13-52_120514
Sample Date: 12/5/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 10:45 AM **Weather:** Cold|Cloudy 30 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** N/A N/A
Casing Material: **Screen Interval:** 70.0 to 80.0 ft bgs
Casing Diameter: **Pump Intake Depth:** Initial: 76.0 ft bmp Final: 76.0 ft bmp
Measured Well Depth: N/A **Purge Time:** 9:35 AM to 10:40 AM
Depth to Water: 71.60 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
9:35 AM	0	100	0.1	8.58	6.77	1.182	-37.4	2.96	65.80	71.66
9:40 AM	5	100	0.2	7.73	6.62	1.179	-28.4	1.62	91.90	71.65
9:45 AM	10	100	0.2	7.57	6.60	1.173	-28.7	0.94	85.30	71.65
9:50 AM	15	100	0.4	7.33	6.65	1.176	-32.3	0.69	80.30	71.69
9:55 AM	20	100	0.5	7.21	6.65	1.174	-32.7	0.61	55.40	71.70
10:00 AM	25	100	0.7	7.27	6.64	1.169	-32.6	0.48	41.50	71.65
10:05 AM	30	100	0.8	7.18	6.63	1.170	-31.5	0.40	30.60	71.65
10:10 AM	35	100	0.9	7.49	6.69	1.166	-34.1	0.39	25.00	71.64
10:15 AM	40	100	1.0	6.96	6.63	1.174	-29.5	0.39	21.20	71.64
10:20 AM	45	100	1.2	7.24	6.65	1.168	-30.3	0.36	19.80	71.66
10:25 AM	50	100	1.4	7.05	6.61	1.169	-26.9	0.38	14.20	71.69
10:30 AM	55	100	1.4	7.03	6.64	1.169	-27.5	0.35	13.50	71.64
10:40 AM	65	100	1.4	7.10	6.66	1.169	-27.8	0.35	12.90	71.64

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** cloudy

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Cliff Walls

Signature:

Abbreviations:

C	degrees Celsius	ft	feet	gal	gallons	mg/L	milligrams per liter	mS/cm	millisiemens per centimeter	N/A	not available
CG	clear glass	ft bgs	feet below ground surface	HCL	hydrochloric acid	mL/min	milliliters per minute	mV	millivolts	NTU	nephelometric turbidity units
F	degrees Fahrenheit	ft bmp	feet below measuring point							ppm	parts per million
										SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 6 **Site Location:** East Lansing, MI
Project No: B0064481.0014.00603 **Well ID:** MW-13-53 **Sample ID:** MW-13-53_120514
Sample Date: 12/5/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 11:55 AM **Weather:** Cold|Cloudy 31 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** N/A N/A
Casing Material: **Screen Interval:** 73.0 to 83.0 ft bgs
Casing Diameter: **Pump Intake Depth:** Initial: 83.0 ft bmp Final: 83.0 ft bmp
Measured Well Depth: N/A **Purge Time:** 11:25 AM to 11:50 AM
Depth to Water: 78.25 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
11:25 AM	0	80	0.1	6.70	6.61	1.073	21.6	1.73	11.60	78.20
11:30 AM	5	80	0.2	7.16	6.71	1.076	12.1	1.18	10.20	78.20
11:35 AM	10	80	0.4	7.34	6.74	1.084	8.0	1.27	8.36	78.20
11:40 AM	15	80	0.4	7.21	6.71	1.087	8.5	0.83	10.30	78.20
11:45 AM	20	80	0.6	7.14	6.71	1.088	8.4	0.80	9.36	78.20
11:50 AM	25	80	0.7	7.43	6.71	1.089	7.8	0.75	9.34	78.20

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Cliff Walls

Signature: 

Abbreviations:

C	degrees Celsius	ft	feet	gal	gallons	mg/L	milligrams per liter	mS/cm	millisiemens per centimeter	N/A	not available
CG	clear glass	ft bgs	feet below ground surface	HCL	hydrochloric acid	mL/min	milliliters per minute	mV	millivolts	NTU	nephelometric turbidity units
F	degrees Fahrenheit	ft bmp	feet below measuring point							ppm	parts per million
										SU	standard units
										TOC	top of casing

Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 6	Site Location: East Lansing, MI	
Project No: B0064481.0014.00603	Well ID: MW-14-66	Sample ID: MW-14-66_120914
Sample Date: 12/9/2014	Duplicate: N/A	Other QC: N/A
Sample Time: 9:40 AM	Weather: Cloudy Cold 30 F	

Instrument Identification

Purge Method: Bladder Pump	Water Quality Meters: YSI	Turbidity Meter
Measuring Point: TOC	Serial #: 1793	4448
Casing Material:	Screen Interval: N/A	
Casing Diameter:	Pump Intake Depth: Initial: 9 ft bmp Final: 9 ft bmp	
Measured Well Depth: N/A	Purge Time: 8:40 AM to 9:40 AM	
Depth to Water: 5.73 ft bmp	PID Reading: 0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
8:40 AM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	5.43
8:45 AM	5	100	0.0	8.69	7.73	1.042	-29.3	3.78	12.30	6.02
8:50 AM	10	100	0.0	8.13	7.50	1.126	-51.6	2.63	15.60	5.99
8:55 AM	15	100	0.0	8.03	7.40	1.167	-63.5	0.66	11.60	6.09
9:00 AM	21	100	0.3	8.03	7.40	1.170	-65.2	0.70	12.10	6.10
9:05 AM	25	100	0.3	8.14	7.41	1.181	-70.6	0.60	10.90	6.09
9:10 AM	30	100	0.3	8.43	7.40	1.185	-70.2	0.63	9.20	6.15
9:15 AM	35	100	0.3	8.64	7.41	1.185	-72.1	0.60	6.30	6.29
9:20 AM	40	100	0.5	8.72	7.40	1.186	-73.4	0.68	3.60	6.31
9:25 AM	45	100	0.5	8.79	7.41	1.187	-73.9	0.72	3.60	6.36
9:30 AM	50	100	0.5	8.83	7.41	1.186	-74.8	0.85	2.90	6.31
9:35 AM	55	100	0.5	8.86	7.41	1.188	-74.6	0.91	2.90	6.31
9:40 AM	60	100	0.8	8.92	7.41	1.187	-74.9	0.85	3.10	6.31

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
Metals	125 mL PE	1	HNO3	N/A
SVOCs	1 L AG	1	None	N/A

Comments

General Comments: N/A
Sampling Remarks: good

Technician: Steve Stelter

Signature:



Abbreviations:

AG	amber glass	ft	feet	HCL	hydrochloric acid	mL/min	milliliters per minute	N/A	not available	ppm	parts per million
C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons							SU	standard units
										TOC	top of casing

Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 6	Site Location: East Lansing, MI	
Project No: B0064481.0014.00603	Well ID: MW-14-67	Sample ID: MW-14-67_120814
Sample Date: 12/8/2014	Duplicate: N/A	Other QC: N/A
Sample Time: 12:10 PM	Weather: Cloudy Cold 30 F	

Instrument Identification

Purge Method: Bladder Pump	Water Quality Meters: YSI	Turbidity Meter
Measuring Point: TOC	Serial #: 1793	4448
Casing Material:	Screen Interval: N/A	
Casing Diameter:	Pump Intake Depth: Initial: 17 ft bmp Final: 17 ft bmp	
Measured Well Depth: N/A	Purge Time: 11:10 AM to 12:10 PM	
Depth to Water: 7.13 ft bmp	PID Reading: 0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
11:10 AM	0	100	0.0	11.55	11.62	1.007	34.7	10.11	15.90	5.80
11:15 AM	5	100	0.0	8.55	8.66	1.777	93.0	11.30	14.70	6.11
11:20 AM	10	80	0.0	9.37	7.93	1.809	117.7	1.91	17.30	6.11
11:25 AM	15	80	0.3	9.31	7.73	1.849	125.2	1.54	12.10	5.89
11:30 AM	20	100	0.3	8.93	7.62	1.861	133.2	1.06	10.60	6.12
11:35 AM	26	100	0.3	9.05	7.57	1.865	140.0	1.00	4.37	6.05
11:40 AM	30	100	0.5	9.24	7.56	1.867	142.9	0.81	4.10	6.09
11:45 AM	35	100	0.5	9.36	7.55	1.867	144.5	0.71	6.20	6.10
11:50 AM	40	100	0.5	9.41	7.55	1.869	145.8	0.73	5.30	6.11
11:55 AM	45	100	0.5	9.48	7.53	1.867	146.7	0.79	3.70	6.11
12:00 PM	50	100	0.5	9.52	7.53	1.868	147.2	0.86	3.50	6.13
12:05 PM	55	100	0.5	9.71	7.53	1.867	147.5	0.93	4.20	6.14
12:10 PM	60	100	0.8	9.66	7.53	1.868	147.5	0.91	3.40	6.13

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
Metals	125 mL PE	1	HNO3	N/A
SVOCs	1 L AG	1	None	N/A

Comments

General Comments: N/A
Sampling Remarks: good

Technician: Steve Stelter

Signature:



Abbreviations:

AG	amber glass	ft	feet	HCL	hydrochloric acid	mL/min	milliliters per minute	N/A	not available	ppm	parts per million
C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons							SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project:	Lansing-Plant 6	Site Location:	East Lansing, MI	
Project No:	B0064481.0014.00603	Well ID:	MW-14-70	Sample ID: MW-14-70_120514
Sample Date:	12/5/2014	Duplicate:	N/A	Other QC: N/A
Sample Time:	3:05 PM	Weather:	Cloudy Cold 30 F	

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	1793	4448
Casing Material:		Screen Interval:	N/A	
Casing Diameter:		Pump Intake Depth:	Initial: 15 ft bmp Final: 15 ft bmp	
Measured Well Depth:	N/A	Purge Time:	1:20 PM	to 3:10 PM
Depth to Water:	10.49 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
1:20 PM	0	0	0.0	9.65	7.71	0.876	5.3	14.01	48.00	10.22
1:25 PM	5	100	0.3	9.52	7.42	1.578	14.2	1.77	658.00	10.84
1:31 PM	11	100	0.3	9.97	7.40	1.572	16.2	1.33	582.00	10.78
1:35 PM	14	100	0.3	9.83	7.41	1.568	18.2	1.08	1000.00	10.76
1:40 PM	19	100	0.3	9.51	7.41	1.565	20.7	0.84	1000.00	10.83
1:45 PM	24	100	0.3	9.43	7.42	1.561	23.5	0.64	1000.00	10.58
1:50 PM	30	100	0.3	9.67	7.41	1.553	30.8	0.90	251.00	11.03
1:55 PM	34	100	0.5	9.56	7.43	1.556	30.5	0.95	149.00	11.02
2:00 PM	39	100	0.5	9.29	7.43	1.556	31.9	1.51	187.00	11.10
2:05 PM	44	100	0.5	9.01	7.45	1.557	33.2	1.22	79.00	11.03
2:10 PM	49	100	0.5	7.82	7.45	1.562	36.1	0.82	72.00	11.03
2:15 PM	54	100	0.8	7.61	7.45	1.566	36.2	0.79	58.00	11.02
2:20 PM	59	100	0.8	7.55	7.45	1.555	37.1	0.67	39.00	11.02
2:25 PM	64	100	1.0	7.71	7.46	1.553	36.9	0.55	21.00	11.02
2:30 PM	69	100	1.0	7.91	7.47	1.553	37.3	0.55	18.00	11.03
2:35 PM	74	100	1.0	8.06	7.47	1.550	38.1	0.53	21.00	11.03
2:40 PM	79	100	1.0	7.90	7.74	1.555	39.6	0.49	15.00	11.03
2:45 PM	84	100	1.3	7.85	7.47	1.552	40.3	0.49	12.30	11.03
2:50 PM	89	100	1.3	7.73	7.48	1.557	41.1	0.46	13.20	11.03
2:55 PM	95	100	1.5	7.39	7.49	1.559	42.3	0.47	9.20	11.03
3:00 PM	99	100	1.5	7.55	7.49	1.554	42.2	0.44	7.30	11.04
3:05 PM	104	100	1.8	7.95	7.48	1.549	42.2	0.44	8.60	11.03
3:10 PM	109	100	1.8	7.85	7.45	1.552	42.2	0.45	8.20	11.04



Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: clear Odor: No Appearance: turbid

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	1	HCL	N/A
Metals	125 mL PE	1	HNO3	N/A
SVOCs	1 L AG	1	None	N/A

Comments

General Comments: N/A
Sampling Remarks: well good

Technician: Steve Stelter

Signature: 

Abbreviations:

AG	amber glass	ft	feet	HCL	hydrochloric acid	mL/min	milliliters per minute	N/A	not available	ppm	parts per million
C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons							SU	standard units
										TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 6 **Site Location:** East Lansing, MI
Project No: B0064481.0014.00603 **Well ID:** MWBP-10-UST5-6 **Sample ID:** MWBP-10-UST5-6_120814
Sample Date: 12/8/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 10:10 AM **Weather:** Cloudy|Cold 33 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** N/A N/A
Casing Material: PVC sch 40 **Screen Interval:** 28.0 to 38.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 34.0 ft bmp Final: 34.0 ft bmp
Measured Well Depth: N/A **Purge Time:** 9:35 AM to 10:05 AM
Depth to Water: 31.46 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
9:35 AM	0	80	0.1	8.73	6.84	4.308	46.7	1.24	50.60	32.69
9:40 AM	5	80	0.2	7.64	6.82	4.347	45.2	0.88	25.30	31.69
9:45 AM	10	80	0.3	7.24	6.77	4.359	47.1	0.69	16.40	31.69
9:50 AM	15	80	0.4	7.08	6.72	4.355	48.8	0.49	10.40	31.69
9:55 AM	20	80	0.6	7.13	6.75	4.353	48.7	0.43	9.32	31.69
10:00 AM	25	80	0.6	7.10	6.76	4.359	48.8	0.44	9.56	31.69
10:05 AM	30	80	0.7	7.16	6.76	4.370	48.8	0.43	8.35	31.69

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs	40 mL CG	1	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Cadmium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Cliff Walls

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	SU	standard units
ft	feet	HCL	hydrochloric acid							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 6 **Site Location:** East Lansing, MI
Project No: B0064481.0014.00603 **Well ID:** MWBP-11-UST1-4 **Sample ID:** MWBP-11-UST1-4_121214
Sample Date: 12/12/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 10:10 AM **Weather:** Cold|Cloudy 35 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 1329
Casing Material: PVC sch 40 **Screen Interval:** 9.0 to 19.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 10 ft bmp Final: 10 ft bmp
Measured Well Depth: 11.30 ft bmp **Purge Time:** 9:05 AM to 10:05 AM
Depth to Water: 2.89 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
9:15 AM	0	75	0.1	6.25	10.71	0.972	152.2	4.44	73.68	2.89
9:20 AM	5	75	0.2	6.29	10.77	0.966	143.3	4.16	44.50	3.35
9:25 AM	10	50	0.2	6.29	10.79	0.963	138.3	4.10	38.34	3.33
9:30 AM	16	50	0.3	6.36	10.83	0.959	136.0	3.87	39.21	3.33
9:36 AM	21	50	0.3	6.42	10.86	0.958	134.7	3.88	40.88	3.34
9:40 AM	25	50	0.4	6.36	10.89	0.956	133.0	3.80	37.47	3.34
9:46 AM	31	50	20.4	6.37	10.94	0.953	131.8	3.70	40.90	3.33
9:45 AM	31	50	0.5	6.31	10.96	0.952	130.5	3.61	40.20	3.34
9:51 AM	36	50	0.5	6.35	11.02	0.951	128.7	3.54	39.75	3.34
9:56 AM	41	50	0.6	6.44	11.05	0.951	127.6	3.48	39.81	3.34
10:01 AM	47	50	0.6	6.35	11.07	0.952	126.3	3.53	40.36	3.34
10:05 AM	50	50	0.7	6.31	11.07	0.952	123.4	3.65	39.95	3.36

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs	40 mL CG	1	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Cadmium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Brendan O'Leary

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	SU	standard units
ft	feet	HCL	hydrochloric acid							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project:	Lansing-Plant 6	Site Location:	East Lansing, MI	
Project No:	B0064481.0014.00603	Well ID:	MWBP-12A-UST1-4	Sample ID: MWBP-12A-UST1-4_121214
Sample Date:	12/12/2014	Duplicate:	N/A	Other QC: N/A
Sample Time:	10:30 AM	Weather:	Cloudy Cold 35 F	

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	1793	4448
Casing Material:	PVC sch 40	Screen Interval:	28.0 to 38.0 ft bgs	
Casing Diameter:	2 in	Pump Intake Depth:	Initial: 35 ft bmp Final: 35 ft bmp	
Measured Well Depth:	N/A	Purge Time:	8:45 AM	to 10:30 AM
Depth to Water:	30.45 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
8:45 AM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	30.49
9:00 AM	15	80	0.0	10.14	6.68	4.376	-5.3	2.59	374.00	30.62
9:05 AM	20	80	0.3	8.94	6.67	4.336	-5.0	2.41	321.00	30.68
9:10 AM	24	80	0.3	9.03	6.67	4.249	-5.9	1.97	412.00	30.65
9:15 AM	30	80	0.3	9.14	6.68	4.148	-9.1	1.71	417.00	30.70
9:20 AM	34	80	0.3	9.66	6.70	4.065	-17.8	1.22	296.00	30.70
9:25 AM	39	80	0.3	10.20	6.71	3.993	-19.8	1.07	211.00	30.71
9:30 AM	44	80	0.3	10.26	6.71	3.986	-19.8	1.06	147.00	30.71
9:35 AM	49	80	0.3	10.39	6.71	3.968	-22.4	0.95	74.00	30.71
9:40 AM	55	80	0.3	10.48	6.71	3.956	-24.1	0.95	45.00	10.71
9:45 AM	59	80	0.3	10.63	6.71	3.942	-25.1	0.90	32.60	30.71
9:50 AM	65	80	0.5	10.67	6.72	3.941	-25.8	0.89	25.30	30.71
9:55 AM	69	80	0.5	10.72	6.72	3.939	-26.5	0.90	18.00	30.71
10:00 AM	75	80	0.5	10.73	6.72	3.941	-27.3	0.85	21.00	30.70
10:05 AM	79	80	0.5	10.85	6.71	3.933	-27.1	0.88	20.50	30.71
10:10 AM	84	80	0.5	10.87	6.71	3.933	-27.1	0.85	17.00	30.71
10:15 AM	89	80	0.8	10.96	6.72	3.926	-27.1	0.80	11.30	30.71
10:20 AM	95	80	0.8	11.00	6.72	3.929	-27.7	0.78	8.60	30.71
10:25 AM	99	80	0.8	10.88	6.72	3.931	-27.8	0.81	7.30	30.71
10:30 AM	104	80	0.8	10.86	6.72	3.930	-27.1	0.79	7.90	30.71



Low-Flow Groundwater Sampling Log

Collected Sample Condition

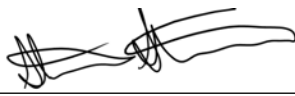
Color: clear Odor: No Appearance: cloudy

Parameter	Container	# of Containers	Preservative	Comments
VOCs	40 mL CG	1	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Canadium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Steve Stelter

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	SU	standard units
ft	feet	HCL	hydrochloric acid							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 6 **Site Location:** East Lansing, MI
Project No: B0064481.0014.00603 **Well ID:** MWBP-12-UST1-4 **Sample ID:** MWBP-12-UST1-4_121214
Sample Date: 12/12/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 9:56 AM **Weather:** Cloudy 32 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 05J2007 4191
Casing Material: PVC sch 40 **Screen Interval:** 15.0 to 25.0 ft bgs
Casing Diameter: 2 in **Pump Intake Depth:** Initial: 9.0 ft bmp Final: 9.0 ft bmp
Measured Well Depth: 11.25 ft bmp **Purge Time:** 9:30 AM to 9:55 AM
Depth to Water: 6.95 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
9:30 AM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	6.95
9:35 AM	5	100	0.1	9.52	6.71	3.139	99.3	1.00	11.70	7.02
9:40 AM	10	100	0.2	9.25	6.67	3.162	52.4	0.78	6.32	7.02
9:45 AM	14	100	0.3	8.15	6.60	3.171	-10.7	0.43	2.64	7.02
9:50 AM	19	100	0.4	8.13	6.60	3.169	-12.9	0.39	2.12	7.02
9:55 AM	24	100	0.5	8.09	6.62	3.169	-16.1	0.39	2.56	7.02

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
VOCs	40 mL CG	1	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Cadmium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Bill Cobern

Signature:

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch 40	polyvinyl chloride 40 Schedule 40
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	SU	standard units
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	TOC	top of casing
ft	feet	HCL	hydrochloric acid								



Low-Flow Groundwater Sampling Log

Project:	Lansing-Plant 6	Site Location:	East Lansing, MI	
Project No:	B0064481.0014.00603	Well ID:	P6-SB-18	Sample ID: P6-SB-18_120814
Sample Date:	12/8/2014	Duplicate:	N/A	Other QC: N/A
Sample Time:	4:55 PM	Weather:	Cloudy Cold 30 F	

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	1793	4448
Casing Material:	PVC sch 40	Screen Interval:	3.0 to 8.0 ft bgs	
Casing Diameter:	2 in	Pump Intake Depth:	Initial: 5 ft bmp Final: 5 ft bmp	
Measured Well Depth:	N/A	Purge Time:	3:37 PM	to 4:55 PM
Depth to Water:	5.42 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
3:37 PM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	5.39
3:40 PM	2	100	0.0	7.11	10.05	0.417	78.5	13.25	58.00	5.69
3:45 PM	7	100	0.0	7.41	9.99	0.415	80.5	7.42	42.90	5.54
3:50 PM	12	100	0.3	7.12	9.89	0.415	84.9	5.95	41.70	5.50
3:55 PM	17	100	0.3	6.71	9.90	0.416	83.9	5.12	30.50	5.51
4:00 PM	22	100	0.3	6.62	9.96	0.414	81.5	4.72	25.30	5.51
4:05 PM	27	100	0.5	6.51	10.04	0.410	77.7	4.41	21.30	5.50
4:10 PM	32	100	0.5	6.50	10.13	0.405	74.4	4.04	17.90	5.51
4:15 PM	37	100	0.5	6.44	10.20	0.401	72.0	3.79	16.70	5.54
4:20 PM	42	100	0.5	6.39	10.28	0.396	69.3	3.59	12.30	5.44
4:25 PM	47	100	0.5	6.40	10.36	0.392	67.0	3.36	11.40	5.44
4:30 PM	52	100	0.8	6.43	10.45	0.390	64.1	3.20	11.30	5.45
4:35 PM	57	100	0.8	6.45	10.53	0.398	61.8	3.01	13.60	5.43
4:40 PM	62	100	0.8	6.41	10.61	0.389	59.8	2.85	11.60	5.47
4:45 PM	67	100	0.8	6.39	10.70	0.390	56.9	2.77	9.40	5.51
4:50 PM	72	100	1.0	6.24	10.75	0.393	56.2	2.68	8.20	5.51
4:55 PM	77	100	1.0	6.35	10.78	0.400	56.2	2.91	8.20	5.52



Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: clear Odor: No Appearance: clear

Parameter	Container	# of Containers	Preservative	Comments
Select Metals: Arsenic, Nickel, Lead, Cadmium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: good

Technician: Steve Stelter

Signature: 

Abbreviations:

C	degrees Celsius	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	TOC	top of casing
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch 40	polyvinyl chloride Schedule 40		
ft	feet	HNO3	nitric acid	mV	millivolts	PE	polyethylene	SU	standard units		
ft bgs	feet below ground surface	mg/L	milligrams per liter								



Low-Flow Groundwater Sampling Log

Project:	Lansing-Plant 6	Site Location:	East Lansing, MI	
Project No:	B0064481.0014.00603	Well ID:	P6-SB-32	Sample ID: P6-SB-32_121114
Sample Date:	12/11/2014	Duplicate:	N/A	Other QC: N/A
Sample Time:	3:40 PM	Weather:	Cloudy Cold 30 F	

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	1793	4448
Casing Material:	PVC sch 40	Screen Interval:	7.0 to 12.0 ft bgs	
Casing Diameter:	2 in	Pump Intake Depth:	Initial: 12 ft bmp Final: 12 ft bmp	
Measured Well Depth:	N/A	Purge Time:	2:27 PM	to 3:40 PM
Depth to Water:	8.52 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
3:40 PM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	7.82
2:30 PM	-71	100	0.0	8.87	7.04	1.948	-71.2	2.25	317.00	8.55
2:35 PM	-66	100	0.0	9.08	6.89	1.948	-67.1	1.16	148.00	9.01
2:40 PM	-61	100	0.3	8.29	6.90	1.961	-65.8	0.88	188.00	9.33
2:45 PM	-56	100	0.3	7.72	6.90	1.962	-64.8	0.59	182.00	9.47
2:50 PM	-51	100	0.3	7.58	6.95	1.958	-64.3	0.36	142.00	9.74
2:55 PM	-46	100	0.3	7.57	6.91	1.959	-64.1	0.34	154.00	9.93
3:00 PM	-41	100	0.3	7.28	6.92	1.961	-63.5	0.25	85.00	10.22
3:05 PM	-36	80	0.5	7.28	6.92	1.962	-63.3	0.27	140.00	10.70
3:10 PM	-31	80	0.5	7.06	6.93	1.966	-63.2	0.32	140.00	10.85
3:15 PM	-26	80	0.8	6.74	6.92	1.964	-61.7	0.37	132.00	11.02
3:20 PM	-21	80	0.8	6.65	6.92	1.960	-60.1	0.40	126.00	11.06
3:25 PM	-16	80	1.0	6.73	6.89	1.952	-59.2	0.40	91.00	11.21
3:30 PM	-11	80	1.0	7.06	6.89	1.943	-59.1	0.46	98.00	11.41
3:35 PM	-5	80	1.0	7.11	6.88	1.940	-58.3	0.49	85.00	11.54
3:40 PM	-1	80	1.0	7.10	6.89	1.936	-56.2	0.47	88.00	10.63



Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: clear Odor: Yes Appearance: cloudy

Parameter	Container	# of Containers	Preservative	Comments
VOCs	40 mL CG	1	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Canadium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: N/A

Technician: Steve Stelter

Signature: 

Abbreviations:

C	degrees Celsius	ft bgs	feet below ground surface	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch	polyvinyl chloride
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	40	Schedule 40
F	degrees Fahrenheit	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	SU	standard units
ft	feet	HCL	hydrochloric acid							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project:	Lansing-Plant 6	Site Location:	East Lansing, MI	
Project No:	B0064481.0014.00603	Well ID:	P6-SB-35	Sample ID: P6-SB-35_120814
Sample Date:	12/8/2014	Duplicate:	N/A	Other QC: N/A
Sample Time:	3:15 PM	Weather:	Cloudy Cold 30 F	

Instrument Identification

Purge Method:	Bladder Pump	Water Quality Meters:	YSI	Turbidity Meter
Measuring Point:	TOC	Serial #:	1793	4448
Casing Material:	Sch. 40 PVC	Screen Interval:	3.0 to 8.0 ft bgs	
Casing Diameter:		Pump Intake Depth:	Initial: 7 ft bmp Final: 7 ft bmp	
Measured Well Depth:	N/A	Purge Time:	2:10 PM	to 3:15 PM
Depth to Water:	4.53 ft bmp	PID Reading:	0.0 ppm	

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
2:10 PM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	3.83
2:10 PM	1	100	0.0	9.06	10.71	0.453	61.0	8.32	69.00	3.89
2:15 PM	5	100	0.0	7.98	10.67	0.436	67.1	4.52	44.00	4.79
2:17 PM	7	100	0.0	7.37	10.63	0.431	72.3	4.21	28.30	4.94
2:20 PM	11	80	0.3	6.93	10.62	0.430	74.4	4.08	14.60	5.02
2:25 PM	15	100	0.3	6.80	10.63	0.426	74.5	4.03	17.10	5.21
2:30 PM	20	80	0.3	6.60	10.64	0.414	75.1	3.92	11.30	5.09
2:35 PM	26	80	0.3	6.52	10.70	0.406	72.5	3.79	8.90	5.11
2:40 PM	30	80	0.3	6.70	10.78	0.400	68.0	3.66	9.10	5.13
2:45 PM	36	80	0.5	6.80	10.80	0.398	66.2	3.71	8.70	5.14
2:50 PM	40	80	0.5	6.95	10.81	0.399	62.7	3.78	7.40	5.17
2:56 PM	46	80	0.8	7.14	10.81	0.399	61.3	3.80	6.20	5.18
3:00 PM	50	80	0.8	7.60	10.80	0.400	58.5	3.72	5.20	5.22
3:05 PM	55	80	0.8	7.80	10.84	0.399	56.2	3.74	5.30	5.21
3:10 PM	60	80	0.8	7.77	10.80	0.397	57.1	3.98	5.00	5.22
3:15 PM	65	80	0.8	7.90	10.80	0.397	53.2	3.78	5.80	5.23



Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: clear Odor: No Appearance: clear

Parameter	Container	# of Containers	Preservative	Comments
Select Metals: Arsenic, Nickel, Lead, Cadmium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: good

Technician: Steve Stelter

Signature: 

Abbreviations:

C	degrees Celsius	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	TOC	top of casing
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC sch 40	polyvinyl chloride Schedule 40		
ft	feet	HNO3	nitric acid	mV	millivolts	PE	polyethylene	SU	standard units		
ft bgs	feet below ground surface	mg/L	milligrams per liter								



Low-Flow Groundwater Sampling Log

Project: Lansing-Plant 6 **Site Location:** East Lansing, MI
Project No: B0064481.0014.00603 **Well ID:** P6-SB-37 **Sample ID:** P6-SB-37_120814
Sample Date: 12/8/2014 **Duplicate:** N/A **Other QC:** N/A
Sample Time: 1:50 PM **Weather:** Cold|Cloudy 30 F

Instrument Identification

Purge Method: Bladder Pump **Water Quality Meters:** YSI Turbidity Meter
Measuring Point: TOC **Serial #:** 1793 4448
Casing Material: Sch. 40 PVC **Screen Interval:** 5.0 to 10.0 ft bgs
Casing Diameter: **Pump Intake Depth:** Initial: 8 ft bmp Final: 8 ft bmp
Measured Well Depth: N/A **Purge Time:** 12:51 PM to 1:50 PM
Depth to Water: 5.83 ft bmp **PID Reading:** 0.0 ppm

Field Parameter Measurements During Purging

Time	Cuml Time (min)	Flow Rate (mL/min)	Cuml Vol Purged (gal)	Temp (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	DO (mg/L)	Turb (NTU)	DTW (ft)
12:51 PM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	5.11
1:00 PM	9	100	0.0	8.43	10.05	0.495	107.6	2.36	42.00	5.37
1:05 PM	14	100	0.0	8.41	10.26	0.499	108.3	4.77	54.00	6.02
1:10 PM	19	100	0.3	8.43	10.42	0.481	102.4	2.67	21.00	6.13
1:15 PM	25	100	0.3	8.20	10.61	0.472	93.1	2.34	21.00	6.62
1:20 PM	29	100	0.3	8.07	10.62	0.468	91.7	2.24	11.90	6.62
1:25 PM	34	100	0.3	7.90	10.62	0.467	89.3	2.12	10.30	6.17
1:30 PM	39	100	0.3	7.84	10.63	0.464	86.1	2.04	7.60	6.73
1:35 PM	44	100	0.5	8.07	10.71	0.462	79.6	1.97	7.30	6.81
1:40 PM	49	100	0.5	8.18	10.71	0.461	77.4	1.93	5.80	6.88
1:45 PM	54	100	0.8	8.34	10.73	0.461	74.2	1.89	5.30	6.93
1:50 PM	60	100	0.8	8.42	10.73	0.462	73.4	2.00	6.10	6.95

Collected Sample Condition

Color: clear **Odor:** No **Appearance:** clear

Parameter	Container	# of Containers	Preservative	Comments
Select Metals: Arsenic, Nickel, Lead, Canadium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: good

Technician: Steve Stelter

Signature:

Abbreviations:

C	degrees Celsius	ft bmp	feet below measuring point	mL/min	milliliters per minute	N/A	not available	ppm	parts per million	TOC	top of casing
F	degrees Fahrenheit	gal	gallons	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	PVC	sch polyvinyl chloride		
ft	feet	HNO3	nitric acid	mV	millivolts	PE	polyethylene	40	Schedule 40		
ft bgs	feet below ground surface	mg/L	milligrams per liter					SU	standard units		