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Subject:
Third 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 third 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 third quarter 2014 gauging and groundwater monitoring activities as part of the on-going Resource Conservation and Recovery Act (RCRA) Corrective Action, between September 15 and September 19, 2014. The activities completed constitute a quarterly monitoring event and included groundwater gauging and sampling of a subset of the Site monitoring wells. All groundwater monitoring activities were completed in accordance with the draft Revised Interim Groundwater Monitoring Work Plan dated August 8, 2014. Monitoring Well locations for Plants 2, 3 & 6 are included on Figures 1, 2 & 3, respectively.

Site Activities

Seventeen new wells were installed in August 2014, to provide a more robust perimeter monitoring network and further assess plume stability. Groundwater elevation measurements were collected on September 15, 2014. Static groundwater elevations were collected from a total of 43 wells. The groundwater elevation measurements are summarized on Table 1. Site-wide groundwater elevation measurements will be collected as part of the semi-annual event scheduled for the first two weeks of December 2014.

Imagine the result

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Between September 15 and September 19, 2014 a total of 43 monitoring wells were sampled 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).

New monitoring wells were also sampled for the following:

- TAL 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.
- Semi-volatile organic compounds (SVOCs) using Method SW8270D

Samples were collected utilizing low-flow groundwater sampling methods using a submersible pump, and were submitted under chain of custody protocol to Merit Laboratories (Merit) located in Lansing, Michigan. Low-flow sampling logs are included as Attachment 1.

Results

The results of the third quarter 2014 event are generally consistent with previous sampling events. Of the 43 wells, two new wells (MW-14-68 and MW-14-69) on Plant 6 could not be sampled at the time of the event because they were dry. These wells were installed within zones of questionable saturation to verify the deeper zones on Plant 6 are not migration zones for 1,4-dioxane.

Analytical results for each well are provided on Table 2. Exceedances of the Part 201 Residential Drinking Water Criteria are illustrated on Figures 1, 2, and 3. Results of the third quarter sampling event are summarized below.

- Volatile organic compounds (VOCs) exceeding Michigan State Department of Environmental Quality (MDEQ) Residential Drinking Water Criteria (RES DW) include 1,4-dioxane, 1,1-dichloroethene, tetrachloroethene, vinyl

chloride, benzene, and ethylbenzene. This is consistent with previous groundwater investigation and monitoring results.

- Metals exceeding MDEQ RES DW include arsenic, manganese, nickel, and vanadium. This is consistent with previous groundwater investigation and monitoring results.

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

- MW-14-58 – A new well located within the perched zone near the western Plant 2 property boundary - 1,4-dioxane was detected at 25 µg/L. This could be associated with the perched plume at Plant 2, or to the Adam's Plating (APC) facility located 400 feet to the northwest. The APC monitoring wells were sampled on October 7th and 8th by the USEPA. A groundwater sample collected from the APC monitoring well MW-12D installed at a similar depth and west of MW-14-58, within the Rosemary Ave right-of-way, contained 1,4-dioxane at a concentration of 12 µg/L.
- MW-14-61 – A new well located within the weathered bedrock zone near bedrock well MW-12-06, east of the Plant 2 LNAPL area - 1,4-dioxane was detected at a concentration of 10 µg/L. This detection could be associated with the lower 1,4-dioxane plume or potentially to the perched groundwater plume (drag down or leakage).
- MW-13-43 – An existing well located within the weathered bedrock along the southern axis of the lower 1,4-dioxane plume - the concentration of 1,4-dioxane during the 3rd quarter was 300 µg/L, higher than previous sampling events. Sampling of hydraulic testing wells (PW-14-01, 02 and 03) in October also indicated concentrations of 1,4-dioxane between 300 and 400 µg/L along the lower 1,4-dioxane plume axis.
- Various metals, primarily arsenic and vanadium, were detected above criteria near the property boundaries at several 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 necessary based on the third quarter 2014 groundwater monitoring data. Monitoring at all these locations will continue per the approved Interim Groundwater Monitoring Plan (revised November 14, 2014) and trends and plume stability will be evaluated over time. A comprehensive annual groundwater monitoring report and updated plume stability assessment will be provided following the first quarter 2015 sampling event as outlined in the approved monitoring plan. Validated laboratory analytical reports will be provided at that time.

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

Sincerely,



Patrick Curry, CPG
Senior Geologist

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Enclosures:

Table 1 – Summary of Groundwater Elevations – September 2014
Table 2 – Summary of Analytical Groundwater Data – September 2014

Figure 1 – Third Quarter 2014 Drinking Water Exceedances Plant 2
Figure 2 – Third Quarter 2014 Drinking Water Exceedances Plant 3
Figure 3 – Third Quarter 2014 Drinking Water Exceedances Plant 6

Attachment 1 – Third Quarter 2014 Groundwater Sampling Logs

Tables

**TABLE 1
SUMMARY OF GROUNDWATER ELEVATION MEASUREMENTS
SEPTEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan**

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								
MW-03(2)	9/15/2014	12	22	876.7	876.79	19.14	9.55	867.15
MW-13-42	9/16/2014	70	75	861.61	860.03	76.81	75.14	786.47
MW-13-43	9/16/2014	72	77	863.82	860.97	79.79	70.96	792.86
MW-13-45	9/15/2014	72	77	863.8	861.54	78.3	69.9	793.90
MW-13-51	9/15/2014	77	87	875.34	872.51	89.83	75.89	799.45
MW-14-54	9/15/2014	12	17	865.21	862.21	19	14.3	850.91
MW-14-55	9/15/2014	13	18	864.17	861.73	20.11	17.97	846.20
MW-14-56	9/15/2014	71	76	863.27	860.56	79	74.96	788.31
MW-14-57	9/15/2014	15	20	863.97	861.10	21.49	13.86	850.11
MW-14-58	9/15/2014	22	27	863.12	860.12	29.95	14.48	848.64
MW-14-59	9/15/2014	12	17	864.61	861.80	19.9	7.7	856.91
MW-14-60	9/15/2014	15	20	864.65	861.80	23.59	12.53	852.12
MW-14-61	9/15/2014	70	75	865.51	862.30	77.54	72.84	792.67
MW-14-62	9/15/2014	12	17	865.17	862.25	19.64	6.32	858.85
MW-14-63	9/18/2014	68	73	854.64	851.68	76.79	71.5	783.14
Plant 3								
MW-13-31	9/15/2014	5	10	861.27	858.36	12.8	10.9	850.37
MW-13-32	9/15/2014	5	10	860.11	857.32	12.63	8.19	851.92
MW-13-33	9/15/2014	12	17	860.71	857.69	19.2	15.24	845.47
MW-13-34	9/17/2014	74	79	853.92	851.82	79.89	69.49	784.43
MW-13-39B	9/15/2014	97	112	860.2	857.33	109.18	68.12	792.08
MW-13-40	9/16/2014	72	77	862.67	859.69	78.91	65.66	797.01
MW-13-41	9/16/2014	77	82	866.38	863.68	84.74	65.97	800.41
MW-13-46	9/16/2014	68	73	854.54	852.12	74.66	67.95	786.59
MW-13-48	9/17/2014	65	70	854.83	852.17	73.06	60.68	794.15
MW-13-49	9/15/2014	73	78	853.01	850.55	81.78	69.18	783.83
MW-14-64	9/17/2014	98.6	103.6	864.56	861.77	106.31	72.76	791.80
MW-14-65	9/17/2014	5	10	866.34	863.71	13.24	6.5	859.84
UNK-09	9/15/2014	11	16	859.42	860.02	15.26	4.93	854.49
Plant 6								
MW-03-01	9/15/2014	28	33	861.37	861.88	33.32	23.65	837.72
MW-03-08	9/19/2014	35	45	869.03	869.387	44.92	33.82	835.21
MW-04-04R	9/15/2014	82	110	873.31	870.64	111.12	81.21	792.1
MW-04-06R	9/15/2014	74	99.5	861.56	858.59	78.11	70.52	791.04
MW-12-12	9/15/2014	13	18	874.34	874.61	17.24	7.36	866.98
MW-13-35	9/15/2014	25	30	864.81	865.23	29.51	24.31	840.5
MW-13-36R	9/15/2014	5.5	10.5	878.04	875.28	12.97	5.02	873.02
MW-13-52	9/15/2014	70	80	872.5	869.84	81.65	71.38	801.12
MW-13-53	9/15/2014	73	83	875.56	873.1	85.5	78.08	797.48
MW-14-66	9/15/2014	14	19	877.85	874.73	22.24	5.51	872.341
MW-14-67	9/16/2014	13	18	877.76	875.07	20.9	5	872.759
MW-14-68	9/15/2014	36	41	878.44	875.42	44.09	dry	dry
MW-14-69	9/15/2014	41	46	883.62	880.72	46	dry	dry
MW-14-70	9/16/2014	16	21	882.79	880.08	23.34	10.51	872.276
P6-SB-32	9/15/2014	7	12	877.79	873.793	16.47	8.12	869.67

Note:

NS - not surveyed
ft bgs - feet below ground surface
ft toc - feet below top of casing
ft msl - feet above mean sea level
-- not calculated

Table 2
SUMMARY OF 3rd QUARTER 2014 GROUNDWATER ANALYTICAL DATA
SEPTEMBER 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)	MI GW (DEQ2013) Non-Res GWVI ^(h)	MW-03(2) 09/17/14 MW-03(2)_091714	MW-03-01 09/16/14 MW-03-01_091614	MW-03-08 09/19/14 MW-03-08_091914	MW-04-04R 09/17/14 MW-04-04R_091714	MW-04-06R 09/16/14 MW-04-06R_091614	MW-12-12 09/17/14 MW-12-12_091714	MW-13-31 09/17/14 MW-13-31_091714	MW-13-32 09/18/14 MW-13-32_091814
Field												
Conductance, specific	mS/cm	--	--	--	7.418	14.71	1.743	NA	3.801	NA	0.995	1.721
Dissolved oxygen (DO), field	mg/L	--	--	--	0.40	0.30	0.55	NA	0.21	NA	0.11	0.69
Oxidation reduction potential (ORP), field	millivolts	--	--	--	77.8	0.30	-95.70	NA	-120.70	NA	55.3	25.7
pH	s.u.	--	--	--	6.66	6.70	7.34	NA	7.10	NA	6.92	6.65
Temperature, field	Deg C	--	--	--	16.72	17.44	18.75	NA	18.11	NA	16.95	24.76
Turbidity (field)	NTU	--	--	--	8.62	5.7	242	NA	21.6	NA	2.65	31.0
Volatile Organics												
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	0.2	--	--	<0.2	<0.2 [<0.2]	<0.2	NA	NA	<0.2	NA	NA
1,2-Dibromoethane (Ethylene dibromide)	ug/L	0.05	5.7	16	<0.05	<0.05 [<0.05]	<0.05	NA	NA	<0.05	NA	NA
1,2-Dichlorobenzene	ug/L	600	13	32000	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
1,4-Dichlorobenzene	ug/L	75	17	380	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
1,4-Dioxane	ug/L	8.5	2,800	--	NA	<5 [<5]	<5	NA	NA	<5	NA	NA
1,1,1-Trichloroethane	ug/L	200	89	71000	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
2-Hexanone	ug/L	1,000	--	67000	<10	<10 [<10]	<10	NA	NA	<10	NA	NA
1,1,2,2-Tetrachloroethane	ug/L	8.5	78	300	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Acetone	ug/L	730	1,700	34000000	<10	<10 [<10]	<10	NA	NA	<10	NA	NA
1,1,2-Trichloroethane	ug/L	5	330	480	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Bromodichloromethane	ug/L	80	--	170	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
1,1-Dichloroethane	ug/L	880	740	18000	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Bromoform	ug/L	80	--	11000	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
1,1-Dichloroethene	ug/L	7	130	1600	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Bromomethane (Methyl bromide)	ug/L	10	35	140	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
1,2-Dichloroethane	ug/L	5	360	210	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Carbon disulfide	ug/L	800	--	9900	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Carbon tetrachloride	ug/L	5	45	38	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
cis-1,2-Dichloroethene	ug/L	70	620	350	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Chlorobenzene	ug/L	100	25	4600	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
trans-1,2-Dichloroethene	ug/L	100	1,500	1500	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Chloroform (Trichloromethane)	ug/L	80	350	720	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Trichloroethene	ug/L	5	200	41	<1	<1 [<1]	2	NA	NA	<1	NA	NA
Chloromethane (Methyl chloride)	ug/L	260	--	1100	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Tetrachloroethene	ug/L	5	60	460	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
cis-1,3-Dichloropropene	ug/L	--	--	--	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Vinyl chloride	ug/L	2	13	52	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Chloroethane	ug/L	430	1,100	180000	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Dichlorodifluoromethane (CFC-12)	ug/L	1,700	--	29000	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Benzene	ug/L	5	200	140	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Methyl acetate	ug/L	--	--	--	<10	<10 [<10]	<10	NA	NA	<10	NA	NA
Ethylbenzene	ug/L	74	18	2600	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Methylene chloride	ug/L	5	1,500	4200	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Styrene	ug/L	100	80	4100	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Toluene	ug/L	790	270	150000	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
trans-1,3-Dichloropropene	ug/L	--	--	--	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Methyl tert butyl ether (MTBE)	ug/L	40	7,100	1000000	5	<1 [<1]	<1	NA	NA	<1	NA	NA
Trichlorofluoromethane (CFC-11)	ug/L	2,600	--	120000	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Trifluorotrchloroethane (Freon 113)	ug/L	170,000	32	--	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	13,000	2,200	18000000	<10	<10 [<10]	<10	NA	NA	<10	NA	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	1,800	--	4400000	<10	<10 [<10]	<10	NA	NA	<10	NA	NA
1,2,4-Trichlorobenzene	ug/L	70	99	570	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
1,2-Dichloropropane	ug/L	5	230	290	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
1,3-Dichlorobenzene	ug/L	6.6	28	230	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Cyclohexane	ug/L	--	--	8100	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Methyl cyclohexane	ug/L	--	--	--	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Dibromochloromethane	ug/L	80	--	330	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
Isopropyl benzene	ug/L	800	28	53	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
o-Xylene	ug/L	--	--	--	<1	<1 [<1]	<1	NA	NA	<1	NA	NA
m&p-Xylene	ug/L	--	--	--	<2	<2 [<2]	<2	NA	NA	<2	NA	NA

Table 2
 SUMMARY OF 3rd QUARTER 2014 GROUNDWATER ANALYTICAL DATA
 SEPTEMBER 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)	MI GW (DEQ2013) Non-Res GWVI ^(h)	MW-03(2) 09/17/14 MW-03(2)_091714	MW-03-01 09/16/14 MW-03-01_091614	MW-03-08 09/19/14 MW-03-08_091914	MW-04-04R 09/17/14 MW-04-04R_091714	MW-04-06R 09/16/14 MW-04-06R_091614	MW-12-12 09/17/14 MW-12-12_091714	MW-13-31 09/17/14 MW-13-31_091714	MW-13-32 09/18/14 MW-13-32_091814
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	120	5	--	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/L	73	11	--	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/L	730	--	--	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/L	370	380	--	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	7.7	--	--	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	1,800	--	--	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/L	45	18	330000	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	ug/L	260	19	3900	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	20	--	--	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	1.1	0.3	--	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ug/L	520	11	1200	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	150	7.4	--	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	43	--	3700000	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	ug/L	1,300	38	230000	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	ug/L	52	--	62000	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/L	1,500	--	9600000	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/L	3	7.3	--	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/L	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	ug/L	2.1	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	ug/L	5	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	ug/L	1.5	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	ug/L	1	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	ug/L	1	--	--	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	2	1	1100	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
Butyl benzylphthalate (BBP)	ug/L	1,200	67	--	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/L	5,800	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/L	85	10	--	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	ug/L	1.6	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	ug/L	2	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/L	--	4	96	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	ug/L	5,500	110	--	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/L	73,000	--	--	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
Di-n-octyl phthalate (DnOP)	ug/L	130	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	ug/L	210	1.6	--	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	ug/L	880	12	300000	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	ug/L	1	0.2	8	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/L	15	0.053	28	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/L	50	--	50	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/L	7.3	6.7	180	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
Isophorone	ug/L	770	1,300	--	NA	NA	NA	NA	NA	NA	NA	NA

Table 2
SUMMARY OF 3rd QUARTER 2014 GROUNDWATER ANALYTICAL DATA
SEPTEMBER 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)	MI GW (DEQ2013) Non-Res GWVI ^(h)	MW-03(2) 09/17/14 MW-03(2)_091714	MW-03-01 09/16/14 MW-03-01_091614	MW-03-08 09/19/14 MW-03-08_091914	MW-04-04R 09/17/14 MW-04-04R_091714	MW-04-06R 09/16/14 MW-04-06R_091614	MW-12-12 09/17/14 MW-12-12_091714	MW-13-31 09/17/14 MW-13-31_091714	MW-13-32 09/18/14 MW-13-32_091814
Nitrobenzene	ug/L	3.4	180	6600	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/L	5	--	--	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	ug/L	270	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/L	1	2.8	--	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	ug/L	52	2	480	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	ug/L	4,400	450	--	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	ug/L	140	--	1700000	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics												
Iron	mg/L	0.3	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/L	0.006	0.13	--	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/L	0.01	0.01	--	0.015 ^{ab}	0.033 [0.035] ^{ab}	NA	0.020 ^{ab}	0.021 ^{ab}	0.003	<0.002	<0.002
Barium	mg/L	2	1.2	--	NA	NA	NA	NA	NA	NA	NA	NA
Boron	mg/L	0.5	7.2	--	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/L	0.005	0.0045	--	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/L	--	0.16	--	0.005	0.008 [0.008]	NA	<0.005	0.009	0.010	<0.005	0.247 ^b
Cobalt	mg/L	0.04	0.1	--	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/L	1	0.02	--	<0.005	<0.005 [<0.005]	NA	<0.005	<0.005	0.005	0.006	0.018
Lead	mg/L	0.004	0.044	--	<0.003	0.004 [<0.003]	NA	<0.003	<0.003	<0.003	<0.003	<0.003
Manganese	mg/L	0.05	4.5	--	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/L	0.002	0.000013	--	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	mg/L	0.1	0.12	--	0.043	0.028 [0.025]	NA	<0.005	0.016	0.090	0.042	1.78 ^{ab}
Selenium	mg/L	0.05	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Silver	mg/L	0.034	0.0002	--	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/L	0.0045	0.027	--	0.015 ^a	<0.004 [<0.004]	NA	<0.004	<0.004	<0.004	<0.004	0.004
Zinc	mg/L	2.4	0.26	--	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered												
Iron (dissolved)	mg/L	0.3	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Antimony (dissolved)	mg/L	0.006	0.13	--	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic (dissolved)	mg/L	0.01	0.01	--	NA	NA	NA	NA	0.021 ^{ab}	0.002	NA	<0.002
Barium (dissolved)	mg/L	2	1.2	--	NA	NA	NA	NA	NA	NA	NA	NA
Boron	mg/L	0.5	7.2	--	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium (dissolved)	mg/L	0.005	0.0045	--	NA	NA	NA	NA	NA	NA	NA	NA
Chromium Total	mg/L	--	0.16	--	NA	NA	NA	NA	0.007	0.009	NA	<0.005
Cobalt (dissolved)	mg/L	0.04	0.1	--	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	mg/L	1	0.02	--	NA	NA	NA	NA	<0.005	<0.005	NA	0.009
Lead (dissolved)	mg/L	0.004	0.044	--	NA	NA	NA	NA	<0.003	<0.003	NA	<0.003
Manganese (dissolved)	mg/L	0.05	4.5	--	NA	NA	NA	NA	NA	NA	NA	NA
Mercury (dissolved)	mg/L	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	mg/L	0.1	0.12	--	NA	NA	NA	NA	0.015	0.093	NA	1.87 ^{ab}
Selenium (dissolved)	mg/L	0.05	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Silver (dissolved)	mg/L	0.034	0.0002	--	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	mg/L	0.0045	0.027	--	NA	NA	NA	NA	<0.004	<0.004	NA	<0.004
Zinc (dissolved)	mg/L	2.4	0.26	--	NA	NA	NA	NA	NA	NA	NA	NA

Table 2
SUMMARY OF 3rd QUARTER 2014 GROUNDWATER ANALYTICAL DATA
SEPTEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:	Units	MW-13-33 09/17/14 MW-13-33_091714	MW-13-34 09/17/14 MW-13-34_091714	MW-13-35 09/16/14 MW-13-35_091614	MW-13-36R 09/17/14 MW-13-36R_091714	MW-13-39B 09/16/14 MW-13-39B_091614	MW-13-40 09/16/14 MW-13-40_091614	MW-13-41 09/16/14 MW-13-41_091614	MW-13-42 09/18/14 MW-13-42_091814	MW-13-43 09/17/14 MW-13-43_091714	MW-13-45 09/16/14 MW-13-45_091614
Field											
Conductance, specific	mS/cm	0.668	2.136	2.077	NA	1.075	6.601	5.663	NA	2.212	1.442
Dissolved oxygen (DO), field	mg/L	0.58	0.58	0.15	NA	0.18	1.01	0.42	NA	0.35	0.91
Oxidation reduction potential (ORP), field	millivolts	92.7	-61.00	-37.50	NA	-145.50	-13.60	-62.00	NA	-46.30	-78.10
pH	s.u.	6.85	6.83	6.84	NA	7.30	7.14	7.02	NA	6.96	7.15
Temperature, field	Deg C	15.51	16.51	15.37	NA	13.93	18.43	15.78	NA	17.15	14.93
Turbidity (field)	NTU	25.0	333	7.2	NA	26.9	156	9.81	NA	0.05	1.24
Volatile Organics											
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	NA	<0.2	NA	NA	NA	<0.2	<0.2	<0.2	<1 Y	<0.2 [<0.2]
1,2-Dibromoethane (Ethylene dibromide)	ug/L	NA	<0.05	NA	NA	NA	<0.05	<0.05	<0.05	<0.3 Y	<0.05 [<0.05]
1,2-Dichlorobenzene	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
1,4-Dichlorobenzene	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
1,4-Dioxane	ug/L	NA	51 ^a	NA	NA	NA	<5	11 ^a	9 ^a	300 Y ^a	32 [33] ^a
1,1,1-Trichloroethane	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
2-Hexanone	ug/L	NA	<10	NA	NA	NA	<10	<10	<10	<10	<10 [<10]
1,1,2,2-Tetrachloroethane	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Acetone	ug/L	NA	<10	NA	NA	NA	<10	<10	<10	<10	<10 [<10]
1,1,2-Trichloroethane	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Bromodichloromethane	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
1,1-Dichloroethane	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Bromoform	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
1,1-Dichloroethene	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Bromomethane (Methyl bromide)	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
1,2-Dichloroethane	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Carbon disulfide	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Carbon tetrachloride	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
cis-1,2-Dichloroethene	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Chlorobenzene	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
trans-1,2-Dichloroethene	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Chloroform (Trichloromethane)	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Trichloroethene	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Chloromethane (Methyl chloride)	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Tetrachloroethene	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
cis-1,3-Dichloropropene	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Vinyl chloride	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Chloroethane	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Dichlorodifluoromethane (CFC-12)	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Benzene	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Methyl acetate	ug/L	NA	<10	NA	NA	NA	<10	<10	<10	<10	<10 [<10]
Ethylbenzene	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Methylene chloride	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Styrene	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Toluene	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
trans-1,3-Dichloropropene	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Methyl tert butyl ether (MTBE)	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Trichlorofluoromethane (CFC-11)	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Trifluorotrchloroethane (Freon 113)	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	NA	<10	NA	NA	NA	<10	<10	<10	<10	<10 [<10]
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	NA	<10	NA	NA	NA	<10	<10	<10	<10	<10 [<10]
1,2,4-Trichlorobenzene	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
1,2-Dichloropropane	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
1,3-Dichlorobenzene	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Cyclohexane	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Methyl cyclohexane	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Dibromochloromethane	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
Isopropyl benzene	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
o-Xylene	ug/L	NA	<1	NA	NA	NA	<1	<1	<1	<1	<1 [<1]
m&p-Xylene	ug/L	NA	<2	NA	NA	NA	<2	<2	<2	<2	<2 [<2]

Table 2
SUMMARY OF 3rd QUARTER 2014 GROUNDWATER ANALYTICAL DATA
SEPTEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:	Units	MW-13-33 09/17/14 MW-13-33_091714	MW-13-34 09/17/14 MW-13-34_091714	MW-13-35 09/16/14 MW-13-35_091614	MW-13-36R 09/17/14 MW-13-36R_091714	MW-13-39B 09/16/14 MW-13-39B_091614	MW-13-40 09/16/14 MW-13-40_091614	MW-13-41 09/16/14 MW-13-41_091614	MW-13-42 09/18/14 MW-13-42_091814	MW-13-43 09/17/14 MW-13-43_091714	MW-13-45 09/16/14 MW-13-45_091614
Semivolatile Organics											
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	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
2,4-Dichlorophenol	ug/L	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
2,4-Dimethylphenol	ug/L	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
2,4-Dinitrotoluene	ug/L	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
2-Chloronaphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/L	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
3,3'-Dichlorobenzidine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/L	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
4-Bromophenyl phenyl ether	ug/L	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
4-Chloroaniline	ug/L	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
4-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/L	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
Benzo(a)pyrene	ug/L	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
Benzo(g,h,i)perylene	ug/L	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
Biphenyl (1,1-Biphenyl)	ug/L	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
bis(2-Chloroethyl)ether	ug/L	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
Butyl benzylphthalate (BBP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	ug/L	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
Dibenzofuran	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/L	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
Di-n-octyl phthalate (DnOP)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/L	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
Isophorone	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 2
 SUMMARY OF 3rd QUARTER 2014 GROUNDWATER ANALYTICAL DATA
 SEPTEMBER 2014
 RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:	Units	MW-13-33 09/17/14 MW-13-33_091714	MW-13-34 09/17/14 MW-13-34_091714	MW-13-35 09/16/14 MW-13-35_091614	MW-13-36R 09/17/14 MW-13-36R_091714	MW-13-39B 09/16/14 MW-13-39B_091614	MW-13-40 09/16/14 MW-13-40_091614	MW-13-41 09/16/14 MW-13-41_091614	MW-13-42 09/18/14 MW-13-42_091814	MW-13-43 09/17/14 MW-13-43_091714	MW-13-45 09/16/14 MW-13-45_091614
Nitrobenzene	ug/L	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
N-Nitrosodiphenylamine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics											
Iron	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/L	<0.002 [<0.002]	NA	0.004	0.002	0.003	0.024^{ab}	0.019^{ab}	NA	NA	NA
Barium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Boron	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/L	<0.005 [<0.005]	NA	0.008	<0.005	<0.005	0.010	0.006	NA	NA	NA
Cobalt	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/L	0.007 [0.006]	NA	<0.005	0.013	<0.005	0.007	<0.005	NA	NA	NA
Lead	mg/L	<0.003 [<0.003]	NA	<0.003	<0.003	<0.003	0.003	0.003	NA	NA	NA
Manganese	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	mg/L	0.009 [0.009]	NA	0.009	0.008	0.006	0.026	0.029	NA	NA	NA
Selenium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/L	<0.004 [0.005]	NA	0.007^a	0.015^a	<0.004	<0.004	<0.004	NA	NA	NA
Zinc	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered											
Iron (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic (dissolved)	mg/L	<0.002 [<0.002]	NA	NA	NA	0.003	0.022^{ab}	NA	NA	NA	NA
Barium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Boron	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium Total	mg/L	<0.005 [<0.005]	NA	NA	NA	<0.005	0.008	NA	NA	NA	NA
Cobalt (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	mg/L	<0.005 [<0.005]	NA	NA	NA	<0.005	<0.005	NA	NA	NA	NA
Lead (dissolved)	mg/L	<0.003 [<0.003]	NA	NA	NA	<0.003	<0.003	NA	NA	NA	NA
Manganese (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	mg/L	0.006 [0.006]	NA	NA	NA	0.006	0.026	NA	NA	NA	NA
Selenium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	mg/L	<0.004 [<0.004]	NA	NA	NA	<0.004	<0.004	NA	NA	NA	NA
Zinc (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 2
 SUMMARY OF 3rd QUARTER 2014 GROUNDWATER ANALYTICAL DATA
 SEPTEMBER 2014
 RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:	Units	MW-13-46 09/16/14 MW-13-46_091614	MW-13-48 09/17/14 MW-13-48_091714	MW-13-49 09/16/14 MW-13-49_091614	MW-13-51 09/16/14 MW-13-51_091614	MW-13-52 09/16/14 MW-13-52_091614	MW-13-53 09/17/14 MW-13-53_091714	MW-14-54 09/19/14 MW-14-54_091914	MW-14-55 09/18/14 MW-14-55_091814	MW-14-56 09/18/14 MW-14-56_091814	MW-14-57 09/19/14 MW-14-57_091914	MW-14-58 09/17/14 MW-14-58_091714
Field												
Conductance, specific	mS/cm	1.880	2.338	1.396	1.424	1.183	1.065	2.434	3.126	4.831	1.268	5.706
Dissolved oxygen (DO), field	mg/L	0.95	0.36	0.21	0.8	1.50	1.75	0.36	1.56	4.91	0.21	0.33
Oxidation reduction potential (ORP), field	millivolts	-24.50	-55.90	-61.20	-43.20	-53.20	-16.90	-77.00	-6.20	81.5	-23.50	-75.20
pH	s.u.	6.64	6.70	7.03	6.85	6.99	6.89	8.20	7.09	6.77	7.15	6.60
Temperature, field	Deg C	20.24	18.66	16.09	16.92	16.07	12.78	20.03	16.84	16.48	17.33	17.37
Turbidity (field)	NTU	96.6	9.92	9.92	21.98	57.35	18.53	2.57	40.2	43.25	2.57	5.60
Volatile Organics												
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	<0.2 [<0.2]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dibromoethane (Ethylene dibromide)	ug/L	<0.05 [<0.05]	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
1,4-Dichlorobenzene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
1,4-Dioxane	ug/L	<5 [<5]	76^a	<5	<5	<5	<5	<5	<5	6	<5	25^a
1,1,1-Trichloroethane	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	11	<1
2-Hexanone	ug/L	<10 [<10]	<10	<10	<10	<10	<10	<200 Y	<50 Y	<10	<10	<10
1,1,1,2-Tetrachloroethane	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Acetone	ug/L	<10 [<10]	<10	<10	<10	<10	<10	<200 Y	<50 Y	<10	<10	<10
1,1,2-Trichloroethane	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Bromodichloromethane	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
1,1-Dichloroethane	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	2	<1
Bromoform	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
1,1-Dichloroethene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Bromomethane (Methyl bromide)	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
1,2-Dichloroethane	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Carbon disulfide	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Carbon tetrachloride	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Chlorobenzene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Chloroform (Trichloromethane)	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Trichloroethene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Chloromethane (Methyl chloride)	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Tetrachloroethene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	201 Y^{ab}	<1	<1	<1
cis-1,3-Dichloropropene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Vinyl chloride	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Chloroethane	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Dichlorodifluoromethane (CFC-12)	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Benzene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	600 Y^{abh}	<5 Y	<1	<1	<1
Methyl acetate	ug/L	<10 [<10]	<10	<10	<10	<10	<10	<200 Y	<50 Y	<10	<10	<10
Ethylbenzene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	990 Y^{ab}	<5 Y	<1	<1	<1
Methylene chloride	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Styrene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Toluene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	190 Y	<5 Y	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Methyl tert butyl ether (MTBE)	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Trichlorofluoromethane (CFC-11)	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Trifluorotrichloroethane (Freon 113)	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	<10 [<10]	<10	<10	<10	<10	<10	<200 Y	<50 Y	<10	<10	<10
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	<10 [<10]	<10	<10	<10	<10	<10	<200 Y	<50 Y	<10	<10	<10
1,2,4-Trichlorobenzene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
1,2-Dichloropropane	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Cyclohexane	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Methyl cyclohexane	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Dibromochloromethane	ug/L	<1 [<1]	<1	<1	<1	<1	<1	<20 Y	<5 Y	<1	<1	<1
Isopropyl benzene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	40 Y^b	<5 Y	<1	<1	<1
o-Xylene	ug/L	<1 [<1]	<1	<1	<1	<1	<1	50 Y	<5 Y	<1	<1	<1
m&p-Xylene	ug/L	<2 [<2]	<2	<2	<2	<2	<2	680 Y	<10 Y	<2	<2	<2

Table 2
SUMMARY OF 3rd QUARTER 2014 GROUNDWATER ANALYTICAL DATA
SEPTEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:	Units	MW-13-46 09/16/14 MW-13-46_091614	MW-13-48 09/17/14 MW-13-48_091714	MW-13-49 09/16/14 MW-13-49_091614	MW-13-51 09/16/14 MW-13-51_091614	MW-13-52 09/16/14 MW-13-52_091614	MW-13-53 09/17/14 MW-13-53_091714	MW-14-54 09/19/14 MW-14-54_091914	MW-14-55 09/18/14 MW-14-55_091814	MW-14-56 09/18/14 MW-14-56_091814	MW-14-57 09/19/14 MW-14-57_091914	MW-14-58 09/17/14 MW-14-58_091714
Semivolatile Organics												
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
2,4,6-Trichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
2,4-Dichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
2,4,5-Trichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
2,4-Dimethylphenol	ug/L	NA	NA	NA	NA	NA	NA	2	<1	<1	<1	<1
2,4-Dinitrophenol	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
2,4-Dinitrotoluene	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
2,6-Dinitrotoluene	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
2-Chloronaphthalene	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
2-Chlorophenol	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
2-Methylnaphthalene	ug/L	NA	NA	NA	NA	NA	NA	4	<1	<1	<1	<1
2-Methylphenol	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
2-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
2-Nitrophenol	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
3&4-Methylphenol	ug/L	NA	NA	NA	NA	NA	NA	2	<1	<1	<1	<1
3,3'-Dichlorobenzidine	ug/L	NA	NA	NA	NA	NA	NA	<0.3	<0.3	<0.3	<0.3	<0.3
Naphthalene	ug/L	NA	NA	NA	NA	NA	NA	44 ^b	<1	<1	<1	<1
3-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
4,6-Dinitro-2-methylphenol	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
4-Bromophenyl phenyl ether	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
4-Chloro-3-methylphenol	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
4-Chloroaniline	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
4-Chlorophenyl phenyl ether	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
4-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
4-Nitrophenol	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Anthracene	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Acenaphthene	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Acenaphthylene	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Acetophenone	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Atrazine	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Benzaldehyde	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Benzo(a)anthracene	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Benzo(a)pyrene	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Benzo(b)fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Benzo(k)fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Biphenyl (1,1-Biphenyl)	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
bis(2-Chloroethoxy)methane	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
bis(2-Chloroethyl)ether	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	2 B	<1	2 B
Butyl benzylphthalate (BBP)	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Caprolactam	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Carbazole	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Chrysene	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Dibenz(a,h)anthracene	ug/L	NA	NA	NA	NA	NA	NA	<2	<2	<2	<2	<2
Dibenzofuran	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Diethyl phthalate	ug/L	NA	NA	NA	NA	NA	NA	<1	3 B	4 B	<1	3 B
Dimethyl phthalate	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Di-n-butylphthalate (DBP)	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Di-n-octyl phthalate (DnOP)	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Fluorene	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Hexachlorobenzene	ug/L	NA	NA	NA	NA	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.2
Hexachlorobutadiene	ug/L	NA	NA	NA	NA	NA	NA	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorocyclopentadiene	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Hexachloroethane	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Indeno(1,2,3-cd)pyrene	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Isophorone	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1

Table 2
 SUMMARY OF 3rd QUARTER 2014 GROUNDWATER ANALYTICAL DATA
 SEPTEMBER 2014
 RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:	Units	MW-13-46 09/16/14 MW-13-46_091614	MW-13-48 09/17/14 MW-13-48_091714	MW-13-49 09/16/14 MW-13-49_091614	MW-13-51 09/16/14 MW-13-51_091614	MW-13-52 09/16/14 MW-13-52_091614	MW-13-53 09/17/14 MW-13-53_091714	MW-14-54 09/19/14 MW-14-54_091914	MW-14-55 09/18/14 MW-14-55_091814	MW-14-56 09/18/14 MW-14-56_091814	MW-14-57 09/19/14 MW-14-57_091914	MW-14-58 09/17/14 MW-14-58_091714
Nitrobenzene	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
N-Nitrosodi-n-propylamine	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
N-Nitrosodiphenylamine	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Pentachlorophenol	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Phenanthrene	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Phenol	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Pyrene	ug/L	NA	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1
Inorganics												
Iron	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/L	NA	NA	NA	NA	NA	NA	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic	mg/L	NA	NA	NA	NA	NA	NA	0.004	0.008	0.007	<0.002	0.011^{ab}
Barium	mg/L	NA	NA	NA	NA	NA	NA	0.023	0.327	0.035	0.034	0.140
Boron	mg/L	NA	NA	NA	NA	NA	NA	0.10	0.05	0.09	0.27	0.10
Cadmium	mg/L	NA	NA	NA	NA	NA	NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Chromium	mg/L	NA	NA	NA	NA	NA	NA	<0.005	<0.005	0.008	<0.005	<0.005
Cobalt	mg/L	NA	NA	NA	NA	NA	NA	<0.005	<0.005	0.005	<0.005	<0.005
Copper	mg/L	NA	NA	NA	NA	NA	NA	<0.005	<0.005	0.014	<0.005	<0.005
Lead	mg/L	NA	NA	NA	NA	NA	NA	<0.003	<0.003	<0.003	<0.003	<0.003
Manganese	mg/L	NA	NA	NA	NA	NA	NA	0.027	2.30^a	0.226^a	0.109^a	1.01^a
Mercury	mg/L	NA	NA	NA	NA	NA	NA	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nickel	mg/L	NA	NA	NA	NA	NA	NA	<0.005	0.035	0.053	0.013	0.019
Selenium	mg/L	NA	NA	NA	NA	NA	NA	<0.005	0.005	<0.005	<0.005	<0.005
Silver	mg/L	NA	NA	NA	NA	NA	NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Vanadium	mg/L	NA	NA	NA	NA	NA	NA	0.005^a	0.009^a	0.008^a	<0.004	0.011^a
Zinc	mg/L	NA	NA	NA	NA	NA	NA	<0.005	<0.005	0.019	<0.005	<0.005
Inorganics-Filtered												
Iron (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	<0.005	<0.005	NA	NA
Arsenic (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	0.006	0.006	NA	NA
Barium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	0.252	0.029	NA	NA
Boron	mg/L	NA	NA	NA	NA	NA	NA	NA	0.05	0.09	NA	NA
Cadmium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	<0.0005	<0.0005	NA	NA
Chromium Total	mg/L	NA	NA	NA	NA	NA	NA	NA	<0.005	<0.005	NA	NA
Cobalt (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	<0.005	0.005	NA	NA
Copper (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	<0.005	0.009	NA	NA
Lead (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	<0.003	<0.003	NA	NA
Manganese (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	1.85^a	0.217^a	NA	NA
Mercury (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	<0.0002	<0.0002	NA	NA
Nickel (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	0.027	0.051	NA	NA
Selenium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	<0.005	<0.005	NA	NA
Silver (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	<0.0005	<0.0005	NA	NA
Vanadium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	0.008^a	0.007^a	NA	NA
Zinc (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	0.016	0.016	NA	NA

Table 2
 SUMMARY OF 3rd QUARTER 2014 GROUNDWATER ANALYTICAL DATA
 SEPTEMBER 2014
 RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:	Units	MW-14-59 09/18/14 MW-14-59_091814	MW-14-60 09/19/14 MW-14-60_091914	MW-14-61 09/19/14 MW-14-61_091914	MW-14-62 09/19/14 MW-14-62_091914	MW-14-63 09/18/14 MW-14-63_091814	MW-14-64 09/17/14 MW-14-64_091714	MW-14-65 09/17/14 MW-14-65_091714	MW-14-66 09/18/14 MW-14-66_091814	MW-14-67 09/18/14 MW-14-67_091814	MW-14-68 09/15/14 Dry	MW-14-69 09/15/14 Dry
Field												
Conductance, specific	mS/cm	1.157	1.159	1.231	1.256	1.207	1.023	1.068	1.179	NA	NA	NA
Dissolved oxygen (DO), field	mg/L	0.36	0.21	0.56	0.26	0.69	0.50	1.89	0.12	NA	NA	NA
Oxidation reduction potential (ORP), field	millivolts	-87.30	-103.90	-63.70	-279.30	-85.40	-57.00	-31.90	-48.80	NA	NA	NA
pH	s.u.	7.07	7.47	7.03	11.85	7.21	6.98	7.03	7.29	NA	NA	NA
Temperature, field	Deg C	16.00	15.49	15.01	18.82	18.57	17.31	19.55	16.53	NA	NA	NA
Turbidity (field)	NTU	7.97	9.35	1.89	0	112	9.79	844	3.1	NA	NA	NA
Volatile Organics												
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	<1 Y	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA
1,2-Dibromoethane (Ethylene dibromide)	ug/L	<0.3 Y	<0.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	NA	NA
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
1,4-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
1,4-Dioxane	ug/L	270 Y ^a	200 Y ^a	10 ^a	58 ^a	<5	<5	<5	<5	<5	NA	NA
1,1,1-Trichloroethane	ug/L	1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA	NA
1,1,1,2-Tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Acetone	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA	NA
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Bromodichloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
1,1-Dichloroethane	ug/L	17	<1	<1	78	<1	<1	<1	1	<1	NA	NA
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
1,1-Dichloroethene	ug/L	28 ^a	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Bromomethane (Methyl bromide)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
1,2-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
cis-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Chlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Chloroform (Trichloromethane)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Trichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Chloromethane (Methyl chloride)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Tetrachloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
cis-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Vinyl chloride	ug/L	<1	3 ^a	<1	2	<1	<1	<1	<1	<1	NA	NA
Chloroethane	ug/L	<1	7	<1	7	<1	<1	<1	<1	<1	NA	NA
Dichlorodifluoromethane (CFC-12)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Benzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Methyl acetate	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA	NA
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Methyl tert butyl ether (MTBE)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Trichlorofluoromethane (CFC-11)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Trifluorotrichloroethane (Freon 113)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA	NA
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Cyclohexane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Methyl cyclohexane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Dibromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Isopropyl benzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
m&p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	NA	NA

Table 2
 SUMMARY OF 3rd QUARTER 2014 GROUNDWATER ANALYTICAL DATA
 SEPTEMBER 2014
 RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:	Units	MW-14-59 09/18/14 MW-14-59_091814	MW-14-60 09/19/14 MW-14-60_091914	MW-14-61 09/19/14 MW-14-61_091914	MW-14-62 09/19/14 MW-14-62_091914	MW-14-63 09/18/14 MW-14-63_091814	MW-14-64 09/17/14 MW-14-64_091714	MW-14-65 09/17/14 MW-14-65_091714	MW-14-66 09/18/14 MW-14-66_091814	MW-14-67 09/18/14 MW-14-67_091814	MW-14-68 09/15/14 Dry	MW-14-69 09/15/14 Dry
Semivolatile Organics												
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
2,4,6-Trichlorophenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
2,4-Dichlorophenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
2,4,5-Trichlorophenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
2,4-Dimethylphenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
2,4-Dinitrophenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
2,4-Dinitrotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
2,6-Dinitrotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
2-Chloronaphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
2-Chlorophenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
2-Methylnaphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
2-Methylphenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
2-Nitroaniline	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
2-Nitrophenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
3&4-Methylphenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
3,3'-Dichlorobenzidine	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	NA	NA
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
3-Nitroaniline	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
4,6-Dinitro-2-methylphenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
4-Bromophenyl phenyl ether	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
4-Chloro-3-methylphenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
4-Chloroaniline	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
4-Chlorophenyl phenyl ether	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
4-Nitroaniline	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
4-Nitrophenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Anthracene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Acenaphthene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Acenaphthylene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Acetophenone	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Atrazine	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Benzaldehyde	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Benzo(a)anthracene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Benzo(a)pyrene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Benzo(b)fluoranthene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Benzo(g,h,i)perylene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Benzo(k)fluoranthene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Biphenyl (1,1-Biphenyl)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
bis(2-Chloroethoxy)methane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
bis(2-Chloroethyl)ether	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	<1	1 B	<1	<1	4 B	3 B	8 B^a	4 B	10 B^a	NA	NA
Butyl benzylphthalate (BBP)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Caprolactam	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Carbazole	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Chrysene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Dibenz(a,h)anthracene	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	NA	NA
Dibenzofuran	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Diethyl phthalate	ug/L	4 B	<1	<1	<1	4 B	4 B	4 B	3 B	<1	NA	NA
Dimethyl phthalate	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Di-n-butylphthalate (DBP)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Di-n-octyl phthalate (DnOP)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Fluoranthene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Fluorene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Hexachlorobenzene	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA
Hexachlorobutadiene	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	NA	NA
Hexachlorocyclopentadiene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Hexachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Indeno(1,2,3-cd)pyrene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Isophorone	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA

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

Location ID: Date Collected: Sample Name:	Units	MW-14-59 09/18/14 MW-14-59_091814	MW-14-60 09/19/14 MW-14-60_091914	MW-14-61 09/19/14 MW-14-61_091914	MW-14-62 09/19/14 MW-14-62_091914	MW-14-63 09/18/14 MW-14-63_091814	MW-14-64 09/17/14 MW-14-64_091714	MW-14-65 09/17/14 MW-14-65_091714	MW-14-66 09/18/14 MW-14-66_091814	MW-14-67 09/18/14 MW-14-67_091814	MW-14-68 09/15/14 Dry	MW-14-69 09/15/14 Dry
Nitrobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
N-Nitrosodi-n-propylamine	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
N-Nitrosodiphenylamine	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Pentachlorophenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Phenanthrene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Phenol	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Pyrene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	NA
Inorganics												
Iron	mg/L	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	<0.005	NA	NA
Arsenic	mg/L	0.005	<0.002	0.014^{ab}	0.005	<0.002	0.008	<0.002	0.003	<0.002	NA	NA
Barium	mg/L	0.093	0.277	0.264	0.026	0.085	0.109	0.079	0.046	0.075	NA	NA
Boron	mg/L	0.22	0.36	0.10	0.31	0.08	0.10	0.08	0.04	0.16	0.26	NA
Cadmium	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA
Chromium	mg/L	<0.005	<0.005	<0.005	<0.005	0.036	<0.005	0.005	<0.005	<0.005	NA	NA
Cobalt	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA
Copper	mg/L	<0.005	<0.005	<0.005	<0.005	0.008	<0.005	0.032^b	<0.005	0.006	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
Manganese	mg/L	0.625^a	0.258^a	0.057^a	<0.005	0.245^a	0.093^a	0.166^a	0.692^a	0.562^a	NA	NA
Mercury	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	NA	NA
Nickel	mg/L	0.018	0.011	0.008	<0.005	0.074	0.022	0.032	0.011	0.022	NA	NA
Selenium	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA
Silver	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA
Vanadium	mg/L	0.004	<0.004	<0.004	<0.004	0.005^a	0.005^a	0.005^a	<0.004	<0.004	NA	NA
Zinc	mg/L	<0.005	<0.005	<0.005	<0.005	0.010	0.011	0.014	0.014	0.008	NA	NA
Inorganics-Filtered												
Iron (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	<0.005	NA	NA	NA	NA
Arsenic (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	<0.002	NA	NA	NA	NA
Barium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	0.083	NA	NA	NA	NA
Boron	mg/L	NA	NA	NA	NA	NA	NA	0.04	NA	NA	NA	NA
Cadmium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	<0.0005	NA	NA	NA	NA
Chromium Total	mg/L	NA	NA	NA	NA	NA	NA	<0.005	NA	NA	NA	NA
Cobalt (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	<0.005	NA	NA	NA	NA
Copper (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	0.026^b	NA	NA	NA	NA
Lead (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	<0.003	NA	NA	NA	NA
Manganese (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	0.158^a	NA	NA	NA	NA
Mercury (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	<0.0002	NA	NA	NA	NA
Nickel (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	0.023	NA	NA	NA	NA
Selenium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	<0.005	NA	NA	NA	NA
Silver (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	<0.0005	NA	NA	NA	NA
Vanadium (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	0.004	NA	NA	NA	NA
Zinc (dissolved)	mg/L	NA	NA	NA	NA	NA	NA	0.013	NA	NA	NA	NA

Table 2
SUMMARY OF 3rd QUARTER 2014 GROUNDWATER ANALYTICAL DATA
SEPTEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:	Units	MW-14-70 09/18/14 MW-14-70_091814	P6-SB-32 09/19/14 P6-SB-32_091914	UNK-09 09/16/14 UNK-09_091614
Field				
Conductance, specific	mS/cm	NA	1.831	0.632
Dissolved oxygen (DO), field	mg/L	NA	0.17	0.08
Oxidation reduction potential (ORP), field	millivolts	NA	-73.80	-134.90
pH	s.u.	NA	7.01	7.64
Temperature, field	Deg C	NA	18.68	20.53
Turbidity (field)	NTU	NA	56.8	6.02
Volatile Organics				
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	<0.2	<0.2	NA
1,2-Dibromoethane (Ethylene dibromide)	ug/L	<0.05	<0.05	NA
1,2-Dichlorobenzene	ug/L	<1	<100 Y	NA
1,4-Dichlorobenzene	ug/L	<1	<100 Y	NA
1,4-Dioxane	ug/L	<5	<5	NA
1,1,1-Trichloroethane	ug/L	<1	<100 Y	NA
2-Hexanone	ug/L	<10	<1,000 Y	NA
1,1,2,2-Tetrachloroethane	ug/L	<1	<100 Y	NA
Acetone	ug/L	<10	<1,000 Y	NA
1,1,2-Trichloroethane	ug/L	<1	<100 Y	NA
Bromodichloromethane	ug/L	<1	<100 Y	NA
1,1-Dichloroethane	ug/L	<1	<100 Y	NA
Bromoform	ug/L	<1	<100 Y	NA
1,1-Dichloroethene	ug/L	<1	<100 Y	NA
Bromomethane (Methyl bromide)	ug/L	<1	<100 Y	NA
1,2-Dichloroethane	ug/L	<1	<100 Y	NA
Carbon disulfide	ug/L	<1	<100 Y	NA
Carbon tetrachloride	ug/L	<1	<100 Y	NA
cis-1,2-Dichloroethene	ug/L	<1	<100 Y	NA
Chlorobenzene	ug/L	<1	<100 Y	NA
trans-1,2-Dichloroethene	ug/L	<1	<100 Y	NA
Chloroform (Trichloromethane)	ug/L	<1	<100 Y	NA
Trichloroethene	ug/L	<1	<100 Y	NA
Chloromethane (Methyl chloride)	ug/L	<1	<100 Y	NA
Tetrachloroethene	ug/L	<1	<100 Y	NA
cis-1,3-Dichloropropene	ug/L	<1	<100 Y	NA
Vinyl chloride	ug/L	<1	<100 Y	NA
Chloroethane	ug/L	<1	<100 Y	NA
Dichlorodifluoromethane (CFC-12)	ug/L	<1	<100 Y	NA
Benzene	ug/L	<1	<100 Y	NA
Methyl acetate	ug/L	<10	<1,000 Y	NA
Ethylbenzene	ug/L	<1	100 Y^{ab}	NA
Methylene chloride	ug/L	<1	<100 Y	NA
Styrene	ug/L	<1	<100 Y	NA
Toluene	ug/L	<1	100 Y	NA
trans-1,3-Dichloropropene	ug/L	<1	<100 Y	NA
Methyl tert butyl ether (MTBE)	ug/L	<1	<100 Y	NA
Trichlorofluoromethane (CFC-11)	ug/L	<1	<100 Y	NA
Trifluorotrchloroethane (Freon 113)	ug/L	<1	<100 Y	NA
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	<10	<1,000 Y	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	<10	<1,000 Y	NA
1,2,4-Trichlorobenzene	ug/L	<1	<100 Y	NA
1,2-Dichloropropane	ug/L	<1	<100 Y	NA
1,3-Dichlorobenzene	ug/L	<1	<100 Y	NA
Cyclohexane	ug/L	<1	<100 Y	NA
Methyl cyclohexane	ug/L	<1	<100 Y	NA
Dibromochloromethane	ug/L	<1	<100 Y	NA
Isopropyl benzene	ug/L	<1	<100 Y	NA
o-Xylene	ug/L	<1	1,100 Y	NA
m&p-Xylene	ug/L	<2	2,300 Y	NA

Table 2
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SEPTEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Location ID: Date Collected: Sample Name:	Units	MW-14-70 09/18/14 MW-14-70_091814	P6-SB-32 09/19/14 P6-SB-32_091914	UNK-09 09/16/14 UNK-09_091614
Semivolatile Organics				
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	<1	NA	NA
2,4,6-Trichlorophenol	ug/L	<1	NA	NA
2,4-Dichlorophenol	ug/L	<1	NA	NA
2,4,5-Trichlorophenol	ug/L	<1	NA	NA
2,4-Dimethylphenol	ug/L	<1	NA	NA
2,4-Dinitrophenol	ug/L	<1	NA	NA
2,4-Dinitrotoluene	ug/L	<1	NA	NA
2,6-Dinitrotoluene	ug/L	<1	NA	NA
2-Chloronaphthalene	ug/L	<1	NA	NA
2-Chlorophenol	ug/L	<1	NA	NA
2-Methylnaphthalene	ug/L	<1	NA	NA
2-Methylphenol	ug/L	<1	NA	NA
2-Nitroaniline	ug/L	<1	NA	NA
2-Nitrophenol	ug/L	<1	NA	NA
3&4-Methylphenol	ug/L	<1	NA	NA
3,3'-Dichlorobenzidine	ug/L	<0.3	NA	NA
Naphthalene	ug/L	<1	NA	NA
3-Nitroaniline	ug/L	<1	NA	NA
4,6-Dinitro-2-methylphenol	ug/L	<1	NA	NA
4-Bromophenyl phenyl ether	ug/L	<1	NA	NA
4-Chloro-3-methylphenol	ug/L	<1	NA	NA
4-Chloroaniline	ug/L	<1	NA	NA
4-Chlorophenyl phenyl ether	ug/L	<1	NA	NA
4-Nitroaniline	ug/L	<1	NA	NA
4-Nitrophenol	ug/L	<1	NA	NA
Anthracene	ug/L	<1	NA	NA
Acenaphthene	ug/L	<1	NA	NA
Acenaphthylene	ug/L	<1	NA	NA
Acetophenone	ug/L	<1	NA	NA
Atrazine	ug/L	<1	NA	NA
Benzaldehyde	ug/L	<1	NA	NA
Benzo(a)anthracene	ug/L	<1	NA	NA
Benzo(a)pyrene	ug/L	<1	NA	NA
Benzo(b)fluoranthene	ug/L	<1	NA	NA
Benzo(g,h,i)perylene	ug/L	<1	NA	NA
Benzo(k)fluoranthene	ug/L	<1	NA	NA
Biphenyl (1,1-Biphenyl)	ug/L	<1	NA	NA
bis(2-Chloroethoxy)methane	ug/L	<1	NA	NA
bis(2-Chloroethyl)ether	ug/L	<1	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	2 B	NA	NA
Butyl benzylphthalate (BBP)	ug/L	<1	NA	NA
Caprolactam	ug/L	<1	NA	NA
Carbazole	ug/L	<1	NA	NA
Chrysene	ug/L	<1	NA	NA
Dibenz(a,h)anthracene	ug/L	<2	NA	NA
Dibenzofuran	ug/L	<1	NA	NA
Diethyl phthalate	ug/L	<1	NA	NA
Dimethyl phthalate	ug/L	<1	NA	NA
Di-n-butylphthalate (DBP)	ug/L	<1	NA	NA
Di-n-octyl phthalate (DnOP)	ug/L	<1	NA	NA
Fluoranthene	ug/L	<1	NA	NA
Fluorene	ug/L	<1	NA	NA
Hexachlorobenzene	ug/L	<0.2	NA	NA
Hexachlorobutadiene	ug/L	<0.05	NA	NA
Hexachlorocyclopentadiene	ug/L	<1	NA	NA
Hexachloroethane	ug/L	<1	NA	NA
Indeno(1,2,3-cd)pyrene	ug/L	<1	NA	NA
Isophorone	ug/L	<1	NA	NA

Table 2
SUMMARY OF 3rd QUARTER 2014 GROUNDWATER ANALYTICAL DATA
SEPTEMBER 2014
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

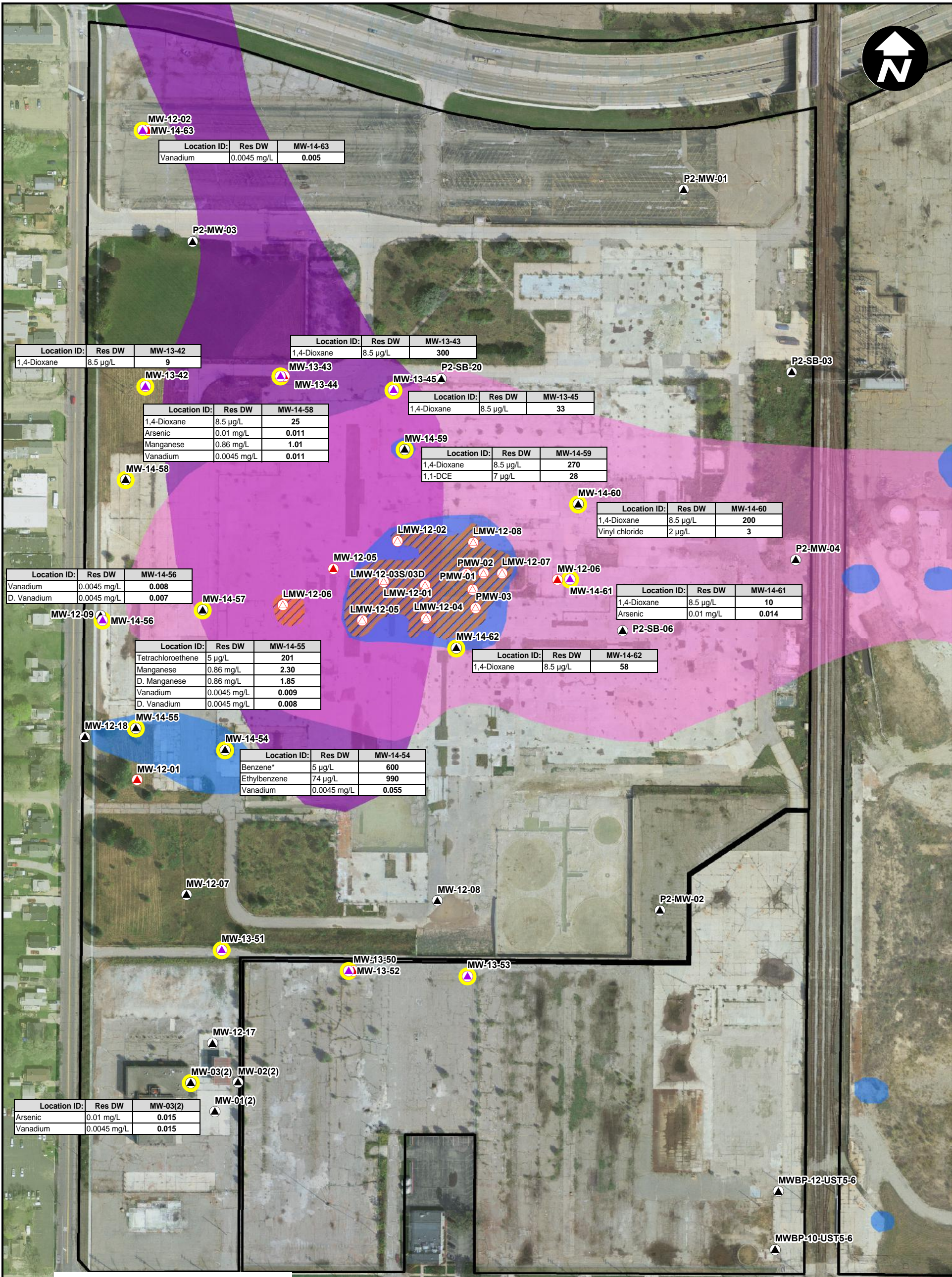
Location ID: Date Collected: Sample Name:	Units	MW-14-70 09/18/14 MW-14-70_091814	P6-SB-32 09/19/14 P6-SB-32_091914	UNK-09 09/16/14 UNK-09_091614
Nitrobenzene	ug/L	<1	NA	NA
N-Nitrosodi-n-propylamine	ug/L	<1	NA	NA
N-Nitrosodiphenylamine	ug/L	<1	NA	NA
Pentachlorophenol	ug/L	<1	NA	NA
Phenanthrene	ug/L	<1	NA	NA
Phenol	ug/L	<1	NA	NA
Pyrene	ug/L	<1	NA	NA
Inorganics				
Iron	mg/L	NA	NA	NA
Antimony	mg/L	<0.005	NA	NA
Arsenic	mg/L	<0.002	0.020^{ab}	0.017^{ab}
Barium	mg/L	0.076	NA	NA
Boron	mg/L	0.05	NA	NA
Cadmium	mg/L	<0.0005	NA	NA
Chromium	mg/L	<0.005	<0.005	<0.005
Cobalt	mg/L	<0.005	NA	NA
Copper	mg/L	0.022^b	<0.005	<0.005
Lead	mg/L	<0.003	<0.003	<0.003
Manganese	mg/L	0.344^a	NA	NA
Mercury	mg/L	<0.0002	NA	NA
Nickel	mg/L	0.016	0.011	<0.005
Selenium	mg/L	<0.005	NA	NA
Silver	mg/L	<0.0005	NA	NA
Vanadium	mg/L	0.006^a	<0.004	<0.004
Zinc	mg/L	0.009	NA	NA
Inorganics-Filtered				
Iron (dissolved)	mg/L	NA	NA	NA
Antimony (dissolved)	mg/L	NA	NA	NA
Arsenic (dissolved)	mg/L	NA	0.019^{ab}	NA
Barium (dissolved)	mg/L	NA	NA	NA
Boron	mg/L	NA	NA	NA
Cadmium (dissolved)	mg/L	NA	NA	NA
Chromium Total	mg/L	NA	<0.005	NA
Cobalt (dissolved)	mg/L	NA	NA	NA
Copper (dissolved)	mg/L	NA	<0.005	NA
Lead (dissolved)	mg/L	NA	<0.003	NA
Manganese (dissolved)	mg/L	NA	NA	NA
Mercury (dissolved)	mg/L	NA	NA	NA
Nickel (dissolved)	mg/L	NA	0.010	NA
Selenium (dissolved)	mg/L	NA	NA	NA
Silver (dissolved)	mg/L	NA	NA	NA
Vanadium (dissolved)	mg/L	NA	<0.004	NA
Zinc (dissolved)	mg/L	NA	NA	NA

Table 2
SUMMARY OF 3rd QUARTER 2014 GROUNDWATER ANALYTICAL DATA
SEPTEMBER 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.
- mg/L - milligrams per liter
- µg/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
- h - Sample exceeds Non-Residential Groundwater Concentrations for Vapor Intrusion (DEQ May 2013)
- NA - Not Analyzed during the 3rd Quarter 2014 Sampling Event

Figures



Location ID:	Res DW	MW-14-63
Vanadium	0.0045 mg/L	0.005

Location ID:	Res DW	MW-13-42
1,4-Dioxane	8.5 µg/L	9

Location ID:	Res DW	MW-13-43
1,4-Dioxane	8.5 µg/L	300

Location ID:	Res DW	MW-14-58
1,4-Dioxane	8.5 µg/L	25
Arsenic	0.01 mg/L	0.011
Manganese	0.86 mg/L	1.01
Vanadium	0.0045 mg/L	0.011

Location ID:	Res DW	MW-13-45
1,4-Dioxane	8.5 µg/L	33

Location ID:	Res DW	MW-14-59
1,4-Dioxane	8.5 µg/L	270
1,1-DCE	7 µg/L	28

Location ID:	Res DW	MW-14-60
1,4-Dioxane	8.5 µg/L	200
Vinyl chloride	2 µg/L	3

Location ID:	Res DW	MW-14-56
Vanadium	0.0045 mg/L	0.008
D. Vanadium	0.0045 mg/L	0.007

Location ID:	Res DW	MW-14-61
1,4-Dioxane	8.5 µg/L	10
Arsenic	0.01 mg/L	0.014

Location ID:	Res DW	MW-14-55
Tetrachloroethene	5 µg/L	201
Manganese	0.86 mg/L	2.30
D. Manganese	0.86 mg/L	1.85
Vanadium	0.0045 mg/L	0.009
D. Vanadium	0.0045 mg/L	0.008

Location ID:	Res DW	MW-14-62
1,4-Dioxane	8.5 µg/L	58

Location ID:	Res DW	MW-14-54
Benzene*	5 µg/L	600
Ethylbenzene	74 µg/L	990
Vanadium	0.0045 mg/L	0.055

Location ID:	Res DW	MW-03(2)
Arsenic	0.01 mg/L	0.015
Vanadium	0.0045 mg/L	0.015

LEGEND

- EXISTING MONITORING WELLS**
- NAPL MONITORING WELL
 - PERCHED MONITORING WELL
 - DEEP OVERBURDEN MONITORING WELL
 - WEATHERED BEDROCK MONITORING WELL
 - BEDROCK MONITORING WELL
 - 3Q14 SAMPLED MONITORING WELL
 - APPROXIMATE EXTENT LNAPL
 - APPROX. EXTENT VOCs IN PERCHED ZONE
 - PERCHED 1,4-DIOXANE IMPACTS > PROPOSED DW CRITERIA (8.5 µg/L)
 - LOWER 1,4-DIOXANE IMPACTS > PROPOSED DW CRITERIA (8.5 µg/L)
 - PROPERTY BOUNDARY

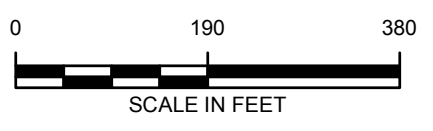
NOTES:

GROUNDWATER PLUMES ARE BASED IN PART ON GROUNDWATER SAMPLES COLLECTED AS PART OF THE RFI ACTIVITIES COMPLETED BETWEEN 2011 AND 2014 AND WILL BE UPDATED AS ADDITIONAL DATA BECOMES AVAILABLE.

MANGANESE VALUES ARE EVALUATED AGAINST THE HEALTH-BASED DRINKING WATER VALUE OF 0.86 mg/L.

* - VALUE ALSO EXCEEDS THE NON-RESIDENTIAL VAPOR INTRUSION GROUNDWATER SCREENING LEVEL OF 140 ug/L.

VOCs: VOLATILE ORGANIC COMPOUNDS
 DW: DRINKING WATER
 LNAPL: LIGHT NON-AQUEOUS PHASE LIQUID

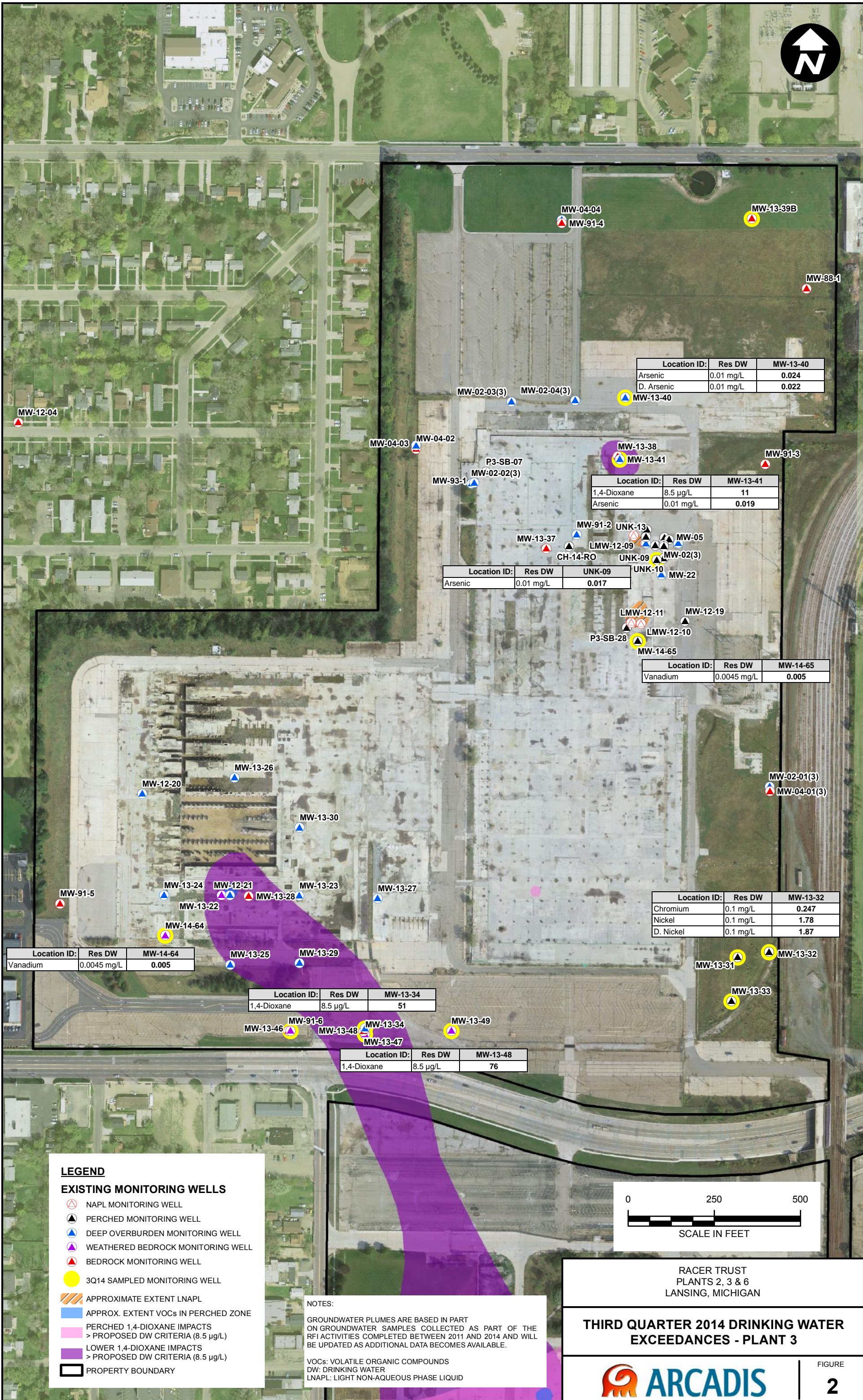


RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

THIRD QUARTER 2014 DRINKING WATER EXCEEDANCES - PLANT 2 AND W. PLANT 6



CITY: Novi DIV: ENV DB: TRY PIC: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl G:\GIS\Project Files\MotoristsLiqudationCompany\Lansing\Docs\working\3Q14 Exceedances.mxd PLOTTED: 11/3/2014 12:53:55 PM BY: dalex



Location ID:	Res DW	MW-13-40
Arsenic	0.01 mg/L	0.024
D. Arsenic	0.01 mg/L	0.022

Location ID:	Res DW	MW-13-41
1,4-Dioxane	8.5 µg/L	11
Arsenic	0.01 mg/L	0.019

Location ID:	Res DW	UNK-09
Arsenic	0.01 mg/L	0.017

Location ID:	Res DW	MW-14-65
Vanadium	0.0045 mg/L	0.005

Location ID:	Res DW	MW-13-32
Chromium	0.1 mg/L	0.247
Nickel	0.1 mg/L	1.78
D. Nickel	0.1 mg/L	1.87

Location ID:	Res DW	MW-14-64
Vanadium	0.0045 mg/L	0.005

Location ID:	Res DW	MW-13-34
1,4-Dioxane	8.5 µg/L	51

Location ID:	Res DW	MW-13-48
1,4-Dioxane	8.5 µg/L	76

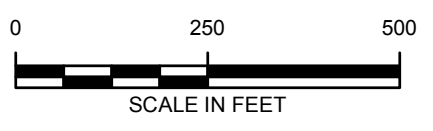
LEGEND

- EXISTING MONITORING WELLS**
- NAPL MONITORING WELL
 - PERCHED MONITORING WELL
 - DEEP OVERBURDEN MONITORING WELL
 - WEATHERED BEDROCK MONITORING WELL
 - BEDROCK MONITORING WELL
 - 3Q14 SAMPLED MONITORING WELL
 - APPROXIMATE EXTENT LNAPL
 - APPROX. EXTENT VOCs IN PERCHED ZONE
 - PERCHED 1,4-DIOXANE IMPACTS > PROPOSED DW CRITERIA (8.5 µg/L)
 - LOWER 1,4-DIOXANE IMPACTS > PROPOSED DW CRITERIA (8.5 µg/L)
 - PROPERTY BOUNDARY

NOTES:

GROUNDWATER PLUMES ARE BASED IN PART ON GROUNDWATER SAMPLES COLLECTED AS PART OF THE RFI ACTIVITIES COMPLETED BETWEEN 2011 AND 2014 AND WILL BE UPDATED AS ADDITIONAL DATA BECOMES AVAILABLE.

VOCs: VOLATILE ORGANIC COMPOUNDS
 DW: DRINKING WATER
 LNAPL: LIGHT NON-AQUEOUS PHASE LIQUID

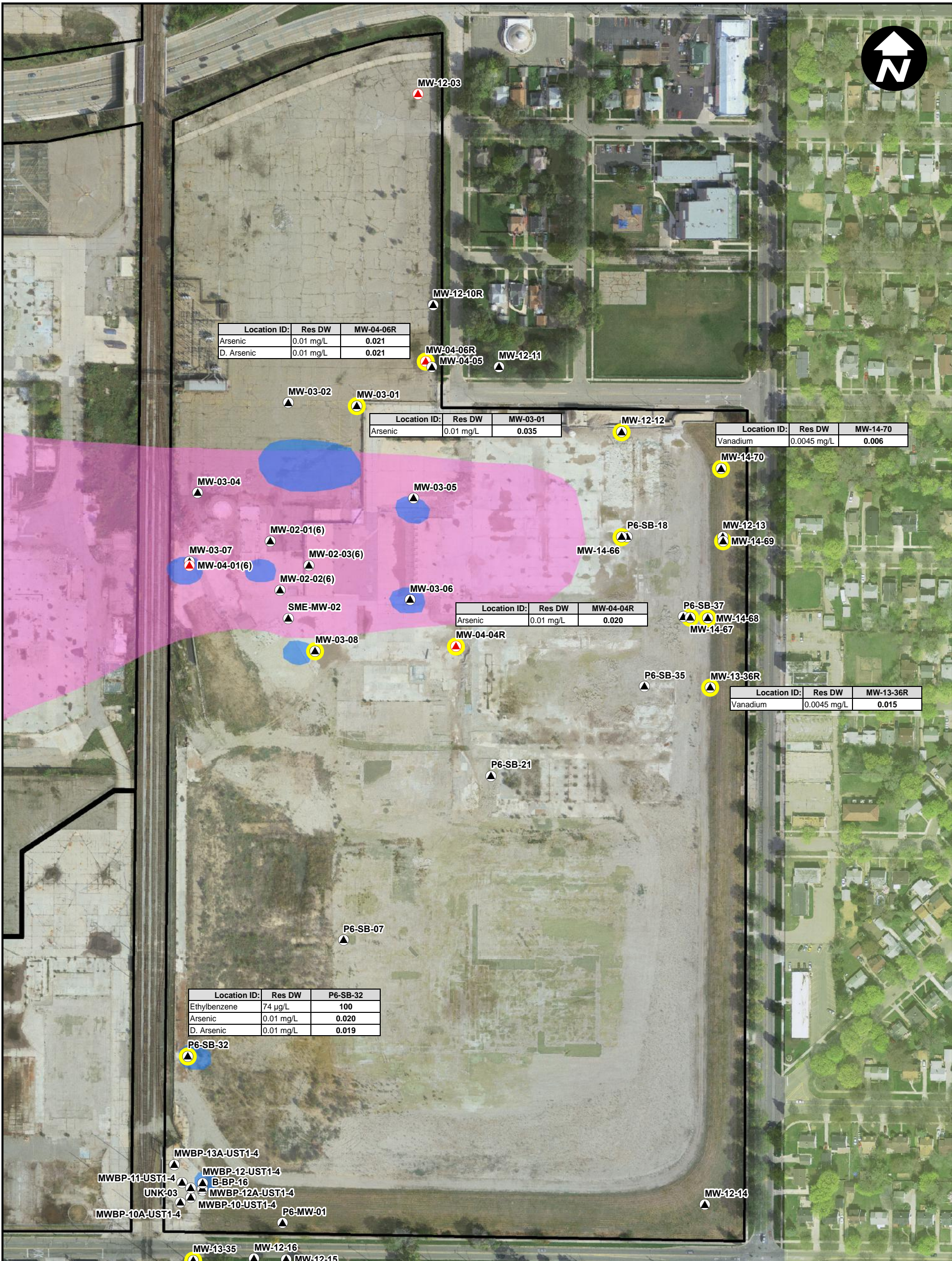


RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

THIRD QUARTER 2014 DRINKING WATER EXCEEDANCES - PLANT 3



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Location ID:	Res DW	MW-04-06R
Arsenic	0.01 mg/L	0.021
D. Arsenic	0.01 mg/L	0.021

Location ID:	Res DW	MW-03-01
Arsenic	0.01 mg/L	0.035

Location ID:	Res DW	MW-14-70
Vanadium	0.0045 mg/L	0.006

Location ID:	Res DW	MW-04-04R
Arsenic	0.01 mg/L	0.020

Location ID:	Res DW	MW-13-36R
Vanadium	0.0045 mg/L	0.015

Location ID:	Res DW	P6-SB-32
Ethylbenzene	74 µg/L	100
Arsenic	0.01 mg/L	0.020
D. Arsenic	0.01 mg/L	0.019

Location ID:	Res DW	MW-13-35
Vanadium	0.0045 mg/L	0.007

LEGEND

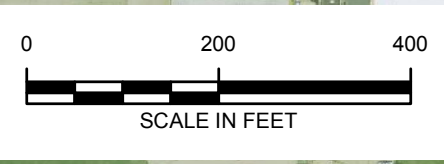
EXISTING MONITORING WELLS

- NAPL MONITORING WELL
- PERCHED MONITORING WELL
- DEEP OVERBURDEN MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL
- BEDROCK MONITORING WELL
- 3Q14 SAMPLED MONITORING WELL
- APPROX. EXTENT VOCs IN PERCHED ZONE
- PERCHED 1,4-DIOXANE IMPACTS > PROPOSED DW CRITERIA (8.5 µg/L)
- PROPERTY BOUNDARY

NOTES:

GROUNDWATER PLUMES ARE BASED IN PART ON GROUNDWATER SAMPLES COLLECTED AS PART OF THE RFI ACTIVITIES COMPLETED BETWEEN 2011 AND 2014 AND WILL BE UPDATED AS ADDITIONAL DATA BECOMES AVAILABLE.

VOCs: VOLATILE ORGANIC COMPOUNDS
 DW: DRINKING WATER



RACER TRUST
 PLANTS 2, 3 & 6
 LANSING, MICHIGAN

THIRD QUARTER 2014 DRINKING WATER EXCEEDANCES - EAST PLANT 6





Attachment 1

Third Quarter 2014 Groundwater
Sampling Logs

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 2</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064479.0014.00603</u>	Well ID: <u>MW-03(2)</u>	Sample ID: <u>MW-03(2)_091714</u>
Sample Date: <u>9/17/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>11:35 AM</u>	Weather: <u>Cold 60 F</u>	

Instrument Identification

Purge Method: <u>Other Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>N/A</u>	<u>N/A</u>
Casing Material: <u>PVC sch 40</u>	Screen Interval: <u>12.0 to 22.0 ft bgs</u>	
Casing Diameter: <u>2 in</u>	Pump Intake Depth: <u>Initial: 14.00 ft bmp Final: 14.00 ft bmp</u>	
Measured Well Depth: <u>19.14 ft bmp</u>	Purge Time: <u>11:05 AM</u> to <u>11:30 AM</u>	
Depth to Water: <u>9.55 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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)
11:05 AM	0	105	0.2	15.76	6.65	7.660	71.4	0.58	17.55	9.56
11:10 AM	5	105	0.3	16.10	6.65	7.632	77.8	0.48	12.17	9.58
11:15 AM	10	105	0.4	16.38	6.65	7.593	80.9	0.43	11.89	9.59
11:20 AM	15	105	0.4	16.58	6.66	7.547	81.5	0.47	8.82	9.59
11:25 AM	20	105	0.6	16.73	6.66	7.481	78.8	0.48	9.51	9.59
11:30 AM	25	105	0.7	16.72	6.66	7.418	77.8	0.40	8.62	9.59

Collected Sample Condition

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

Parameter	Container	# of Containers	Preservative	Comments
VOCs	40 mL CG	3	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Vanadium, 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 bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	TOC	top of casing
CG	clear glass	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million		
F	degrees Fahrenheit	HCL	hydrochloric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HNO3	nitric acid								

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 2</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064479.0014.00603</u>	Well ID: <u>MW-13-42</u>	Sample ID: <u>MW-13-42_091814</u>
Sample Date: <u>9/18/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>4:50 PM</u>	Weather: <u>Cold 60 F</u>	

Instrument Identification

Purge Method: <u>Other Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>N/A</u>	<u>N/A</u>
Casing Material: _____	Screen Interval: <u>70.0 to 75.0 ft bgs</u>	
Casing Diameter: <u>2 in</u>	Pump Intake Depth: <u>Initial: N/A Final: N/A</u>	
Measured Well Depth: <u>76.81 ft bmp</u>	Purge Time: <u>4:48 PM</u> to _____	
Depth to Water: <u>75.14 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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)

Collected Sample Condition

Color: N/A **Odor:** N/A **Appearance:** N/A

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A

Comments

General Comments: N/A
 Sampling Remarks: only 1 ft of water. attempted to purge dry first thing in the morning but water wouldnt draw from the bladder. bailing sample at the end of the day

Technician: Cliff Walls

Signature: 

Abbreviations:

CG	clear glass	ft bmp	feet below measuring point	N/A	not available	ppm	parts per million	TOC	top of casing
F	degrees Fahrenheit	HCL	hydrochloric acid						

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 2</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064479.0014.00603</u>	Well ID: <u>MW-13-43</u>	Sample ID: <u>MW-13-43_091714</u>
Sample Date: <u>9/17/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>MS/MSD</u>
Sample Time: <u>2:20 PM</u>	Weather: <u>Cloudy Cold 55 F</u>	

Instrument Identification

Purge Method: <u>Other Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>N/A</u>	<u>N/A</u>
Casing Material: <u>Sch 40 PVC</u>	Screen Interval: <u>72.0 to 77.0 ft bgs</u>	
Casing Diameter: <u>2 in</u>	Pump Intake Depth: <u>Initial: 74.00 ft bmp Final: 74.00 ft bmp</u>	
Measured Well Depth: <u>79.79 ft bmp</u>	Purge Time: <u>1:20 PM</u> to <u>2:15 PM</u>	
Depth to Water: <u>70.96 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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	90	0.2	17.63	7.12	1.818	17.6	2.08	26.78	70.73
1:25 PM	4	90	0.3	17.35	7.07	1.420	23.2	1.43	23.12	70.78
1:30 PM	9	90	0.3	16.98	7.03	1.631	28.4	1.19	20.52	70.75
1:35 PM	14	90	0.5	16.94	7.00	1.579	30.4	1.30	20.93	70.75
1:40 PM	19	90	0.6	16.88	6.99	1.576	24.9	0.85	20.87	70.75
1:45 PM	24	90	0.7	16.97	7.00	1.584	-8.2	0.69	18.50	70.75
1:50 PM	29	90	0.8	17.09	7.03	1.606	-27.4	0.55	15.15	70.75
1:55 PM	34	90	0.9	17.15	7.04	1.664	-42.8	0.50	15.21	70.75
2:00 PM	39	90	1.0	17.02	7.01	1.818	-52.3	0.43	10.60	70.75
2:05 PM	44	90	1.0	17.09	6.96	2.164	-54.0	0.38	4.10	70.75
2:10 PM	49	90	1.0	17.08	6.96	2.195	-46.5	0.34	0.08	70.75
2:15 PM	54	90	1.2	17.15	6.96	2.212	-46.3	0.35	0.05	70.75

Collected Sample Condition

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

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A

Comments

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

Technician: Cliff Walls

Signature: 

Abbreviations:

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

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 2</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064479.0014.00603</u>	Well ID: <u>MW-13-45</u>	Sample ID: <u>MW-13-45_091614</u>
Sample Date: <u>9/16/2014</u>	Duplicate: <u>DUP_01_091614</u>	Other QC: <u>N/A</u>
Sample Time: <u>11:50 AM</u>	Weather: <u>Cold 60 F</u>	

Instrument Identification

Purge Method: <u>Other Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>N/A</u>	<u>N/A</u>
Casing Material: <u>Sch. 40 PVC</u>	Screen Interval: <u>72.0 to 77.0 ft bgs</u>	
Casing Diameter: <u>2 in</u>	Pump Intake Depth: <u>Initial: 75.0 ft bmp Final: 75.0 ft bmp</u>	
Measured Well Depth: <u>78.30 ft bmp</u>	Purge Time: <u>11:15 AM</u> to <u>11:50 AM</u>	
Depth to Water: <u>69.90 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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	65	0.3	14.47	7.27	1.422	-104.9	2.29	4.86	70.10
11:20 AM	4	65	0.3	14.70	7.20	1.423	-97.3	1.53	2.46	70.10
11:25 AM	9	65	0.4	14.92	7.18	1.428	-94.1	1.34	2.76	70.10
11:30 AM	14	65	0.5	14.96	7.17	1.435	-84.0	1.10	2.80	70.10
11:35 AM	20	65	0.5	14.79	7.16	1.438	-87.4	1.01	2.75	70.10
11:40 AM	24	65	0.7	14.79	7.15	1.438	-78.0	0.92	2.58	70.10
11:45 AM	29	65	0.8	14.91	7.15	1.439	-80.6	0.89	2.17	70.10
11:50 AM	35	65	0.8	14.93	7.15	1.442	-78.1	0.91	1.24	70.10

Collected Sample Condition

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

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A

Comments

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

Technician: Cliff Walls

Signature: 

Abbreviations:

C	degrees Celsius	ft	feet	HCL	hydrochloric acid	mL/min	milliliters per minute	mV	millivolts	NTU	nephelometric turbidity units
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mS/cm	millisiemens per centimeter	N/A	not available	ppm	parts per million
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-13-51	Sample ID: MW-13-51_091614
Sample Date: 9/16/2014	Duplicate: N/A	Other QC: N/A
Sample Time: 2:30 PM	Weather: Cold Cloudy 55 F	

Instrument Identification

Purge Method: Other 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: 84.0 ft bmp	Final: 84.0 ft bmp
Measured Well Depth: 89.83 ft bmp	Purge Time: 1:55 PM	to 2:25 PM
Depth to Water: 75.89 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)
1:55 PM	0	60	0.3	16.74	6.89	1.422	52.3	2.04	32.78	76.15
2:00 PM	6	60	0.3	16.86	6.83	1.420	-55.7	1.46	34.44	76.16
2:05 PM	11	60	0.4	16.74	6.82	1.422	-54.0	1.15	33.35	76.18
2:10 PM	15	60	0.5	16.87	6.83	1.418	-52.8	0.97	29.37	76.19
2:15 PM	20	60	0.6	17.01	6.85	1.419	-40.8	0.88	24.05	76.21
2:20 PM	25	60	0.7	17.20	6.87	1.419	-42.3	0.83	23.19	76.36
2:25 PM	30	60	0.8	16.92	6.85	1.424	-43.2	0.80	21.98	76.41

Collected Sample Condition

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

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A

Comments

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

Technician: Cliff Walls

Signature: 

Abbreviations:

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

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 2</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064479.0014.00603</u>	Well ID: <u>MW-14-54</u>	Sample ID: <u>MW-14-54_091914</u>
Sample Date: <u>9/19/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>2:00 PM</u>	Weather: <u>Cold 60 F</u>	

Instrument Identification

Purge Method: <u>Other Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>N/A</u>	<u>N/A</u>
Casing Material: _____	Screen Interval: <u>N/A</u>	
Casing Diameter: _____	Pump Intake Depth: <u>Initial: 15.00 ft bmp Final: 15.00 ft bmp</u>	
Measured Well Depth: <u>19.00 ft bmp</u>	Purge Time: <u>1:35 PM</u> to <u>1:55 PM</u>	
Depth to Water: <u>14.30 ft bmp</u>	PID Reading: <u>220 ppm</u>	

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	65	0.2	19.69	8.32	2.409	-101.1	0.64	3.08	14.51
1:35 PM	6	65	0.2	19.71	8.28	2.430	-96.9	0.53	2.36	14.51
1:40 PM	10	65	0.3	19.74	8.24	2.443	-92.4	0.39	4.08	14.51
1:45 PM	15	100	0.4	19.81	8.21	2.445	-86.6	0.31	3.95	14.51
1:50 PM	20	65	0.6	19.89	8.21	2.448	-83.0	0.34	2.58	14.51
1:55 PM	25	65	0.7	20.03	8.20	2.434	-77.0	0.36	2.57	14.51

Collected Sample Condition

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

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A
SVOCs	1L AG	2	None	N/A
TAL 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	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units
C	degrees Celsius	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	TOC	top of casing
CG	clear glass	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million		
F	degrees Fahrenheit	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-14-55	Sample ID: MW-14-55_091814
Sample Date: 9/18/2014	Duplicate: N/A	Other QC: N/A
Sample Time: 1:20 PM	Weather: Cold 60 F	

Instrument Identification

Purge Method: Other 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: 20.10 ft bmp Final: 20.10 ft bmp	
Measured Well Depth: 20.11 ft bmp	Purge Time: 11:40 AM to 1:15 PM	
Depth to Water: 17.97 ft bmp	PID Reading: .3 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)
11:40 AM	0	95	0.7	14.92	6.97	3.118	-11.7	1.21	438.60	18.20
11:45 AM	5	95	0.8	15.02	6.97	3.097	-12.4	1.08	420.60	18.20
11:50 AM	10	95	0.8	15.16	6.99	3.120	-13.3	1.17	251.80	18.20
11:55 AM	15	95	0.9	15.45	7.00	3.120	-14.2	1.48	212.60	18.20
12:00 PM	20	95	1.0	15.80	7.02	3.117	-14.0	1.25	198.90	18.20
12:05 PM	25	95	1.1	15.73	7.03	3.140	-13.8	1.24	160.50	18.20
12:10 PM	30	95	1.3	15.62	7.03	3.134	-14.4	1.21	130.80	18.20
12:15 PM	35	95	1.4	15.48	7.03	3.149	-13.9	1.26	110.80	18.20
12:20 PM	40	95	1.5	15.36	7.02	3.145	-13.6	1.25	111.90	18.20
12:25 PM	45	95	1.4	15.31	7.02	3.135	-11.6	1.28	108.10	18.20
12:30 PM	50	95	1.5	15.80	7.03	3.076	-13.9	1.30	100.40	18.20
12:35 PM	55	95	1.6	16.05	7.05	3.090	-14.4	1.29	98.30	18.20
12:40 PM	60	95	1.7	15.57	7.04	3.109	-12.9	1.36	76.80	18.20
12:45 PM	65	95	1.8	16.07	7.03	3.154	-11.2	1.43	70.12	18.20
12:50 PM	70	95	1.9	16.60	7.05	3.133	-12.0	1.39	61.58	18.20
12:55 PM	75	95	2.0	16.52	7.07	3.119	-8.4	1.45	55.02	18.20
1:00 PM	80	95	2.0	16.24	7.06	3.103	-9.4	1.46	48.30	18.20
1:05 PM	85	95	2.0	16.09	7.05	3.124	-7.0	1.51	43.12	18.20
1:10 PM	90	95	2.2	16.85	7.06	3.117	-8.7	1.51	38.18	18.20
1:15 PM	95	95	2.3	16.84	7.09	3.126	-6.2	1.56	40.20	18.20

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	3	HCL	N/A
SVOCs	1L AG	2	None	N/A
TAL 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	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units
C	degrees Celsius	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	TOC	top of casing
CG	clear glass	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million		
F	degrees Fahrenheit	HCL	hydrochloric acid								

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 2</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064479.0014.00603</u>	Well ID: <u>MW-14-56</u>	Sample ID: <u>MW-14-56_091814</u>
Sample Date: <u>9/18/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>4:00 PM</u>	Weather: <u>Cold 60 F</u>	

Instrument Identification

Purge Method: <u>Other Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>N/A</u>	<u>N/A</u>
Casing Material: _____	Screen Interval: <u>N/A</u>	
Casing Diameter: _____	Pump Intake Depth: <u>Initial: 77.5 ft bmp Final: 77.5 ft bmp</u>	
Measured Well Depth: <u>79.00 ft bmp</u>	Purge Time: <u>2:55 PM</u> to <u>3:55 PM</u>	
Depth to Water: <u>74.96 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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)
2:55 PM	0	75	0.2	17.46	6.71	4.811	66.0	5.77	65.13	75.35
3:00 PM	5	75	0.2	17.21	6.71	4.833	68.7	5.59	39.15	75.45
3:05 PM	10	75	0.3	16.75	6.69	4.835	74.2	5.66	31.69	75.50
3:10 PM	15	75	0.4	16.53	6.68	4.838	77.7	5.61	32.75	75.61
3:15 PM	20	75	0.5	16.42	6.67	4.831	79.6	5.66	35.16	75.66
3:20 PM	25	75	0.5	16.47	6.69	4.830	79.5	5.64	38.15	75.70
3:25 PM	30	75	0.6	16.55	6.72	4.827	78.4	5.60	38.22	75.80
3:30 PM	35	75	0.8	16.56	6.74	4.828	78.4	5.57	44.35	75.84
3:35 PM	40	75	0.8	16.49	6.75	4.827	80.3	5.33	42.65	75.89
3:40 PM	45	75	0.9	16.63	6.76	4.818	79.2	5.25	41.30	78.85
3:45 PM	50	75	1.0	16.70	6.78	4.824	78.0	5.15	44.97	75.87
3:50 PM	55	75	1.2	16.55	6.78	4.822	80.0	5.12	46.65	75.90
3:55 PM	60	75	1.3	16.48	6.77	4.831	81.5	4.91	43.25	75.91

Collected Sample Condition

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

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A
SVOCs	1L AG	2	None	N/A
TAL 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	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units
C	degrees Celsius	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	TOC	top of casing
CG	clear glass	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million		
F	degrees Fahrenheit	HCL	hydrochloric acid								

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 2</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064479.0014.00603</u>	Well ID: <u>MW-14-57</u>	Sample ID: <u>MW-14-57_091914</u>
Sample Date: <u>9/19/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>12:40 PM</u>	Weather: <u>Cold 60 F</u>	

Instrument Identification

Purge Method: <u>Other Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>N/A</u>	<u>N/A</u>
Casing Material: _____	Screen Interval: <u>N/A</u>	
Casing Diameter: _____	Pump Intake Depth: <u>Initial: 24 ft bmp Final: 24 ft bmp</u>	
Measured Well Depth: <u>21.49 ft bmp</u>	Purge Time: <u>11:53 AM</u> to <u>12:30 PM</u>	
Depth to Water: <u>13.86 ft bmp</u>	PID Reading: <u>0 ppm</u>	

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)
12:00 PM	0	90	0.1	17.43	7.15	1.425	-21.0	0.34	3.79	13.94
12:05 PM	5	90	0.2	17.31	7.15	1.382	-22.5	0.26	3.63	13.93
12:10 PM	9	90	0.2	17.29	7.15	1.332	-22.4	0.21	3.80	13.93
12:15 PM	14	90	0.3	17.37	7.15	1.303	-22.8	0.16	3.57	13.93
12:20 PM	19	90	0.3	17.36	7.15	1.276	-24.4	0.20	2.93	13.93
12:25 PM	24	90	0.4	17.36	7.15	1.270	-23.3	0.23	2.92	13.93
12:30 PM	30	90	0.4	17.33	7.15	1.268	-23.5	0.21	2.57	13.93

Collected Sample Condition

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

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A
SVOCs	1L AG	2	None	N/A
TAL 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	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units
C	degrees Celsius	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	TOC	top of casing
CG	clear glass	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million		
F	degrees Fahrenheit	HCL	hydrochloric acid								

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 2</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064479.0014.00603</u>	Well ID: <u>MW-14-58</u>	Sample ID: <u>MW-14-58_091714</u>
Sample Date: <u>9/17/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>4:10 PM</u>	Weather: <u>Cold 60 F</u>	

Instrument Identification

Purge Method: <u>Other Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>N/A</u>	<u>N/A</u>
Casing Material: _____	Screen Interval: <u>N/A</u>	
Casing Diameter: _____	Pump Intake Depth: <u>Initial: 25.0 ft bmp Final: 25.0 ft bmp</u>	
Measured Well Depth: <u>29.95 ft bmp</u>	Purge Time: <u>3:35 PM</u> to <u>4:05 PM</u>	
Depth to Water: <u>14.48 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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	100	0.2	16.68	6.56	4.372	-77.2	0.53	116.10	14.55
3:40 PM	5	100	0.3	17.27	6.56	4.933	-77.5	0.55	40.26	14.55
3:45 PM	10	100	0.3	17.50	6.61	5.439	-79.9	0.48	19.91	14.50
3:50 PM	15	100	0.4	17.42	6.61	5.550	-78.6	0.39	12.24	14.50
3:55 PM	21	100	0.5	17.36	6.61	5.603	-76.7	0.35	8.69	14.50
4:00 PM	25	100	0.7	17.40	6.60	5.658	-74.0	0.34	8.07	14.50
4:05 PM	30	100	0.8	17.37	6.60	5.706	-75.2	0.33	5.60	14.50

Collected Sample Condition

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

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A
SVOCs	1L AG	2	None	N/A
TAL 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	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units
C	degrees Celsius	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	TOC	top of casing
CG	clear glass	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million		
F	degrees Fahrenheit	HCL	hydrochloric acid								

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 2</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064479.0014.00603</u>	Well ID: <u>MW-14-59</u>	Sample ID: <u>MW-14-59_091814</u>
Sample Date: <u>9/18/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>10:30 AM</u>	Weather: <u>Cold 60 F</u>	

Instrument Identification

Purge Method: <u>Other Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>N/A</u>	<u>N/A</u>
Casing Material: _____	Screen Interval: <u>N/A</u>	
Casing Diameter: _____	Pump Intake Depth: <u>Initial: 15.00 ft bmp Final: 15.00 ft bmp</u>	
Measured Well Depth: <u>19.90 ft bmp</u>	Purge Time: <u>9:25 AM</u> to <u>10:25 AM</u>	
Depth to Water: <u>7.70 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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	70	0.2	15.40	7.16	1.159	-98.4	1.06	61.79	8.14
9:30 AM	5	70	0.2	15.24	7.13	1.154	-95.4	0.93	51.77	8.14
9:35 AM	10	70	0.3	14.99	7.09	1.152	-90.5	0.66	40.16	8.14
9:40 AM	15	70	0.4	15.04	7.08	1.153	-87.8	0.55	30.36	8.14
9:45 AM	20	70	0.5	15.24	7.07	1.152	-87.2	0.51	22.32	8.14
9:50 AM	25	70	0.5	15.49	7.07	1.154	-86.3	0.47	18.61	8.14
9:55 AM	30	70	0.7	15.66	7.07	1.156	-87.5	0.38	18.09	8.14
10:00 AM	35	70	0.7	15.77	7.07	1.155	-87.5	0.41	12.74	8.14
10:05 AM	41	70	0.9	15.79	7.07	1.158	-88.9	0.39	10.77	8.14
10:10 AM	45	70	1.0	15.77	7.07	1.157	-88.1	0.41	11.05	8.14
10:15 AM	50	70	1.1	15.80	7.06	1.156	-87.9	0.35	9.87	8.14
10:20 AM	55	70	1.2	15.85	7.06	1.157	-89.0	0.35	8.52	8.14
10:25 AM	60	70	1.3	16.00	7.07	1.157	-87.3	0.36	7.97	8.14

Collected Sample Condition

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

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A
SVOCs	1L AG	2	None	N/A
TAL 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	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units
C	degrees Celsius	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	TOC	top of casing
CG	clear glass	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million		
F	degrees Fahrenheit	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-14-60	Sample ID: MW-14-60_091914
Sample Date: 9/19/2014	Duplicate: N/A	Other QC: N/A
Sample Time: 10:45 AM	Weather: Cold 60 F	

Instrument Identification

Purge Method: Other 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: 22.0 ft bmp	Final: 22.0 ft bmp
Measured Well Depth: 23.59 ft bmp	Purge Time: 9:05 AM	to 10:40 AM
Depth to Water: 12.53 ft bmp	PID Reading: .6 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	75	0.2	13.59	7.63	1.247	-113.2	1.55	149.50	12.90
9:10 AM	5	75	0.2	13.50	7.60	1.221	-106.3	1.07	89.19	12.90
9:15 AM	11	75	0.4	13.43	7.54	1.206	-97.8	0.85	58.30	12.90
9:20 AM	15	75	0.4	13.53	7.53	1.196	-102.9	0.72	49.30	12.90
9:25 AM	20	75	0.5	13.73	7.51	1.191	-104.1	0.61	39.37	12.90
9:30 AM	25	75	0.5	14.01	7.51	1.199	-106.4	0.49	35.36	12.90
9:40 AM	35	75	0.7	14.35	7.51	1.191	-110.2	0.46	34.15	12.90
9:45 AM	40	75	0.8	14.53	7.50	1.189	-109.3	0.37	31.17	12.90
9:50 AM	45	75	0.8	14.57	7.50	1.189	108.9	0.35	30.20	12.90
9:55 AM	50	75	1.0	14.80	7.50	1.184	-109.0	0.34	25.39	12.90
10:00 AM	55	75	1.0	14.92	7.49	1.162	-104.9	0.32	28.35	12.90
10:05 AM	60	75	1.2	15.08	7.48	1.169	-109.0	0.28	22.35	12.90
10:10 AM	65	75	1.3	15.18	7.48	1.169	-106.3	0.28	15.88	12.90
10:15 AM	70	75	1.4	15.21	7.48	1.168	-104.2	0.27	14.25	12.90
10:20 AM	75	75	1.5	15.27	7.47	1.164	-100.3	0.26	21.95	12.90
10:25 AM	80	75	1.5	15.42	7.47	1.163	-104.5	0.24	13.64	12.90
10:30 AM	85	75	1.6	15.46	7.47	1.162	-104.0	0.24	9.85	12.90
10:35 AM	90	75	1.8	15.43	7.47	1.162	-102.3	0.24	9.47	12.90
10:40 AM	95	75	1.9	15.49	7.47	1.159	-103.9	0.21	9.35	12.90

Low-Flow Groundwater Sampling Log

Collected Sample Condition


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

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A
SVOCs	1L AG	2	None	N/A
TAL 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	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units
C	degrees Celsius	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	TOC	top of casing
CG	clear glass	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million		
F	degrees Fahrenheit	HCL	hydrochloric acid								

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 2</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064479.0014.00603</u>	Well ID: <u>MW-14-61</u>	Sample ID: <u>MW-14-61_091914</u>
Sample Date: <u>9/19/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>10:52 AM</u>	Weather: <u>Cold 60 F</u>	

Instrument Identification

Purge Method: <u>Other Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>N/A</u>	<u>N/A</u>
Casing Material: _____	Screen Interval: <u>N/A</u>	
Casing Diameter: _____	Pump Intake Depth: <u>Initial: 75 ft bmp Final: 75 ft bmp</u>	
Measured Well Depth: <u>77.54 ft bmp</u>	Purge Time: <u>10:30 AM</u> to <u>10:50 AM</u>	
Depth to Water: <u>72.84 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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	70	0.1	15.00	7.02	1.300	-62.9	0.95	2.41	72.95
10:35 AM	6	70	0.2	14.89	7.02	1.286	-63.7	0.53	2.95	72.95
10:40 AM	11	70	0.2	14.89	7.02	1.268	-65.1	0.49	2.94	72.95
10:45 AM	16	70	0.3	14.93	7.03	1.253	-64.5	0.46	2.62	72.95
10:50 AM	21	70	0.3	15.01	7.03	1.231	-63.7	0.56	1.89	72.95

Collected Sample Condition

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

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A
SVOCs	1L AG	2	None	N/A
TAL 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	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units
C	degrees Celsius	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	TOC	top of casing
CG	clear glass	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million		
F	degrees Fahrenheit	HCL	hydrochloric acid								

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 2</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064479.0014.00603</u>	Well ID: <u>MW-14-62</u>	Sample ID: <u>MW-14-62_091914</u>
Sample Date: <u>9/19/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>12:45 PM</u>	Weather: <u>Cold 60 F</u>	

Instrument Identification

Purge Method: <u>Other Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>N/A</u>	<u>N/A</u>
Casing Material: _____	Screen Interval: <u>N/A</u>	
Casing Diameter: _____	Pump Intake Depth: <u>Initial: 11.0 ft bmp Final: 11.0 ft bmp</u>	
Measured Well Depth: <u>19.64 ft bmp</u>	Purge Time: <u>12:10 PM</u> to <u>12:40 PM</u>	
Depth to Water: <u>6.32 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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)
12:10 PM	0	100	0.2	18.74	11.60	0.886	-232.8	0.77	12.00	6.60
12:15 PM	5	100	0.3	18.74	11.62	0.896	-237.2	0.75	2.60	6.60
12:20 PM	10	100	0.4	18.82	11.65	0.928	-247.9	0.44	2.36	6.60
12:25 PM	15	100	0.4	18.91	11.67	0.964	-257.3	0.43	2.14	6.60
12:30 PM	20	100	0.5	18.87	11.77	1.167	-270.0	0.33	1.24	6.60
12:35 PM	25	100	0.7	18.77	11.85	1.251	-282.5	0.24	1.33	6.60
12:40 PM	30	100	0.8	18.82	11.85	1.256	-279.3	0.26	0.00	6.60

Collected Sample Condition

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

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A
SVOCs	1L AG	2	None	N/A
TAL 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	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units
C	degrees Celsius	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	TOC	top of casing
CG	clear glass	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million		
F	degrees Fahrenheit	HCL	hydrochloric acid								

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 2</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064479.0014.00603</u>	Well ID: <u>MW-14-63</u>	Sample ID: <u>MW-14-63_091814</u>
Sample Date: <u>9/18/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>3:11 PM</u>	Weather: <u>Cloudy 62 F</u>	

Instrument Identification

Purge Method: <u>Other Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>1793</u>	<u>4191</u>
Casing Material: _____	Screen Interval: <u>N/A</u>	
Casing Diameter: _____	Pump Intake Depth: <u>Initial: 75.0 ft bmp Final: 75.0 ft bmp</u>	
Measured Well Depth: <u>76.79 ft bmp</u>	Purge Time: <u>2:10 PM</u> to <u>3:10 PM</u>	
Depth to Water: <u>71.50 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	71.50
2:15 PM	5	100	0.1	18.75	7.17	1.179	-58.3	1.81	1000.00	71.83
2:20 PM	9	100	0.2	18.44	7.22	1.191	-71.1	0.90	905.00	71.83
2:25 PM	15	100	0.3	18.40	7.22	1.194	-74.8	0.83	863.00	71.83
2:30 PM	20	100	0.4	18.33	7.22	1.197	-78.2	0.75	747.00	71.83
2:35 PM	24	100	0.5	18.36	7.22	1.197	-80.1	0.72	688.00	71.83
2:40 PM	29	100	0.6	18.41	7.21	1.201	-80.5	0.68	341.00	71.83
2:45 PM	35	100	0.7	18.42	7.21	1.202	-85.1	0.71	198.00	71.83
2:50 PM	39	100	0.8	18.47	7.21	1.204	-83.6	0.69	141.00	71.83
2:55 PM	45	100	0.9	18.55	7.21	1.203	-84.5	0.68	129.00	71.83
3:00 PM	50	100	1.0	18.52	7.21	1.205	-86.6	0.67	126.00	71.83
3:05 PM	54	100	1.1	18.55	7.21	1.205	-85.3	0.68	119.00	71.83
3:10 PM	60	100	1.2	18.57	7.21	1.207	-85.4	0.69	112.00	71.83

Collected Sample Condition

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

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A
SVOCs	1L AG	2	None	N/A
TAL Metals	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
 Sampling Remarks: Turbidity stabilized after 60 minutes, but above 10 ntu's. Therefore, both total and dissolved metals samples were collected

Technician: Bill Cobern

Signature: 

Abbreviations:

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

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 3</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064480.0014.00603</u>	Well ID: <u>MW-13-31</u>	Sample ID: <u>MW-13-31_091714</u>
Sample Date: <u>9/17/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>MS/MSD</u>
Sample Time: <u>11:19 AM</u>	Weather: <u>Cloudy 60 F</u>	

Instrument Identification

Purge Method: <u>Submersible Electric Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>1661</u>	<u>4022</u>
Casing Material: <u>PVC sch 40</u>	Screen Interval: <u>5.0 to 10.0 ft bgs</u>	
Casing Diameter: <u>2 in</u>	Pump Intake Depth: <u>Initial: 11.80 ft bmp Final: 11.80 ft bmp</u>	
Measured Well Depth: <u>12.80 ft bmp</u>	Purge Time: <u>10:21 AM</u> to <u>11:15 AM</u>	
Depth to Water: <u>10.90 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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)
10:23 AM	0	100	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10:25 AM	3	100	0.5	15.62	7.01	1.035	-80.1	0.79	442.00	N/A
10:30 AM	7	100	1.0	16.00	6.99	1.007	-48.8	0.46	342.00	N/A
10:35 AM	12	100	1.5	16.19	6.98	0.993	-24.1	0.27	135.00	N/A
10:40 AM	18	100	2.0	16.37	6.96	0.986	1.0	0.20	112.00	N/A
10:45 AM	22	100	2.5	16.48	6.96	0.986	16.7	0.16	22.70	N/A
10:50 AM	28	100	3.0	16.56	6.94	0.988	28.9	0.14	10.20	N/A
10:56 AM	33	100	3.5	16.68	6.92	0.989	38.6	0.15	5.02	N/A
11:00 AM	38	100	4.0	16.79	6.92	0.991	44.9	0.13	3.68	N/A
11:06 AM	43	100	4.5	16.92	6.93	0.994	51.5	0.12	2.63	N/A
11:10 AM	47	100	5.0	16.96	6.93	0.994	53.4	0.12	2.60	N/A
11:15 AM	53	100	5.5	16.95	6.92	0.995	55.3	0.11	2.65	N/A

Collected Sample Condition

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

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

Comments

General Comments: N/A
 Sampling Remarks: could not measure depth to water while purging. pump was above water level

Technician: Amy O'Neil

Signature: 

Abbreviations:

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

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 3</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064480.0014.00603</u>	Well ID: <u>MW-13-32</u>	Sample ID: <u>MW-13-32_091814</u>
Sample Date: <u>9/18/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>1:16 PM</u>	Weather: <u>Cloudy 60 F</u>	

Instrument Identification

Purge Method: <u>Other Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>N/A</u>	Serial #: <u>05J2007</u>	<u>1329</u>
Casing Material: <u>PVC sch 40</u>	Screen Interval: <u>5.0 to 10.0 ft bgs</u>	
Casing Diameter: <u>2 in</u>	Pump Intake Depth: <u>Initial: 11.0 ft bmp Final: 11.0 ft bmp</u>	
Measured Well Depth: <u>N/A</u>	Purge Time: <u>12:15 PM</u> to <u>1:15 PM</u>	
Depth to Water: <u>N/A</u>	PID Reading: <u>0.0 ppm</u>	

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)
12:15 PM	0	50	0.0	N/A	N/A	N/A	N/A	N/A	N/A	8.23
12:20 PM	5	50	0.1	19.97	6.57	1.694	24.5	0.70	30.60	8.56
12:25 PM	10	50	0.1	20.23	6.58	1.695	26.3	0.69	31.30	8.56
12:30 PM	16	50	0.2	21.12	6.59	1.700	24.3	0.69	31.10	8.56
12:35 PM	21	50	0.2	21.62	6.61	1.702	23.3	0.65	30.60	8.56
12:40 PM	25	50	0.3	22.31	6.65	1.706	20.9	0.62	30.20	8.56
12:45 PM	30	50	0.3	23.31	6.64	1.710	25.3	0.69	29.60	8.56
12:50 PM	36	50	0.4	23.69	6.69	1.711	26.9	0.69	30.10	8.56
12:55 PM	41	50	0.4	24.12	6.67	1.712	27.2	0.68	31.60	8.56
1:00 PM	45	50	0.5	24.52	6.65	1.719	25.9	0.69	29.90	8.56
1:05 PM	51	50	0.5	24.35	6.65	1.721	25.8	0.69	31.30	8.56
1:10 PM	56	50	0.6	24.56	6.64	1.719	25.4	0.68	32.60	8.56
1:15 PM	60	50	0.6	24.76	6.65	1.721	25.7	0.69	31.00	8.56

Collected Sample Condition

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

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

Comments

General Comments: N/A
 Sampling Remarks: Drawdown stabilized at a flow rate of 50 ml/min. Turbidity was stable, but at a value greater than 10 ntu's, therefore both total and dissolved metals were collected.

Technician: Amy O'Neil

Signature: 

Abbreviations:

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

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 3</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064480.0014.00603</u>	Well ID: <u>MW-13-33</u>	Sample ID: <u>MW-13-33_091714</u>
Sample Date: <u>9/17/2014</u>	Duplicate: <u>DUP_02_091714</u>	Other QC: <u>N/A</u>
Sample Time: <u>1:42 PM</u>	Weather: <u>Cloudy 60 F</u>	

Instrument Identification

Purge Method: <u>Submersible Electric Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>1661</u>	<u>4022</u>
Casing Material: <u>PVC sch 40</u>	Screen Interval: <u>12.0 to 17.0 ft bgs</u>	
Casing Diameter: <u>2 in</u>	Pump Intake Depth: <u>Initial: 17.20 ft bmp</u>	<u>Final: 19.00 ft bmp</u>
Measured Well Depth: <u>19.20 ft bmp</u>	Purge Time: <u>12:05 PM</u>	<u>to 12:50 PM</u>
Depth to Water: <u>15.24 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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)
12:05 PM	0	100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	15.21
12:11 PM	5	100	0.5	15.65	6.76	0.657	84.4	1.57	23.10	N/A
12:15 PM	10	100	1.0	15.68	6.79	0.670	90.8	0.77	20.40	N/A
12:20 PM	15	100	1.5	15.65	6.81	0.677	88.9	0.61	15.20	N/A
12:25 PM	19	100	2.0	15.83	6.81	0.681	89.7	0.58	16.00	N/A
12:30 PM	25	100	2.5	17.00	6.81	0.699	90.0	1.83	15.50	N/A
12:37 PM	32	100	3.0	15.84	6.81	0.670	92.5	1.54	63.90	N/A
12:43 PM	37	100	3.5	15.51	6.83	0.668	92.9	0.86	62.20	N/A
12:45 PM	39	100	4.0	15.52	6.83	0.668	93.0	0.70	30.70	N/A
12:50 PM	44	100	4.5	15.51	6.85	0.668	92.7	0.58	25.00	N/A

Collected Sample Condition

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

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

Comments

General Comments: N/A
 Sampling Remarks: could not measure drawdown, pump is too long

Technician: Amy O'Neil

Signature: 

Abbreviations:

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

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 3</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064480.0014.00603</u>	Well ID: <u>MW-13-34</u>	Sample ID: <u>MW-13-34_091714</u>
Sample Date: <u>9/17/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>10:20 AM</u>	Weather: <u>Cloudy Sunny 52 F</u>	

Instrument Identification

Purge Method: <u>Other Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>1793</u>	<u>4191</u>
Casing Material: <u>PVC sch 40</u>	Screen Interval: <u>74.0 to 79.0 ft bgs</u>	
Casing Diameter: <u>2 in</u>	Pump Intake Depth: <u>Initial: 77.0 ft bmp</u>	<u>Final: 77.0 ft bmp</u>
Measured Well Depth: <u>79.89 ft bmp</u>	Purge Time: <u>9:18 AM</u>	<u>to 10:20 AM</u>
Depth to Water: <u>69.49 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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)
9:18 AM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	69.49
9:25 AM	6	100	0.1	14.94	7.03	1.870	-40.1	4.19	1000.00	69.82
9:30 AM	11	100	0.2	14.75	7.02	1.882	-43.1	1.40	1000.00	69.82
9:35 AM	16	100	0.3	14.76	7.00	1.890	-45.7	1.19	850.00	69.82
9:40 AM	21	100	0.4	15.06	6.93	1.917	-51.0	0.86	563.00	69.82
9:45 AM	26	100	0.5	15.23	6.90	1.948	-54.1	0.76	432.00	69.82
9:50 AM	31	100	0.6	15.61	6.86	1.995	-56.0	0.67	393.00	69.82
9:55 AM	36	100	0.7	15.93	6.85	2.051	-59.9	0.60	386.00	69.82
10:00 AM	42	100	0.8	16.01	6.87	2.070	-60.5	0.63	379.00	69.82
10:05 AM	46	100	0.9	16.11	6.87	2.083	-61.6	0.59	366.00	69.82
10:10 AM	51	100	1.0	16.15	6.84	2.104	-62.3	0.59	369.00	69.82
10:15 AM	56	100	1.1	16.40	6.83	2.133	-60.3	0.59	344.00	69.82
10:20 AM	61	100	1.2	16.51	6.83	2.136	-61.0	0.58	333.00	69.82

Collected Sample Condition

Color: black **Odor:** No **Appearance:** turbid

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A

Comments

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

Technician: Amy O'Neil|Bill Cobern

Signature: 

Abbreviations:

C	degrees Celsius	ft	feet	HCL	hydrochloric acid	mL/min	milliliters per minute	mV	millivolts	NTU	nephelometric turbidity units
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mS/cm	millisiemens per centimeter	N/A	not available	ppm	parts per million
F	degrees Fahrenheit	gal	gallons							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_091614
Sample Date: 9/16/2014	Duplicate: N/A	Other QC: N/A
Sample Time: 11:50 AM	Weather: Cloudy 60 F	

Instrument Identification

Purge Method: Submersible Electric Pump	Water Quality Meters: YSI	Turbidity Meter
Measuring Point: TOC	Serial #: 1661	4022
Casing Material: Welded Steel	Screen Interval: 97.0 to 112.0 ft bgs	
Casing Diameter: 4 in	Pump Intake Depth: Initial: 106.63 ft bmp	Final: 106.63 ft bmp
Measured Well Depth: 109.18 ft bmp	Purge Time: 10:34 AM	to 11:44 AM
Depth to Water: 68.12 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	67.99
10:39 AM	5	100	0.1	13.20	7.60	0.986	-148.2	0.55	22.30	68.50
10:48 AM	13	100	0.3	13.18	7.66	0.975	-155.0	0.38	18.00	68.60
10:51 AM	17	100	0.4	13.12	7.65	0.976	-137.4	0.38	24.80	68.60
10:55 AM	20	100	2.5	13.17	7.64	0.979	-140.9	0.41	26.50	68.63
11:00 AM	26	100	3.0	13.26	7.61	0.985	-150.2	0.43	26.00	68.70
11:05 AM	30	100	3.5	13.39	7.59	0.993	-143.7	0.41	29.50	68.70
11:10 AM	36	100	4.0	13.60	7.55	1.002	-141.2	3.00	29.70	68.70
11:15 AM	41	100	4.5	13.63	7.52	1.013	-142.3	2.40	27.60	68.70
11:20 AM	45	100	5.0	13.68	7.51	1.019	-166.1	2.00	27.90	68.70
11:25 AM	50	100	5.5	13.48	7.46	1.036	-173.5	0.16	27.20	68.70
11:30 AM	55	100	6.0	13.59	7.37	1.034	-152.0	0.19	27.00	68.71
11:35 AM	60	100	6.5	13.91	7.34	1.069	-147.0	0.18	26.90	68.71
11:40 AM	65	100	7.0	13.93	7.32	1.075	-141.4	0.18	26.80	68.71
11:44 AM	70	100	7.5	13.93	7.30	1.075	-145.5	0.18	26.90	68.71

Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: green Odor: No Appearance: clear

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

Comments

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

Technician: Amy O'Neil

Signature: 

Abbreviations:

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

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 3</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064480.0014.00603</u>	Well ID: <u>MW-13-40</u>	Sample ID: <u>MW-13-40_091614</u>
Sample Date: <u>9/16/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>11:25 AM</u>	Weather: <u>Cloudy 54 F</u>	

Instrument Identification

Purge Method: <u>Other Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>1793</u>	<u>4191</u>
Casing Material: <u>Sch 40 PVC</u>	Screen Interval: <u>72.0 to 77.0 ft bgs</u>	
Casing Diameter: <u>2 in</u>	Pump Intake Depth: <u>Initial: 76.0 ft bmp</u>	<u>Final: 76.0 ft bmp</u>
Measured Well Depth: <u>78.91 ft bmp</u>	Purge Time: <u>10:25 AM</u>	<u>to 11:25 AM</u>
Depth to Water: <u>65.66 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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)
10:26 AM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	65.66
10:30 AM	5	100	0.1	14.82	6.76	6.534	31.4	1.44	212.00	65.99
10:35 AM	9	100	0.2	14.87	6.78	6.532	25.0	1.46	192.00	65.97
10:40 AM	15	100	0.3	15.01	6.82	6.539	17.4	1.36	180.00	65.94
10:45 AM	20	100	0.4	15.21	6.84	6.536	10.7	1.38	169.00	65.89
10:50 AM	25	100	0.5	15.42	6.86	6.527	7.1	1.43	141.00	65.89
10:55 AM	30	100	0.6	15.52	6.86	6.537	5.1	1.41	125.00	65.89
11:00 AM	34	100	0.7	16.23	6.92	6.526	-1.0	1.19	141.00	65.88
11:05 AM	39	100	0.8	16.81	7.02	6.558	-5.3	1.09	146.00	65.87
11:10 AM	44	100	0.9	17.21	7.05	6.571	-8.0	1.07	149.00	65.87
11:15 AM	49	100	1.0	17.59	7.07	6.574	-10.1	1.05	151.00	65.87
11:20 AM	55	100	1.1	18.13	7.11	6.604	-13.1	1.01	154.00	65.88
11:25 AM	59	100	1.2	18.43	7.14	6.601	-13.6	1.01	156.00	65.87

Collected Sample Condition

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

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Vanadium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
 Sampling Remarks: collected both total and dissolved metals due to high but stable turbidity.

Technician: Bill Cobern

Signature: 

Abbreviations:

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

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 3</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064480.0014.00603</u>	Well ID: <u>MW-13-41</u>	Sample ID: <u>MW-13-41_091614</u>
Sample Date: <u>9/16/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>1:10 PM</u>	Weather: <u>Sunny 60 F</u>	

Instrument Identification

Purge Method: <u>Other Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>1793</u>	<u>4191</u>
Casing Material: <u>Sch 40 PVC</u>	Screen Interval: <u>77.0 to 82.0 ft bgs</u>	
Casing Diameter: <u>2 in</u>	Pump Intake Depth: <u>Initial: 82.0 ft bmp</u>	<u>Final: 82.0 ft bmp</u>
Measured Well Depth: <u>84.74 ft bmp</u>	Purge Time: <u>12:20 PM</u>	<u>to 1:10 PM</u>
Depth to Water: <u>65.97 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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)
12:20 PM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12:25 PM	4	100	0.1	17.08	6.97	4.634	-42.3	10.59	17.70	65.99
12:30 PM	9	100	0.2	16.50	7.04	5.330	-50.9	2.72	16.20	65.99
12:35 PM	14	100	0.3	16.44	7.03	5.341	-53.0	1.71	15.20	65.98
12:40 PM	19	100	0.4	16.32	7.02	5.356	-54.4	1.09	15.10	65.98
12:45 PM	24	100	0.5	16.25	7.02	5.364	-54.7	0.85	14.70	65.98
12:50 PM	29	100	0.6	16.13	7.02	5.385	-56.3	0.63	15.40	65.98
12:55 PM	34	100	0.7	15.92	7.02	5.445	-58.7	0.49	13.40	65.99
1:00 PM	39	100	0.8	15.82	7.02	5.530	-60.7	0.44	11.10	65.99
1:05 PM	44	100	0.9	15.73	7.02	5.604	-61.1	0.43	9.32	65.99
1:10 PM	49	100	1.0	15.78	7.02	5.663	-62.0	0.42	9.81	65.99

Collected Sample Condition

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

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Vanadium, 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	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	TOC	top of casing
CG	clear glass	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million		
F	degrees Fahrenheit	HCL	hydrochloric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units		
ft	feet	HNO3	nitric acid								

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 3</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064480.0014.00603</u>	Well ID: <u>MW-13-46</u>	Sample ID: <u>MW-13-46_091614</u>
Sample Date: <u>9/16/2014</u>	Duplicate: <u>DUP_03_091614</u>	Other QC: <u>N/A</u>
Sample Time: <u>2:50 PM</u>	Weather: <u>Sunny 65 F</u>	

Instrument Identification

Purge Method: <u>Other Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>1793</u>	<u>4191</u>
Casing Material: _____	Screen Interval: <u>68.0 to 73.0 ft bgs</u>	
Casing Diameter: _____	Pump Intake Depth: <u>Initial: 72.0 ft bmp</u>	<u>Final: 72.0 ft bmp</u>
Measured Well Depth: <u>74.66 ft bmp</u>	Purge Time: <u>2:05 PM</u>	<u>to 2:50 PM</u>
Depth to Water: <u>67.95 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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)
2:05 PM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	67.95
2:10 PM	5	100	0.1	17.28	6.68	1.964	-42.6	0.98	484.00	68.23
2:15 PM	10	100	0.2	17.63	6.66	1.935	-38.1	0.88	241.00	68.23
2:20 PM	15	100	0.3	18.58	6.65	1.908	-32.2	0.87	165.00	68.22
2:25 PM	20	100	0.4	19.53	6.64	1.885	-25.8	0.99	115.00	68.21
2:30 PM	25	100	0.5	19.94	6.64	1.884	-25.2	0.97	101.00	68.20
2:35 PM	30	100	0.6	20.13	6.64	1.882	-24.7	0.96	99.20	68.19
2:40 PM	35	100	0.7	20.19	6.64	1.881	-24.9	0.97	97.60	68.18
2:45 PM	40	100	0.8	20.09	6.64	1.881	-24.6	0.93	97.60	68.17
2:50 PM	45	100	0.9	20.24	6.64	1.880	-24.5	0.95	96.60	68.16

Collected Sample Condition

Color: black **Odor:** No **Appearance:** turbid

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A

Comments

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

Technician: Bill Cobern

Signature: 

Abbreviations:

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

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 3</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064480.0014.00603</u>	Well ID: <u>MW-13-48</u>	Sample ID: <u>MW-13-48_091714</u>
Sample Date: <u>9/17/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>12:10 PM</u>	Weather: <u>Cloudy Sunny 56 F</u>	

Instrument Identification

Purge Method: <u>Other Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>1793</u>	<u>4191</u>
Casing Material: _____	Screen Interval: <u>65.0 to 70.0 ft bgs</u>	
Casing Diameter: _____	Pump Intake Depth: <u>Initial: 70.0 ft bmp</u>	<u>Final: 70.0 ft bmp</u>
Measured Well Depth: <u>73.06 ft bmp</u>	Purge Time: <u>10:50 AM</u>	<u>to 12:10 PM</u>
Depth to Water: <u>60.68 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	60.68
10:55 AM	6	100	0.1	18.93	6.79	2.337	-64.9	3.85	1000.00	60.70
11:00 AM	11	100	0.2	18.59	6.71	2.338	-60.7	1.11	1000.00	60.70
11:05 AM	15	100	0.3	18.26	6.70	2.338	-55.9	0.57	608.00	60.70
11:10 AM	21	100	0.4	17.99	6.68	2.338	-55.4	0.39	160.00	60.70
11:15 AM	26	100	0.5	18.00	6.68	2.337	-55.6	0.35	122.00	60.70
11:20 AM	30	100	0.6	17.95	6.68	2.340	-55.7	0.35	99.60	60.70
11:25 AM	35	100	0.7	18.13	6.67	2.333	-55.9	0.36	86.10	60.70
11:30 AM	41	100	0.8	18.18	6.68	2.341	-56.1	0.37	72.30	60.70
11:35 AM	45	100	0.9	18.21	6.68	2.335	-57.1	0.38	61.10	60.70
11:40 AM	51	100	1.0	18.12	6.68	2.336	-57.2	0.37	45.50	60.70
11:45 AM	56	100	1.1	18.22	6.68	2.337	-56.9	0.38	42.10	60.70
11:50 AM	61	100	1.2	18.42	6.69	2.339	-58.2	0.37	31.00	60.70
11:55 AM	65	100	1.3	18.56	6.69	2.340	-56.2	0.36	21.60	60.70
12:00 PM	71	100	1.4	18.63	6.70	2.342	-55.6	0.36	17.20	60.70
12:05 PM	75	100	1.5	18.74	6.71	2.339	-56.3	0.36	11.30	60.70
12:10 PM	81	100	1.6	18.66	6.70	2.338	-55.9	0.36	9.92	60.70

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	3	HCL	N/A

Comments

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

Technician: Amy O'Neil|Bill Cobern

Signature: 

Abbreviations:

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

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 3</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064480.0014.00603</u>	Well ID: <u>MW-13-49</u>	Sample ID: <u>MW-13-49_091614</u>
Sample Date: <u>9/16/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>3:37 PM</u>	Weather: <u>Cloudy 60 F</u>	

Instrument Identification

Purge Method: <u>Submersible Electric Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>1661</u>	<u>4022</u>
Casing Material: _____	Screen Interval: <u>73.0 to 78.0 ft bgs</u>	
Casing Diameter: _____	Pump Intake Depth: <u>Initial: 79.28 ft bmp Final: 79.28 ft bmp</u>	
Measured Well Depth: <u>81.78 ft bmp</u>	Purge Time: <u>2:28 PM</u> to <u>3:34 PM</u>	
Depth to Water: <u>69.18 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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)
2:28 PM	0	100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	68.77
2:36 PM	8	100	0.5	19.85	7.10	1.545	-95.8	1.72	189.00	70.59
2:40 PM	11	100	1.0	19.65	7.10	1.530	-105.7	0.50	175.00	70.70
2:45 PM	17	100	2.0	19.33	7.10	1.515	-107.0	0.47	129.00	70.89
2:50 PM	22	100	2.5	18.52	7.10	1.489	-103.1	0.42	108.00	71.11
2:55 PM	26	100	3.0	17.92	7.09	1.472	-94.4	0.34	112.00	71.39
2:59 PM	31	100	3.5	17.30	7.07	1.454	-86.3	0.31	52.50	71.75
3:05 PM	37	100	4.0	16.11	7.05	1.414	-75.7	0.24	48.20	72.20
3:10 PM	42	100	4.5	16.11	7.04	1.409	-72.2	0.22	21.70	72.61
3:15 PM	46	100	5.0	16.11	7.04	1.410	-69.0	0.22	19.90	72.86
3:20 PM	51	100	5.5	16.03	7.04	1.405	-66.3	0.21	13.80	73.21
3:26 PM	57	100	6.0	16.07	7.04	1.404	-64.0	0.21	10.20	73.61
3:30 PM	61	100	6.5	15.91	7.04	1.400	-64.2	0.21	9.95	73.91
3:34 PM	66	100	7.0	16.09	7.03	1.396	-61.2	0.21	9.92	74.20

Collected Sample Condition

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

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A

Comments

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

Technician: Amy O'Neil

Signature: 

Abbreviations:

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

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 3</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064480.0014.00603</u>	Well ID: <u>MW-14-64</u>	Sample ID: <u>MW-14-64_091714</u>
Sample Date: <u>9/17/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>4:25 PM</u>	Weather: <u>Sunny 69 F</u>	

Instrument Identification

Purge Method: <u>Other Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>1793</u>	<u>4191</u>
Casing Material: _____	Screen Interval: <u>N/A</u>	
Casing Diameter: _____	Pump Intake Depth: <u>Initial: 104.0 ft bmp Final: 104.0 ft bmp</u>	
Measured Well Depth: <u>106.31 ft bmp</u>	Purge Time: <u>3:30 PM</u> to <u>4:25 PM</u>	
Depth to Water: <u>72.76 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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)
3:31 PM	0	100	0.0	N/A	N/A	N/A	N/A	N/A	N/A	72.76
3:35 PM	3	100	0.1	18.16	7.03	0.923	-43.8	2.20	127.00	69.92
3:40 PM	9	100	0.2	18.17	7.03	0.930	-48.8	1.72	52.30	69.92
3:45 PM	14	100	0.3	17.91	7.00	0.950	-51.0	1.30	48.10	69.92
3:50 PM	19	100	0.4	17.88	6.99	0.957	-52.7	1.04	40.30	69.92
3:55 PM	23	100	0.5	17.78	6.98	0.966	-53.6	0.91	36.30	69.92
4:00 PM	28	100	0.6	17.57	6.98	0.977	-54.0	0.81	29.30	69.92
4:05 PM	34	100	0.7	17.52	6.98	0.985	-54.1	0.75	22.80	69.92
4:10 PM	38	100	0.8	17.49	6.98	0.998	-57.1	0.57	18.60	69.92
4:15 PM	43	100	0.9	17.40	6.98	1.006	-57.3	0.53	15.60	69.92
4:20 PM	49	100	1.0	17.34	6.98	1.015	-57.0	0.51	11.30	69.92
4:25 PM	53	100	1.1	17.31	6.98	1.023	-57.0	0.50	9.79	69.92

Collected Sample Condition

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

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A
SVOCs	1L AG	2	None	N/A
TAL 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	HNO3	nitric acid	mS/cm	millisiemens per centimeter	NTU	nephelometric turbidity units	SU	standard units
C	degrees Celsius	ft bmp	feet below measuring point	mg/L	milligrams per liter	mV	millivolts	PE	polyethylene	TOC	top of casing
CG	clear glass	gal	gallons	mL/min	milliliters per minute	N/A	not available	ppm	parts per million		
F	degrees Fahrenheit	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-14-65	Sample ID: MW-14-65_091714
Sample Date: 9/17/2014	Duplicate: N/A	Other QC: N/A
Sample Time: 1:56 PM	Weather: Sunny 66 F	

Instrument Identification

Purge Method: Other Pump	Water Quality Meters: YSI	Turbidity Meter
Measuring Point: TOC	Serial #: 1793	4191
Casing Material:	Screen Interval: N/A	
Casing Diameter:	Pump Intake Depth: Initial: 10.0 ft bmp	Final: 10.0 ft bmp
Measured Well Depth: 13.24 ft bmp	Purge Time: 12:40 PM	to 1:55 PM
Depth to Water: 6.50 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)
12:41 PM	0	50	0.0	N/A	N/A	N/A	N/A	N/A	N/A	6.50
12:45 PM	4	50	0.1	19.46	6.96	1.070	-27.9	1.80	1000.00	6.83
12:50 PM	9	50	0.1	19.52	6.96	1.070	-28.0	1.82	1000.00	6.89
12:55 PM	15	50	0.2	19.54	6.96	1.071	-28.2	1.83	1000.00	6.93
1:00 PM	20	50	0.2	19.57	6.97	1.072	-28.4	1.80	1000.00	7.02
1:05 PM	24	50	0.3	19.60	6.97	1.072	-28.9	1.81	1000.00	7.14
1:10 PM	29	50	0.3	19.61	6.98	1.072	-29.1	1.79	1000.00	7.20
1:15 PM	35	50	0.4	19.62	6.99	1.073	-29.4	1.79	1000.00	7.19
1:20 PM	39	50	0.4	19.61	6.99	1.073	-29.6	1.79	1000.00	7.21
1:25 PM	45	50	0.5	19.63	6.99	1.073	-29.9	1.77	1000.00	7.23
1:30 PM	49	50	0.5	19.63	7.00	1.073	-30.1	1.82	1000.00	7.24
1:35 PM	55	50	0.6	19.54	7.01	1.073	-30.8	1.77	1000.00	7.22
1:40 PM	60	50	0.6	19.51	7.01	1.073	-30.8	1.81	904.00	7.24
1:45 PM	65	50	0.7	19.51	7.02	1.071	-31.1	1.83	864.00	7.24
1:50 PM	69	50	0.7	19.53	7.03	1.069	-31.5	1.86	854.00	7.25
1:55 PM	74	50	0.8	19.55	7.03	1.068	-31.9	1.89	844.00	7.26

Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: brown Odor: No Appearance: turbid

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A
SVOCs	1L AG	2	None	N/A
TAL Metals	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
 Sampling Remarks: Drawdown didn't stabilize at 50 ml/min.
 Turbidity stable but at a value greater than 10 ntu. Therefore, both total and dissolved metals were collected.

Technician: Bill Cobern

Signature: 

Abbreviations:

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

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 3</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064480.0014.00603</u>	Well ID: <u>UNK-09</u>	Sample ID: <u>UNK-09_091614</u>
Sample Date: <u>9/16/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>1:36 PM</u>	Weather: <u>Cloudy 60 F</u>	

Instrument Identification

Purge Method: <u>Submersible Electric Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>1661</u>	<u>4022</u>
Casing Material: <u>PVC sch 40</u>	Screen Interval: <u>11.0 to 16.0 ft bgs</u>	
Casing Diameter: <u>2 in</u>	Pump Intake Depth: <u>Initial: 12.76 ft bmp Final: 12.76 ft bmp</u>	
Measured Well Depth: <u>15.26 ft bmp</u>	Purge Time: <u>12:53 PM</u> to <u>1:30 PM</u>	
Depth to Water: <u>4.93 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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)
12:53 PM	0	100	0.5	N/A	N/A	N/A	N/A	N/A	N/A	2.66
12:55 PM	1	100	1.0	18.66	7.68	0.630	-146.4	0.77	12.00	3.40
1:00 PM	6	100	1.5	18.91	7.68	0.620	-147.5	0.23	7.39	3.40
1:05 PM	11	100	2.0	19.83	7.67	0.629	-141.8	0.18	6.30	3.40
1:10 PM	16	100	2.5	20.28	7.66	0.635	-141.3	0.14	5.98	3.40
1:15 PM	21	100	3.0	20.60	7.66	0.639	-136.5	0.13	6.48	3.40
1:20 PM	26	100	3.5	20.87	7.65	0.642	-141.7	0.08	6.30	3.40
1:25 PM	31	100	4.0	20.52	7.65	0.635	-139.4	0.08	5.89	3.40
1:30 PM	37	100	4.5	20.53	7.64	0.632	-134.9	0.08	6.02	3.40

Collected Sample Condition

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

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

Comments

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

Technician: Amy O'Neil

Signature: _____



Abbreviations:

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

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 6</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064481.0014.00603</u>	Well ID: <u>MW-03-01</u>	Sample ID: <u>MW-03-01_091614</u>
Sample Date: <u>9/16/2014</u>	Duplicate: <u>DUP_04_091614</u>	Other QC: <u>N/A</u>
Sample Time: <u>5:23 PM</u>	Weather: <u>Sunny 70 F</u>	

Instrument Identification

Purge Method: <u>Other Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>3298</u>	<u>4433</u>
Casing Material: <u>PVC sch 40</u>	Screen Interval: <u>28.0 to 33.0 ft bgs</u>	
Casing Diameter: <u>2 in</u>	Pump Intake Depth: <u>Initial: 30 ft bmp Final: 30 ft bmp</u>	
Measured Well Depth: <u>33.32 ft bmp</u>	Purge Time: <u>4:34 PM</u> to <u>5:20 PM</u>	
Depth to Water: <u>23.65 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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)
4:34 PM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	23.35
4:35 PM	2	75	0.0	16.78	6.71	14.420	-80.1	1.62	81.20	23.51
4:40 PM	7	100	0.0	16.20	6.68	14.660	-69.3	0.54	74.30	23.70
4:45 PM	11	75	0.3	16.22	6.67	14.650	-63.9	0.46	72.30	23.78
4:51 PM	17	75	0.3	16.27	6.67	14.650	-57.6	0.31	52.30	23.89
4:55 PM	21	0.75	0.3	17.06	6.69	14.660	-52.1	0.45	24.30	23.91
5:00 PM	26	0.75	0.3	17.15	6.69	14.670	-50.0	0.39	17.70	23.93
5:05 PM	31	0.75	0.3	17.37	6.69	14.670	-49.8	0.35	10.30	23.93
5:10 PM	36	0.75	0.5	17.48	6.70	14.680	-48.1	0.35	8.30	23.93
5:15 PM	42	0.75	0.5	17.51	6.70	14.700	-47.0	0.32	6.20	23.93
5:20 PM	46	0.75	0.8	17.44	6.70	14.710	0.3	0.30	5.70	23.93

Collected Sample Condition

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

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Vanadium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: none

Technician: Steve Stelter

Signature: _____



Abbreviations:

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

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 6</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064481.0014.00603</u>	Well ID: <u>MW-03-08</u>	Sample ID: <u>MW-03-08_091914</u>
Sample Date: <u>9/19/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>1:01 PM</u>	Weather: <u>Sunny 58 F</u>	

Instrument Identification

Purge Method: <u>Other Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>1793</u>	<u>4191</u>
Casing Material: <u>PVC sch 40</u>	Screen Interval: <u>35.0 to 45.0 ft bgs</u>	
Casing Diameter: <u>2 in</u>	Pump Intake Depth: <u>Initial: 42 ft bmp Final: 42 ft bmp</u>	
Measured Well Depth: <u>44.92 ft bmp</u>	Purge Time: <u>12:00 PM</u> to <u>1:00 PM</u>	
Depth to Water: <u>33.82 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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)
12:00 PM	0	50	0.0	N/A	N/A	N/A	N/A	N/A	N/A	33.82
12:05 PM	6	50	0.1	15.93	7.33	1.786	-99.1	0.68	449.00	34.15
12:10 PM	10	50	0.1	16.44	7.30	1.799	-94.9	0.58	430.00	34.15
12:15 PM	15	50	0.2	16.44	7.31	1.801	-93.8	0.47	405.00	34.15
12:20 PM	21	50	0.2	16.58	7.31	1.790	-96.3	0.45	352.00	34.15
12:25 PM	26	50	0.3	16.88	7.32	1.782	97.0	0.43	321.00	34.15
12:30 PM	30	50	0.3	17.26	7.32	1.778	-93.9	0.46	290.00	34.15
12:35 PM	36	50	0.4	17.53	7.32	1.775	-93.0	0.47	288.00	34.15
12:40 PM	41	50	0.4	17.97	7.32	1.767	-94.5	0.48	254.00	34.15
12:45 PM	46	50	0.5	18.21	7.33	1.763	-95.8	0.49	198.00	34.15
12:50 PM	51	50	0.5	18.36	7.34	1.760	-96.4	0.54	240.00	34.15
12:55 PM	56	50	0.6	18.60	7.34	1.750	-95.3	0.54	242.00	34.15
1:00 PM	60	50	0.6	18.75	7.34	1.743	-95.7	0.55	242.00	34.15

Collected Sample Condition

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

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A

Comments

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

Technician: Bill Cobern

Signature: 

Abbreviations:

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

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 6</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064481.0014.00603</u>	Well ID: <u>MW-04-04R</u>	Sample ID: <u>MW-04-04R_091714</u>
Sample Date: <u>9/17/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>5:45 PM</u>	Weather: <u>Sunny 70 F</u>	

Instrument Identification

Purge Method: <u>N/A</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>N/A</u>	<u>N/A</u>
Casing Material: <u>Welded Steel</u>	Screen Interval: <u>82.0 to 110.0 ft bgs</u>	
Casing Diameter: _____	Pump Intake Depth: <u>Initial: N/A Final: N/A</u>	
Measured Well Depth: <u>111.12 ft bmp</u>	Purge Time: _____ to _____	
Depth to Water: <u>81.21 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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)

Collected Sample Condition

Color: N/A **Odor:** N/A **Appearance:** N/A

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

Comments

General Comments: N/A
 Sampling Remarks: Sample log was not completed at time of sample.

Technician: Steve Stelter

Signature: 

Abbreviations:

F	degrees Fahrenheit	HNO3	nitric acid	PE	polyethylene	ppm	parts per million	TOC	top of casing
ft bmp	feet below measuring point	N/A	not available						

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_091614
Sample Date: 9/16/2014	Duplicate: N/A	Other QC: N/A
Sample Time: 3:46 PM	Weather: Sunny 70 F	

Instrument Identification

Purge Method: Other Pump	Water Quality Meters: YSI	Turbidity Meter
Measuring Point: TOC	Serial #: 3298	4433
Casing Material: Welded Steel	Screen Interval: 74.0 to 99.5 ft bgs	
Casing Diameter:	Pump Intake Depth: Initial: 74 ft bmp Final: 74 ft bmp	
Measured Well Depth: 78.11 ft bmp	Purge Time: 1:34 PM to 3:45 PM	
Depth to Water: 70.52 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)
1:34 PM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	70.50
1:55 PM	21	150	0.0	16.72	7.22	3.750	-128.6	5.17	117.30	70.58
2:01 PM	26	150	N/A	16.06	7.24	3.764	-137.7	3.01	114.60	70.58
2:05 PM	30	150	0.3	15.68	7.52	3.757	-150.2	0.52	37.30	70.62
2:10 PM	35	125	0.3	16.10	7.25	3.748	-146.3	0.41	24.60	70.58
2:15 PM	40	125	0.3	16.94	7.27	3.754	-148.7	0.40	41.30	70.58
2:20 PM	45	125	0.5	17.60	7.25	3.757	-141.8	0.45	35.10	70.58
2:26 PM	51	125	0.5	18.58	7.22	3.761	-130.2	0.37	30.10	70.58
2:30 PM	55	125	0.8	18.43	7.22	3.762	-128.2	0.39	30.90	70.58
2:36 PM	61	125	0.8	18.60	7.22	3.762	-130.3	0.43	31.60	70.58
2:40 PM	65	125	0.8	18.59	7.21	3.769	-132.6	0.43	28.10	70.58
2:45 PM	70	125	1.0	18.75	7.20	3.761	-130.8	0.41	29.30	70.58
2:50 PM	75	125	1.0	19.06	7.20	3.759	-129.3	0.38	18.60	70.58
2:55 PM	80	125	1.3	19.25	7.19	3.766	-123.3	0.35	27.30	70.58
3:00 PM	85	125	1.5	19.48	7.19	3.767	-132.2	0.36	19.30	70.58
3:05 PM	90	125	1.5	18.93	7.20	3.775	-141.2	0.32	19.50	70.58
3:10 PM	95	125	1.5	18.86	7.21	3.766	-139.1	0.30	20.10	70.58
3:15 PM	100	125	1.5	18.71	7.20	3.761	-141.5	0.29	21.30	70.58
3:22 PM	108	125	2.0	18.71	7.19	3.760	-133.1	0.26	25.80	70.58
3:26 PM	111	125	2.0	18.49	7.18	3.751	-134.9	0.23	7.18	70.58
3:30 PM	115	125	2.5	18.70	7.17	3.761	-130.9	0.22	22.30	70.58
3:35 PM	121	125	2.5	18.35	7.15	3.782	-132.3	0.23	19.60	70.58
3:41 PM	127	125	2.0	18.59	7.12	3.769	-126.1	0.21	20.10	70.58
3:45 PM	130	125	2.5	18.11	7.10	3.801	-120.7	0.21	21.60	70.58

Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: yellow Odor: No Appearance: clear

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

Comments

General Comments: N/A
Sampling Remarks: none

Technician: Steve Stelter

Signature: 

Abbreviations:

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

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 6</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064481.0014.00603</u>	Well ID: <u>MW-12-12</u>	Sample ID: <u>MW-12-12_091714</u>
Sample Date: <u>9/17/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>10:30 AM</u>	Weather: <u>Sunny 70 F</u>	

Instrument Identification

Purge Method: <u>N/A</u>	Water Quality Meters: <u>N/A</u>	<u>N/A</u>
Measuring Point: <u>TOC</u>	Serial #: <u>N/A</u>	<u>N/A</u>
Casing Material: <u>PVC sch 40</u>	Screen Interval: <u>13.0 to 18.0 ft bgs</u>	
Casing Diameter: <u>2 in</u>	Pump Intake Depth: <u>Initial: N/A Final: N/A</u>	
Measured Well Depth: <u>17.24 ft bmp</u>	Purge Time: _____ to _____	
Depth to Water: <u>7.36 ft bmp</u>	PID Reading: <u>N/A</u>	

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)

Collected Sample Condition

Color: N/A **Odor:** N/A **Appearance:** N/A

Parameter	Container	# of Containers	Preservative	Comments
VOCs	40 mL CG	3	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Vanadium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
 Sampling Remarks: Sample log was not completed at time of sampling.

Technician: Steve Stelter

Signature: 

Abbreviations:

CG	clear glass	ft bmp	feet below measuring point	HNO3	nitric acid	N/A	not available	PE	polyethylene	TOC	top of casing
F	degrees Fahrenheit	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-13-35	Sample ID: MW-13-35_091614
Sample Date: 9/16/2014	Duplicate: N/A	Other QC: N/A
Sample Time: 12:59 PM	Weather: Sunny 70 F	

Instrument Identification

Purge Method: Other Pump	Water Quality Meters: YSI	Turbidity Meter
Measuring Point: TOC	Serial #: 1191	3106
Casing Material:	Screen Interval: 25.0 to 30.0 ft bgs	
Casing Diameter:	Pump Intake Depth: Initial: 26 ft bmp Final: 26 ft bmp	
Measured Well Depth: 29.51 ft bmp	Purge Time: 11:06 AM to 12:55 PM	
Depth to Water: 24.31 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)
11:06 AM	0	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	24.32
11:31 AM	24	100	0.0	13.80	6.87	2.398	-27.5	0.44	113.00	24.34
11:35 AM	29	100	0.3	14.09	6.87	2.398	-29.3	0.44	104.00	24.34
11:41 AM	34	100	0.3	14.17	6.88	2.395	-31.9	0.39	101.00	24.34
11:45 AM	38	100	0.5	14.24	6.88	2.398	-28.3	0.36	76.90	24.34
11:50 AM	43	100	0.5	14.34	6.88	2.395	-33.5	0.29	61.80	24.34
11:55 AM	48	100	0.8	14.26	6.88	2.392	-30.0	0.26	51.30	24.33
12:00 PM	53	100	0.8	14.22	6.86	2.365	-28.0	0.28	32.10	24.33
12:05 PM	58	100	1.0	14.09	6.86	2.336	-35.8	0.21	21.00	24.32
12:10 PM	63	100	1.0	14.08	6.85	2.307	-30.9	0.21	18.60	24.32
12:15 PM	69	100	1.0	14.15	6.86	2.276	-34.3	0.19	21.30	24.32
12:20 PM	73	100	1.3	14.26	6.87	2.256	-37.5	0.19	15.30	24.32
12:25 PM	78	100	1.5	14.33	6.87	2.232	-41.0	0.19	15.30	24.32
12:30 PM	83	100	1.5	14.45	6.87	2.209	-41.3	0.16	14.50	24.32
12:35 PM	88	100	2.0	14.65	6.87	2.186	-36.2	0.16	11.50	24.32
12:40 PM	93	100	2.0	14.54	6.86	2.147	-34.4	0.17	7.30	24.32
12:45 PM	98	100	2.5	14.96	6.85	2.041	-37.9	0.15	8.30	24.32
12:53 PM	107	100	2.8	15.38	6.84	2.086	-36.8	0.18	6.90	24.32
12:55 PM	108	100	3.0	15.37	6.84	2.077	-37.5	0.15	7.20	24.32

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, Vanadium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
Sampling Remarks: none

Technician: Steve Stelter

Signature: 

Abbreviations:

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

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 6</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064481.0014.00603</u>	Well ID: <u>MW-13-36R</u>	Sample ID: <u>MW-13-36R_091714</u>
Sample Date: <u>9/17/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>1:35 PM</u>	Weather: <u>Sunny 70 F</u>	

Instrument Identification

Purge Method: <u>N/A</u>	Water Quality Meters: <u>N/A</u>	<u>N/A</u>
Measuring Point: <u>TOC</u>	Serial #: <u>N/A</u>	<u>N/A</u>
Casing Material: _____	Screen Interval: <u>5.5 to 10.5 ft bgs</u>	
Casing Diameter: _____	Pump Intake Depth: <u>Initial: N/A Final: N/A</u>	
Measured Well Depth: <u>12.97 ft bmp</u>	Purge Time: _____ to _____	
Depth to Water: <u>5.02 ft bmp</u>	PID Reading: <u>N/A</u>	

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)

Collected Sample Condition

Color: N/A **Odor:** N/A **Appearance:** N/A

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

Comments

General Comments: N/A
 Sampling Remarks: Sample log was not completed at time of sampling.

Technician: Steve Stelter

Signature: 

Abbreviations:

F	degrees Fahrenheit	HNO3	nitric acid	PE	polyethylene	TOC	top of casing
ft bmp	feet below measuring point	N/A	not available				

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_091614
Sample Date: 9/16/2014	Duplicate: N/A	Other QC: N/A
Sample Time: 4:05 PM	Weather: Cold 60 F	

Instrument Identification

Purge Method: Other 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: 79.0 ft bmp Final: 79.0 ft bmp	
Measured Well Depth: 81.65 ft bmp	Purge Time: 3:30 PM to 4:00 PM	
Depth to Water: 71.38 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)
3:30 PM	0	100	0.3	16.61	7.00	1.208	-67.0	1.18	92.20	71.40
3:35 PM	5	100	0.4	16.39	7.02	1.205	-65.1	1.46	78.44	71.42
3:45 PM	15	100	0.5	15.98	6.98	1.190	-56.0	1.68	61.09	71.42
3:50 PM	21	100	0.7	16.04	6.94	1.183	-50.8	1.55	56.02	71.42
3:55 PM	25	100	0.8	16.09	6.99	1.183	-53.6	1.54	56.08	71.42
4:00 PM	31	100	0.9	16.07	6.99	1.183	-53.2	1.50	57.35	71.42

Collected Sample Condition

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

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A

Comments

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

Technician: Cliff Walls

Signature: 

Abbreviations:

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

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 6</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064481.0014.00603</u>	Well ID: <u>MW-13-53</u>	Sample ID: <u>MW-13-53_091714</u>
Sample Date: <u>9/17/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>9:35 AM</u>	Weather: <u>Cold 60 F</u>	

Instrument Identification

Purge Method: <u>Other Pump</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>N/A</u>	<u>N/A</u>
Casing Material: _____	Screen Interval: <u>73.0 to 83.0 ft bgs</u>	
Casing Diameter: _____	Pump Intake Depth: <u>Initial: 83.0 ft bmp Final: 83.0 ft bmp</u>	
Measured Well Depth: <u>85.50 ft bmp</u>	Purge Time: <u>8:50 AM</u> to <u>9:30 AM</u>	
Depth to Water: <u>78.08 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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)
8:50 AM	0	85	0.2	12.20	6.90	1.083	-19.2	3.22	55.51	78.01
8:55 AM	6	8	0.2	12.27	6.89	1.080	-18.6	2.39	54.36	78.01
9:00 AM	11	85	0.4	12.29	6.89	1.077	-18.2	1.64	41.31	78.01
9:05 AM	16	85	0.5	12.34	6.88	1.074	-17.6	1.45	37.68	78.01
9:10 AM	21	85	0.6	12.45	6.88	1.066	-17.2	1.43	29.41	78.01
9:15 AM	26	85	0.7	12.44	6.89	1.066	-16.9	1.49	24.56	78.01
9:20 AM	30	85	0.8	12.56	6.89	1.063	-17.0	1.58	18.75	78.01
9:25 AM	36	85	0.9	12.68	6.89	1.063	-17.0	1.75	19.21	78.01
9:30 AM	40	85	0.9	12.78	6.89	1.065	-16.9	1.75	18.53	78.01

Collected Sample Condition

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

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A

Comments

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

Technician: Cliff Walls

Signature: 

Abbreviations:

C	degrees Celsius	ft	feet	HCL	hydrochloric acid	mL/min	milliliters per minute	mV	millivolts	NTU	nephelometric turbidity units
CG	clear glass	ft bmp	feet below measuring point	mg/L	milligrams per liter	mS/cm	millisiemens per centimeter	N/A	not available	ppm	parts per million
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-14-66	Sample ID: MW-14-66_091814
Sample Date: 9/18/2014	Duplicate: N/A	Other QC: N/A
Sample Time: 10:11 AM	Weather: N/A	

Instrument Identification

Purge Method: Other Pump	Water Quality Meters: YSI	Turbidity Meter
Measuring Point: TOC	Serial #: 3298	4433
Casing Material:	Screen Interval: N/A	
Casing Diameter:	Pump Intake Depth: Initial: 18 ft bmp Final: 18 ft bmp	
Measured Well Depth: 22.24 ft bmp	Purge Time: 9:00 AM to 10:10 AM	
Depth to Water: 5.51 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	0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	5.09
9:02 AM	3	100	0.0	15.83	7.49	1.000	104.6	2.25	14.60	5.10
9:05 AM	5	100	0.0	15.88	7.44	0.997	73.7	2.86	11.70	5.10
9:10 AM	10	100	0.0	15.98	7.41	0.997	42.4	1.39	10.60	5.11
9:15 AM	16	100	0.3	16.04	7.37	1.006	7.4	0.72	9.19	5.13
9:20 AM	20	100	0.3	16.06	7.35	1.029	-18.5	0.50	7.60	5.15
9:25 AM	25	100	0.3	16.04	7.32	1.072	-31.4	0.36	6.90	5.16
9:30 AM	30	100	0.5	N/A	7.31	1.096	-37.6	0.26	5.60	5.17
9:36 AM	36	100	0.5	16.18	7.30	1.115	-40.0	0.20	4.20	5.10
9:40 AM	40	100	0.5	16.17	7.30	1.139	-42.5	0.17	5.10	5.18
9:45 AM	45	100	0.5	16.24	7.29	1.154	-43.9	0.15	6.20	5.18
9:50 AM	50	100	0.8	16.27	7.29	1.160	-43.9	0.14	5.20	5.19
9:55 AM	55	100	0.8	16.32	7.29	1.169	-44.1	0.12	4.70	5.19
10:00 AM	60	100	0.8	16.36	7.29	1.176	-46.3	0.13	3.60	5.19
10:05 AM	65	100	1.0	16.47	7.29	1.178	-46.9	0.12	4.10	5.19
10:10 AM	70	100	1.0	16.53	7.29	1.179	-48.8	0.12	3.10	5.19

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	3	HCL	N/A
SVOCs	1L AG	2	None	N/A
TAL Metals	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
 Sampling Remarks: none

Technician: _____

Signature: _____



Abbreviations:

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

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 6</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064481.0014.00603</u>	Well ID: <u>MW-14-67</u>	Sample ID: <u>MW-14-67_091614</u>
Sample Date: <u>9/16/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>12:03 PM</u>	Weather: <u>Sunny 70 F</u>	

Instrument Identification

Purge Method: <u>N/A</u>	Water Quality Meters: <u>N/A</u>	<u>N/A</u>
Measuring Point: <u>TOC</u>	Serial #: <u>N/A</u>	<u>N/A</u>
Casing Material: <u></u>	Screen Interval: <u>N/A</u>	
Casing Diameter: <u></u>	Pump Intake Depth: <u>Initial: N/A Final: N/A</u>	
Measured Well Depth: <u>20.90 ft bmp</u>	Purge Time: <u></u> to <u></u>	
Depth to Water: <u>5.00 ft bmp</u>	PID Reading: <u>N/A</u>	

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)

Collected Sample Condition

Color: N/A **Odor:** N/A **Appearance:** N/A

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A
SVOCs	1L AG	2	None	N/A
TAL Metals	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
 Sampling Remarks: No sample log was collected at the time of sampling.

Technician: Steve Stelter

Signature: 

Abbreviations:

AG	amber glass	F	degrees Fahrenheit	HCL	hydrochloric acid	HNO3	nitric acid	N/A	not available	PE	polyethylene
CG	clear glass	ft bmp	feet below measuring point							TOC	top of casing



Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 6</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064481.0014.00603</u>	Well ID: <u>MW-14-68</u>	Sample ID: <u>MW-14-68_091514</u>
Sample Date: <u>9/15/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>12:00 PM</u>	Weather: <u>Sunny 70 F</u>	

Instrument Identification

Purge Method: <u>N/A</u>	Water Quality Meters: <u>N/A</u>	<u>N/A</u>
Measuring Point: <u>TOC</u>	Serial #: <u>N/A</u>	<u>N/A</u>
Casing Material: <u></u>	Screen Interval: <u>N/A</u>	
Casing Diameter: <u></u>	Pump Intake Depth: <u>Initial: N/A Final: N/A</u>	
Measured Well Depth: <u>44.09 ft bmp</u>	Purge Time: <u></u> to <u></u>	
Depth to Water: <u>N/A</u>	PID Reading: <u>N/A</u>	

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)

Collected Sample Condition

Color: N/A **Odor:** N/A **Appearance:** N/A

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A
SVOCs	1L AG	2	None	N/A
TAL Metals	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
 Sampling Remarks: No sample was collected because the well was dry.

Technician: Steve Stelter

Signature: _____

Abbreviations:

AG	amber glass	F	degrees Fahrenheit	HCL	hydrochloric acid	HNO3	nitric acid	N/A	not available	PE	polyethylene
CG	clear glass	ft bmp	feet below measuring point							TOC	top of casing

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 6</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064481.0014.00603</u>	Well ID: <u>MW-14-69</u>	Sample ID: <u>MW-14-69_091514</u>
Sample Date: <u>9/15/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>11:50 AM</u>	Weather: <u>Sunny 70 F</u>	

Instrument Identification

Purge Method: <u>N/A</u>	Water Quality Meters: <u>N/A</u>	<u>N/A</u>
Measuring Point: <u>TOC</u>	Serial #: <u>N/A</u>	<u>N/A</u>
Casing Material: _____	Screen Interval: <u>N/A</u>	
Casing Diameter: _____	Pump Intake Depth: <u>Initial: N/A Final: N/A</u>	
Measured Well Depth: <u>N/A</u>	Purge Time: _____ to _____	
Depth to Water: <u>ft bmp</u>	PID Reading: <u>N/A</u>	

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)

Collected Sample Condition

Color: N/A **Odor:** N/A **Appearance:** N/A

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A
SVOCs	1L AG	2	None	N/A
TAL Metals	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
 Sampling Remarks: No sample was collected because the well was dry.

Technician: Steve Stelter

Signature: _____

Abbreviations:

AG	amber glass	F	degrees Fahrenheit	HCL	hydrochloric acid	HNO3	nitric acid	N/A	not available	PE	polyethylene
CG	clear glass	ft bmp	feet below measuring point							TOC	top of casing

Low-Flow Groundwater Sampling Log

Project: <u>Lansing-Plant 6</u>	Site Location: <u>East Lansing, MI</u>	
Project No: <u>B0064481.0014.00603</u>	Well ID: <u>MW-14-70</u>	Sample ID: <u>MW-14-70_091614</u>
Sample Date: <u>9/16/2014</u>	Duplicate: <u>N/A</u>	Other QC: <u>N/A</u>
Sample Time: <u>11:43 AM</u>	Weather: <u>Sunny 70 F</u>	

Instrument Identification

Purge Method: <u>N/A</u>	Water Quality Meters: <u>YSI</u>	<u>Turbidity Meter</u>
Measuring Point: <u>TOC</u>	Serial #: <u>N/A</u>	<u>N/A</u>
Casing Material: _____	Screen Interval: <u>N/A</u>	
Casing Diameter: _____	Pump Intake Depth: <u>Initial: N/A Final: N/A</u>	
Measured Well Depth: <u>23.34 ft bmp</u>	Purge Time: _____ to _____	
Depth to Water: <u>10.51 ft bmp</u>	PID Reading: <u>0.0 ppm</u>	

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)

Collected Sample Condition

Color: N/A **Odor:** N/A **Appearance:** N/A

Parameter	Container	# of Containers	Preservative	Comments
VOCs; 1,4-Dioxane	40 mL CG	3	HCL	N/A
SVOCs	1L AG	2	None	N/A
TAL Metals	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
 Sampling Remarks: No sample log was created at the time of sampling.

Technician: Steve Stelter

Signature: _____

Abbreviations:

AG	amber glass	F	degrees Fahrenheit	HCL	hydrochloric acid	HNO3	nitric acid	N/A	not available	PE	polyethylene
CG	clear glass	ft bmp	feet below measuring point							ppm	parts per million
										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-32	Sample ID: P6-SB-32_091914
Sample Date: 9/19/2014	Duplicate: N/A	Other QC: Equipment Blank
Sample Time: 11:07 AM	Weather: Sunny 70 F	

Instrument Identification

Purge Method: Other Pump	Water Quality Meters: YSI	Turbidity Meter
Measuring Point: N/A	Serial #: 1793	4191
Casing Material: PVC sch 40	Screen Interval: 7.0 to 12.0 ft bgs	
Casing Diameter: 2 in	Pump Intake Depth: Initial: 14.0 ft bmp	Final: 14.0 ft bmp
Measured Well Depth: N/A	Purge Time: 10:05 AM	to 11:05 AM
Depth to Water: N/A	PID Reading: 83 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)
10:05 AM	0	50	0.0	N/A	N/A	N/A	N/A	N/A	N/A	8.38
10:10 AM	5	50	0.1	18.18	7.01	1.832	-73.7	0.38	62.10	9.01
10:15 AM	10	50	0.1	18.35	7.00	1.827	-74.3	0.33	60.30	8.99
10:20 AM	14	50	0.2	18.37	7.01	1.828	-75.5	0.29	59.30	8.97
10:25 AM	20	50	0.2	18.46	7.01	1.827	-74.8	0.25	58.00	8.93
10:30 AM	25	50	0.3	18.50	7.01	1.828	-74.5	0.25	56.30	8.93
10:35 AM	29	50	0.3	18.44	7.02	1.830	-74.6	0.25	54.50	8.95
10:40 AM	35	50	0.4	18.45	7.02	1.831	-74.6	0.23	56.10	8.96
10:45 AM	40	50	0.4	18.52	7.01	1.830	-74.5	0.21	56.10	8.96
10:50 AM	44	50	0.5	18.54	7.01	1.831	-74.2	0.20	55.90	8.96
10:55 AM	49	50	0.5	18.57	7.01	1.831	-74.0	0.18	56.30	8.97
11:00 AM	55	50	0.6	18.67	7.01	1.829	-73.5	0.17	56.70	8.97
11:05 AM	60	50	0.6	18.68	7.01	1.831	-73.8	0.17	56.80	8.97

Low-Flow Groundwater Sampling Log

Collected Sample Condition

Color: clear Odor: Yes Appearance: cloudy

Parameter	Container	# of Containers	Preservative	Comments
VOCs	40 mL CG	3	HCL	N/A
Select Metals: Arsenic, Nickel, Lead, Vanadium, Chromium, and Copper	125 mL PE	1	HNO3	N/A

Comments

General Comments: N/A
 Sampling Remarks: Drawdown stabilized at a depth greater than 4". Turbidity stabilized at a value greater than 10 ntu's, therefore both total and dissolved metals were collected. Equipment Blank EB0004_091914 was collected prior to gauging/sampling this well.

Technician: Steve Stelter

Signature: 

Abbreviations:

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