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MEMORANDUM

TO: Darlene Stringer, MDEQ
Matt Gamble, MDEQ

REF. NO.: 017360-T01Y14

FROM: Jeni Quigley/jq/71/Pwl.

DATE: June 3, 2014

CC: David Favero, RACER

RE: **Proposed Groundwater Monitoring Program Modifications
Former Grand Rapids Metal Plant
Wyoming, Michigan**

Conestoga-Rovers & Associates (CRA), on behalf of Revitalizing Auto Communities Environmental Response (RACER) Trust, is submitting this request to modify the current groundwater monitoring program at the former Grand Rapids Metal Plant property located at 300 36th Street SW in Wyoming, Michigan (Site). Groundwater monitoring is currently performed at the Site on a semi-annual basis as part of the on-going interim monitoring program.

The proposed modifications to the current monitoring program, as well as justifications for each modification, are presented in Table 1. The monitoring wells that are proposed to be sampled, or not sampled, during each groundwater monitoring event are presented in Figure 1. The proposed modifications to groundwater sample analyses performed on samples collected from each monitoring well location are presented in Figure 2.

Please contact David Favero at (217) 741-6235 or Jeni Quigley at (269) 685-5181 with any questions regarding this Memorandum or the enclosed information.

**TABLE 1
PROPOSED CHANGES TO SEMI-ANNUAL GROUNDWATER MONITORING
FORMER GRAND RAPIDS METAL PLANT
WYOMING, MICHIGAN**

<u>Sample Location ID</u>	<u>Former Location ID ⁽¹⁾</u>	<u>Screen Depth (ft bgs)</u>	<u>Ground Surface Elevation (ft AMSL)</u>	<u>Screen Elevations (ft AMSL)</u>	<u>Current Sample Analysis</u>	<u>Proposed Change in Monitoring</u>	<u>Justification</u>
85-1		15.5 to 20.5	675.57	660.07 to 655.07	VOCs, Metals	Do not sample as part of routine monitoring	The screen elevation of 85-1 is similar to that of MW58-13 and the wells are only located approximately 250 ft. apart. Sufficient monitoring of the aquifer in this area can be completed by sampling MW58-13.
85-2		13.5 to 18.5	671.83	658.33 to 653.33	VOCs, Metals	Do not sample as part of routine monitoring	The screen elevation of 85-2 is similar to that of MW27-11 and the wells are only located approximately 200 feet from each other. Sufficient monitoring of the aquifer in this area can be completed by sampling MW27-11.
85-6		19.5 to 24.5	679.91	660.41 to 655.41	VOCs and SVOCs	None	Monitoring wells within the area of observed LNAPL will continue to be monitored for VOCs and SVOCs.
85-7		20.6 to 25.6	678.14	657.54 to 652.54	VOCs, Metals	Install a new PVC monitoring well near this location and abandon 85-7.	Elevated metals concentrations are potentially a result of the galvanized steel well casing and steel screen. The necessity for analyzing groundwater samples for metals concentrations will be re-evaluated following initial sampling of the replacement well.
86-3		41.5 to 46.5	676.26	634.76 to 629.76	VOCs	None	This monitoring well will continue to be sampled in order to monitor the off-Site groundwater plume.
87-10		29 to 32	668.08	639.08 to 636.08	VOCs	None	This monitoring well will continue to be sampled in order to monitor the off-Site groundwater plume.
87-11		30 to 33	666.68	636.68 to 633.68	VOCs, Metals	Install a new PVC monitoring well near this location and abandon 87-11.	Elevated metals concentrations are potentially a result of the galvanized steel well casing and steel screen. The necessity for analyzing groundwater samples for metals concentrations will be re-evaluated following initial sampling of the replacement well.
87-13		40 to 43	663.91	623.91 to 620.91	VOCs	None	This monitoring well will continue to be sampled in order to monitor the off-Site groundwater plume.
87-8		19.7 to 22.7	677.30	657.60 to 654.60	VOCs	None	This monitoring well will continue to be sampled in order to monitor the off-Site groundwater plume.
87-9		50.5 to 53.5	673.53	623.03 to 620.03	VOCs	Do not sample as part of routine monitoring	The screen elevation of monitoring well 87-9 is similar to that of MW11D-04 and the wells are located approximately 500 ft. apart. Sufficient monitoring of the aquifer in this area can be completed by sampling the down-gradient well, MW11D-04.
88-2		26 to 29	665.95	639.95 to 636.95	VOCs	Do not sample as part of routine monitoring	Based on hydraulic head measurements and groundwater sample analytical data, it appears that the Cole Drain creates a hydraulic barrier and is the discharge point for the portion of the aquifer being monitored (to the east of the drain). This monitoring well location is on the opposite (west) side of the hydraulic barrier. Also, monitoring results from 2003 through 2014 have not detected any COCs or indicated any exceedances of Part 201 Criteria.
88-3		27 to 30	664.65	637.65 to 634.65	VOCs	Do not sample as part of routine monitoring	Based on hydraulic head measurements and groundwater sample analytical data, it appears that the Cole Drain creates a hydraulic barrier and is the discharge point for the portion of the aquifer being monitored (to the east of the drain). This monitoring well location is on the opposite (west) side of the hydraulic barrier. Also, monitoring results from 2003 through 2014 have not detected any COCs or indicated any exceedances of Part 201 Criteria.
88-4		18 to 21	661.45	643.45 to 640.45	VOCs	Do not sample as part of routine monitoring	Based on hydraulic head measurements and groundwater sample analytical data, it appears that the Cole Drain creates a hydraulic barrier and is the discharge point for the portion of the aquifer being monitored (to the east of the drain). This monitoring well location is on the opposite (west) side of the hydraulic barrier. Also, monitoring results from 2003 through 2014 have not detected any COCs or indicated any exceedances of Part 201 Criteria.
MW1-03		30 to 35	678.99	648.99 to 643.99	VOCs	Do not sample as part of routine monitoring	The screen elevation of MW1-03 is similar to that of MW49-13 and the wells are only located approximately 80 ft. apart. Sufficient monitoring of the aquifer, and of the plume migrating on-Site, in this area can be completed by sampling MW49-13.
MW2-03		22 to 27	680.89	658.89 to 653.89	VOCs	None	This monitoring well will continue to be sampled in order to monitor the off-Site groundwater plume.
MW10-04		33 to 38	666.63	633.63 to 628.63	VOCs	None	This monitoring well will continue to be sampled in order to monitor the off-Site groundwater plume.
MW11D-04		40 to 45	663.71	623.71 to 618.71	VOCs	None	This monitoring well will continue to be sampled in order to monitor the off-Site groundwater plume.
MW11S-05		5 to 10	663.27	658.27 to 653.27	VOCs	None	This monitoring well will continue to be sampled in order to monitor the off-Site groundwater plume.

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MW13-04		25 to 30	678.85	653.85 to 648.85	VOCs	Do not sample as part of routine monitoring	This monitoring well is located side-gradient to the Site and near the eastern property line. Other monitoring wells in the area (MW46-12, MW45-12, and 85-6) are better situated to monitor groundwater conditions and possible migration of COCs due to groundwater flow direction.
MW15-04		25 to 30	671.89	646.89 to 641.89	VOCs	None	This monitoring well will continue to be sampled in order to monitor the possible migration of COCs off-Site.
MW17-06		51 to 56	664.64	613.64 to 608.64	VOCs	None	
MW27-11		12.5 to 17.5	671.71	659.21 to 654.21	VOCs	Collect a sample for metals analysis	MW27-11 was installed downgradient of the Bulk Unload Area to monitor groundwater conditions related to soil contamination in this area. Multiple exceedances of GSIPC in soil samples collected in this area have been observed.
MW28-12		14 to 19	676.85	662.85 to 657.85	VOCs	None	A temporary monitoring well (SB88-11) installed up-gradient from MW28-12 detected concentrations of PCE above the DWC. MW28-12 was originally installed to investigate a confirmed release from a diesel UST; however, it will now serve as a monitoring point for potential PCE contamination in this area of the Site.
MW29-12	MW21-11	11.4 to 21.4	675.99	664.59 to 654.59	VOCs	Do not sample as part of routine monitoring	The screen elevation of MW29-12 is similar to that of MW31-12 and MW32-12 and the wells are only located approximately 250 to 300-ft from each other. Sufficient monitoring of the aquifer in this area can be completed by sampling the monitoring well furthest down-gradient from the plume migrating on-Site, MW32-12.
MW30-12	MW3-03	25 to 30	676.96	651.96 to 646.96	VOCs	None	This monitoring well will continue to be sampled to monitor groundwater conditions in the vicinity of the former power house and baler house.
MW31-12	MW24-11	12.2 to 22.2	675.65	663.45 to 653.45	VOCs, Metals	Do not sample as part of routine monitoring	The screen elevation of MW31-12 is similar to that of MW29-12 and MW32-12 and the wells are only located approximately 250 to 300-ft from each other. Sufficient monitoring of the aquifer in this area can be completed by sampling the monitoring well furthest down-gradient from the plume migrating on-Site, MW32-12.
MW32-12	MW19-11	13.9 to 23.9	676.41	662.51 to 652.51	VOCs	None	
MW33-12	87-2	31 to 36	679.16	648.16 to 643.16	VOCs, Metals	Do not collect a sample for Metals analysis	Monitoring results to-date indicate exceedances of DWC; however, risks related to the drinking water pathway are mitigated through the current RC and the existence of the City's water supply. Monitoring for metals concentrations will occur only at points of compliance near the GSI (wells adjacent to Cole Drain).
MW34-12	87-4	14.4 to 24.4	675.01	660.61 to 650.61	VOCs, Metals	Do not collect a sample for Metals analysis	Monitoring results to-date indicate concentrations of metals that exceed the DWC; however, risks related to the drinking water pathway are mitigated through the current RC and the existence of the City's water supply. Monitoring for metals concentrations will occur only at points of compliance near the GSI (wells adjacent to Cole Drain).
MW35-12	86-2	24.6 to 29.6	677.62	653.02 to 648.02	VOCs	None	This monitoring well is located in the vicinity of the historical degreaser release (source area) and will continue to be sampled to monitor groundwater conditions near the former source area.
MW36-12	MW23-11	19.5 to 29.5	680.24	660.74 to 650.74	VOCs	Do not sample as part of routine monitoring	The screen elevation of MW36-12 is similar to that of MW37-12 and MW38-12 and the wells are only located approximately 100 to 175-ft from each other. Sufficient monitoring of the aquifer in this area can be completed by sampling MW38-12.
MW37-12	87-1	19.4 to 29.4	680.80	661.40 to 651.40	VOCs, Metals	Do not sample as part of routine monitoring	The screen elevation of MW37-12 is similar to that of MW36-12 and MW38-12 and the wells are only located approximately 100 to 175-ft from each other. Sufficient monitoring of the aquifer in this area can be completed by sampling MW38-12.
MW38-12	MW26-11	20 to 30	680.85	660.85 to 650.85	VOCs, Metals	Do not collect a sample for Metals analysis	Monitoring results to-date indicate concentrations of metals that exceed the DWC; however, risks related to the drinking water pathway are mitigated through the current RC and the existence of the City's water supply. Monitoring for metals concentrations will occur only at points of compliance near the GSI (wells adjacent to Cole Drain).
MW39-12	87-5	35.4 to 40.4	679.53	644.13 to 639.13	VOCs, Metals	Do not sample as part of routine monitoring	The screen elevation of MW39-12 is similar to that of MW40-12 and the wells are only located approximately 250 feet from each other. Sufficient monitoring of the aquifer in this area can be completed by sampling MW40-12.

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MW40-12	MW14-04	45 to 50	681.58	636.58 to 631.58	VOCs	None	This monitoring well is located down-gradient from the historical degreaser release (source area) and will continue to be sampled to monitor groundwater conditions near the former source area.
MW4-03		52 to 57	679.30	627.30 to 622.30	VOCs	None	This monitoring well will continue to be sampled in order to monitor the off-Site groundwater plume.
MW41-12	MW20-11	18.3 to 28.3	678.40	660.10 to 650.10	VOCs	None	This monitoring well is located down-gradient from the historical degreaser release (source area) and will continue to be sampled to monitor groundwater conditions near the former source area.
MW42-12	MW22-11	21 to 31	681.44	660.44 to 650.44	VOCs	None	This monitoring well is located down-gradient from the historical degreaser release (source area) and will continue to be sampled to monitor groundwater conditions near the former source area.
MW43-12	MW25-11	15 to 25	675.96	660.96 to 650.96	VOCs	None	This monitoring well is located down-gradient from the defined LNAPL area and areas where excavation activities occurred in 2012. It will continue to be sampled to monitor groundwater conditions in this area.
MW44-12	85-5B	18.5 to 28.5	679.97	661.47 to 651.47	VOCs, SVOCs, and Metals	Do not collect a sample for Metals analysis	Monitoring results to-date indicate concentrations of metals that exceed the DWC; however, risks related to the drinking water pathway are mitigated through the current RC and the existence of the City's water supply. Monitoring for metals concentrations will occur only at points of compliance near the GSI (wells adjacent to Cole Drain). Monitoring wells within the area of observed LNAPL will continue to be monitored for VOCs and SVOCs.
MW45-12	MW18-10	19.1 to 29.1	679.23	660.13 to 650.13	VOCs, SVOCs, and Metals	Do not collect a sample for Metals analysis	Monitoring results to-date indicate concentrations of metals that exceed the DWC; however, risks related to the drinking water pathway are mitigated through the current RC and the existence of the City's water supply. Monitoring for metals concentrations will occur only at points of compliance near the GSI (wells adjacent to Cole Drain). Monitoring wells within the area of observed LNAPL will continue to be monitored for VOCs and SVOCs.
MW46-12	86-1	20.2 to 30.2	680.60	660.40 to 650.40	VOCs, SVOCs, and Metals (including hexavalent chromium)	Do not collect a sample for Metals analysis	Monitoring results to-date indicate concentrations of metals that exceed the DWC; however, risks related to the drinking water pathway are mitigated through the current RC and the existence of the City's water supply. Monitoring for metals concentrations will occur only at points of compliance near the GSI (wells adjacent to Cole Drain). Monitoring wells within the area of observed LNAPL will continue to be monitored for VOCs and SVOCs.
MW48-13		46 to 51	671.47	625.47 to 620.47	VOCs	None	
MW49-13		34 to 39	679.23	645.23 to 640.23	VOCs	None	This monitoring well will continue to be sampled in order to monitor the off-Site groundwater plume that is migrating on to the Site.
MW50-12		17 to 27	680.48	663.48 to 653.48	VOCs and SVOCs	None	Monitoring wells within the area of observed LNAPL will continue to be monitored for VOCs and SVOCs.
MW5-03		30 to 35	675.77	645.77 to 640.77	VOCs	Do not sample as part of routine monitoring	The screen elevation of MW5-03 is similar to that of MW8-04 and the wells are only located approximately 200 feet apart. Sufficient monitoring of the aquifer in this area can be completed by sampling MW8-04.
MW51-12		17 to 27	680.73	663.73 to 653.73	VOCs and SVOCs	None	Monitoring wells within the area of observed LNAPL will continue to be monitored for VOCs and SVOCs.
MW52-12		16.7 to 26.7	679.98	663.28 to 653.28	VOCs and SVOCs	None	Monitoring wells within the area of observed LNAPL will continue to be monitored for VOCs and SVOCs.
MW53-12		13 to 23	677.24	664.24 to 654.24	VOCs	Do not sample as part of routine monitoring	MW53-12 was installed to investigate the potential for additional VOC sources on the southwest portion of the property or an additional plume migrating onto the property. Results of all monitoring to-date have not indicated any exceedance of Part 201 Criteria or detections of groundwater COCs.

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MW57-13		10 to 20	677.80	667.80 to 657.80	VOCs	Do not sample as part of routine monitoring	MW57-13 was installed to investigate the potential for the presence of LNAPL after results of a groundwater sample collected from a temporary well in this location identified concentrations of PNAs above the water solubility criteria. The presence of LNAPL has not been detected in MW57-13 and sample results do not indicate the presence of PAHs above the water solubility criteria.
MW58-13		13.5 to 18.5	675.63	662.13 to 657.13	VOCs	None	This monitoring well will continue to be sampled in order to monitor potential migration of groundwater contamination off-Site.
MW6-03		13 to 18	665.60	652.60 to 647.60	VOCs	None	This monitoring well will continue to be sampled in order to monitor the off-Site groundwater plume.
MW7-03		36 to 41	675.03	639.03 to 634.03	VOCs	None	This monitoring well will continue to be sampled in order to monitor the off-Site groundwater plume.
MW8-04		30 to 35	674.50	644.50 to 639.50	VOCs	None	This monitoring well will continue to be sampled in order to monitor the off-Site groundwater plume.
MW9-04		43 to 48	678.27	635.27 to 630.27	VOCs	None	This monitoring well will continue to be sampled in order to monitor the off-Site groundwater plume.
PWDISCH		45 to 55	669.39	624.39 to 614.39	VOCs	Do not sample as part of routine monitoring	PWDISCH was installed as a discharge well for the former groundwater treatment system. The well has a 10-ft long screen that does not straddle the water table surface. Also, 10-ft screens are not recommended for monitoring unless the presence of LNAPL is the primary concern and LNAPL has not been observed in any of the wells in this area. The screen elevation is also similar to MW11D-04. Sufficient monitoring of the aquifer in this area can be completed by sampling the down-gradient well MW11D-04.

Notes:

⁽¹⁾ During Site demolition in 2012 several monitoring wells were destroyed and subsequently replaced following the completion of demolition activities. The replacement wells were assigned new location IDs.

COCs - Contaminants of Concern

DWC - Drinking Water Criteria

GSI - Groundwater-Surface Water Interface

GSIPC - Groundwater-Surface Water Interface Protection Criteria

LNAPL - light non-aqueous phase liquid

PAHs - polynuclear aromatic hydrocarbons

RC - Declaration of Restrictive Covenant

SVOCs - semi-volatile organic compounds

VOCs - volatile organic compounds