

April 14, 2022

Peter Ramanauskas
U.S. EPA Region 5
77 West Jackson Blvd.
Chicago, Illinois 60604-3590

Dear Mr. Ramanauskas:

Re: RCRA Corrective Action Administrative Order on Consent (AOC)
Progress Report 82, October 2021 through March 2022
GM Casting Operations Bedford Facility, ID 006036099, Docket No. RCRA 05 2017 0011
Bedford, Indiana

This Progress Report is submitted by General Motors LLC (GM) in accordance with the GM Bedford Casting Operations (BCO) Facility Resource Conservation and Recovery Act (RCRA) Administrative Order on Consent (AOC – United States Environmental Protection Agency [U.S. EPA] Docket No. RCRA 05-2014-0011), executed on August 4, 2014. This report covers the period from October 2021 through March 2022 for the RCRA Corrective Action (CA) Project at the GM BCO – Bedford Facility (Facility) and select surrounding properties (Site), Bedford, Indiana.

The next RCRA progress report covering April through October 2022 will be submitted on or before October 15, 2022.

1. List of Completed Activities

The following activities took place, and the following documents were prepared and distributed during this quarter:

1. The Groundwater Treatment Plant (GWTP) collected and treated water from the Pilot Trench, Vault sumps, and wet wells during October 2021 through March 2022. An estimated 0.50 pounds of PCBs were removed during the reporting period through collection and treatment of the groundwater. A summary of the volumes and sample results used for this calculation is provided in Table 1. Operational and compliance samples were collected quarterly. Monthly discharge monitoring reports have been submitted to the State of Indiana in conformance with the National Pollutant Discharge Elimination System (NPDES) Permit Number IN0064424. A total of 23,608,449 gallons of treated groundwater were discharged during the reporting period.
2. Absorbent socks were removed and replaced from CH-5, MW-X209Y053, and CAMW-3 monthly from October 2021 through March 2022. Table 2 summarizes oil removal (based on disposal weights) from the AOI-8 area.
3. Progress Report 81 covering activities from April through September 2021 was submitted to U.S. EPA on October 12, 2021.



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4. Memorandum providing the catch basin repair summary was submitted to U.S. EPA on October 14, 2021.
5. Annual Project Update Meeting (Part 3) was held by virtual conference on October 21, 2021.
6. EI CA750 groundwater monitoring was conducted the week of November 15, 2021.
7. The 2022 Financial Assurance cost estimate was submitted to U.S.EPA on November 16, 2021.
8. Far field dye test background sampling began November 22, 2021.
9. GM requested U.S.EPA's approval to re-use gravel removed during sewer repair air knifing activities as backfill in the excavated entry holes on December 3, 2021.
10. Letter summarizing the cores stored on-Site was submitted to U.S.EPA on December 8, 2021.
11. Responses to U.S.EPA comments on the 2020 Annual Vault Report were submitted to U.S.EPA on January 14, 2022. On January 18, 2022, U.S.EPA provided additional comment on January 14, 2022. USEPA agreed to finalizing the 2020 Annual Vault reporting upon response to remaining comments. Additional responses to comments were submitted to U.S.EPA on January 19, 2022.
12. U.S. EPA approved GM's request to re-use gravel removed during sewer repair air knifing activities as backfill in the excavated entry holes on January 20, 2022.
13. U.S.EPA requested clarification of the 2022 financial assurance cost estimate on January 20, 2021.
14. GM provided responded to U.S.EPA's comments on the 2022 financial assurance cost estimate on January 21, 2022.
15. U.S.EPA approved the 2022 financial assurance cost estimate on January 24, 2022.
16. The final 2020 Annual Vault Report was submitted to U.S.EPA on January 24, 2022.
17. Repair and slip lining of a storm sewer between manholes ST-2 and ST-62 was completed on January 24, 2022.
18. Memorandum providing responses to U.S.EPA comments on the Phase II Perimeter Groundwater Trench Collection System Design report was submitted to U.S.EPA on January 26, 2022.
19. U.S.EPA provided comments on the Corrective Measures Proposal and the Long Term Operation, Monitoring and Maintenance Plan on February 3, 2022.
20. U.S.EPA provided additional comments on the Phase II Perimeter Groundwater Trench Collection System Design Report on February 9, 2022.
21. Quarterly groundwater level monitoring was conducted the week of February 14, 2022.
22. Memorandum providing the sewer repair summary was submitted to U.S. EPA on March 14, 2022.
23. Responses to U.S.EPA additional comments on the Phase II Perimeter Groundwater Trench Collection System Design Report were submitted to U.S.EPA on March 23, 2022.
24. Routine project meetings updates were held with U.S.EPA and IDEM on October 21, and November 18, 2021 and January 20, February 17, and March 17, 2022. A written update was provided on December 17, 2021 in lieu of a conference call.

Although not included in the RCRA CA activities, GM continues to work with U.S. EPA and IDEM on completing the prescriptive removal of PBC-impacted soils at Parcels 400, 430 and 431. The following related documents were prepared and distributed during this reporting period.



G E N E R A L M O T O R S

1. U.S.EPA provided comments on the Parcel 430/431 Construction Completion Report on October 6, 2021.
2. Responses to U.S.EPA comments on the Parcel 430/431 Construction Completion Report were provided on October 22, 2021.
3. Final Parcel 400 Construction Completion Report (dated August 11, 2021) and Parcels 430 & 431 Construction Completion Report (dated October 28, 2021) were submitted to U.S. EPA and IDEM on December 6, 2021.
4. U.S.EPA provided written approval of the Parcels 400 Construction Completion Report and the Parcels 430 & 431 Construction Completion Report on December 15, 2021.
5. IDEM provided written approval of the Parcels 400 Construction Completion Report and the Parcels 430 & 431 Construction Completion Report on February 10, 2022.
6. GM transmitted U.S.EPA and IDEM approval of the construction reports and termination of access agreement by certified mail dated February 11, 2022.

GM has received confirmation from the U.S postal service the property owners received the agency approval letters. With this final transmittal to the property owners, GM has fulfilled their obligations outlined in the agency-approved work plans. No further action is required by GM regarding these properties.

2. Summaries of Problems and Planned Resolutions

2.1 Solar Sipper

During routine maintenance conducted on June 30, 2021, GHD noted that while the solar sipper was operational, no product was being recovered when tested in manual mode. GHD shut down the system so as not to generate non-product waste and allow the oil within the well to recover. During subsequent monthly site visits in July 2021 through March 2022, no recoverable product was detected. GHD is assessing whether the oil recoverable by the system has been accomplished.

GM and GHD continues to gauge oil accumulation within CH-2 and evaluate alternative oil recovery methods (e.g. manual removal by bailer or peristaltic pump, absorbent sock).

2.2 GUS Groundwater Pumping System

Due to a kink in the gravel underdrain system (GUS) sump (installed during the construction of the on-Site TSCA Vault) PCB-impacted groundwater from with the GUS is not able to be removed at the sump. GHD evaluated the ability to install horizontal pumps through a series of cleanouts to replace the lost pumping capacity at the sump. GHD prepared a mock-up of the cleanouts in order to determine if the potential horizontal pumps could navigate the bends in the cleanouts. Unfortunately, due to the length of the pumps, the pumps could not navigate the bends in the cleanouts.

GM is currently determining the feasibility of installing a new groundwater extraction well, targeting the GUS at the north-center extent of the GUS. A specialty drilling firm would be engaged to perform this work as the well would need to be installed at an angle in order to hit the gravel bed while avoiding the Vault top and bottom liners.



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3. Projected Work for the Next Reporting Period

Work anticipated for the next reporting period includes:

1. Continue OMM for the GWTP
2. Continue GWTP discharge reporting under the NPDES permit
3. Collect monthly transducer data from the pilot trench monitoring location.
4. Continue dye tracing study as part of Pilot Trench Performance Monitoring Plan
5. Implement the Clarifier NAPL Recovery Assessment plan
6. Mow the East Plant Area cover system
7. Conduct the semi-annual cover system inspection
8. Evaluate installation of a horizontal or angle well within the GUS
9. Conduct the first half 2022 EI CA750 monitoring and the third quarter 2022 static water level gauging
10. Submit the second half 2021 EI CA750 monitoring report
11. Provide U.S. EPA and IDEM project updates via emails and/or telephone calls
12. Finalize the updated project web site
13. Prepare a Project Fact Sheet for residents
14. Launch the updated data management tool
15. Develop the Spring 018 Decommissioning Plan
16. Update the groundwater treatment plant operations monitoring and maintenance plan
17. Update the site source control operations, monitoring and maintenance plan
18. Provide documentation of the 2022 Financial Assurance
19. Respond to U.S. EPA comments on the CMP and LTOMMP and re-submit these documents when responses are approved.
20. Finalize the Phase II Perimeter Groundwater Trench Collection System Design Report
21. Finalize bid document for the Phase II Perimeter Groundwater Trench Collection System
22. Begin the contractor selection process for the Perimeter Groundwater Trench Collection System

Please feel free to call me at 313-506-9465 if you have any questions concerning this information or otherwise regarding the Bedford GM LLC Project.

Sincerely,



Ed Peterson
Project Manager, Eco-Restorers
GM Sustainable Workplaces

Encl.



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cc: Corey Peaslee; U.S. EPA
Chris Myer; IDEM
Ed Peterson; General Motors
Nathan Milliman; General Motors
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Francis Ramacciotti; GHD



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**GWTP PCB Mass Removal Estimate
GM Bedford BCO Facility
Bedford, Indiana**

	Groundwater Treatment Plant (GWTP) Treated Volume (gallon)	PCB Influent Concentration ^(1,3) (µg/L)	Mass PCB Treated ⁽²⁾ (pound)
January 2019	5,467,881	0.71	0.032
February 2019	5,393,116	ND	0.000
March 2019	4,916,870	0.92	0.038
April 2019	5,547,708	1.5	0.069
May 2019	3,670,000	1.3	0.040
June 2019	5,542,417	1.2	0.056
July 2019	1,743,512	1.6	0.023
August 2019	930,385	1.1	0.009
September 2019	753,569	1.6	0.010
October 2019	977,015	1.5	0.012
November 2019	2,104,042	2.2	0.039
December 2019	3,099,964	1.4	0.036
January 2020	4,690,161	0.68	0.027
February 2020	3,642,899	1.1	0.033
March 2020	4,853,095	0.96	0.039
April 2020	2,681,548	1.4	0.031
May 2020	3,767,813	1.2	0.038
June 2020	2,295,164	0.96	0.018
July 2020	1,465,351	1.6	0.020
August 2020	2,109,119	0.89	0.016
September 2020	822,061	1.5	0.010
October 2020	1,663,537	1.24	0.017
November 2020	2,798,824	1.1	0.026
December 2020	2,045,106	1.1	0.019
January 2021	3,375,573	1.3	0.037
February 2021	4,192,610	1.2	0.042
March 2021	4,665,579	0.96	0.037
April 2021	3,035,075	0.7	0.018
May 2021	2,937,213	0.7	0.017
June 2021	1,746,454	0.7	0.010
July 2021	3,136,451	0.8	0.021
August 2021	1,148,478	0.8	0.008
September 2021	1,835,041	0.8	0.012
October 2021	2,261,232	2.3	0.043
November 2021	2,187,172	2.3	0.042
December 2021	4,396,238	2.3	0.084
January 2022	3,940,451	2.7	0.089
February 2022	5,937,720	2.7	0.134
March 2022	4,885,636	2.7	0.110

Total Estimated Volume of Water Treated During Reporting Period(gallons)	23,608,449
Total Estimated Mass of PCB Treated During Reporting Period (pounds)	0.50
Total Estimated Mass of PCB Treated, Since January 2019 (pounds)	1.36

Notes:

¹ PCB concentration based on an average of parent and duplicate sample, if duplicate sample was collected. Quarterly influent sampling began in February 2021.

² Mass removed = $\frac{\text{treated volume (gallons)} \times \text{PCB concentration} (\frac{\mu\text{g}}{\text{L}}) \times 3.7854}{453.59 \times 1,000,000}$

³ Influent sampling reduced from to monthly to quarterly in April 2021.

Table 2

**AOI-8 Oil Removal
GM Bedford BCO Facility
Bedford, Indiana**

Date	Well	Oil Mass (lbs)	PCB Content (mass %)	PCB Mass (lbs) ¹
10/31/2018	CH-5	2.16	11%	0.24
11/5/2018	CH-5	2.28	11%	0.25
11/23/2018	CH-5	2.09	11%	0.23
12/4/2018	CH-5	2.81	11%	0.31
1/9/2019	CH-5	2.22	11%	0.24
1/23/2019	CH-5	2.16	11%	0.24
2/11/2019	CH-5	2.3	11%	0.25
2/26/2019	CH-5	2.33	11%	0.25
3/7/2019	CH-5	2.18	11%	0.24
3/18/2019	CH-5	2.29	11%	0.25
4/1/2019	CH-5	2.39	11%	0.26
7/15/2019	CH-5	2.85	11%	0.31
7/31/2019	CH-5	1.88	11%	0.21
8/22/2019	CH-5	1.1	11%	0.12
11/20/2019	CH-5	1.2	11%	0.13
12/17/2019	CH-5	2.5	11%	0.27
1/20/2020	CH-5	3	11%	0.33
2/13/2020	CH-5	2	11%	0.22
4/24/2020	CH-5	1.5	11%	0.16
7/16/2020	CH-5	1.25	11%	0.14
8/12/2020	CH-5	2.75	11%	0.30
9/24/2020	CH-5	2	11%	0.22
11/19/2020	CH-5	2	11%	0.22
12/21/2020	CH-5	3	11%	0.33
1/25/2021	CH-5	1.65	11%	0.18
2/24/2021	CH-5	2	11%	0.22
3/16/2021	CH-5	2	11%	0.22
4/20/2021	CH-5	2.48	11%	0.27
5/27/2021	CH-5	1.98	11%	0.22
6/21/2021	CH-5	1.98	11%	0.22
7/29/2021	CH-5	0.98	11%	0.11
8/26/2021	CH-5	0.48	11%	0.05
9/17/2021	CH-5	1.48	11%	0.16
10/28/2021	CH-5	0.98	11%	0.11
11/18/2021	CH-5	0.98	11%	0.11
12/9/2021	CH-5	0.48	11%	0.05
1/27/2022	CH-5	0.98	11%	0.11
2/16/2022	CH-5	1.23	11%	0.13
3/30/2022	CH-5	0.73	11%	0.08
Total PCB Removed from CH-5 (LNAPL) ³				7.92
3/25/2019	MW-X209Y053	24.21	40%	9.68
7/15/2019	MW-X209Y053	2.45	40%	0.98
7/31/2019	MW-X209Y053	1.98	40%	0.79

Table 2

**AOI-8 Oil Removal
GM Bedford BCO Facility
Bedford, Indiana**

Date	Well	Oil Mass (lbs)	PCB Content (mass %)	PCB Mass (lbs) ¹
8/22/2019	MW-X209Y053	1.1	40%	0.44
1/20/2020	MW-X209Y053	2.1	40%	0.84
2/13/2020	MW-X209Y053	1	40%	0.40
4/24/2020	MW-X209Y053	1	40%	0.40
7/16/2020	MW-X209Y053	1.0	40%	0.40
9/24/2020	MW-X209Y053	1.6	40%	0.62
11/19/2020	MW-X209Y053	1.0	40%	0.40
12/21/2020	MW-X209Y053	2.8	40%	1.10
1/25/2021	MW-X209Y053	0.8	40%	0.32
2/24/2021	MW-X209Y053	1.5	40%	0.60
3/16/2021	MW-X209Y053	1.0	40%	0.40
4/20/2021	MW-X209Y053	1.48	40%	0.59
5/27/2021	MW-X209Y053	1.23	40%	0.49
6/21/2021	MW-X209Y053	0.73	40%	0.29
7/29/2021	MW-X209Y053	1.48	40%	0.59
8/26/2021	MW-X209Y053	1.48	40%	0.59
9/17/2021	MW-X209Y053	0.48	40%	0.19
10/28/2021	MW-X209Y053	0.73	40%	0.29
11/18/2021	MW-X209Y053	0.53	40%	0.21
12/9/2021	MW-X209Y053	0.48	40%	0.19
1/27/2022	MW-X209Y053	0.48	40%	0.19
2/16/2022	MW-X209Y053	0.73	40%	0.29
3/30/2022	MW-X209Y053	0.73	40%	0.29
Total PCB Removed from MW-X209Y053 (DNAPL) ^{2,4}				21.60
3/28/2019	CH-2A (solar sipper)	74.05	58%	42.95
2/11/2021	CH-2A (solar sipper)	159.72	58%	92.64
Total PCB Removed from CH-2A (DNAPL) ^{4,5}				135.59
3/16/2021	CAMW-3	1	31%	0.31
4/20/2021	CAMW-3	2.0	31%	0.61
5/27/2021	CAMW-3	0.7	31%	0.23
6/21/2021	CAMW-3	1.5	31%	0.46
7/29/2021	CAMW-3	0.5	31%	0.15
8/26/2021	CAMW-3	0.18	31%	0.06
9/17/2021	CAMW-3	1.48	31%	0.46
10/28/2021	CAMW-3	1.48	31%	0.46
11/18/2021	CAMW-3	0.48	31%	0.15
12/9/2021	CAMW-3	0.98	31%	0.30
1/27/2022	CAMW-3	0.48	31%	0.15
2/16/2022	CAMW-3	0.73	31%	0.23
3/30/2022	CAMW-3	0.48	31%	0.15
Total PCB Removed from CAMW-3 (DNAPL) ^{6,7}				3.71

Table 2

**AOI-8 Oil Removal
GM Bedford BCO Facility
Bedford, Indiana**

Date	Well	Oil Mass (lbs)	PCB Content (mass %)	PCB Mass (lbs) ¹
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Notes:

¹ PCB weight based on average of analytical data

Location	Sample Date	PCB (mg/kg)	Average (mg/kg)
CH-5	9/19/2005	224,500	
	8/16/2011	89,700	109,067
	4/9/2014	13,000	
MW-X209Y053	9/19/2006	400,000	400,000
CH-2A	11/5/2008	380,000	580,000
	4/9/2014	780,000	
CAMW-2	11/21/2019	310,000	310,000

² PCB weight from solar sipper and the initial removal from MW-X209Y053 (3/25/2019) is based on an approximate gallons of oil removal. DNAPL density of 1.16 g/cc used when converting volume (gallons) to mass (pounds). Density value determined by laboratory analysis from the 4/19/2014 CH-2A sampling event.

³ CH-5 Mass
(lbs)= $\frac{\text{Sock net weight (lbs)} \times 109,067 \text{ (mg/kg)}}{1,000,000 \text{ (mg/kg)}}$

⁴ MW-X209Y053
Mass(lbs) = $\frac{\text{Sock net weight (lbs)} \times 400,000 \text{ (mg/kg)}}{1,000,000 \text{ (mg/kg)}}$

3/25/2019 mass removal calculated based on removal of 2.5 gallons of NAPL

⁵ CH-2A Mass
(lbs) = $\frac{\text{Liquid weight (lbs)} \times 580,000 \text{ (mg/kg)}}{1,000,000 \text{ (mg/kg)}}$

⁶ CAMW-3 Mass
(lbs)= $\frac{\text{Sock net weight (lbs)} \times 310,000 \text{ (mg/kg)}}{1,000,000 \text{ (mg/kg)}}$

⁷ PCB concentration at CAMW-2 used for removal calculations as no data is available for CAMW-3 and the two locations are in close proximity.