



March 9, 2020

Reference No. 017358

Kevin Lund
Michigan Department of Environment, Great Lakes & Energy
Remediation Division
Jackson District Office
301 East Louis Glick Highway
Jackson, MI
49201-1556

Original Sent Via Email

Dear Mr. Lund:

**Re: 2019 Project Summary
Willow Run Powertrain
Ypsilanti, Michigan**

On behalf of Revitalizing Auto Communities Environmental Response Trust (RACER), GHD has prepared this letter to provide a high level summary of the work completed as part of the ongoing Resource Conservation and Recovery Act (RCRA) Corrective Action (CA) at the Willow Run Powertrain site (Site) in Ypsilanti, Michigan. To keep this update concise, data that has already been included in submittals to Michigan Department of Environment, Great Lakes & Energy (EGLE) will be referenced but is not attached to this update. Data that is under review and will be submitted in the future will be identified. This letter describes the work completed in 2019 and is an update to the previous letter sent to the EGLE in March of 2019 that provided a summary of the activities in 2017 and 2018.

1. Redevelopment Activities

In late 2016, the remainder of the previously owned RACER Willow Run Powertrain site was sold to Willow Run Arsenal for Democracy (WRAD). The property is being redeveloped and operated by the American Center for Mobility (ACM) as an autonomous vehicle test facility. The southeastern portion of the property is being redeveloped by the Yankee Air Museum (YAM) as The National Museum of Aviation and Technology at Historic Willow Run. Redevelopment activities are ongoing at the Site although the 2019 activities have not been as significant in scope as past years. The development of the tech park on the south parcel began in late 2019 with the design of a roundabout and roadways to define the tech park layout. To support redevelopment activities by ACM, RACER has been involved in discussions and coordinating updates to the easement and deed restrictions that apply to the former property and are shared by YAM, ACM and/or RACER. This work is ongoing in preparation for the ownership of the property to be transferred from WRAD to ACM. There are remaining repairs on ACM and YAM properties anticipated to be completed in the summer of 2020.



2. Site Environmental Work

This summary of work completed in 2019 includes the following:

- Semiannual Groundwater Level Monitoring events
- Groundwater Sampling Results Summary
- Well Abandonment, repairs and installation due to redevelopment activities
- LNAPL Evaluation
- Vapor Intrusion sampling
- Tetrachloroethene (PCE) Impacted Area well installation
- Groundwater system operation
- PFAS Investigation and Evaluation

2.1 Semiannual Groundwater Level Monitoring Events

Since RACER took over the RCRA CA responsibilities at the Site, groundwater levels have generally been gauged on a quarterly basis, January, April, August and October of each year. The monitoring frequency in 2019 was reduced in 2019 to semiannually. On March 22nd, 2019 GHD submitted a summary of the results of previous year's groundwater level monitoring. GHD has prepared a summary of groundwater contour maps from the 2019 events to provide an update to EGLE. This will be submitted under separate cover.

2.2 Groundwater Sampling Results Summary

A thorough review of site wide groundwater chemistry was initiated in 2019 and a summary will be finalized and submitted for review in 2020.

2.3 Well Abandonment, repairs and installation due to Redevelopment Activities

GHD and RACER have worked with the property owners and operators, YAM and ACM, to evaluate the need for wells as their respective redevelopments advance. In some cases, GHD has abandoned and repaired wells ahead of construction, and in other cases the construction teams have converted stickup wells into flush mounts. On September 27, 2019 GHD submitted a letter to Mr. Kevin Lund, EGLE, to document monitoring wells that have been destroyed during redevelopment and construction activities on the ACM portion of the site over the past several years. In the fall of 2019, GHD performed well repair activities on both the ACM and YAM portions of the site. There are remaining repairs on both ACM and YAM properties that are anticipated to be completed in the summer of 2020.



2.4 LNAPL Evaluation

Following the stabilization of groundwater levels, a natural source zone depletion (NSZD) study was conducted to confirm whether natural LNAPL biodegradation is occurring. Following the NSZD study, an assessment of the mobility and overall stability of the remaining LNAPL at the Site was performed.

These evaluations revisit the historical LNAPL mobility evaluation results, updated with discussion of the implications of the significant change in hydraulic conditions following the demolition of most of the Site buildings completed in October 2014, as well as observations associated with the implementation of the French Drain containment system along the eastern and southeastern Site boundaries that relate to the potential mobility of the LNAPL. The evaluation summary document is being finalized and will be provided to EGLE under separate cover.

2.5 Vapor Intrusion Sampling

An additional sub slab soil gas sampling event was conducted in mid-August 2019 within the remaining YAM building. Twenty-five soil gas/vapor pin locations were sampled utilizing TO-15 and TO-17 analysis methods. Each location was also sampled for methane. Additional real time field readings were collected during the sampling event for methane, carbon monoxide, and carbon dioxide. A summary report is being prepared that will present the conclusions of several years of study and any proposed next steps, if warranted.

2.6 PCE Impacted Area

An Interim Measures Work Plan (IMWP) memorandum dated April 5, 2018 and submitted to EGLE presented the results of investigation into the PCE impacted area near former building 19, south of the former plant. Due to redevelopment changes, destroyed and damaging wells within the PCE impacted area, the well network needed to be reestablished to fulfill the monitoring objectives of the IMWP. New wells were installed on the YAM and ACM properties to enable monitoring of PCE in groundwater. GHD is currently preparing a revised monitoring plan to evaluate the PCE impacts following the redevelopment activities in this area over the last several years and the reestablished well network. A further evaluation will be conducted once the results from these events are evaluated. An update to the IMWP was sent to EGLE on March 6, 2020 and was prepared based on the monitoring results and current conditions.

2.7 Groundwater Collection System

2.7.1 System Operations

The French drain groundwater collection system began operation in February of 2018. During the 2019 year, 17,116,600 gallons were discharged to the Ypsilanti County Utilities Authority (YCUA) under the Industrial User Permit (IUP). The groundwater quality has been monitored at a minimum of twice per month pursuant to discharge permit requirements which includes quarterly sampling for PFAS.

Periodically during 2019 GHD has monitored the groundwater response to system operational changes. This has included periods of time when the system was turned off for extended periods (i.e. concurrent



with the NSZD evaluation), and when pumping rates were fixed rather than variable (i.e. during maintenance and repair periods). This has provided information on the sensitivity of the groundwater level changes in pumping conditions.

2.7.2 Additional Monitoring for design

Final design of the groundwater treatment system was postponed in 2018 to allow the operational system discharge to YCUA to be monitored and used to refine the influent concentrations and flow rate for final design. Groundwater samples were collected periodically during 2019 to evaluate the consistency of influent concentrations. The discharge concentrations remain consistent, which is expected with a steady state groundwater collection system, although some concentrations, including oil and grease, are lower than predicted prior to system installation. Additional work is being completed to evaluate treatment for PFAS and is discussed in section 2.8.

2.8 PFAS Investigation and Evaluation

During 2019, the Willow Run Site was added to the Michigan PFAS Action Response Team list of PFAS sites. The following sections briefly summarize the PFAS related work that has been completed over the year.

2.8.1 PFAS Treatment Evaluations

In the fall of 2018 RACER convened a team to conduct bench and pilot scale testing for PFAS treatment. Two pilot studies, one in December 2018 and February 2019 were conducted to evaluate if ultraviolet radiation (UV), ion exchange and ozone would degrade PFAS. Ongoing bench scale studies using advanced oxidation (AO), ion exchange (IX) and granular activated carbon (GAC) are also being tested.

In 2018 GHD and RACER began investigating options for the treatment of PFAS in collected groundwater. This continued through 2019 and included the following:

- Continued a pilot study to evaluate if ultraviolet light and ozone could degrade PFAS.
- Continued bench scale studies at the GHD Innovative Technology Group (ITG) laboratory to evaluate usage rates and breakthrough times for ion exchange (IX) and granular activated carbon (GAC).
- Performed a literature review to determine the value of continuing pilot testing of oxidation related treatment options for PFAS which suggested that an alkaline ozonation process documented by Lin (et al.) in 2012 might be promising.
- GHD's ITG laboratory completed several rounds of bench scale studies evaluating the alkaline ozonation process documented by Lin (et al). The initial round of bench scale studies showed significant reduction in PFOS and PFOA concentrations. Additional rounds were completed to evaluate reproducibility and to assess if destruction was occurring.
- Consulted/partnered with Notre Dame University, Oregon State University, Purdue University, Texas Tech University, the research and development laboratory of Heritage Environmental, ECT2, Battelle,



Clarkson University and the University of Michigan to assist in additional specialized testing and/or bench scale studies to evaluate the destruction of PFAS.

- RACER, with the support of EGLE, has met with YCUA and Ypsilanti Township representatives to provide updates to the PFAS treatment evaluations.

Summaries of this work have been provided to EGLE and YCUA during 2019. These have included:

- March 11, 2019 – Memorandum titled "PFAS Treatment Methods Evaluation Summary". The memorandum is addressed to Grant Trigger, who forwarded it to EGLE and U.S. EPA by email on the same day. This was also included as an attachment to the 2019 first quarterly report submitted to YCUA.
- Email to Kevin Lund (EGLE) on April 30, 2019 providing a PFAS sampling timeline as requested by MPART.
- September 20, 2019 – Memorandum titled "PFAS Treatment Methods Evaluation Summary – September Update". The memorandum is addressed to Grant Trigger, and was sent to EGLE by email on the same day. This was also included as an attachment to the 2019 third quarterly report submitted to YCUA.

GHD and RACER are continuing bench scale studies and working with various partners to assess alternative treatment options that can lead to a long term cost effective solution for the site.

2.8.2 PFAS Investigations

Two PFAS site investigations were initiated during 2019. After discussion with EGLE and ACM, the area surrounding the former wastewater treatment plants was investigated to determine if PFAS was present in these areas due to the former activities and assist in site redevelopment, specifically soil relocation, activities. The work plan memorandum was sent to Mr. Kevin Lund (EGLE) on November 14, 2019. The second investigation involved sampling the east side storm drain and the 84-inch storm sewer to determine if the discharge was impacted with PFAS. The results for both investigation areas are being evaluated and will be communicated when appropriately reviewed.

2.9 Summary

Work continues at the site to evaluate pathways and find cost effective solutions to long term operation, monitoring and maintenance for the Site. The Willow Run site is listed on the RCRA 2020 list, with the goal to obtain concurrence on the plan for corrective action complete with controls by end of September 2020. With the discovery of PFAS and evaluating options with the available long term O&M budgets set up by the formation of the trust, it is not likely that full concurrence will be obtained by September 2020.



Please feel free to contact Grant Trigger, RACER at 313-670-6226 or the undersigned at 248-893-3428 should you required clarification or further information.

Sincerely,

GHD

A handwritten signature in black ink that reads "Beth Landale". The script is cursive and fluid.

Beth Landale

Project Manager

BL/bw/9

cc: Grant Trigger, RACER