

January 30, 2020

Ms. Lori Babcock
Michigan Department of Environment, Great Lakes, and Energy
Materials Management Division
Saginaw Bay District Office
401 Ketchum St, Suite B
Bay City, Michigan 48708

**SUBJECT: Initial Semiannual Progress Report – Selection of Final Remedy
DE Karn Bottom Ash Pond Coal Combustion Residuals (CCR) Unit**

Dear Ms. Babcock,

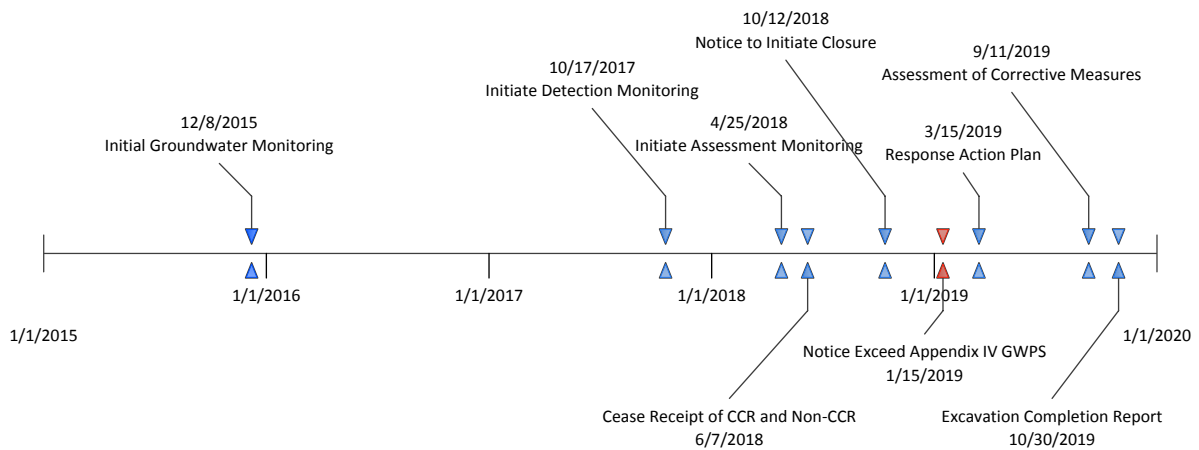
This Semiannual Progress Report, prepared as a requirement of §257.97(a) of the Federal Coal Combustion Residual (CCR Rule), describes progress towards selecting and implementing the final remedy for the Karn Bottom Ash Pond. A progress report is required to be prepared semiannually upon completion of the Assessment of Corrective Measures (ACM) Report until the final remedy is selected. This progress report is the first developed following the completion of the Karn Bottom Ash Pond ACM Report.

As presented in the key milestones timeline below, a groundwater monitoring system was installed for the bottom ash pond and background monitoring commenced in December 2015. Consumers Energy first reported the exceedence above statistically significant levels (SSLs) for Appendix IV constituents in the "Notification of Appendix IV Constituent Exceeding Groundwater Protection Standard per §257.95(g)" (TRC, January 2019). Subsequently, the Assessment of Corrective Measures Report (TRC, September 2019) was completed on September 11, 2019 as a step towards developing a final remedy.

Source Control Measures Undertaken

On October 17, 2016, in accordance with the schedule defined in §257.102 of the CCR Rule, Consumers Energy placed into the Operating Record an Initial Written Closure Plan for the Karn Bottom Ash Pond that detailed a plan for closing the unit in place. This plan was revised on January 12, 2018 to reflect that the bottom ash pond would be closed by removing the CCR. A new double-lined, double composite surface impoundment was constructed immediately adjacent to the bottom ash pond and put into service on June 8, 2018 to replace the Karn Bottom Ash Pond. Notification for Intent to Initiate Closure of the Karn Bottom Ash Pond was posted on October 12, 2018 with dewatering activity commencing on March 20, 2019. Excavation of CCR removal commenced in April 2019 with all removal and decontamination activities completed and documented in an excavation completion report that was submitted to EGLE dated October 30, 2019 (Golder, 2019).

DE Karn Timeline for Corrective Action



Results of 2019 Semi-Annual Sampling Events

Statistical analysis from semiannual groundwater monitoring events verified that the only constituent of concern that is present at statistically significant levels above the established Groundwater Protection Standard (GWPS) is arsenic. Groundwater chemistry already appears to be improving as a result of discontinuing the hydraulic loading to the Karn Bottom Ash Pond and is expected to further improve now that source removal of the CCR has been completed. Arsenic concentrations at DEK-MW-15002, DEK-MW-15003, and DEK-MW-18001 demonstrate a decreasing trend from last monitoring event as discussed in the "2019 Annual Groundwater Monitoring and Corrective Action Report" (TRC, January 2020).

Progress Towards Remedy Selection

Consumers Energy first provided the Michigan Department of Environment, Great Lakes, and Energy (EGLE) a Response Action Plan prepared in accordance with Part 115 on March 15, 2019 after calculating a potential SSI for arsenic for the Karn Bottom Ash Pond. This report documents identified potential sources of contamination, interim response activities taken to control possible sources of contamination, and a schedule for terminating receipt of waste and initiating closure of the bottom ash pond. This report was approved by EGLE on May 14, 2019 based on the following additional documentation:

- Hydrogeological Monitoring Plan (HMP) of compliance monitoring addressing groundwater monitoring and porewater at the groundwater/surface water interface approved by EGLE January 8, 2018. This compliance monitoring program addresses groundwater and surface water interface monitoring for all coal ash management regulated by the EGLE Materials Management Division.
- Groundwater Extraction and Treatment System approved as an Interim Measure to

improve reliability of achieving compliance at alternative monitoring points in compliance with a groundwater mixing zone authorized on December 23, 2015 as detailed in the HMP approved by EGLE January 8, 2018.

- Quarterly groundwater monitoring reports demonstrating compliance with all required monitoring under the HMP verifying that water quality standards are being achieved through the monitoring of an authorized mixing zone at all monitoring points in the program ensuring that there are currently no adverse effects on human health or the environment from either surface water or groundwater. These reports are submitted 30-days after the calendar quarter in which monitoring was performed as follows: April 30th, July 30th, October 30th, January 30th.
- DE Karn Bottom Ash Pond Workplan and Workplan dated November 29, 2017 and approved by EGLE on December 20, 2018. This workplan provided the template for excavation and the post-excavation confirmation that CCRs were removed so that constituent concentrations were less than health-based criteria.

The Response Action Plan also explicitly committed to providing an assessment for potential remedial actions based on recommendations from the ACM Report submitted to EGLE on September 11, 2019. This report stated that the remedial strategy was to manage CCR source material by excavating CCRs consistent with the closure plan and then to manage residual contamination in groundwater. As noted in the timeline, Consumers Energy commenced removing CCR from the Karn Bottom Ash Pond by ceasing hydraulic loading in the pond in June 2018 when bottom ash and process waters were diverted to a newly installed double-lined, double-composite impoundment. The former bottom ash pond area was then allowed to dewater by gravity and commenced operation of a construction dewatering system on March 20, 2019. Excavation of the CCRs from the pond and restoration activities to grade the excavation with clean fill and slope to promote stormwater drainage, reducing future precipitation infiltration was completed in September 2019. A final report documenting excavation activities, lines of evidence verifying CCR above health-based criteria was removed and completed the removal of CCR was submitted to the EGLE on October 30, 2019.

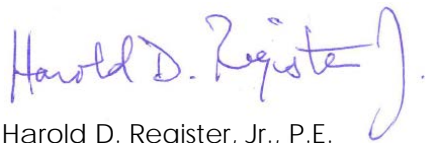
The ACM Report indicated that groundwater management alternatives under consideration that could potentially address the residual arsenic under *known* groundwater conditions were identified as: 1) Source removal with post-remedy monitoring, 2) Source removal with groundwater capture/control, 3) Source removal with impermeable barrier, 4) Source removal with active geochemical sequestration, and 5) Source removal with passive geochemical sequestration. These groundwater monitoring alternatives were considered to be technically feasible final groundwater management strategies when following a source removal activity.

Now that the source removal activities have been completed for the Karn Bottom Ash Pond and the excavation has been restored and graded to minimize future infiltration, an initial groundwater monitoring event conducted in October 2019 confirms that improvements to groundwater continue to be observed. Additional sampling events will be needed to monitor continued improvements as the groundwater conditions return to a new equilibrium based on site hydrogeology and groundwater and porewater chemistry. These subsequent sampling

events will inform the on-going improvements and retention of monitoring-only, passive, or active remedial options following the source removal. The final remedy for the Karn Bottom Ash Pond will be formally selected per §257.97 and Michigan Solid Waste requirements once the selected option is reviewed and commented on by EGLE and a public meeting is conducted at least 30-days prior to the final selection as required under §257.96(e).

The next semiannual progress report will be submitted in six months by July 30, 2020. Please feel free to contact me with any questions or clarifications.

Sincerely,



Harold D. Register, Jr., P.E.

Principal Engineer

Landfill Operations Compliance

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Ms. Darby Litz, TRC