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Groundwater Remedy Selection and Design Semiannual Progress Report

Coal Combustion Residual Rule Compliance

Facility
Healy Power Plant
2.5 Mile Healy Spur Road
Healy, Alaska

August 30, 2019

This semiannual progress report is the second report since completing the corrective measures assessment in August 2018 and documents GVEA's progress towards selecting and designing the remedy for the groundwater impacts associated with the four coal combustion residuals (CCR¹) units at the Healy Power Plant. This report has been documented in GVEA's facility operations records to satisfy the requirements under §257.105(h)(12) of the CCR Rule and posted to GVEA's CCR Website in accordance of §257.107(h)(9).

At the Healy Power Plant, groundwater concentrations of constituents listed in appendix IV of the CCR Rule have been detected at statistically significant levels exceeding the groundwater protection standard. Accordingly, corrective measures are to be assessed and taken to prevent further releases, to remediate any releases, and to restore affected areas to their original conditions in accordance with the CCR Rule. Additionally, because the ponds are unlined, GVEA must cease placement of CCR in ponds and retrofit or close the ponds in accordance with the CCR Rule. GVEA intends to close the ponds since location requirements in the CCR Rule restricts continued use of these ponds even if the ponds were retrofitted with a liner. Closure of the ponds consists of removing coal ash from within the waste boundary of each of the four CCR units and backfilling excavations as outlined in the *Closure and Post-Closure Plan*.

In August 2018, GVEA completed an assessment of corrective measures in accordance with the CCR Rule. As part of the assessment process, alternatives were developed and screened against threshold criteria to determine whether corrective measures would meet the remedial objectives and should be retained or eliminated from further consideration. Upon completing a detailed evaluation, source removal and disposal of CCR material within the four CCR units was identified as the preferred corrective measure to effectively address groundwater impacts associated with the CCR units. As stated in the *Corrective Measures Assessment Report*, source removal and disposal would be the primary corrective measure taken since the unlined ponds must close and be removed in accordance with the CCR Rule. Furthermore, by closing the ponds, the source of highly alkaline water will be eliminated; resulting in lower (ambient) pH levels in the downgradient groundwater, and thereby would likely eliminate the mobilization of naturally-occurring metals in groundwater and eliminate exceedances of the GWPS.

Source removal, the primary corrective measure to address groundwater impacts, cannot commence until an alternative disposal option for CCR material from Unit 1 is engineered, installed and operating. At this time, GVEA does not have an alternative disposal option capable of managing coal ash from Unit 1 and must continue to manage coal ash at the four CCR units, as needed, to generate and contribute power to GVEA's

¹ CCR is defined under the CCR Rule as fly ash, bottom ash, boiler slag, and flue gas desulfurization materials generated from burning coal for the purpose of generating electricity by electric utilities and independent power producers.

cooperative member owners. In addition, to support the selection of a remedy and effectively implement corrective action, GVEA must further characterize the site and assess whether other potential sources are contributing to groundwater concentrations at the site.

As discussed in the *Corrective Measures Assessment Report*, naturally occurring metals in the soil are mobilized into solution on contact with highly alkaline water from the ponds. Because it appears that pH is the primary variable controlling the leaching and mobility of contaminants in CCR and in native soil, GVEA will be conducting a leachability testing study to further evaluate geochemistry processes and the leaching and mobility of contaminants from other potential sources at the Healy Power Plant. In October 2019, GVEA plans to collect samples of the coal ash and subsurface soils at the Healy Power Plant for leach testing. The study will be performed in order to:

1. Understand the metals and concentrations present in groundwater, native soils, historical coal ash and Unit 1's coal ash;
2. Determine the leaching of contaminants in native soils, historical coal ash, and Unit 1's coal ash under various pH conditions; and
3. Evaluate the potential for naturally-occurring metals in native soils and residual metals in historical coal ash within the former pond to contribute to high groundwater concentrations under current groundwater conditions and leaching to groundwater at levels greater than the GWPS.

A detailed description and the results of the leaching tests performed, and a discussion of the geochemistry data evaluation to help explain groundwater quality at the site will be provided in the 2019 annual groundwater monitoring report. Upon completion of the leach testing and the geochemistry evaluation, GVEA will proceed with either conducting additional tests to determine the most effective solution or selecting and designing a remedy to address groundwater impacts associated with the CCR units at the Healy Power Plant.

Additionally, GVEA continues to evaluate alternative disposal options for managing Unit 1 coal ash. An assessment of Unit 1 and Unit 2 ash handling systems was recently conducted by an engineering company specializing in material handling solutions. Recommendations to modify the ash handling systems were made and are currently being considered by GVEA for implementation and prioritization. To modify the ash handling systems, additional work is needed to design, construct/install, and operate the new system; including complete design of the new system followed by installation of additional conveyance components and control systems. Once the new coal ash handling system is complete and operating effectively, GVEA will cease placement of CCR in the CCR units and initiate closure of the CCR units; thereby eliminating the source.