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Revised: March 9, 2021
 Original: October 17, 2017
 File No. 129778-041

SUBJECT: Tecumseh Energy Center – Groundwater Monitoring Systems Certification
 Bottom Ash Settling Pond and Ash Landfill 322
 Evergy Kansas Central, Inc.

Evergy Kansas Central, Inc. (Evergy; f/k/a Westar Energy, Inc.) operates the subject coal combustion residuals (CCR) management units referred to as the Bottom Ash Settling Area (BASA; also known as the Bottom Ash Setting Pond) and Ash Landfill 322 (322 Landfill) at the Tecumseh Energy Center (TEC) located in Tecumseh, Kansas. These CCR units are considered subject to the CCR Rule since they were active as of the effective date of the CCR Rule.

This document addresses the requirements of § 257.91 *Groundwater Monitoring Systems*, specifically § 257.91(f), of the US Environmental Protection Agency’s (USEPA) Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities, 40 CFR Part 257 (CCR Rule) effective October 19, 2015. This document serves as certification that the units comply with the requirements defined in the CCR Rule. In addition, this document revision provides narratives outlining the basis for the design and geospatial arrangements of the CCR well monitoring networks based on site-specific conditions, established hydrogeologic principles, and industry practice, with consideration for the geometry and physical characteristics of and material contents within the CCR unit(s) being monitored.

Each single-unit groundwater monitoring system has been designed to include at least a minimum of one up gradient and three downgradient monitoring wells pursuant to § 257.91(c). We also note that each of the single-unit groundwater monitoring systems includes at least one side gradient piezometer used to support the groundwater elevations and flow direction. Evergy submitted the associated design and construction information for the monitoring well networks to the Kansas Department of Health and Environment (KDHE) for review and approval that the network met the requirements of the CCR Rule, and KDHE provided approval of both original groundwater monitoring networks in July 2016. Table 1 below presents the wells in each of the groundwater monitoring systems as certified herein. This certification has been prepared based upon information available in the facility Operating Record pursuant to § 257.91(e)(1).

Table 1 – CCR Unit Groundwater Monitoring Well Networks

CCR UNIT	Upgradient Monitoring Well	Downgradient Monitoring Wells			Piezometric Observation Monitoring Well
Bottom Ash Settling Area	MW-7	MW-8	MW-9	MW-10	MW-11
Ash Landfill 322	MW-4	MW-1	MW-5	MW-6	MW-2

BASA CCR MONITORING SYSTEM

The BASA monitoring network as originally designed included one up gradient and three down gradient monitoring wells, along with one side-gradient well utilized for potentiometric observation. The minimum number of monitoring wells is appropriate for this unit based on the consistent groundwater flow direction observed during the baseline sampling events which confirmed that the down gradient monitoring wells were located to sufficiently detect groundwater constituents in the uppermost aquifer passing the waste boundary of the unit.

322 LANDFILL CCR MONITORING SYSTEM

The 322 Landfill monitoring network includes one up gradient and three down gradient monitoring wells, along with one side-gradient well utilized for potentiometric observation. Prior to the CCR Rule, a monitoring network was already operating (MW-1, MW-2, and MW-4) and certified at the 322 Landfill in compliance with KDHE Solid Waste Permit No. 322. The KDHE monitoring network was reviewed for inclusion into the CCR program. Although the KDHE monitoring network was approved by KDHE, the network of wells was expanded and two (2) additional CCR monitoring wells (MW-5 and MW-6) were installed providing information that characterized MW-2 as a side-gradient monitoring well. Well MW-2 remained in the monitoring network as a potentiometric (groundwater elevation) observation point to assist with tracking the potentiometric groundwater elevations at the 322 Landfill. Since initial certification of the groundwater monitoring system at the 322 Landfill under the CCR Rule in 2017, the groundwater flow field has remained consistent with predominant flow in a northerly direction along the long axis of the unit. The minimum number of monitoring wells is appropriate for this unit based on the consistent groundwater flow direction observed during the baseline sampling events which confirmed that the down gradient monitoring wells were located to sufficiently detect groundwater constituents in the uppermost aquifer passing the waste boundary of the unit.

BASIS OF DESIGN/GEOSPATIAL ARRANGEMENTS OF CCR WELL MONITORING NETWORKS

The BASA and 322 Landfill monitoring systems have been constructed to intersect representative flow paths of groundwater beneath each unit and are sufficient and appropriate to characterize the quality of groundwater flowing beneath each unit based on the size of each unit, aquifer thickness, groundwater flow rate, groundwater flow direction, and characteristics of the uppermost aquifer, including thicknesses, stratigraphy, lithology, hydraulic conductivities, porosities and effective porosities of the same.

CERTIFICATION STATEMENT

Pursuant to 40 CFR Chapter I Subchapter I Part 257 Subpart D § 257.91(f), I certify that the groundwater monitoring systems for the BASA and the 322 Landfill have been designed and constructed to meet the requirements of § 257.91. The certification submitted is, to the best of my knowledge, accurate and complete.

Signed: 
 Certifying Engineer

Print Name: Steven F. Putrich, P.E.
 Kansas License No.: PE24363
 Title: Project Principal
 Company: Haley & Aldrich, Inc.



Signed: 
 Registered Geologist

Print Name: Mark D. Nicholls, P.G.
 Kansas License No.: 881
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Revision No.	Date	Notes
0	October 2017	Original
1	March 2021	Provide additional information supporting the rationale for the originally certified CCR monitoring well networks at the BASA and 322 Landfill which included the minimum number of monitoring wells.