

June 13, 2018

Tennessee Valley Authority
1101 Market Street
Chattanooga, Tennessee 37402

**Groundwater Monitoring System, Revision 1
Ash Pond Complex
TVA Gallatin Fossil Plant
Gallatin, Tennessee**

1.0 Introduction

This letter documents AECOM's updated certification of the groundwater monitoring system for the Tennessee Valley Authority (TVA) Gallatin Fossil Plant Ash Pond Complex (APC), which includes Ash Pond A, Ash Pond E, Middle Pond A, and the Bottom Ash Pond. The monitoring system was initially certified on October 16, 2017; this update reflects the installation of a dedicated pump in one of the wells (GAF-406L), so that all wells are now equipped with dedicated pumps. Based on the information evaluated by AECOM, the groundwater monitoring system, first year baseline monitoring phase of TVA's Coal Combustion Residuals (CCR)-Rule Groundwater Quality Monitoring Program, meets the performance standard specified in the Final CCR Rule at 40 CFR § 257.91.

2.0 Summary of Findings

In establishing the groundwater monitoring system for the Ash Pond Complex at the Gallatin Fossil Plant in Gallatin, Tennessee, AECOM developed a hydrogeologic characterization of the site, designed and reviewed the installation of the monitoring wells, and evaluated available groundwater data. Based upon review of the available information, the groundwater monitoring system at the Ash Pond Complex meets the performance standard specified in 40 CFR § 257.91, based on the following criteria:

- The monitoring system is a multi-unit system (257.91(d)) for the following CCR units: Ash Pond A, Ash Pond E, Middle Pond A, and the Bottom Ash Pond.
- There are a sufficient number of wells installed at appropriate locations and depths to yield groundwater samples that accurately represent the quality of background groundwater unaffected by CCR and the quality of groundwater at the downgradient waste boundary (257.91(a)(1) and (2)).
- The wells provide samples from the uppermost aquifer (257.91(a) and 257.53).
- The groundwater monitoring system contains 7 background wells and 16 downgradient monitoring wells, thus the number of wells exceeds the minimum specified in 257.91(c)(1).

- The system contains 7 background wells (GAF-412C, GAF-412L, GAF-414L, GAF-426C, GAF-426L, GAF-427C, and GAF-427L) representing conditions unaffected by CCR (257.91(a)(1) and (c)(1)).
- The system contains 16 downgradient wells (24, GAF-402C, GAF-402L, GAF-405C, GAF-406L, GAF-410U, GAF-416C, GAF-422C, GAF-446C, GAF-449L, GAF-450C, GAF-450L, GAF-451C, GAF-452C, GAF-452L, and GAF-453C) monitoring groundwater near the waste boundary (257.91(a)(2) and (c)(1)).
- The system includes additional wells beyond the minimum requirements as needed to meet the performance standard (257.91(c)(2)).
- Wells are constructed appropriately (257.91(e)).

3.0 Qualified Professional Engineer Certification

I, Gabriel W. Lang, PE, being a Registered Professional Engineer in good standing in the State of Tennessee, do hereby certify, to the best of my knowledge, information, and belief that the information contained in this certification is prepared in accordance with the accepted practice of engineering; that the information contained herein is accurate as of the date of my signature below; and that the design and construction of the groundwater monitoring system as described above meets the requirements of 40 CFR § 257.91. Opinions relating to environmental, geologic, and hydrogeologic conditions or other estimates are based on available data; actual conditions may vary from those encountered at the times and locations where data are obtained, despite the use of due care.

SIGNATURE: _____

DATE: June 13, 2018

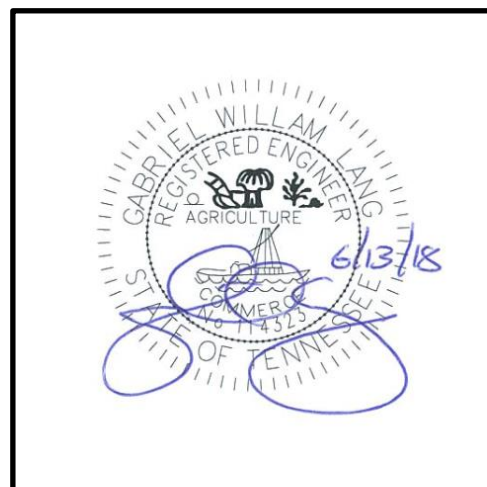
PRINTED NAME: Gabriel W Lang, PE

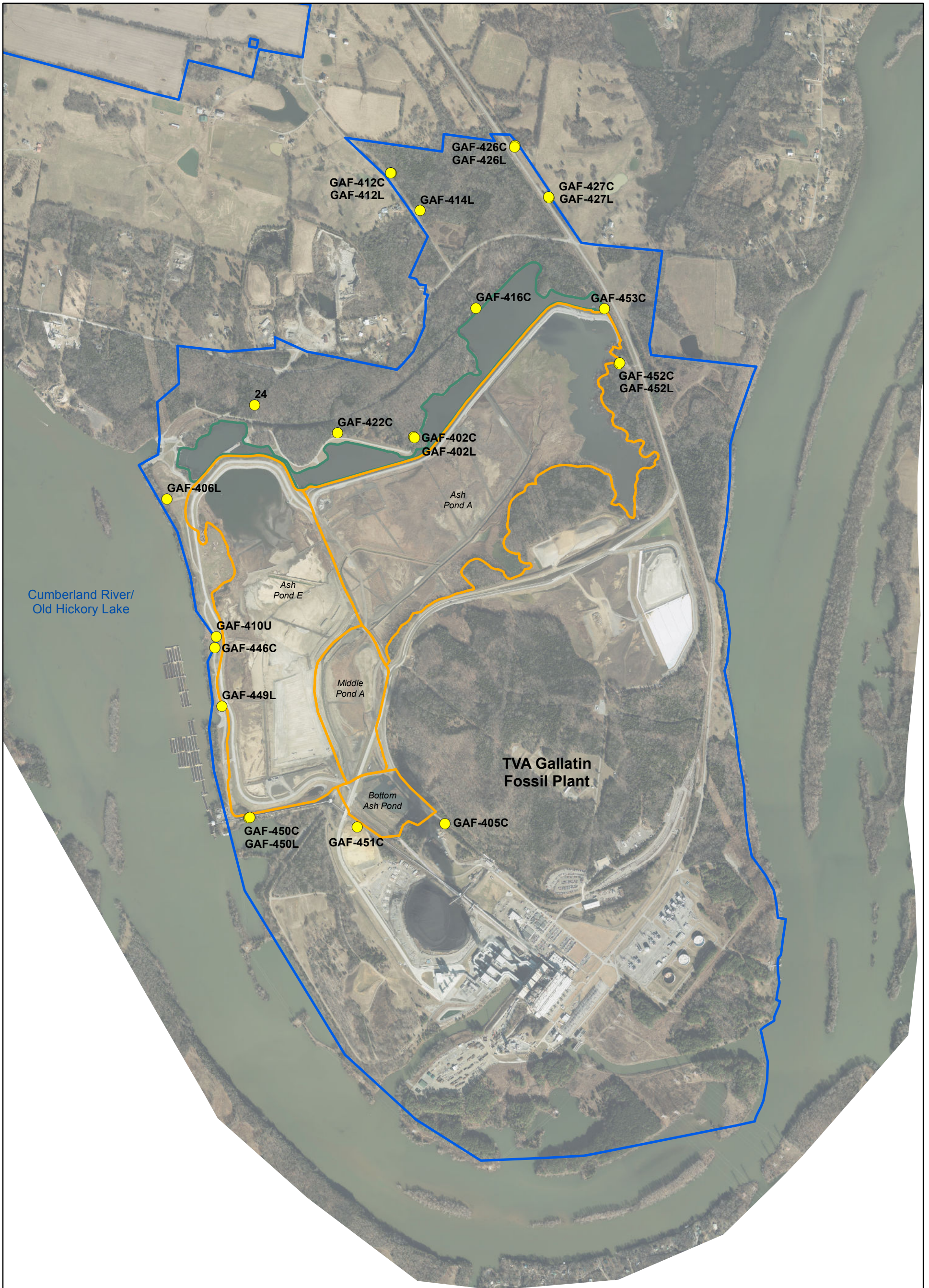
ADDRESS: AECOM
1600 Perimeter Park Drive, Suite 400
Morrisville, NC 27560

TELEPHONE: 919-461-1344

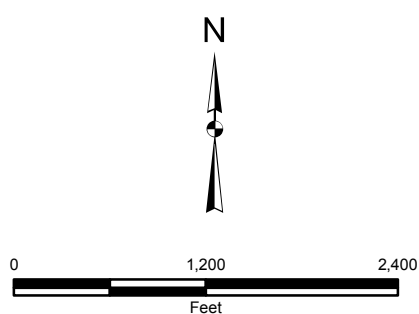
Attachments:

Figure 1 – CCR Rule Monitoring System Plan
Table 1 – Well Construction Information





- LEGEND**
- CCR Rule Monitoring System Wells
 - TVA Gallatin Fossil Plant Property Boundary (Approximate)
 - Ash Pond Complex
 - Stilling Ponds



NOTE: Aerial image dated February 2017

AECOM

Figure 1

**CCR RULE MONITORING SYSTEM
ASH POND COMPLEX (APC)**

<small>DRAWN BY:</small> MARK.P.SMITH	<small>REVIEWED BY:</small> C.GARLINGTON	<small>APPROVED BY:</small>	<small>REVISION NUMBER:</small> REV. 1
--	---	-----------------------------	---

**GALLATIN FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY**

<small>DATE:</small> 1/22/2018	<small>DEPT:</small> FOSSIL AND HYDRO ENGINEERING
-----------------------------------	--

**TABLE 1
WELL CONSTRUCTION INFORMATION
CCR RULE GROUNDWATER MONITORING SYSTEM
ASH POND COMPLEX (MULTI-UNIT)
TVA GALLATIN FOSSIL PLANT**

Well ID	UNID #	Position Relative to CCR Unit	Top of Casing Elevation (ft)	Ground Elevation (ft)	Screened Interval (ft btoc)	Screened Formation	Total Well Depth (ft btoc)	Pump Intake Depth (ft btoc)	Well Diameter (in) / Material	Well Co-ordinates	
										TN State Plane NAD27 Northing (ft)	TN State Plane NAD27 Easting (ft)
24	GAF-00-GW-43-005	Downgradient	464.13	461.6	20.3 - 30.3	Carters Limestone	30.5	25	2-in PVC	707910.82	1878249.14
GAF-402C	GAF-00-GW-43-010	Downgradient	464.03	460.3	18.8 - 28.8	Carters Limestone	29.2	24	4-in PVC	707480.11	1880332.05
GAF-402L	GAF-00-GW-43-011	Downgradient	464.93	460.8	75.2 - 85.2	Lebanon Limestone	85.7	80	2-in PVC	707494.16	1880320.69
GAF-405C	GAF-00-GW-43-014	Downgradient	486.46	482.7	23.2 - 41.8	Carters Limestone	41.8	31	2-in PVC	702448.03	1880730.21
GAF-406L	GAF-00-GW-43-015	Downgradient	471.54	467.5	48.0 - 58.0	Lebanon Limestone	58.4	52	2-in PVC	706683.23	1877107.46
GAF-410U	GAF-00-GW-43-017	Downgradient	458.51	455.2	22.0 - 32.0	Unconsolidated	32.2	27	2-in PVC	704888.96	1877749.25
GAF-412C	GAF-00-GW-43-018	Background	477.64	473.9	43.6 - 63.6	Carters Limestone	63.9	54	4-in PVC	710931.17	1880022.99
GAF-412L	GAF-00-GW-43-019	Background	477.58	473.7	109.5 - 129.5	Lebanon Limestone	129.5	123	4-in PVC	710929.65	1880028.63
GAF-414L	GAF-00-GW-43-021	Background	481.45	478.6	93.2 - 103.2	Lebanon Limestone	103.2	98	4-in PVC	710438.90	1880406.55
GAF-416C	GAF-00-GW-43-023	Downgradient	466.87	464.2	32.0 - 52.0	Carters Limestone	52.3	42	2-in PVC	709168.17	1881134.07
GAF-422C	GAF-00-GW-43-028	Downgradient	463.78	460.1	19.6 - 35.6	Carters Limestone	35.7	31	4-in PVC	707542.45	1879330.87
GAF-426C	GAF-00-GW-43-029	Background	505.58	501.7	40.3 - 60.3	Carters Limestone	60.4	57	4-in PVC	711267.94	1881639.45
GAF-426L	GAF-00-GW-43-030	Background	506.83	502.6	176.7 - 186.7	Lebanon Limestone	187.0	183	2-in PVC	711281.94	1881642.00
GAF-427C	GAF-00-GW-43-031	Background	489.76	485.7	60.5 - 70.5	Carters Limestone	71.0	68	4-in PVC	710614.65	1882083.09
GAF-427L	GAF-00-GW-43-032	Background	488.41	484.2	144.4 - 159.4	Lebanon Limestone	159.9	152	4-in PVC	710606.97	1882087.73
GAF-446C	GAF-00-GW-43-034	Downgradient	461.06	457.3	23.9 - 33.9	Carters Limestone	34.4	29	4-in PVC	704742.14	1877728.58
GAF-449L	GAF-00-GW-43-036	Downgradient	463.09	458.2	61.3 - 71.3	Lebanon Limestone	71.8	68	4-in PVC	703982.89	1877822.35
GAF-450C	GAF-00-GW-43-050	Downgradient	466.73	463.7	51.2 - 57.2	Carters Limestone	57.2	55	4-in PVC	702528.53	1878184.63
GAF-450L	GAF-00-GW-43-051	Downgradient	466.62	463.6	77.6 - 95.5	Lebanon Limestone	95.5	95	3-in PVC	702526.39	1878174.14
GAF-451C	GAF-00-GW-43-037	Downgradient	490.17	485.8	53.0 - 63.0	Carters Limestone	63.5	63	4-in PVC	702406.33	1879585.84
GAF-452C	GAF-00-GW-43-038	Downgradient	484.13	480.6	102.3 - 112.3	Carters Limestone	112.4	109	4-in PVC	708455.27	1883011.13
GAF-452L	GAF-00-GW-43-039	Downgradient	484.31	480.7	159.7 - 169.7	Lebanon Limestone	170.4	167	4-in PVC	708438.06	1883004.23
GAF-453C	GAF-00-GW-43-040	Downgradient	467.78	464.2	49.5 - 59.5	Carters Limestone	59.8	56	4-in PVC	709163.45	1882810.94

Notes:

Elevation information from DDS Survey; elevation in National Geodetic Vertical Datum 1929.

Well co-ordinates based on North America Datum of 1927

Well construction information based on data provided by TVA Well Inventory, April 5, 2018.

CCR - coal combustion residual(s)

ft btoc - feet below top of casing

in - inches (inside diameter)