

Allen Fossil Plant

MEMPHIS, TENNESSEE



QUICK FACTS



EPA CCR Rule Groundwater Monitoring

This fact sheet summarizes groundwater monitoring conducted by TVA for the Allen Fossil Plant, as required by the U.S. Environmental Protection Agency (EPA) Coal Combustion Residuals (CCR) Rule. The EPA published the CCR Rule on April 17, 2015. It requires companies operating coal-fired power plants to study whether constituents in CCR have been released to groundwater from active, inactive and new CCR impoundments, as well as active and new CCR landfills.

The CCR Rule establishes multiple phases of protective groundwater monitoring including baseline sampling, Detection Monitoring and Assessment Monitoring. Corrective action may be necessary at the completion of this process. For more information on the CCR Rule Groundwater Monitoring requirements, go to www.tva.com/ccr.

Allen Plant CCR Rule Groundwater Monitoring Network

In addition to ongoing groundwater monitoring required under State regulations, TVA installed an additional well around the CCR management units and implemented a baseline sampling program. After completion of the baseline sampling, TVA began Detection Monitoring. The constituents specified by the CCR Rule for Detection Monitoring are boron, calcium, chloride, fluoride, pH, sulfate, and total dissolved solids (TDS). These seven constituents can occur naturally in soils, rock, groundwater and surface water, and are also present in coal and CCR. They were selected by EPA because they can indicate groundwater conditions that may require further evaluation.

Commissioning Date: 1959

Termination Date: March 31, 2018

Output Was: 741 Megawatts

Plans for updating/expansion:

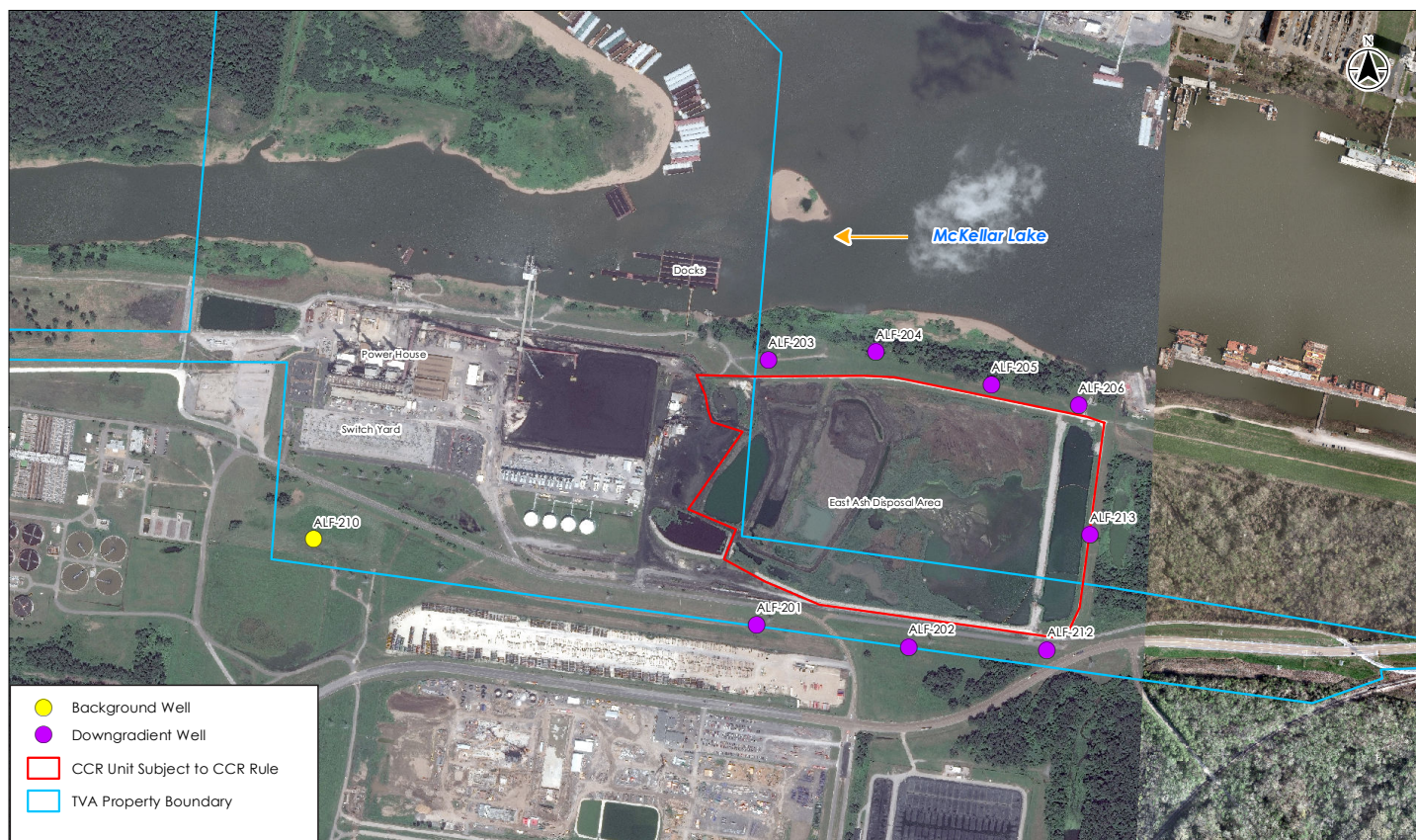
A natural gas generation plant began operations in 2018.

TVA Wide CCR Conversion

Program Total Spend:

Approximately \$1.3 Billion

TVA installed a “background”, or upgradient, well in a location that is not expected to be affected by the management of CCR. Other wells were drilled around the edge of the areas where CCR is managed or already existed and were being monitored. These wells are sometimes referred to as “downgradient wells” and placed in locations to monitor for releases to groundwater. The locations of the wells are shown below.



CCR Rule Detection Monitoring Results for Allen Fossil Plant

TVA prepared its initial **2017 Groundwater Monitoring and Corrective Action Report** for the Allen Fossil Plant, which analyzed the results of the detection monitoring to determine if there were statistically significant increases (SSIs) over background levels. The report was posted publicly March 2, 2018, and can be found by clicking on the following hyperlink www.tva.com/ccr. The initial comparison of downgradient wells to upgradient wells showed that concentrations of boron, chloride, fluoride, pH, sulfate and TDS around the CCR management units may be greater than naturally occurring levels. Data does not reflect the quality of public drinking water supplies, which are regularly tested to confirm they are meeting safe drinking water standards.

2018 Groundwater Monitoring Activities

During the baseline sampling phase of the CCR Rule, prior to Detection Monitoring, arsenic was found at uniquely high levels that exceeded Maximum Contaminant Levels (MCLs) in the upper Alluvial aquifer (shallow aquifer) associated with the East Ash Disposal Area in some of the monitoring wells. TVA conducted additional investigations of groundwater conditions at the Allen Fossil Plant and provided the results to the Tennessee Department of Environment and Conservation (TDEC). With the results from the initial sampling and the Detection Monitoring, the facility moved into the Assessment Monitoring phase. The groundwater sampling for this phase is expanded to test for additional constituents, for which TVA has determined groundwater protection standards (GWPS) (see chart below), including antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, fluoride, lead, lithium, mercury, molybdenum, radium, selenium and thallium.

Allen Fossil Plant CCR Rule Assessment Monitoring Results

The Assessment Monitoring results are contained in the **2018 Annual Groundwater Monitoring and Corrective Action Report**. The report can be found at www.tva.com/ccr. Below is the Allen Assessment Monitoring Results Matrix, which is based on comparative analysis of statistical analysis results versus GWPS. Refer to Appendix A – Statistical Analysis Report of the 2018 Annual Groundwater Monitoring and Corrective Action Report for more information.

| Constituent | GWPS mg/L | GROUNDWATER QUALITY MONITORING WELL LOCATIONS | | | | | | | | |
|-------------|--------------|---|------------------------|---------|---------|---------|---------|---------|---------|---------|
| | | Background Well | East Ash Disposal Area | | | | | | | |
| | | ALF-210 | ALF-201 | ALF-202 | ALF-212 | ALF-213 | ALF-206 | ALF-205 | ALF-204 | ALF-203 |
| Antimony | 0.006 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Arsenic | 0.01 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Barium | 2 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Beryllium | 0.004 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Cadmium | 0.005 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Chromium | 0.1 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Cobalt | 0.006 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Fluoride | 4 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Lead | 0.015 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Lithium | 0.04 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Mercury | 0.002 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Molybdenum | 0.1 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Rad226+228 | 5 pCi/L | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Selenium | 0.05 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Thallium | 0.002 | ● | ● | ● | ● | ● | ● | ● | ● | ● |

Color Coding Key

- Monitoring data results are below GWPS
- Monitoring data results are below GWPS, but results are 65% or more of the GWPS
- Monitoring data results exceed GWPS (TVA will initiate assessment of corrective measure)

Next Steps for Allen Fossil Plant CCR Rule Groundwater Monitoring

TVA will continue to monitor and evaluate the groundwater at the Allen Fossil Plant site. The coal-fired plant ceased operations in 2018, and the East Ash Disposal Area is no longer receiving CCR material. In addition, TVA is conducting a remedial investigation on the arsenic exceedances found in the shallow aquifer and has provided TDEC with a recommended interim corrective action to address the environmental impacts. A revised Closure Plan, dated April 23, 2019, has been placed in the facility operating record and posted to the CCR website. The Closure Plan states that, subject to the completion of all necessary environmental reviews, TVA intends to close the East Ash Disposal Area by removal. TVA has completed an Assessment of Corrective Measures Report to analyze the potential effectiveness of potential corrective measures. This report will be posted to the CCR website on August 14, 2019. A semiannual report describing the progress in selecting and designing the final remedy will be completed in January 2020.