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Memorandum:

To: Daphne Lutz, Chief, Industrial/Municipal Branch
From: Chris Johnson, Chief, Water Quality Branch CLJ
Date: July 20, 2016
Subject: Baker Creek/Mulberry Fork Fish Kill Response

Emergency Response Number (ERIS) --- 8673

The Water Quality Branch has reviewed the available information concerning the reported fish kill on June 16, 2016. ADCNR and ADEM personnel responded to the fish kill on June 16th. ADCNR personnel were the first to arrive, and reported observing dead, partially decomposed fish floating on the surface of the water in Baker Creek and also downstream on the Mulberry Fork. ADEM personnel arrived later in the day because of an earlier emergency response incident, and reported that dead fish were observed across from the Mulberry Fork/Baker's Creek confluence and downstream from the confluence. ADCNR personnel did not observe any dead fish on the Mulberry Fork upstream of the Baker Creek confluence. In addition, ADCNR and ADEM personnel did not observe any dead fish on Baker Creek upstream of the Gorgas Steam Plant.

A comprehensive assessment of the following information was considered:

- ADEM investigation results including ambient water quality data collected on June 16th and June 27th
- Temperature and stream flow data from continuous USGS gage (02453500) located on the Mulberry Fork upstream of the Gorgas Steam Plant
- ADCNR's Fish Kill Report dated June 16, 2016
- Alabama Power Company's letter to ADEM dated July 8, 2016
- The Smith and Bankhead Dam generation/release schedules.

Hydrologic characteristics of the Mulberry Fork located near Gorgas Steam Plant, including both streamflow and temperature, are heavily influenced by the hydropower release of cold water from Smith Lake Dam located on the Sipsey Fork approximately 46 miles upstream from Gorgas Steam Plant. Flow and temperature data collected at the USGS gage on Mulberry Fork near Cordova provides documentation that in the week prior to the reported fish kill, Smith Dam released very little water downstream. Therefore, during this low flow period, Mulberry Fork may have become stratified due to an increase in ambient water temperatures and a corresponding decrease in water velocity.

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The Alabama Power Company Gorgas Steam Plant is located adjacent to the Mulberry Fork and Baker Creek. The Gorgas Steam Plant utilizes once-through cooling water that is withdrawn via an intake canal from the Mulberry Fork at an approximate depth of 30 feet and eventually discharged to Baker Creek. At this depth, the Mulberry Fork may contain low dissolved oxygen. However, dissolved oxygen data is not available for Baker's Creek and Mulberry Fork on the date the actual incident occurred.

While the cause of the fish kill is undetermined, in order to gain a better understanding of any potential water quality impacts to Baker Creek and the Mulberry Fork, the Water Quality Branch will have further discussions with the Industrial/Municipal Branch with regard to potential future monitoring activities.