

Hydrology, Geology, and Surface Water Quality in Bayou Chene and Lacassine Bayou in Southwestern Louisiana

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ABSTRACT

As of the 2014 reporting year, Bayou Chene and Lacassine Bayou in southwestern Louisiana are listed as impaired water bodies under the Clean Water Act. In both bayous, low dissolved oxygen is listed among the causes of impairment. In order to develop strategies for improving water quality, it is necessary to understand the influence of natural conditions on dissolved oxygen and other water quality parameters. Accordingly, a three-part study of the relationship between hydrology, geology, and surface water quality in Bayou Chene and Lacassine Bayou was proposed. First, a water quality study was conducted to ascertain seasonal and spatial variations in surface water quality. Second, a geological study was proposed to assess spatial variations in the properties of Pleistocene and Holocene sediment deposits. Third, a geospatial and statistical analysis was proposed to relate the results of the geological study and the water quality study; research results on this relationship will be presented. In addition, data on soils, climate, water depth, flow rate, and historical water quality were gathered from secondary sources. Regression analysis of these data, along with preliminary results from the water quality study, suggests influences on water quality from climate and agricultural activities.