



# RESEARCH PROJECT CAPSULE [13-8GT]

September 2012

TECHNOLOGY TRANSFER PROGRAM

## Bayou Corne Sinkhole: Control Measurements of State Highway 70 in Assumption Parish, Louisiana

### JUST THE FACTS:

**Start Date:**  
August 22, 2012

**Duration:**  
9 months

**End Date:**  
April 30, 2013

**Funding:**  
State: TT-Reg

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Sponsored jointly by the Louisiana  
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University

### POINTS OF INTEREST:

*Problem Addressed / Objective of  
Research / Methodology Used  
Implementation Potential*

[WWW.LTRC.LSU.EDU](http://WWW.LTRC.LSU.EDU)

### PROBLEM

The sinkhole located in northern Assumption Parish, Louisiana, threatens the stability of Highway 70, a state-maintained route. In order to monitor and mitigate potential damage effects on this infrastructure, the Louisiana Department of Transportation and Development (LADOTD) has requested accurate and precise measurements of control points along the nearby portions of Highway 70.

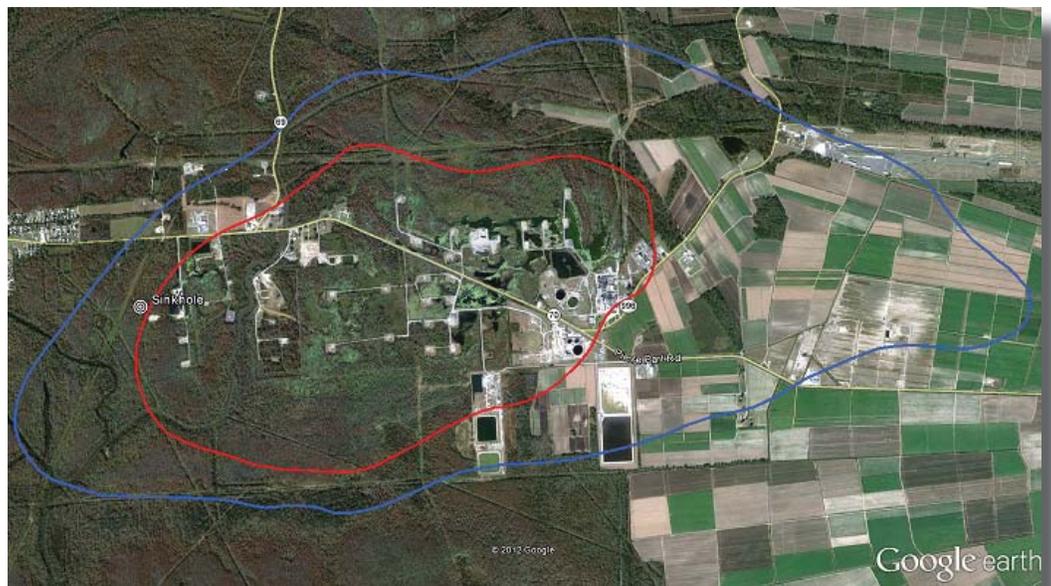


Figure 1

*An aerial photograph of the Bayou Corne area with the approximate size and location of the sinkhole, and the salt dome's 1000' and 10,000' contours in red and blue, respectively.*

### OBJECTIVE

The fundamental objective of this research is to monitor and assess the stability of Highway 70 that is potentially vulnerable to the Assumption Parish sinkhole. Accordingly, the Center for Geoinformatics (C4G) at Louisiana State University (LSU) proposes to collect horizontal and vertical control measurements using Global Positioning Systems (GPS) enhanced by a real-time network of continuously operating reference stations (CORS) maintained by the center. The data will be processed and made available to stakeholders and decision makers in accordance with the response activities initiated by LADOTD.

## METHODOLOGY

This project will be implemented in four tasks over nine months. Staff from C4G will collect horizontal and vertical measurements at control points located at 500-ft. intervals along a three-mile stretch of Highway 70 in Assumption Parish. The study area is located between the bridges at Bayou Corne (on the west) and Bayou Choupique (on the east).

Measurements collected in the field will be transferred from GPS data collectors and uploaded to the LSU computer network for distribution. Because control points will be measured using a Real-Time GNSS (RTN) System, all observations will be made available within hours of their collection. Datasets exported from the GPS data collectors will be saved in an ESRI Shapefile format. Shapefiles will be accompanied by appropriate metadata.

An Internet accessible File Transfer Protocol (FTP) server will be deployed and maintained by the C4G to distribute the data products for this study. Datasets will remain accessible via the FTP site through the extent of the project. Datasets will also be accessible via Web mapping applications hosted by the C4G. To ensure fault tolerance, all datasets will be backed up on redundant storage units.

The C4G will submit an intermediate and final report regarding the tasks performed for this project.

## IMPLEMENTATION POTENTIAL

The data produced by this study will be available to LADOTD staff seeking to assess the stability of Highway 70 portions vulnerable to the Assumption Parish sinkhole. The data will be accessible via FTP server and maintained by the C4G. Data will also be tallied and summarized in worksheets and map products. Map services will be coordinated with the LADOTD GIS staff.