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### **Fault Related Subsidence and Land Submergence in Southeastern Louisiana**

A study was conducted to determine the contribution of fault movement to subsidence and land loss, and the resulting effects on flood control, navigation, hurricane protection and coastal restoration projects in the deltaic plain region of southeastern Louisiana. The distribution, intensity, and frequency of occurrence of surface fault movement driven by subsurface tectonic processes, gravity slumping and other causes were considered. A framework of faulting was established to which changes in the deltaic plain can be linked. These changes are related to differential vertical movements, which alter elevation and slope of the modern surface within fault-bound blocks. Locations of major faults that comprise this framework were established through literature review and data derived from research conducted primarily by petroleum geologists. These data also show that the faults extend into the deep subsurface and are characterized by offsets in subsurface stratigraphy.

Episodic fault movement has occurred throughout the Quaternary. More than 100 surface fault traces and/or scarps have been identified and evaluated. Typically the traces are linear segments from 1 to 5 miles in length and have associated areas of rapid land loss or wetland deterioration on the down-dropped block. Down-dropped blocks are usually tilted and exhibit vertical displacement of 1 to 4 feet. Many coastal lakes and bays were formed by historic and pre-historic fault events. Increased fault activity began in the 1960s and continues to present.