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Project: Channel Dredging Impacts On Shoreline Response At And Adjacent To Main Pass, Mobile Bay Entrance, Alabama

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The purpose of this study is to evaluate the impact of channel construction and maintenance dredging activities on adjacent shoreline response at Main Pass (Mobile Bay), AL. Historical shoreline positions, bathymetry data sets, beach profiles, and dredging records provide the basis for quantifying change and developing a long-term sediment budget. Wave and current measurements, storm frequency and magnitude, freshwater runoff, and water level analyses provide the basis for quantifying dominant coastal processes causing coastal morphologic change. Using these data, shoreline response relative to natural forces and engineering activities will be evaluated to determine the extent to which beach erosion along Dauphin Island can be attributed to U.S. Army Corps of Engineers (USACE) channel maintenance operations.

Five primary technical tasks will be completed to address the study purpose. First, a complete historical data analysis from existing reports and data sets will provide quantitative information on shoreline position and change, bathymetry change, beach profile adjustments, dredging quantities and sediment type, wave and current patterns, storm frequency and magnitude, freshwater runoff, and water level fluctuations. Second, hydrodynamic modeling will be conducted to document spatial changes in flow at and adjacent to Main Pass relative to engineering activities. Third, wave transformation modeling will be conducted to document the impact of channel modifications on wave propagation and sediment transport. Fourth, field surveys of water level and nearshore currents will be completed to verify numerical circulation modeling results. Fifth, a sediment budget for the area will be completed based on information generated in the previous tasks. The product of these analyses will be a technical report documenting the study results.

