

INTEGRATING WETLAND AND WATER MONITORING IN COASTAL LOUISIANA, USA FOR IMPROVED RESTORATION PLANNING AND ASSESSMENT

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Many agencies and programs collect environmental monitoring data in coastal Louisiana. According to the last count, over 5,000 coastal monitoring stations, from various federal and state agencies, private companies, and academic institutions were in operation. In association with other partnership agencies, U.S. Geological Survey and Louisiana Department of Natural Resources have developed a system-wide assessment and monitoring plan (SWAMP). The SWAMP integrates monitoring of biological, chemical, physical, and climatological coastal ecosystem components in four modules: wetlands, barrier islands, inshore waters and rivers, and near coastal waters. This integrated approach includes the development of common statistical designs, selection of baseline indicators, utilization of compatible sampling methodologies, and the development of appropriate analytical techniques. SWAMP'S goals are focused to (1) reduce data redundancies, (2) maximize agency resources, (3) improve evaluations of restoration efforts, and (4) provide a database to develop comprehensive models and studies linking the near shore environment with estuaries and wetlands.

The wetlands module of the SWAMP known as Coastwide Reference Monitoring System (CRMS-Wetlands) has been designed and is in progress for implementation. This module uses a multiple-reference approach with respect to hydrogeomorphic functional assessments and probabilistic sampling. References are considered to encompass a range of ecological conditions for each regional stratum (basin) across the coast. Trajectories in the reference sites are then compared with trajectories of the project sites through time. A total of 612 stations that represent combinations of geomorphology, hydrologic basin, project/non-project areas, and vegetation type will be sampled. The measured variables will address project and regional objectives and include land:water ratio, vegetation composition and cover, marsh elevation, duration and frequency of inundation, salinity, and sedimentation and erosion. The sample design also incorporates the historical coastwide transects used for multiyear habitat surveys.

The other three modules of the SWAMP are currently being designed and will be integrated with CRMS-Wetlands. The designs of these modules focus on oceanographic (hydrodynamic and geomorphic) and water quality (event and effects) variables using a variety of platforms and sensors to support ecosystem backcasting and forecasting capability.