

**STUDY PROGRESS REPORT
GEOLOGY AND SOILS
MORGAN FALLS PROJECT (FERC NO. 2237)**

NOVEMBER 2005

1. INTRODUCTION

Georgia Power is conducting a study to characterize existing erosion and sedimentation within the Morgan Falls project area and to develop information for analyzing the potential effects of continued project operation on geology and soils. The study is being conducted according to the study plan for the Morgan Falls Project approved by the Federal Energy Regulatory Commission (Commission) on November 26, 2004. The results of the study will be presented in a Geology and Soils Study Report, which Georgia Power will distribute to participants and file with the Commission by April 1, 2006. Georgia Power will use the information generated by the study to evaluate the environmental effects of its proposed project in the Preliminary Licensing Proposal, to be filed with the Commission by October 2, 2006.

The specific objectives of the Geology and Soils Study are to:

- Characterize the distribution, sources, and rate of sediment deposition within the Morgan Falls impoundment based on field reconnaissance and review and analysis of existing topographic/hydrographic survey and sediment characterization information.
- Evaluate whether sedimentation has reached or is approaching equilibrium in the project impoundment.
- Evaluate the impact of future sedimentation on usable storage capacity of the Morgan Falls impoundment and re-regulation of Buford Dam flows.
- Characterize surface sediment quality in the project area based on review of existing sediment data for the Chattahoochee River and Morgan Falls impoundment.
- Evaluate the feasibility and estimated costs of dredging, transporting, and disposing of sediment.

2. STUDY PROGRESS

2.1 Activities Completed

Shoreline Reconnaissance Survey

The following activities were completed to inventory and characterize existing sources of erosion and sedimentation within the project area:

- Completed a shoreline reconnaissance survey of the project impoundment and tailrace area extending downstream to beyond the Georgia

Department of Natural Resources boat ramp on September 13, 2005. Twenty-seven sites were evaluated and rated using the visual shoreline assessment protocol as described in the study plan.

- Compiled shoreline reconnaissance survey findings, including ratings of bank stability, bank vegetative protection, riparian buffer zone width, potential causes of erosion, and impervious surfaces within the riparian zone.
- Obtained aerial photography of the project area from National Park Service (2002) and University of Georgia Map Library (1972 and 1988) for use in qualitatively comparing current shoreline conditions to conditions pre-dating creation of the Chattahoochee River National Recreation Area in 1978.

Analysis of Existing Information and Data

The following activities were conducted for characterizing the distribution, sources, and rate of sediment deposition within the Morgan Falls impoundment:

- Contacted the U.S. Army Corps of Engineers (Corps) Mobile and Savannah Districts to obtain hydrographic information used to estimate 1976 reservoir storage volume for the Metropolitan Atlanta Area Water Resources Management Study (MAAWRMS).
- Requested HEC-2 water surface profile model information used by Federal Emergency Management Agency (FEMA) in the project area for flood hazard mapping purposes. It is anticipated that these data may contain cross-sectional profiles of the Morgan Falls impoundment.
- Coordinated with Atlanta Regional Commission staff on identifying and obtaining available aerial photography of the project area from the 1960s and 1970s to assist in documenting sedimentation trends over that period.
- Analyzed main channel and embayment areas for reservoir storage and surface area based on the 2001 Corps hydrographic survey and bathymetry map.
- Began evaluating cross-sectional profiles of the Morgan Falls impoundment used by Atlanta Sand and Supply Company.

Feasibility and Cost of Dredging

The following activities were conducted for evaluating the feasibility and costs of dredging and disposing of sediments in the Morgan Falls impoundment:

- Reviewed and analyzed existing relevant information and past dredging evaluations; identified key variables for estimating unit costs; and conducted site visit on July 8, 2005 to observe site conditions relative to physical constraints for dredging operations.

- Developed and analyzed a conceptual range of scenarios for bracketing upper and lower limits of dredging costs based on quantity of material to be handled, its location in the impoundment, potential access for land-based operations, and assumptions on sediment handling and disposal.
- Analyzed applicability and implications of federal, state, and local land use, environmental, and resource regulations and permitting requirements potentially relevant to dredging operations in the Morgan Falls impoundment.
- Began analysis and documentation of basis for variables necessary to develop unit costs of dredging for the conceptual range of scenarios defined.

2.2 Preliminary Findings

Shoreline Reconnaissance Survey

- Twenty-five of 27 sites assessed were characterized by stable or moderately stable banks; 22 were well protected by vegetation (70 to 100 percent coverage). Sites with the greatest potential for active shoreline erosion mainly occur at public recreation access points.
- Potential sources of shoreline erosion observed in the project area (in decreasing order of frequency of occurrence) were impervious surfaces, stormwater runoff, public recreation/access, Buford Dam peaking releases, roads and bridges, tributary inflow, wildlife activity (geese and ducks), land-disturbing activity, reservoir fluctuations, and horse pastures.

3. VARIANCE FROM STUDY PLAN AND SCHEDULE

- There has been no substantive variance to date from the study plan or schedule. Detailed information supporting the Corps' 1976 estimate of reservoir storage volume for MAAWRMS has not yet been provided to Georgia Power. Georgia Power is searching other sources for relevant hydrographic information for the impoundment from the 1970's (e.g., FEMA).

4. REMAINING ACTIVITIES

- Complete analysis of existing information and data relative to distribution, sources, and rate of sediment deposition; effects of project operations on shoreline erosion and sedimentation; surface sediment quality in the project area; and feasibility and costs of dredging.
- Prepare the Geology and Soils Study Report.