INTRODUCTION

The U.S Army Corps of Engineers, Wilmington District (Wilmington District) in partnership with the Commonwealth of Virginia are sponsoring a feasibility study under the authority of Section 216 of the River and Harbor and Flood Control Act of 1970 (Public Law 91-611). Section 216 authorizes the review of the operation of the Philpott Dam and Lake and report recommendations to Congress on the advisability of modifying the structures or the structures' operation and for improving the quality of the environment in the overall public interest.

Approval of participation in this feasibility study by the US Army Corps of Engineers, Wilmington District, was based on the report entitled 905(b) Reconnaissance Report, Philpott Dam and Lake, Virginia, (Section 216) Study, Smith River dated August 2004, approved 7 January 2005. Public, stakeholder, and local,
State, and Federal agency input received during the early stages of this study indicated there is a public interest in reviewing the following areas: natural resources; downstream fisheries management related to the brown trout fishery, water quality, the Philpott guide curve and its effects on various resources, and upstream fisheries related to the largemouth bass fishery in Philpott Lake. Hydropower and upstream recreation were topics addressed in several comment letters. Downstream water supply, recreation, erosion and siltation, drought management, fish and wildlife, endangered species, cultural resources, and shoreline management are of concern; however; very few comments were submitted regarding these concerns. US Army Corps of Engineers Regulation (ER) 1105-2-100, Planning Guidance Notebook, provides full guidance regarding conduct of the study.

Technical Work Groups were formed in the following areas: Natural and Cultural Resources; Operation Policies and Administrative Procedures; Shoreline Management and Erosion; Water Quality; Water Supply; and, Aesthetics and Recreation. Each of the Work Groups is to develop a Scope of Work to assess existing conditions and to forecast the future conditions that would exist if no modifications are made to operating procedures at the Philpott Dam. This analysis is being done in accordance with U.S. Water Resources Council's *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies* as implemented by the U.S. Army Corps of Engineers' Planning Guidance Note Book (Engineering Regulation 1105-2-100). A summary of the progress made thus far on the Philpott 216 Study can be found in the November 2006 *Project Management Plan for Philpott Lake, Virginia (Section 216) Feasibility Study*. This management plan and other materials regarding the Philpott 216 study are available at the following website:
http://www.saw.usace.army.mil/Authorized_Projects/Main.htm.

The objective of the proposed study is to provide the flow and water-quality modeling tools that can be used to assess the effects of changes in Philpott Dam operations on Smith River flows; duration, extent, velocities, and depth; and temperature distributions in the river. This objective will be met by performing the following tasks: (1) review existing data and develop a hydrologic and water-quality monitoring plan to support modeling; (2) review existing modeling approaches for the Smith River below Philpott, (3) implement the hydrologic and water-quality monitoring program to obtain information necessary to support

and test model evaluation; (4) develop, calibrate, and test hydrodynamic models that are capable of simulating upstream and downstream movement of water; (5) develop, calibrate, and test water-quality models that simulate temperature and DO dynamics in the Smith River main channel; and (6) apply these models to determine effects of selected water management scenarios on downstream conditions in the Smith River. Coordination with the Natural Resources Work Group will be critical as improvement of habitat conditions for brown trout and Roanoke logperch is a planning objective of the study.

SCOPE

The study area will include the Smith River below Philpott Dam downstream to _____. The study will consider additional length of the Smith River if necessary.

APPROACH

The proposed approach for each of the 6 project tasks, as outlined in the "Scope of Work" is described in the following section.

Task 1: Develop Water-Quality Monitoring Strategy:

Task 2: Review of Existing Modeling Frameworks:

Task 3: Field Monitoring / Needed Data Collection:

Task 4: Hydrodynamic Modeling:

Background and Setting:

Modeling Approach and Description:

Task 5: Water-Quality Modeling:

Task 6: Simulation of Management Scenarios:

SCHEDULE

The schedule for completing the various tasks and subtasks presented in this proposal is:

FUNDING

Funding needs for the various tasks is outlined in Table X. Costs are given by 12-month year, so fiscal year costs will need to be adjusted depending on the project begin date.