Coosa River Modeling Project

2006 Field Study Plan
Module 6
DO and Temperature Depth Profiles

Georgia Department of Natural Resources
Environmental Protection Division
Watershed Protection Branch
Watershed Planning & Monitoring Program
4220 International Parkway
Suite 101
Atlanta, Georgia 30354

Introduction

The primary objective of this module is to gain insight into the water quality characteristics of the Coosa River in the lake-like portion of the river. This insight will provide a general picture of the dissolved oxygen and temperature characteristics of the Coosa River and its influence on Weiss Lake.

Regular temperature and dissolved oxygen depth profiles will be collected at selected river stations to document the extent of vertical mixing in the system. This project will include centerline runs, made of the river, from Rome to the Georgia/Alabama State Line, with depth profiles. The cross-sectional depth profiles will provide an improved understanding of the influences upstream and their impact on the Coosa River as it enters Weiss Lake.

Study Area and Sampling Location

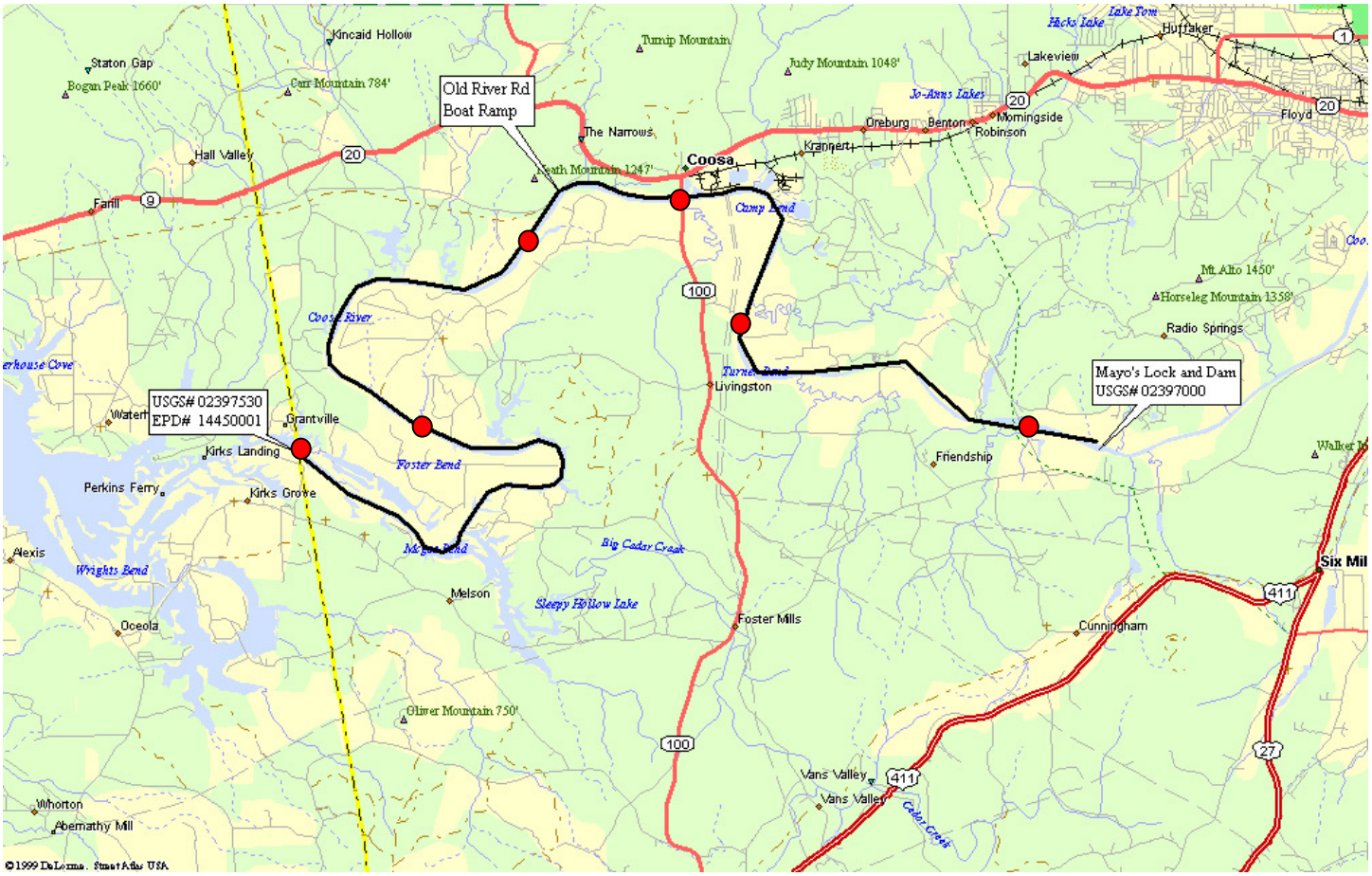
The Coosa River is located in northwest Georgia and flows east to west from the north Georgia mountains to the Georgia/Alabama State Line. The State Line is one of the eastern-most locations in Lake Weiss that is still noticeably riverine. The State Line monitoring site is important in understanding interstate water quality issues.

Water quality data will be collected in the Coosa River from Mayo's Bar downstream to the State Line. Depth profile measurements will be taken from a boat at six locations that are given in Table 6-1 and shown in Figure 6-1.

Table 6-1. Locations of the EPD Depth Profile Monitoring Sites

Mainstem	Location	Latitude	Longitude
Upper Coosa Sub-Basin			
Coosa River	at Blacks Bluff (RM 278)	N 34.2059	W 85.2804
Coosa River	U/S Beech Creek (RM 272.6)	N 34.2274	W 85.3403
Coosa River	at SR 100 (RM 269.7)	N 34.2486	W 85.3556
Coosa River	River Mile 267	N 34.2357	W 85.3947
Coosa River	River Mile 262	N 34.2040	W 85.4140
Coosa River	near Coosa (State Line) (RM 255)	N 34.1994	W 85.4439

Figure 6-1. Depth Profile Sampling Locations



Methodology

Water quality measurements will be taken using programmable in-situ water quality monitors (Hydrolab multiprobe sonde). The monitors will record dissolved oxygen, temperature, pH, conductivity, turbidity, chlorophyll a, and depth. Centerline profiles will be taken at all monitoring sites. In addition, at the State Line, measurements will be taken at the quarter points and 95% from the left edge of water (95% LEW) looking downstream.

The depth profiles will start at 0.2 feet below the water's surface. Measurements will then be taken at every foot until four feet, then every two feet until ten feet, and finally every five feet until the bottom is reached.

Measurements and Documentation of Field Data/Observations

The in-situ Hydrolab measurements that will be taken will consist of depth, water temperature, conductivity, dissolved oxygen, and pH. Air temperature, photic zone

depth readings, and river water levels will also be recorded. Sampling data will be documented in a bound field book and will be electronically recorded in the Hydrolab memory. Upon return to the office, the data will be downloaded and reviewed. Data will be put in spreadsheets and reviewed by the Watershed Modeling Unit following each sampling day. The spreadsheets will include all data collected during the sampling day as well as graphs for temperature and dissolved oxygen profiles for each percent LEW.

In addition, gage height, flow data, and water temperature will be collected from the USGS gage station #02397000 (via USGS real-time website) at Mayo's Bar Lock and Dam. DO, pH, water temperature, and conductivity data will be collected (via USGS real-time website) from the USGS gage station # 02397530 at the Georgia/Alabama state line. The stage height at dam on Lake Weiss USGS station # 02399500 Coosa River at Leesburg will also be collected via the USGS real-time website. This data will be put in the spreadsheets alongside in-situ water quality measurements for river flow, stage, and water quality measurements comparisons.

Calibration histories of the Hydrolab will be maintained. The data will be documented in table format for each sampling day. The temperature and DO data will also be documented in graphical format for the purpose of distinguishing trends among the readings depending on the depth.

Schedule

The Coosa River depth profiles will be conducted once a week (weather permitting) starting April 2006 and continuing through October 2006.

Quality Control

All fieldwork will be performed in accordance with the Division's Quality Assurance/Quality Control (QA/QC) procedures maintained by the Watershed Protection and Management Program. Equipment used will be calibrated in the laboratory prior to and after sampling is conducted according to manufacturer's instructions. The Quanta and Minisonde will also undergo a comparability surface reading just before and just after sampling is conducted. Sampling data will be documented in a bound field book. Data will be put in spreadsheets following each sampling day, reviewed by the Watershed Modeling Unit, and entered and maintained in the Watershed Protection Branch's Water Resources Data-Base (WRDB).

Safety

The vehicle will be equipped with a first aid kit. The samplers will be proficient in towing procedures. While operating the boat, the samplers will have life jackets and float cushion, emergency equipment (horn, paddle, booster box, maps, tools, cell phone) and be proficient in boat operation procedures. The sampling will be canceled if extreme weather conditions exist.

Equipment

The equipment to be used for the project includes:

- Vehicle with tow rating higher than 4000 lbs.
- Boat capable of 24 mile round trip with anchor
- Thermometer
- Hydrolab unit Minisonde serial#33229
- Hydrolab unit Quanta serial #QT001154
- Field Book, waterproof permanent pens
- Secchi Disk
- Li-Cor
- Tapedown
- GPS unit
- Depth finder
- Life jackets and float cushion
- Emergency boat kit
- Digital Camera
- First Aid kit