

Issue Action Group: E10 Smith Tailrace Work Group

Meeting Summary: Smith Powerhouse – October 7, 2002

Final 02-19-03

Agreements & Resolutions

- 1) The STWG agreed that given the intake configuration at Smith Dam, it would be an extremely costly and formidable obstacle to overcome in designing intake modifications that may or may not produce warmer water releases into the Sipsey Fork.
- 2) The STWG will investigate potential streams/rivers in the Warrior basin where potential restoration efforts for T&E mussels and snails may be accomplished.
- 3) The STWG will begin discussions of enhancing the trout fishery at their next scheduled meeting.

Meeting Notes

These notes summarize the major items discussed during the meeting and are not intended to be a verbatim transcript or analysis of the meeting.

Environmental Data

The STWG began their meeting with APC distributing additional biological data that has been collected in the Sipsey Fork below Smith Dam. These included:

- Sipsey and Mulberry Fork electrofishing fish collections
- Sipsey Fork macroinvertebrate field collections
- Trout Movement Studies in Sipsey and Mulberry Fork.

Malcolm stated that the electrofishing collections consisted of 20 minutes of “pedal time” at each of the listed locations. Length information was also recorded for each fish collected. The ADCNR may request the length data later.

Malcolm reviewed the macroinvertebrate information for the group. There was a request to expand the macroinvertebrate tables to show density information for each collection area. Jim Lochamy will follow up on this request. There was a short discussion of what trout eat in the Sipsey since the macroinvertebrate samples appear to be impaired. John Eisenbarth stated that he has looked at some stomach contents and that they were dominated by terrestrial insects (ants, beetles, *etc.*). His belief is that fish move up onto the flooded banks to feed during generation cycles. The reduced levels of food in the Sipsey Fork result in a “Put and Take” trout fishery. Fish appear to grow very little in this section of the river.

Due to some problems with printing the 1999 and 2000 study reports, the reports were not distributed at the meeting. Bill Sim will send electronic copies of the reports to the STWG members. Ed Tyberghein gave a synopsis of APC’s trout movement studies in the Sipsey and Mulberry Forks.

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In the 1999 study, trout were radio-tagged and released at several locations in the Sipsey Fork. Fish usually moved downstream to deeper areas of the Sipsey Fork. During October, several fish moved upstream towards the dam. This may have been related to spawning efforts since some of these fish actually had developed ovaries with eggs. Some fish moved into the Mulberry Fork during the study, but most of the tracked fish stayed within the Sipsey Fork. John Eisenbarth stated that the study agrees with what he observes while fishing. He added that he believes that fish move up into the creek mouths during generation to forage for food and to avoid high velocities.

During the 2000 study, trout were radio-tagged and released at various locations in the Mulberry Fork. Trout moved down as far as the Gorgas Steam Plant. They moved upstream also, but never went above the confluence of the Sipsey and Mulberry Forks.

Overall, fish stocked in the Sipsey Fork stayed in the Sipsey, and fish stocked in the Mulberry Fork stayed in the Mulberry.

Birmingham Water Board Dredging Permit

ADCNR and APC, to date, have not been able to get a copy of the ACOE dredging permit issued to the Birmingham Water Board several years ago. Jim Crew will continue APC's efforts to obtain this information.

Release Temperatures from the Project

Bill presented a diagram of the Smith Dam intake configuration. The intakes are bottom oriented and are 53 ft. tall (bottom at el. 420 and top at el. 473 msl). Bill also presented temperature vertical profile plots for the forebay area. The plots show that the lake typically begins to stratify in June and stays stratified usually until October. The epilimnion of the lake is typically limited to a 20 foot thick layer on the top of the reservoir. The thermocline and hypolimnion occupy the remaining 70 feet of the water column. Thermocline temperatures average around 15 to 16 °C and the hypolimnion averages less than 10 °C. Since the intakes are bottom oriented, they draw water directly from the hypolimnion and thermocline. This results in release temperatures around 15 °C. Modifications to the intakes would still draw a majority of the water from the thermocline which would result in little if any warming.

Bill noted that it is essentially impossible to modify the existing intakes to pull water from the epilimnion strata which is 20 to 25 feet up from the top of the intake. Due to the buoyancy of warm water, it is also impossible to draw this warm water down into the cooler layers of the lake and into the intakes. As such, modifications to the intakes in hopes of passing warmer water downstream through the Smith Project may not be physically possible, would be extremely costly and may not produce the warming needed for a "natural" warmwater stream.

ADCNR acknowledges this situation, but would like to reserve final judgement on the warmwater conversion pending the outcome of the coldwater enhancement approach.

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Bill presented data on the resulting downstream temperatures in the Sipsey and Mulberry Forks all the way to the Gorgas Steam Plant (approximately 45 miles). The cold water releases travel along the bottom of the river and warmer water entering from Mulberry Fork “floats” on the top of the cooler water. Gorgas Steam Plant takes advantage of this situation by withdrawing the cooler bottom water to use as cooling water at the Plant.

Bill noted that this cool water in the Mulberry presents an opportunity to have a “Put Grow and Take” trout fishery in the Mulberry Fork.

Bill agreed to consolidate all of the information presented at the meeting into a “report” for the Work Group.

Threatened and Endangered Species

Malcolm and Jeff prepared a list of potential T&E species that could be introduced in the Sipsey Fork. The list represents species that were probably historically present in the Sipsey Fork and species that could be introduced into the basin.

Federally Endangered:

Mussels

Epioblasma penita (Buttahatchee River)
Pleurobema decisum (Sipsey River)
Pleurobema furvum (Bankhead National Forest (NF))
Pleurobema perovatum (Sipsey River)
Ptychobranhus greenii (Bankhead NF)

Snails

Leptoxis plicata (Locust Fork)
Lioplax cyclostomaformis (Cahaba River)

Federally Threatened:

Mussels

Lampsilis perovalis (Bankhead NF)
Medionidus acutissimus (Bankhead NF)

State Priority 1 and 2 (but not federally protected)

Mussels

Anodontoides radiatus
Elliptio arca (Sipsey River)
Elliptio arctata (Locust Fork)

Snails

Leptoxis melanooides (Locust Fork)

Paul Johnson Tennessee Aquarium Research Institute is cultivating many of these species at Cohutta Hatchery and is looking for places to introduce them.

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The temperature preferences for these species is in the range of 25 °C and higher. The current release temperatures from the dam prevent these mussels from inhabiting the Sipsey Fork and a portion of the Mulberry Fork.

The STWG discussed the issue and identified a potential solution. Since the cold water releases from Smith can't be modified, then the STWG should try to identify stream/rivers in the basin where mussel/snail restoration efforts could potentially be initiated.

Malcolm, Jeff, John, and Bill briefly discussed several potential areas to be investigated. The STWG agreed that Malcolm and Jeff will review, identify, and report up to 10 sites for restoration efforts. Their report will consist of: site review notes, maps, site description, and possibly water quality information (grab sample) for each identified site.

Recreation

Bill is continuing to contact ADECA regarding the confidentiality of the recreation data for Smith Tailrace. It may be necessary for APC to paraphrase the results into a synopsis so that we can share the information with the STWG.

John Eisenbarth has been collecting recreation preference data via a survey form that is available through the Riverside Fly Shop. John and his wife will consolidate this information and make it available to the STWG for consideration.

USFWS Discussions

Jim and Henry held a conference call with Carl Couret (USFWS) on Friday October 11, 2002 at 9:00 AM to discuss the STWG meeting. Each aspect of the meeting was discussed and Carl's questions were answered as accurately as possible. Carl agreed with the consensus of the STWG. Since the cold water release can't be changed, then APC should investigate ways to enhance T&E species in other basin streams and/or rivers.

Conclusion

The STWG will work on the action items listed above and schedule the next meeting following completion of most of the action items. At the next meeting, the STWG will begin discussing improvements to the trout fishery.

IAG documents and materials are posted on the Internet at www.southerncompany.com/alpower/hydro.