

Evaluation of Neely Henry Tailrace Area

April 10, 2006

Final Edits of the Technical Team

Introduction

Based on discussions between APC, ADCNR, and USFWS at the May 11, 2005 meeting, there was agreement to develop a plan to assess the downstream area below the Neely Henry Project (N. Henry) with respect to minimum flow discussions. The N. Henry tailrace area was identified as a "high priority" project that would involve collection of site specific environmental data for the flow evaluation process. For this evaluation, the Technical Team¹ recommended that collection efforts concentrate on aquatic riverine species (fish, mussels, and snails) with a focus on species that are rare and/or imperiled (including those species listed under the ESA as well as priority species listed in Alabama Wildlife - Mirarchi 2004) and are currently present in the tailrace area. However, this does not preclude the inclusion of non-imperiled aquatic species in the evaluation process. In addition to the biological information, water quality data will also be incorporated into the evaluation process. The results of these evaluations will ultimately be included in the APC Enhancement Proposal previously filed with FERC², and possibly, in the Section 7 consultation if T&E species are present in the tailrace area.

Data Collection Schedule

In order to adequately assess the condition of the tailrace area at N. Henry after the DO enhancements have been made, it was recommended that "baseline" biotic information be collected prior to the installation and operation of aeration systems. According to the 401 application, DO enhancements will be installed and operating within 18 months of the issuance of the new license (August 2007), followed by a 36 month monitoring/evaluation period. Therefore, pre-DO enhancement data (baseline) will be collected in 2006 and 2007 in the Henry tailrace at the location of the existing water quality monitoring station. The monitor in the Neely Henry tailrace shall record dissolved oxygen and temperature at 60-minute intervals during periods of generation following one continuous hour of generation from May 1 through September 30. During flood events, the monitoring may be temporarily discontinued until tailrace elevations return to normal. The proposed overall data collection plan is as follows:

- 2005: Site recon and sampling reach selection
- 2006: Mid-March to early April – fisheries samples (baseline)
June to October – mussel and snail samples (baseline)
- 2007: Mid-March to early April – fisheries samples (baseline)
June to October – mussel and snail samples (baseline)
- 2009: DO enhancements in place (this is a projected date)
- 2011: Mid-March to early April – post-DO enhancement fisheries samples
June to October – post-DO enhancement mussel and snail samples
- 2012: Mid-March to early April – post-DO enhancement fisheries samples (if needed)
June to October – post-DO enhancement mussel and snail samples (if needed)
- 2013: Discussion of results

¹ Jeff Powell – USFWS; Dan Catchings & Jeff Garner – ADCNR; Jim Lochamy & Steve Krotzer – APC; Henry Mealing – Kleinschmidt Associates.

² The APC Enhancement Proposal was filed with FERC on July 28, 2005 and supplemented on December XX, 2005.

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Selection of Sampling Stations:

Reconnaissance surveys were conducted during the fall of 2005 in the N. Henry tailrace. The reconnaissance trip began near the dam and proceeded downstream until the desired riverine habitat was depleted. The reconnaissance survey was conducted under a low or minimum flow scenario.

One sampling reach was selected in the N. Henry tailrace/tailwater area. This sampling reach will start at a point just downstream of APC's DO monitoring station and extend downstream to Cane Creek. If sampling just downstream of the dam is possible, this area will be added as an additional sampling reach.

For the sampling reach a general "habitat assessment" will be performed to characterize the reach. This will include the collection of some basic parameters (wetted channel width, stream bank measurements, island dimensions, substrate embeddedness, etc.) that may be useful in site comparisons.

Baseline Sampling:

Fish Sampling

Beginning in the Spring of 2006, fish community data will be collected at each designated sampling reach once per year (during mid-March to early April) following the sampling schedule listed above. Fish sampling will be qualitative in nature and used to characterize the species present in each sampling station. Because habitat types are quite deep (*i.e.*, lack of wadeable areas), sampling will primarily consist of boat electrofishing. A limited amount of backpack electrofishing and seining will be performed if shallow habitats are present. Qualitative collection efforts will focus on the detection and distribution of the fish species present.

Boat daytime electrofishing will be used at each sampling reach to sample the fish community in generally deeper areas (greater than 2 feet deep). Sampling will include 6 to 10 - ten minute samples in the reach. Boat electrofishing sampling will commence at the beginning of each reach with a shoreline (10 min.) and an open-water/mid-channel (10 min.) sample. Each of these samples will be collected and processed as a separate sample. After processing the samples, another shoreline (10 min) and mid-channel (10 min) sample will be collected until the reach has been sampled for a total of 60 to 100 minutes. Within each sampling reach, all microhabitats (pools, riffles, runs, brush piles, stumps, boulders, etc.) will be sampled in an attempt to clearly describe the fishery community present.

All stunned fish will be collected during sampling, placed in a live well or collection container, identified to species, total length measured, weighed to the nearest gram and released as described below. Problematic species identifications will be preserved in 10% formalin or stored on ice and returned to the APC lab for identification and enumeration. Other information pertinent to collections will also be recorded (date, time, weather conditions, sample location,

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collection technique, sampling effort, water temperature, DO, and secchi disc, etc.) as directed on each data sheet.

Collect Length and Weight on all:

- 1) spotted bass, largemouth bass, freshwater drum, black and white crappie, striped and hybrid-striped bass, white bass, and all Catostomidae species.
- 2) Bluegill larger than 150 mm (Collect length only on all individuals smaller than 150 mm).
- 3) Centrarchids (sunfish other than bluegill).
- 4) Catfish larger than 300 mm (Collect length only on all individuals smaller than 300 mm).
- 5) Collect length and weight on any species not specifically listed in these procedures.

Collect Length only:

- 1) yellow bass
- 2) minnows/shiners, darters, sculpins, bullhead catfish, & mosquitofish

Sub-sampling shad species:

- 1) Process threadfin and gizzard shad separately.
- 2) Measure and record up to 10 individuals (for each species collected) and then determine and record the aggregate weight of the 10 individuals.
- 3) On the remaining individuals (of each species), count the total number – measure and record the largest and smallest – and determine and record the aggregate weight.

Collection of carp, gar, and smallmouth buffalo – note the total number observed in the sample area, but do not net them.

Backpack daytime electrofishing and seining will be used to sample the fish community at each sampling reach where shallower areas (less than 2 feet deep) are present. A sampling unit of effort is defined as a seine haul through a pool, a seine set in a riffle or run where fishes are shocked into the seine, or a set length of shoreline shocked for fishes. At each sampling reach two 150 ft. shoreline transects (150 feet in length x 2 feet wide) will be electrofished. Each of these transects are processed as separate samples. In addition, 10 pool, 10 run, and 10 riffle “sampling efforts” will also be collected. A sampling effort is defined as a 15 ft. X 15-20 ft. area that is either shocked or seined as a unique sample. Shocking into a seine in riffle or run areas is acceptable and is counted as one effort. Each “sampling effort” is processed and recorded separately. If sufficient pool, run, or riffle habitat is not present to collect 10 sampling efforts of each, then efforts should be shifted to an alternative habitat type so that a total of 30 sampling efforts are collected. Within each sampling station, all microhabitats (pools, riffles, runs, brush piles, stumps, boulders, etc.) will be sampled in an attempt to clearly describe the fishery community present. Each “sampling effort” is processed as a separate sample. For each sample, the number of each species collected is recorded and fish are returned downstream of the collection area. Any problematic species identifications will be

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collected and preserved in 10% formalin or on ice and returned to APC lab for identification and enumeration and addition to the data sheet. Other information pertinent to collections will also be recorded (date, time, weather conditions, sample location, collection technique, sampling effort, water temperature, DO, and secchi disc, etc.) as directed on each data sheet.

Mussels and Snail Sampling

Mussel and snail occurrence and distribution will be sampled during the late summer or fall (June to October) as specified in the Sampling Schedule due to lower flows typically experienced during this time of the year. Five days of field surveys (with one diver on each day) will be expended in the project tailrace and will be conducted by APC contractors. The water depths in the N. Henry tailwater area will require that either SCUBA and or HOOKA equipment be used to adequately sample most areas. Twenty (20) "¼ meter" quantitative samples will be performed in the sample reach. In addition, one hour of dive time will be performed to gather qualitative sampling data in each sampling reach. Prior to sampling in 2006, APC will provide GIS maps for the N. Henry tailwater illustrating the locations sampled during APC's tailwater mussel surveys in 1999-2000. All searches (i.e., each dive) will be timed and recorded on field sheets. All snails (except for *Tulotoma*, or other species listed as T&E) will be preserved in 95% ethanol and identified at a later date. Mussels will be identified, grouped as sub-adults (approx. 20mm or less) or as adults, counted, and recorded before being released. GPS coordinates will be collected along with each sample.

In addition to these dive samples, Technical Team members will spend 1 to 2 days of surveys to determine the extent of the known populations of *Tulotoma* in each sampling reach. Additional qualitative snail surveys may also be performed on these days of sampling.

Crayfish Sampling

Crayfish sampling will likely be qualitative. For example, specimens collected during any fish or mussel/snail sampling trips will be saved and preserved in a voucher collection.

Water Quality Data

Available historical water quality data (as reported during the N. Henry relicensing process and the 401 permitting process) and post DO enhancement water quality data as required by the new 401 certificate will also be available for review.

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General Habitat Assessment

Although no specifics have been discussed, a limited habitat assessment may be conducted during the post-DO enhancement period if deemed necessary by the Technical Team.

Data Analysis and Assessment Criteria

Current baseline data listed above will be assimilated into one database and stored for future comparison with post DO-enhancement data. The data comparisons will be conducted and reported as designated in the projected schedule listed above. This report will be used for discussing the need for any minimum flows below the project and will be incorporated into the APC Enhancement Proposal on file with FERC.