

Water Quality Workgroup

August 23, 2006

8:00 am

Participants:

Bill Kittrell – Virginia Department of Game and Inland Fisheries

John Copeland – Virginia Depart. of Game and Inland Fisheries

Mike McLeod – Virginia Department of Environmental Quality

Greg Rooker – Friends of Claytor Lake

Rick Roth – Friends of the New River

Matthew Chan – Normandeau Associates

Mary Rhodes – citizen and land owners

Terry Noble – U.S. Corps of Engineers

Beth Cade – U.S. Corps of Engineers

Dave Falcinelli – Kleinschmidt Associates

Frank Simms – American Electric Power

John Massey-Norton – American Electric Power

Larry Willis – Virginia Department of Environmental Quality

Teresa Rogers – Appalachian Power Company

Mike Hreben – Kleinschmidt Associates

Objectives of the study plan were reviewed. Relicensing relevance was reviewed.

Methods to conduct the study were reviewed.

Comment: The DEQ metals data for the first five years of 15 year period probably in total instead of dissolved. Mike McLeod will check.

New Data to be collected during the Water Quality Study: Chlorophyll A to use as an indicator for phytoplankton. There is a strong link between phytoplankton and the habitat. VDGIF has 3 years of profile data. Appalachian proposing two sets of profiles during worst case conditions – low flow, high temperatures.

Comment: Existing data is available for 3 sites (one near state park, one near dam, mouth of clapboard hollow.) The most critical is in lower zone (state park and dam.) In low flow years, habitat is pulled out (see John Kilpatrick's thesis.) For frequency for chlorophyll A sampling, discuss with Tom Shahady. Start seeing this issue with the habitat in July and August.

Comment: State Park is more than 1 km. VDGIF has zooplankton data.

At each transect, there are four locations where a vertical profile will be taken.

Comment: John Kilpatrick's thesis also has information on transects.

Continuous temperature monitoring – locations – look at available data to see if there are data gaps.

Comment: VDGIF's temperature data is year round. This data should be the first thing looked at in this study. There is a flat trajectory downstream of the dam. Start regaining sinuosity around Radford Arsenal. Concerns include potential impact on fish spawn (small mouth), survival of eggs, hatching times, larval fish survival and growth of fish. (See VDGIF study request for additional information.) Recruitment varies. There is a strong link with flow. The difference between other rivers and New River, there is some regulation of flow and there is a temperature component. Look at interaction of flow and temperature and how it affects small mouth bass. (See Dr. Orth's study information – for North Anna below Lake Anna.)

Comment: VDGIF temperature monitors upstream of Claytor Temperature: two mainstem - Reed Creek, Big Island.

Comment: VDEQ requests DO, pH, conductivity monitors upstream of the reservoir - same sites at temperature. It will tell us what is coming into the project.

Question: What are we looking for? Response: Depression and daily effects of DO.

Comment: VDEQ's monitoring is seeing DO depressions downstream. Is it plant operations? They are seeing low DO three miles downstream during low flow in August.

Question: At what point do we see it recover?

Comment: There is a "hump" in DO in the reservoir outside the buoys. (See data in PAD.)

Issue today is to answer the question – Is the operation of the dam causing low DO? Look for depressions and then correlate back to operations.

Comment: Little River is small component of the flow. Not seeing fish kills in the reservoir.

Comment: August of 2002 when flows were less than 750 cfs – there was a fish displacement below the dam.

Possible Time frame for data collection: June 15th – September 15th

Suggestion: Spot checks for DO and when you see depression in DO, then put in continuous monitors in order to get good data.

Comment: Repeating what happened in 2002 not likely. Look for depressions and then monitor.

Comment: Continuous monitor will give frequency of depression.

Comment: There is some daily fluctuation in temperatures.

Question: What is the overall objective? Response: Meet the water quality standard downstream of the dam. What do we do during low flow periods to meet the standard.

Comment: There have been depressions (but not below standards) during none drought years.

Comment: There may be operation modifications that could bring up the operations to bring up DO to a higher level. (Minimum goal is to meet standards)

Question: Does the concept of antidegradation apply?

At other FERC projects, the goal is to consistently meet the state standards.

Question: Why only looking at non-structural options? Response: Typically the easiest and less costly options to implement.

Question: Will 2 days give you enough information? Response: We will also be looking at all the existing data from over the last 15 years. Existing data also correlates to various operation scenarios.

Question: Do we need to focus on specific operations scenarios?

Comment: VDEQ monitoring station 3 miles downstream collects data once every two months, during the day.

Comment: There isn't much information within 1 mile downstream.

Comment: Focus on period between June 15 – Sept 15th.

DO is very difficult to monitor continuously.

Question: Can you use vertebrate community as surrogate for DO?

Suggested Approach: Use more of the threshold approach. We know there is a problem at low flows. If flows reach a certain point between June 15 or Sept 15 (or whatever period is selected), trigger a more intensive sampling approach. Otherwise, do a spot check below the dam.

Comment: Early morning readings during July – September would most likely give you the sag but this will also depend on operations.

Suggested Approach: Concentrate on continuous monitoring near dam. If there is a drop, then do additional monitoring downstream.

Question: If there is low DO, how do you change operations to bring that level back up?

Question: How can you get measurements throughout the day to know when to install the continuous monitoring? Can you look at the changes day to day to do some modifications to bring up DO?

Suggested Approach: Possible weekly monitoring, throughout the day, during the two month low flow, high temperature period, with a trigger point to know to put out a continuous monitor (just downstream).

Comment: Take a profile in the forebay when you are doing continuous monitoring so you can relate the two.

Proposal for revised study: On regular basis (June 15 – Sept. 15) measure DO below dam to get indication of when approaching low DO to indicate sag.

Samples to be taken early morning (pre-dawn sampling) each week. When threshold is approached, deploy continuous monitor upstream and in tailrace.

Comment: One possible trigger: operating at minimum flow.

Suggestion for timing sampling: Based on schedule of operations – take sample 15 minutes before generation or readings every 5 minutes for one hour.

Comment: Modeling to show re-aeration rate downstream then plug in different starting DOs.

The data we are collecting now is preliminary data to define the issue.

Comment: Another possible trigger – look at upstream gages to show low flows are coming.

Monitoring now is to determine how big of problem there is. Collect one year of data and correlate that to existing historical data. How much deviation to saturation has occurred historically? Plot DO against what saturation should be over last 15 years.

Comment: Concern that frequency of monitoring of the VDEQ station is once every two months. If there was a problem, it may not have been detected.

Suggested Approach for revised study plan: Go out on a regular basis - weekly, look at other triggers such as operation, collect early morning samples at dam, take readings every 5 minutes for hour. Downstream – have a couple of other sample spots. Put boat in at VDGIF ramp, go up to dam, and then downstream to these sites. Riverview Park at Radford is one suggestion. If DO samples are acceptable, then may not need to put out continuous monitor.

Final Proposal for Revised Study Plan:

DO, pH, conductivity, and temperature monitoring on weekly basis June 15 – September 15: 4 locations downstream of the dam – early morning sampling, at dam – every 5 minutes for hour in tailrace. Triggers for continuous monitoring – 25 minutes per hour autocycle, look at water temperatures, DO – contractor will contact VDEQ to discuss when continuous monitor goes in. Then also take a profile weekly in the forebay. This will also provide information to trigger

continuous monitoring. Weekly data shared with VDEQ. Talk with Tom Shahady about chlorophyll a sampling.

Comment: The pool may already be depressed when it comes through the plant. It would be good to know if there is an increase through the units.

The original two proposed profiles on the reservoir for DO, temperature, pH, conductivity – same period June 15 – Sept. 15. Locations: Upstream at dam in forebay and 1 km upstream of dam.

Comment: Sampling of sediments – Existing data is surface samples, not core sampling. Samples are taken when fish tissue samples are taken approximately once every five years.

The core samples proposed will be used to calibrate the Chirp profiler and classify grain size.

Question: Is there any value in testing sediment in relation to habitat? Response: After looking at existing data, if there looks like there is a problem, Appalachian can look at adding sediment sampling requirements in dredging permit conditions under Shoreline Management guidelines.

Question: Would operation fluctuations cause contaminants to resuspend?

Comment: Trying to find source of contaminants hard to determine from sediments.

With the velocity and sediment modeling, it will show where sediments are deposited and redistributed within the lake.

Comment: PCBs attach to certain types of particles. The hot spots may not be near the source.

Comment: While the contractor is calibrating their instruments, COE is interested in collecting a couple of three samples. Could COE take their samples when we are in the area? COE would provide personnel and sampling equipment.

Response: The contractor was not receptive to allowing others on their boat. Appalachian will consider.

Comment: What about water from human consumption standpoint? Response: We will be looking at all water quality data that has been collected to date.

Comment: Pulaski County has a water intake for municipal water supply – potential source of data.

Question: What difference could operations of the project have on different water quality parameters for the reservoir? Response: Appalachian's shoreline guidelines / plan could have the most impact on the resuspension of sediments.

Question: How many small jobs (less than 25 cubic yards) are out there now? Response: Permits are currently not required for these types of jobs. Can require notification for these jobs under the shoreline plan.

Comment: Concern about spraying for aquatic vegetation.

Comment: There is a concern that if there isn't some way to continue monitoring that we are locking ourselves in for 50 years? Response: There are different ways within the license to handle this. One of the things this study will look at is what monitoring is needed in the future. If you see a change in the water quality under the new license, you could always go to FERC and ask to reopen license. FERC could require a water quality monitoring plan with triggers that require monitoring. Don't know the best way to go until you collect the information.

Preliminary license proposal or draft EA to file with FERC: workgroups come to some agreement on what the license should look like in context of balancing all aspects of the project.

Water Quality Study – two parts: Collecting the existing data and collecting additional data concurrently. Some data gaps have been identified and additional information will be collected during the first year.

Comment by FERC: If the group is interested in adaptive management, it would need to start during second year.

Comment: Need to get Tom Shahady's info in order to revise plan.

Meeting adjourned.