

## **Instream Flow Needs / Reservoir Elevation Workgroup (2<sup>nd</sup> Meeting)**

**August 24, 2006**

**9:00 am**

Participants:

Bill Kittrell – Virginia Department of Game and Inland Fisheries

Mike McLeod – Virginia Department of Environmental Quality

Larry Willis – Virginia Department of Environmental Quality

John Copeland – Virginia Dept. of Game and Inland Fisheries

Dick Neves – U.S.G.S.

Mike Pinder – Virginia Department of Game and Inland Fisheries

Rick Roth – Friends of the New River

Paul Angermeier – Virginia Tech

John Kauffman – Virginia Dept. of Game and Inland Fisheries

Brad Buchanan – Montgomery Co. Parks and Recreation

Larry Bandolin – Citizen

Frank Simms – American Electric Power

Ty Ziegler – Devine Tarbell and Associates

Teresa Rogers – American Electric Power

John Smith – FERC (conference call)

Summary of meeting on the 10<sup>th</sup>:

- Hydrology issues – looking at a wide range of operation regimes;
- Tools need to be developed to look at daily and hourly time steps as data allows; and
- Species of concern discussed – a list is in the PAD.

Today we want to finalize the species list, including mussels. Today we need to provide the details in this plan including the tools that will need to be developed.

How this study integrates with other studies including water quality, recreation, water elevations and storage was discussed. This team will integrate with other studies as we progress.

Question: How do you assess the different impacts of flow regimes on population?

PHABSIM lets you know how the habitat is affected by the different flow regimes. Hydro Generation controls flow that moves through channel. We need to look at

how the different flows affect the different habitats. One can look at other cases that have observed responses to flow regimes and draw inferences. Proposing to do IFIM and/or IHA. Workgroup will look at results in combination with literature and come up with the best flow recommendations for each season. Develop several effectiveness protocols for post licensing. This is how they get to population responses.

Question: Would conditional licensee or adaptive management be a possibility?

Response: First we need a baseline or starting point. This can be provided by IFIM in combination with IHA.

Comment regarding other relicensings: IHA or PHABSIM used as tools to provide information. IFIM is useful for low flow. For spring, used statistics from IHA. Workgroup looked at all available information to come up with a proposed operations scheme.

Start with initial information but need input from others to come up with how this impacts populations.

Question: Do we as a group have an understanding that there will be effectiveness monitoring after the fact?

Response: There will be opportunities after the first study period to reconvene with information from this study and water quality information to discuss where to go from there.

As the licensee, we need a certain amount of certainty for future operations. Study requests have to meet the 7 criteria. The goals and objectives need to be defined. Project nexus needs to be defined. What are the objectives for flows and the fisheries?

You have to get all workgroups together to look at results of all studies and how they tie together. Then you look at what to do with project operations to get to the objectives. Can have another monitoring done in 5 years to determine impact on population.

PHABSIM will help us make decisions on how flows affects habitat. Once you have the tools, you can bring the experts together to discuss.

Question/Comment: Conceptually – who is the group of experts? Would like for it to be a more formal group of paid experts. Response: Depending on the species

of concern, if no one in this group can provide this information, then this person needs to be brought in.

From FERC's perspective, they are having a hard time of defining the study. The workgroup in the future could include other people. If there is a person that the workgroup agrees needs to be consulted with, then that in itself doesn't constitute a study.

Study plan can include "upon completion of first year of study the workgroup can include "peer review" if necessary." The consultant provides expertise in this field. State agencies, federal agencies, or other stakeholders can go out and bring in others with expertise.

FERC's example: Workgroup called in an additional expert called in to address a specific issue that couldn't be resolved.

Comment: Do not agree that the group present today is a group of experts. Some of the workgroups are mostly stakeholders.

Question: Has applicants ever provided funding to convene a group of varied disciplines to come up with flow recommendations? Response: Holding these meetings are some form of funding. There is no requirement to have to have all these meetings.

This group needs to discuss methodology. The study needs to define what we are going to look at and what we are going to do in the field. Final recommendations on flows will be done outside of the study.

Comment: Other stakeholder groups have gone out and hired experts to help in preparing their responses to study plans, etc.

Question: Is this a consensus process? Response: It is meant to be a consensus process or there wouldn't be workgroups coming together to work out the details. Our intent is that we come out of the workgroups with consensus. However, not every group will have consensus. We have to file something that we believe is the most realistic approach and then stakeholders have the opportunity to provide comments. FERC has the final say.

Need to focus on the study and the objectives of the study. If we come to an impasse, we can determine if other outside experts are needed to be brought in.

Comment: FERCs understanding is that there would be information on the species that are selected. Response: There is a literature review as part of the study.

Comment: Add Objective: There needs to be a literature review of what is found related to responses. Choices made based on this information to define driver species? # species that are important and find out what is important about each species.

Proposed revision to study plan: Add Phase II objective between #2 and #3: Perform literature review on identified species of concern (literature on effects of life history and effects of flow, season to life cycle and how season is tied into flow.)

Comment: This will help us focus in on the different species.

Comment: Need to look at categories of species: Fish, mussel, vegetation, crayfish, salamanders, insects,  
List: Chubs; Migratory Species – hog sucker; Mussels – need fish host (flathead catfish is a host for 3 mussels); Sport fish – small mouth bass.

The list of aquatic species and what habitat information is available was reviewed. (List from the PAD.)

Comment: Will need more literature review on chub, bigmouth, and greenside darter.

Comment: The ILP doesn't rule out developing a curve in the field.

Comment: Crayfish – would want to look at native, stream (not burrower) crayfish. Mike Roell has done some studies. (Check with Va Tech.)

Comment / Question: Sycamores – provide habitat – woody debris. How does flow affect woody debris downstream?

Comment: Add to Issues and Concerns – riparian species.

Erosion study is looking at downstream bank erosion.

Comment: Lower New River has the most substantial muskie fishery – tied to vegetative bed (water willow). They eat suckers and shiners.

Comment: Persinger – small mouth bass, Pajak – rock bass

Comment: Greenside darter associated with water willow beds. Need to capture waterwillow beds in transects.

Comment: Water willow will show up in fall – water willow will be brown at this time. Need overall coverage of water willow downstream to determine weighting.

Comment: Temperature and flow impacts release of baby mussels (glochidia).

Comment: Jim Layzer (Tenn. Tech) has information on mussels.

Comment: Upstream of ledges – good habitat for greenfloater.  
Can run sensitivity analysis.

Question: If some species are declining – Do we know why? Do we need additional upstream water monitoring?

River models that look at temperature: Can take IFIM tool and use in conjunction with a model that looks at temperature. Already have a dynamic model proposed, can include temperature. Need to have temperature data to correspond. (Note: Need to add additional temperature monitors downstream in Water Quality study to cover area downstream to 460 bridge – an additional 2 – 3 monitors.)

Comment: Dr. Orth has used this type of model. Temperature impacts go down further than DO.

Comment: Flow attenuation tool needs to model temperature. Water Quality Study will collect the additional temperature data.

Comment: Populations upstream vs. downstream. Need to have two temperature monitors upstream at a mussel bed as a comparison between upstream temperature and downstream of dam. (Note: Water Quality study will need to collect this data.)

Comment: Mussels – need to look at a long term brooder (pocketbook and wavy-rayed) and a short term brooder (purple wartyback and spike).

Comment: The workgroup will review the curves for an understanding of how the curves were developed.

Comment: Crayfish – native. Mike Pinder will provide species.

Comment: Hellbinder – federal species of concern. Found in flat rocks, logs. Is there enough information? Time of year important for this species. August – October period of concern.

Comment: Downstream Woody debris needs to be looked at.

Comment: Modeling of gravel movement – effects of peaking on all kinds of gravel, all sizes. HEC – RAS model should be used to assess this. Concern is 1 – 2 kilometers downstream of dam.

Comment: Water Willow – do we need to bring in an expert? There may be enough in data available. Past studies looked at wetted perimeter. Water willow is associated with gravel. Need a literature search.

Comment: Sycamore – riparian species, on banks – needs to be included. How do flows impact and how do level fluctuations impact? Bank stability and water levels in relation to the roots should be looked at. Do literature review to determine response to flows.

Comment: Look at effects of flows on riparian vegetation through bank erosion, fluctuations, etc. What are the key species? Perform a literature search to determine species to target.

Question: IHA – can be used daily. Can it look at hourly data?

Comment: Appalachian can role the IHA analysis into this study plan.

Tools that need to be developed:

Incorporate Temperature into dynamic model

IHA

PHABSIM

HEC-RAS – transport of gravels, fines (Question: Does the existing study provide this information?)

Need to capture concerns of within day variations (dual flow analysis module)

Include consultation to provide interpretation of results to help make sense of the results and bring in additional information and help with recommendations and provide professional judgement – Year 2.

Revised Study Plan should provide introduction with summary of workgroup discussions to date.

New concerns identified: Temperature, woody debris, gravel, impact of flows on species of interest, their habitats, and recreation.

Easy to add and delete life stages as we model. In literature review, look for information on all life stages and look at all in the modeling to decide what to focus on.

For species that do not have curves, can use curves for guilds.

Comment: Information on generators, generator curves, etc, is needed.

To Do: Check with consultant on proposed Sedimentation Study to determine if the proposed study identify how sediment and gravel will move downstream under various flow regimes. Will it be modeled? Additional temperature monitoring needs to be done in water quality study.

Meeting adjourned.