

## **Public Hearing Review and Comment on the Proposed Lamprey Protected Instream Flows**

**As required by Laws of 2002, Chapter 278:3,III(a) a public hearing will be held jointly with New Hampshire Senate and House committees with the support of the Lamprey Water Management Planning Area Advisory Committee to hear public comment on the Proposed Lamprey Protected Instream Flows (PISF.)**

**WEDNESDAY, January 14, 2009, 6:30 pm – 9:00 pm  
Lee Public Safety Center, 20 George Bennett Road, Lee, NH**

### **6:30 – 6:45 Hearing Process and Process for Establishing the Protected Flows**

**Wayne Ives, NH Department Of Environmental Services** - Welcome to the public hearing for the Lamprey Designated River Proposed Protected Instream Flow Report being held at the Lee Safety Complex on January 14, 2009. The Department of Environmental Services is holding this meeting jointly with the House Resources, Recreation & Development Committee, the Senate Energy, Environment and Economic Development, and Senate Wildlife, Fish and Game Committees. My name is Wayne Ives. I am the Instream Flow Specialist for the Department. With me tonight are staff from Normandeau, UNH and Rushing Rivers who make up the consulting group working on this program.

Instream Flow requirements were first defined in 1990 in NH statute RSA 483—The Rivers Management and Protection Act. The state legislature determined that certain rivers deserve protected status because of their outstanding natural and cultural resources. The legislature then described requirements for protection of water quantity to conserve and protect these resources. Categories of instream public uses, outstanding characteristics and resources were identified for protection in the statute. DES was given the responsibility for developing and applying flow protection rules to these entities. The purpose of this program is to identify flow needs for instream uses and develop management criteria so we can continue to use water for off-stream uses.

DES developed Instream Flow rules and they were adopted in May 2003. Establishing protected flows is only the first step. The rules contain a two-step process where first a scientific evaluation of the flow needs of the river's protected entities is completed, and then a water management plan is created that describes the management actions to be taken to meet those needs. The contractors have been surveying affected water users and dam owners to understand their water needs. Affected water users are defined as water users who use more than 140,000 gallons in any week and are within 500 feet of the Designated River or tributary. Affected Dam Owners are owners of dams with impoundments of 10 or more acres. Once the protected flows are established, the contractors in consultation with water users and dam owners will develop water management alternatives. The water management plans will incorporate three management components: water conservation, operation of dams for storage and release of water, and water use changes such as changes of timing of pumping and additional storage. By combining alternatives from within these component groups based on their effectiveness in maintaining the protected flows and on their cost, the water management plans will be constructed.

A year after adoption of the water management plans, a public hearing will be held jointly with the NH legislature to review the pilot program. DES is working to coordinate an expert review of the results and methods used in the Lamprey and Souhegan PISF development. The review will be coordinated by the Instream Flow Council, an organization in the United States and Canada dedicated to improving the effectiveness of instream flow programs. The review process will include selection of experts in the instream flow community who are well versed in statistical methods, fish studies, and the use and application of incremental methods.

Legislation also requires that each pilot river has two advisory committees to assist the Department: a Technical Review Committee (TRC) and a Water Management Planning Area Advisory Committee (WMPAAC.) The WMPAAC is made up of people representing local knowledge and interests within the watershed. Their role is to advise and assist DES regarding public concerns and river conditions focusing mainly on the Water Management Plan. The Technical Review Committee is made up of watershed management professionals from business, conservation, and government agencies. The members provide DES with technical feedback and direction toward developing the Protected Instream Flow.

The Lamprey Pilot Program started several years ago. In February 2004 a Selection Team, made of two DES members, two TRC members, and two WMPAAC members, ranked the Normandeau team first. They and three other consulting groups were asked for proposals. In March 2004 the TRC and the WMPAAC met jointly to review the proposals and provide their comments to the Selection Team members before the consultant interviews. Later in March the Selection Team interviewed the consultants and heard their approaches for assessing protected flows. The Selection Team ranked the Normandeau group highest in all categories.

After contract signing and reconnaissance surveys, the TRC met in February 2006 to review in the consultants' report which describes both the protected entities and the proposed assessment methods for determining their protected flows (which were the same methods as described in the proposal.) The committee met twice in the spring of 2007 reviewing the Target Fish Community, which was completed and then the final report was issued that November.

The field work and assessments were completed during 2006 and 2007. DES began presenting the protected flows methods and results at a TRC meeting in June 2008. The complete report with appendices was posted in September of last year.

The Lamprey Instream Flow Study covers the 12 miles of the river that are Designated under the Rivers Management and Protection Program. This study used fish data collected from 43 stations comprising over 6300 fish. The model also used data from 1851 fish collection stations to establish fish habitat preferences. Of the twelve miles of Designated River, habitat parameters were measured over 5.6 miles of the river. These assessments were conducted five times at different flow levels (0.1, 0.2, 0.5, 1.0 and 1.5-2.0 cfsm).

Tonight we will present the results of the instream flow study conducted on the Lamprey River and open the floor to questions and comments. This meeting is being recorded to accurately collect your comments and the discussion voiced here. The Department has extended the comment period two and a half weeks to the end of the day March 2, 2009. The address to send comments is available on half sheets at the door.

Copies of the Lamprey Report are available for your review. Compact discs containing the report in Adobe format are available from DES on request. The report may also be downloaded from the DES Instream Flow website and FTP site. Paper and CD copies are available for review at DES Public Information Center offices in Concord; and both the Lee and Durham town libraries.

Following the comment period, this report will be revised based on review of the comments submitted. Then the final document will be delivered to the Commissioner of DES for his decision to establish these protected flows as water quality standards for the Lamprey Designated River.

We will now present an overview of the results of the Lamprey Proposed Protected Instream Flows. We want to reserve as much time as possible for questions and statements so please hold questions until after the presentation unless the question can be answered as a very succinct clarification.

### **Presentation of the Proposed Lamprey PISF Report**

Al Larson (Normandeau Associates, Inc.) gave a presentation describing the Lamprey Instream Flow Study and its results. The following discussions were held at intervals during the presentation (found at [http://des.nh.gov/organization/divisions/water/wmb/rivers/instream/lamprey/documents/task6\\_20090114hearing.pdf](http://des.nh.gov/organization/divisions/water/wmb/rivers/instream/lamprey/documents/task6_20090114hearing.pdf)).

**Judith Spang** – What does ‘opportunistic’ mean in terms of setting the flow levels?

**Al Larson** – The individual has to make a decision based on the existing conditions as to whether they will engage in that activity or not. It becomes so complex due to the number of variables that they have to take into consideration. We cannot necessarily set a number to that because there are different preferences for making the decision if you are going to go swimming that day or not.

**Judith Spang** – Would you discount swimming as a means to protect because someone wants to go Wednesday because it is raining but 25 people want to go the next day when it is warm?

**Al Larson** – Where we found people swimming was on the impounded sections as opposed to the free-flowing sections. In those impounded sections they are less flow dependent because they are impounded. It comes down to a person’s preference that day whether the water level or their intention to go swimming was sufficient to engage in that activity or the air temperature or whether it was raining that day. It was very difficult to come up with, at each of these locations, a distinct flow level which would then support swimming.

**Judith Spang** – It still doesn’t make sense to me. People will be swimming the week of July 10<sup>th</sup> whether it is rainy or sunny but it will make a difference to them what the flow levels are.

**Al Larson** – What was interesting in the surveys that we got was that people recommended flows. (Those were in the July assessment.) People said, based on today’s flow conditions, flow could be higher. Looking back at historical levels on those dates--on that day we did the survey--the flow was twice what the mean flow is normally for that day. Even though it is two times higher what it normally was there were those who felt that there should have been more water.

**Wayne Ives** – I think a better example for describing ‘opportunistically’ would be hydropower. Hydropower doesn’t expect to have certain levels of flow all year round. They know that peak flows will only happen in the spring and their level of generation is only going to occur during certain parts of the year. They know that those times of the year they expect a certain amount of days that they generate. [Days when power can be produced] are not going to be on the same day [and therefore power producing days are used when they do occur—thus ‘opportunistically’].

[Power producers] expect that the frequency and the duration of those levels are going to be met on a continued basis [just not on the same day]. Swimming is a little complicated because it has so much to do with preference rather than something more deliberate like a hydropower production. They need to have a certain minimum flow in order to generate power. That is an example of opportunistic. They use the flows when they occur but they expect it to happen on a consistent basis.

**Bill Hall** – What is the difference between the red and green lines except for the colors? [on presentation slide 44]

**Piotr Parasiewicz** – It represents the two different flow conditions. For every site we have five maps and for every five maps there are maps for every single species so we have seven species.

**Al Larson** – This is 0.1 cfs [cubic foot per second] per square mile relative to the drainage base at Packer’s Falls [where the flow is measured].

**Bill Hall** – The cfs for the right-hand one would be what?

**Piotr Parasiewicz** – It would be 36 or so.

**Piotr Parasiewicz** – That drainage area is about 180 square miles. The watershed area changes as you go up or down the river. That is why we use cfsm because the further downstream you go the more water you need to fill the channel. We are covering such a long distance in the river that it wouldn’t be compatible to look at the entire river at 0.1 cfsm, 18 cfs because upstream it may be a lot of water but downstream it is not.

**Sharon Meeker** – Did you choose the macroinvertebrates on the basis on which ones are more attractive to fish?

**Piotr Parasiewicz** – No, we chose EPT taxa: Ephemeroptera, Plecoptera, Trichoptera. They are used frequently as a standard of water quality investigations because they need clean and fast flowing water. That is why this big taxonomic group has been selected.

**Sharon Meeker** – What are emergency conditions as described by law?

**Al Larson** – It is a period which is recognized by the Commissioner [of Environmental Services] as an emergency.

**Sharon Meeker** – What are the guidelines for that?

**Al Larson** – It is primarily drought conditions, if I recall.

**Sharon Meeker** – There is a definition of drought conditions?

**Al Larson** – It is right in the rules. This was a question raised earlier relative to that and some other condition that would require use of the water but in an emergency condition.

**Steve Couture** – It is in the Statute under 483:9-c in the Instream Flow Section in paragraph 4. “The protected instream flow levels established under this section shall be maintained at all times, except when inflow is less than the protected instream flow level as a result of natural causes or when the commissioner determines that a public water supply emergency exists which affects public health and safety.” The criteria would be “that which affects public health and safety”.

**David Meeker** – As you pointed out, the days you might want to go boating might be in the middle of the winter.

**Al Larson** – That could be. And that was raised at the previous presentation.

**Sharon Meeker** – This is the best information you have--that’s yearly?

**Al Larson** – Right. The question [of choosing a boating season] is how to delineate the beginning and the end of the boating period.

**Piotr Parasiewicz** – To put it in perspective, the flows of this level usually happen in the spring. It is not that this number is off by 200%, maybe 5 or 10% of the time.

**Al Larson** – Another example, and maybe Lee can explain it, is for the wood turtle. One of the recommended conditions here is flows above 500 cfs. Why, during this period, is a flow above 500 cfs critical to the wood turtle?

**Lee Carbonneau** – It is protective of wood turtles that would be nesting in the higher- flood plain terrace so a flow above that level could potentially flood turtle nests. You can see that it doesn't happen very often in the dry years. It does happen occasionally in other years. There is actually another protected flow for wood turtles for winter when they are using the water as a cover during hibernation.

**Bill Hall** - Is the 6 times duration in two days? [presentation slides 66-67]

**Al Larson** – That is the number of years that it occurred. That was one year. Two years during that duration we had that event.

**Bill Hall** – All of your calibrations are referencing the USGS gage at Packer's Falls?

**Al Larson** – That is right and that is why in the study what you will see are normalized flow values.

**Bill Hall** – You missed my point. You are referencing that gage?

**Al Larson** – That is right.

**Bill Hall** - Have you ever made any effort to calibrate that gage with some sandbags and a piece of plywood?

**Al Larson** – The USGS is responsible for developing the rating curves. They have a Quality Control Program in order to report that data. We are using that data--they go through a quality control process.

**Bill Hall** – I don't think they are doing it for 4 cfs.

**Piotr Parasiewicz** – We have three more gages in the river that we placed ourselves that were calibrated and adjusted. UNH adjusted all of these gages. Every gage has been calibrated so if there were obvious, huge errors it would be apparent. If on one of our gages we would have less or more water than the Packer's Fall's Gage then it would be obvious. We didn't find any errors like that. Obviously, at the very low flows that certainty of calibration is getting lower and lower.

**Bill Hall** – I was referring to the flows below 4 cfs.

**Piotr Parasiewicz** – That is why I did not set 3.7 cfs as a bottom line. I do not believe that you can measure 3.7 versus 4.

**Bill Hall** - I believe that you can do a fairly good job with a V-notch in a piece of plywood and some sandbags and the reason I say that is that I have looked at that river a number of times over 50 years when it has been flowing low and we had water shortages. I have gone to Lee Hook Road where it is almost imperceptible flow and, just a few years ago when we're having a dry spell, nor was it going under the Packer' Fall's Bridge.

**Piotr Parasiewicz** – That is understandable because you are talking about flows with withdrawals. The flows we talk about are when the water taken out of the Lamprey River is added back to the river. These are naturalized flows under natural conditions. You cannot look at the river today. If, for example, Durham wants to suck all the water out of the river one year, you cannot take that flow condition as a benchmark and say this flow occurs so it is fine. No, [flows less than 4 cfs] occur because we use the watershed and that is why we conducted a simulation of naturalized flows which was still relatively simple and is more on the lower side than the higher side.

**Bill Hall** – You said that Durham was sucking out all the water?

**Piotr Parasiewicz** – I did not say that. I gave a hypothetical example.

**Steve Couture** – Can we hold any additional questions until the presentation is completed?

**Brandon Kernon** – I was going to make a point about the Newmarket withdrawals that it is not needed every day and it is meant to be used when there are high flows. It is different from when other water supply users are taking water during emergencies.

**Sharon Meeker** – Will the side document [containing the public comments] be considered when the Management Program is put together and will it be organized to it is easy to look at, or it be a list?

**Al Larson** – That is a good question. The way we did it for the initial draft was chronologic and as comments come in we provide responses. We have grouped them into themes but if it becomes unwieldy and people are having difficulty and are focused on one thing then we may have to talk internally about revising the approach. As it stands now, in the initial draft we produced we know who commented and who they are associated with, the date we received it and their comment. We don't want to have to regenerate the report every time we get a comment in. We are going to integrate those all in until we get to the final version.

**Sharon Meeker** – When will the Management Advisory Committee (WMPAAC) begin to meet, or have they already?

**Al Larson** – They have already have begun to meet and they had a meeting last week where a number of questions were raised about this and we made some changes to the presentation but we will ultimately be making changes to the report. As this process moves forward there will be more meetings of the WMPAAC.

**Sharon Meeker** – Those meetings will be publicly announced?

**Al Larson** – Yes, and they are posted on the site. Also, if you are interested and you are not on it there is a contact list relative to notification on that.

**Wayne Ives** – The Water Management Advisory Meetings are public meetings and open for anyone to attend. The WMPAAC members are the only ones who can vote but anyone is able to come in and discuss or raise issues. If you want to be notified and are not already on the notification list, see me and I will get your contact information and be sure that you will be notified.

**Dave Cedarholm** – How was the WMPAAC selected?

**Wayne Ives** – The legislature defined the people who would be in the WMPAAC. The process included a nomination form and we solicited nominations from the groups that were identified by the legislature and the groups were then vetted through the Rivers Management Advisory, which is the program that oversees the Rivers Management Protection Program. The listing was sent to Governor and Council for approval and they approved the nominations.

**Carl Smith** - Is there a target date for the finalization of the Water Management Plan?

**Wayne Ives** – It is supposed be completed in October 10<sup>th</sup> of this year. My expectation is that we will probably not met that deadline but we are trying to move forward, make progress and not slip too much more than we have already. The unknowns of being in a pilot program have meant that we have tried to allow as much input as possible in the process. We are trying to keep it moving forward but there are a lot of things we didn't foresee and we may need to shift directions. We are working through how it will work. We have the rules that describe what needs to be done but sometimes it takes a little bit more than that to actually to get from one point to the next. It is a learning process and at the end of this whole process the legislature reviews the overall results and the rules and we will have to revise the rules regardless because the pilot program only applies to the Lamprey and the Souhegan. If we want to continue on, the rules will be revised [The current rules cover only the Lamprey and Souhegan.] and there are a

number of things that I am already keeping track of that need to be changed. The goal is to get this done by this fall but I am not sure that we are going to make that.

**Dave Cedarholm** - What can tell us to give UNH and water users in Durham confidence that the rare flows in combination with the maximum duration are not overly conservative and those low flows are not artificially low? There is an awful lot of judgment calls and clinical work that is combined together.

**Al Larson** – At this point I have to say it is based on our interpretation of what was gathered at field investigations and our analysis of that data. I know that there have been questions relative to verification and sensitivity analysis and we tried to address those in previous discussions. The numbers that are presented here are our best estimates based on the work, field investigations and modeling that has been done.

**Wayne Ives** – It is keyed to the natural flow paradigm so what we are a looking at are things that exist already and maintain those flow levels. I think that the Town of Durham is already withdrawing, under these conditions, sufficient water for needs. Is that not the case? We don't know what your long-term demands will be at this point but it seems that right now you are not withdrawing everything that can be withdrawn from even the level of the 401 WQ Certification. Under this process, we are looking at maintaining natural flows and based on the baseline flow conditions, or natural hydrograph, which is not hugely different from the existing hydrograph.

**Steve Couture** – Talking about statistical analysis, for these types of studies for habitat and biological-based studies, the usual error of our approach is very rare, not common at all. This type of science is being defined. I just wanted to make sure that point is clear. However, DES has taken the initiative and identified the fact that we do need some validation of this pilot project effort and we have initiated a process of a third party review for a group of instream flow specialists to take a look at this process and make a recommendation that we can take back to the General Court for them to consider whether or not this pilot project was successful and the methods that were applied were appropriate.

**Piotr Parasiewicz** – There are not many studies that have been done so extensively with as much data as we have here. It is probably one of the most exacting studies or results that you can find anywhere. We went a number of extra miles in validation of our models. There is one part that is not in the report yet. We looked at the predictions of the model and how they affected fish observations from 2002 and used this, in part, for the validation of the model and model calibration. We have done some sensitivity analysis as well, as available by the budget but, as pointed out, it was not the thorough sensitivity analysis that is being done in current science. I would be happy to do it. It would make a great paper.

### **Comments and Questions on the Lamprey Protected Instream Flow Report**

**Judith Spang** – I am the Chair of the Legislative Committee that designed the pilot program and will possibly be passing judgment on if this is something that we want to do on other rivers. It appears to me that from the get-go that fish were going to be the controlling factor and if so, thinking in terms of what can we take away from pilot, that will be streamlined, affordable and efficient enough that we can apply it to the rest of the protected rivers and maybe, ultimately, the rest of NH's rivers. I am thinking that if it is understood all along that fish are going to be the controlling factor, why should we bother to look at all the other affected users? If we are able to make changes to the statutes, obviously, we are not going to protect 200 cfs for swimmers or 100 cfs for a turtle species or a plant. Maybe we can get rid of that in the statute and cut to the chase and say that fish is where we are going to go.

**Wayne Ives** – The riparian vegetation and wildlife also have some specific flow needs that aren't covered under the fish needs. The riparian vegetation and wildlife, in particular, need certain high flows that happen on a very rare basis. Fish generally do not work on a decadal timescale but riparian vegetation sometimes does especially the floodplain forests and those types of environments. There are things within the floodplain forest that are providing additional components of the protected flows that aren't provided by the fish. The recreational users tend to be protected by maintaining the natural flows. If we maintain the natural flows then we will maintain their frequency and duration for recreational events. There is some bearing and validity in continuing to track what those critical levels are and make sure that is continuing to happen. It has a different periodicity from the fish and the riparian vegetation and wildlife. You are right, when it comes right down to it, the most sensitive species are the ones that actually live in the river and it is not too surprising that fish are largely responsive to instream flows more than any of the other protected entities. Some protected entities have no flow dependency. They are not dependent upon the flows of the river. Geological resources and archeological conditions don't really have a flow dependency unless they are flooded out.

**Judith Spang** – From what I see and my experience on the river, at 4cfs, there are wetlands that are drained that clearly affect the vegetation. People who live at upstream end of the impoundment, which were never contacted about their recreational use, can no longer swim or boat from their house.

**Wayne Ives** – If those conditions happen on a natural duration and frequency, that is something they should expect but if they occur on a longer than normal frequency or duration than those then there needs to be management.

**Judith Spang** – If the river is protected, say if the Town of Durham can draw water down to 4 cfs and those people are no longer able to recreate on the river and all of the wetlands along the river are drained, then I would say that the 4 cfs is protecting the fish but not a lot of the other things.

**Piotr Parasiewicz** – We didn't say that the 4 cfs protects the fish. It is an extremely low flow that can happen for one day. 16 cfs is the beginning of rare flow conditions that may be for a longer duration than one day. 4 cfs is a catastrophic situation and if it happens, should never last longer than one day and should not happen at all.

**Judith Spang** – It says on the last slide that the final recommendation is that flows should be no lower than 4 cfs. That is not what you mean to say?

**Piotr Parasiewicz** – The first one says that the table that you saw before, with the different flow magnitudes and duration, is the driving one. 4 cfs is the bottom line so the flows can go below 15 cfs, all the way to 4 cfs, for no longer than six days but they should never go under 4 cfs. The flows that protect fish are higher. These are rare conditions. From the scientific standpoint, the prescriptions that we are coming up with for recreation, the larger flow magnitudes or flooding is something that you could easily transfer from one river to another one. On the Exeter River the conditions when people are going canoeing are similar to what they have in the Lamprey. This should be much easier but for fish it may be a little more difficult because it is so individual and depends on the form and structure of the river.

**James Emery** – I am very appreciative of the intent and the objective of this process and the people that were involved in this and the hard work that has gone into this but I have many concerns. I feel that this modeling method is not well vetted in the scientific community and we are moving forward toward the Management Plan and we have not done any kind of error analysis. The last time that I was here, at the last hearing, we did ask the question about an error analysis and the reply was that you could do an error analysis but it was not part of this work scope. I find it extraordinary that we can move forward with the management planning and ,

through this process of a public hearing, move to the next step prior to us having a third party review because this process is an extremely complicated and hard for even scientists to come to terms with. The fact that the scientific TRC has not completely agreed with the results of this study and it is still on the table. I don't believe that they have concurred. In our last meeting we were informed that they needed to clarify it and they said to go ahead with the public hearing but they had not concurred with the conclusions. I think that tells us a fair amount; the fact that we don't have an error analysis. I am very concerned about those people upstream. Everybody who needs water upstream of that public water supply all play a role. Many public utilities are concerned about how this may affect them. I don't want to be overly critical but I have a hundred questions but I am not going to ask them. I will say that there are certain things that I don't understand, like how we can have common flows that are higher between July and October, above the mean-average flow. I am concerned about how all 17 dams have been evaluated and how we have changed between the releases at Pawtuckaway between 1950 and today and pre-1950. I am not satisfied with how those issues have been addressed in the Addendum to the Report but I want to be on the record that I have a lot of concerns about the report. I want to congratulate the people that have worked on it because it has been a lot of work. The level of accuracy that we are talking about in terms of controlling flow and the real level of accuracy of how we got to the point of determining those instream flow levels. There is a big difference and whenever we pick a number we have to live with that for the rest of our lives. I think that we have to do, and that it is owed to the public to do, a third-party review and that the TRC would provide a public document in terms of their complete review and where they stand on this and that we have an opportunity to revisit this after the public comment period over the next forty-five days.

**Al Larson** – In the report we do recommend that there be the possibility in the future of revising these numbers relative to any changes in conditions. These numbers would not necessarily be set in stone forever. There would be situations in which they could be revisited. Obviously, they could be challenged and there is an appeal process and, for any future withdrawals or discharges, there would be a process by which those applicants would be able to provide documentation to support their case for changes but we didn't state in the Report that these numbers could potentially change in the future if there is a change in conditions.

**Piotr Parasiewicz** – I would like to add one thing because I have heard a number of times that the method is not vetted in the scientific community. The method has been published in scientific literature and there are about seven papers that have been peer reviewed by international scientists. For the Souhegan and Lamprey projects, we followed a very rigorous review of methods that are available. The methods have been published in an [Instream Flow Council] book as one of the standard methods for instream flow determination. I am very happy that there will be a third-party review but the public should understand that the State is going an extra mile here and that from this standpoint it is a peer-reviewed and accepted method.

**John Brooks** – I appreciate that it is a vetted method perhaps in the scientific community but it seems to me that for the number of subjective decisions they brought into this analysis that there is some error associated with prior conditions and it seems to me that what you created is a working hypothesis. These numbers are your best estimate at this point, the PISFs, but it is these fish species that are the critical ones. I think that it is a very eloquent methodology but what you have come up with are some estimates and it shouldn't be the burden of the public to prove that those are wrong. As part of the Instream Flow Plan there should be some review required in the future at regular intervals to show whether this method is working, whether the objectives of the PISFs are working, and if they are not they should be adjusted to reflect either errors in the

original estimates, assessment or in a change of conditions. Just to say that they may be adjusted sometime is insufficient protection to the water resource users in the watershed.

**Wayne Ives** – As a clarification, are you suggesting monitoring or a repeated assessment through some other methods?

**John Brooks** – No, not some other methods but just looking at the fish population in five years and seeing if the projected growth has occurred.

**Wayne Ives** – Essentially a monitoring program?

**John Brook** – Yes, something that is fairly simple, and if it is not [working] then figure out why and adjust it.

**Bill Hall** – Could you repeat what you said about the municipal withdrawals and how that relates to this without the municipal withdrawals? You used the term “sucking water from the river”.

**John Brooks** – He was referring to the naturalized flow concept.

**Bill Hall** – Can you characterize, once again, the withdrawals and how they affect this?

**Piotr Parasiewicz** – As I described before, we created a decision foundation for a determination of how much water needed to be in the river. We looked at habitat that support species as far as the flow patterns that would support species, which would be the flows as they occur today, plus the water that is being withdrawn for our purposes. The flow-time series that went into the model were the flow-time series that were recorded on the gage station, [then] adding the water that was otherwise withdrawn from the system. The flows that serve as a base for our decision are flows as they would naturally occur there.

**Bill Hall** – Do you feel that they have been withdrawing water up until this year? For instance, Durham has been withdrawing water over the last several years.

**Piotr Parasiewicz** – It doesn't matter what I feel. I was not in charge of developing the flow-time series. UNH developed the naturalized flows. That is the flow-time series that I worked with.

**Dave Cedarholm** – I think we are at a little bit of a disadvantage because we missed out on this hydrologic analysis and how this naturalized flow was developed. I am disappointed that we didn't get to hear some discussion from Tom Ballestero or maybe you about the Lamprey process that the UNH crew put together to develop that naturalized flow and what it actually entails. How was Lake Pawtuckaway considered in that? I understand that the impoundments, Wiswall and the McCallum Dam were removed in developing that. I think that this group is really at a disadvantage about not having a discussion on that.

**Al Larson** – We have given the same presentation and we did a similar presentation to the TRC in which that was discussed. Not all of you were there but some of you attended that and we actually had to convene two meetings to fit the material in our original presentation. In response to comments we have received in the past we tried to streamline this presentation to keep it down to one evening. One of the sections in that presentation that was removed was the background information, in which Tom Ballestero, who was unavailable tonight, presented in the TRC meeting at some length in the development of the naturalized flow hydrograph and that is discussed in detail in the report so I will refer you back to that. They went to great length getting information from DES on past dam operation, practices particularly on Pawtuckaway, and tried to take that into consideration in recreating the naturalized flow along with accessing the reported water use data on record with DES. I recognize and appreciate your concern relative to that portion of the presentation but we were able to get this presentation down to 69 slides whereas in the past we started out at 120 and it took multiple meetings to get through the technical details for the TRC. We are not hiding anything here and I don't think that is what you are suggesting but, again, that information is available in the report. Piotr's presentation in the

past has been quite lengthy and one comment in the last meeting from a person who has attended a number of meetings that it was the fewest number of slides that Piotr had presented and that he finally understood what was going on because of [too much] technical detail that was presented in the past.

**Paul Chamberlain** – One point of clarification when we talk about UNH being involved in the study is that UNH has two roles in this. One is that our faculty and students have done a lot of the scientific work. The other part is the water management and water system part of UNH so it might be a little bit confusing to the public to talk about UNH because we do have two distinct roles here in this project. I have some concerns and nervousness as I look ahead to the management phase recognizing that this report focusing on the designated portion of the river which is at the lower end of the watershed. As someone, in conjunction with Durham, who is an affected water user, I am bit concerned that in the management phase, when we contemplate flows no less than 4 cfs, the implication is that there is going to a mandatory release from the impoundment, which we are dependent upon to maintain that flow. That becomes very burdensome if we are not looking at the watershed and managing the watershed as an entity. Wayne, I know that you and have had that conversation earlier but I needed to say that publicly. I feel that when we get to the management phase that the entire watershed has to be looked at as an entity to implement these protected instream flows. In the designated segment, a large percentage is impounded. The naturalized flows, if I understand correctly, modeled flows as though the impoundments were removed or not present, modeled on historic conditions. How does a modeled flow, which is based on a condition that is very different from current conditions, help us in managing the river?

**Piotr Parasiewicz** – The impoundment itself is not changing flow much except for the water that is being taken out. It is a pond that the water just flows through with some level of inaccuracy.

**Bill McDowell** – That is not true. When we go back to Leroy Poff's paper, that this is based on, it is not just the amount in a year that moves from the impoundment down to Great Bay, it is the duration, timing and frequency, all of which are affected by the impoundment.

**Piotr Parasiewicz** – They are affected by withdrawals by the impoundments.

**Bill McDowell** – No, they are affected by the impoundment.

**Piotr Parasiewicz** – The impoundments are so small. I am talking about impoundments in the designated reach.

**Bill McDowell** – Have we actually gotten down that calculation to the extent that a residence time is changed by this impoundment? My guess is that it is not insignificant. Studies show that it greatly extends residence time in the basin.

**Wayne Ives** – I think we are getting beyond the question here. The question was, "It is largely impounded and how is it modeled with the impoundments removed and how does that define the protected flows?"

**Piotr Parasiewicz** – From my perspective, the impoundment itself has the greatest affect as an impounded waterbody on fish habitat because it is changing the fluvial environment to a pond environment so, therefore, if we want to determine the habitat that would support native fauna we need to consider the river without those ponds that were artificially created. Thirty percent of the river is becoming 0% habitat for the fluvial fishes. That is why in the river structure baseline conditions we removed a portion of the dams. We didn't remove them completely because we recognize that they are usually built on ledges. We recognize that even with removal of this dam the water level would just drop some.

To determine that amount of habitat that shapes the community we actually step back from this approach, taking into account the water. We took into account that there is habitat that is created by flow and there is habitat that is created by channel modification.

If I would take the river without impoundments and calculate how much water that was needed to provide X amount of habitat. Then if I would put this impoundment back and would like to get the same amount of habitat I would need more water. If I wanted to get 30% of habitat, a big part of this 30% portion of habitat is in this area that is currently being impounded. There are more habitats with more water. In order to get back to 30% of habitat for fish I would need to have more water.

In our recommendations we didn't go for the higher level of water that would be necessary for fish. We are basing our recommendations on the amount of water that would be necessary under naturalized conditions to be sufficient habitat and we recognized if we really wanted to accomplish sustainable population we would need to consider steps beyond managing river flows because there is only so much you can do with flow management.

**Wayne Ives** – There is habitat under the impoundment that would provide a portion of the habitat that would be available in that whole habitat-needs assessment and if we don't have the impounded area as part of the habitat because it is covered by the impoundment it means that somewhere else we have to have more habitat, which is just not available. So we are setting the river structure back to natural conditions to set the stage for what the flows would be for the [remaining riverine segments of the] river without the impounded segment in there. The protected flows represent what is appropriate for the river under natural conditions. It is not possible to take out a portion of the river that is underneath the dammed section and try to create the same amount of habitat with what is left, which is what we would try to do if we left the impoundments in there without naturalizing [the physical structure.] Does that make sense? We haven't finished answering Paul's I think.

**Bill McDowell** – When and why was the decision made to figure out what habitat would be there if the dams weren't there and then try to bring enough water from the river to account for what should have been there?

**Piotr Parasiewicz** – We want to determine the amount of habitat that protects the natural fish community. The habitat consists of many factors but two key components are the river's form or structure, the riffles and rapids, and the amount of water. Both of those create the habitat that supports native fauna. If one part of this component is modified and does not match this template we cannot say anything about the second component because they are intertwined. They interact with each other. If you have a pool and riffles there will be a specific amount of water that provides stable habitat for the common shiner. If instead you have a run or channel, then you will never find water that provides this habitat. We could never create the conditions that allows for water to create the habitat. First we determine this and then we created the model and habitat with the form and determine the amount of water that gave us this habitat. We know that there are impoundments in this river so we know the amount of water. In our report, you will find a calculation that says with this amount of water, under today's condition, we will get only this much habitat.

**Bill McDowell** – We established a desired or modeled condition that is based on pre-colonial flows. We are saying that is not what exists today and we will accept some amount of reduction. We won't expect to recreate the same level of habitat.

**Piotr Parasiewicz** – That is right. We are basically taking into account that today there is an impact. We allow for some level of impact and basically we are answering only the question of how much water.

**Bill McDowell** – The conclusion is that we are basing the protected flows as if the [dam] structures weren't there.

**Piotr Parasiewicz** – Yes, because if you were to take those structures and put them back you would need much more water than what we are recommending.

**Wayne Ives** – To answer your [Paul Chamberlain's] first question which was concerning the fact that the designed reach is basically at the end of the lower end of the watershed and that the impacts of water use within watershed need to be addressed across the watershed and not only in the designated segment. That is the case. The Water Management Plan incorporates all users without recognition of where they occur relative to the designated reach but as long as they are within the watershed they are part of the Water Management Plan.

The affected dam owners, as long as they are in the watershed and they met the qualifications of an affected dam owner, which means they have greater than 10 acres of impounded area, they are potentially part of the Water Management Plan process. Clearly, some of the dams on the Souhegan that we have looked at only have an impact on the last 100 meters or so of the stream so their use as water management plan tools is limited whereas some of the dams that are located near the headwaters have the ability to affect the entire reach so they will be much more effective.

This is a part of the Water Management Plan process that we didn't foresee when we started this process. We expected that the entire population of affected dams would play a part proportionately but it doesn't really make sense to try to do that because some of them have such little effect that their impact would be largely a cost without much benefit whereas the others have a greater benefit with the same cost.

The first point that Paul raised about the need for a watershed-wide approach for this is how the Water Management Plan is being developed. All affected water users, homeowners are not affected by this, that use over 140,000 gallons per week, which is 15 gallons per minute on a continuous basis, are supposed to be registered with the state and reporting their water use. They are involved in developing the Water Management Plan that would include conservation efforts on their part and depending on the effectiveness, water use changes. The intent is to flatten peak uses and spread it out as much as possible. That is the direction of the Water Management Plan.

**Bill Hall** - I have spent a good deal of time watching the flows of water, both in flowing hydrants and a construction job where we were flowing 5 to 7 cfs on a daily basis. 4 cfs is almost 2,000 a minute. That is a healthy amount when you flow a hydrant opened up to four 1/2 inch pipe, using a Speedo gage to 2,000 gallons a minute. You must deflect that to a big snow plow on a truck to prevent breaking up the pavement. That is a lot of water. You ought to try it and maybe that would be the way to convince you that you may have a gage calibration problem. I have gone to Lee Hook Road, Wiswall and Packer's Falls Road when the town and the university have been pumping from the impoundment and looked at the flows very carefully. I have gone down from Lee Hook Road and walked across the rocks and not gotten my feet wet and I can guarantee you that flow was not 4 cfs at Lee Hook Road and I don't believe it was at Packer's Falls by the gage stick. I have looked at Wiswall when it has had perhaps a million or a million and a half going through it, which is 2 cfs. I am here to testify today and convince you to go down there when that gage station is reading 4, 5 or 6 cfs and go in with some plywood and sandbags make a V and find out what that river is actually flowing when that gage station says 4 cfs. I am asking you to do that.

**Dave Cedarholm** – If you do not consider the difference between the target and existing fish communities that you see in the impoundments, are there flow-related signs in the river that suggest that there are problems that we need to manage differently than it is today?

**Piotr Parasiewicz** – Yes, there are signs. We have a community that has shifted from fluvial fish to pond fish. That is an obvious sign that we are having flux. Regardless of the impoundments, we have a shift in the community. There are too many sunfish outside of the impoundments. It is not only the impoundments which suggest that they have better conditions

than the fluvial fish. It wouldn't be honest to say that the fauna is completely damaged but it is affected.

**Wayne Ives** – This river is actually in good condition considering its size and is used frequently as a reference river in similar studies because it has relatively low levels of impact compared to what other rivers of this size have as far as water withdrawals and diversion. It is comparatively much better off than a number of rivers. Located where it is on the seacoast, it is considered an important resource.

**Dave Cedarholm** – What you are saying is that if we continue to manage the river the way we do today it will probably be ok?

**Wayne Ives** – It probably will be and what we have to develop in the Water Management Plan is what it takes to maintain these protected flows.

**Dave Cedarholm** – If the Durham UNH water system withdraws water, having the conditions we have today, and managing the river like we have today, then we shouldn't see it get any worse.

**Wayne Ives** – Piotr made a point, not exactly like it is today, but similar. We are not far off. That is not to say that everything is okay the way it is but it would be close.

**Piotr Parasiewicz** – It is also about proactive management. You still need to react to what happens in the world and the river. We are having increased amounts of low flows in our river in the Northeast. Even with the observation that we talked about today, we know that in 2000-2003 this river was so low that it was scary. It is about being protective, prevention of the further damage and improvement. I think there is room for improvement and, being perfectly honest, I think that we are proposing, compared to anything else that have been proposed, does not place a lot of burden on the people who are using water for other purposes. The way we envision it is that we are requesting to step back when it is getting really dicey. The intention of our prescription is not to make the water users stop three times in a year, every year, or ten times in a year. Our intention is that in the average year you will probably not need to do anything but the year when it is really low and might be damaging to fauna, then there should be a plan for protective actions to avoid catastrophe.

**Steve Couture** – I think the key is that what has been used in the past is a standard setting approach and is not flexible and does not consider the natural flow paradigm. What has been presented tonight is the natural flow paradigm which takes into consideration natural variability, which inherently provides more management flexibility options than the standard set language. That is a key point of what is being put forth as a protected instream flow for those that use water.

**Piotr Parasiewicz** – We recognize that drought happens and it should happen. We should not try to prevent every single drought but we are open to the idea of adapted management and monitoring. I am the first one to say that we should evaluate and continuously monitor to make sure that our prescriptions are on target and if there is a need for modification. It is my intention to make sure that this river is in good shape.

**Jamie Emery** – Dave [Cedarholm] raised a good point about the management of the river. The issues are, of course, those that come next in terms of planning and developing water resources for the purposes of public water supply needs. How many people upstream of the designated reach area on the Management Plan Committee are public utilities withdrawing water? As you have indicated, every withdrawal on this watershed gets rolled into the balance of what goes through Durham. What representation do the individuals upstream of designated area have on the Committee?

**Wayne Ives** – The WMPAAC is made up of representatives of the shareholder group so, when the nominations were made for the public water suppliers, we did ask that anyone that wanted to

be involved nominate themselves if they fit into the category of a public water supplier. The people that submitted nominations were put through the wringer and came out as WMPAAC members and that meant UNH/Durham. All of the water users of any sort, whether they are public water suppliers or not, are invited to all the WMPAAC meetings and they all have the ability to speak on their behalf, as well as TRC meetings, where we focus on technical issues. At any of these meetings, we have notified the affected water users and the affected dam owners that the meetings were being held and they were invited to attend and speak at the public hearing and raise any concerns or issues. As far as being on the Committee, the fact that you are on the Committee is much less important than the ability to come in and speak for yourself.

**Jamie Emery** – So you have notified all the public water suppliers and the registered water users?

**Wayne Ives** – Any registered water user that qualifies as an affected water user and dam owner that qualifies as an affected dam owner are all on the notification list.

**Cynthia Copeland** – As you work through this model and the two pilot studies that you have done on the Souhegan and the Lamprey; what is the transferability in what you are discovering in the pilot study to other rivers in the future?

**Wayne Ives** – I think that there have been several things identified to shorten the process up and largely it is a question of the level of effort that people want to do to maintain this process. There is a cost to every assessment that we do. We could, theoretically, shorten this up and simplify it down to fish and that would be a tremendous cost savings but I think it would be a disservice to riparian vegetation, wildlife, recreational users, hydropower, and other issues along the river. I think there are simplifications that will be involved in this process. I don't know if two studies are enough and we may need a few more to transfer this process, in a simplified form, to other rivers.

Right now we have looked at two fairly small rivers but we haven't looked at something as big as the Connecticut, the Merrimack, or some of the mountainous regions of the state. To me there are a number of different components that make up a river and a watershed that haven't been demonstratively tested in these two pilots but I think that [the consultants] have ideas which I am not going to ask them to start spouting now. There is the potential to push towards to a less robust or more simplified process.

The Department is also developing guidance for short-term, or interim, development of standard setting techniques to use in the meantime. As the processes gain acceptance there is going to be less controversy. There is a lot of interest and concern about the MesoHABSIM pilot program. Nobody knows quite where the Water Management process fits but as we go through a couple of these it will give people confidence in the process and we can avoid a lot of the meetings that we had to go through developing an understanding of the framework and presenting that stuff over and over again as part of the process. A large part of what took so long on the Souhegan was the back and forth with how much detail we needed to include in the Report. We ended up doing a number of additional appendices that document things in a great deal of detail on the Souhegan. Things like that take a lot more time. Once the process is better established I think the confidence in the process will result in shorter time periods and a lot less cost.

**Piotr Parasiewicz** – I would like to add that there are about seven or eight other studies that have been conducted in the Northeast that provide a very nice database for further generalization.

**John Brooks** – I am confused a little bit about where this is going in the long run. I appears, from your conversation about the impoundments and the stream flow criteria that you used, that unless you restore the stream bed to its original natural condition, with the PISF you specify,

based on natural flows and natural stream bed conditions, you will never meet your objectives as far as repopulating the fish species that you want. Does that mean that further down the road you are going to require these impoundments be dismantled, or does it mean that at some point you are going to say that we are going to get 70 to 90% of where we want to be and that is sufficient? How are those decisions made? It is not an easy process that you will have to go through. I don't know what the guidelines and regulations require but if the regulations require natural conditions and natural target species can it require basically dismantling all man made structures in the stream?

**Wayne Ives** – No, none of this results in removal of dams. If people do decide to remove dams then we know what the result will be but the process does not require, expect or advocate for dam removals. It is looking at this in the scientific perspective to say here is what we have identified as protected flows because we have been able to establish a baseline condition and determine what the flows are within those baseline conditions.

Otherwise, if you have used a sliding scale of some rivers that are pristine, like the Saco with very few removals and very few dams, if any, that those rivers should have their conditions based on their conditions now, whereas another river, which is heavily dammed and heavily diverted, should be based on its existing conditions. Then all we would be doing is cementing the status quo in place. What we need to do is determine protected flows to support the species that are supposed to be there. Then it is a policy decision whether to do something to return to more protected conditions but it is not part of the instream flow process to ask for, expect or request dam removals.

**John Brooks** – What I am concerned about is that it may place the burden for control of the PISF on water users versus the impoundment operators if one is protected and the other isn't. There is very little effort to protect public water drinking resources. I am little bit surprised that so much time was spent on people for boating, which probably accounts for 1,000 or 2,000 per year versus 10,000 of people for water resources, who seem to be largely left out of this study out of consideration for protection. It seems that there is a very strange displacement of emphasis on the water resource allotment.

**Wayne Ives** – You are saying water resources as far as drinking water supplies?

**John Brooks** – Yes.

**Judith Spang** – A couple of things have been said, including some by the last speaker, which cause me great concern. I think that there was an allusion made earlier, and I don't think that Piotr meant it to be taken this way. I think he said that "it is not my intention to place an undue burden on any water user." I think in terms of even discussing at length what the Towns of Durham, Newmarket and the Universities water use plans are is inappropriate. When you look at the way this study is supposed to be structured by statute. By statute it was set up to be divided very deliberately into two separate parts. One is strictly scientific, which is devoid of any decision of who gets to use the water and when and how much. It is supposed to be strictly looking at the resources and the water that they use. And it greatly disturbs me if the TRCs are beginning to take into consideration how they should interpret that data to the benefit of one user versus another and I think that the whole recreational thing was completely glossed over. The job of this Committee was to determine how much water was needed for recreation, not whether they were going to get it or not. I haven't read the report or the recommendations from that point of view but I think it is very important for the public to understand also that all this committee is supposed to do is scientific work.

**Wayne Ives** – That is a good point. The statutory authority divided the process into a scientific phase that used the information from the statutory description of protected entities to say that flow dependent protected entities need to have a scientifically based evaluation of their protected

flow needs without the inclusion of policy driven issues that more related to public water supplies and where those play into that process.

**Dave Cedarholm** – I appreciate and commend the work that the project team has done. They obviously worked very diligently and carefully to put together a very complete report. I truly feel that you worked hard. On behalf of the water users in Durham and UNH I want to say that starting back in 1970 the university and the Town made a concerted effort to solve a water resource/drinking water problem that was a result of drought conditions from the 1960's. Since then the Town and the University have spent tens of millions of dollars in today's dollars to solve that problem. In 1999/2000 those plans were attempted to be improved upon and a water conservation project resulted in restrictions in what the University and the Town planned on doing. Using that resource for the future and for low-flow use, if these proposed PISFs go through it will add even more of a restriction and basically force the town and the University into spending tens of millions of dollars.

**Judith Spang** – This is exactly what I am talking about. This is completely inappropriate for the TRC to be taking this sort of thing into consideration. This is the kind of thing that the Water Management Committee, by statute, is set up to listen to and take that into consideration and weigh your needs against the needs of other people but it isn't fair to this group of scientists to have to be listening to policy questions. That is not is the way, statutorily, that this is supposed to be set up. It was supposed to very clean, science unaffected by policy and then all hell breaks loose with the Water Management Planning Committee. That becomes where the rubber hits the road with the science. I am sorry to interrupt but that is such a clear example.

**Steve Couture** – I am the Rivers Coordinator and I am responsible for administering the Rivers Management Program. I just wanted to make a couple of quick comments and then hand it back to Wayne. As far as the implementation of this pilot project, DES is responsible for issuing a report to the General Court by December 2010. That includes any recommendations for improvements and how to move forward with the program and then the General Court has to act on that. I wanted to make sure that was clear when you were talking about efficiencies that none of that has been formally issued to the General Court and will not be until pilot projects have been implemented. Secondly, I wanted to thank Representative Tupper and Representative Spang for taking to be here tonight, they are the chair and the vice-chair of the House Resources, Recreation & Development Committee so I appreciate you taking the time to sit in tonight. I think it would probably be best at this point to focus the comments and the questions to technical aspects of what was presented tonight because it is quite clear, in statute and rule, that the established of protected instream flow is based on technical assessment evaluation and this becomes the states Water Quality Standard for enforcing water quantity for the Lamprey River. It is absolutely correct that the technical aspect is what we are talking about tonight so any questions or comments should be focused on the technical aspect and not the implementation. That would probably be the best use of everyone' time because it is getting late.

**Sean Greig** – I am work in both drinking water and wastewater and I understand that you need to manage your water and your ecosystems and it is very important but I was going outside the scope. What kind of role do the towns that are affected in the implementation phase play? How are they going to be included? I am not trying to affect you any which way but if we are included we can probably help avoid some of the problems in the future because when we need water it is a drought and that is when you don't want to give us the water because there isn't any water to give. We need to work hand in hand taking water when it is available because in the late 1990's/2000 we had a drought situation and we had a recharge and were pulling the water off in the winter time in small amounts and keeping our aquifer full. What happens with our aquifer is that the water actually flows back to the wetlands if it is not being used. We can avoid pulling water off during times when it is at a critical stage.

**Wayne Ives** – My purpose is to make sure that both sides get water. You just made two critical points. One is that this process help people with the thought process they need to do water management planning and take different actions than we have in the past, which has been to take water when it is really not available. And the other is this water management plan process, which includes discussion with the water users and the dam owners to describe their water use patterns that are needed, how much water is needed and when. The details of what you have in your head about your water program or your operation is what needs to go into the Water Management Plan. The [consultants] need to talk to you and other people like you in the watershed as they develop the Water Management Plan because the process includes back and forth discussions.

The reason that we selected the Lamprey and Souhegan Rivers to begin with as pilot programs is because there were a number of different water user types. We have the fish hatchery on the Souhegan, public water suppliers, bottled water suppliers who have even less flexibility because their product takes the water and removes it all together without a wastewater return to balance it. We have a large variety of different types of water users in these relatively small watersheds that we can ask, “What are the problems of your type of water use that we can now project into other watersheds when we get to the bigger watersheds that have the same types of water users?” How can you project the same kind of effort when you get to those areas? What you said helps me spread what we are trying to present here.

**Bill Hall** – When we get to 4 or 5 cfs in Durham the powers that be have decided to not take water anymore because some of the other aspects of the 401 for sampling and monitoring are rather onerous. At 45 cfs that is 30 million gallons a day. Nothing I’ve seen here happens at 30 million gallons a day. I watched the slides very carefully. We need approximately 3 million gallons. That is 3%. Why you have a 401 that keeps the University from taking that water. When they do take it this time of year, or when it is flowing that much, they could get away with not even treating it. They have to treat it because they are not certain what is in it, but right out of the Lamprey it is drinking water. They do chlorinate it, put coagulant in it and put it through the filter beds. It is that good.

**Steve Couture** – Once the PISF is established, the 401 Water Quality Certificate can be revisited because a new water quality standard has been established.

**Bill Hall** – I was just commenting on what he said because it kicks in and affects us at 30 million gallons a day which in my opinion is so unreasonable.

**Wayne Ives** – That is the standard setting tool that we have used in the past. Now we are moving into a more natural flow paradigm-based flow.

**Bill Hall** – In other words there was no scientific basis for that fact.

**Wayne Ives** – That is not true either. The 45 cfs that was in the slides describes the historical document, which is the 401.

**Bill Hall** – I was watching the flows when these things happen, 16 and that sort of thing, and that is not 45.

**9:45**                    **Hearing Adjourns**

## **ATTENDANCE LIST**