FYI, Bill, so that you, Laura and Emily have all related pieces/information. Ron wanted to remind us that this had been provided in late September to the technical group. I had assumed at that time that Adam and Mike L would forward it to you, but just in case you haven’t seen it, this is simply an example of a related study (in abstract).

Martha

Folks:

A reminder from Sept. 2010. There are many recreational studies that one only has to examine the literature on to appreciate flow impacts on angling. This is but one example. This remains a data gap. It should be of zero surprise that recreational fisheries on fish found in the Kokish River are flow dependent. There is no need to substantiate the obvious about angling on this stream. Those requiring further insights should do their homework.

Ron

Instream Flows and “Angler Habitat:” Flow Effects on Fishability on Eight Pacific Northwest Rivers

Authors: Doug Whittaker\textsuperscript{a}, Bo Shelby\textsuperscript{b}, Jesse Abrams\textsuperscript{c}

Abstract

Instream flow affects biophysical habitat for aquatic species and “angler habitat” or “fishability.” Previous work speculates about flows that provide fishability, but without detailed information or analyses. This article presents anglers' normative flow evaluations for fishability on segments of eight Pacific Northwest rivers. Results show varying evaluations across rivers, with optimal fishing flows ranging from 5 to 118% of mean annual flow, and evaluations appear to be influenced by type of river segment, target species, and angling
technique. This suggests comprehensive assessments will require case-specific information rather than applications of "rule-of-thumb" formulae. Findings also highlight potential differences between flow requirements for "angler habitat" versus "fish habitat." Variables likely to influence fishability evaluations include effects that anglers can assess in social science research and effects that require biophysical studies. Fisheries management requires consideration of the full range of social and biophysical outputs and their potential trade-offs, an area requiring interdisciplinary research.

**Keywords:** instream flow; fishing; fishability; angler habitat; recreation habitat; norms

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**From:** Ptolemy, Ron ENV:EX  
**Sent:** Wednesday, September 22, 2010 4:43 PM  
**To:** McCulloch, Mike ENV:EX  
**Cc:** Bracher, Grant ENV:EX; Down, Ted ENV:EX; Tepper, Herb ENV:EX  
**Subject:** KokishRbParrRiff.xlsx---peak usable width for the Diversion Reach varies but is generally near 4.4 cms or 26%LT mad---glides produce a higher flow need

<< File: KokishRbParrRiff.xlsx >>

Hi Mike:

The outstanding issues are still:

1. Experimental pulse flows for both passage and spawning;
2. Uncertainties around attraction flows at the tail-race;
3. Residual flows that are recommended below 4.4 cms and complications for summer steelhead compensation (parr stage);
4. Uncertainties around elevated stream temperatures and impacts on delayed adults in the Diversion Reach (maximum values are already >23 C at Sites T1 and T3);
5. Validation of habitat suitability curves (where do steelhead parr live and is there a connection between parr density and PHabSim results);
6. Plot of daily residual flows for the Diversion reach in a wet, dry and normal year;
7. Data gap and analyses of recreational flows for angling.

Best regards and see you tomorrow,

**Ronald A. Ptolemy, RPBio**  
Rivers Biologist/Instream Flow Specialist, Fisheries Science Section  
Ecosystems Branch  
Ministry of Environment  
PO Box 9334 Station Prov Govt  
Victoria, BC V8W 9M1  
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e-mail: [Ron.Ptolemy@gov.bc.ca](mailto:Ron.Ptolemy@gov.bc.ca)
From: McCulloch, Mike ENV:EX
Sent: Monday, January 17, 2011 5:09 PM
To: Anslow, Martha EAO:EX; Ptolemy, Ron ENV:EX
Cc: Ashcroft, Greg E EAO:EX; Stratford, Belina EAO:EX; Down, Ted ENV:EX
Subject: RE: REQUEST for written comments and further to TWG mtg scheduled for this Thursday

Follow Up Flag: Follow up
Flag Status: Completed

Martha,

The Ministry of the Environment (now split between the Ministry of Natural Resource Operations and the Environment) noted a number of deficiencies of the Kokish River Hydroelectric Project Application for an Environmental Assessment Certificate, Volume 1, September 2010. This note will try and provide clarity surrounding the expectations on angling assessments.

Within section 16.3.7.3, entitled Recreation and Camping, the proponent identifies that “During the course of consultation during the pre-application stage, various sources Project’s fisheries field crews, local government representatives, stakeholders and members of the public, as well as volunteers with the Kokish River Community Hatchery, report observing angling activity in the Project area...” and section 15.5.2.2 identifies that “No additional mitigation measures are proposed relating to angling...”, despite the fact that during periods of overlapping use (diversion and angling) the conditions within the diversion reach will be changed dramatically.

In a note drafted by R. Ptolemy dated October 6th, 2010, Item# 3 contains an excerpt from the EAC Application referenced above and adds that, “The information package is missing both a method to assess angling flows and mitigative flows.” The proponents response contained within Agency tracking table sent out by Martha Anslow, on January 5th, 2011, states that: “The effects assessment for Land, Resource, and Water Use is contained in section 16.5. The following will be added to that section: “Project related IFR’s could effect current angling flows by altering the characteristics of angling waters. This is expected to be offset by increased opportunities resulting from fewer ‘washed-out’ days that typically occur during the wet months of October and November when some days are unfishable during periods of high water”.

The proponents response has been deemed inadequate by the ministry in that it does not identify a methodology used to assess angling flows nor does it provide any mitigate strategies IF a comprehensive assessment shows a decrease in usability (as R. Ptolemy had identified in his October 6th correspondence). Additionally the proponents response references a time period where angling is prohibited within the diversion reach (i.e the month of November) limiting the effect of the “offset” argument. There are a number of scientific documents addressing the assessment of the flow/angling relationship and I do not believe that the Ministry should be prescriptive in determining which references should be used. All references will identify that local knowledge should be weighted heavily and this is a tenant I do not mind repeating here.

We do collect statistics on steelhead angling use through the Steelhead Harvest Analysis (SHA), these data appear below. The average reported use of the Kokish between 1968 and 2006 was 238 days/year. The average catch during this same period was 120 steelhead/year yielding 0.50 steelhead/day throughout the reporting period. Use has been variable but we believe that strong fish abundance could yield increased, sustainable use near reported maxima.
Sincerely,

MPM

Michael McCulloch
Anadromous Fisheries Specialist
Ministry of Natural Resource Operations
2080A Labieux Road, Nanaimo, BC
(O) 250.751.3156
(C) 250.713.5546

From: Anslow, Martha EAO:EX
Sent: Monday, January 17, 2011 1:43 PM
To: Ptolemy, Ron ENV:EX; McCulloch, Mike ENV:EX
Cc: Ashcroft, Greg E EAO:EX; Stratford, Betina EAO:EX; Down, Ted ENV:EX
Subject: Re: REQUEST for written comments and further to TWG mtg scheduled for this Thursday

Thanks, Ron - I do appreciate your time constraints! Mike spoke to this issue at the mtg last Thursday with a further discussion with the Proponent's consultants after the mtg, and we discussed all of this with the Proponent this morning. It will be very helpful to formally receive the ministries' concerns/positions as soon as possible.
Re: the TWG mtg scheduled this Thursday - DFO cannot attend and you are only available in the morning in Victoria. Can the mtg come to you? The Proponent + consultants can come and meet us here from 9:00 until you need to leave. It could be at Jutland or we can make arrangements here. Mike could participate by telecon if he can't come down. This would be a very focussed discussion related to the further work you required of the Proponent (other Dec 10 action items would be covered off at a full TWG in Nanaimo next Tues, Jan 25th, for which we hope Mike is available, we haven't heard from him yet).

The Proponent is speaking with their consultants and plan to provide all related materials to us by tomorrow in advance of Thursday's mtg.

Please let me know where/when for this Thursday and we'll make arrangements - thanks a lot.

Martha

From: Ptolemy, Ron ENV:EX
Sent: Monday, January 17, 2011 01:11 PM
To: Anslow, Martha EAO:EX; McCulloch, Mike ENV:EX
Cc: Ashcroft, Greg E EAO:EX; Stratford, Betina EAO:EX; Down, Ted ENV:EX
Subject: RE: REQUEST: written response from MOE/MNRO to Proponent's response to MOE's October 6, 2010 comments re: angling assessment

Martha:

The queue is long. Your request is fresh; much before it.

Maybe.

Ron

From: Anslow, Martha EAO:EX
Sent: Monday, January 17, 2011 12:51 PM
To: Ptolemy, Ron ENV:EX; McCulloch, Mike ENV:EX
Cc: Ashcroft, Greg E EAO:EX; Stratford, Betina EAO:EX
Subject: REQUEST: written response from MOE/MNRO to Proponent's response to MOE's October 6, 2010 comments re: angling assessment

Hi Ron – thanks again for your time today. There have now been several separate discussions between the Proponent, EAO and MOE/MNRO re: this issue, and at this point, we need to receive a formal comment from MOE/MNRO on the Proponent’s written response to your October 6 comments. Our timeframe for this response, as set at last Thursday’s meeting, is tomorrow. Could you and Mike please provide this to us by then?

Thanks for your ongoing help,

Martha

Martha Anslow
Project Assessment Manager
Hi Mike - thanks for providing this information to Laura. Can you please be sure to include EAO in all related communication with the Proponent? We are trying to understand the extent of the analysis required by MOE and MNRO so that we can direct the Proponent re: whether and how to complete this work given the reduced timeframe for completion and review in this EA.

Thanks a lot,
Martha

-----Original Message-----
From: Cornwell, Laura [mailto:Laura.Cornwell@stantec.com]
Sent: Sunday, January 16, 2011 1:06 PM
To: 'bill.payne@brookfieldpower.com'; Anslow, Martha EAO:EX
Subject: Fw: Kokish angling use

Fyi

----- Original Message ----- 
From: McCulloch, Mike ENV:EX <Mike.McCulloch@gov.bc.ca>
To: Cornwell, Laura
Sent: Sat Jan 15 16:29:41 2011
Subject: Fw: Kokish angling use

Sorry once again for the delay on this note.

We are back online this afternoon.

MPM

From: McCulloch, Mike ENV:EX
Sent: Fri 14/01/2011 8:42 PM
To: laura.cornwall@stantec.com
Subject: Kokish angling use

Laura,

Sorry for the slight delay in this note. Unfortunately,
As per our meeting yesterday I was going to provide you with a clearer set of expectations and guidance relative to statements in the Kokish Application surrounding angling flows. During our discussion I committed to:

1) Providing appropriate contacts deemed suitable by the Ministry to satisfy the needs of "consultation" in matters similar to the angling use issue at hand;

2) Provide appropriate references if readily available, and

3) Provide use statistics for the Kokish River as reported by the Steelhead Harvest Analysis.

Following is a brief summary of my commitments.

1) The Ministry has used organized angling Groups including the BC Wildlife Federation, BC Federation of Drift Fishers, BC Federation of Fly Fishers as representatives of a broad cross section of the angling community. In this case where a specific flow target or flow range needed to facilitate angling is to be derived, a local group including anglers with extensive experience with the system may be more appropriate. Perry Wilson or other members of the Port McNeil Chinook Club may be more instructive in developing flow targets or ranges.

2) I mentioned the Tennant approach from memory but I am unable to provide a specific reference (sorry). Instream Flows for Riverine Resource Stewardship (ISBN 0-9716743-1-0), speaks to similar water allocation issues but fails to address angling specifically. If I find any specific reference next week when I have access to my library I will forward on.

3) Kokish use statistics are appended to this note (first worksheet with alphabetical river charts)

Have a great weekend and see you next week.

MPM