

**Thompson Falls Fish Passage
Technical Advisory Committee
PPL Montana, LLC**

Meeting Minutes Prepared by Morrison-Maierle, Inc.
September 3, 2009 9:30 AM
Credit Union, Thompson Falls, Montana

The Thompson Falls Fish Passage Technical Advisory Committee (TAC) met September 3, 2009 at the Whitefish Credit Union in Thompson Falls. Persons attending the meeting were:

Brent Mabbott	PPL Montana	lbmabbott@pplweb.com	406-533-3447
Frank Pickett	PPL Montana	fjpickett@pplweb.com	406-533-3445
Jon Jourdonnais	PPL Montana	jhjourdonnais@pplweb.com	406-533-3443
Blaine Hildreth	PPL Montana	bchildreth@pplweb.com	406-533-3427
Jay Stuckey	MFWP	jstuckey@blackfoot.net	406-827-9205
Harvey Carlsmith	MFWP		406-827-9205
Jon Hanson	MFWP	jonhanson@mt.gov	406-827-9320
Jim Vashro	MFWP	jvashro@mt.gov	406-751-4550
Tim Bodurtha	USFWS	Tim_bodurtha@fws.gov	406-758-6882
Craig Barfoot	CSKT	craigb@cskt.org	406-883-2888
Joe DosSantos	Avista	joe.dossantos@avistacorp.com	406-847-2266
Andy Welch	MDEQ	awelch@mt.gov	406-444-9897
Ginger Gillin	GEI Consultants, Inc.	ggillin@geiconsultants.com	916-662-6233
Kristi Webb	Morrison-Maierle, Inc.	kwebb@m-m.net	406-542-8880

Fish Ladder Construction Update - Blaine Hildreth (PPL Montana)

Construction Contract is with COP (Billings, MT)

On-site engineering firm is Morrison-Maierle, Inc. (Missoula, MT)

Design Engineer is GEI Consultants, Inc. (Denver, CO)

Construction Status

- Access to project site was a challenge. COP proposed and built a temporary bridge across the spillway.
 - The temporary bridge was constructed in one month.
 - The temporary bridge allows construction activities to continue, and provides safe work and access.
 - COP will continue to use the temporary bridge through the winter.
 - COP plans to remove temporary bridge before spring runoff then access site from the island.
- Question: Does the bridge have to be removed prior to runoff?
 - PPL Montana and COP area currently evaluating the situation. There is a plan to tear out segments of the temporary bridge prior to spring runoff and then rebuild.
- COP intends to finish construction work prior to runoff in 2010.
- Excavation subcontracted with Coleman (Dillon, MT)
 - The original plan was to make a clean cut in the bedrock. After consultation with several contractors, it was determined that a clean cut was not possible using blasting.
 - COP's preference was to use rock hammer and excavate.
 - Geotechnical testing indicated the sedimentary rock layers dipped between 60 and 75 degrees
 - COP recommended laying the wall back, which provided a solid material/stable rock except for a small portion where the fish ladder is to be secured.

- GEI working on design to secure fish ladder on face of slope.
 - Unknown material uncovered at the base – fractured gravel (bottom of stilling basin). Currently Coleman is removing the material.
 - Excavation should be completed the week of August 30, 2009.
- There has been a redesign of the middle section of the fish ladder.
 - The redesign was a result of over excavation, which will require additional concrete to set a subgrade for the fish ladder base.
 - GEI assisted in the process to develop a design to find the subgrade for the base.
 - Design changes only impact the middle section and how pools/ladder is supported.
 - Pool dimensions have not been impacted or redesigned.
- Schedule: COP projected completion date is scheduled for October/November 2010
 - Once excavation is complete, COP will work through winter setting up forms and pouring concrete.
 - Blaine mentioned that it is possible the project will be completed earlier (summer 2010).

Additional comments regarding project

- Continuity has been key - from biological design to engineers to contractor
- Biologically driven - provide what biologists (agencies) have requested.
 - Engineering plan not modified without approval through biologists
 - Built with different water supply options and ability to modify function/water movement for ladder.
 - Once complete it is up to biologists to manage and ensure efficacy of the fish ladder.

Where can you overlook construction site?

- Viewing area is projected to be complete by mid October 2009.
 - The island is open to the public, but there is no designated fishway viewing area at the moment.
 - Public does not have full viewing access of the site until the viewing area is complete.
 - Viewing the project from the other side of the river will be in the way of the contractor.
- Webcams have been set up for viewing construction activities.
 - Project schedule and photos are also available on PPL Montana's website, <http://www.pplmontana.com>

2009 Water Quality Work – Frank Pickett (PPL Montana)

Frank Pickett presented total dissolved gas (TDG) graphs to the group. The graphs showed the following information:

- Thompson Falls Daily Average Outflow.
 - 2009 peak runoff was at 60,000 cfs.
 - Average peak runoff is approximately 70,000 cfs.
- 2009 BBB TDG and Flow.
 - BBB maxed out at 114%-115% TDG – followed spill curve.
 - Lost hydrolab below dam – divers will go out in a month to retrieve.
 - High bridge – 5-6% higher than BBB (dilution of water from powerhouse).
- 2009 TDG at Thompson Falls.
 - In some cases in Columbia system, 120% TDG has not resulted in gas bubble trauma to fish.
 - Studies and information gained from the Columbia system may be a benefit to the Thompson Falls project.

- For every meter in depth, TDG is reduced by approximately 10% TDG. Thompson Falls adult fish are observed approximately 1 to 4 meters below water surface.
- Frank will present a more complete report in spring 2010.

Thermal Plume – Brent Mabbott (PPL Montana) and Jay Stuckey (MFWP)

- PPL Montana evaluated the thermal plume from Thompson Falls River into the Thompson Falls Reservoir.
- MFWP (Jay Stuckey) has photos taken during spring runoff on June 3, 2009.
 - Thompson River was flowing approximately 250 cfs into Thompson Falls Reservoir.
 - Downstream of confluence with Thompson River the water mixes.
 - No difference and no thermal plume identified downstream.
 - Measured temperatures at the Cherry Creek boat launch.
 - Water temperature was measured and top to bottom and across channel, there was no difference in temperature.
 - No thermal plume identified at Cherry Creek boat launch.

Spring 2009 PPL Northern Pike Summary - Brent Mabbott (PPL Montana) and Jay Stuckey (MFWP)

- Brent evaluated David Schmetterling's pike removal techniques from Milltown Reservoir.
- Thompson Falls Reservoir, as defined in MFWP regulations, ends at confluence with Thompson River.
 - The Clark Fork River is influenced by the Thompson Falls Dam an additional 1 to 2 miles upstream of Thompson River.
 - This area upstream of the confluence with the Thompson River is part of Thompson Falls Reservoir based on hydrologic characteristics.
 - Characteristics of a reservoir also includes island complex upstream of Thompson River.
- Two areas of northern pike populations were identified in 2009.
 - Near Thompson Falls town – slow water/shallow area.
 - Upstream of confluence with Thompson River, the Island complex.
 - Previous tag returns have shown pike move between and beyond these two areas.
- PPL Montana and MFWP sampled for northern pike during high flows.
 - Brent found that electrofishing for northern pike was most successful when the water was a little murky, which occurred when spill was approximately 25,000 cfs.

Spring 2009 PPL Northern Pike Summary (Handout provided by Jay Stuckey, MFWP)

Beginning on March 20, 2009 and continuing to July 7, 2009 efforts were conducted to capture northern pike in the Thompson Falls Reservoir and among the islands in the Clark Fork River approximately one mile upstream of Thompson River in order to develop a population estimate for this section of the Clark Fork River. Efforts began by placing 4 to 6 gill nets of 1-inch mesh in the reservoir and island locations then pulling/checking the nets every hour to decrease net mortalities. By May additional methods using angling and electroshocking were incorporated particularly among the islands. Combined efforts took place 3 times each week from 3/20 – 5/29/09 alternating from reservoir to islands.

A total of 157 northern pike were floy tagged during this time from all methods, 89 by electroshocking, 64 by nets and 4 by angling. Of these fish there were 19 recaptures, 4 by nets, and 15 by electroshocking of which 2 were recaptured 3 and 4 times respectively. Netting efforts captured 8 different species other than northern pike; 2 LMB, 19YP, 3 RBT, 1 BLT (271mm), 10 PUMP, 10 NPM, 1 SMB, 9 LSS. Anglers caught 12 of the floy tagged NP with their tags returned.

Lavage was done on 135 of the northern pike with 59 having stomach contents. Numerous pike had bones of small fish in the stomach which were unidentifiable. Stomach contents showed a wide variety of feeding options used by the pike including 1 juvenile bull trout (150mm), 3 unknown *Onchorynchus spp.*, northern pikeminnow fry, leeches, grass, 1 frog, insect (stoneflies and dragonfly larva), 1 six inch pocket gopher, yellow perch (186mm), largescale sucker (237mm) and one twenty inch northern pike that had a thirteen inch mountain whitefish in its stomach.

Electrofishing was also done below the PPL dam on 5/28 & 6/4/09 to evaluate any symptoms fish may exhibit from Gas Bubble Trauma. A total of 276 fish of 14 species were captured with none exhibiting GBT symptoms. Species totals are; 146 LSS, 17 RBT, 4 LT, 6 LWF, 3 BRN, 10 MWF, 49 SMB, 6 LNS, 13 NPM, 15 PEA, 4 WCT, 1 NP, 1 WRHY, 1 sculpin.

- Summary of Northern Pike 2009 Study
 - During Northern Pike sampling efforts, a 271 mm BLT was caught.
 - Northern Pike population estimate not complete. A population estimate will be conducted according to Schmetterling's methodology used for Milltown Reservoir
 - It is likely there is connectivity and movement between the two populations (island complex, town area) identified in this study. If northern pike were removed from reservoir, the population may rebound as a result of connectivity to the island complex, and extending upstream into the Flathead system.
 - Cleithrum scaling verification was recommended by Joe DosSantos, Avista. Joe Hanson, MFWP – mentioned scale verification is planned to be conducted this fall.
 - Brent is going to write up methods, results, and summary of the 2009 study and work with GEI (Ginger Gillin) to produce report for TAC this winter.
 - PPL Montana (Brent) will follow up in fall with additional sampling via netting and electrofishing scheduled for October 2009. Unlikely electrofishing will be successful in fall. 2009 conditions included 4-inch visibility for electroshocking.

- In the fall, Brent and MFWP will shock upstream of islands for baseline CPUE or M/R data on fish populations before fish ladder opens. This sampling will continue post fish ladder operation. Sampling efforts will include fish species identification, length, weight, etc.
- Brent proposed to use 15 radio tags for Northern Pike monitoring to the TAC during this meeting. This was discussed and the TAC agreed that 15 radio tags would not be used to monitor Northern Pike.
 - Comments from TAC regarding putting radio tags in Northern Pike this fall 2009 included:
 - Jon Hanson – not worth it. What’s the objective? Not clear on objective other than finding out where Northern Pike (NP) are spawning? Assume this is difficult to determine in this system with change of temperatures (daily, weekly), NP move and look like spawning and then temperature change and then switch direction. Schmetterling has documented spawning behavior, optimal temperature, and behavioral influence of temperature.
 - Brent agrees with Jon: Only a limited number of places where NP can spawn with system. Likely know locations of spawning
 - CSKT - Low gradient sections of river to complete NP life history and exploit other parts of river for other stages. More interested in write up of existing data collected from 2009 than future radio tag study.
 - CSKT – Requested a write up for “lessons learned” from NP study.
 - What agencies have learned from 2009 and previous years include: NP use entire corridor up to Flathead River and depending time of year and NP will use different corridors depending on time of year.

Recovery of Tagged Fish (Jay Stuckey – MFWP)

- Brown Trout – Detected on Hilltop receiver. Fish came out of Prospect Creek on December 4, 2008 –moving between bridge and Prospect, 3-yr tag (about half of the tag life has been used)
- Rainbow Trout (18-inch) detected below Cabinet
- June 7 a BLT was captured downstream of Cabinet Gorge at the Cabinet Gorge Hatchery
 - Genetic analysis provided two likelihoods for origin: Monture Creek and/or Cedar Creek (verified with Jay Stuckey, October 28, 2009)
 - Confidence for both likelihoods was low (less than 2)
 - Transported to Clark Fork River near Paradise, MT
 - BLT traveled to lower Flathead River
 - BLT traveled 3 miles in 5 days
 - Moved up Flathead River when Clark Fork River was muddy
 - Around July 4 detected up Jocko Creek (was in Magpie Creek for a bit prior to entering Jocko)
- Remote station was installed on 23 June at the confluence of the Clark Fork River and Lower Flathead River
- 24 Radio Tags Left

General Discussion – Prioritization for Studies/Evaluation of Ladder

- USFWS - Tim Bodurtha expressed concern and does not want to see the evaluation of ladder to suffer as a result of spending time of northern pike studies in reservoir (Craig Barfoot, CSKT agreed with USFWS).
- USFWS questions asked included:

- Are fish already tagged?
- Will PIT tags be used in all fish?
- What is the PIT tagging schedule (spring 2010?) if ladder construction is complete in October/November 2010?
- Two major evaluations ongoing concurrently (northern pike and fish ladder), ensure enough resources available to conduct both, priority for USFWS is to complete ladder evaluation.
- How will the fish ladder be evaluated?
 - Ladder will be highly selective – flexibility to operate ladder, won't be determined by automatic gate based on PIT tags, this will be a manual operation.
 - At the 45th pool, fish will be stopped, moved into a tank and up to the work station. Every fish will be checked at the work station.
 - Biomark will help with PIT tags – know when fish move in, where fish is located (e.g., in bottom or top of pools).
 - Electricity available to set up PIT tag studies.
 - Requires new PIT tag technology.
 - .
 - Evaluation studies fish ladder start spring 2011 – real activity and real evaluation.
 - Fall 2010 – fill up with water, and figure out movement of water and fish ladder function
 - Need fish marked in 2010.
 - Table 12 – schedule for the ladder evaluation -5-years to evaluate fish ladder (due 2015 to FERC).
 - Evaluation program set up in next year 2010 – methodology set up by end of year 2010.
 - Fishways operations manual by end of December 2010. It has been noted that the existing time table to develop a fishway operation manual is not sufficient and the version developed for the December 2010 deadline will be prepared with the intent to modify as operations are better understood through the first couple of years of operation. The seasonal dynamics of the fish ladder operation will not be known for several years and this adaptive approach will allow for necessary modification in the fishway operation manual.
- Comment on Previous Thompson Falls Telemetry Studies (Ginger Gillin – GEI)
 - Fall radio tags, limited success in recovery in spring.
 - Previous study found radio tags from spring were higher recovery in following year.
 - Question is - Will tagging recovery be different between PIT tags and radio tags?
 - Brent – agree need to prepare spring 2010, double mark (PIT Tag and ??).
- When BLT are captured in August (summer time during warm water conditions) at the fish ladder, how will genetic assignment and holding process be conducted?
 - If fish have to be genetically assigned, what is the holding location? (MFWP question)
 - If capture August or any time of year, what is holding location or process (not part ladder)?
 - Brent recommend use truck and send to Cabinet?
 - MFWP recommended potential use of Blue Creek.
 - Another option includes the use of tanks and plumb with PVC.
 - Or do you immediately just release fish going upstream since already going upstream?
 - Avista uses cold water source at hatchery (1500 gallon tanks per BLT).
 - Question: Determine holdover? Or need for holder over and send over BLT?

Disease Study (Jon Hanson, MFWP)

- Jon Hanson reported on work done during 2 weeks this August 2009 regarding disease.
 - MFWP evaluated disease throughout Lower Clark Fork River and upstream to St. Regis River and into Idaho.
 - Couple weeks ago, collected data from 4 streams upstream of Thompson Falls Dam and other collections downstream
 - Help state evaluate disease concerns with fish passage over all 3 dams
 - Anticipate continue efforts into the future –study ongoing in 5 years intervals
 - Funding sources: PPL, Avista, and MFWP
 - Whirling disease live cage out in Thompson River
 - Sampled White Pine, Thompson River for whirling disease
 - Results- Preliminary results in winter 2009
 - Final report in spring 2010
- Note: CSKT (Craig Barfoot)– extensive disease work in past and may be of interest to MFWP
 - Mission and Jocko Ck near Hatchery
 - Disease – whirling disease

Updates (Jon Hanson –MFWP)

- Blossom Lakes – Rotenone treatment to remove nonnative brook trout
- Implemented last week (August 2009)
- Not a project funded by Thompson Falls TAC.

Status from Ladd Knotek (MFWP) regarding Oregon Gulch and Fish Creek TAC Funded Projects

Ladd provided the following information on the TAC funded projects.

Fish Creek Aquatic passage (\$24,000)

- \$24,000 allocated was used to leverage > \$70,000 in additional funds
- Culverts at all 3 proposed crossing sites on Bear Cr and Surveyors Creek were removed to enhance fish passage and natural stream function
- An additional 37 culverts were removed in the Bear, Deer, Surveyors, Thompson, Wig and Chicken Creek drainages. > 20 miles of roads were stored or decommissioned in these drainages

Oregon Gulch Mine Restoration (\$15,000)

- RFP was issued and consultant was selected - River Design Group
- Fieldwork and survey of site completed in Aug-Sept 2009
- Design alternatives document will be completed in early Nov 2009

Clark Fork River bull trout DNA samples - not sure if MFWP has submitted any samples to the lab this year yet

National Funding opportunity through USFWS

- Announcement out that 11 million dollars available.
- Proposals due October 1, 2009.
- Technical and financial systems.
- High priority aquatic habitats.
- Removal of barriers.

- Emphasis on connectivity.
- Matching goal of 1:1.
- Reviewed sometimes according to partnering.
- Awards can max at \$800,000.
- Ginger will email to Ladd and others.
- Generally competitive at a national level.
 - Compete nationally until funding pot is fully awarded.
 - PPL recommend state and service go out get funding.

Committee on evaluation and monitoring (fish evaluation criteria):

Jon Hanson

Brent Mabbott

Wade Fredenberg

- Brent will provide list of ideas and coordinate with group for next step.
- Objective – Mid- November distribute to group (outline of evaluation program)
- Need to put identify the different components of fish ladder evaluation (e.g., movement to and from fish ladder).
- Set up program for evaluation process.

Next Thompson Falls Meeting

- January 2010 – next meeting @ 10AM
 - Week of the 11th or 18th meet in Missoula at MFWP office
 - Brent will coordinate with Ladd (MFWP) and propose several dates
- Review of TAC proposals in next meeting
- Committee (Brent, Jon, Wade) will report on proposed Fish Evaluation Criteria.
- **Deadline Reminders:** April 1, 2010 – Annual Report to USFWS and FERC; Summary (methods and lessons learned) from Northern Pike 2009 study (to TAC in winter 2009/2010); and Water Quality Report (to TAC and then USFWS and FERC) by April 2010.