

Fisheries, Aquatic Habitat and Water Quality Resource Group
Mystic Lake Relicensing Meeting
January 21, 2004
Best Western Yellowstone Inn, Livingston

Group in Attendance:

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Resource Group Summary:

On January 21, 2004 a public meeting was held in Livingston, Montana regarding the FERC relicensing of Mystic Lake Hydroelectric Project (hereafter referred to as the Project) using the Integrated Licensing Process (ILP). The purpose of this meeting was to openly discuss 1) impact issues from the Project, 2) what type of simple data analysis or field work could be conducted in the summer of 2004, 3) whether there are any significant study needs for 2005 or 2006, 4) impact issues that can be resolved by long-term monitoring or an adaptive management plan, 5) impact issues that can be resolved by PM&E measures, and 6) determine next meeting date. The discussions presented below are a work in progress and do not reflect formal decisions made by PPLM or any agency or public group.

Fisheries and Aquatic Habitat

Bypass Presentation

Brent Mabbott started with a power point presentation on the bypass reach. Pictures of the bypass reach during July and October familiarized the group how aquatic habitat changes with varying flows in different parts of the bypass. An elevation profile of the bypass reach showed how steeper and flatter sections correlated with the fish habitat photos of pools and steep drops. Ginger Gillin provided maps showing the history of stocking above and below Mystic Lake.

Genetic Data

Genetics data (polymerase chain reaction) of trout in Mystic Lake indicate that all individuals sampled from Mystic Lake (n = 25) and Silver Lake (n = 20) contained markers indicative of both rainbow trout and Yellowstone cutthroat trout. These individuals appear to come from a hybrid swarm population of rainbow trout and Yellowstone cutthroat trout. The genetic contributions of rainbow trout and Yellowstone cutthroat trout were 87% and 13%, respectively for Mystic Lake and 86% and 14%, respectively for Silver Lake.

Yellowstone cutthroat trout were historically stocked above Mystic Lake, therefore it is likely that stocked non-indigenous Yellowstone cutthroat trout were the origin source that hybridized with rainbow trout creating the current hybrid swarm population found in Mystic and Silver Lakes. It is unknown whether Mystic Lake and the watershed that feeds it historically contained fish. It has been mentioned in past MFWP documents that mountain whitefish are present in Mystic Lake, therefore making it possible that Mystic Lake historically contained fish. The reasoning is that mountain whitefish were not usually stocked or used as live-bait; therefore the presence of whitefish may support the hypothesis that there were fish indigenous to Mystic Lake. The other school of thought is that Mystic Lake and all waters upstream were fishless, due to the topography of the area and the fact that during the last glacial period Mystic Lake was above barrier falls. In addition, while the mention of mountain whitefish in Mystic Lake has occurred in reports, no documentation has been found describing when or where mountain whitefish were captured or observed in Mystic Lake.

Intake Condition

The hydropower intake at Mystic Lake is located at a depth of about 60 feet at normal pool elevation. Brent discussed the drawings of the intake fish screen at Mystic Lake. The space between grates is 2 9/16 inches in width and the maximum water velocity at the intake is 2.5 ft/second. The question of whether entrainment is an important issue was discussed informally.

Areas of Expressed Concerns

The group agreed that future monitoring of fisheries and water quality (see below) is needed for Mystic Lake and the bypass reach.

Instream flow studies were conducted in 1979 which led to the existing minimum flow FERC license conditions. Limited data are available on response of the bypass fishery to those flows. The United States Forest Service and Montana Fish, Wildlife, and Parks (MFWP) expressed a concern that the instream flow in the bypass reach be justified based on some type of quantitative measure. In 2004, PPL Montana will set up a

sampling protocol for fish estimating fish populations in the bypass reach and establish a habitat assessment protocol as a first step toward evaluating instream flows.

Both Trout Unlimited (TU) and MFWP stated that the reach of West Rosebud Creek downstream of the project is their primary area of concern.

MFWP stated that they are not concerned about providing fish passage at the Re-reg Dam.

Trout Unlimited has concerns about whirling disease, although the disease is not known to be present in the West Rosebud Creek drainage at this time. PPL MT will conduct temperature monitoring in West Rosebud Creek below the re-regulation dam in 2004 to describe temperature regime. In addition, PPL MT will conduct benthic invertebrate sampling in portions of West Rosebud Creek, in 2004 to assess the presence or absence of the oligochaete worm *Tubifex tubifex* the obligate secondary host for *Myxobolus cerebralis* the causative agent of whirling disease. This information may help to address concerns regarding the potential for the introduction of whirling disease into the project area.

Discussion ensued on potential project impacts to the riparian zone. This is a potential concern shared by the wildlife resource group. USFS will obtain historic aerial photos to review whether there has been any decline in riparian conditions during the past 50 years. Because there are agricultural activities downstream of the project, it is possible that grazing could have affected riparian conditions. Historically, peaking operations were affecting bank erosion via movement of anchor ice. However PPL constructed the re-regulating dam in the 1980's which corrected this problem. The riparian zones around both Emerald Lake and Rosebud Lake and the downstream areas will be assessed in a reconnaissance study this spring. PPL MT expressed interest in working with local landowners to improve riparian habitat as a potential conservation measure if that seemed appropriate based on data collected in the future.

As a result of the above discussions, the group suggested consideration of the following data needs:

Mystic Lake

Possible 2004 Studies

- Continue with bathymetric mapping
- Rainbow trout population estimate
- Genetic sampling upstream of Mystic Lake (to identify possible physical barriers)

Long-term monitoring

- Fish abundance using one or a combination of techniques:
 - Sonar equipment, gill netting, and / or measured angling catch per unit effort (every few years)
- Recommended fish variables

- Average lengths/weights
- Diet analysis

Bypass Reach (Mystic Lake Dam downstream to Powerhouse)

Possible 2004/2005 Studies

- Habitat inventory
- Frequency and depth of pools
- Use staff gauge at certain sites with varying flows and document with pictures
- Electrofishing (Population estimates, general fish statistics)
- Over-winter survival (Elastomer tags)
- Benthic invertebrate diversity
 - Kick sampling by trail bridge
- Identify the costs that would be associated with additional flows in the bypass reach.

Long-term monitoring

- Fish abundance
- General fish statistics
 - Average lengths/weights
 - Diets

Downstream of Powerhouse

Possible 2004/2005 Studies

- Collaborate with MFWP's to conduct monitoring of fish populations in West Rosebud and Emerald Lake
- Conduct shoreline surveys for West Rosebud and Emerald lakes to calculate lake surface areas, volumes, and retention times.
- Survey West Rosebud Creek from the mouth upstream looking for potential barriers to fish passage. Conduct spawning surveys during spring and fall, above (to the powerhouse) and below (to the mouth) West Rosebud Lake.
- Correlate spawning survey data with riparian inventories
- Identify where public access is currently allowed and where it might be obtained

Long-term monitoring

- Monitor West Rosebud Lake, Emerald Lake, and West Rosebud Creek downstream of powerhouse in collaboration with MFWP.

Notes:

- It is unclear whether existing minimum flows are adequate for the bypass fishery. Agencies agreed that data are needed support the effectiveness of the status quo
- More genetics data on fish in Mystic Lake are not needed.
- MFWP expressed interest in having PPL Montana helping with future monitoring downstream of Powerhouse.

- Trout Unlimited was interested in evaluating the possibility for the unintentional introduction of whirling disease in to the project area and downstream into West Rosebud Creek.

Water Quality

Summary

Frank Pickett (PPL Montana) led the discussion on water quality. The goal of the discussion was to identify studies that the group felt should be conducted in the near future, as well as resource documentation that has occurred in the recent past and will continue in the near future. It was noted that possible formal studies might not be identified until the outcome of near-term studies have been completed. Long-term monitoring was not included in the discussion with the assumption that once short-term studies have been completed a better understanding of what the “issues” are will be available.

Possible 2004 Studies and Data Collection

- Water elevation (stage data) downstream of re-regulation dam (some PPL data exist and will be collated; also AWWA may have recreational use data that will also be collected)
- Monitor sedimentation below re-regulation dam
- Test for the presence of *Tubifex* worms at three locations below powerhouse (as secondary host of *Myxobolus cerebralis* (causative agent of whirling disease))
 - Backwater areas with sedimentation, using standard benthic macroinvertebrate sampling methods (Possibly in Emerald Lake as well)
- Determine if any geographic temperature gradient in West Rosebud Creek exists downstream of Powerhouse and characterize it
 - Optic stowaway thermographs in West Rosebud Creek (below re-regulation dam), West Rosebud Creek (above Fiddler Creek), West Rosebud Creek (above confluence of East Rosebud Creek), and East Rosebud Creek (above confluence of West Rosebud Creek)
 - One ambient air temperature thermograph
- Test for polychlorinated biphenyls (PCB's)
 - Test sediments in West Rosebud and Emerald Lakes

2003 & 2004 Resource Documentation

Mystic Lake

- Zooplankton sampling (density, species composition)
- Chlorophyll *a* (discrete depth analysis)
- Temperature and dissolved oxygen profiles
- Secchi depth
- Conductivity

- Bathymetric map
- Phytoplankton (species composition)
- Nutrient analysis (done a few years ago)

West Rosebud and Emerald Lakes:

- Zooplankton sampling (density, species composition)
- Chlorophyll *a*
- Conductivity
- Temperature and dissolved oxygen profiles
- Bathymetric map
- Cation - anion balance
- Bacteria

Notes:

- Frank Pickett will draft PPL's 2004 Water Quality Data Collection Plan
- It was noted that formal study plan requests would originate from the specific group or agency spearheading that issue using FERC's guidelines (PPL will provide a form).
- A revised copy of the Oil Spill Plan is currently available; Frank Pickett has copies.
- The Flow Restoration Plan (restoring water to West Rosebud Creek in the unlikely event that a break in the penstock occurs) was brought to discussion. PPL Montana is going to consult their engineers on this issue.
- It was decided that no additional RA Group meetings are needed prior to production of the PAD for fish or water quality. Telephone or a teleconference would be scheduled if any reason emerged during the PAD preparation
- PPL Montana will prepare a Limited 2004 Data Collection Plan and work with the agencies to accomplish unified goals.