Weber Hydroelectric Project Relicensing
Fisheries Working Group Meeting Notes
SWCA Offices, Salt Lake City, UT
March 7, 2016

Present at the Meeting
Eve Davies, PacifiCorp
Frank Shrier, PacifiCorp
Lindsey Kester, SWCA
Ben Gaddis, Gaddis Consulting
Jesse Waldrip, Kleinschmidt
Paul Thompson, Utah Division of Wildlife Resources
Paul Badame, Utah Division of Wildlife Resources
George Weekley, U.S. Fish and Wildlife Service
Paul Burnett, Trout Unlimited
Ernesto de la Hoz, RedFish
Fred Reimherr, Trout Unlimited
Stewart Edwards, PacifiCorp

Participating by Phone
Finlay Anderson, Kleinschmidt (left meeting approx. 9:40 am)
Claire McGrath, Federal Energy Regulatory Commission (left meeting approx. 9:30 am)

Meeting Purpose:

- To introduce the contractor team preparing the fish passage design to the Fisheries Working Group (FWG).
- To ensure the contractor team is up to speed on the project and the process.
- To establish design criteria for the fish passage design.

Action Items from the March 7, 2016 Meeting	
All	• Review study plan redlines being distributed later today. Approval/acceptance requested by March 25.

Decisions Made at This Meeting

None.

Meeting Opening

Gaddis opened the meeting with introductions and a review of the agenda. Jesse Waldrip of Kleinschmidt Associates was introduced as the contractor who will design the fish passage structure. Also present was subcontractor Ernesto de la Hoz of RedFish.

Project Updates – Davies

Davies said there will be an onsite review of the project in the afternoon and invited interested members of the FWG to attend.

Davies said study plans will be distributed later today with changes since last distribution in redline. All the study plans will be sent out for review; however, there have been no changes to Cultural, minor changes to Fisheries, and very minor changes to Terrestrial Threatened Endangered and Sensitive Species. In Recreation, the two appendices have changed. Water Resources is the only study plan with major changes. New hydrology information, which was taken from the Pre-Application Document (PAD), has been added to the beginning of study plan. There is also new hydrology information in Section 4. The new information is largely graphical and includes a new table and new figure. Davies said she thinks this new information is valuable, and was added at request of USFWS. Once study plans are sent out, they will need approval from everyone. Davies requested a response by March 25. The study plans will then be filed with FERC for 30-day public review.

Weekley asked about status of the sondes. Davies said the plant is now back online and has been for more than a week. She said monitoring was collapsed per Utah Division of Water Quality, that is, there is no below-plant monitoring when the plant is offline. The sonde is in place, and should now be accumulating data when the plant is online. Two water quality monitoring periods have already been completed. Water quality has been monitored per study plan so far.

A Google Earth image of the study area was displayed via overhead. Davies showed the project area and sampling locations. She noted some problems with the FERC project boundary, for example, it leaves out the recreation area and includes a hunk of freeway. She said PacifiCorp will be looking at it as part of the licensing process, but it is not of concern today. There were no questions from the FWG.

Process Update

Davies said study plans are largely unchanged since last summer. We are now proceeding with fisheries and water quality. There is also recreation work to do this summer. She said two work groups were set up during the study plan meeting held during scoping, one for recreation and one for fisheries. This year will largely be studies. McGrath asked how long studies will take. Davies said by the end of the calendar year we should have all the information needed. If additional work is needed next year, that may be fisheries. There will also be a January sample for water quality. Once the 30-day public comment period is up, technical reports can be completed for the two complete plans. The fisheries technical report should be complete in the first quarter of next year. Shrier clarified that if looking at entrainment, that study will go through next year. So for fisheries only, there will be a second year of studies with the technical report done by June. McGrath said she hopes not too many assumptions are made regarding fish movement. Shrier said studies are being done only when the plant is running, but we will try to cover that. He said he thinks the critical period is June for entrainment (post spawning). Weekley suggested going into July a bit. It was suggested that the camera be run this year, picking it up again when the plant comes online in February or March next year. Weekley said he thinks it's a good idea, since next year is a different water year. McGrath encouraged data collection beginning this year, plus

next year. Davies summarized the status of the studies: Next year all studies should be done, fisheries may extend to next year. Thompson clarified that larger size class fish have been dropped from the entrainment study– a change that should be tracked through the study plan. He said it was difficult to obtain fish this size and they probably could not make it through the trash racks anyway.

Fish Passage Project - Jesse Waldrip, Kleinschmidt Associates

A delivery and timeframe table was shown as an overhead (Attachment 1). Davies noted that a PacifiCorp operations staff member will be in attendance later in the meeting. She noted that a number of deliverables (memos) will have review dates. The May 4 meeting will begin discussion of alternatives. She noted that the FWG has some 30-day review periods on written material. Davies said she is trying to stick with an aggressive schedule and will push dates out if necessary but she hopes not. She asked if there were conflicts on any key dates. Some concerns were raised about the July 13 meeting date (Note: this meeting was moved to July 12, but later back to July 13). The May 4 meeting should take 6 to 8 hours. Shrier said that if the meetings were held in Ogden, the FWG could go out to the project area if needed. Thompson will confirm meeting space at his offices. Davies asked if there were problems with any of the dates reviews are due. None were noted. The July 13 meeting may take four hours, but Davies requested that participants block out the whole day. Davies said the group should be able to discuss entrainment by then as well. Calendar invitations will be sent for the meetings. Davies noted the September 9 due date for FWG comments on Kleinschmidt's Conceptual Design Report would be important to close things out.

Station Operation

Davies said that the project can run year round during high water years. With water agreements, the plant now runs more typically like a low water year and is more typically offline October through February or March. Shrier asked at what flow the plant runs. Davies said she believes it runs at about 50 cfs, but that should be double checked with operations staff. Thompson said flows were at 600 cfs this morning with the rain yesterday. Davies said the Weber-Davis Canal is immediately downstream, within the footprint of the tailrace. There are two diverters downstream that can take all the water and sometimes do. There are some senior rights downstream but there is no gage in the area.

Low Level Gate – Thompson noted that 20 or so Bonneville cutthroat trout are known to have passed the Weber plant, he believes during low water. He reported that the antenna at this location froze and broke. He said he knows fish aren't passing when the gates are down.

Operations That May Affect Design - Waldrip asked, above 120 cfs, when above plant capacity what happens? Davies said PacifiCorp cracks the radial gates at the bottom. Thompson said at extremely high flows (e.g., 5,000 cfs), the gates are raised.

Waldrip asked about the order of operations--what gates are raised when? Edwards asked why that matters. Waldrip said the river will always be at the same level. With a fish ladder, you would want to open the south gate first so it's not flooded. Edwards said that would have to be noted to Operations but he thinks there's no reason why not. Gaddis said that could be discussed when the operations staff

member arrives. Thompson asked if we needed to know at what flow both gates are open and how often we are at that level. Waldrip discussed the effect this could have on attraction flows – other flows could diminish the effectiveness of the ladder. Davies said PacifiCorp is doing a major intake modernization at the same time as fish passage, which could be good. Additional controls, etc. could be added, so it's good timing.

Waldrip asked how often operators come to the site. Davies said daily. She said gates can be moved partially automatically but operators usually do it manually with callout. Waldrip said he needs to know the level of fluctuation that must be dealt with. Davies said deadband is very narrow, within a foot all the time or less than that. Davies said if the plant trips, that throws it offline, and the gates swing open to keep the level the same.

Waldrip asked about minimum flow. Is the gate electronic or manual? Davies said manual. Waldrip asked how forecasting goes. Davies said PacifiCorp will get forecast flow for the year. This is set March 1 each year. On April 1 the forecast is available, April 15 irrigation begins. But there are checks throughout the year, she said, and adjustments are made based on flow conditions. PacifiCorp has a minimum flow requirement in their license. If we dip under, we must consult with agencies and report that consultation to the Federal Energy Regulatory Commission (FERC), something PacifiCorp makes best efforts to avoid. Operators typically run higher than the requirement to avoid incidents like this. Burnett said Weber flows can be broken down into three periods 1) delivery period; 2) October to March winter flows with low water, during which the plant has not operated in recent years; and 3) spring runoff- with big fluctuations.

The following questions were noted on the whiteboard and discussed with the PacifiCorp operator later in the meeting:

1. Order of operations of gates
   Only one at a time; north is mobile, south is set.

2. What cfs is in the river for both gates to be up?
   Big. >4000 cfs.

3. How often are operators there?
   Daily

4. How is the level of headpond monitored? – *Computer*
   1 for forebay/1 below rack.

5. Gate adjustments manual based on flow.
   Conditions – need to make sure to maintain minimum flow conditions. How often does operator make adjustment? When?
   50-100 cfs, at most once a day.

Weber System – Paul Thompson, UDWR

Thompson said the Weber River is an important system for UDWR. UDWR manages all fish species in the river. They are not trying to get rid of brown trout, but are trying to improve for Bonneville cutthroat trout (BCT).

Thompson said UDWR saw lots of large BCT in the system and funded a 2011 graduate project. All BCT were PIT-tagged--about 2,000 fish. Antennas were installed in the tributaries. BCT were using them. The antennas were moved around to check for blockage etc. Large numbers of fish were noted above and below the PacifiCorp facility and using the tributaries. Thompson said he believed we could really strengthen BCT populations with fish passage at the Weber facility. Waldrip asked about stocking. Thompson said brown trout are stocked in town, sterile rainbows are also stocked. A watershed map showing diversions on the system was shown via overhead. Thompson noted tributaries being used for spawning. He said the reach from Weber to Echo Dam is catch and release for BCT, to preserve fluvial fish. UDWR is currently monitoring bluehead sucker (BHS) from Echo to Weber. A graduate student project is ongoing to document spawning bars. They are also looking at what types of habitat features benefit BHS, but not brown trout. Thompson noted again that more than 20 BCT are known to have gone past the PacifiCorp structure, so they are still behaving as fluvial fish. There are populations in the Bear and Logan rivers that behave as fluvial fish (life history form), but very few fish like this remain, he said. UDWR wants to preserve them.

Gaddis said it sounds like most [fish biologists here] are on same page as to how things are working. He asked if there was any disagreement. None was noted. Burnett asked about timing. Thompson said BCT go into the tributaries in April to early June. Adult fish move late March through early April. A pulse of fish wanting to go past the dam would be March-April. There is not as much data on younger fish, he said. May – June BCT come into the mainstem Weber. By that time they can go where they want with the current. Burnett added a little more data. He said movement is done by summer. We don't know what they are doing in winter. Thompson said BHS spawn mid-May – June and overwinter down by Morgan but we don't have data on movements. Burnett said he operated a trap at a fish ladder--he showed the location on Google Earth. He said he checked it every other day to determine up and downstream movement.

De La Hoz reviewed the BHS data he summarized for the meeting (from the San Juan River). Shrier noted that the data were for Colorado River system blueheads and would need to be adjusted for the Weber. Thompson described BHS in the Weber and said there are morphological differences. He said they are being found in riffles in the Weber. But in summary, we need to design for appropriate velocities to navigate, we don't want them to stay in the fish ladder. Thompson encouraged the FWG to also work with the graduate student noted above.

Design Criteria

FWG members reviewed and discussed the criteria listed below (table provided by Waldrip). Note: three criteria have not yet been completed. A final table will be included in Kleinschmidt's upcoming design criteria memo.

WEBER HYDROELECTRIC PROJECT
UPSTREAM FISH PASSAGE

DESIGN CRITERIA

1.)	Target Species	Bonneville Cutthroat Trout Bluehead Sucker
	Life stage	Juvenile Bluehead (150 mm and larger) BCT – all life stages (150 mm and larger)
2.)	Fish Swim Speed (burst)	Bonneville Cutthroat Trout - 3-5 ft/sec Bluehead Sucker – 4 ft/sec or less preferable
3.)	Design Population	No population limitation
4.)	Station Hydraulic Capacity	320-360 cfs
5.)	Minimum Flow	34-50 cfs
6.)	Low Level Gate Hydraulic Capacity	TBD
7.)	Spillway Radial Gate Hydraulic Capacity	TBD
8.)	Period of Operation of Ladder	Up to Year Round? -Get more info on low level gate velocities -Operate ladder when pool is full
9.)	River Flow Operating Range	34-2000 cfs (verify upper limit based on below) for design purposes. Will operate as long as forebay is full Upper limit = max capacity south gate can take without opening north gate + powerhouse capacity North gate will spill a little to clear debris.
10.)	Headpond Operating Range	Typically 1-3 inches, up to 7 inches
11.)	Diversion Dam Tailwater Operating Range	
12.)	Entrance Location	North side of river immediately downstream of spillway. Reuse existing opening in retaining wall where min flow is currently discharged.
13.)	Minimum Water Depth at Fish Entrance	2.0 ft
14.)	Fish Entrance Gate	Stoplogs for dewatering fishway (not preferred), or Upward opening gate for dewatering fishway(less preferred), or Downward opening gate for adjusting attraction flow depth (preferred)
15.)	Fish Entrance Invert Related to Adjacent River Bottom	Entrance perched in water column

16.)		
17.)	Attraction Flow	USFWS: 3-5% of Gate Capacity or 50 cfs, whichever is greater NMFS: 5-10% of high design flow (5% exceed. flow on flow duration curve)
18.)	Supplemental Attraction Flow System	Most likely will need
19.)	Sampling Facility	Yes, temporary, removable trap
20.)	Viewing Window	Determine feasibility – space constraints
21.)	Type of Fishway	Denil (chute type) Fishway (1:10 slope) Pool & Weir Fishway (1:10 to 1:20 slope, pending flow & drop/pool) Natural Channel Fishway (1:20 slope)
22.)	Debris Handling	Look into feasibility – floating/skirted boom. Angled bar racks
23.)	Fishway Access	Yes
24.)	Grating Covering Fishway	Yes, serrated bar grating

Next Steps

- Site visit to the project area this afternoon.
- Next FWG meeting scheduled for May 4, 2016, UDWR Northern Regional Offices

Attachment 1

FISH PASSAGE PROJECT DELIVERABLES AND TIMEFRAMES

PROJECT DELIVERABLE	DELIVERY DATE
1. Meeting with FWG	March 7
2. Site Survey Topography (Kleinschmidt Submittal)	March 18
3. Hydroelectric Project Operations Memo (Kleinschmidt Submittal)	March 25
4. Draft Design Criteria Memo (Kleinschmidt Submittal)	April 1
5. Comments on Draft Design Criteria Memo (FWG Submittal)	April 29
6. Meeting with FWG	May 4
7. Final Design Criteria Memo (Kleinschmidt Submittal)	May 20
8. Fish Passage Alternatives Memo (Kleinschmidt Submittal)	June 3
9. Comments on Fish Passage Alternatives Memo (FWG Submittal)	July 1
10. Meeting with FWG	July 13
11. Draft Conceptual Design Report (Kleinschmidt Submittal)	August 12
12. Comments on Conceptual Design Report (FWG Submittal)	September 9
13. Final Conceptual Design Report (Kleinschmidt Submittal)	October 7