PACIFICORP ENERGY
A DIVISION OF PACIFICORP

Wallowa Falls Project Relicensing
January 15, 2014

Updated Study Report Meeting Summary

Start Time: 9:00 a.m.	**End Time**: 3:25 p.m.
Subject: To review the overall 2013 study methods, results, and recommendations and to discuss and clarify the enhancement measures proposed in the Preliminary Licensing Proposal	**Attendees**: See attendance list at the conclusion of this summary

The comments identified in the table below were submitted orally at the Updated Study Report (USR) Meeting on January 15, 2014.

Stakeholder Requests and PacifiCorp Responses - January 15, 2014
USFS: Requests PacifiCorp share location data (e.g. forms, gps points) with the Forest Service relating to noxious weed survey maps.
PacifiCorp Response: *PacifiCorp will use the Wallowa-Whitman National Forest forms to document noxious weeds and provide the forms along with any other additional data by the end of each calendar year.*
USFS: Contact Jerry Hustafa (USFS) to secure a list of local qualified contractors to assist in implementation of the noxious weed maintenance plan.
PacifiCorp Response: *Kendel Emmerson will contact Mr. Hustafa to get a list of local contractors with the intent of having a contract in place by the time a new license is issued.*
FERC: Requested that PacifiCorp include in its Final License Application (FLA) submittal, a discussion of why PacifiCorp may not be including all of the requested information concerning the tailrace reroute FERC asked for in their Preliminary License Proposal (PLP) comments.
PacifiCorp Response: *PacifiCorp will provide additional discussion in the FLA, but schedule and cost preclude developing the design further prior to submittal of the FLA.*
FERC: Requested PacifiCorp add a general discussion of possible wetland effects resulting from tailrace reroute construction to the Final License Application.
PacifiCorp Response: *Concur with the FERC and will include additional information on effects of the Proposed Project to wetlands in the FLA.*
USFS: Will evaluate the drainage situation at Trail Wetland #1 and provide PacifiCorp with recommendations regarding non-culvert options to improve drainage.

PacifiCorp Response: *PacifiCorp will review the options and propose a revised measure in the FLA to address trail drainage issues at Trail Wetland #1.*
FERC: Diane Rodman requested that PacifiCorp describe in the FLA why the proposed Project does not affect resources protected under the Migratory Bird Treaty Act of 1918 (MBTA).
PacifiCorp Response: *Concur with the FERC and will do so. The only potential impact to MBTA-protected resources the proposed Project would have is hazard tree removal and vegetation clearing. This would be conducted outside of the nesting season July 15-December 31, unless a tree is an eminent hazard to facilities or public safety*
FERC: Requested PacifiCorp expand discussion of Instream Flow Study results in the FLA
PacifiCorp Response: *Concur with the FERC and will do so.*

Meeting Minutes

Introduction

Following introductions, Russ Howison (PacifiCorp) reviewed the near term Relicensing Schedule presented below:

Party	Milestone	Date
PacifiCorp	File Initial Study Report (ISR)	January 3, 2013
All stakeholders	Initial Study Report Meeting	By January 17, 2013
PacifiCorp	File ISR Meeting Summary	By February 2, 2013
All Stakeholders	Disputes/Requests to Amend Study Plan Due to FERC	March 3, 2013
All Stakeholders	Responses to Requests Due to FERC	April 3, 2013
FERC	Director's Determination	May 3, 2013
PacifiCorp	Second Study Season (as needed)	Spring Summer 2013
PacifiCorp	Final Technical Report (assumes 1 study season)	June 2013
PacifiCorp	File Preliminary Licensing Proposal	October 1, 2013

Party	Milestone	Date
All stakeholders	Preliminary Licensing Proposal Comments Due	December 30, 2013
PacifiCorp	File Updated Study Report (USR)	January 3, 2014
All stakeholders	Updated Study Report Meeting	By January 17, 2014
PacifiCorp	File USR Meeting Summary	February 2, 2014
PacifiCorp	File Final License Application	February 28, 2014
PacifiCorp	Issue Public Notice of App. Filing	March 14, 2014
Party	**Post Filing Milestone**	**Date**
FERC	Issue Public Tendering Notice	March 14, 2014
FERC	Director's Determination on Any Additional Study Requests	March 30, 2014
FERC	Issue Ready for EA Notice	April 29,2014
Agencies	Terms, Condit's, Recomm's Due	June 28, 2014
FERC	Issue License Order	March 25, 2015

Matt Cutlip (FERC – Portland) communicated that if additional studies are requested after this meeting, PacifiCorp still must file its Final License Application (FLA) by the required date (February 28, 2014) without the additional requested studies being completed. If requests to amend or revise certain study plans are filed with FERC, a separate process for considering the request will take place post license application filing.

Cutlip also noted any request to modify an ongoing FERC-approved study must meet the criteria identified in 18 CFR §5.15(d). Any proposal for new information gathering or studies must meet the criteria identified in 18 CFR Section §5.15(e).

Both the USRs and a copy of the USR Meeting presentations given by the resource leads at the meeting can be found at:

USR:
http://www.pacificorp.com/es/hydro/hl/wf.html
- Updated Study Reports

Presentation:
http://www.pacificorp.com/es/hydro/hl/wf.html
- Relicensing Documents

Meeting Summary:
http://www.pacificorp.com/es/hydro/hl/wf.html#
- Consultation Summary

Geology and Soils – Russ Howison (PacifiCorp)
Howison reviewed the study objectives to include characterizing existing geology, evaluating long-term surficial erosion potential in the Project area, identifying potential slope instability issues and geologic hazards that could pose a risk to both the Project facilities and the surrounding drainages, and recommending remediation measures as necessary.

The study area includes the lands adjacent to the proposed Project boundary including the forebay, access road, penstock, and tailrace.

Howison reviewed the methods used to include a desktop analysis of existing maps and publications to develop knowledge concerning project operations and history, local geology, and known geologic hazards, conducting field reconnaissance to identify: geologic hazards, slope stability concerns (cuts and fills), and erosion potential, assessing the risk from geologic hazards, slope stability issue and erosion, and developing conceptual options and cost estimates for remedial assessment.

The field work conducted to date and the study status includes:

- The desktop analysis was completed in August, 2012.
- A three-day walking field reconnaissance was conducted on September 17-19, 2012 by an engineering geologist and a geotechnical engineer. Work included assessment of: geomorphology, surficial geology, potential geologic hazards, slope stability and erosion concerns within the study area. Areas observed include the slopes adjacent to the forebay, access road, penstock, bypassed reach and tail race.
- A subsequent site visit was performed on June 11 and 12, 2013 to evaluate a failing slope condition within the inboard shoulder of the penstock access road at Station 11+50
- A risk and needs assessment was performed.

No variances to the study plan occurred.

Howison also reviewed the northern portion of the Project (tailrace, powerhouse, and lower penstock section) which consists of glacial deposits and alluvium; characterized by thicker overburden materials and granular soils. The southern portion of project (middle and upper penstock sections and forebay) consists of volcanic and metavolcanic rocks (principally pyroclastics and andesite); characterized by relatively thin soils and talus deposits.

The results of the geologic hazard evaluation include the following:

- Project area has no history of large translational landslides and no signs of ancient landslide terrain or global instability were observed during the site reconnaissance.
- No historically active deep-seated slumps or rotational slides were observed.
- History of debris flows in the drainages of the E. and W. Fork of the Wallowa River.
- A significant debris flow slide occurred in 2006 on the west slope across the East Fork Wallowa River. The debris flow slide occurred on the opposite side of the river from the penstock, and the event deposited a significant amount of debris and sediment that temporarily dammed the river.
- Based on the steeper slopes and thinner soil and vegetation cover, the western slopes above the East Fork Wallowa River appear more susceptible to debris flows than the

eastern slopes; therefore, the penstock and access road are less vulnerable to this type of slide event.

Slope stability (cuts and fills) and erosion concerns were discussed and include the following:

- Localized areas of minor sloughing associated with cut and side cast construction techniques along the access road were observed during the site reconnaissance.
- These areas do not pose an immediate risk to the penstock; however, they will likely continue to be an access road maintenance issue.
- A shallow failure area (~30 ft. across) was observed within outboard shoulder of the penstock road at Sta. 11+50. The penstock is buried within the road, adjacent to the headscarp of the failure. (see image below)
- Concern that failing slope could retrogress further into embankment and undermine the penstock.
- A 65-foot long mechanically stabilized earth (MSE) wall has been designed to improve the stability of the access road and support the penstock along the failing slope section. Construction of MSE wall is scheduled for the spring of 2014.

Shallow Failure Area (~Station 11+50)

Howison informed the attendees that the only penstock failure and subsequent uncontrolled discharge of water due to natural hazards was the result of a tree fall event and there are ongoing hazard tree concerns (near trestle locations and the Royal Purple Creek diversion flowline).

No additional licensing-related studies are proposed and under the current license, PacifiCorp will monitor the failing (sloughing) slope section along the access road at Station 11+50 until mitigation measures can be implemented this spring. The objective of the monitoring program is to provide forward notice of increased slope movement, which could undermine the buried penstock, leaving it unsupported within the road grade.

Proposed measures include:

- As part of the proposed Vegetation Management Plan, assess and remove any trees along the penstock alignment and the Royal Purple Creek diversion flowline that present a hazard.
- Under the FERC Dam Safety and Surveillance Monitoring Plan, routinely monitor the access road and cut and fill slopes along the penstock alignment paying particular attention to the Royal Purple Creek drainage area and the segment between the dam and where the penstock is located on the west side (down slope) of the access road (approximate Stations 0+00 to 17+50).

General discussion took place regarding the 65-foot long mechanically-stabilized-earth wall planned for construction this spring. Field reconnaissance suggests the construction will have no effects to bull trout or bull trout critical habitat. The potential for the project to result in stream turbidity is low. Construction is planned for 2014, prior to new-license issuance. Briana Weatherly (PacifiCorp) communicated that PacifiCorp is able to install the wall without working below the ordinary high water mark of the East Fork Wallowa River. A berm will be constructed to protect against material/sediment/debris going into the river.

Dan Gonzalez stated that after visiting the site, the Forest Service was comfortable with the planned action.

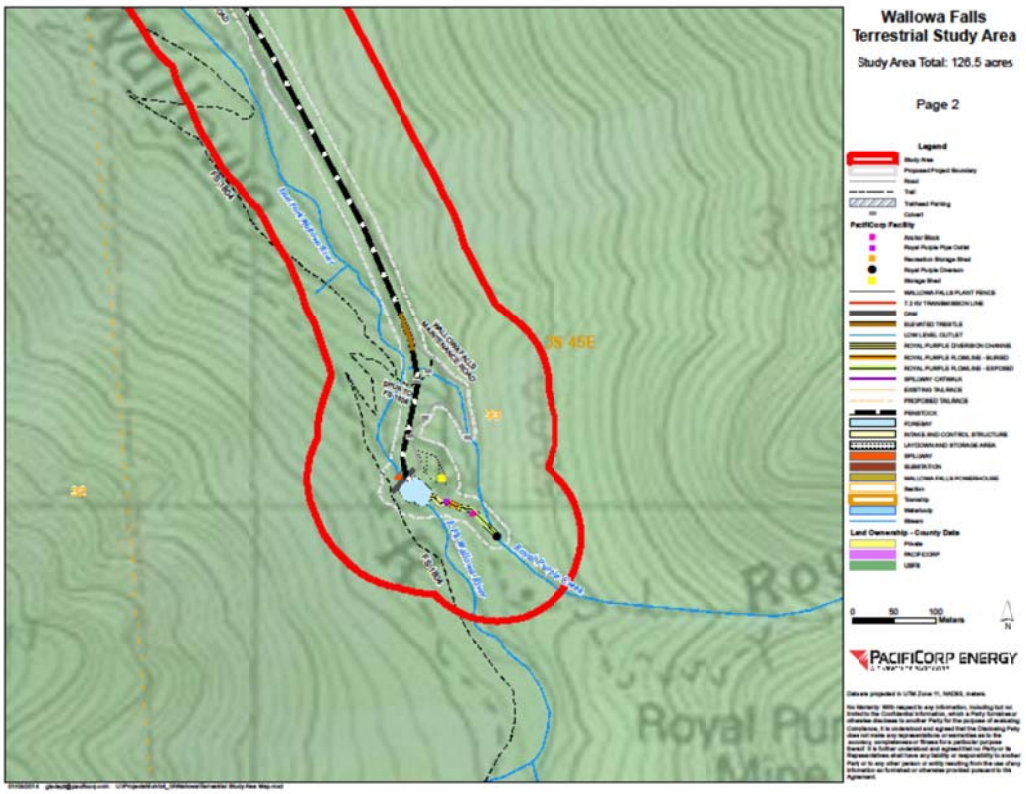
Terrestrial Resources, Special Status Plant Study – Kendel Emmerson (PacifiCorp)

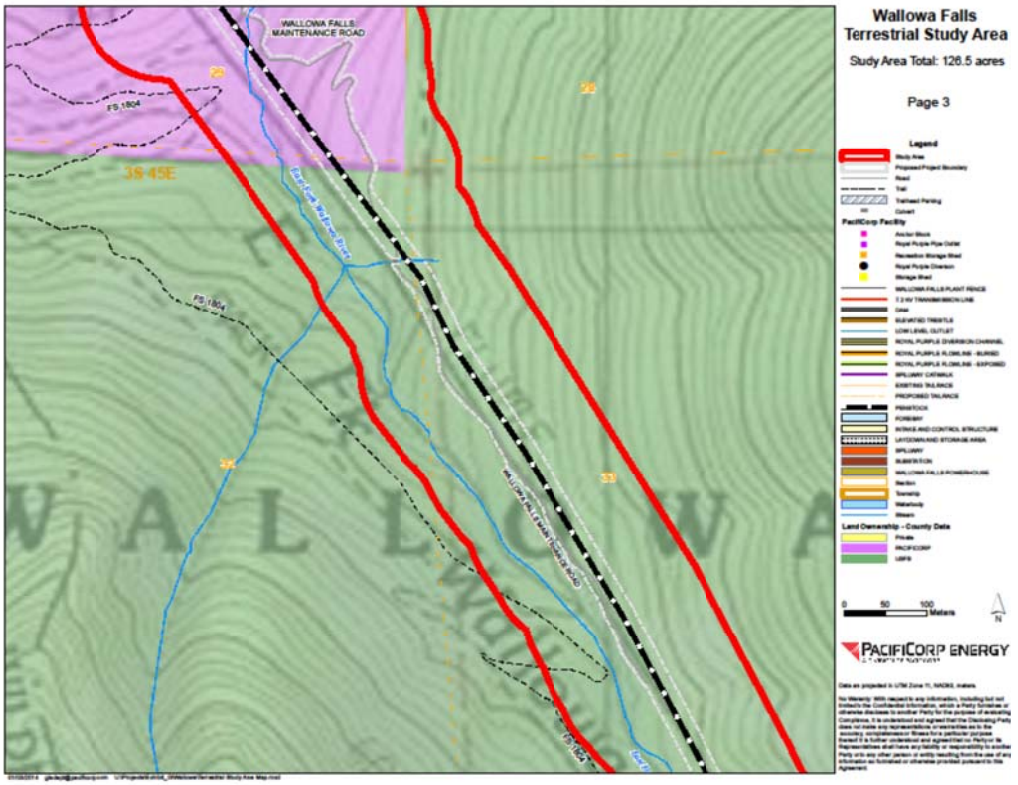
Emmerson reviewed the objectives to include identifying and mapping occurrences of special status plants within the Study Area. Special status plants include any plants that are on the following lists:

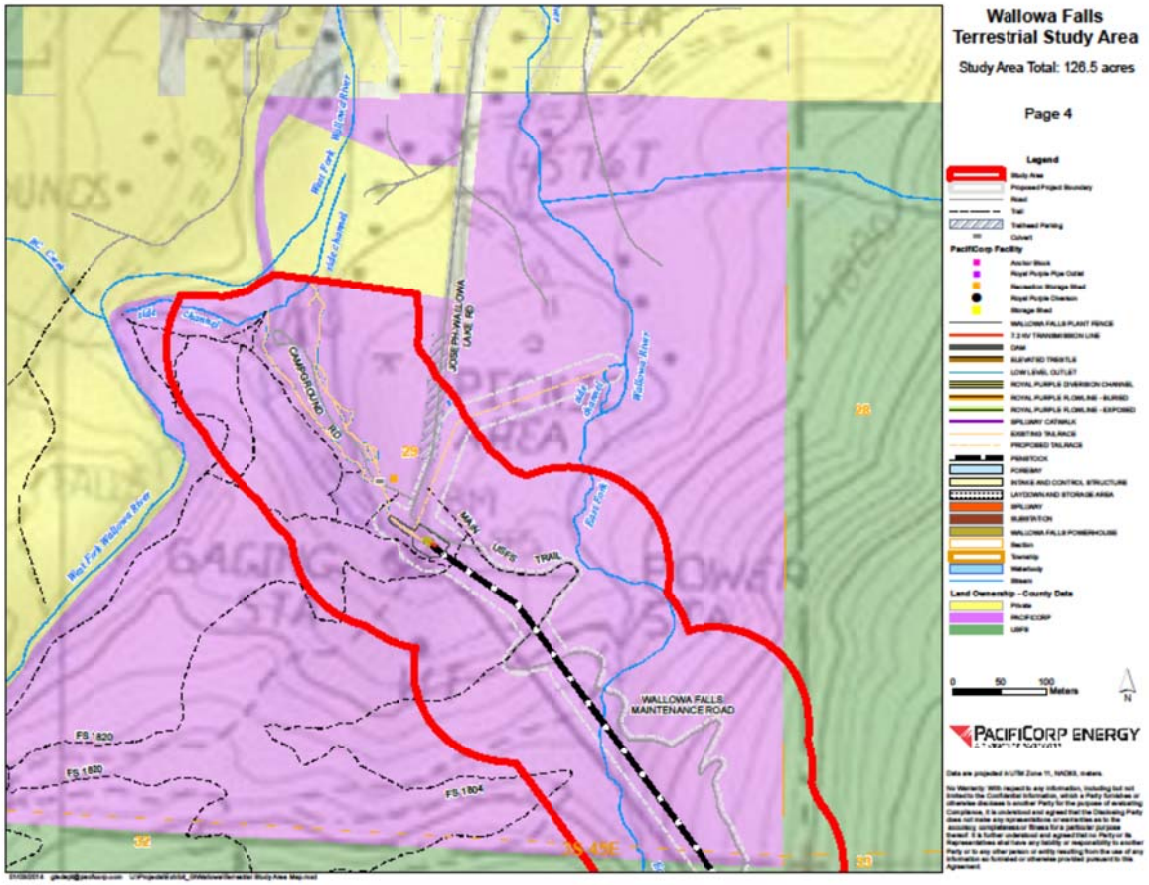
- United States Fish and Wildlife Service (USFWS) status that is Federally Listed Endangered, Threatened, Proposed, Candidate, and Species of Concern
- Oregon Department of Agriculture status that is Listed Endangered, Listed Threatened, Proposed Endangered, Proposed Threatened, and Candidate
- Oregon Biodiversity Information Center (ORBIC) List 1 or 2
- Regional Forester's Special Status Species Lists for Sensitive Non-Vascular and Vascular plants on the Wallowa-Whitman National Forest
- Wallowa-Whitman National Forest Strategic Plant Species List

The study area includes lands owned by PacifiCorp or USFS that are within 100-meters of a PacifiCorp facility.

Emmerson provided the following three maps for review:







The study methods included a pre-field review to update current special status plant lists and evaluate any existing data, conducting of field surveys using an intuitive-controlled methodology as described in Whiteaker et al. 1998 and surveying the results documented using USFS forms

The study status is as follows:

- Pre-field review was completed May 30, 2012.
- Field surveys were completed June 13 and July 31, 2012.
- Documentation completed Updated Study Report December 2013.

No variances from the study plan occurred, no special status plant species were observed, field data collected is sufficient to meet study objectives and the Project operations and routine maintenance should have no effect on special status plant species.

No additional special status plant studies are proposed prior to the issuance of a new license. A post license special status plant survey would occur in the proposed tailrace reroute construction footprint prior to construction.

Diana Rodman (FERC) asked if PacifiCorp is prepared to change the re-route alignment if a special status plant was discovered. PacifiCorp responded that there is no possible alternate alignment and other mitigation measures may be required if a special status plant were found.

Cutlip suggested PacifiCorp include justification in its FLA as to why a special status plant survey is not needed at this time in the reroute construction footprint.

Noxious Weed Study - Kendel Emmerson (PacifiCorp)
Emmerson reviewed the noxious weed study objectives to include identifying and mapping noxious weed populations on lands and aquatic areas within the Study Area.

The study area includes all lands owned by PacifiCorp or USFS that are within 100-meters of a PacifiCorp facility.

The study methods included updating current state and county noxious weed lists, evaluating existing data on noxious weed locations within the Study Area, producing a map of high, medium, and low potential noxious weed areas within the Study Area, conducting field surveys simultaneously with special status plant surveys using the same intuitive-controlled methodology and developing a map of existing noxious weed locations and document results.

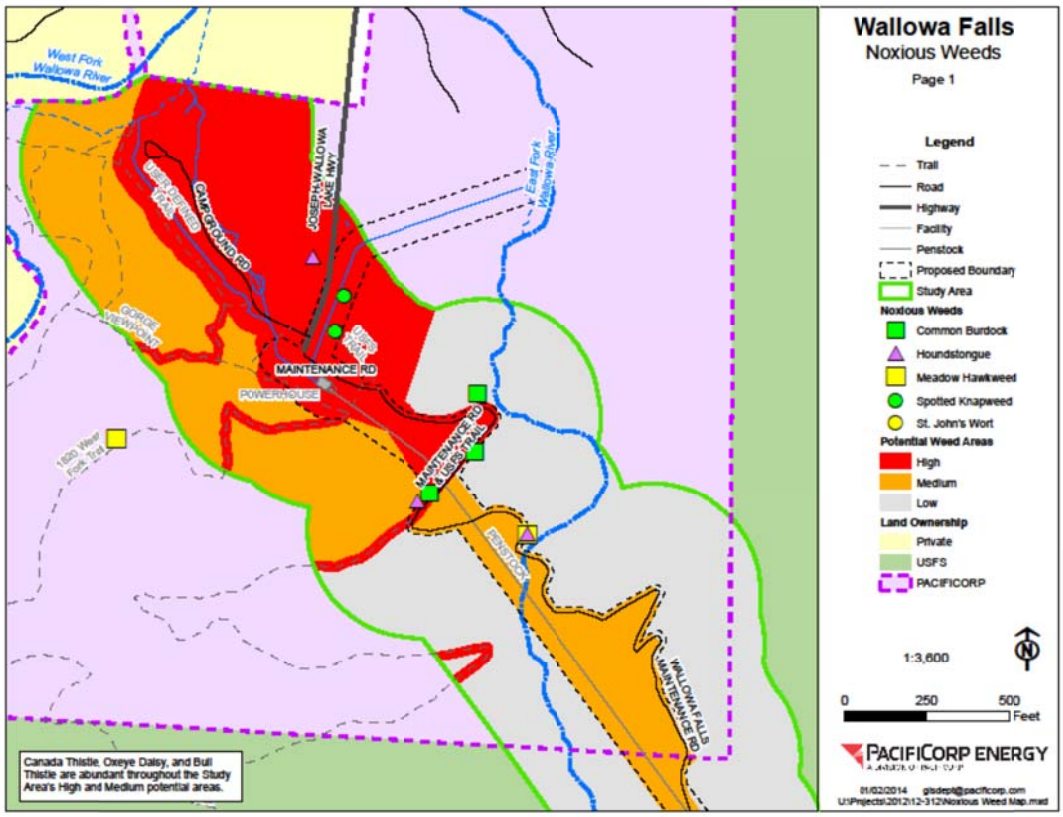
The study status is as follows:

- Pre-field review was completed May 30, 2012.
- Field surveys were completed June 13 and July 31, 2012.
- Maps and documentation were completed and are in the Updated Study Report December 2013.

No variances from the study plan occurred. Noxious weeds were located within the Study area.

The field data collected is sufficient to meet study objectives.

Emmerson provided maps that illustrate potential weed areas (high = red, medium = orange and gray = low) and documented the results (see maps below).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Houndstongue
Meadow Hawkweed
Spotted Knapweed
St. John's Wort
Potential Weed Areas
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Medium
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Land Ownership
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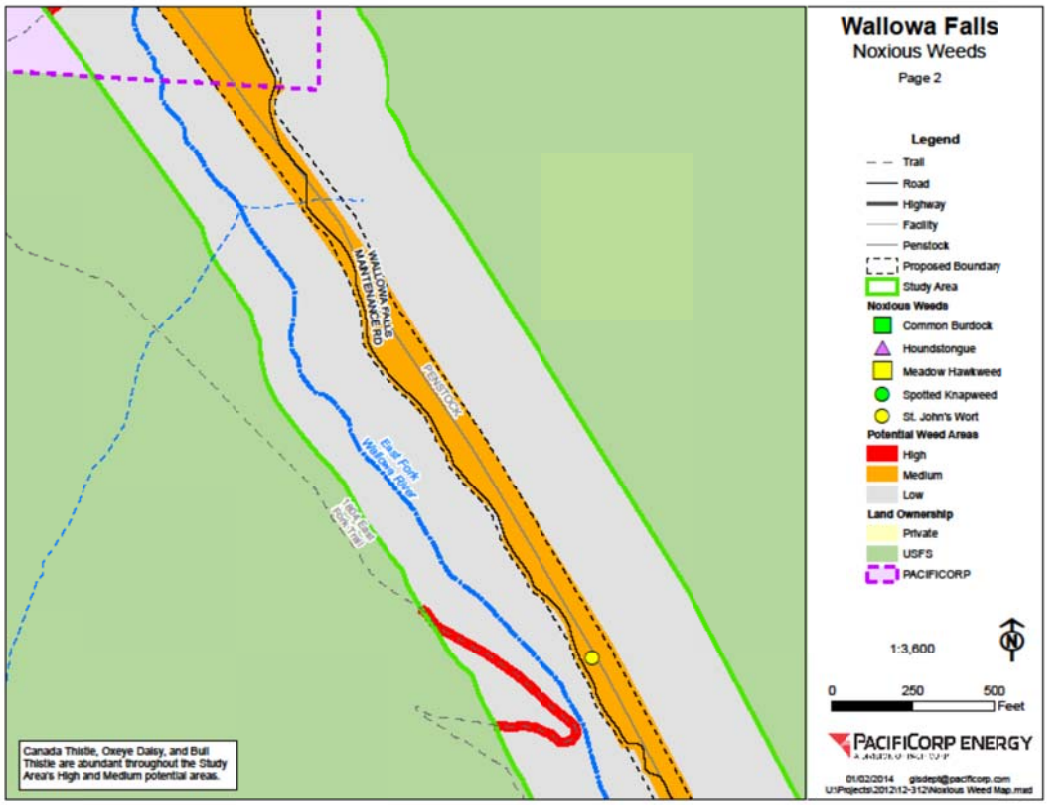
West Fork Wallowa River
East Fork Wallowa River
JOSEPH-WALLOWA LAKE HWY
CAMPGROUND RD
GORGE VIEWPOINT
MAINTENANCE RD
POWERHOUSE
PENSTOCK
WALLOWA FALLS MAINTENANCE RD
Canada Thistle, Oxeye Daisy, and Bull Thistle are abundant throughout the Study Area's High and Medium potential areas.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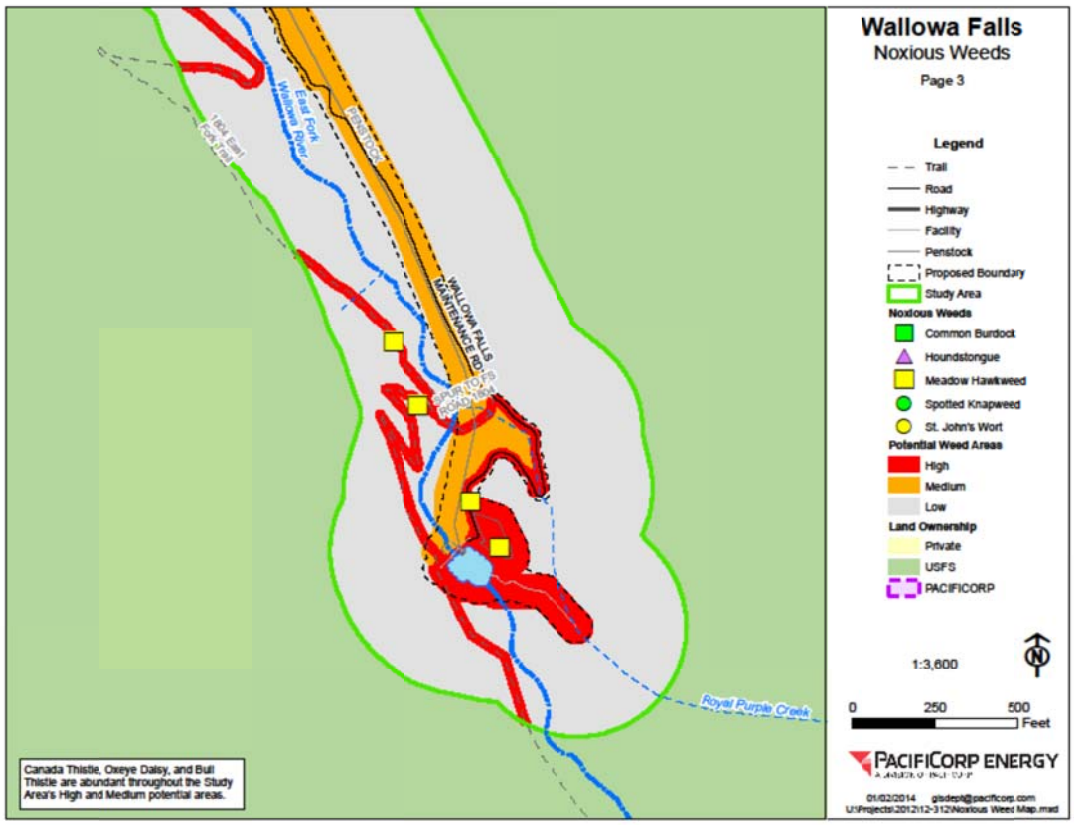


No additional Noxious Weed Studies are proposed prior to the issuance of a new license. Post license issuance, PacifiCorp proposes to implement a Noxious Weed Management Plan to monitor and control noxious weeds on both USFS and PacifiCorp owned lands within the Project boundary .

PacifiCorp was requested to share location data (e.g. gps points) of noxious weeds with the Forest Service. Emmerson will contact Jerry Hustafa (USFS) to secure a list of local contractors relating to noxious weed maintenance treatments.

Riparian and Wetland Study – Kendel Emmerson (PacifiCorp)
Emmerson stated that the riparian and wetland study objectives included identifying and mapping the estimated boundary of wetlands and ordinary high water mark for rivers and streams within the study area, describing the existing riparian and wetland habitat location, extent, and conditions, assessing the Project's operational effects on the riparian and wetland function in the study area and identifying any potential management measures or opportunities to protect and improve wetland or riparian habitat conditions..

The study area includes all lands and aquatic areas that are owned by PacifiCorp or USFS that are within 100-meters of a Project facility.

The methods used include a pre-field review of information (topography, existing GIS datasets), field surveys for wetlands and riparian areas were conducted simultaneously, riparian and wetland perimeters were determined by the obvious signs of hydrology, vegetation, and soil

indicators, maps and study documentation was completed and is available in the Updated Study Report, December 2013.

Field surveys were completed between July 3-5, 2012. Most of the East Fork Wallowa River banks within the Study Area are inaccessible, so points were collected where accessible and then corrected, as needed, on aerial imagery. A few small wetlands and tributaries were located and mapped.

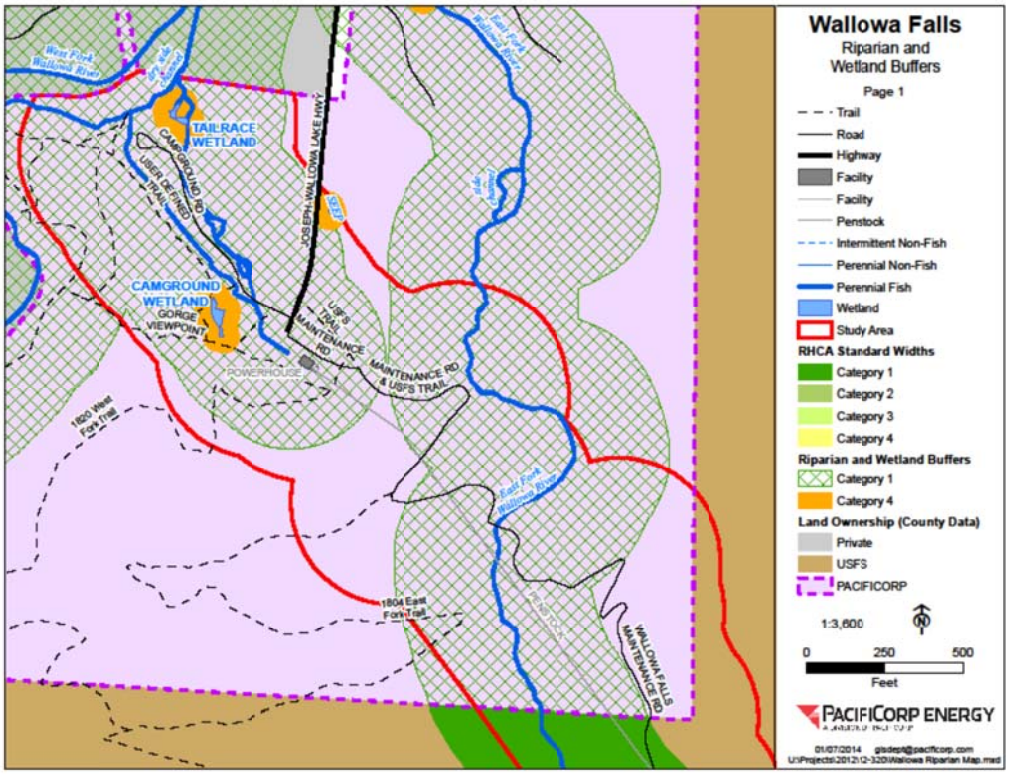
The field data collected is sufficient to meet study objectives. No additional riparian and wetland studies are proposed prior to the issuance of a new license. Post license issuance, PacifiCorp proposes to conduct a wetland delineation and ordinary high water mark determination within the tailrace reroute construction footprint in the summer prior to construction. Any effects to wetlands from the construction of the tailrace reroute will be subject to additional permitting requirements under Section 404 of the Clean Water Act.

There was general discussion regarding the FERC comment on the PLP requesting PacifiCorp provide the results of additional wetland and riparian studies for the area affected by the construction of the proposed tailrace reroute. Weatherly stated that PacifiCorp has developed a conceptual-30% design at this point and was reluctant to invest in a more detailed design prior to the company accepting a new FERC license requiring the facility to be built. Cutlip requested that PacifiCorp include in its FLA submittal a discussion of why PacifiCorp may not be including all of the information FERC requested regarding this issue in the PLP comments. PacifiCorp will more clearly address this issue in the FLA.

Rodman asked if PacifiCorp has identified mitigation appropriate for effects on wetlands. Emmerson said there are two wetland areas in the campground that would be affected by the tailrace reroute and will likely lose their only source of hydrology. There is a lack of suitable mitigation locations in the immediate area, upstream of Wallowa Lake. PacifiCorp will delineate the wetlands and ordinary high water mark prior to constructing the project and will seek the appropriate wetland permits form the Army Corps of Engineers and Oregon Department of State Lands. Mitigation measures will be determined through these permitting processes and PacifiCorp will explore areas in the Wallowa Valley for mitigation opportunities. Rodman requested PacifiCorp add a rough calculation of known wetland effects to the Final License Application so the FERC can include it in their analysis.

Emmerson raised concerns with the Forest Service proposed culvert at Trail Wetland #1 to reduce trail erosion, standing water, and mud. She explained that a culvert may not work at this location because the Trail Wetland is a “weeping wall” type spring that extends for several feet above and below the trail, so channelizing the water into a culvert would be very difficult. The Forest Service will evaluate the situation and provide PacifiCorp with recommendations regarding non-culvert options.

Emmerson provide three maps for review and comment illustrating riparian and wetland buffers in the Project area.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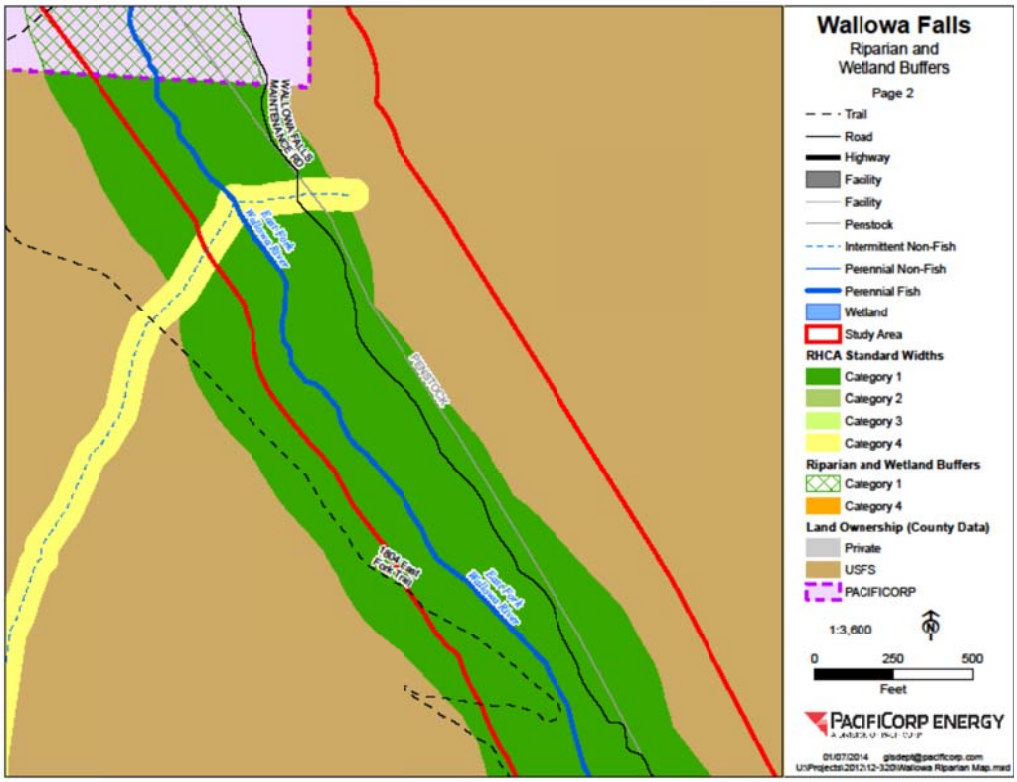
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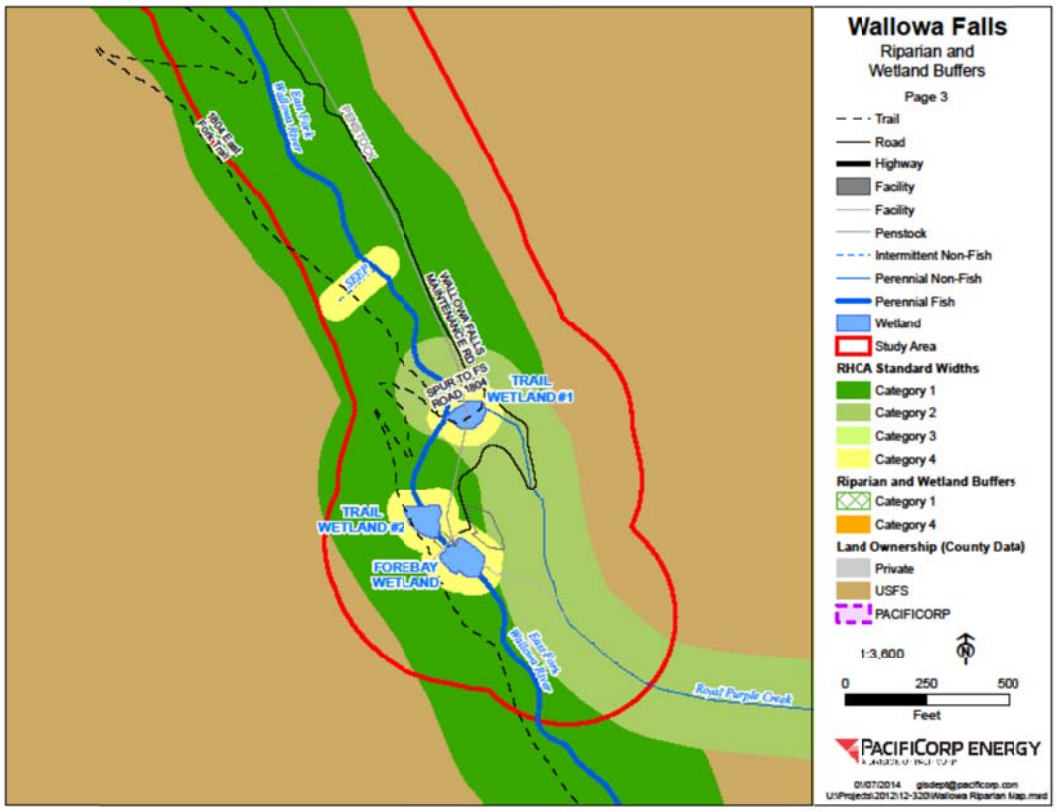
East Fork Wallowa River
1804 East Fork Trail



<Break 10:00am>
<Reconvene 10:10am>

Vegetation Cover Study – Kendel Emmerson (PacifiCorp)
Emmerson informed the attendees that Project operations will require some vegetation removal. For example, the FERC dam safety inspections frequently require that vegetation be removed from dams and other facilities so they can be properly assessed.

The study objectives include identifying and classifying vegetation cover types within the Study Area.

The study area includes all lands owned by PacifiCorp or USFS that are within 100-meters of a Project facility.

The methods used included producing a map that delineates the distinct plant communities into vegetation cover type polygons using aerial imagery, topography, streams, roads, and existing GIS datasets and conducting field surveys to ground-truth and correct the vegetation cover type boundaries and to determine the appropriate plant association group (PAG) for each polygon.

Field surveys were completed between June 12-14 and July 3-5, 2012.

The variance to the plan included several areas that were inaccessible and had to be assessed from vantage points, no PAGs accurately describe talus slopes. Three PAGs were created to

capture this information: Talus (TALU), Talus-shrub (TALU-SHRU), and Talus/Aspen (TALU-POTR).

No additional vegetation cover studies are proposed and the final results and recommendations are presented in the December 2013 Updated Study Report.

Emmerson provided a table (see below) illustrating plant association group types and acres within the Study Area.

PAG Name	PAG Code	Number of Acres within the Study Area	Total Percent of the of Study Area
Black Cottonwood/Pacific willow	POTR2/SALA2	1.35	1.07
Developed	DEV	1.58	1.25
Grand Fir/ Queen's Cup	ABGR/CLUN	1.75	1.38
Grand Fir/Twinflower	ABGR/LIBO2	15.24	12.05
Grand Fir/Big Huckleberry	ABGR/VAME	59.73	47.22
Palustrine Emergent	PEM	0.11	0.09
Palustrine Scrub Shrub	PSS	0.34	0.27
Palustrine Unconsolidated Bottom	PUB	0.28	0.22
Ponderosa Pine/Common Snowberry	PIPO/SYAL	1.03	0.81
Rock Outcrop	RO	1.55	1.23
Subalpine Fir/Big Huckleberry	ABLA2/VAME	18.24	14.42
Talus	TALU	9.78	7.73
Talus/Aspen	TALU/POTR	7.74	6.12

Talus/Shrubland	TALU/SHRU	7.78	6.15
	Total	126.50	

Major vegetation cover types included grand fir and subalpine fir series, talus slopes, and rock outcrops.

PacifiCorp proposes to conduct regular vegetation management inspections to identify potential hazard trees and other vegetation issues. Routine observation and assessment of hazard trees over time will promote a more accurate identification of true hazards. Tree falling and vegetation removal will be scheduled outside active nesting periods, unless it presents an eminent threat.

Wildlife Study – Kendel Emmerson (PacifiCorp)
Emmerson reviewed the wildlife study objectives to include documenting baseline information on the occurrence, distribution, and relative abundance of terrestrial species with special emphasis on the following species:

- USFWS status that is Listed Endangered, Listed Threatened, Proposed Endangered, Proposed Threatened, Candidate, Species of Concern, and Partial Status
- Oregon Department of Fish and Wildlife List of Threatened, Endangered and Sensitive Species ORBIC List 1 or 2
- Regional Forester's Special Status Species Lists for Sensitive Vertebrates and Federally Threatened, Endangered, and Proposed (TE&P)
- Management Indicator Species for the Wallowa Whitman National Forest

The Study Area includes all lands and aquatic areas that are owned by PacifiCorp or USFS and are within 100-meters of a Project facility.

The methods used included updating the current special status wildlife species lists, evaluating any existing data, conducting field surveys to document wildlife observations and conducting dip net surveys to document amphibian use in the Study Area.

Field Work Conducted to Date and Study Status includes field surveys that were completed during May 15-16, 2012 and August 21-22, 2012 and anecdotally while conducting other field studies.

Rodman requested that PacifiCorp describe in the FLA why the proposed Project does not affect resources protected under the Migratory Bird Treaty Act of 1918. Emmerson responded that the only potential impact to MBTA-protected resources the proposed Project would have is hazard tree removal and vegetation clearing. This would be conducted outside of the nesting season (July 15-December 31) unless a tree is an eminent hazard to facilities or public safety.

No variances from the study plan occurred.

- Surveys confirmed the presence of the known sensitive species and determined the presence of the Rocky Mountain tailed frog (*Ascaphus montanus*) in the waters upstream of the fore bay.

- The two State Sensitive Vulnerable avian species were detected within the Study Area; Olive-sided flycatcher and pileated woodpecker are not likely to be affected by project operations.
- No known potential project effects on bald eagles.
- The field data collected is sufficient to meet study objectives.

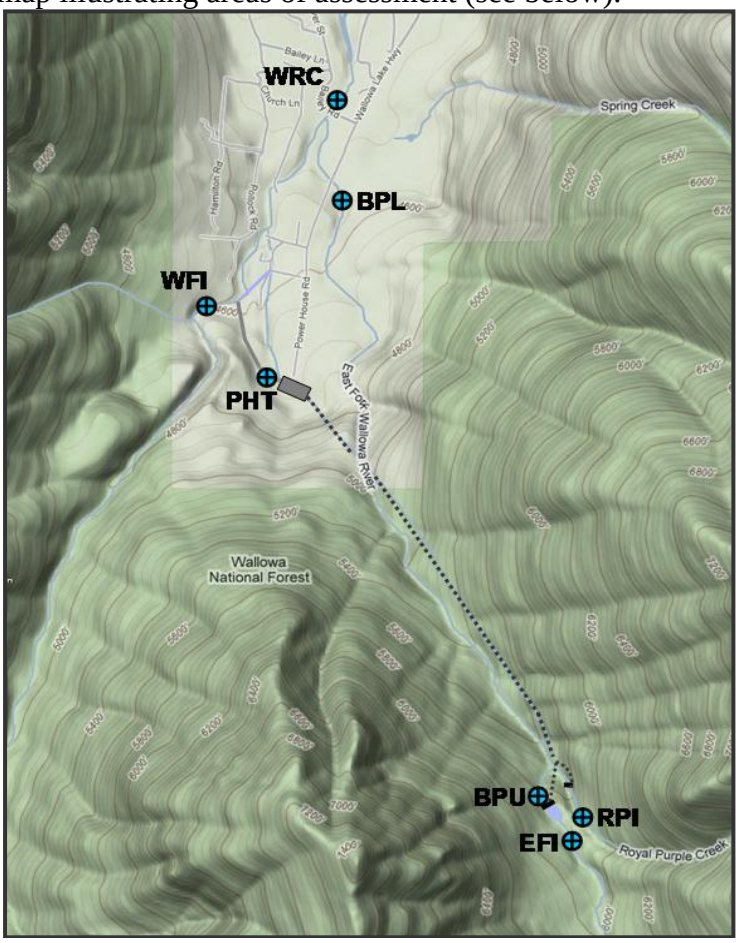
FERC, USFWS, USFS, and ODFW requested a more thorough analysis of bald eagle be included in the License Application and that PacifiCorp use the USFWS bald eagle guidelines to describe why the project would have no effect on eagles.

No additional wildlife studies are proposed and the final results and recommendations are presented in the December 2013 Updated Study Report.

Water Resources – Ken Carlson (CH2M Hill)
Carlson identified the objectives to include characterizing and assessing hydrology in the Project area and monitoring and evaluating key water quality parameters in the Project area.

The Study parameters include flow, water temperature, dissolved oxygen (DO), total dissolved gas (TDG), and turbidity. Other parameters are not a concern in this pristine watershed and have no specific nexus to Project operations.

Carlson provided a map illustrating areas of assessment (see below).



There was no routine forebay flushing in 2013, therefore, no turbidity sampling. All study activities related to forebay drawdown were addressed in the Sediment & Substrate Characterization.

The additional work performed since the Initial Study Report was issued includes the following:

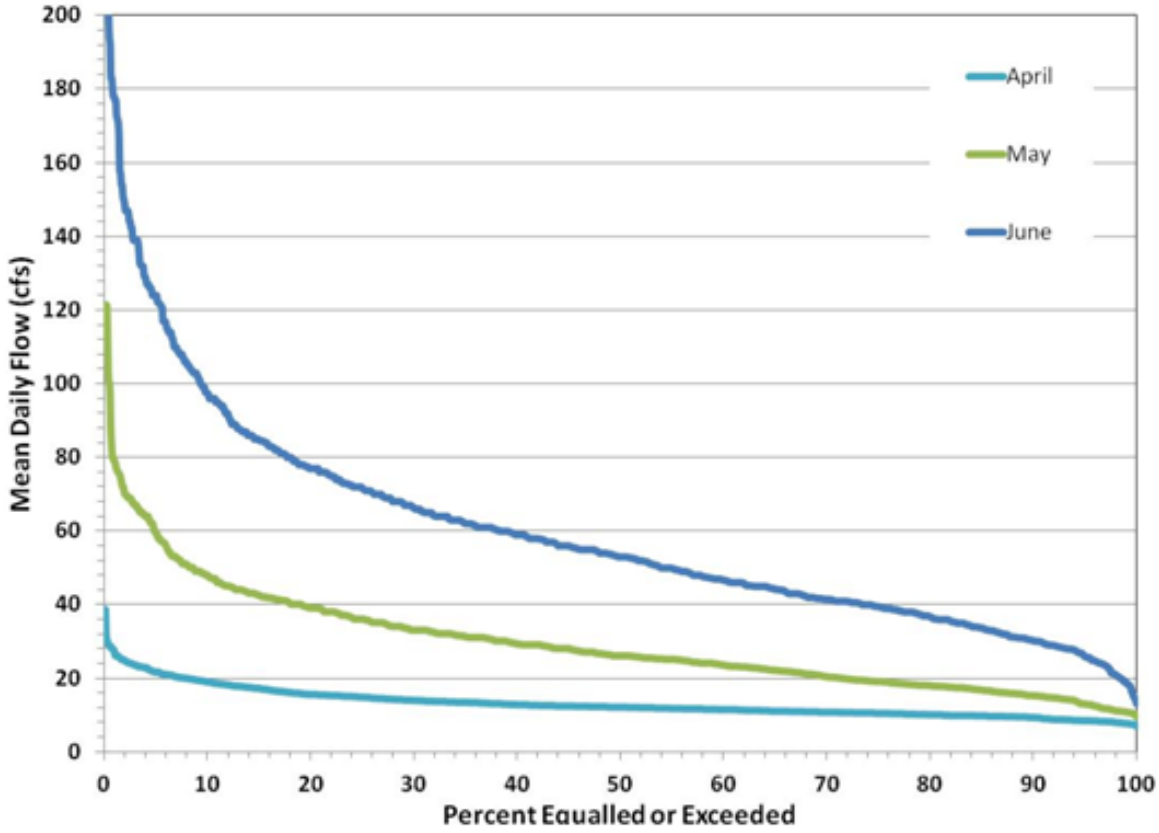
- Continued flow and water temperature data collection in 2013
- Assessment of Project-related effects on water resources
- Assessment of compliance with State water quality standards
- Updated Study Report (Final Technical Report) – Public Draft

Additional water year flow data collected in WY 2013 indicate:

- Average annual flows near historic normal levels (same in 2012)
- Average monthly inflows to the Project:
  - Wet: October through February; September
  - Normal: other months.
- Rain-on-snow events recorded at site BPL (bypassed lower) site not as evident during WY 2013

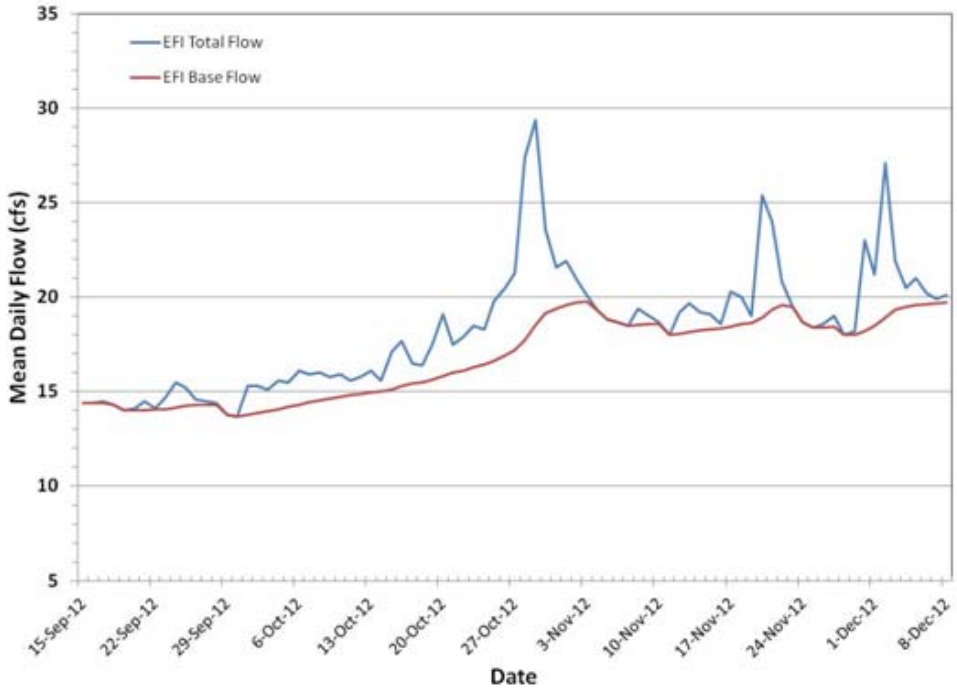
The additional flow data analysis in 2013 determined that the 44-year flow records from historic USGS gages in the East Fork are representative of current hydrologic conditions. The 44-year flow record was used to develop daily flow duration curves by month and the hydrograph separation analysis was used to estimate baseflow contributions to the East Fork

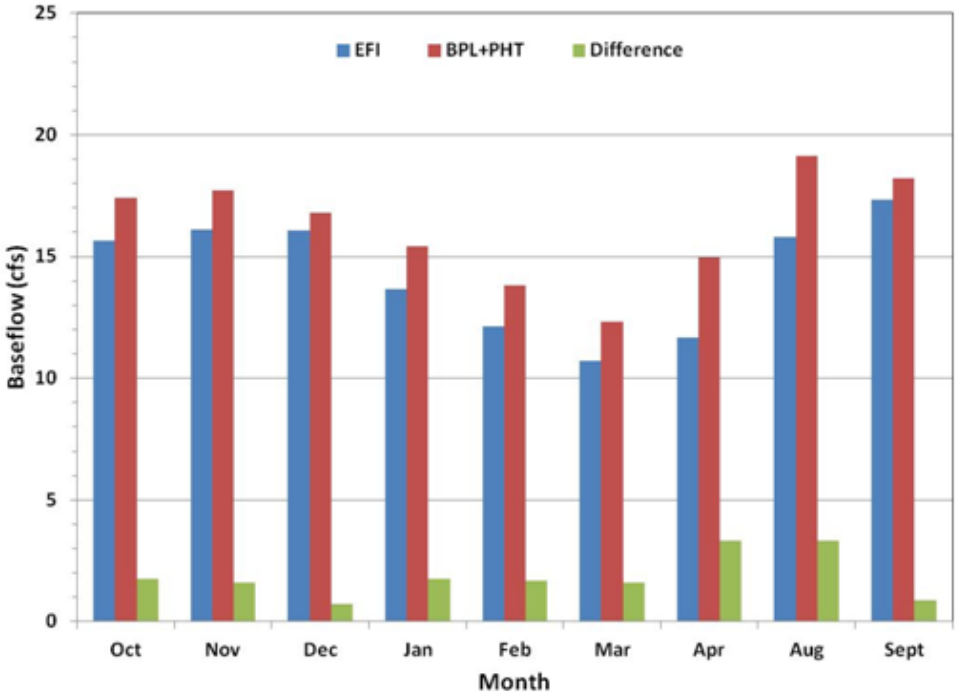
Carlson provided an example (below) of flow duration curves for attendee review.



And, an illustration of a hydrograph separation analysis (below):

- Average monthly baseflow estimates (for months of low flow periods):
  - 10 to 17 cfs at site EFI
  - 12 to 19 cfs at site BPL
- Net average monthly baseflow between sites b and BPL: 1 to 4 cfs.
  - Net baseflow provides estimate of the sustained groundwater discharge in the East Fork between the EFI and BPL locations (during low flow seasons)





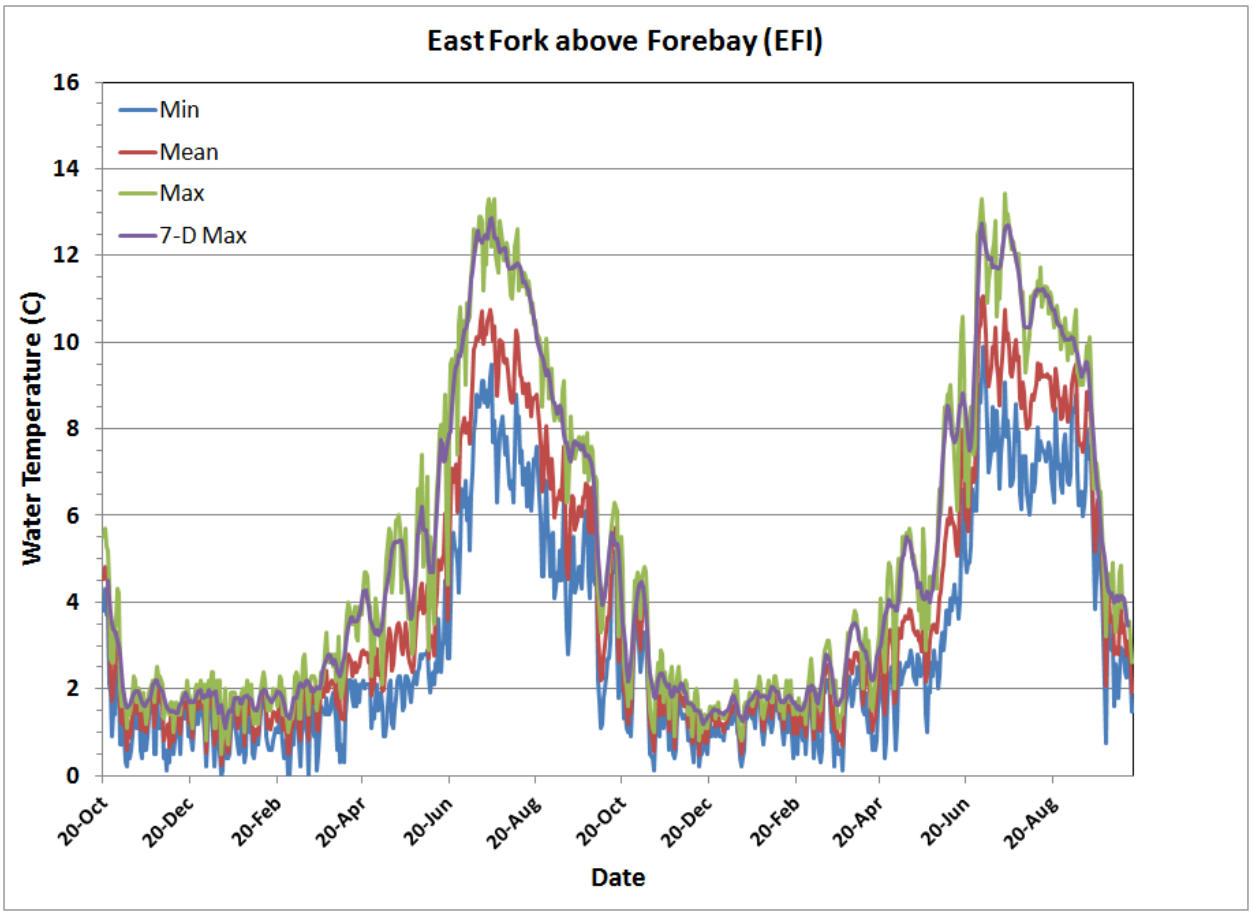
Carlson also communicated that the Project effects on flows are related to diversions from the East Fork to the Powerhouse. The effects on flows under current conditions include:

- Reduced flows in the East Fork below the Project Diversion dam
- Increased flows in about 0.5 miles of the West Fork between the existing tailrace discharge location and the East Fork

And, the effects of proposed measures include:

- Increased flows back to the East Fork bypassed reach
- Correspondingly decreased flows in the West Fork (below the current tailrace discharge location)
- East Fork bypassed reach (to the new tailrace discharge location):
    - Flows would be increased by about 3.2 to 3.5 cfs
    - i.e., the difference between the proposed 4 cfs minimum instream flow release and the 0.5 to 0.8 cfs that is currently released.
- East Fork bypassed reach (downstream portion):
    - Flows would be increased by the re-routed (returned) powerhouse diversion amounts (which are currently discharged to the West Fork).
    - On average, flows would be increased from:
    - 20 to 35 cfs (73 percent) during the spring runoff period (April-July)
    - 1.8 to 14.7 cfs (7-fold) during the summer/early fall low-flow period (August-October)
    - 0.9 to 10.9 cfs (10-fold) during the winter lower-flow period (November-March).
- West Fork (from current tailrace discharge location to East Fork):
    - Flows would be decreased by the Powerhouse diversion amounts that would no longer be discharged to the West Fork.
    - On average, flows would be decreased by:
        - 8 percent during the spring runoff higher-flow period (April-July)
        - 30 percent during the summer/early fall low-flow period (August-October)
        - 42 percent during the late fall/winter lower-flow period (November-March)
- Wallowa River (downstream East Fork and West Fork):
    - No changes in flow would occur because the effects of Project operations on flows dissipate as the East Fork and West Fork join.

Provided below for attendee review and comment is a graph illustrating water temperature data collection in 2013.



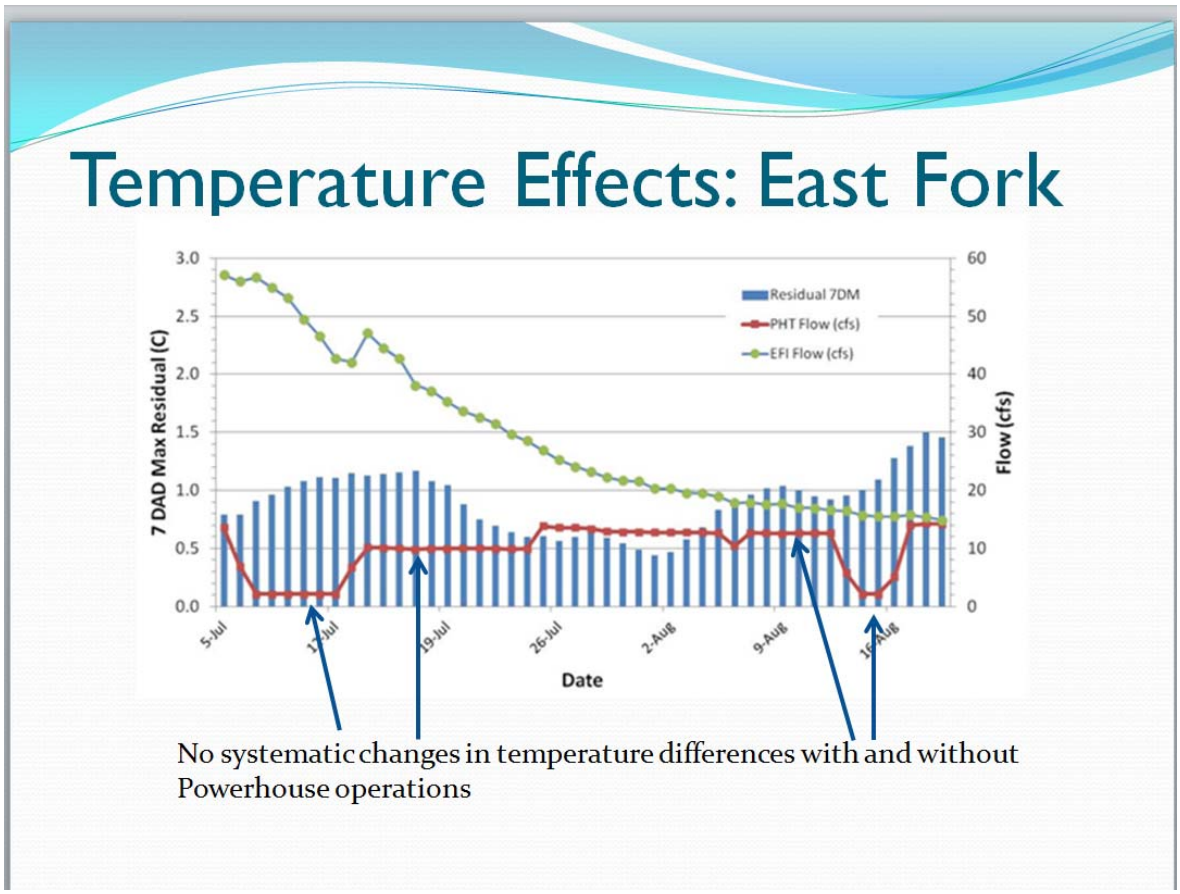
Water temperature conditions include the following:

- Overall thermal regime is "cold" in the streams of the Project area
- Peak 7-DAD Max temperatures:
  - WFI: 15.0°C
  - WRC: 14.2°C
  - BPL: 14.0°C
  - RPI: 13.4°C
  - EFI: 12.9°C
  - BPU : 12.4°C
- 7-DAD Max values less than (and therefore meet) the State's 12°C bull trout criteria throughout most of the year at all study sites.
- 7-DAD Max values exceeded 12°C for relatively short periods (about 2 to 4 weeks) in mid-summer at all sites.
  - The 12°C criteria is for streams supporting use for bull trout spawning and juvenile rearing (per OAR 340-041-0028).

The temperature effects on the East Fork include the following:

- Related to effects on flows as previously discussed (Current Conditions and under Proposed Measures)
- Differences in values at sites EFI and BPL indicate warming about 0.5 to 1.5°C in the East Fork between these sites during mid-summer.

- However, no systematic changes in these differences whether or not Powerhouse diversions were occurring during mid-summer



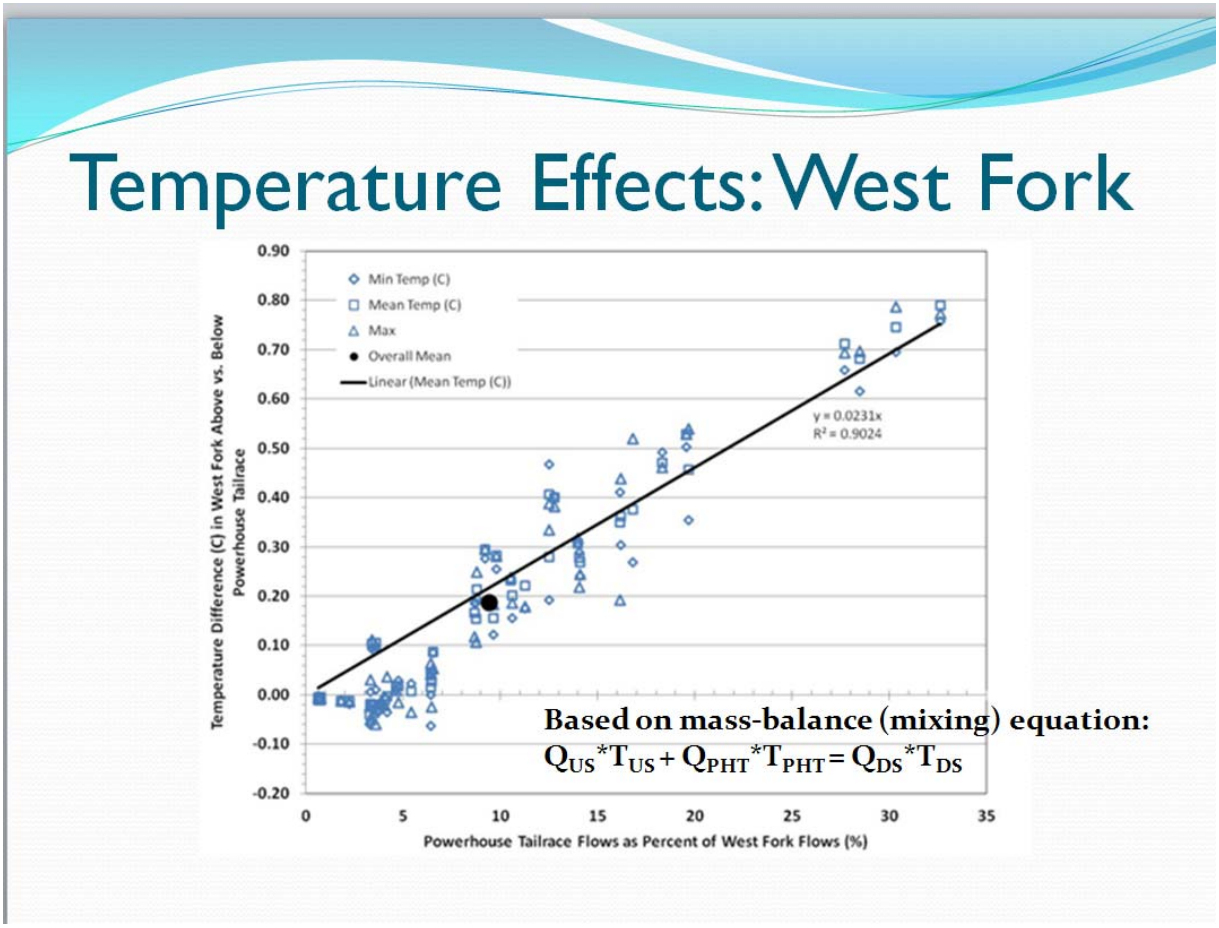
The estimated Effects in the East Fork (mid-summer) include the following:

- We assume that the warming observed in the East Fork is mostly related to the 1,200-ft elevation change
  - Elevation change has a direct effect on the rate of stream heating due to adiabatic lapse rate of air temperature
- Under Proposed Measures, increases in flow in the East Fork could act to further moderate the rate of warming in the reach. However, the above analysis suggests such changes in summer may not be significant.

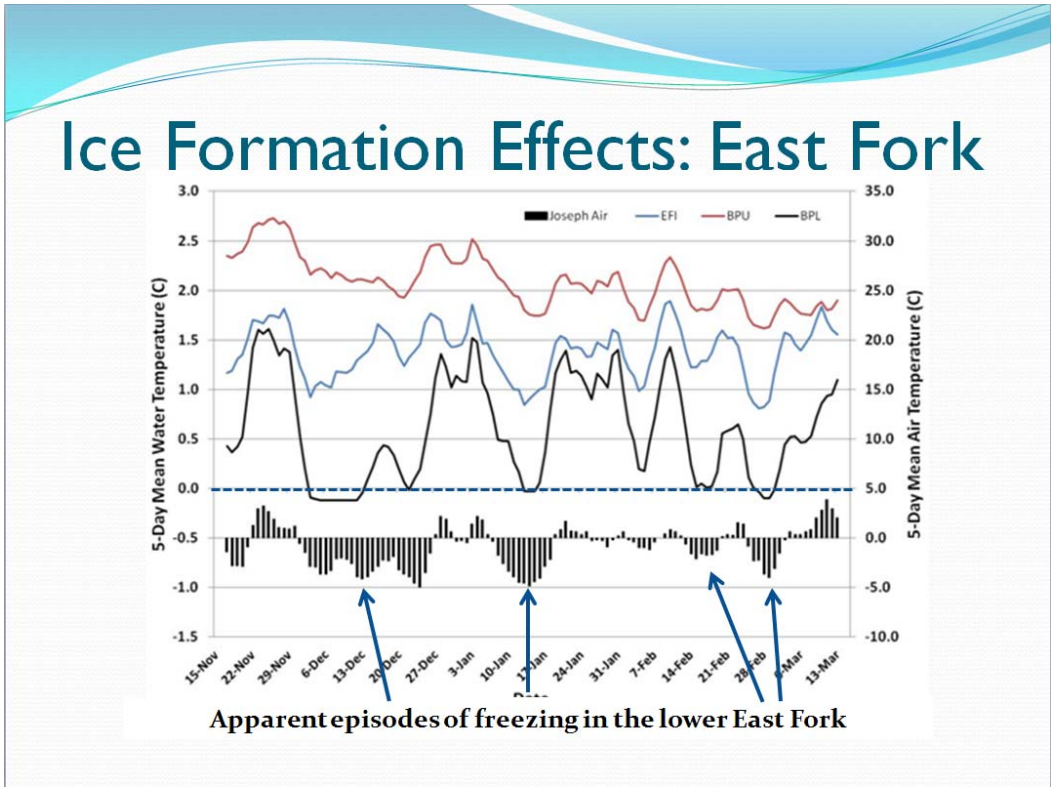
The estimated Effects in the West Fork include the following:

- Under Project Measures, the absence of Powerhouse tailrace flows in the West Fork (due to the tailrace re-route) will result in slightly warmer temperatures in summer in the 0.5-mile distance between the existing tailrace discharge location and the confluence with the East Fork.
  - Slightly cooler tailrace flows will be re-routed back to the East Fork rather than discharged to the West Fork.
  - Estimated warming: 0.2°C warmer on average, and up to about 0.8°C.
  - West Fork inflow temperatures are naturally warmer than East Fork temperatures

- Larger drainage area with comparatively lower mean elevation, lower average gradient, greater stream width, and longer stream reach length

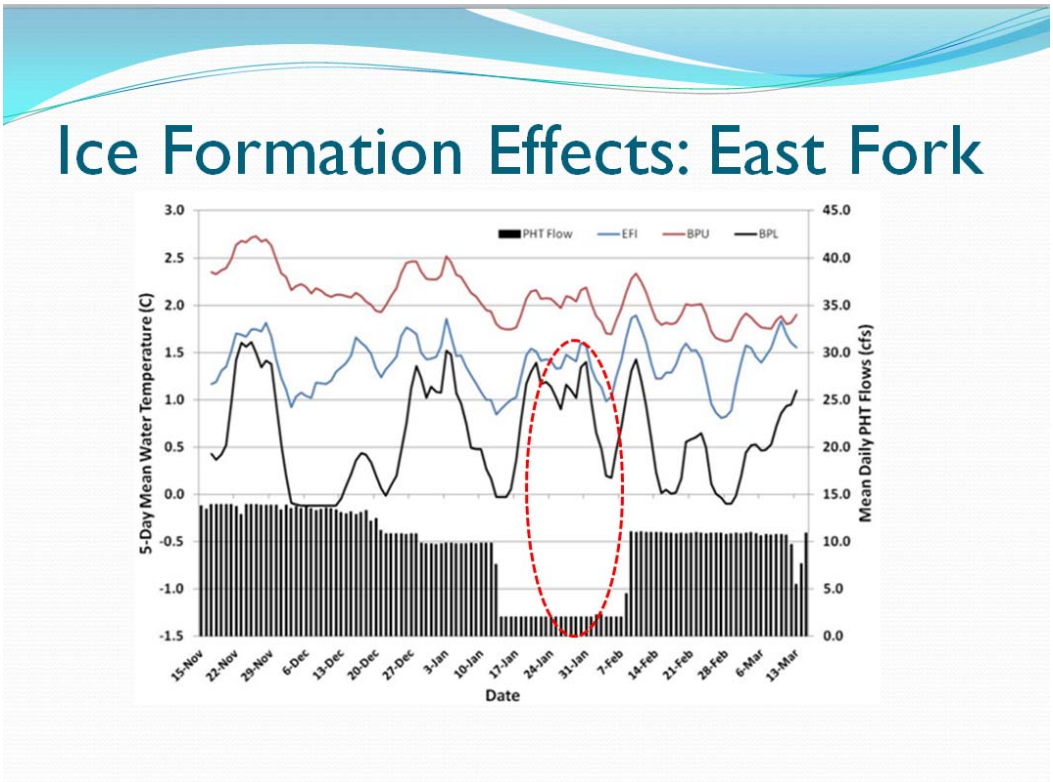


Carlson reviewed the apparent episodes of freezing in the lower East Fork (see illustration below). There is evidence that in-stream ice formation occurs in lower East Fork at times during winter. In addition, data from site BPL (bypassed lower) indicate that water temperatures dropped to 0 to -0.1°C on several days during winter. It is also notable that freezing levels (0°C or less) was not reached at either of the upstream, higher-elevations East Fork Inflow (EFI) and BPU sites on the East Fork.



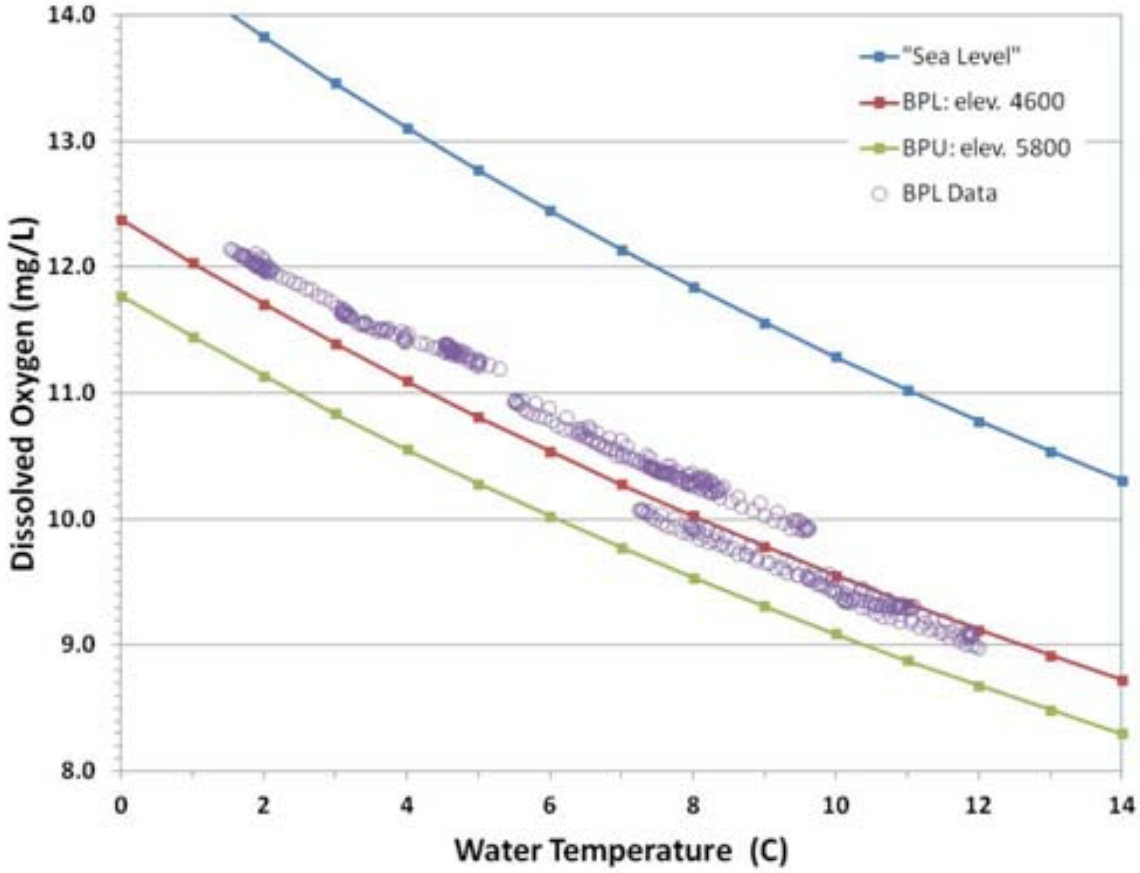
Carlson informed the attendees that the reasons for the freezing episodes at the lower site BPL, but not the upper sites, are not specifically known, but are likely a combination of the following factors:

- More baseflow at site EFI that likely increases the groundwater-related thermal load present at site EFI
- Project forebay's water volume (thermal mass) further retains thermal load at site BPU (which is located just below the forebay)
- Occurrence of winter air temperature inversions that cause cold air pooling around the area of site BPL
- Differences in stream hydraulics between BPL and the other upstream sites that may further affect the occurrence of ice formation
- Drops in water temperatures to freezing levels at site BPL appear to be more strongly correlated with air temperature than flow
- However, slightly warmer water temperatures when diversions of flow to the Powerhouse were not occurring indicate that higher bypass instream flow releases (as would occur under proposed Project operations) could play a further role in reducing ice formation in the East Fork bypassed reach.



Carlson communicated that no additional DO data collection took place in 2013. DO has been recorded at near full saturation (100 percent) in all measurements during the sampling in 2012. No documented Project-related effect on DO and all DO values meet Oregon State standard's 90 -95 percent saturation criteria.

Provided below is an illustration providing more detail on the effects of elevation on DO.



No additional data was collected in 2013 for TDG. The TDG is at or near 100 percent saturation (i.e., average of 98 percent saturation; range 96 to 100 percent saturation). These values indicate that TDG supersaturation is not a concern at the Project powerhouse. TDG values at the powerhouse tailrace meet the Oregon State standards of 105 or 110 percent saturation criteria.

Carlson described the following turbidity-study status:

- Routine forebay maintenance flushing did not occur during the study period, consequently, proposed sampling did not occur.
- PacifiCorp has developed a proposal to guide future forebay flushing events that would occur.
- Turbidity monitoring occurred during June 2012 in the East Fork
    - Purpose: develop a record of background turbidity for a typical June runoff period when future forebay flushing events would occur
- PacifiCorp will include a proposed Turbidity Monitoring Plan in the Final License Application

No additional water resources studies are proposed. The final results and recommendations are presented in the December 2013 Updated Study Report.

<Lunch 12:00pm>
<Reconvene 1:15pm>

Sediment and Substrate Characterization – Briana Weatherly (PacifiCorp)
Weatherly informed that attendees that the study plan objective is to characterize baseline sediment and substrate conditions in the project area and analyze potential effects of future forebay flushing on water quality, substrate compositions and aquatic resources in the bypassed reach of the East Fork Wallowa River.

Weatherly reviewed the 2012 field work objectives to include:

- Professional survey of the surface and thickness of the fine grain sediment deposit in the drained forebay was conducted to calculate sediment volume.
- Sediment samples were collected in the forebay and analyzed for metals and particle size distribution at a Test America laboratory.
- Streambed grain size analysis using Wolman surface pebble counts and bulk samples were conducted in the lower bypassed reach.
- Suspended sediment surface water samples were collected in the lower bypassed reach in June 2012; and analyzed at a Test America laboratory.
- Continuous turbidity monitoring was conducted for the entire month of June 2012 in the lower bypassed reach.

The 2013 objectives are as follows:

- Collect additional data to support 401 Water Quality Certification application and ESA consultation.
- Collect surface grain size data at the same 5 transect locations in the bypassed reach as done in 2012.
- Record habitat type and average channel gradient at each transect.
- Compare 2012 surface grain size data to data collected in 2013.
- Record continuous turbidity data for the month of June 2013 at the upper staff gage site above the Project forebay and the lowest staff gage site in the bypassed reach.
- Collect surface grain size data from areas of the West Fork Wallowa River upstream of Project tailrace discharge and East Fork Wallowa River above Project forebay in order to provide comparison data from areas unaffected by a forebay flush.

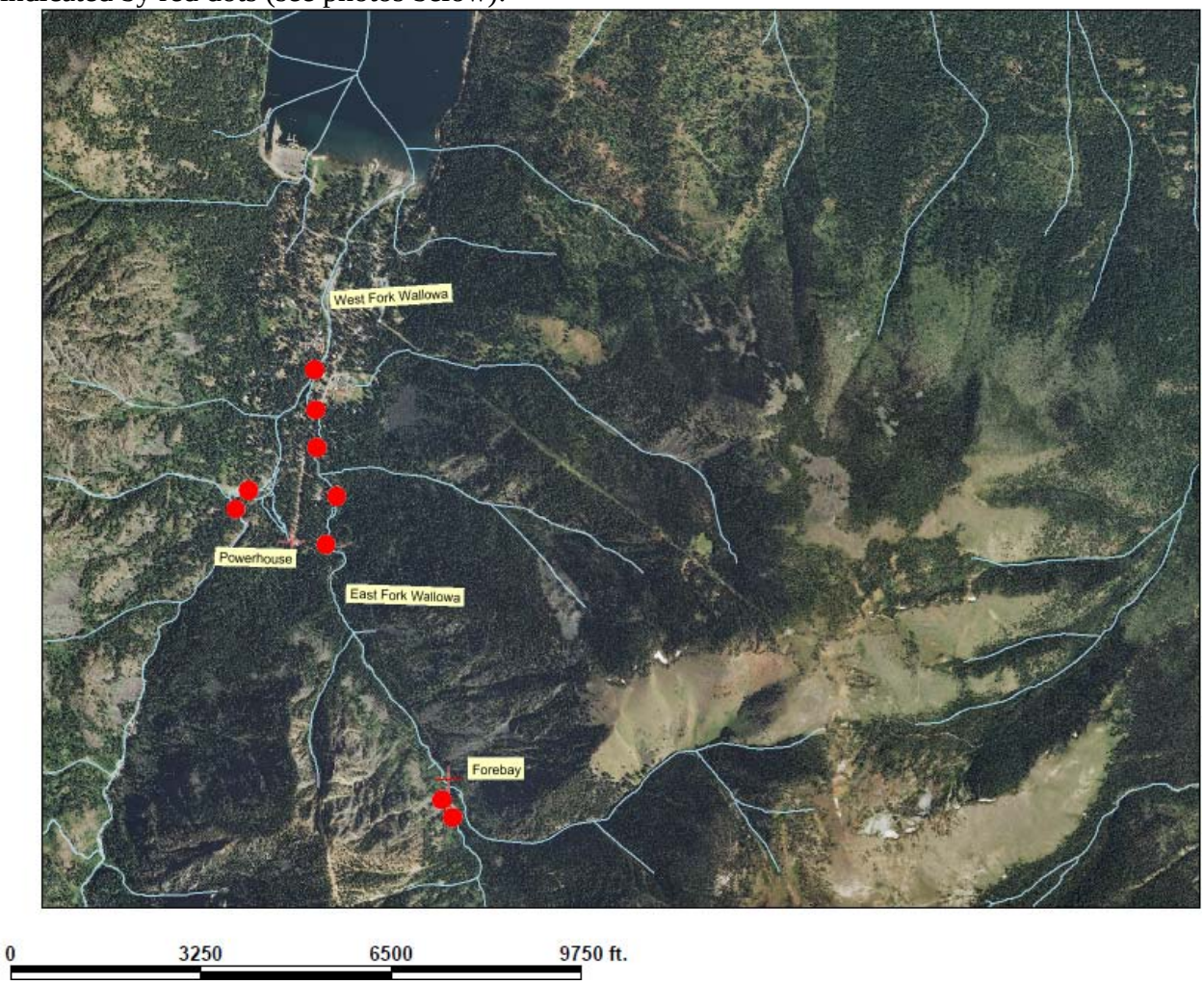
The field work and analysis conducted in 2013 includes:

- Collection and analysis of 2013 surface grain size data from 2012 replicate areas within the East Fork Wallowa River bypassed reach.
- Record of habitat type and channel gradient at all transect locations.
- Collection and analysis of additional surface grain size data from the East Fork Wallowa River upstream of the Project forebay and the West Fork Wallowa River upstream of the Project tailrace to provide comparison data from geomorphically similar areas not affected by forebay flushing.
- Deployment of water quality sondes for turbidity measurement at the upper and lower staff gages.

The study area includes replicate areas, from 2012 data collection, within the bypassed reach of the East Fork Wallowa River, the East Fork Wallowa River upstream of Project forebay and the West Fork Wallowa River upstream of Project tailrace discharge.

The methods include a streambed grain size analysis (Wolman Pebble Counts).

Weatherly provided an aerial photo with analysis points of where transects were completed as indicated by red dots (see photos below):



Weatherly also provided for review of attendees a transect data table to include a summary of transects locations, stream gradient and habitat types (see below for details):

Transect #	Location	Wetted Width	Average Gradient	Habitat Unit Type	Photo Reference
9 (2013)	West Fork Wallowa River: In front of third snag on river left upstream of mess hall.	35 ft. (10.7 m)	3%	Cascade over boulder	1
8 (2013)	West Fork Wallowa River: In front of Boy Scout mess hall.	35 ft. (10.7 m)	3%	Cascade over boulder	2

7 (2013)	Above project forebay	19.5 ft. (6.0 m)	3%	Riffle	4
6 (2013)	Above project forebay	13.7 ft. (4.2 m)	3%	Pool tailout	5 and 6
5	Above abandoned well house/old staff gage site at abandoned water intake.	14.2 ft. (4.3 meters)	2%	Cascade over boulder	7 and 8
4	At channel split near USFS maintenance yard	12 ft. side channel (3.7 m); 13.4 ft. main channel (4.1 m)	2% 3%	Side channel - Riffle Main channel – Cascade over boulder	9 and 10 11 and 12
3	At IFIM Transect 13	15 ft. (4.6 m)	2%	Riffle/glide	14 and 15
2	Approximately 20 meters below road bridge	18.3 ft. (5.6 m)	3%	Riffle	17 and 18
1	Immediately above confluence of the East and West Fork Wallowa Rivers.	13.4 ft. (4.1 m)	3%	Riffle	21and 22

Also provided is a comparison of 2012 vs 2013 percent of total in size class in bypassed reach transects (see below):

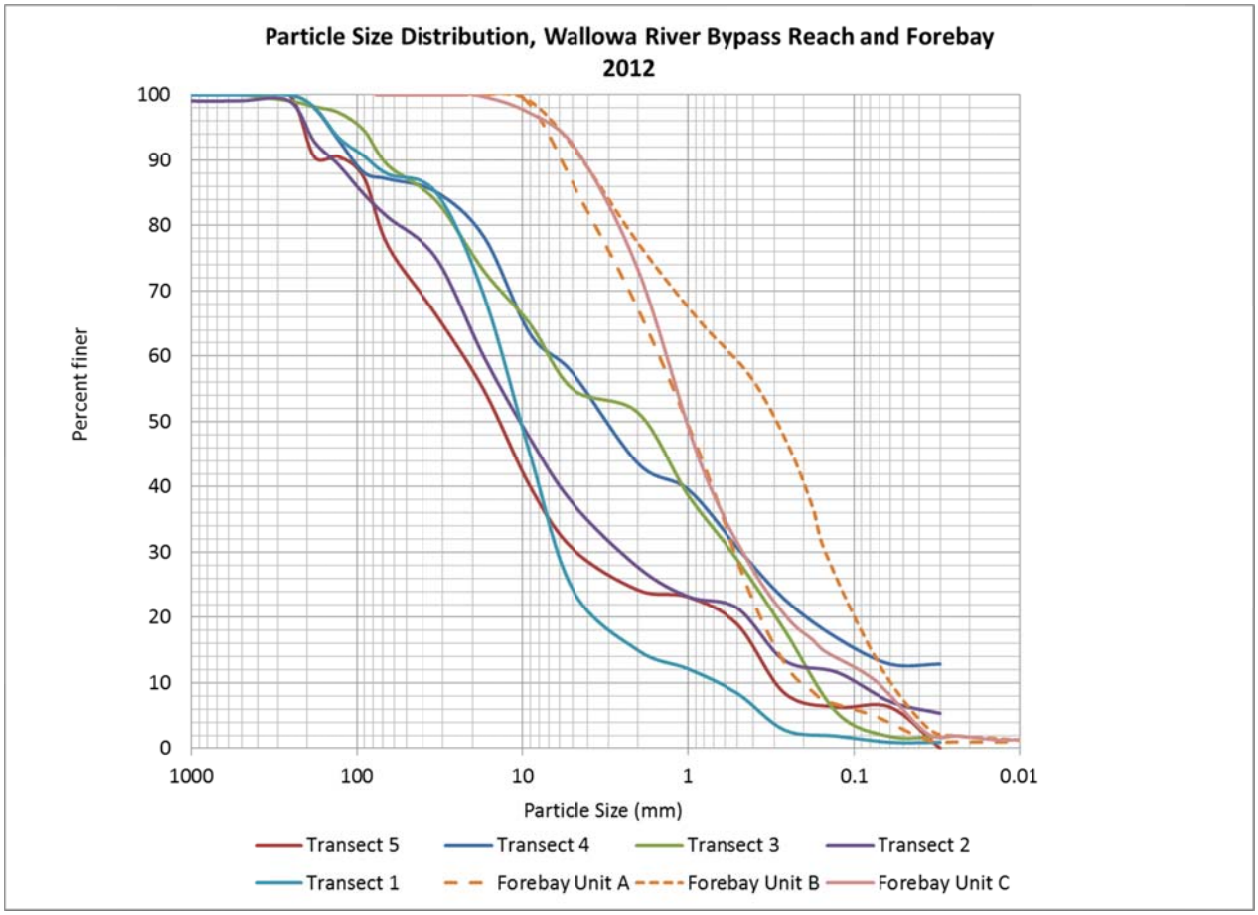
		2012 Percent of total in size class in bypassed reach transects				
Size Category	Size Ranges (mm)	Transect 5	Transect 4	Transect 3	Transect 2	Transect 1
Sand and Fines	≤2 mm	23.1	36.9	38.7	23.1	12
Very fine gravel	2-4	1.1	3.7	12.6	4.4	2.8
Fine Gravel	5-8	6.3	13	3.6	9.7	9.3
Medium gravel	9-16	9.5	5.5	9.9	9.7	20.6
Course gravel	17 - 32	14.7	13.9	8.1	12.4	24.2
Very course gravel	33 - 64	11.6	6.5	10.8	15	15.9
Small cobble	65 - 90	10.5	1.9	5.4	6.2	2.8
Medium cobble	91 - 128	10.5	0.9	5.4	3.5	2.8
Large cobble	129 - 180	3.2	4.6	2.7	4.4	2.8
Very large cobble	181 - 255	0	4.6	0.9	3.5	4.7
Small boulder	256 - 512	9.5	1.9	0.9	6.2	1.8
Medium boulder	513 - 1024	0	0	0.9	0	0

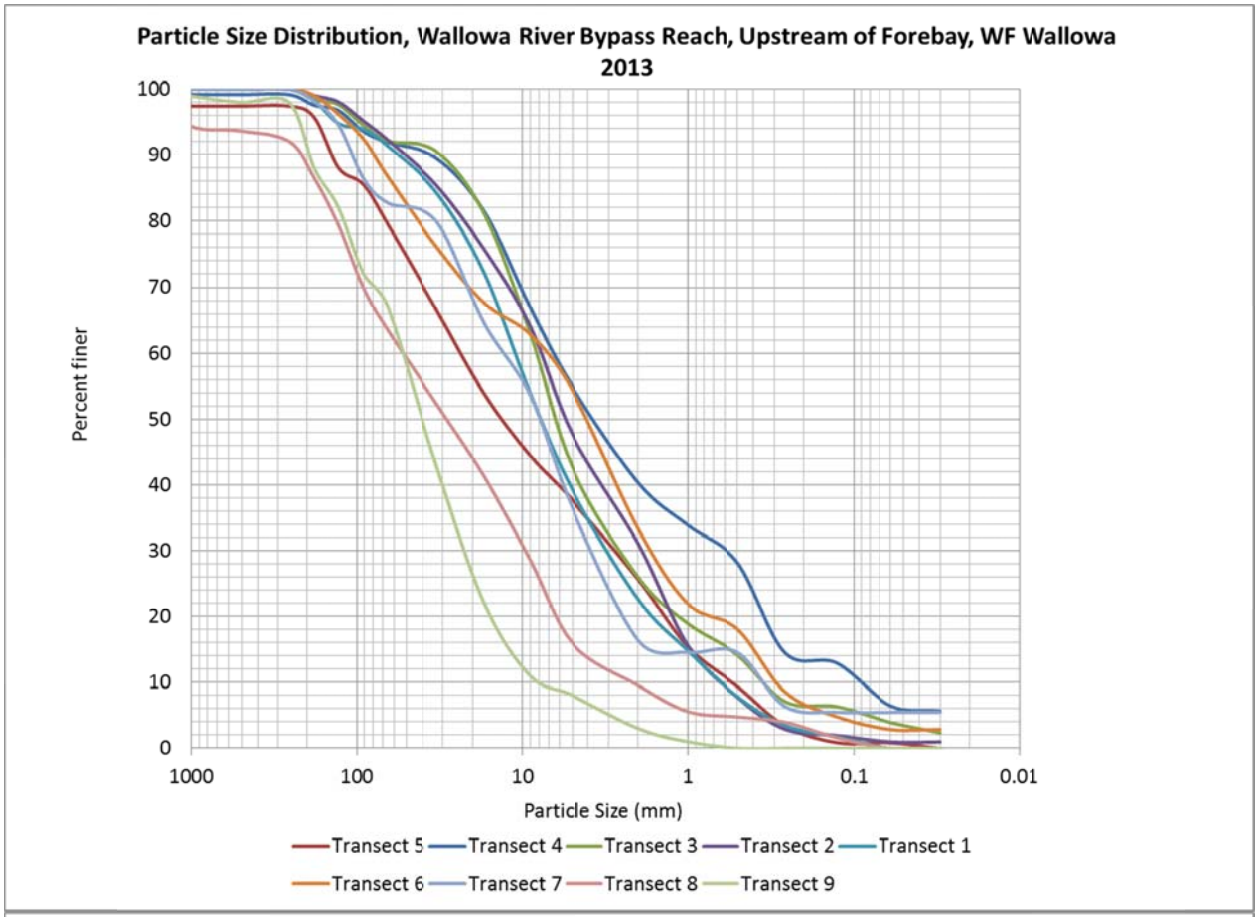
		2013 Percent of total in size class in bypassed reach transects				
Size Category	Size Ranges (mm)	Transect 5	Transect 4	Transect 3	Transect 2	Transect 1
Sand and Fines	≤2 mm	15.4	33.9	18.9	15.5	14.8
Very fine gravel	2-4	10.3	6.5	7.1	15.5	7.8
Fine Gravel	5-8	12	14.5	16.5	16.5	16.5
Medium gravel	9-16	6.8	12.1	20.5	16.5	14.8
Course gravel	17 - 32	9.4	14.5	18.1	11.7	18.3
Very course gravel	33 - 64	12.8	8.1	9.4	9.7	12.2
Small cobble	65 - 90	12.8	2.4	1.6	6.8	7
Medium cobble	91 - 128	6	1.6	2.4	2.9	2.6
Large cobble	129 - 180	2.6	3.2	3.1	2.9	0.9
Very large cobble	181 - 255	7.7	0.8	0.8	1	3.5
Small boulder	256 - 512	1.7	1.6	1.6	1	1.7
Medium boulder	513 - 1024	0	0	0	0	0

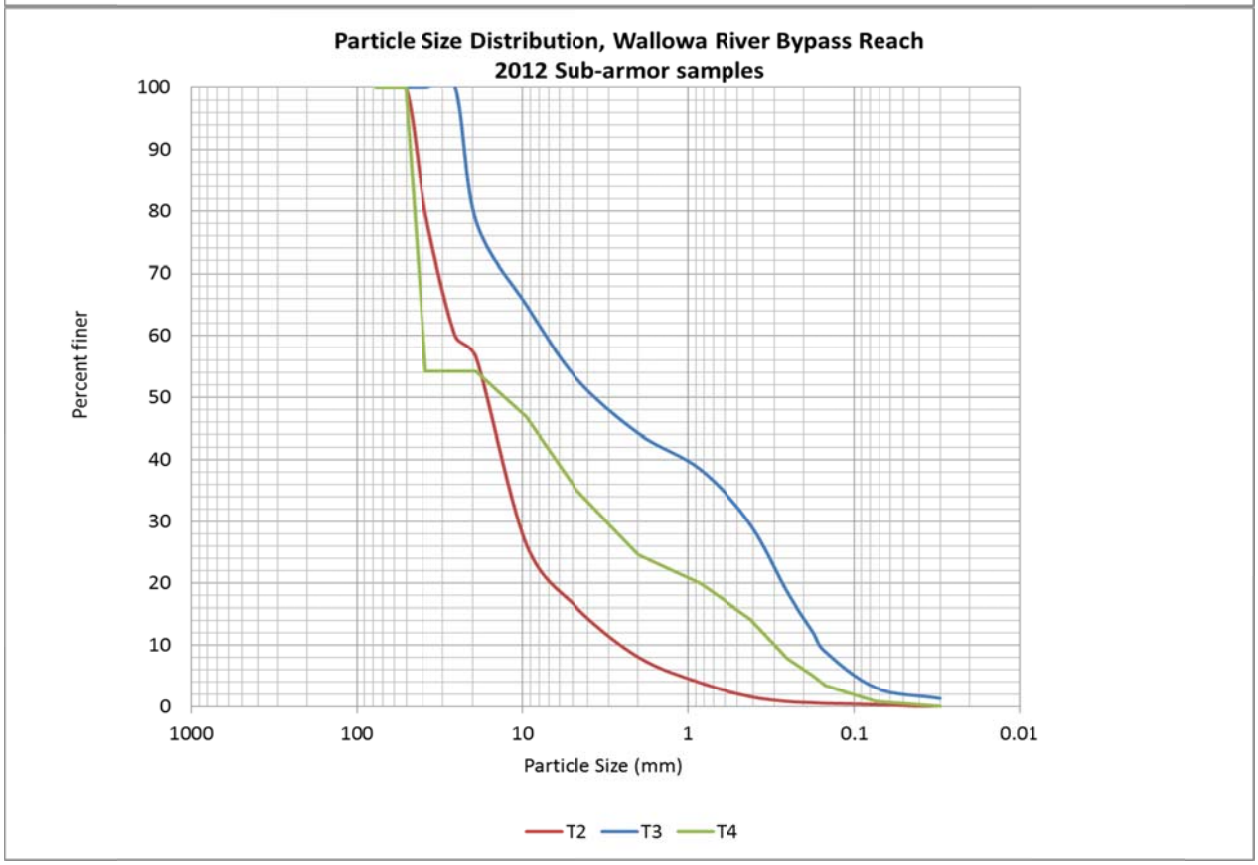
Also provided for review is the 2013 percent of total in size class upstream of forebay and in West Fork Wallowa River transects (see below):

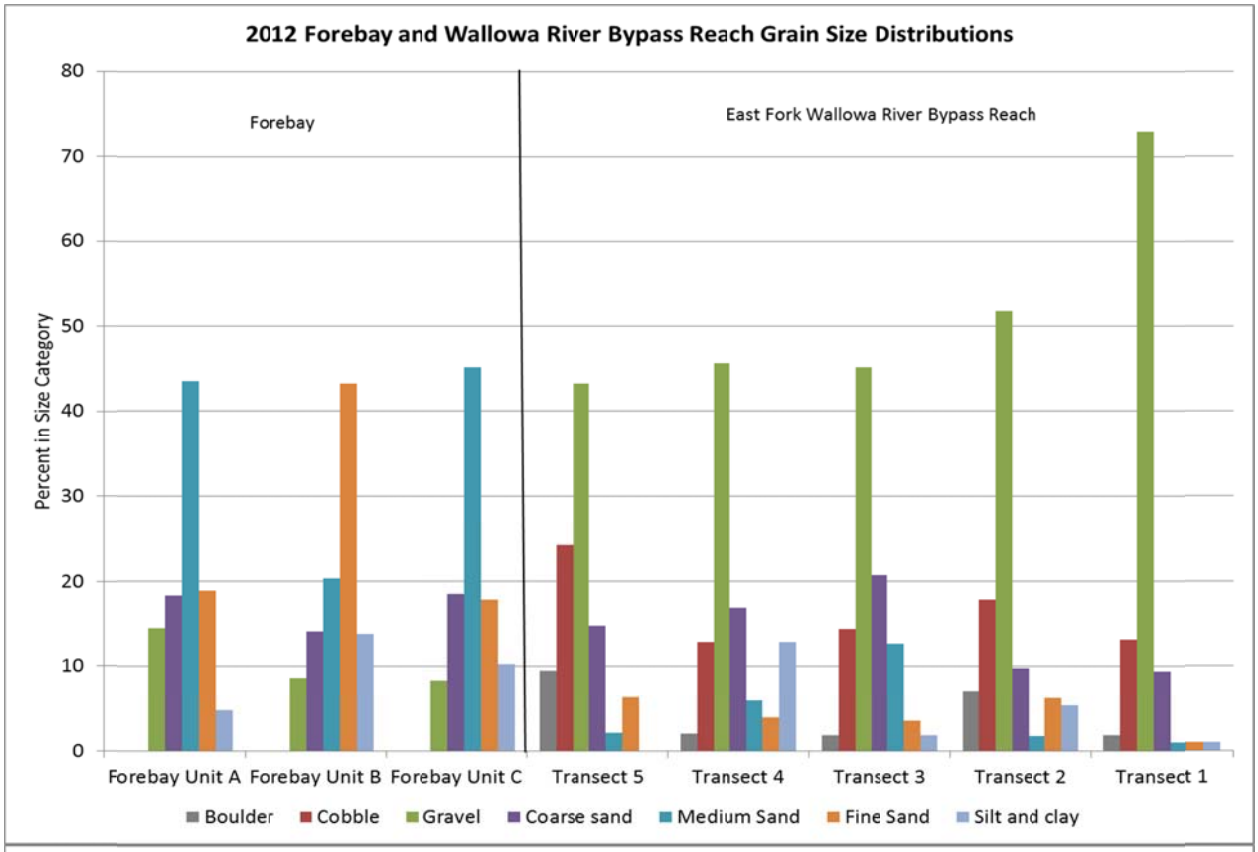
		2013 Percent of total in size class upstream of forebay and in West Fork Wallowa River transects			
Size Categories	Size Ranges (mm)	Transect 6 (upstream of forebay)	Transect 7 (upstream of forebay)	Transect 8 (West Fork Wallowa)	Transect 9 (West Fork Wallowa)
Sand and Fines	≤2 mm	21.9	14.5	5.5	1.0
Very fine gravel	2 - 4	11.4	1.8	4.0	2.0
Fine Gravel	5 - 8	21.0	20.0	6.3	5.0
Medium gravel	9 - 16	8.6	17.3	12.7	3.0
Course gravel	17 - 32	4.8	10.9	12.7	11.0
Very course gravel	33 - 64	8.6	15.5	11.1	21.0
Small cobble	65 - 90	10.5	2.7	11.1	24.0
Medium cobble	91 - 128	5.7	3.6	6.3	5.0
Large cobble	129 - 180	3.8	8.2	9.5	10.0
Very large cobble	181 - 255	2.9	3.6	7.1	6.0
Small boulder	256 - 512	1.0	1.8	5.6	10.0
Medium boulder	513 - 1024	0	0	1.6	0

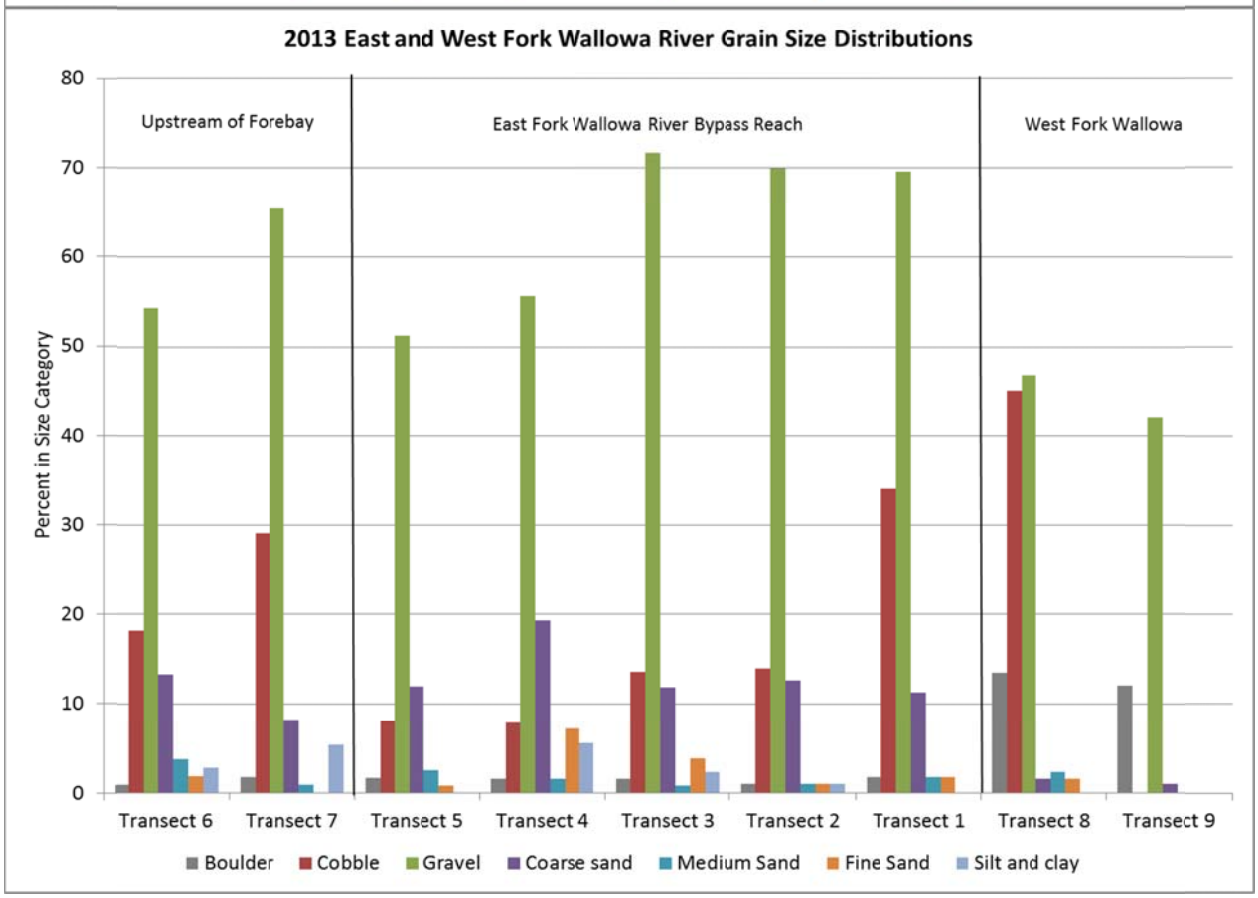
Weatherly informed the attendees that the observations of the data to follow indicate that the 2012 Pebble count data reflects streambed surface conditions after the August 2012 project-related sediment input to the bypassed reach. Pebble count data collected in August 2013 represent conditions one year after the sediment release. In 2013 the percent of sand and finer grain substrates at each transect in the bypassed reach was generally less than in 2012. Pockets of fine grain substrates were still observed during 2013 data collection. Smaller gravels were at higher densities in 2013 sample, while larger gravels were a higher proportion of the sample during 2012 sampling and larger grain substrate proportions (cobble, boulder) were similar in both the 2012 and 2013 sample.




Particle Size Distribution, Wallowa River Bypass Reach, Upstream of Forebay, WF Wallowa 2013
Percent finer
100
90
80
70
60
50
40
30
20
10
0
1000
100
10
1
0.1
0.01
Particle Size (mm)
Transect 5
Transect 4
Transect 3
Transect 2
Transect 1
Transect 6
Transect 7
Transect 8
Transect 9


Particle Size Distribution, Wallowa River Bypass Reach 2012 Sub-armor samples
Percent finer
100
90
80
70
60
50
40
30
20
10
0
1000
100
10
1
0.1
0.01
Particle Size (mm)
T2
T3
T4


2012 Forebay and Wallowa River Bypass Reach Grain Size Distributions
Forebay
East Fork Wallowa River Bypass Reach
Percent in Size Category
80
70
60
50
40
30
20
10
0
Forebay Unit A
Forebay Unit B
Forebay Unit C
Transect 5
Transect 4
Transect 3
Transect 2
Transect 1
Boulder
Cobble
Gravel
Coarse sand
Medium Sand
Fine Sand
Silt and clay


2013 East and West Fork Wallowa River Grain Size Distributions
Upstream of Forebay
East Fork Wallowa River Bypass Reach
West Fork Wallowa
Percent in Size Category
80
70
60
50
40
30
20
10
0
Transect 6
Transect 7
Transect 5
Transect 4
Transect 3
Transect 2
Transect 1
Transect 8
Transect 9
Boulder
Cobble
Gravel
Coarse sand
Medium Sand
Fine Sand
Silt and clay

Weatherly further stated that the fine grained particle size distribution of 2013 sample areas in the bypassed reach looks similar to the particle size distribution in the 2012 sub-armor samples from the bypassed reach. The percent sand and finer in samples upstream of the forebay were also similar to the 2013 sampling in the bypassed reach:

- Upstream of forebay: 14.5-21.9
- Bypassed reach: 14.8 to 33.9

This suggests that the level of fines in the bypassed reach is similar to areas not being influenced by forebay flushing. The bypassed reach transect with the highest levels of fine-grained sediment during both years, Transect 4, is likely being influenced by a very low gradient side channel which includes primarily fine-grained substrate.

In order to meet a functioning *appropriately* characterization for bull trout (as defined by USFWS), sediment fines (0.85 mm particle size) should comprise no more than 12 percent of surface sediments; to meet a functioning *at risk* characterization for bull trout (as defined by USFWS), sediment fines (0.85 mm particle size) should comprise more than 12 percent and no more than 17 percent of surface sediments; and sediment fines (0.85 mm particle size) greater than 17 percent are considered *unacceptable*.

- Figure 1: In 2012 all transects within the bypassed reach, with the exception of transect 1 (functioning appropriately) fall within the unacceptable range for sediment fines.
- Figure 2: In 2013, results of pebble counts indicate substrate at all 2012 repeat sample locations, except Transect 4 are now functioning at risk.
- Figure 3: Based on pebble count data collected at transects in the East Fork Wallowa River above the Project forebay and in the West Fork Wallowa River above the Project tailrace, it appears that the East Fork Wallowa River has higher percent fines.

Figure 1

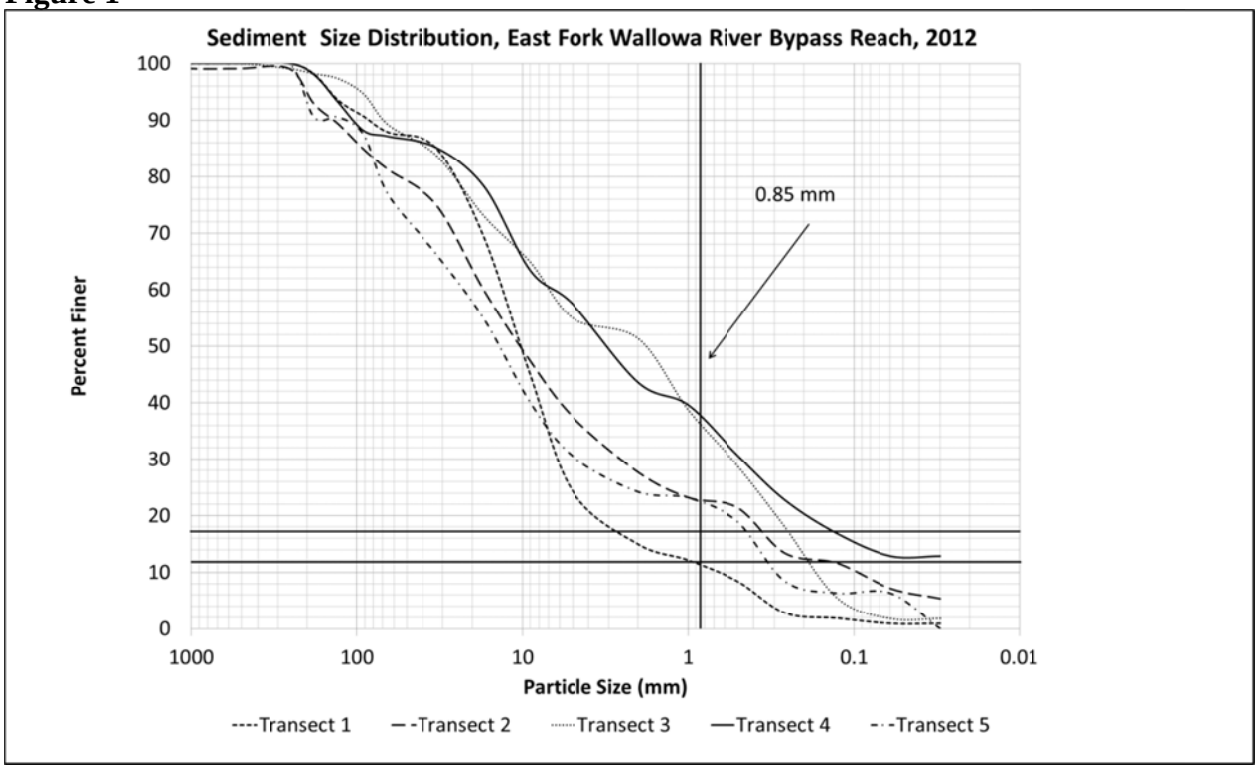


Figure 2

Sediment Size Distribution, East Fork and West Fork Wallowa River Bypassed Reach, 2013

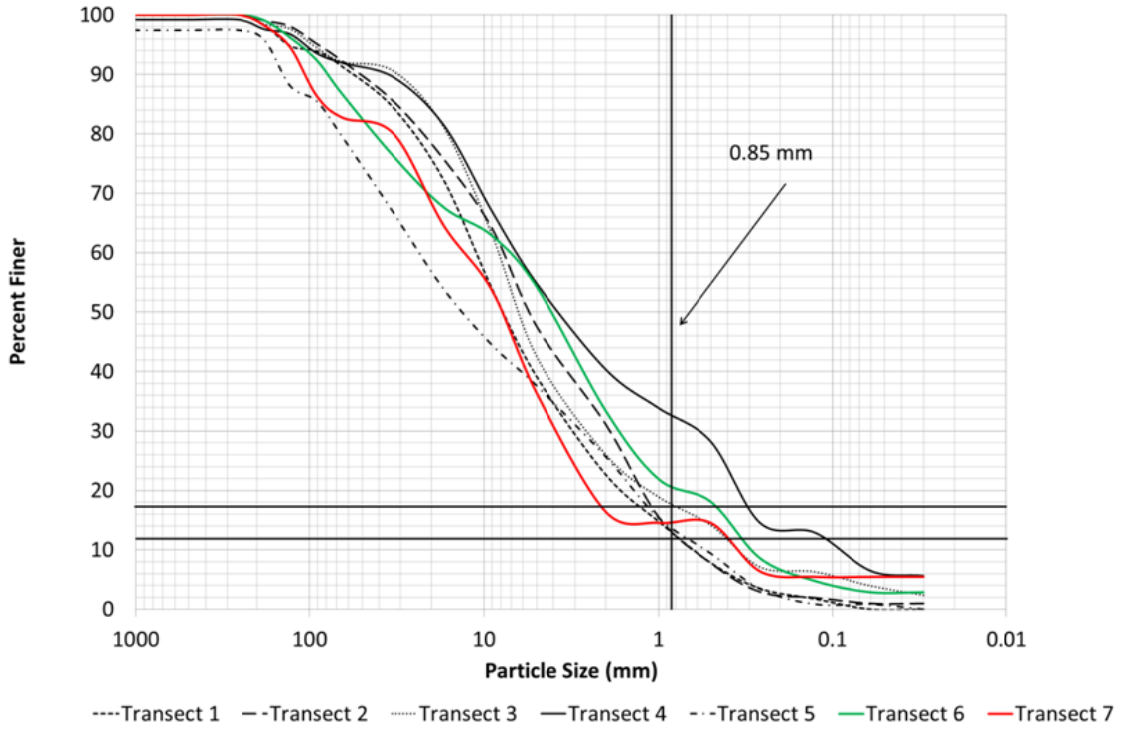
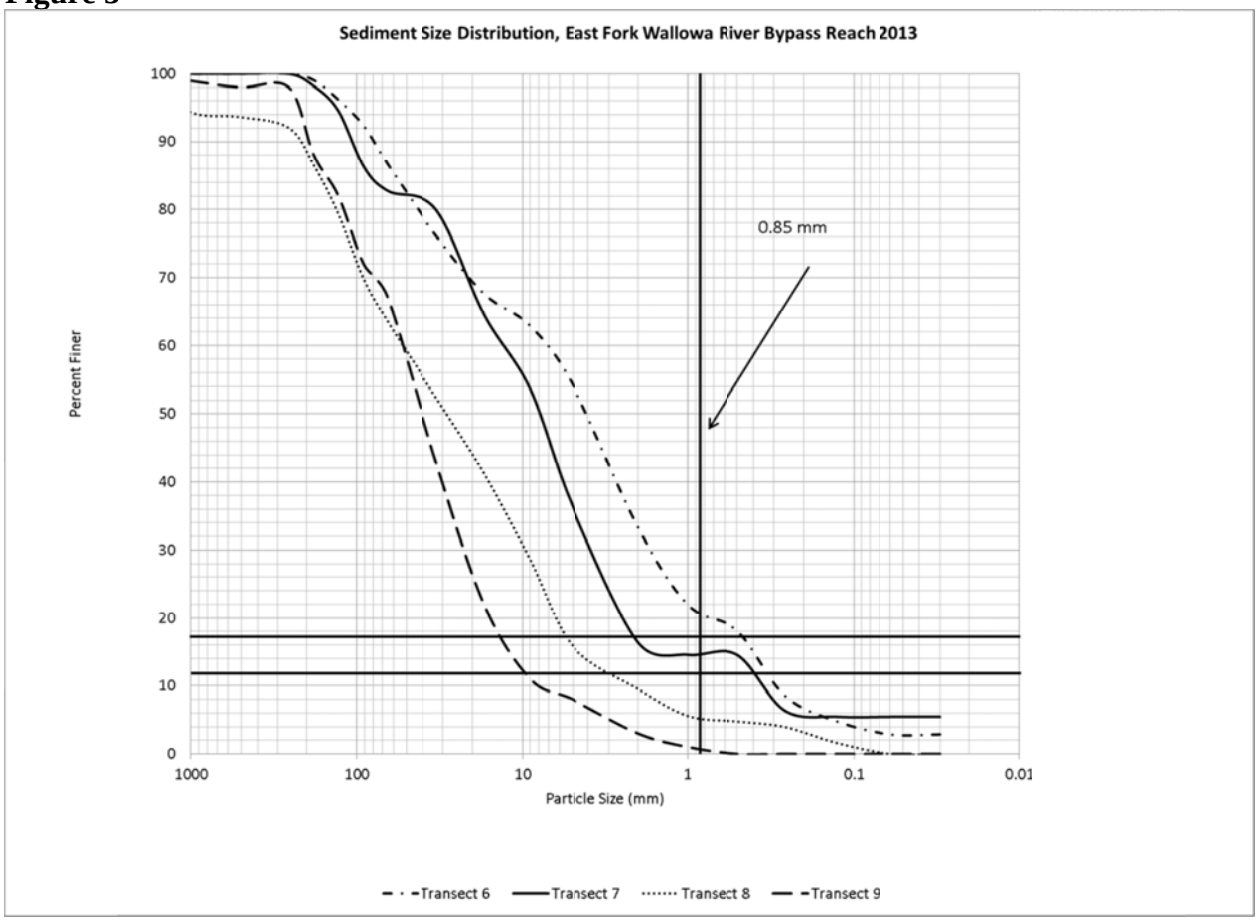


Figure 3



In 2013 PacifiCorp analyzed the estimated flow necessary to transport sand and fines through the bypassed reach of the East Fork Wallowa River. Hydraulic data collected at Physical Habitat Simulation Model (PHABSIM) transects were used to estimate shear stress in the center of the channel at the highest flow measured (15 cfs) and compared to critical shear stress required to move 2mm particles on the stream bed.

- Calculations suggest that flows of 15 cfs would be able to pick up and transport fines through the thalweg of the channel in the bypassed reach.
- At higher flows, fines would be able to be picked up across the majority of the channel cross sections; shear stress will always be lowest along shallow channel margins for a given flow, but at 45 cfs (June 50 percent exceedence flow in bypassed reach) it is likely that sand and fines would be moved throughout the bypassed reach.

Weatherly communicated to the attendees that based on shear stress calculations at PHABSIM transects in the lower bypassed reach, flow during June (spring runoff) should be able to easily move 2 mm and finer sediment through the bypassed reach.

It is expected that there will be short-term increases in turbidity during the flushing event; monitoring of turbidity levels prior to, during, and following the flushing event will provide information on the magnitude and duration of increased turbidity levels in comparison to normal levels. Fine sediment levels at transects upstream of the forebay and in the lower bypassed reach

were similar, suggesting that past forebay flushing does not result in a long-lasting increase in fine sediment levels in the bypassed reach.

In response to agency questions regarding long-term schedule and frequency of forebay flushing, Weatherly indicated that PacifiCorp proposes to routinely (annually if possible) flush the Project for the life of the license. Prior to the unintended release of sediment from the forebay that occurred in August of 2012 it had been 3 years since the forebay was flushed. PacifiCorp is proposing to flush the forebay routinely in the month of June.

Weatherly discussed the following points regarding forebay flushing methods and schedule:

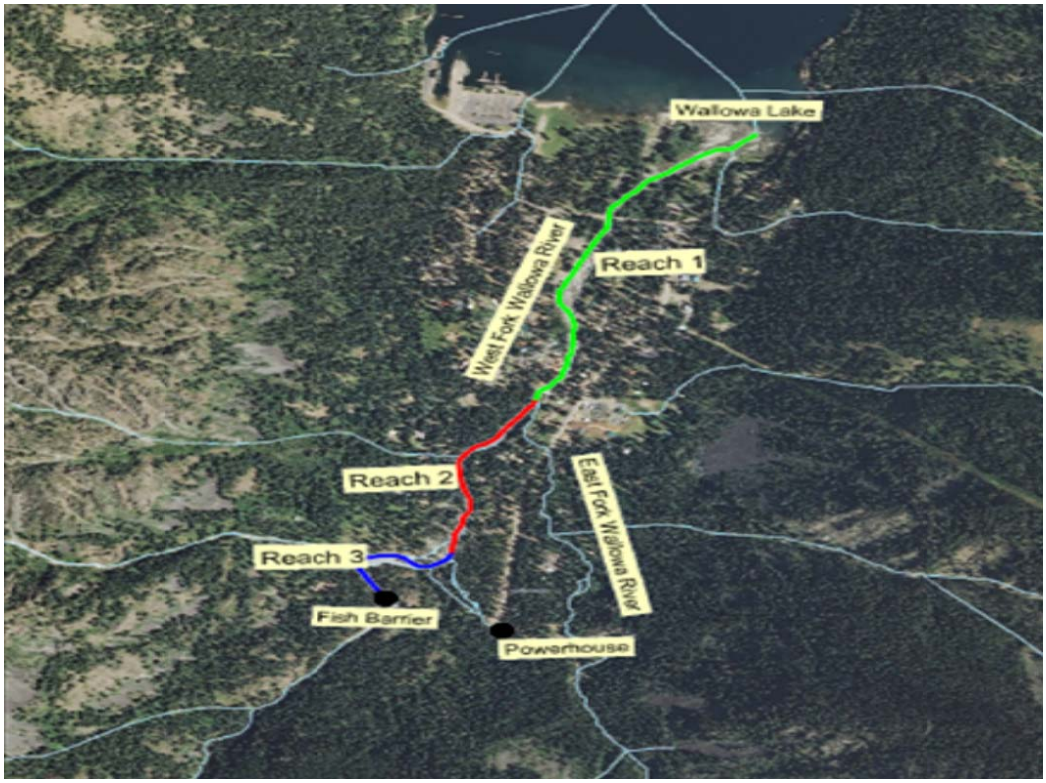
- In the past PacifiCorp operations & maintenance staff has had trouble closing the low-level outlet pipe slide gate once it's open.
- Dewatering the forebay would be required but a complete drawdown is unlikely in June due to high inflow exceeding outflow capacity.
- PacifiCorp engineers and a diver evaluated the gate in 2013 and made modifications so the gate can close and seat under head (with water in the forebay).
- Proposed method of flushing is to fully open the low-level outlet pipe gate in June; staff with hydraulic pumps attached to hoses operated from the upland shoreline would mobilize sediment in the forebay. The sediment will evacuate the forebay through the low level outlet pipe.
- A detailed description of flushing methods will be provided in the FLA.

No additional Sediment and Substrate studies are proposed. The final results and recommendations are presented in the December 2013 Updated Study Report.

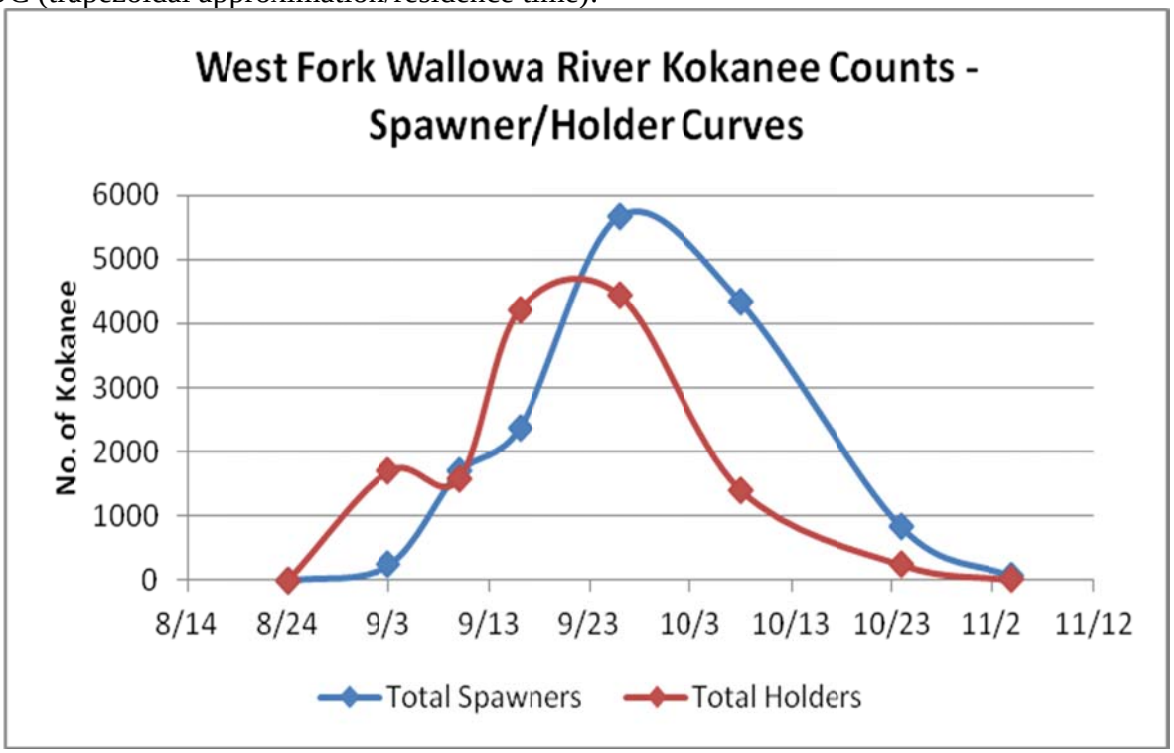
Aquatic Resources – Jeremiah Doyle (PacifiCorp)
Doyle informed the attendees that the study objective is to simulate 2013 total kokanee spawner abundance of the West Fork Wallowa River by Reach.

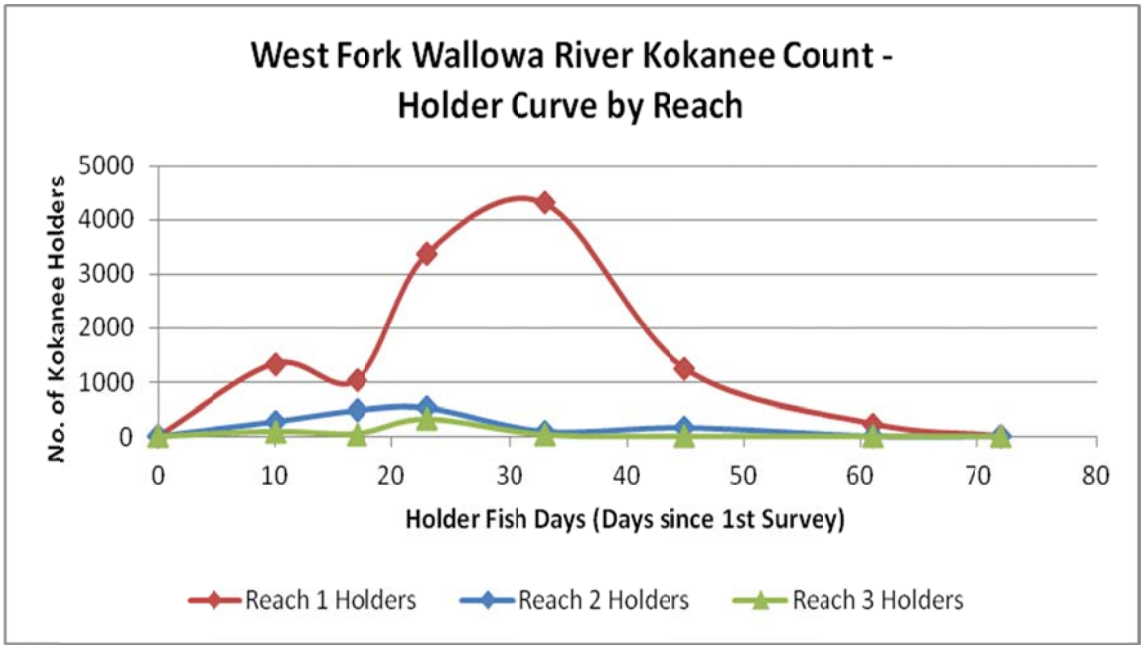
The study area includes surveys that were conducted within the East Fork Wallowa River bypassed reach and the West Fork Wallowa River. The survey methods employed were visual counts. The population was estimated by calculating the Area Under the Curve (AUC) method once the count data was plotted. AUC was captured by trapezoidal approximation divided by holder residence time. Holder residence time was evaluated by temporal space between the peak holder and peak spawner count.

All tasks associated with this study were completed by November 2013. There were no variances to the Study Plan. The figure below presents the evaluation results by stream reach.



Doyle discussed the graph below illustrating Kokanee counts over a period of given dates, Kokanee count – holder curve by reach and the estimates of spawning kokanee by reach using AUC (trapezoidal approximation/residence time):





Estimates of Spawning Kokanee by Reach using AUC (trapezoidal approximation/residence time)	
Reach	*Total Kokanee*
1	***23,455***
2	***2,607***
3	***791***
Total	***27,128***

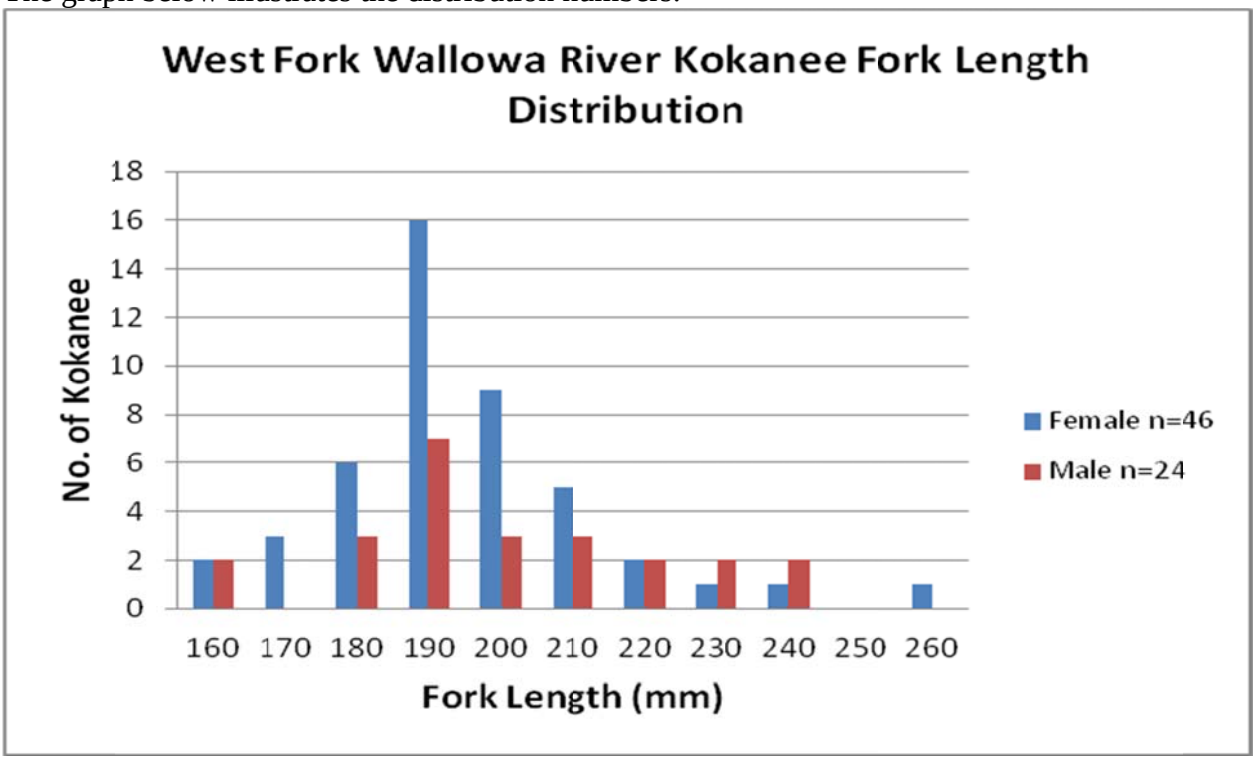
Doyle explained that the reason for evaluating the 3 reaches separately was to identify the percentage of the Kokanee population affected by the proposed tailrace re-route (the West Fork Wallowa River between the existing tailrace discharge and the East Fork Wallowa River mouth.

In order to determine Kokanee spawner abundance, the following methods\observations were employed:

- West Fork Wallowa River was surveyed for spawning kokanee on eight occurrences between August 24, 2013 and November 4, 2013.
- The peak holder count was observed on September 21 with the peak spawner count following shortly thereafter on September 26, giving a residence time of five days.
- A peak kokanee total count of 10,110 was observed in the West Fork Wallowa River on September 26, 2013. A peak total count of 100 kokanee was observed within the East Fork Wallowa bypassed reach during the same survey
- 86 percent of the estimated total number of spawning kokanee within the West Fork Wallowa River in 2013 were counted within Reach 1, as compared to ten percent of the total in Reach 2 and four percent of the total in Reach 3.

- During each survey, along with kokanee live counts, a portion of spawned-out kokanee carcasses were also measured in order to evaluate size at spawn. Average female fork length observed was 198mm with a standard deviation of 20.6mm. Males were observed to be slightly larger, having an average of 206mm fork length with a standard deviation of 25.6mm. The largest measured male was 280mm and the largest female 260mm.

The graph below illustrates the distribution numbers:



No additional data collection or analyses are proposed and the study methodology and results are fully described in the Updated Study Report (Final Technical Report). The results and recommendations will be summarized in the Final License Application

Doyle also reviewed the objectives of determining bull trout use of the Project tailrace and bypassed reach as follows:

- To obtain better understanding of the current distribution and life history of the Wallowa River bull trout population upstream of Wallowa Lake, specifically with concern to the Project tailrace and bypassed East fork Wallowa River, seventeen captured bull trout in 2012 received a Passive Integrated Transponder (PIT) tag prior to release, much of the proposed 2013 study hinged on the ability to recapture these previously PIT tagged bull trout.

The study area includes the collection efforts to capture and or interrogate bull trout targeted areas within the EF Wallowa River bypassed reach, and the Project tailrace.

Doyle informed the attendees that the methods included identifying streams that were electrofished to capture bull trout in August 2013 and passive PIT antennas were deployed at specified sites to interrogate previously tagged bull trout.

No variances from the FERC Study Plan Determination were made during the course of this Study. All data gathering and analysis is complete.

The results are:

- 68 total bull trout were captured, 54 from the bypassed reach and 12 from the tailrace.

PacifiCorp used more stringent protocol in 2012; yet 2013 was less stringent and many more fish were caught.

Project Tailrace

SPECIES	Sample Size	MEAN LENGTH (mm)	STANDARD DEVIATION	MAXIMUM LENGTH
Bull trout & hybrids – 2012	5	300	175.49	550
Bull trout & hybrids – 2013	12	232	92.12	440

EF Wallowa Bypassed Reach

SPECIES	Sample Size	MEAN LENGTH (mm)	STANDARD DEVIATION	MAXIMUM LENGTH
Bull trout & hybrids – 2012	47	113	44.46	245
Bull trout & hybrids– 2013	56	111	73.14	480

PIT antennas at the mouth of the Project tailrace and East Fork Wallowa River bypassed reach were constructed and powered up on August 16, 2013. The East Fork Wallowa River bypassed reach PIT antenna ran continuously until taken out of the stream on November 3, 2013. The Project tailrace channel antenna was taken off-line on August 26, 2013. The short study duration for the Project tailrace antenna was due to the channel de-watering on August 26 which remained de-watered until September 27, at which time a barrier weir was constructed at the mouth of the channel to prohibit fish from entering. The weir was in place until November 5, 2013.

The location of the detections are illustrated in the photo provided below:

EF Wallowa Bypassed Reach PIT Antenna Detections - 2013

PIT #	Capture Year & Location	FL @ capture	PIT Antenna Transit Times
C58803D	2012 - 600-700m EFW bypassed reach	179	8/27 @A2, downstream
AC35675	2013 - Project tailrace	440	8/30 @A2, upstream 9/18 @A4 and A2 downstream
C587230	2013 - Project tailrace	227	9/3 @A2, upstream
AC35672	2013 - 800-900m EFW bypassed reach	480	9/11 @A2, upstream
C583A3C	2013 - Project tailrace	246	10/13 @A4, upstream

Project Pit Antenna Detections – 2013

PIT #	Capture Year & Location	FL @ capture	PIT Antenna Transit Times
6586847	2012 - BC Creek	170	8/19 - 8/21 @A2

No previously tagged bull trout were encountered during the August 2013 electrofishing survey of the East Fork Wallowa bypassed reach and all handled recaptures (3) were encountered in the Project tailrace during the August maintenance de-watering event. Of specific interest concerning the tailrace recaptures, was the recapture of previously captured and tagged bull trout from the upper East Fork Wallowa bypassed reach in 2012.

Along with these three handled recaptures, two additional bull trout captured and tagged during 2012 activities were also interrogated moving past passive PIT antenna sites in 2013.

PIT #	FL @ Initial Capture	FL @ Recap	2012 Capture Location	2013 Recap Location	Comments
591847	215	255	Project tailrace	Project tailrace	40mm growth. Hybrid
C586E5C	191	237	700-800m EFW bypassed reach	Project tailrace	46mm growth
658484B	179	234	700-800m EFW bypassed reach	Project tailrace	55mm growth
C58803D	179	unknown	600-700m EFW bypassed reach	EFW PIT antenna	
6586847	170	unknown	BC Creek	Project tailrace PIT antenna	

In addition, maiden bull trout captures from 2013 activities (63) have not been genotyped. It is anticipated this action will occur in early 2014. To date, 55 bull trout captured upstream of the dam at the outlet of Wallowa Lake and prior to 2013 activities have been genotyped for species identification by the United States Fish and Wildlife Service's Abernathy Fish Conservation Genetics Lab. Of these 55 samples, 10 were verified to be bull trout/brook trout hybrids.

There was general discussion around the issue of bull trout\brook trout hybridization and how they should be managed. The US Fish and Wildlife Service is currently developing a policy to address management of bull trout hybrids.

No additional data collection or analyses are proposed and the study methodology and results are fully described in the Updated Study Report (Final Technical Report). The results and recommendations will be summarized in the FLA.

Macroinvertebrate Surveys – Jeremiah Doyle (PacifiCorp)
Doyle informed the attendees that in order to follow a more thorough protocol, a second year of Relative Abundance and Composition of Macroinvertebrate Species were collected from waters in and around the Project.

The study area included surveys that were conducted within the East Fork Wallowa River bypassed reach, Project tailrace, and above the Project Forebay. A surber-sampler type dip net was used for sample collection. All tasks associated with this Study were completed by the end of August 2013.

There were no variances from the FERC Study Plan Determination during the course of this study.

One-square meter macroinvertebrate samples were collected on August 12, 2013 from sites established during 2012 activities/ Sample locations were at the following locations:

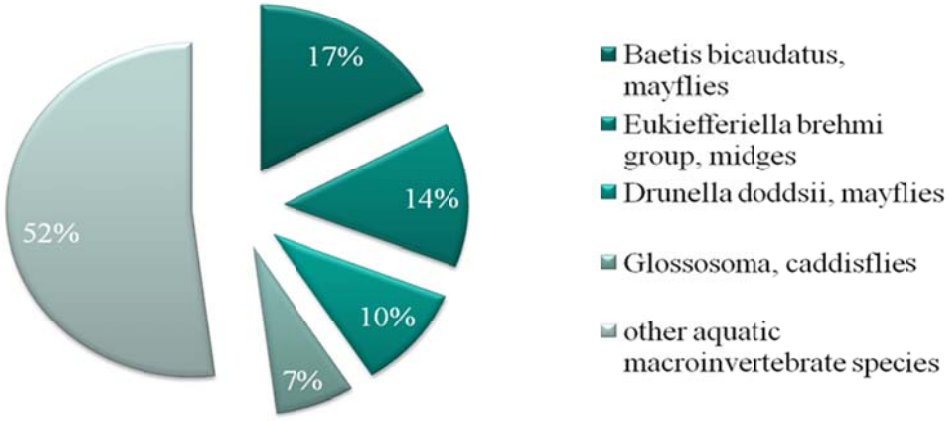
- EF Wallowa River just above the Project forebay
- EF Wallowa River 500 meters upstream from the confluence with the WF Wallowa River
- EF Wallowa River just upstream from the confluence with the WF Wallowa River.

During collection of the macroinvertebrate sample from the upper East Fork Wallowa River bypassed reach above the Project forebay on August 12, 2013 the Project forebay itself was also surveyed for fish presence. Using snorkel survey techniques, the entire forebay was surveyed. Three brook trout parr were observed. These fish were most likely out-migrants from Aneroid Lake upstream of the forebay.

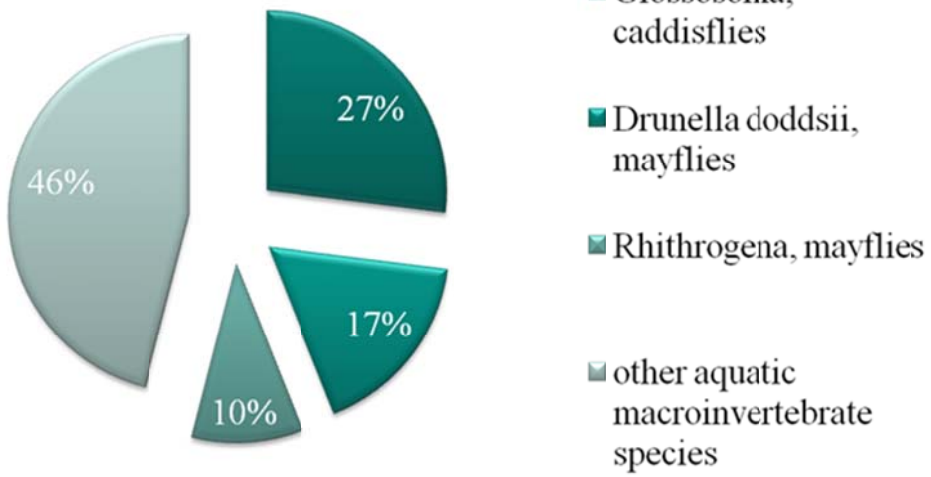
Within the three samples collected, taxon richness and diversity increased the further downstream the sample location. Percent composition of species intolerant to higher water temperatures and lower dissolved oxygen levels also increased in the downstream sample when compared to the samples taken from upstream. Though tolerant taxon increased in samples taken from lower in the stream reach, all three samples collected had high levels of moderate to highly intolerant aquatic macroinvertebrate species, indicative of high water quality.

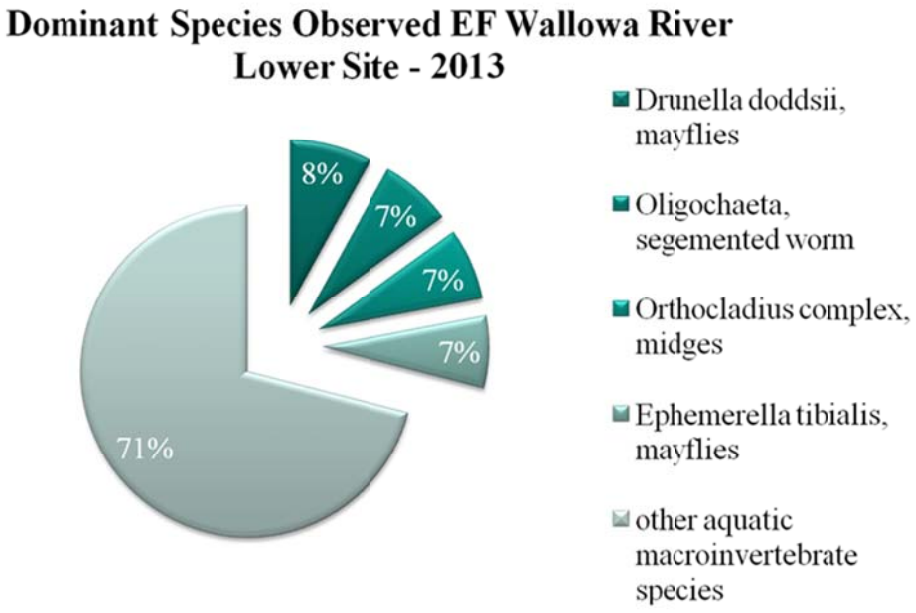
The pie charts below illustrate the dominate species observed in the three locations:

Dominant Aquatic Macroinvertebrate Species Observed EF Wallowa River Above Forebay Site - 2013



Dominant Species Observed EF Wallowa River Middle Site - 2013





No additional data collection or analyses are proposed and the study methodology and results are fully described in the Updated Study Report (Final Technical Report). The results and recommendations will be summarized in the FLA.

<Break 2:10pm>
<Reconvene 2:15pm>

Instream Flow Study – Kaylea Foster and Russ Howison (PacifiCorp)
The objective of the instream flow study is to simulate relationships between fish habitat and flow in the East Fork Wallowa River bypassed reach, to perform a habitat duration analysis for important life stages of bull trout and kokanee over a variety of potential minimum flows and provide objective, scientifically-grounded information to guide environmental flow decision making.

The study area is the East Fork Wallowa bypassed reach.

The study completion was marked by 5 milestones:

- Habitat Survey
- Stakeholder Meetings to:
  - Develop Habitat Suitability Criteria
  - Identify Study Area
  - Identify Transect Locations
- Field Data Collection
- Habitat Simulation with Physical Habitat Simulation (PHABSIM) model
- Habitat Duration Analysis

Study Status is as follows:

MILESTONE	COMPLETION DATE
Mesohabitat Survey	April 2012
Stakeholder Meetings	June 2012
Field Data Collection	August 2012
Habitat Simulation*	February 2013
Habitat Duration Analysis	May 2013

*included consultation with ODFW

The Instream Flow Incremental Methodology (IFIM) based methods include the following:

- Meso-habitat survey
- Stakeholder meetings
- Hydraulic survey
- PHABSIM modeling

Variance to the study plan is as follows:

- Field work was generally consistent with study plan
- Study target flows compared to gaged flows:

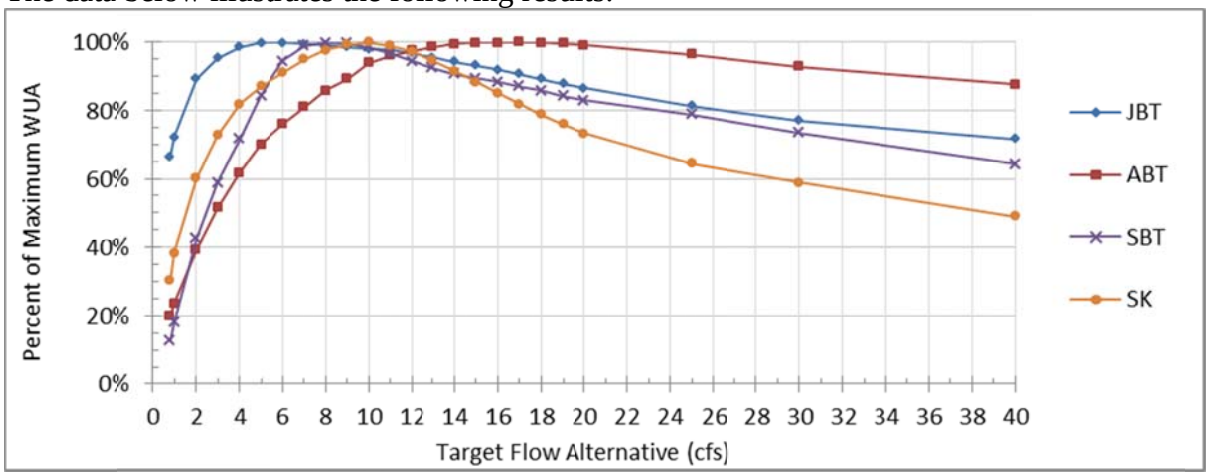
Study Plan Target Q		Gaged Flows
High Flow:	16 cfs	15 cfs
Medium Flow:	8 cfs	7.5 cfs
Low Flow:	4 cfs	5.3 cfs

Rainbow trout in the bypassed reach were omitted from the analysis as they are likely either the triploid (infertile) Cape Cod strain routinely stocked in Wallowa Lake, or downstream migrants from Aneroid Lake, where ODFW stocks diploid (fertile) Cape Cod rainbow trout. The diploid strain is a fall spawner, and therefore unlikely to establish a self-sustaining population due to the shortage of thermal degree-days necessary for successful egg incubation. In either case, the rainbow trout in the bypass reach appear to be products of a routine stocking schedule, unable to reproduce. PacifiCorp considered it biologically prudent to focus the study efforts on ESA-listed bull trout and kokanee. No stakeholder objections to this approach were raised during the study planning meetings and consultation.

Foster reviewed the following existing conditions:

- East Fork bypass reach is approximately 1.7 miles long
- The lower half of the bypass supports an adfluvial bull trout population, hatchery-reared rainbow trout, and brook trout
- The lowest 600 to 800 feet of the bypass supports kokanee spawning
- The current FERC minimum flow requirement is 0.5 cfs
- PacifiCorp maintains a minimum flow of 0.5 to 0.8 cfs

The data below illustrates the following results:



- Greatest rate of habitat increase occurs as flows increase from 0.8 cfs and 2 cfs.
- Peak WUA values occur at:
  - 5 cfs to 6 cfs for juvenile bull trout (JBT)
  - 8 cfs for spawning bull trout (SBT)
  - 18 to 19 cfs for adult bull trout (ABT)
  - 10 cfs for spawning kokanee (SK)

Q: Why not stop the analysis at habitat-flow relationships (previous slide)?

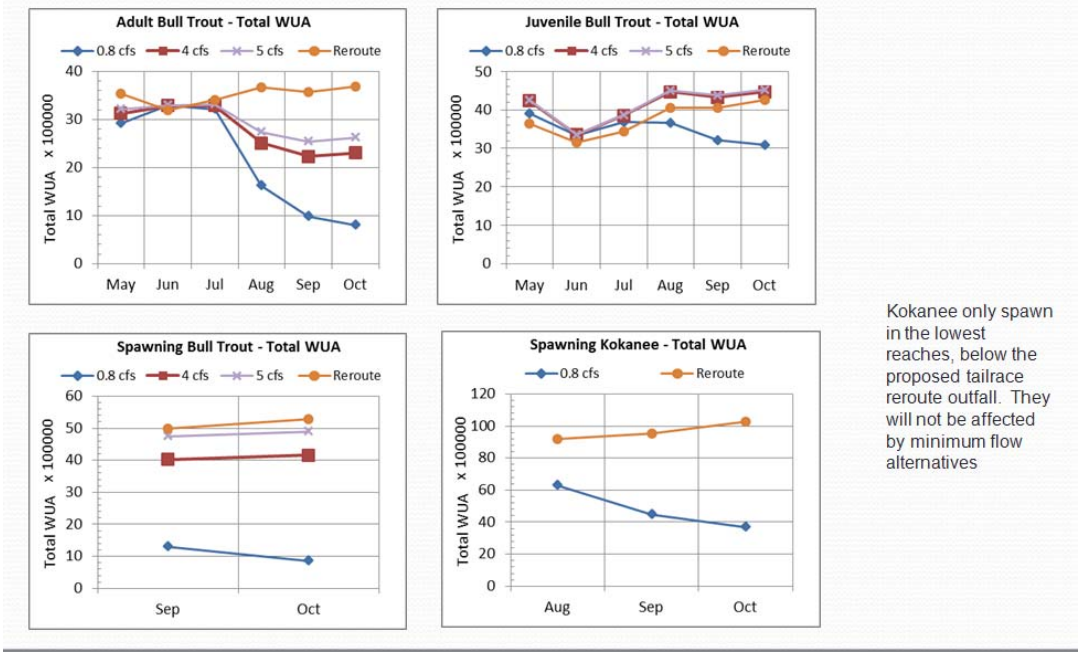
A: WUA curves illustrate how habitat changes with flow, but do not incorporate the actual range of flows that are known to occur in the bypass reach. Habitat duration analysis incorporates actual flows and temporal variation

A duration analysis was performed for minimum flow alternatives between 0.8 cfs and 10 cfs. An unimpaired alternative was also analyzed to represent the tailrace reroute proposal.

Selected results are presented, including:

- 0.8 cfs (existing conditions)
- 4 cfs (PacifiCorp's proposal)
- 5 cfs (Stakeholder recommendation)
- Unimpaired Flow (Proposed tailrace reroute)

Following are the results of the Habitat duration analysis:



General discussion took place regarding the applicability of the instream flow study results to the upper habitat reach where PacifiCorp is proposing a minimum instream flow of 4 cfs. All of the transect data for the IFIM study were collected downstream of this reach. It is currently uncertain what habitat quality improvements would result from flow increases above the proposed 4 cfs. There may be value in using the IFIM results from the lower habitat reach as an index of flow-habitat relationships in the upper habitat reach. However, the channel is of a different character in these two locations. Conditions in the upper habitat reach are not conducive to habitat modeling. Tim Hardin (ODFW) asked if there is a deadline by which PacifiCorp and agencies need to reach agreement on flow conditions. Howison stated that PacifiCorp would like to resolve as much as possible between now and filing of the Final License Application. Post license application filing, the agencies can always comment to the FERC. There is a study dispute resolution process if an agency thinks additional study of an issue is needed.

Cutlip communicated to the attendees that stakeholders can file a request to amend or modify a study plan. PacifiCorp has to file its license application by February 28, 2014. After the application is filed, FERC will review the information provided in the application and make a determination if any additional information is needed.

Howison invited the agencies to contact PacifiCorp if they desire additional discussion between now and February 28, 2014.

No additional data collection or analyses are proposed at this time and the results and recommendations are summarized in greater detail in the Preliminary License Proposal

The study methodology and results are fully described in the Updated Study Report (Final Technical Report).

Wrap Up and Next Steps

PacifiCorp will continue to work on preparing the final license application incorporating the updated study data from 2013 and responding to the FERC and agency comments received on the PLP. The Updated Study Report Meeting discussions will also be considered in preparing the license application.

PacifiCorp will continue to accept and consider comments and recommended measures from stakeholders and is open to additional discussion on any issue.

PACIFICORP ENERGY
A DIVISION OF PACIFICORP

Wallowa Falls Hydroelectric Dam Relicensing
Updated Study Report Meeting
January 15, 2014 – 9:00 am – 4:00 pm

Meeting Room – PacifiCorp, 111 W. North Street, Enterprise, OR 97282

Participant Name	Agency/Company	
Russ Howison Russ.howison@pacificorp.com	PacifiCorp Energy	
Kim McCune	PacifiCorp Energy	
Kendel Emmerson	PacifiCorp Energy	
Kaylea Foster	PacifiCorp Energy	
Jeremiah Doyle	PacifiCorp Energy	
Briana Weatherly	PacifiCorp Energy	
Ken Carlson	CH2M Hill	Consultant
Matt Cutlip	FERC - Portland	
Diane Rodman	FERC – DC	
Mike Tust	FERC	
Daniel Gonzalez	US Forest Service	
Gretchen Sausen	US Fish & Wildlife Service	
Jerold Hustafa	US Fish & Wildlife Service	
Tim Hardin	Oregon Dept of Fish & Wildlife	
Elizabeth Moats	Oregon Dept of Fish & Wildlife	
John Dadoly	ODEQ	
Alan Miller	US Forest Service	