Project Status Meeting
Wallowa Falls Hydroelectric Project
FERC Project No. 308

November 4, 2014

PACIFICORP ENERGY
A DIVISION OF PACIFICORP

Welcome

Purpose of Meeting:

- to review PacifiCorp's Additional Information Request-Response filed with FERC on October 22, 2014
- to discuss enhancement measures proposed in the Final License Application
- to discuss recreation interests in the Project area

Introductions

Process Schedule

Discussion

Wallowa Falls Relicensing – Post Application Schedule

Responsible Party	Task	Date	Notes
PacifiCorp	FILE Final License Application	2/28/2014	
PacifiCorp	FILE Public Notice of License Application filing	3/14/2014	
FERC	FERC Director Issued Additional Information Request (AIR) to PacifiCorp	3/27/2014	
PacifiCorp	FILE Response to FERC AIR	6/25/2014	
FERC	FERC Director Issued Second Additional Information Request (AIR) to PacifiCorp	7/24/2014	
PacifiCorp	File Response to Second FERC AIR	10/22/2014	
FERC	Ready for Environmental Analysis (REA) and Application Acceptance	11/14/14	Estimated date, FERC has discretion to take longer if needed
All stakeholders	Comments, Interventions, Recommendations, Preliminary Terms and Conditions due	1/13/15	60 days from REA
PacifiCorp	Requests 401 Certification	1/13/15	60 days from REA
PacifiCorp	File reply to stakeholder comments, recommendations and prescriptions	2/27/15	45 days from preliminary terms and conditions (105 days from REA)
FERC	Issue Draft EA	7/12/15	180 days from preliminary terms and conditions (240 days from REA)
All stakeholders	Comments on EA due	8/11/15	30 days after EA (FERC has discretion to allow up to 60 day review period)
Agencies	Modified 4(e) Conditions and Fishway Prescriptions	10/10/15	60 days from EA comment due date
FWS	Issue ESA biological opinion (BO)	11/24/15	135 days from Draft EA
FERC	Issue Final EA	1/8/16	90 days from modified (final) terms and conditions (105 days from REA)
ODEQ	Issue 401 Water Quality Certificate	1/13/16	1 year from 401 Application
FERC	Issue License Order	1/23/16	Assumes 60 days from Final EA. However License cannot be issued until Biological Opinion and 401 Water Quality Certificate are issued.
PacifiCorp	Accepts license	2/22/16	Protect completion

AIR 1

Winter Channel Ice Formation and Flooding

FERC Request

Comments in the Project record indicate that flooding in the East Fork bypassed reach can occur under existing conditions during the December through February period… Provide the following additional information for the period of December 1 through December 31, 2013:

(a) a summary of daily average flows in the bypassed reach as measured at the project's compliance gage downstream of the East Fork Dam;

(b) a summary of the daily average powerhouse discharge during this period; and

(c) if available, any additional water temperature or stream flow data (e.g., daily averages by monitoring location) recorded during this period.

ATTACHMENT A

Wallowa Falls (FERC Project No. 308) Bypassed Reach Flow, Temperature and Generation

Date	BPU Q (CFS)	Generator Q (CFS)	BPL Q (CFS)	BPU TEMP (degrees C)	BPL TEMP (degrees C)	Generation (KWH)
12/01/13	6.10	9.6	6.88	2.25	3.10	672
12/02/13	10.76	4.2	12.01	1.19	1.82	294
12/03/13	12.10	0.0	22.38	0.30	-0.07	0
12/04/13	11.54	0.0	50.18	-0.07	-0.09	0
12/05/13	11.48	0.0	82.76	-0.07	-0.09	0
12/06/13	9.13	4.0	96.93	0.05	-0.10	276
12/07/13	4.16	9.7	90.30	0.35	-0.10	681
12/08/13	4.05	9.5	90.00	0.39	-0.11	669
12/09/13	3.81	9.5	99.20	0.93	-0.11	666
12/10/13	3.41	9.5	124.95	1.13	-0.12	664
12/11/13	3.55	9.5	97.81	1.16	0.19	664
12/12/13	3.70	9.6	5.19	1.49	1.14	672
12/13/13	3.29	9.7	5.55	1.67	1.66	682
12/14/13	3.11	9.6	5.10	1.69	1.75	673
12/15/13	3.17	9.6	5.01	1.90	1.97	675
12/16/13	3.14	9.8	4.82	1.64	1.79	684
12/17/13	3.22	9.6	4.51	1.83	1.81	674
12/18/13	3.10	9.7	4.55	1.88	2.01	681
12/19/13	3.00	9.5	4.78	0.95	1.06	664
12/20/13	3.22	9.5	4.33	1.00	0.64	666
12/21/13	3.63	9.5	5.53	1.53	1.61	666
12/22/13	3.42	9.6	5.20	1.80	1.92	673
12/23/13	3.64	9.5	5.19	2.06	2.23	664
12/24/13	3.20	9.5	4.90	0.87	1.13	668
12/25/13	3.13	9.4	4.61	1.05	0.87	658
12/26/13	3.11	9.7	4.58	1.55	1.51	682
12/27/13	2.99	9.8	4.33	1.66	1.55	684
12/28/13	2.72	9.6	4.53	1.35	1.48	676

Key Point

- *While Project operations may not have a significant effect on occurrence and duration of freezing water temperatures (and ice formation) in the vicinity of BPL, it is likely that changes in flow related to powerhouse operations could affect the magnitude of backwater effects when significant ice formation ("ice damming") occurs. For example, the December 2013 flow data from the BPL site (Figure B-2) shows a precipitous increase in flow about December 3 that is coincident with the onset of the freezing of the water at that site.*

Figure B-1. Weather Conditions for November 25-December 20, 2013

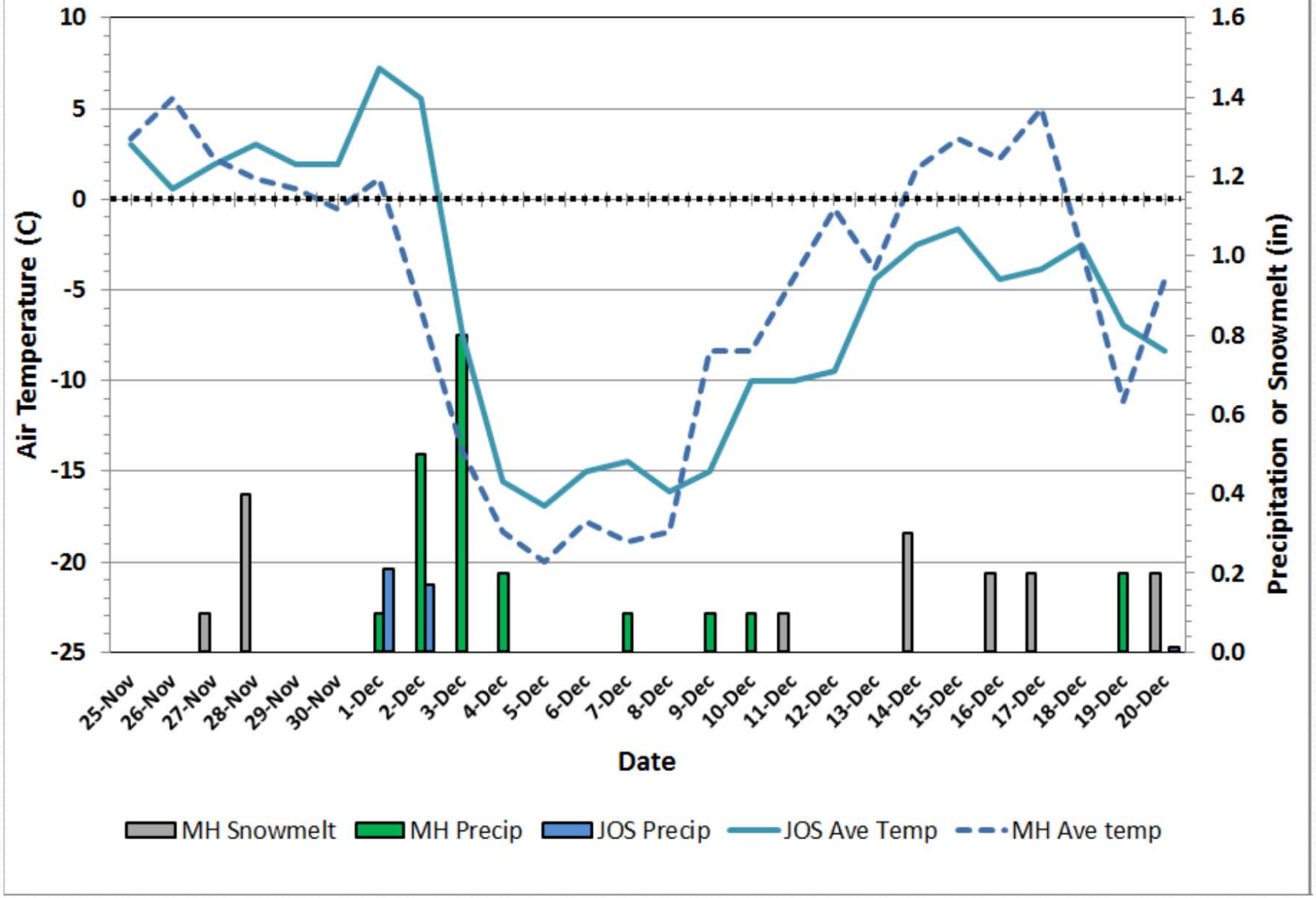
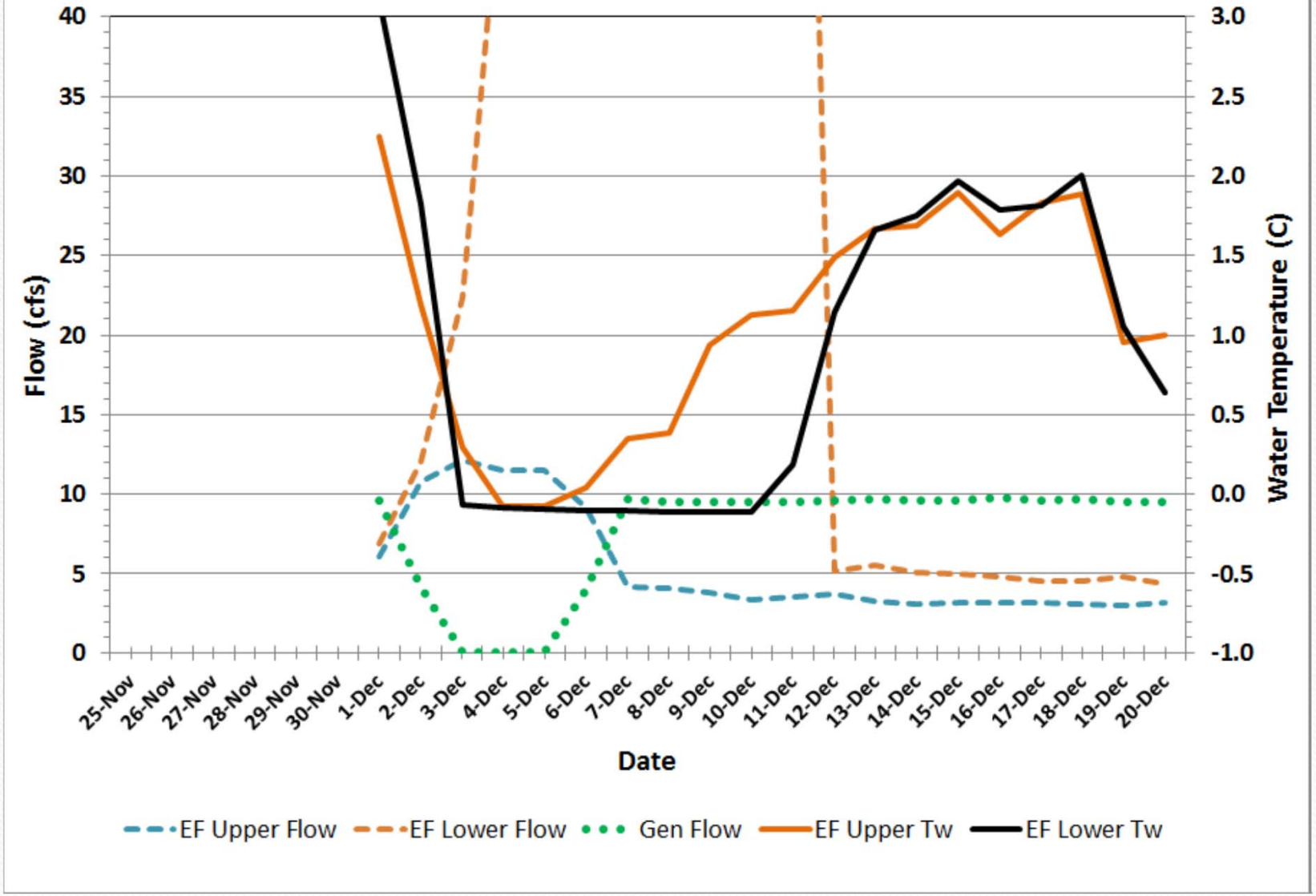


Figure B-2. Flow and Tw Conditions for November 25-December 20, 2013



AIR 2

Powerhouse Outage Events

FERC Request

Provide a detailed description of any powerhouse outage events that occurred from August 1, 2011 to present, including a description of the cause, date, and duration of each of the events, as well as an explanation of whether the penstock headgate was opened or closed during each of the events.

PacifiCorp Energy
Hydro Resources Department
Wallowa Falls Hydroelectric Project Outage Report

Unit : All Units - Wallowa Falls Hydroelectric Project

Forced Outage Type : All Internal and External Outage Types

Forced Outage Cause: All Causes

Blue shading indicates confirmed or possible headgate closure.

Outage Number	Outage Start (Date/Time)	Cause	Explanation	Classification	Unit Name	Outage End (Date/Time)
11537	1/13/2012 15:30:00 PM		Unplanned: Broken turbine bucket			2/1/2012 08:00:00 AM
11537 cont	2/1/2012 08:50:00 AM		Unplanned: Unknown cause, headgate closed			2/2/2012 16:10:00 PM
11710	2/3/2012 09:44:00 AM		Unplanned: Faulty DC field cable on generator			2/7/2012 14:20:00 PM
11740	2/8/2012 16:01:00 PM		Unplanned: Faulty electrical relay			2/8/2012 18:40:00 PM
12085	7/6/2012 09:14:00 AM		Planned: Stator cleaning, headgate closed			7/13/2012 09:30:00 AM
11510	8/13/2012 07:34:00 AM		Planned: annual maintenance, headgate closed			8/16/2012 15:30:00 PM
12275 & 12394	8/24/2012 15:53:00 PM		Planned: Battery maintenance & repair PLC			9/13/2012 17:40:00 PM
12521	10/09/2012 14:50:00 PM		Unplanned: Turbine Bearing Oil leak			10/10/2012 18:21:00 PM
12524	10/12/2012 16:13:00 PM		Unplanned: Turbine Bearing Oil problems			11/1/2012 17:55:00 AM
12646	11/19/2012 22:30:00 PM		Unplanned: Electrical Storm in area			11/20/2012 14:33:00 AM
12326	8/26/2013 09:03:00 AM		Planned: annual maintenance, headgate closed			9/26/2013 14:10:00 PM
13825	12/2/2013 11:50:00 AM		Planned: Switchyard electrical equipment repair, headgate closed			12/5/2013 13:22:00 AM
14086	2/14/2014 16:00:00 PM		Unit intentionally shut down for penstock protection, headgate closed			8/27/2014 08:20:00 AM

AIR 3

Bypassed Reach Flow Modeling

FERC Request

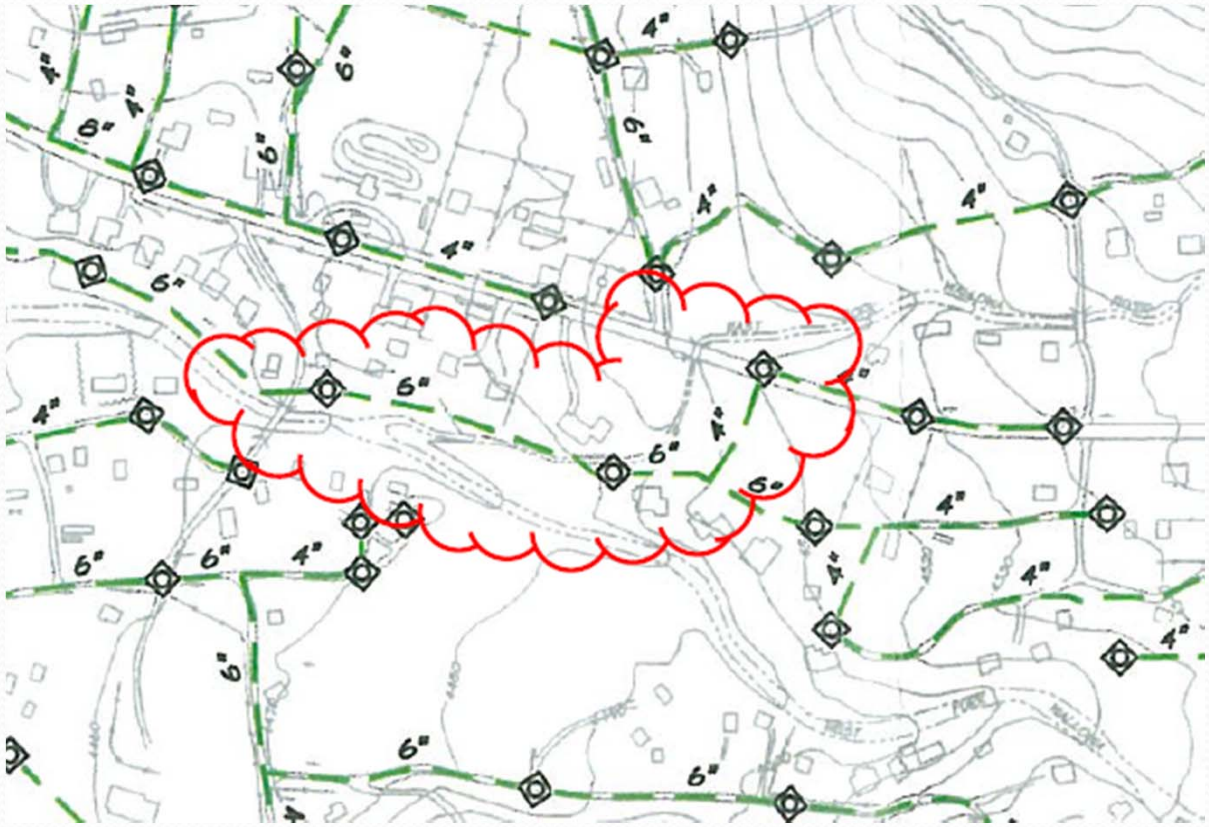
Provide the following for the East Fork Wallowa River Bypassed Reach:

- cross section survey data collected for the PHABSIM model from your IFIM study in tabular format
- design information including survey data or as-built plans for all existing in-stream structures (e.g., bridges, culverts, the abandoned USGS gauge weir) that could affect stream flow at flood stage
- photographs of all existing in-stream structures

PacifiCorp Response

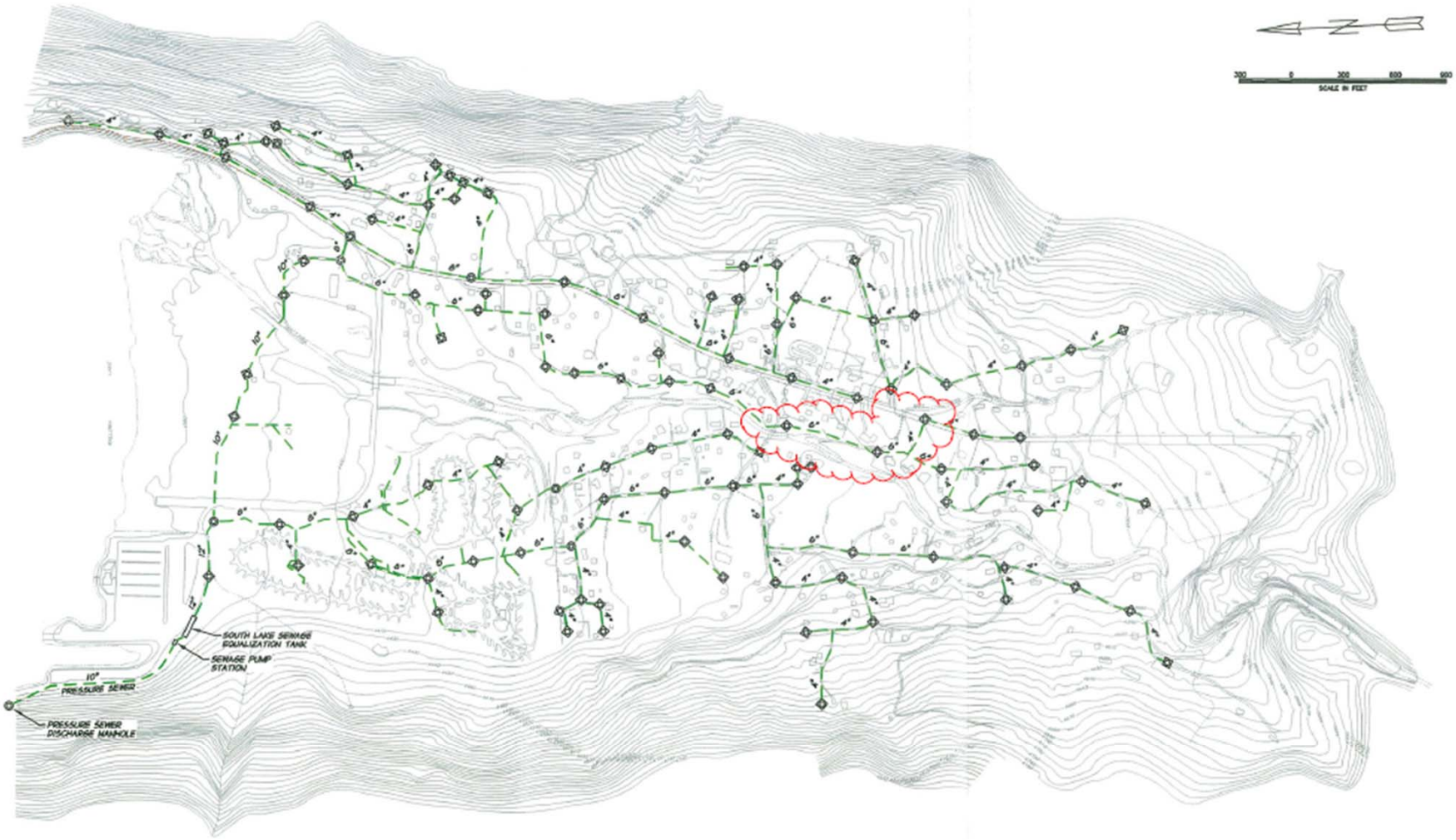
- Cross section survey data was provided on CD
- Design Drawings for Bailey Lane Bridge, OR Hwy 351 Bridge, USGS weir (abandoned), and three county water and sewer lines
- Transmittal memos from Wallowa County consulting Engineers, Anderson Perry & Associates
- Photos of the two bridges and USGS weir

County Sewer System



Flying Arrow Property

Flying Arrow Property



LEGEND

EXISTING MANHOLE

EXISTING CLEANOUT

EXISTING SEWER MAIN AND SIZE

anderson perry & associates, inc.

WALLOWA LAKE COUNTY
SERVICE DISTRICT
WATER/WASTEWATER SYSTEM STUDY
EXISTING WASTEWATER SYSTEM
(SOUTH END OF LAKE)

FIGURE
1-3

Anderson Perry Memo

- "…it is apparent that flooding of the septic tanks at the Flying Arrow site could result in potential impacts to the operation of the District's sewage collection system and/or the City of Joseph's wastewater treatment plant….
- Sewage overflows could occur at any of the cleanouts or manholes shown between the Flying Arrow site and the south lake sewage equalization tank….
- Sewage overflows could result in inadequately treated wastewater being discharged to the Wallowa River during the winter months….
- The City of Joseph would likely receive a violation from DEQ for non-compliance with conditions of their NPDES permit in either situation."

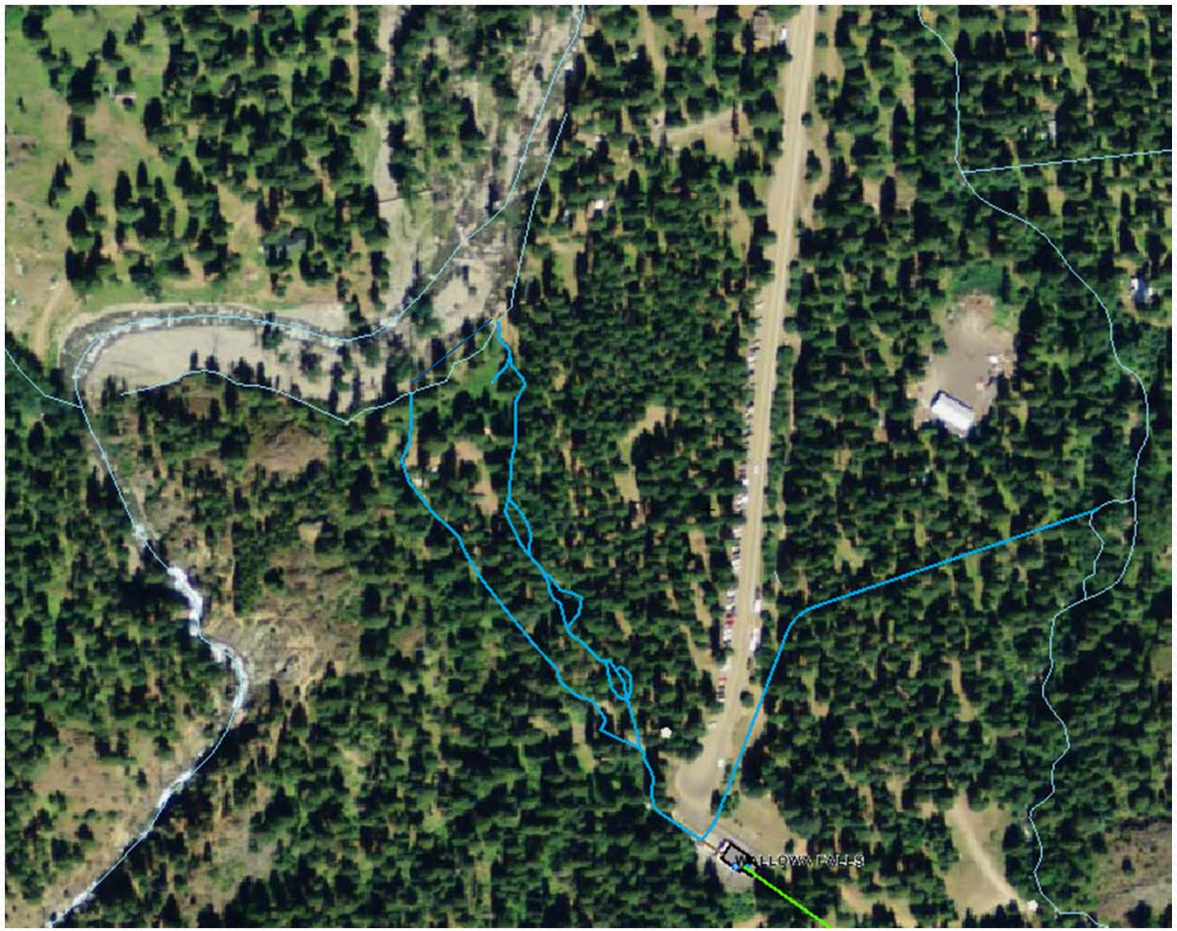
AIR 4

Tailrace Alternatives

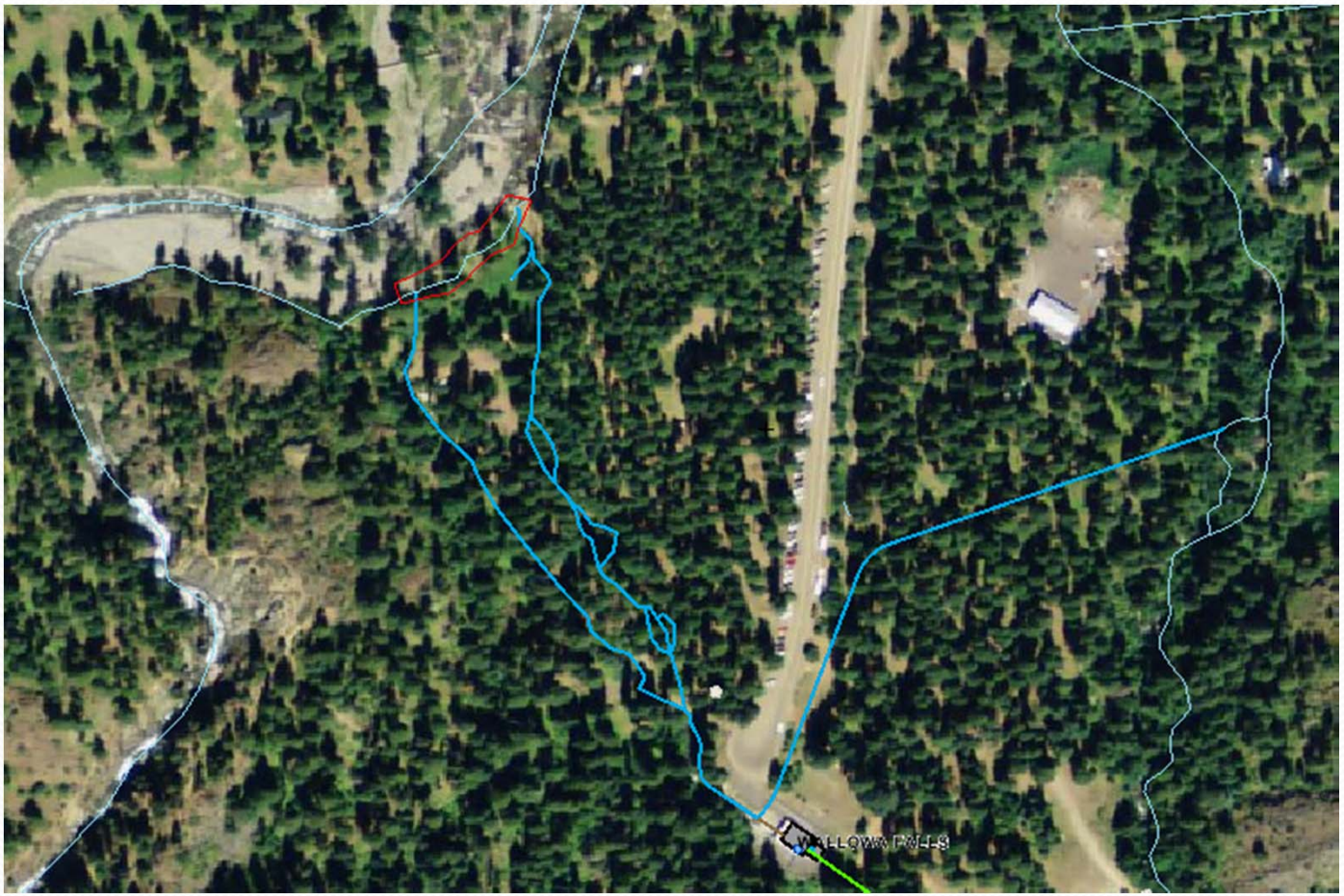
FERC Request

- Provide an evaluation of the environmental effects, benefits, and costs of the following (five) alternatives:

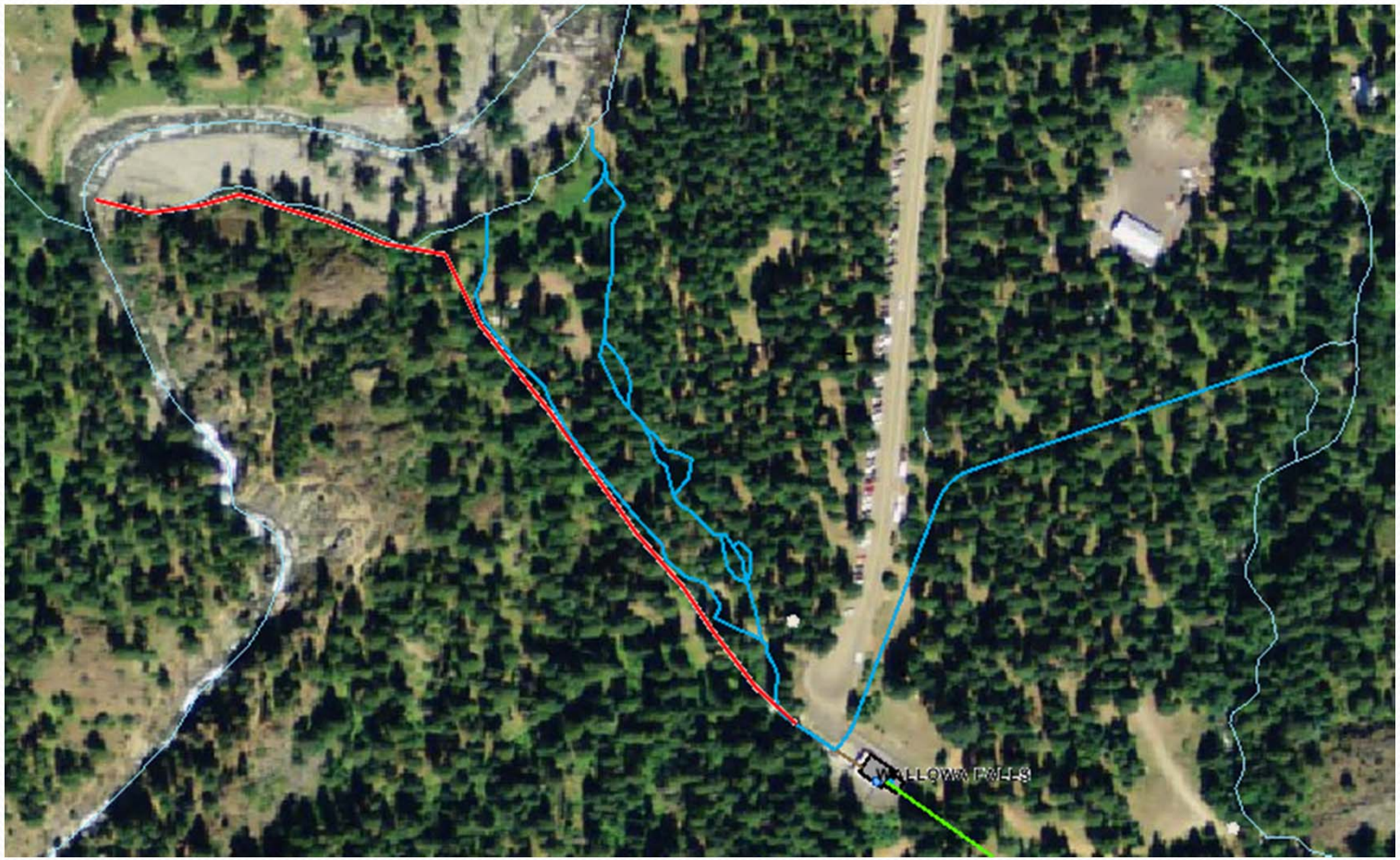
(1) permanently dewatering the existing tailrace channel and constructing a pipe along the existing tailrace channel alignment to convey powerhouse flows to the West Fork



(2) continuing to use the existing tailrace channel to convey powerhouse flows to the West Fork, but constructing a permanent fish passage barrier at the existing tailrace channel confluence with the West Fork to prevent fish from migrating into the tailrace channel;



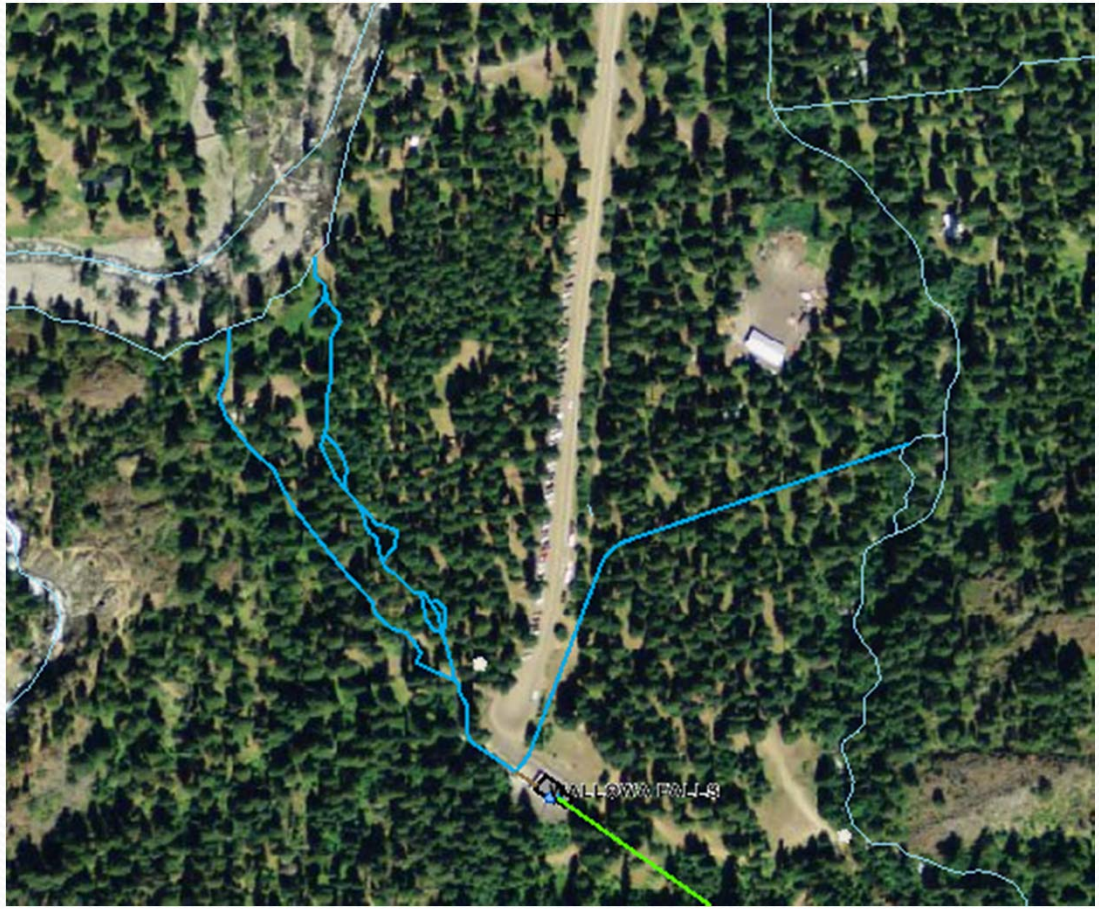
(3) permanently dewatering the existing tailrace channel and constructing a pipe along a different alignment that discharges to a more-stable channel location upstream of the current discharge location on the West Fork.



PacifiCorp Response

- FERC alternatives 1, 2, and 3 all entail construction of new facilities in the active West Fork Wallowa River channel in order to eliminate risk of stranding ESA protected bull trout and\or bull trout redds.
- The capital costs associated with alternatives 1, 2 and 3 are prohibitively high considering the risk to damage from seasonal high flows the water conveyance system and\or outfall structure would be subject to.

(4) seasonal shutdown of the proposed tailrace pipe with a discharge of powerhouse flows to the existing tailrace channel during winter periods of channel ice formation in the bypassed reach



PacifiCorp Assumptions

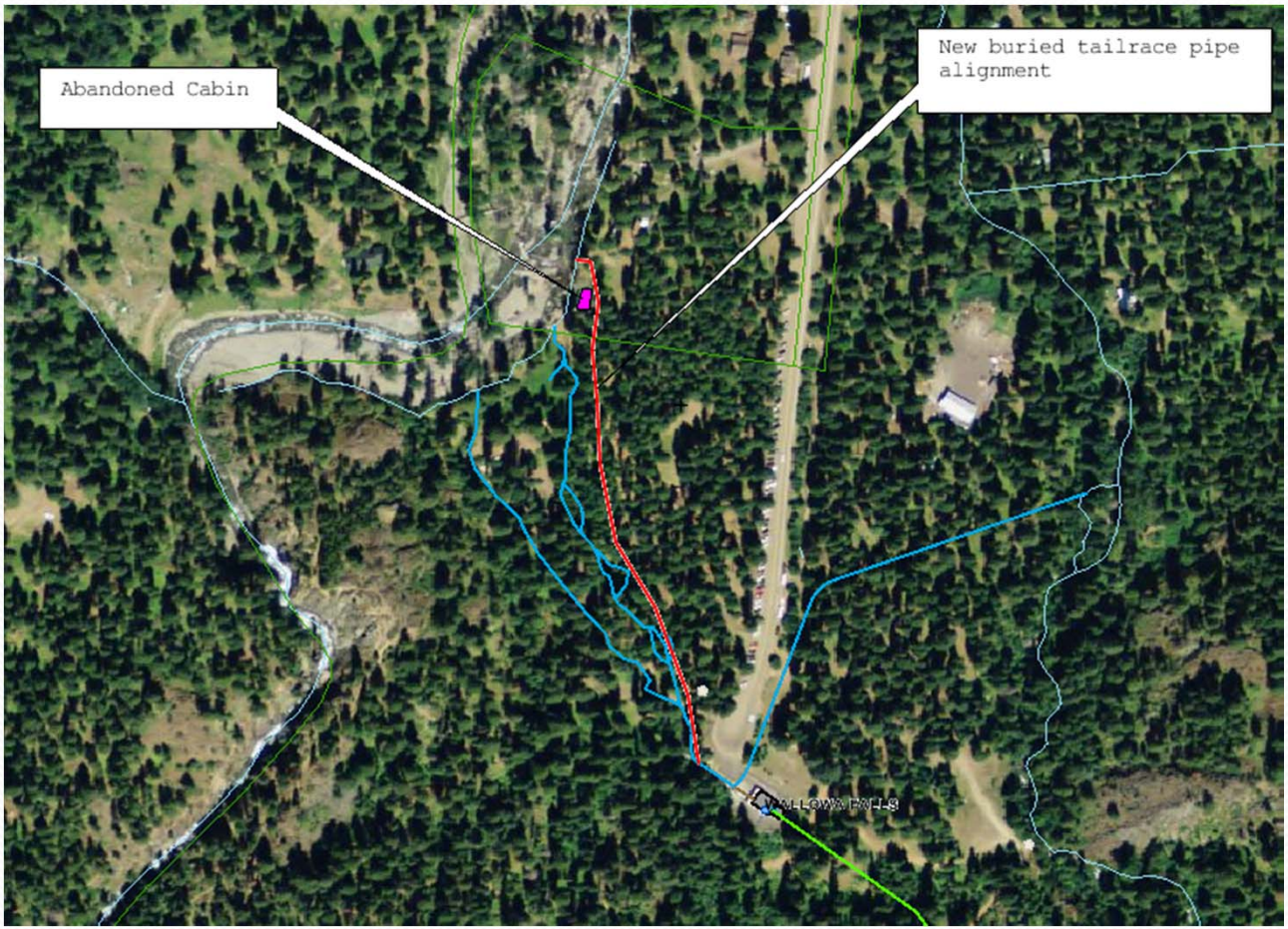
- Shutdown of the tailrace discharge into the East Fork Wallowa River would need to occur from November through March, which is the period when potential channel ice formation can occur from particularly cold weather events;
- During the shutdown period, all powerhouse flow would be discharged into the existing tailrace channel;
- A temporary barrier (picket-weir or similar) would seasonally be constructed at the mouth of the existing tailrace channel to prohibit fish from entering it;
- Under the new license, the required instream flow release into the East Fork bypassed reach during the shutdown period would be 4 cfs as measured at the proposed compliance gage location.

Under this alternative, the reduction in flow to the East Fork bypassed reach during the shut-down period would result in a reduction in channel wetted perimeter of up to 3.4 feet (1 m) that could adversely affect bull trout redds.

When the existing tailrace is brought online, and East Fork flow drops from 14 cfs (median) to 4 cfs, an average reduction in wetted perimeter of 1.7 feet would occur. Depending on one's location in the stream, this reduction in wetted perimeter could range from 0.5 feet to 3.4 feet.

Project Shutdown/ Full Flow in Bypass (CFS)	Summary of wetted perimeter reduction when flows drop to 4 cfs		
	Min reduction, 13 transects (ft)	Average reduction, 13 transects (ft)	Max reduction, 13 transects (ft)
12.0	0.5	1.6	3.2
14.0	0.5	1.7	3.3
16.0	0.5	1.8	3.4

(5) construct a pipe to convey powerhouse flows that extends farther downstream of the existing tailrace channel alignment/discharge point to an area of the West Fork with a more-stable channel that wouldn't be as susceptible to channel migration.



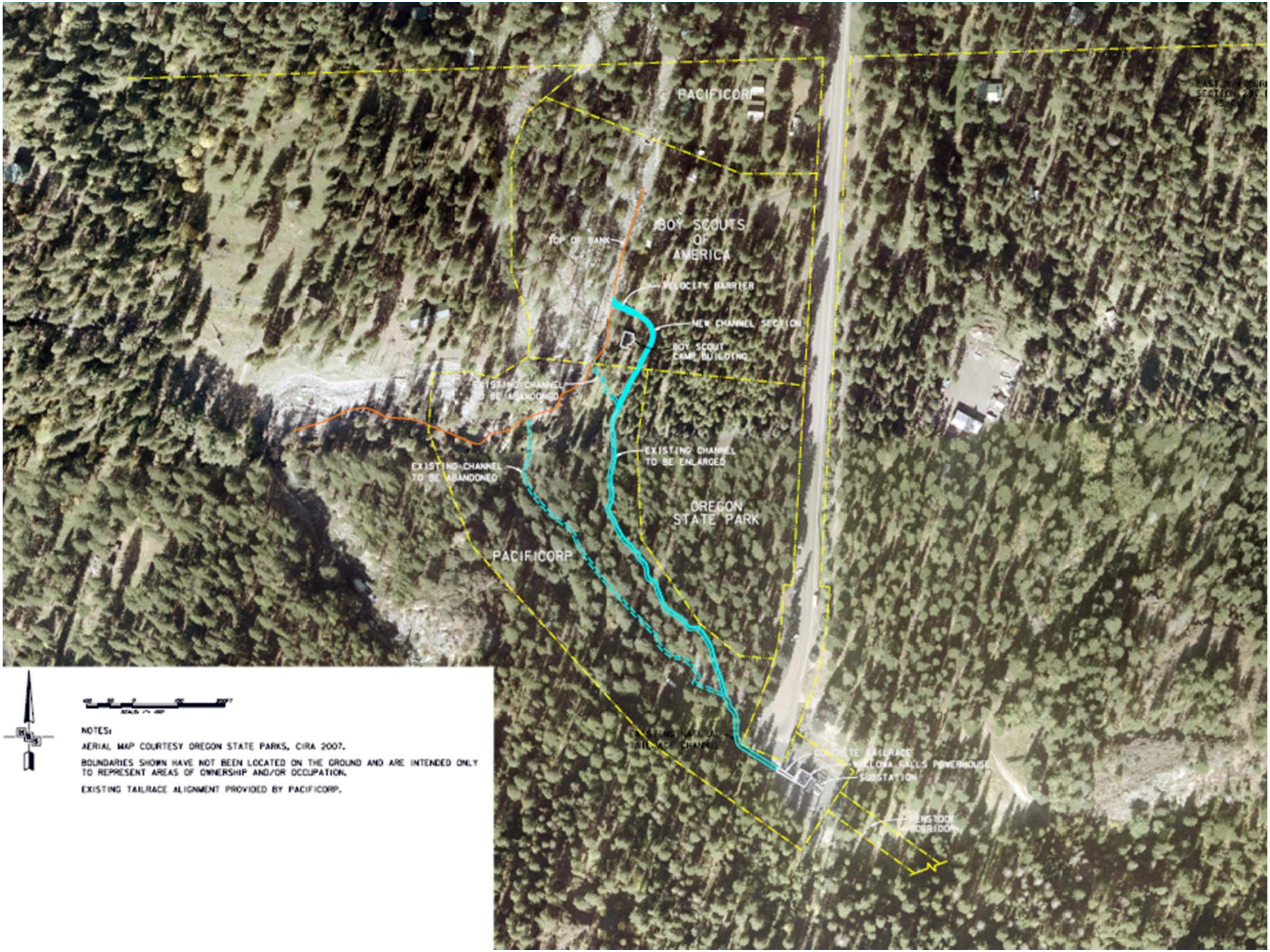
PacifiCorp Response

- Capital cost would be comparable to the reroute to the East Fork Bypassed Reach (approx $1.75 M).
- This alternative would not realize the same aquatic habitat benefits in the lower East Fork Wallowa River bypassed reach as the proposed new tailrace discharge location on the East Fork Wallowa River.
- The outfall structure associated with this alternative would be immediately adjacent to, and discharge into, the active West Fork Wallowa River channel.
- Though a detailed geotechnical evaluation of the area between the powerhouse and the West Fork has not been done, this location is likely to be much less susceptible to damage from high flow events in the West Fork compared to alternatives 1, 2, and 3 above.


DANGER

PacifiCorp's Sixth Alternative (f)

- Permanently dewatering the existing tailrace channel and constructing an open excavated channel to convey powerhouse flows that extends farther downstream of the existing tailrace channel alignment/discharge point to an area of the West Fork with a more-stable channel that would not be as susceptible to channel migration:



NOTES:

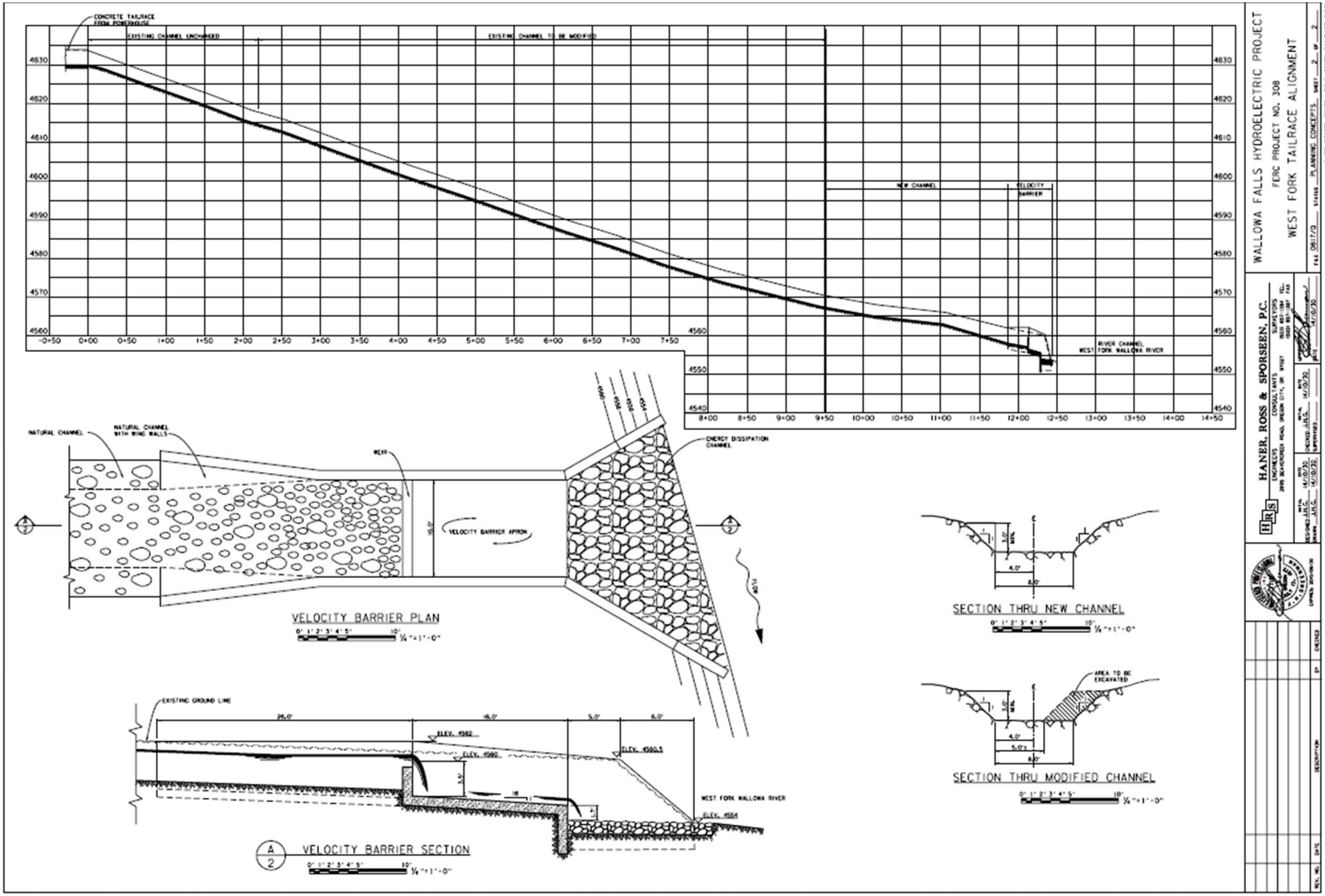
AERIAL MAP COURTESY OREGON STATE PARKS, CIRA 2007.

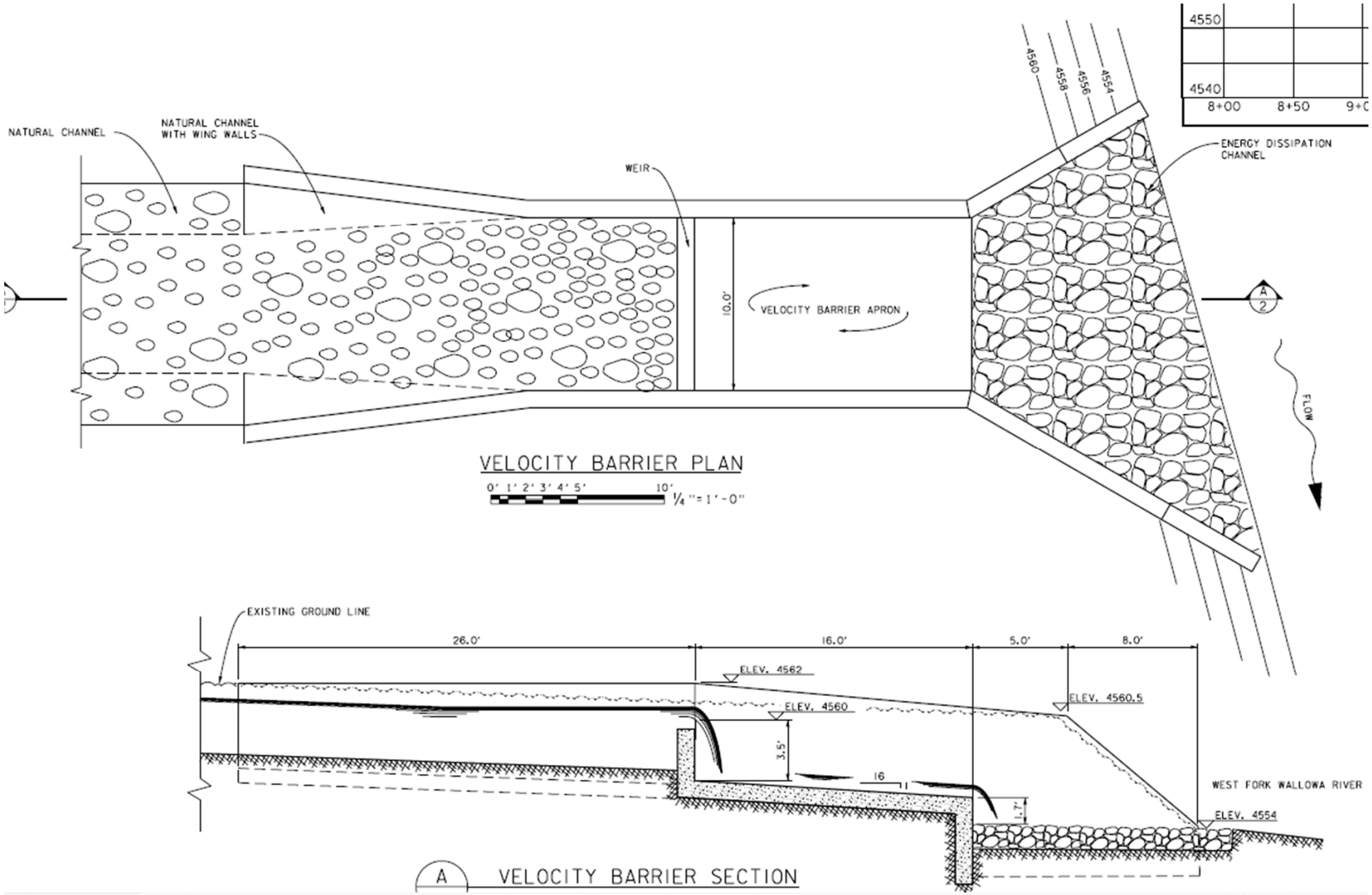
BOUNDARIES SHOWN HAVE NOT BEEN LOCATED ON THE GROUND AND ARE INTENDED ONLY TO REPRESENT AREAS OF OWNERSHIP AND/OR OCCUPATION.

EXISTING TAILRACE ALIGNMENT PROVIDED BY PACIFICORP.

PacifiCorp Assumptions

- The existing tailrace side channel alignment would be used for much of its length.
- This alternative would include a discharge structure with a velocity barrier which meets the requirements of Section 5.4 – Velocity Barriers in the 2011 NMFS Anadromous Salmonid Passage Facility Design (NMFS 2011) to prevent all fish species and life stages from entering the tailrace channel.
- Instream flow releases in the East Fork bypassed reach of a year-round flow of 4 cfs as measured at the proposed compliance gage location.
- Capital costs of this alternative are estimated to be $850,000.


CONCRETE TAILRACE FROM POWERHOUSE
EXISTING CHANNEL UNCHANGED
EXISTING CHANNEL TO BE MODIFIED
NEW CHANNEL
VELOCITY BARRIER
RIVER CHANNEL WEST FORK WALLOWA RIVER
NATURAL CHANNEL
NATURAL CHANNEL WITH WING WALLS
WEIR
VELOCITY BARRIER APRON
ENERGY DISSIPATION CHANNEL
VELOCITY BARRIER PLAN
¼"=1'-0"
EXISTING GROUND LINE
ELEV. 4562
ELEV. 4560
ELEV. 4560.5
WEST FORK WALLOWA RIVER
ELEV. 4554
VELOCITY BARRIER SECTION
SECTION THRU NEW CHANNEL
AREA TO BE EXCAVATED
SECTION THRU MODIFIED CHANNEL
WALLOWA FALLS HYDROELECTRIC PROJECT
FERC PROJECT NO. 308
WEST FORK TAILRACE ALIGNMENT
HANER, ROSS & SPORSEEN, P.C.
ENGINEERS CONSULTANTS SURVEYORS
STATUS PLANNING CONCEPTS
SHEET 2 OF 2
REV. NO. DATE DESCRIPTION BY CHECKED


4550
4540
8+00
8+50
9+0
4560
4558
4556
4554
NATURAL CHANNEL
NATURAL CHANNEL
WITH WING WALLS
WEIR
ENERGY DISSIPATION
CHANNEL
10.0'
VELOCITY BARRIER APRON
A
2
FLOW
VELOCITY BARRIER PLAN
0' 1' 2' 3' 4' 5' 10'
1/4"=1'-0"
EXISTING GROUND LINE
26.0'
16.0'
5.0'
8.0'
ELEV. 4562
ELEV. 4560
ELEV. 4560.5
3.5'
16
1.7'
WEST FORK WALLOWA RIVER
ELEV. 4554
A
VELOCITY BARRIER SECTION

AIR 5

Aesthetic Resources

FERC Request

Provide the results of your review of the state's noise standards and your evaluation of the project in relation to those standards along with the estimated cost of possible noise mitigation measures.

PacifiCorp Response

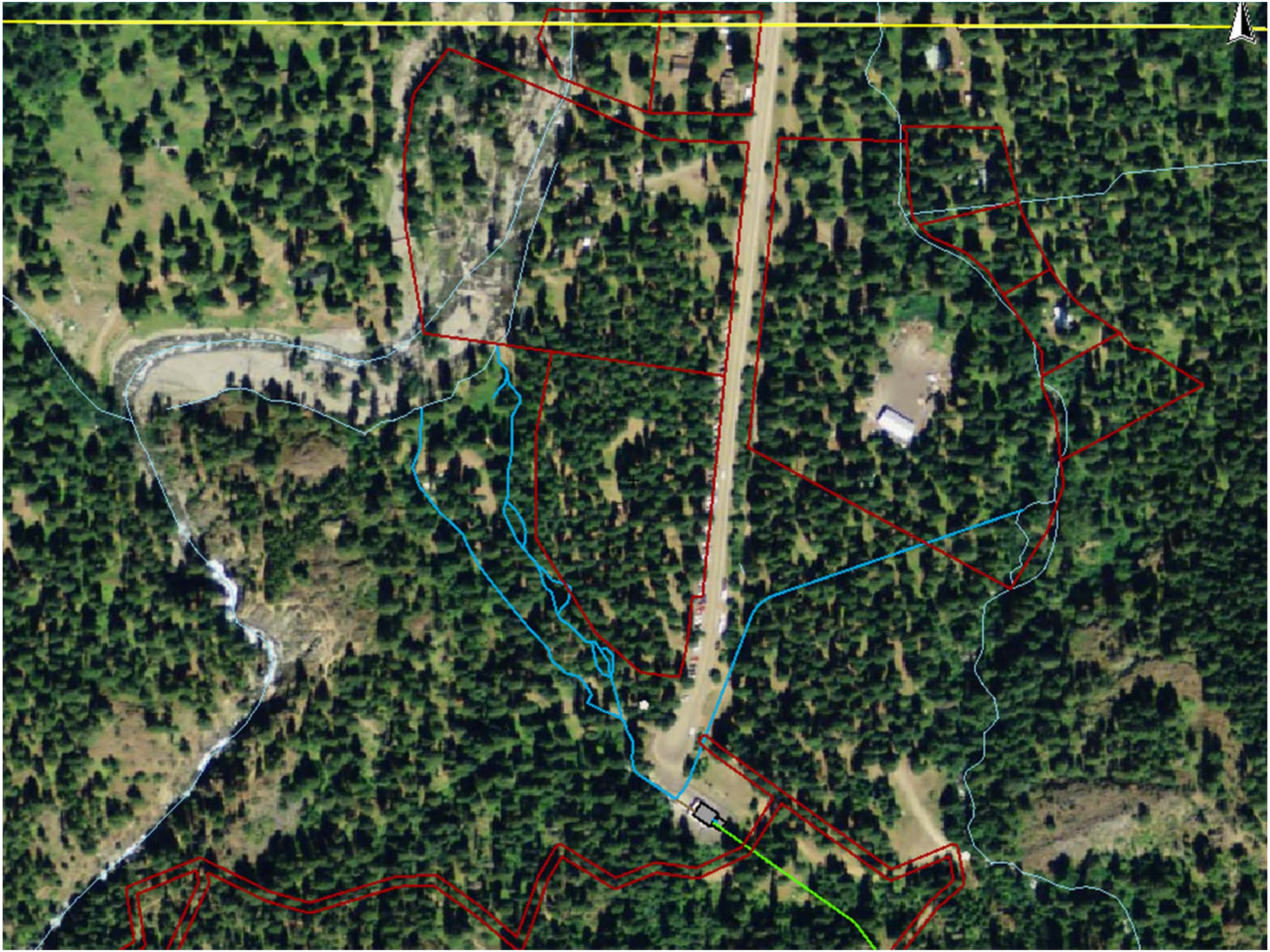
Any application of Oregon's Noise Program to the Project would be unreasonable.

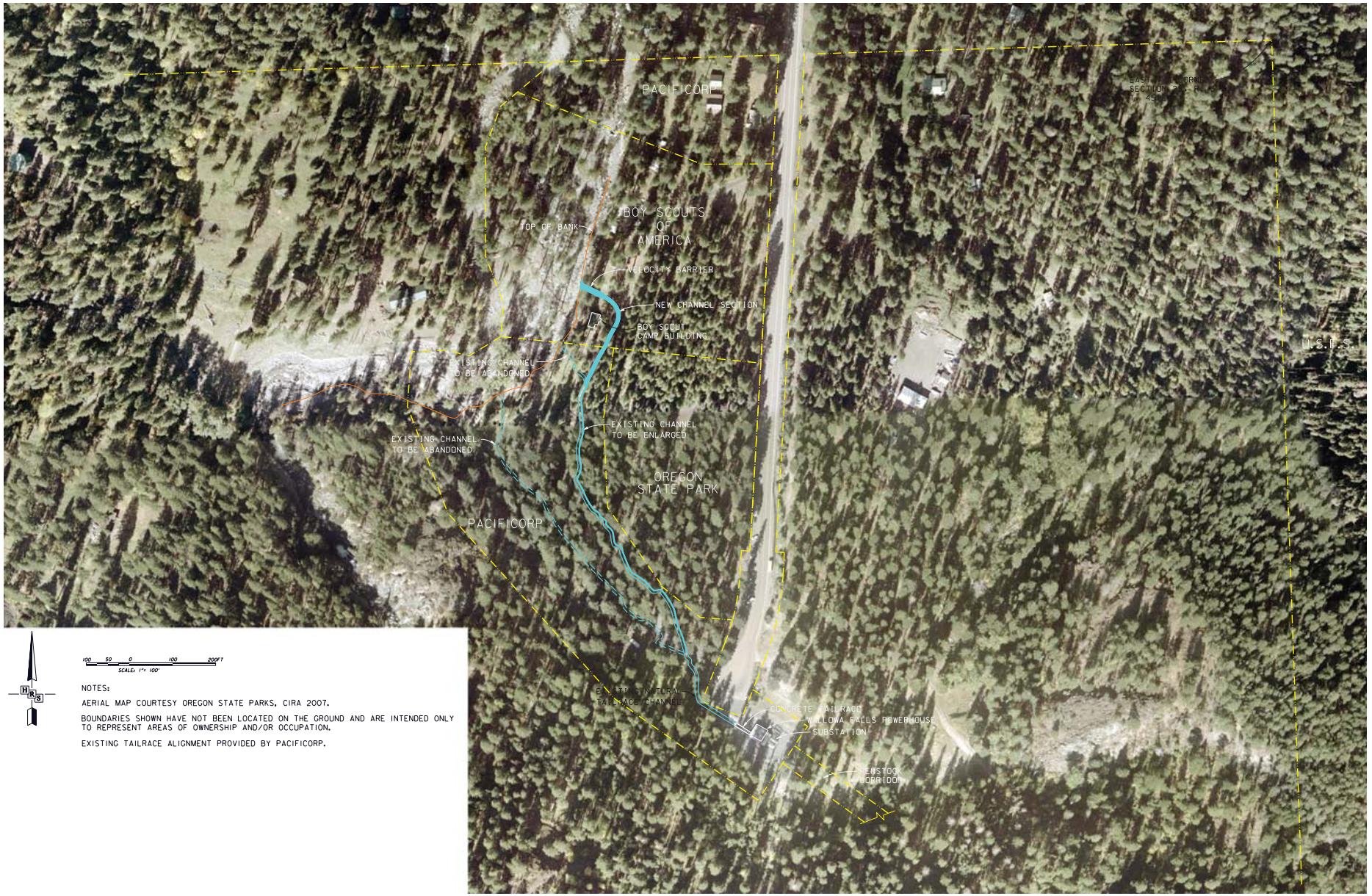
- Oregon Department of Environmental Quality ("DEQ") no longer administers or enforces the noise regulations.
- The Project appears to meet the necessary conditions for a variance from the state rules because it was developed long before the passage of Noise Program and likely prior to nearby noise sensitive properties.
- Following the state suspension of the Noise Program, DEQ issued guidance stating that enforcement and administrative of noise is largely a matter for local and county agencies.
- There are no Wallowa County noise regulations that adopt or apply the standards from the Noise Program; and no county permits regulate noise levels from the Project.

Noise Mitigation Measures

- The area between the tailrace and the State Highway 351 terminus-turn-around (approximately 15 feet, 4.5m) does not have enough horizontal room for a berm to be constructed high enough to be effective.
- Due to maintenance staff need for access to the tailrace flume, a cover directly over the tailrace flume would not be practical.
- A noise-insulated building that would allow for tailrace maintenance was evaluated. The capital cost is approximately $250,000.

Recreation Discussion





100 50 0 100 200FT
SCALE: 1"= 100'

NOTES:

AERIAL MAP COURTESY OREGON STATE PARKS, CIRA 2007.

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EXISTING TAILRACE ALIGNMENT PROVIDED BY PACIFICORP.

WALLOWA FALLS HYDROELECTRIC PROJECT

FERC PROJECT NO. 308

WEST FORK TAILRACE ALIGNMENT

FILE 0617/0 STATUS PLANNING CONCEPTS SHEET 1 OF 2

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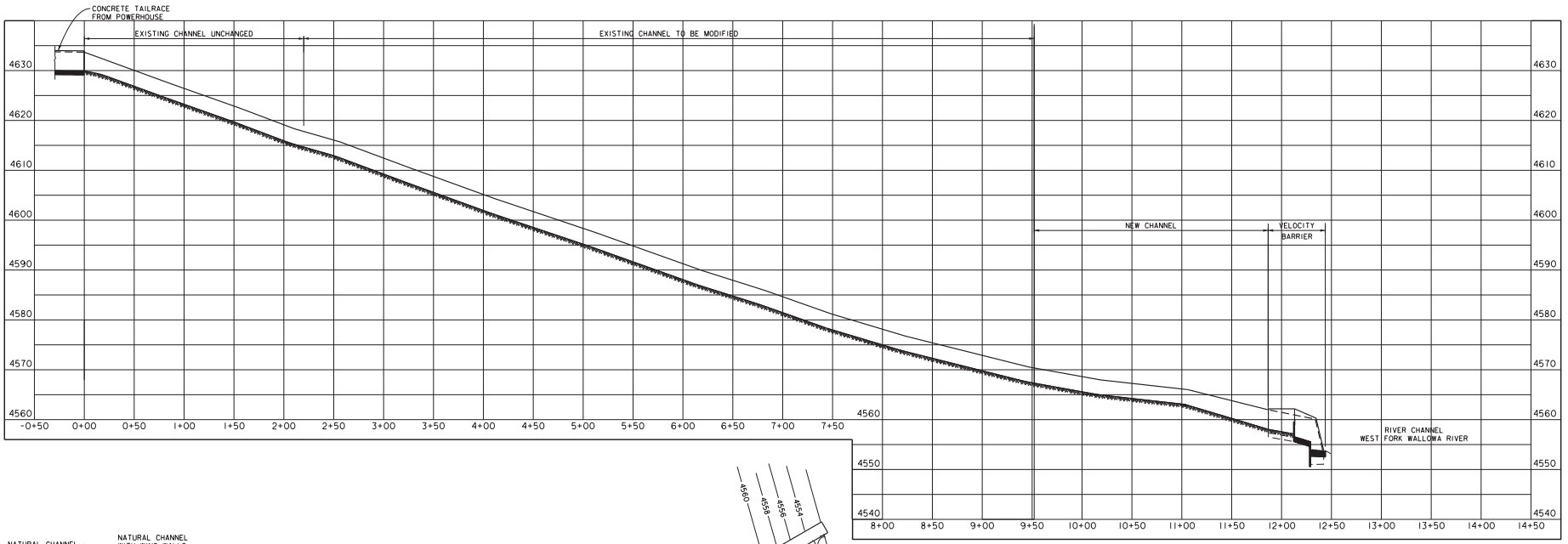
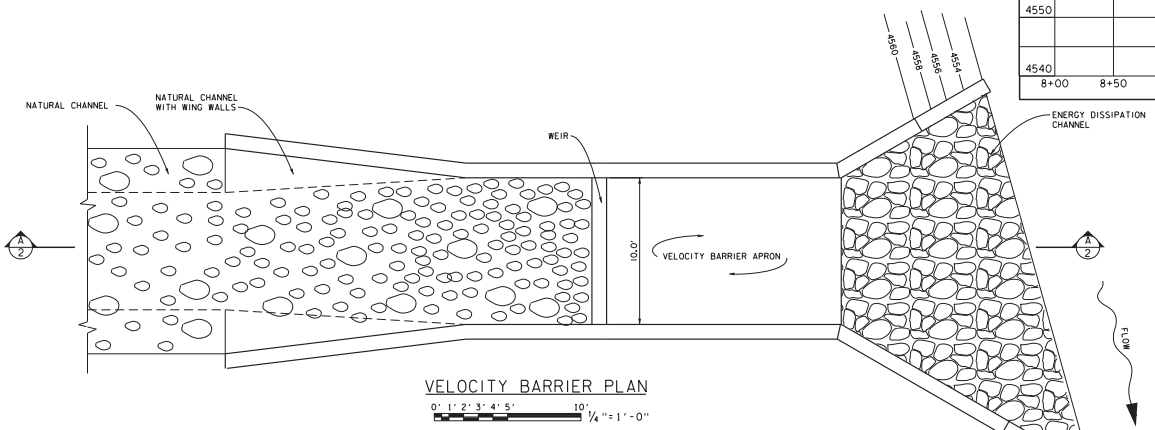
HANER, ROSS & SPORSEEN, P.C.
ENGINEERS CONSULTANTS SURVEYORS
2895 BEAVERCREEK ROAD, OREGON CITY, OR 97027 (503) 657-1184 TEL. (503) 657-1387 FAX

DESIGNED J.H.G. INITIAL 14/10/28 DATE
DRAWN J.H.G. 14/10/28
CHECKED J.H.G. 14/10/28
SUPERVISED
APPROVED 14/10/28

REGISTERED PROFESSIONAL ENGINEER J. H. GREEN EXPIRES: 2015/06/30

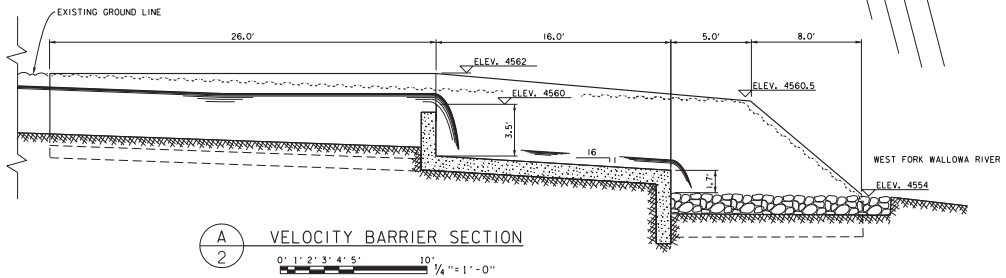
REV. NO.	DATE	DESCRIPTION	BY	CHECKED





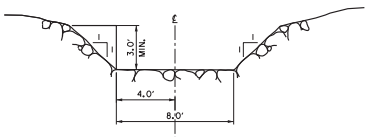
VELOCITY BARRIER PLAN

0' 1' 2' 3' 4' 5' 10'
1/4"=1'-0"



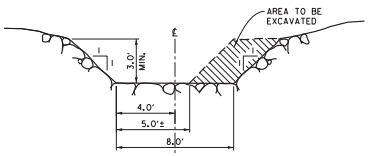
A/2 VELOCITY BARRIER SECTION

0' 1' 2' 3' 4' 5' 10'
1/4"=1'-0"



SECTION THRU NEW CHANNEL

0' 1' 2' 3' 4' 5' 10'
1/4"=1'-0"



SECTION THRU MODIFIED CHANNEL

0' 1' 2' 3' 4' 5' 10'
1/4"=1'-0"

WALLOWA FALLS HYDROELECTRIC PROJECT
FERC PROJECT NO. 308
WEST FORK TAILRACE ALIGNMENT

FILE 0617/0 STATUS PLANNING CONCEPTS SHEET 2 OF 2

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HANER, ROSS & SPORSEEN, P.C.
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APPROVED [signature] DATE 14/10/30

INITIAL J.H.C. DATE 14/10/30 DESIGNED
INITIAL J.H.C. DATE 14/10/30 DRAWN
CHECKED J.H.C. DATE 14/10/30 SUPERVISED

EXPIRES: 2015/06/30

REV. NO.	DATE	DESCRIPTION	BY	CHECKED