Public Notice

DEQ Requests Comments on Modification of Opal Springs Hydro Project 401 Certification

The Oregon Department of Environmental Quality invites the public to provide written comment on the proposed modification to a Section 401 water quality certification for the Opal Springs Hydroelectric Project.

Background

On October 8, 2015 the Deschutes Valley Water District filed an application with the Federal Energy Regulatory Commission to amend its existing operating license to provide fish passage facilities at the project. The proposed action will also increase the elevation of the reservoir. Because adding fish passage changes how the project will store and discharge water, section 401 of the Clean Water Act requires DEQ to determine if the changes will harm water quality. On October 26, 2016 DEQ issued a section 401 water quality certification conditionally certifying the action.

Proposed Modification

Following issuance of the section 401 certification, DVWD modified certain technical aspects of the project. While these changes do not alter the principle objective of providing fish passage, the changes do affect water storage, discharge, and certain conditions of the 401 certification. On June 12, 2017 DVWD requested DEQ review the proposed changes and, if warranted, modify the certification to reflect these changes.

The revised activities are similar in nature to those previously evaluated by DEQ, but are reduced in scope. For example, DVWD now requests a smaller increase to the reservoir surface elevation than it previously proposed. This change will decrease the length of time water is impounded behind the diversion dam and result in fewer effects on water quality parameters such as temperature, pH, and dissolved oxygen. Because our October 2016 analysis concluded the project would not violate water quality standards, DEQ expects the reduced scope of actions described in DVWD's 2017 modified proposal to also comply with Oregon water quality standards.

Authority to Modify Certifications

Oregon Administrative Rule 340-048-0050(1)(d) allows DEQ to modify or revoke a certificate if "changes in conditions regarding the activity or affected waterways since the certification was issued affect or might affect compliance with water quality standards and requirements".

The modified certification revises references to water surface elevations to be consistent with the changes to the project proposed by DVWD.

Where can I get more information?

Copies of the applicant's proposed activity, DEQ's evaluation, and the modified section 401 water quality certification follow this public notice.

You also contact Chris Stine to make an appointment to review the documents in person:

Phone: 541-686-7810 or 800-844-8467
Fax: 541-686-7551
Email: stine.chris@deq.state.or.us

How do I participate?

You may submit comments by mail, fax or email to:

Chris Stine, Hydroelectric Specialist
Oregon Department of Environmental Quality
165 E. 7th Ave. Suite 100
Eugene, OR 97401

Fax: 541-686-7551
Email: stine.chris@deq.state.or.us

All comments are due by 5 p.m., Friday December 8, 2017. All comments will become part of the public record.

About the facility and the receiving water

The Opal Springs Hydroelectric Project was licensed in 1982 and began operating in 1985. Because earlier construction of the Pelton Round Butte dam below the project had blocked upstream access to migrating fish, fish passage above and below the project was not required or provided.

State of Oregon
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Search for "water quality certification"

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Please include your full name and mailing address so that we can remove you from our print mailing list.

Last updated: 11/2017
By: Chris Stine

The Opal Springs project is located at river mile 7.2 on the Crooked River at the base of the Crooked River Gorge. Oregon's 303d list of impaired water bodies indicates the Crooked River does not meet water quality standards for pH and temperature from river mile 0 to 51, a segment which includes the project. Beginning about 4 miles upstream of the project, large quantities of groundwater enter the Crooked River which increases flow and generally improves water quality.

What is DEQ's role?

In Oregon, DEQ has the sole authority under Section 401 of the Clean Water Act to issue a Section 401 water quality certification.

DEQ must identify effects which the proposed operation will have on water quality, and must propose conditions to ensure that water quality standards will still be met.

Should FERC issue an amended license, DEQ will work closely with Deschutes Valley to implement the conditions contained in the Section 401 water quality certification.

How may the Project affect water quality?

Under the proposed license amendment, the project will provide fish passage, increase the height of the diversion dam and create an accrual account of water to facilitate seasonal fish migration. Raising the height of the dam will increase the time it takes for water to flow through the reservoir. Because the increased residence time is small, DEQ believes this modification is unlikely to have a measurable adverse effect on water quality. No other changes are proposed which will likely impact water quality.

DEQ will require Deschutes Valley to conduct water quality monitoring for certain parameters including temperature, pH, and dissolved oxygen. If DEQ determines the Project causes a violation of Oregon's water quality standards DEQ can require Deschutes Valley to modify operations to reduce impacts on water quality.

What happens after the public comment period closes?

DEQ will consider and respond to all comments received and may modify the proposed permit based on comments. DEQ gives equal weight to written and oral comments.

Accessibility information

Documents can be provided upon request in an alternate format for individuals with disabilities or in a language other than English for people with limited English skills. To request a document in another format or language, call DEQ in Portland at 503-229-5696, or toll-free in Oregon at 1-800-452-4011, ext. 5696; or email deqinfo@deq.state.or.us.

Modification of Section 401 Water Quality Certification

For the Opal Springs Hydroelectric Project

Background

On October 8, 2015 the Deschutes Valley Water District filed with the Federal Energy Regulatory Commission an application for a non-capacity amendment to its existing operating license and a Settlement Agreement to install and operate fish passage facilities at the project. The application requests FERC amend the existing license consistent with the terms of the Settlement Agreement that authorizes an increase in the normal maximum operating pool elevation, the construction of fish passage facilities, and implementation of an adaptive management program.

Because the proposed actions alter the storage and discharge of water the Oregon Department of Environmental Quality evaluated the potential effect of the proposed action on water quality. On October 26, 2016 DEQ issued a section 401 water quality certification conditionally certifying the action. The certification contained certain requirements to monitor water quality to confirm that project operation under the amended license would meet water quality standards.

Since filing the license amendment application, DVWD has modified certain technical aspects of the proposed activity. While these changes do not alter the principle objective of providing fish passage, the changes affect proposed license articles and certain conditions addressed by the 401 certification. On June 12, 2017 DVWD requested DEQ review revisions to the proposed activity and, if warranted, modify the certification in accordance with state law. On August 2, 2017 DEQ notified DVWD that the Department would evaluate the effect which changes to the proposed action would have on water quality and would modify the 401 certification, if required, to ensure compliance with water quality standards, relevant portions of the federal clean water act, and other requirements of state law.

DEQ Rules and Authority

Oregon Administrative Rules 340-048-0050 describe the circumstances under which DEQ may modify a 401 certification. Specifically, OAR 340-048-0050(1)(d) allows DEQ to modify or revoke a certificate if “changes in conditions regarding the activity or affected waterways since the certification was issued affect or might affect compliance with water quality standards and requirements”.

State of Oregon Department of Environmental Quality

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DEQ is a leader in restoring, maintaining and enhancing the quality of Oregon’s air, land and water.

In their June 12, 2017 correspondence DVWD proposed certain changes to the project which would modify the proposed maximum pool elevation, the operating range of the fish ladder, the impoundment area and storage volume. These changes affect proposed license articles and, by extension, aspects addressed in DEQ's October 26, 2017 section 401 water quality certification.

The changes proposed by DVWD will directly affect the storage and discharge of water under an amended license. Because these proposed changes may affect implementation of the October 26, 2016 certification DEQ will reevaluate the effects of the proposed action on water quality and modify the certification in accordance with OAR 340-048-0050(1)(d).

Proposed Action

The Deschutes Valley Water District currently operates the Opal Springs Hydroelectric Project (FERC No. 5891) under a 50 year license issued by the Federal Energy Regulatory Commission in November 1982. In October 2015, Deschutes Valley applied to FERC for a non-capacity license amendment to amend operation of the Project in the following ways:

- Increase the maximum pool elevation from 2,004.21 feet to 2,010.21 feet;
- Construct a fish ladder to provide volitional upstream fish passage; and
- Modify the spillway to enable safe, timely, and effective downstream fish passage.

On October 26, 2016 DEQ issued a section 401 water quality certification based on our evaluation of the proposed action as described in the October 8, 2015 application to FERC for a non-capacity license amendment and the February 3, 2016 application to DEQ for water quality certification.

In correspondence dated June 12, 2017 DVWD proposed certain technical changes to the activity. Specifically, DVWD proposes to reduce the maximum pool elevation by three feet and operate the forebay at a constant elevation rather than within a three-foot operating range. These proposed changes will affect hydraulic management of the project, the proposed license articles, and certain conditions addressed by DEQ's October 2016 water quality certification.

Revisions to the activities proposed by DVWD are presented in Table 1.

DEQ Evaluation

DEQ believes the modifications sought by DVWD will likely have no observable effect or may slightly improve water quality relative to the analysis presented in our October 2016 Evaluations and Findings Report. None of the actions described in DVWD's proposed modification will negatively affect water quality relative to our October 2016 analysis. This determination is based on our understanding that the revised proposal represents activities which are similar in nature to those previously evaluated by DEQ, but are reduced in scope. Because our October 2016 analysis concluded there was reasonable assurance the project would not violate water quality standards, DEQ similarly expects the actions described in DVWD's 2017 modified proposal to also comply with Oregon water quality standards.

A discussion of specific changes to the DVWD's proposed activity is described below.

Diversion Pool Elevation: The principal revision to the proposed activity concerns changes to the maximum elevation of the diversion pool. Under the June 2017 amended proposal, DVWD will maintain the maximum pool elevation at 2,007.21 feet (local project datum). The proposed elevation is three feet above the current maximum operating elevation of 2,004.21 feet and three feet below the elevation proposed in the 2015 license amendment application. Raising the pool elevation increases hydraulic residence time which may increase temperature, decrease dissolved oxygen, and promote algal activity which may affect pH. DEQ evaluated the effects of the proposed action on these water quality parameters in the October 2016 Evaluations and Findings Report (DEQ 2016). Our analysis concluded the effects of the proposed action under an amended license were unlikely to violate water quality standards. To confirm this expectation, the certification requires DVWD to monitor water quality during the summer while the diversion pool is within 20 percent of the maximum proposed elevation increase. The revised action proposes a smaller pool elevation increase and, for this reason, DEQ expects the effects on water quality will be less than would occur under actions described in the 2015 license amendment application. Because the revised action still proposes to increase the diversion pool elevation, DEQ retains the requirement to monitor water quality (e.g., temperature, dissolved oxygen, and pH) under an amended license, but will modify the certification conditions to reflect the revised pool elevation proposed by DVWD.

Diversion Pool Operating Range: Under the June 2017 amended proposal, DVWD will maintain the diversion pool surface at a constant elevation. Previously, DVWD proposed to maintain the reservoir elevation within an operating range of three feet. Limiting changes in pool elevation may reduce shoreline erosion, turbidity, and impacts to marginal habitat. DEQ expects this modification will either have no measureable effect or may slightly improve water quality. The October 2016 section 401 certification did not condition reservoir operation. Because DEQ expects no negative impacts resulting from the proposed change in operation, no conditions on reservoir operation are deemed necessary.

Impoundment Area: Under the 2017 proposed modification, the volume of the impoundment will decrease from 184.8 acre-feet to 119 ac-ft. The surface area will decrease from 15 acres to 14.4 ac. The lower reservoir volume will decrease the hydraulic residence time and reduce the potential for water quality impairment. DEQ expects the proposed changes to the impoundment area will either have no measureable effect or may slightly improve water quality. DEQ retains the requirement to monitor water quality (e.g., temperature, dissolved oxygen, and pH) under an amended license, but will modify the certification conditions to reflect the revised pool elevation proposed by DVWD.

Facilities: Several changes to project facilities are proposed. First, by maintaining the surface of the diversion pool at constant elevation, DVWD proposes to reduce the number of exit cells of the fish ladder from four to one. Secondly, the project will retain the existing-type fixed flashboards at spillways rather than use pneumatically operated crest weirs. Lastly, the project will decrease the number of downstream fish passage intake gates from three to one.

The proposed changes described above will have no effect on water quality during operation and DEQ will make no changes to the water quality certification to reflect these changes. DEQ expects the water quality effects of project construction will be considered during DVWD's application to the Army Corps of Engineers for an in-water construction permit pursuant to section 404 of the Clean Water Act.

Findings

On June 12, 2017 DVWD notified DEQ of proposed changes to the Opal Springs Hydroelectric Project which modify the storage and discharge of water under an amended FERC license. DVWD requested that DEQ evaluate these changes and, if warranted, modify the October 2016 section 401 water quality certification. DEQ has considered the proposed changes and, as authorized under OAR 340-048-0050(1)(d), modified the certification to ensure compliance with applicable water quality standards.

DEQ has determined that changes to the proposed activity will comply with the applicable provisions of Sections 301, 302, 303, 306 and 307 of the Clean Water Act, Oregon Administrative Rules, Chapter 340, Division 41 and other appropriate requirements of state law, provided Deschutes Valley implements the conditions presented in the attached revised section 401 water quality certification.

Based on the preceding analysis and findings, it is recommended that pursuant to section 401 of the Federal Clean Water Act and ORS 468B.040, the Director, or assigned signatory, conditionally approve revisions to the certification of the Opal Springs Hydro Project, FERC Project No. 5891, consistent with the findings of this document.

Accessibility

Table 1. Changes Proposed by DVWD for the Opal Springs Hydroelectric Facility Fish Passage Project

Element	Existing	2015 License Amendment Proposal	2017 Proposed Modifications
Maximum Pool Elevation	2004.21 feet[1]	2010.21 feet	2007.21 feet (LPD)
Minimum Pool Elevation	2004.21 feet	2007.21 feet	2007.21
Operating range of fish ladder	N/A	3 feet range of forebay elevation	Constant forebay elevation
Impoundment Storage	106 acre-feet	184.8 acre-feet	119 acre-feet
Surface Area	11 acres	15 acres	14.4 acres
Project Boundary (around reservoir)	Follows 2004.21- foot contour	Follows 2010.21-foot contour	Follows 2010.21-foot contour
Fish Ladder Exit Structure	N/A	Configurable (4 exit cells) for variable forebay elevation	Single exit cell, constant forebay elevation
Control of spillway	Fixed flashboard	Pneumatic Crest Weirs	Fixed flashboards
Downstream passage past intake	Crest spill	3 gates for downstream passage (river right and left)	1 gate for fish passage (river right)
Monitoring and Evaluation Program	N/A	See Proposed License Articles 5,6	No Change
Performance Objectives	N/A	See Proposed License Article 7	No Change
Adaptive Management	N/A	See Proposed License Article 8	No Change
Proposed License Articles			
Article 2: Fish Passage Facilities		Authorizes facilities to increase in the normal maximum diversion pool elevation up to 2,010.21 feet NGVD 29	Authorizes facilities to increase in the normal maximum diversion pool elevation up to 2,007.21 feet NGVD 29
Article 4: Bypass Flow Accrual Account		Sets Accrual Rate[2] for calculating water credits for Bypass Flow Accrual Account as 2.89% of instantaneous turbine flow.	Change in formula such that the accrual rate (and hence the amount of water for the water bank) will remain unchanged.
Article 8: Adaptive Management (paragraph – 2.1)		Less than 90 percent passage effectiveness or survival. The Licensee shall implement applicable Tier 1 measures, as required by the FPWG, and shall increase the BFAA Allocation Percent to 35%.	Less than 90 percent passage effectiveness or survival. The Licensee shall implement applicable Tier 1 measures, as required by the FPWG and shall increase the BFAA Allocation Percent to 60%.
Article 8: Adaptive Management (paragraph – 2.2)		Less than 90 percent passage effectiveness or survival. The Licensee shall implement all remaining and applicable Tier 1 measures, as required by the FPWG, and shall increase the fisheries BFAA Allocation Percent to 45%.	Less than 90 percent passage effectiveness or survival. The Licensee shall implement all remaining and applicable Tier 1 measures, as required by the FPWG, and shall increase the fisheries BFAA Allocation Percent to 70%.

[1] All elevations are reported in National Geodetic Vertical Datum of 1929 (NGVD 29) except construction drawings that are in the local project datum (LPD), which is greater than NGVD 29 by 1.79 feet. For purposes of keeping the construction and engineering simple, this LPD is used in an engineering context. The OSHP is authorized to operate at a maximum pool elevation of 2,005 feet NGVD 29; surveys conducted in 2009 by DVWD indicate that the current elevation of the impoundment is at 2004.21 feet. The proposal is to increase the impoundment elevation by 3 feet, making the new maximum operating elevation 2,007.21 feet NGVD 29 (2,009 feet LPD).

[2] Accrual rate is the product of the Allocation Percent and the increase in power generation as a result of the pool raise: (25% x 11.54%); under the revised project description the formula will now be (50% x 5.77%)

Clean Water Act § 401 Certification
for the
Deschutes Valley Water District
Opal Springs Hydroelectric Project
(FERC No. 5891)
Crooked River Subbasin,
Jefferson County, Oregon

Upon Federal Energy Regulatory Commission issuance of an amended license for the Opal Springs Hydroelectric Project, the Deschutes Valley Water District shall comply with the following § 401 water quality certification conditions:

1. Water Quality Management Plan

Within six months of receiving an amended FERC license Deschutes Valley Water District shall submit a Water Quality Management Plan to the Oregon Department of Environmental Quality. Upon approval by DEQ, Deschutes Valley Water District shall file the WQMP with FERC and implement the WQMP upon FERC approval. The WQMP must address parameters specified in this § 401 water quality certification and include:

a) Data collection protocol, analytical methods, and laboratory method reporting limits;
b) Location and description of monitoring points;
c) Compliance monitoring and field audit schedule;
d) Data sampling frequency;
e) Applicable compliance criteria;
f) Instrument calibration procedures and schedule;
g) Data validation procedures and quality assurance methodology; and
h) Contingency plan for inoperable or malfunctioning equipment.

2. Biological Criteria; Protection of Beneficial Uses; Instream Flows

a) Bypass Reach Flows

Deschutes Valley shall maintain a minimum continuous instream flow of 50 cfs in the bypass reach below the dam in accordance with Article 36 of the current FERC license.

b) Bypass Flow Accrual Account (BFAA)

Deschutes Valley Water District shall establish, manage, and administer the Bypass Flow Accrual Account in accordance with methodology presented in proposed License Article 4 of the 2015 Amended and Restated Settlement Agreement.

c) Fish Passage
Deschutes Valley Water District shall construct, operate, and maintain fish passage facilities in accordance with the criteria described in proposed License Article 2 of the 2015 Amended and Restated Settlement Agreement.

d) Beneficial Use
If DEQ determines that operation of the fish passage facilities described in Condition 2c of these Conditions extends the range of documented spawning habitat used by salmon, steelhead, or bull trout, the Deschutes Valley Water District must take appropriate actions to comply with the following additional conditions, unless otherwise specified by DEQ:

(1) The seven-day-average maximum temperature may not exceed 12.0 degrees Celsius in stream segments with documented bull trout spawning and juvenile rearing use;
(2) The seven-day-average maximum temperature may not exceed 13.0 degrees Celsius during the period identified by DEQ in stream segments with documented salmon or steelhead spawning use;
(3) Dissolved oxygen may not be less than 11.0 mg/l during the period identified by DEQ in stream segments with documented active spawning use, and if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the dissolved oxygen limit is 9.0 mg/l.

DEQ will notify Deschutes Valley Water District in writing of its determination that these additional conditions are required, including the corresponding areas and time periods in which each condition applies.

Upon such notification, Deschutes Valley Water District may submit within 90 days an alternative plan that demonstrates compliance with these conditions for DEQ's review. If, after public review and comment in accordance with applicable law, if any, DEQ approves or conditionally approves that plan as consistent with water-quality standards, then DVWD will implement that plan, as conditioned, in accordance with its terms.

3. Narrative Criteria: Objectionable Discoloration, Scum, and Oily Sheens

a) Best Management Practices
Deschutes Valley Water District must employ Best Management Practices when handling, storing, or using materials which may, if spilled, result in adverse or objectionable conditions in violation of this water quality standard.

b) Notification
In the event of a spill or release or threatened spill or release to waters of the state of petroleum or other hazardous substances at or above reportable quantities as specified in applicable state and federal regulations, Deschutes Valley must implement effective spill response procedures, notify Oregon Emergency Response System, and comply with ORS Chapters 466 and 468, as applicable.

c) Recordkeeping
For the term of the amended license, Deschutes Valley Water District shall retain records for the period of time required by law which document: the occurrence of reportable releases; visual observations and/or photographic documentation of hazardous material releases which impact aquatic resources; remedial activities undertaken by Deschutes Valley Water District or a contractor to address hazardous material releases; correspondence and/or conversation records which document agency notification, as warranted regarding hazardous material releases; other records deemed appropriate.

4. Dissolved Oxygen

a) Water Quality Monitoring Plan

The WQMP developed by Deschutes Valley Water District pursuant to Condition 1 of these § 401 Certification Conditions shall incorporate the dissolved oxygen monitoring requirements presented below:

(1) Impoundment

Deschutes Valley Water District shall continuously measure DO at upstream and downstream locations in the diversion pool for a minimum of 30 consecutive days during the first July and August when the diversion pool is maintained at an average elevation of at least 2,006.61 feet MSL (i.e., 80 percent of the proposed increase in elevation).

Beginning no later than May 1, Deschutes Valley Water District shall continuously measure DO at the above referenced locations for at least 15 consecutive days during the first May in which the diversion pool is maintained at an average elevation of at least 2,006.61 feet MSL.

(2) Bypass Reach

Concurrent with the measurements and schedules described in Condition 4a(1) above, Deschutes Valley Water District shall measure DO in the upper bypass reach in the vicinity of the proposed ladder entrance.

b) Duration

Water quality monitoring is required for three consecutive years beginning in the first year following completion of fish passage facilities identified in Condition 2c. If, after the second year of required monitoring, DEQ is reasonably assured the Project will meet applicable water quality standards, DEQ may approve discontinuing further monitoring. Alternatively, DEQ may require additional monitoring and/or adaptive management after the third year of monitoring, as warranted, to demonstrate provide support for all recognized beneficial uses.

c) Reporting

Deschutes Valley Water District shall report DO monitoring data to DEQ by December 31 of each year for which monitoring was performed. The report shall address the requirements in Condition 1 of these Conditions and analyze the effects, if any, of Project operation on the DO water quality standard. Following review and approval of the report by DEQ, Deschutes Valley Water District shall file the report with FERC.

d) Adaptive Management

If monitoring indicates the DO water quality standard is not met, DEQ will require Deschutes Valley Water District to submit a report analyzing the situation and shall require additional monitoring and adaptive management of the Project to ensure Project operation does not contribute to violations of water quality standards. Strategies to achieve this objective may include reducing the operating elevation of the diversion pool, increasing flow in the bypass reach or other operational adjustments to ensure Project operation does not contribute to violations of water quality standards.

5. Hydrogen Ion Concentration (pH)

a) Water Quality Monitoring Plan

The WQMP developed by Deschutes Valley Water District pursuant to Condition 1 of these § 401 Certification Conditions shall incorporate the pH monitoring requirements presented below:

(1) Impoundment

Deschutes Valley Water District shall measure pH at upstream and downstream locations in the diversion pool for a minimum of 30 consecutive days during the first July and August when the diversion pool is maintained at an average elevation of at least 2,006.61 feet MSL.

(2) Bypass Reach

Concurrent with the measurements and schedules described in Condition 5(a)(1) above, Deschutes Valley Water District shall measure pH in the upper bypass reach in the vicinity of the proposed ladder entrance.

b) Duration

Water quality monitoring is required for three consecutive years beginning in the first year following completion of fish passage facilities identified in Condition 2c. If, after the second year of required monitoring, DEQ is reasonably assured the Project will meet applicable water quality standards, DEQ may approve discontinuing further monitoring. Alternatively, DEQ may require additional monitoring and/or adaptive management after the third year of monitoring, as warranted, to demonstrate provide support for all recognized beneficial uses.

c) Reporting

Deschutes Valley Water District shall report pH monitoring data to DEQ by December 31 of each year for which monitoring was performed. The report shall address the requirements in Condition 1 of these Conditions and analyze the effects, if any, of Project operation on the pH water quality standard. Following review and approval of the report by DEQ, Deschutes Valley Water District shall file the report with FERC.

d) Adaptive Management

If monitoring indicates the pH water quality standard is not met, DEQ will require Deschutes Valley Water District to submit a report analyzing the situation and shall require additional monitoring and or adaptive management of the Project to ensure Project operation does not contribute to violations of water quality standards. Strategies to achieve this objective may include reducing the operating elevation of the diversion pool, increasing flow in the bypass reach, or other operational adjustments to ensure Project operation does not contribute to violations of water quality standards.

6. Temperature

a) Water Quality Monitoring Plan

The WQMP developed by Deschutes Valley Water District pursuant to Condition 1 of these § 401 Certification Conditions shall incorporate the minimum temperature monitoring requirements presented below:

(1) Impoundment

Deschutes Valley Water District shall measure temperature at upstream and downstream locations in the diversion pool from May 1 through September 30 beginning with the first year after completion of activities proposed under the proposed license amendment.

Monitoring shall include a minimum of 30 days during the July and August when the diversion pool is maintained at an average elevation of at least 2,006.61 feet.

(2) Bypass Reach

Concurrent with the measurements and schedules described in Condition 6a(1) above, Deschutes Valley Water District shall measure temperature in the upper bypass reach in the vicinity of the proposed ladder entrance.

b) Duration

Water quality monitoring is required for three consecutive years beginning in the first year following completion of fish passage facilities identified in Condition 2c. Based on the results of the first and second year of required monitoring, DEQ will determine whether monitoring may be discontinued or additional data collection is required. If DEQ determines that additional data collection is required, DEQ will require additional monitoring and adaptive management.

c) Reporting

Deschutes Valley Water District shall report temperature monitoring data to DEQ by December 31 of each year for which monitoring was performed. The report shall address the requirements in Condition 1 of these Conditions and analyze the effects, if any, of Project operation on the temperature water quality standard. Following review and approval of the report by DEQ, Deschutes Valley Water District shall file the report with FERC.

d) Adaptive Management

If monitoring indicates the temperature water quality standard is not met, DEQ will require Deschutes Valley Water District to submit a report analyzing the situation and may require additional monitoring and/or adaptive management of the Project to ensure Project operation does not contribute to violations of water quality standards. Adaptive measures may include altering the timing and/or magnitude of Bypass Flow Accrual Account releases to minimize temperature increases in the bypass reach, lowering the elevation of the diversion pool to decrease retention time, or other measures intended to reduce Project-related thermal impacts. Deschutes Valley Water District must submit the report within six months of identifying temperature exceedances. Upon DEQ approval, Deschutes Valley shall submit the plan to FERC for approval. Upon FERC approval, Deschutes Valley shall implement the plan.

7. General Conditions

a) Certification Modification

DEQ, in accordance with Oregon and Federal law including OAR Chapter 340, Division 48 and, as applicable, 33 USC 1341, may modify this Certification to add, delete, or alter Certification conditions as necessary to address:

(1) Adverse or potentially adverse Project effects on water quality or designated beneficial uses that did not exist or were not reasonably apparent when this § 401 Certification was issued;

(2) TMDLs (not specifically addressed above in these § 401 Certification Conditions);

(3) Changes in water quality standards;

(4) Any failure of these § 401 Certification Conditions to protect water quality or designated beneficial uses as expected when this § 401 Certification was issued; or;

(5) Any change in the Project or its operations that was not contemplated by this § 401 Certification that might adversely affect water quality or designated beneficial uses.

b) Other Federal Permits

Upon applying for any federal license or permit authorizing a discharge to waters of the United States other than the new or amended FERC license, Deschutes Valley Water District shall provide DEQ written notice of such application and of any proposed changes or new activity requested to be authorized under the application since issuance of this § 401 Certification. DEQ will notify Deschutes Valley Water District and the applicable federal agency either that: (1) this § 401 Certification is sufficient for purposes of the federal license or permit; or (2) in light of new information related to the water quality impacts of the activity requested to be authorized under the application, there is no longer reasonable assurance of compliance with state water quality standards. In the latter event, ODEQ will consider the new information, solicit and consider public and agency comment as required by law, and issue a 401 certification determination for purposes of the federal license or permit.

For projects which require in-water work, Deschutes Valley Water District shall obtain, as applicable, a removal-fill permit from Oregon Department of State Lands, a dredge and fill permit from the Corps pursuant to § 404 of the Clean Water Act, and a §401 water quality certification from DEQ.

c) Project Modification
Deschutes Valley Water District shall obtain DEQ review and approval before undertaking any change to the Project that might significantly affect water quality (other than project changes authorized by a new or amended FERC license or required by or considered in this § 401 Certification), including changes to Project structures, operations, and flows.

d) Repair and Maintenance
Deschutes Valley Water District shall obtain DEQ review and approval before undertaking Project repair or maintenance activities that might significantly affect water quality (other than repair or maintenance activities authorized by a new or amended FERC license required by or considered in this § 401 Certification). DEQ may, at Deschutes Valley Water District's request, provide such prior approval effective prospectively for specified repair and maintenance activities.

e) Inspection
Deschutes Valley Water District shall allow DEQ such access as necessary to inspect the Project area and Project records required by these § 401 Certification Conditions and to monitor compliance with these § 401 Certification Conditions, upon reasonable notice and subject to applicable safety and security procedures when engaged in such access.

f) Posting
Deschutes Valley Water District shall post or maintain a copy of these § 401 Certification Conditions at the Opal Springs Hydro Project Office.

8. Project Specific Fees

In accordance with ORS 543.080, Deschutes Valley Water District shall pay project-specific fees, in 2016 dollars adjusted according to the formula in Condition 8c below, to DEQ for costs of overseeing implementation of this Certification.

a) Oregon Department of Environmental Quality
Deschutes Valley Water District shall pay project-specific fees to ODEQ, made payable to State of Oregon, Department of Environmental Quality, according to the following schedule:

FERC License	Annual Project-Specific Fee Subject to Adjustment	Due
Upon License Amendment	$ 3,500 prorated to June 30	Within 30 days

Years 1 - 5	$ 3,500	July 1

b) Annual Adjustment
Fee amounts shall be adjusted annually, according to the following formula:

AD = D x (CPI-U)/(CPI-U-June 2010)

Where:

AD = Adjusted dollar amount payable to agency.
D = Dollar amount pursuant to Condition 8a above,
CPI-U = the most current published version of the Consumer Price Index-Urban. The CPI-U is published monthly by the Bureau of Labor Statistics of the U.S. Department of Labor. If that index ceases to be published, any reasonably equivalent index published by the Bureau of Economic Analysis may be substituted by written agreement between DEQ and Deschutes Valley Water District.

c) Payment Schedule
Fees shall be paid pursuant to a written invoice from DEQ. Except as provided below, project-specific fees shall be due on July 1 of each year following issuance of the new FERC License. Deschutes Valley Water District shall pay an initial prorated payment to DEQ within 30 days of issuance of the amended FERC license, for the period from the date of license issuance to the first June 30 which follows license amendment issuance.

d) Credits
DEQ will credit against this amount any fee or other compensation paid or payable to DEQ directly or through other agencies of the State of Oregon, during the preceding year (July 1 to June 30) for DEQ's costs of oversight.

e) Expenditure Summary
Upon request, DEQ shall, on a biennial basis, provide Deschutes Valley Water District with a summary of project specific expenditures.

f) Duration
The DEQ fee shall expire 3 years after the first July 1 following the issuance of the new FERC license, unless DEQ terminates it earlier because oversight is no longer necessary. One year before the expiration of the fee, or earlier if mutually agreed, DEQ and Deschutes Valley Water District shall review the need, if any, to modify, extend, or terminate the fee, in accordance with ORS 543.080. Deschutes Valley Water District shall pay any project-specific fee required after such review as provided in ORS 543.080.

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

David Belyea Date
Acting Western Region Administrator

1.0 PROJECT DESCRIPTION

The OSHP is located southwest of the town of Culver in Jefferson County, at river mile (RM) 7.2 on the Crooked River in Central Oregon. The dam is about 0.75 mile upstream of the head of Lake Billy Chinook in the northeast quarter of the northwest quarter of Section 33, Township 12S, Range 12E, Willamette Meridian (WM) (Figure 1-1). The upstream end of the reservoir is located on BLM land in the northeast quarter of the northwest quarter of Section 4, Township 13S, Range 12E, WM (Figure 1-1). Figure 1-2 shows the OSHP facilities, surrounding geographic features, and land ownership.

The OSHP consists of the following elements:

- a 21-foot-high, 175.2-foot-long, concrete-capped, rockfill diversion dam topped with 6 feet of flashboards that create a pool with a storage capacity of 106.4 acre-feet and a surface area of 11.1 acres at normal maximum pool elevation of 2004.21 feet;[1,2]
- a 44-foot by 33-foot rectangular concrete intake structure 32 feet in height on the left abutment of the diversion dam;
- two 12.5-foot-diameter, 1,157-foot-long buried corrugated metal conduits;
- a 30-foot-diameter steel surge-tank bifurcator;
- a 16-foot-diameter, 160-foot-long steel penstock;
- two turbine-driven pumps, one rated at 175 horsepower and the other at 480 horsepower;
- a powerhouse containing one turbine generating unit with a nameplate capacity of 4.3 MW at a power factor of 0.85 providing 1,800 cubic feet per second (cfs) of powerhouse capacity;
- a 250-foot-long, 20.8-kilovolt (kV) underground transmission line interconnecting to the Pacific Power and Light transmission system; and
- appurtenant facilities.

[1] All elevations are reported in National Geodetic Vertical Datum of 1929 (NGVD 29) except construction drawings that are in the local project datum (LPD), which is greater than NGVD 29 by 1.79 feet. For purposes of keeping the construction and engineering simple, this LPD is used in an engineering context.

[2] The OSHP is authorized to operate at a maximum pool elevation of 2,005 feet NGVD 29; surveys conducted in 2009 by DVWD indicate that the current elevation of the impoundment is at 2004.21 feet. The proposal is to increase the impoundment elevation by 6 feet, making the new maximum operating elevation 2,010.21 feet NGVD 29 (2,012 feet LPD)

FIGURE 1-1 PROJECT LOCATION MAP

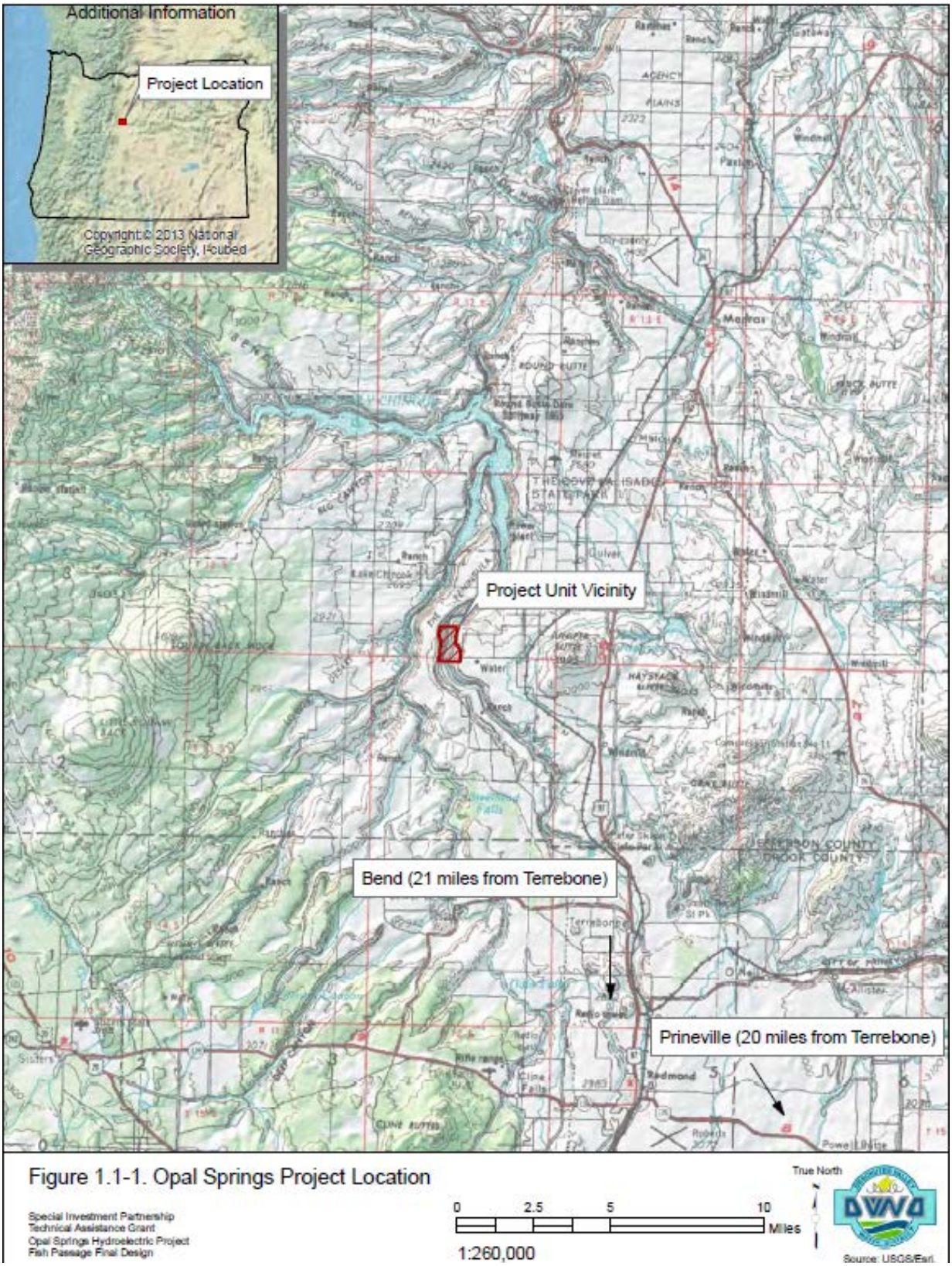
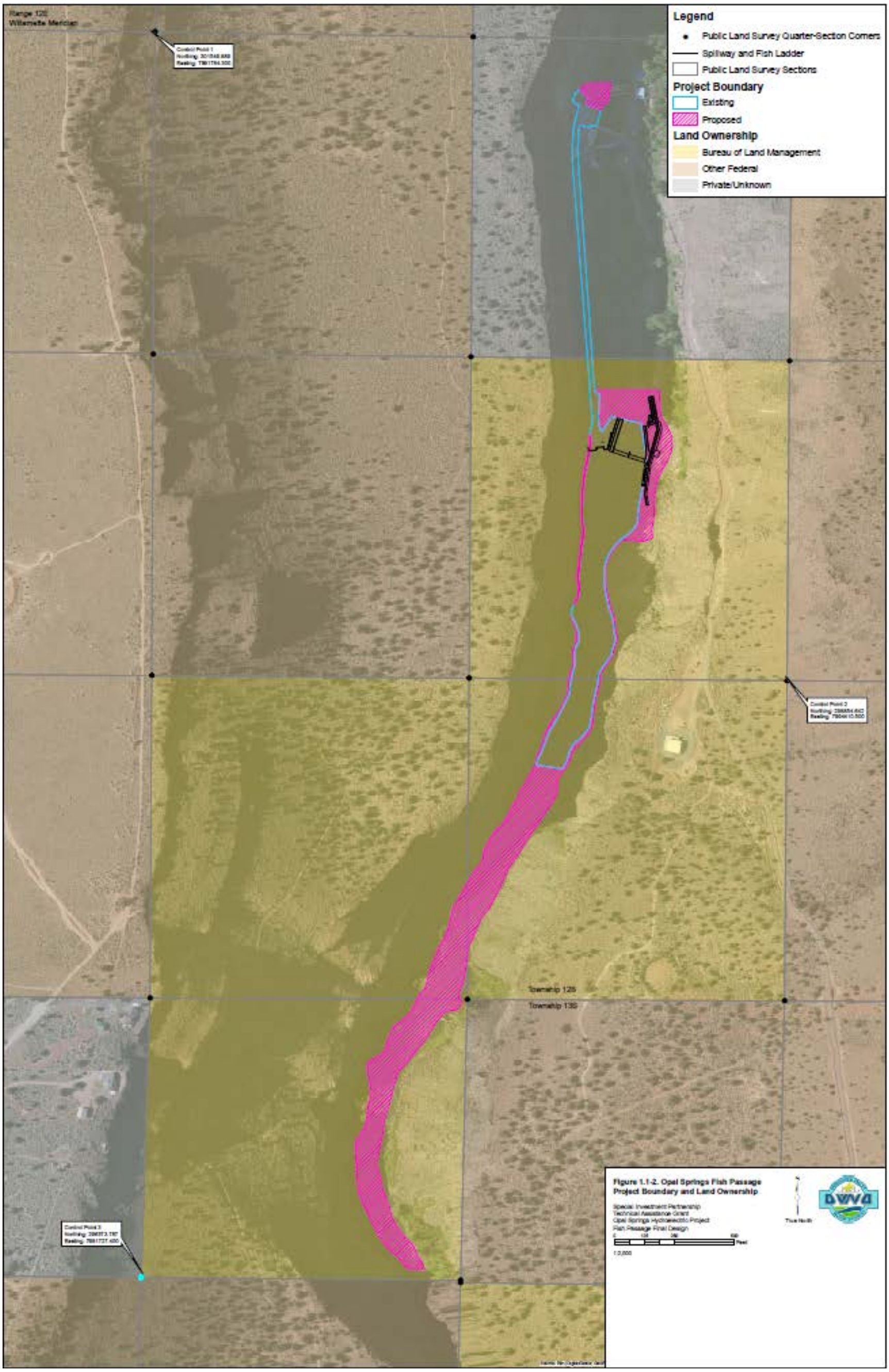


FIGURE 1-2 PROJECT FEATURES, LAND OWNERSHIP, AND FERC BOUNDARY (EXISTING AND PROPOSED)



1.1 EXISTING PROJECT OPERATIONS

The OSHP is operated as a run-of-river facility. As required by Article 36 of the current OSHP license, DVWD maintains the discharge from the Opal Springs Dam at a continuous minimum flow of 50 cfs or the inflow to the reservoir, whichever is less, for the purposes of protecting and enhancing aquatic resources in the Crooked River downstream of the OSHP. The OSHP's water right is for 1,772.5 cfs, which may be fully used when river flows exceed 1,822.5 cfs. Once the powerhouse capacity (1,772.5 cfs) is exceeded, excess stream flows during periods of high runoff (typically in the spring) are passed over the stoplogs as the impoundment is allowed to rise.

1.2 PROPOSED ACTION

According to the Proposed Action, FERC will authorize DVWD to build a fish ladder and to increase the maximum pool elevation of the OSHP to 2,007.21 feet (2,009 feet LPD), which will be the new minimum water surface elevation of the pool, for purposes of ensuring continuous operation of the fish ladder. FERC will also authorize DVWD to operate the OSHP in accordance with an adaptive management framework that includes establishing a water bank to facilitate upstream and downstream fish passage.

At the proposed increased water surface elevation, the OSHP impoundment will store 119 acre-feet and have a surface area of 14.4 acres. The proposed upstream extent of the pool will approach, but not encroach on, the downstream boundary of the Lower Crooked River Wild and Scenic River Area (the east-west centerline of the Wild and Scenic boundary is at the northern half of the northern half of Section 4, Township 13S, Range 12E, WM, approximately RM 8). The OSHP boundary would be amended to reflect the inclusion of additional BLM lands (Figure 1-3).

The OSHP will continue to operate as a run-of-river facility. As described in Appendices A and B of the Settlement Agreement, DVWD would manage a water bank for the benefit of upstream and downstream fish passage, for use at the request of the Fish Managers. The Fish Managers will base their requests on a planning process involving all parties to the Settlement Agreement

to generate a BFAA Annual Allocation Plan (described in Section 4.3.3). The DVWD will modify its operations to supply additional water through a spillway adjacent to the fish ladder, which will be part of the facilities.

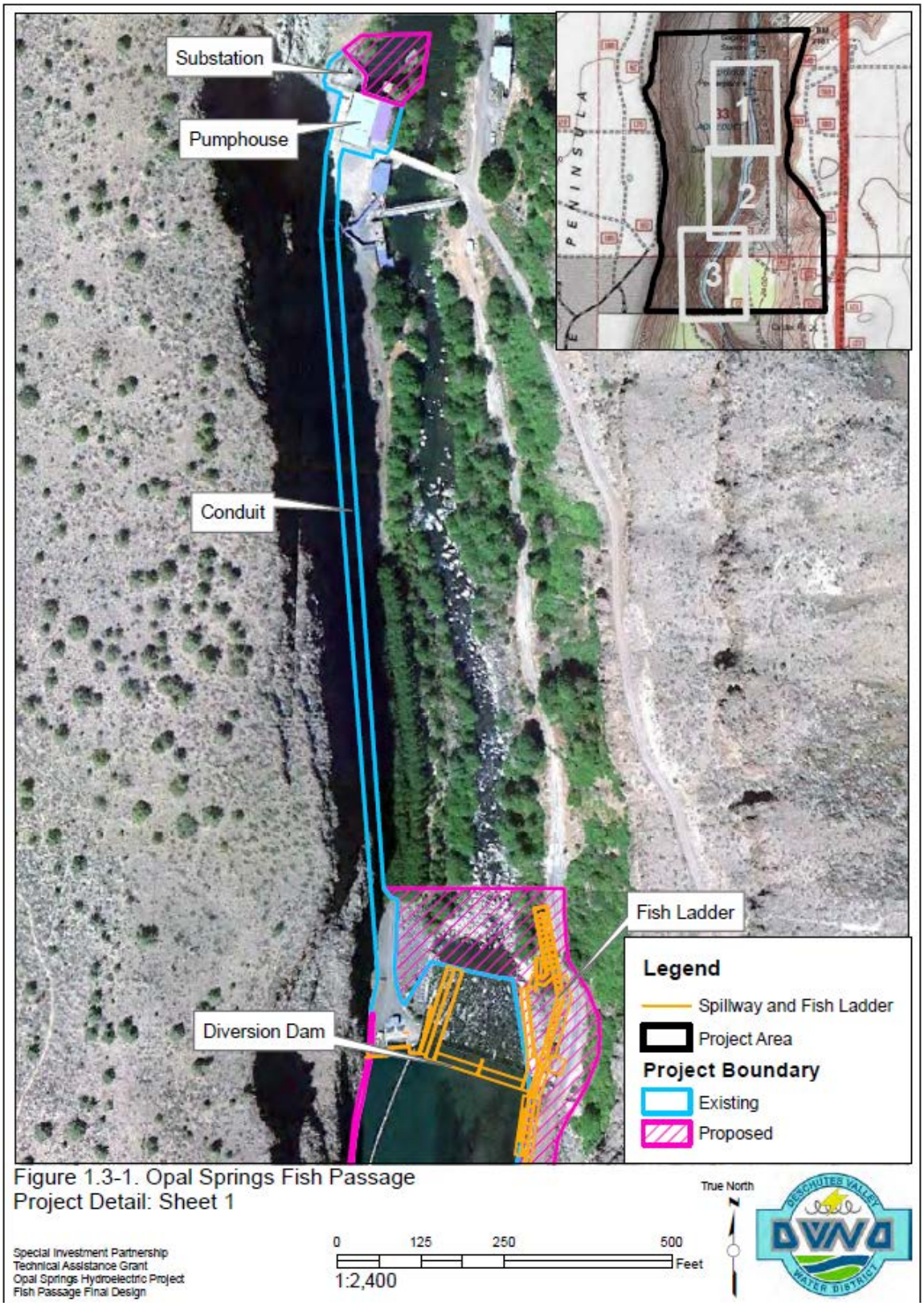
The following sections describe the elements of the Proposed Action.

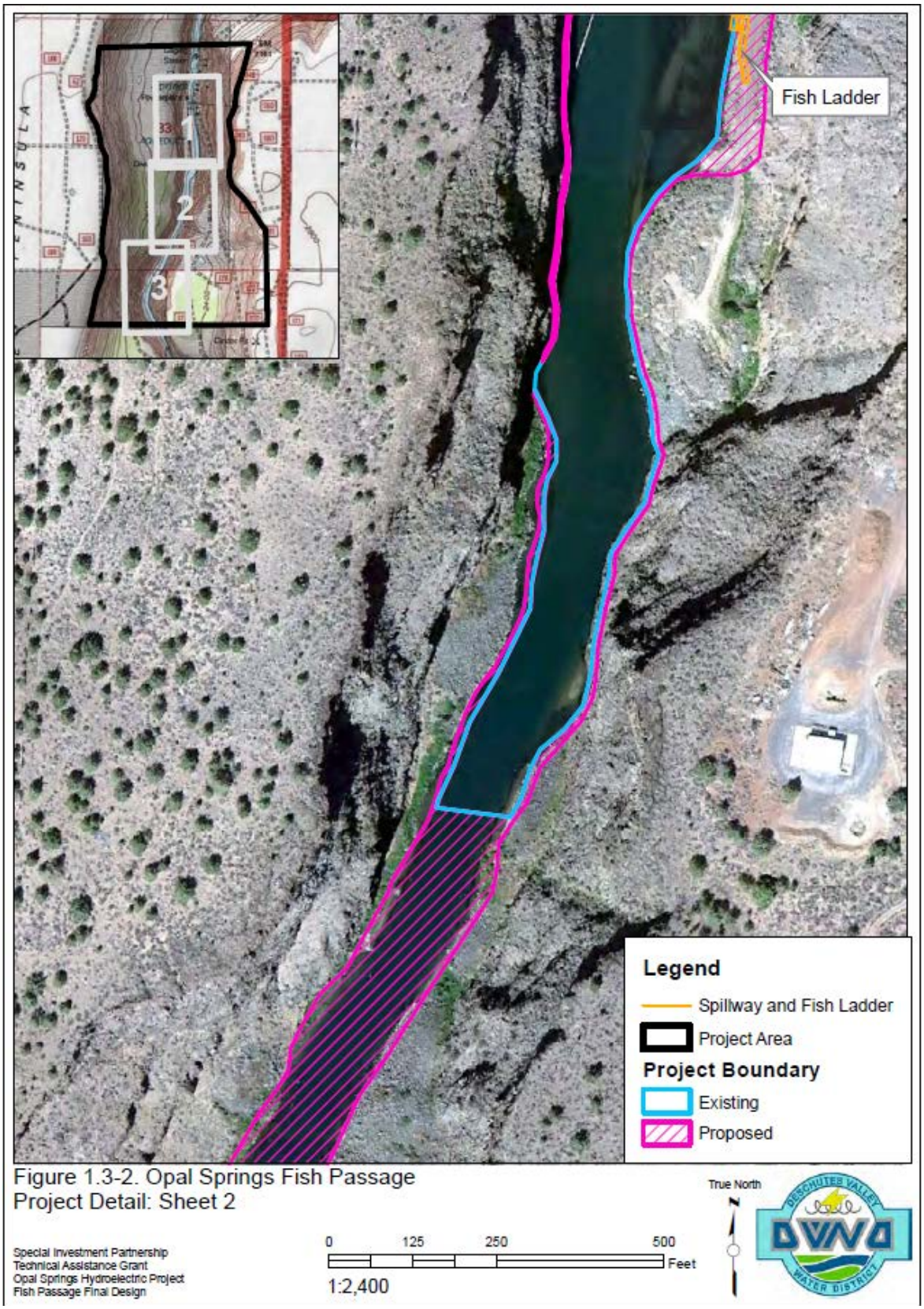
1.2.1 PROPOSED BOUNDARY

The FERC boundary of the OSHP will be amended to include additional BLM lands and to incorporate features necessary for operating the new and existing facilities. Proposed changes include the following:

- The FERC boundary below the diversion will be extended to include the fish ladder and an extended portion of the tailrace below the OSHP where potential adaptive measures could be implemented pursuant to the proposed adaptive management plan.
- On the west side of the reservoir, the boundary will include the upstream portions of the fish ladder and the boat ramp.
- Elsewhere above the diversion, the boundary will follow the 2,007.21-foot contour. This elevation ensures that the boundary will not encroach on the Lower Crooked River Wild and Scenic River Area.

FIGURE 1-3 PROJECT DETAIL




Fish Ladder
1
2
3
Legend
Spillway and Fish Ladder
Project Area
Project Boundary
Existing
Proposed
Figure 1.3-2. Opal Springs Fish Passage
Project Detail: Sheet 2
Special Investment Partnership
Technical Assistance Grant
Opal Springs Hydroelectric Project
Fish Passage Final Design
0
125
250
500
Feet
1:2,400
True North
DVWD
DESCHUTES VALLEY WATER DISTRICT

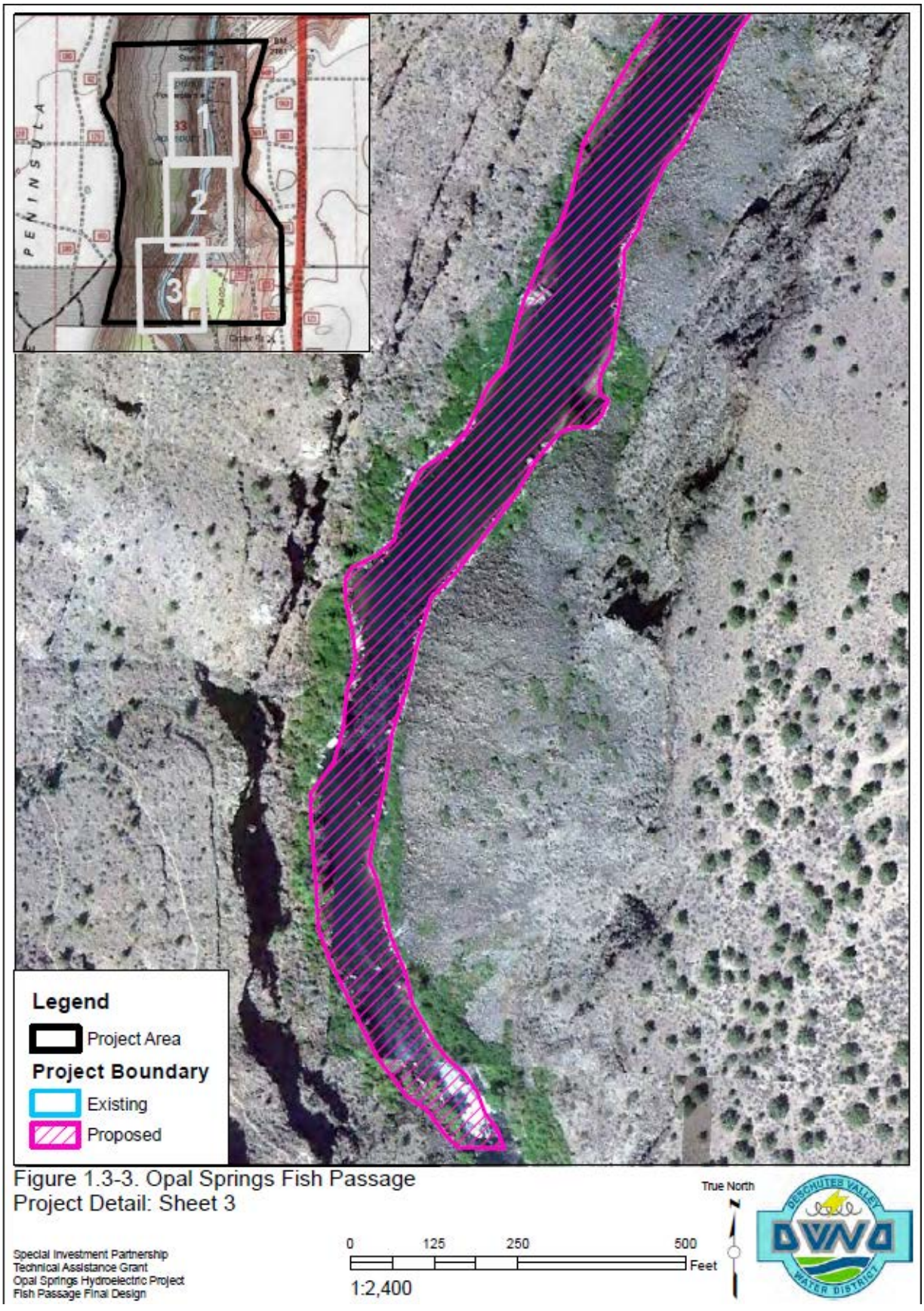
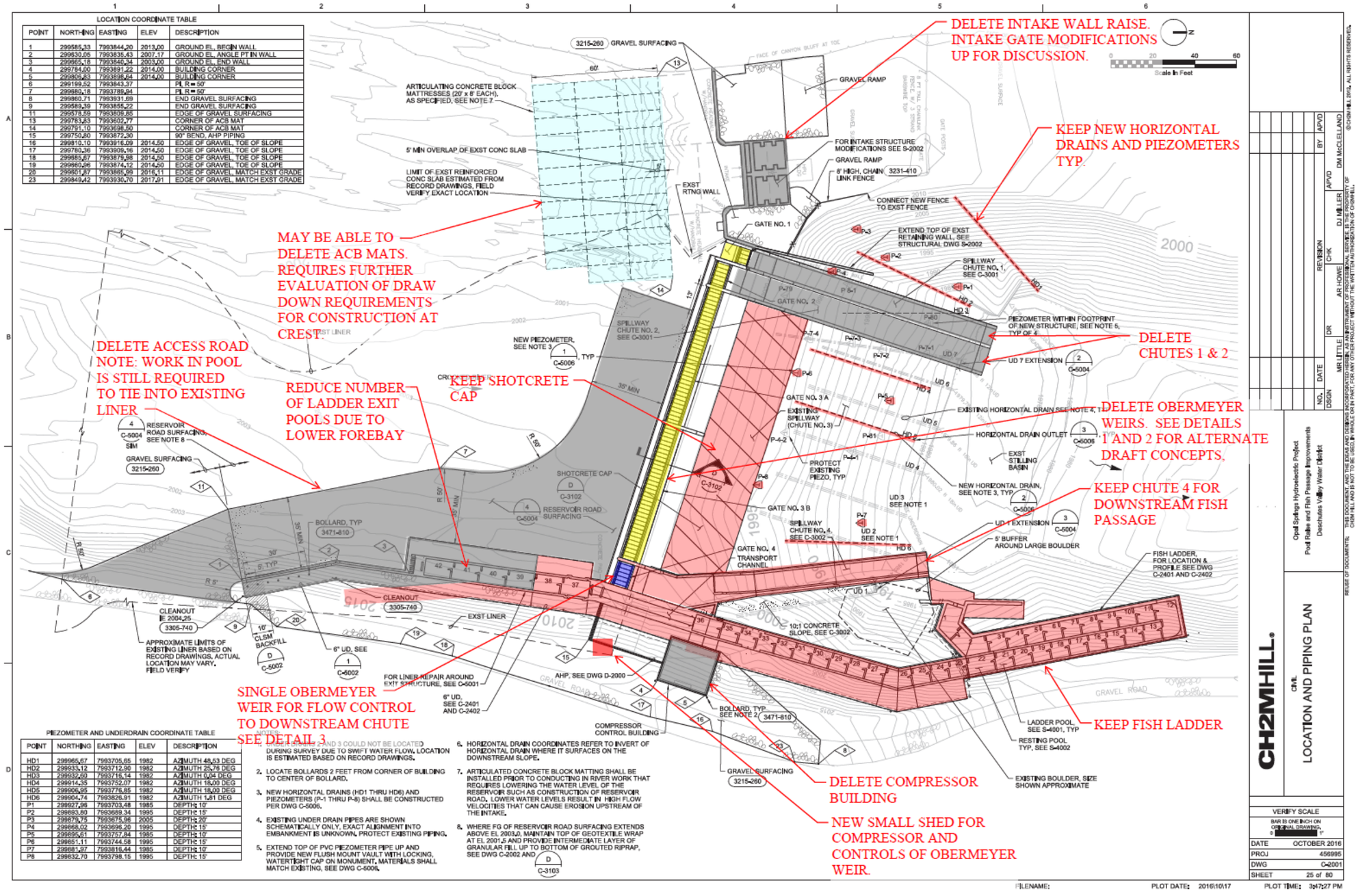


Figure 1.3-3. Opal Springs Fish Passage Project Detail: Sheet 3

1.2.2 PROPOSED FACILITIES

The proposed facilities, which are described in detail in the following sections, include a fish ladder and a combination of fixed flashboards and pneumatic crest gates to raise the pool elevation. The following subsections describe these facilities in detail. This configuration is a variation of previously submitted designs, which had been reviewed and approved by the Parties, including the Fish Agencies (NMFS, USFWS, ODFW, BIA). Figure 1-4 below identifies the changes in the proposed facilities from previously approved designs. Revised final drawings are being developed. The Parties have reviewed the modified plans, but will require that the final designs be reviewed for consistency with any final license conditions that FERC may issue because of the proposed amendment.

FIGURE 1-4 FISH LADDER



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1.2.2.1 FISH LADDER

The Proposed Action includes constructing a vertical-slot fish ladder on the right abutment of Opal Springs Dam to allow volitional upstream passage of fish. The ladder will include five key features:

- entrance
- attraction spill
- exit structure
- temporary adult trap
- other facilities for monitoring and evaluation

The fish ladder will accommodate a static forebay water surface elevation at 2,007.21.0 feet (2,009 feet LPD). The tailwater surface elevation with 50 cfs is 1,979.01; therefore, the maximum hydraulic differential between headwater and tailwater will be approximately 28.2 feet. As a result, the proposed layout describes 38 pools with hydraulic drops of 9 inches each.

Entrance. The ladder is designed to pass both salmon and trout. An entrance approximately 1 foot 10 inches wide by 3 feet high will deliver 30 cfs with 12 inches of differential. The ladder entrance is located based on field observations with the resource agencies and the results of flow testing conducted in late August 2012. During testing, the spill flow varied from approximately 30 cfs to 1,030.0 cfs, which encompasses the 95% to 5% exceedance streamflow range for bypass flows.

The ladder entrance is positioned to take advantage of a back-eddy pool that forms on the downstream side of a large boulder on the right bank adjacent to the stilling basin. Spill flows are expected to create a whitewater shear zone near the boulder that will guide fish moving upstream from the stilling basin tailout over the short distance to the fishway entrance. The maximum length of this whitewater shear zone is estimated to be between approximately 5 to 40 feet for Auxiliary Flow Gate (AFG) flow rates ranging from 20 cfs to 300 cfs. The water jet discharging from the fish ladder entrance will intersect the AFG a large angle, and the

resultant velocity vectors will be directed toward the stilling basin tailout and downstream boulder field.

Attraction Spill. No piped auxiliary water supply system will be provided. The minimum bypass flow of 50 cfs will be supplied by the 30 cfs fish ladder flow and minimum 20 cfs of spill flow. Spill flow normally will be supplied by the AFG adjacent to the fish ladder; however, this spill flow may also be augmented by overtopping of the fixed flashboards across the crest of the dam. Spill delivered in this manner would supplement AFG flows but would be dispersed and therefore unlikely to confuse fish searching for the ladder entrance. o

Exit Structure. The fish ladder will have a single exit pool located within the forebay to accommodate a static forebay water surface elevation. The exit structure an end exit slot (open-channel flow), as preferred by the fish agencies.

Temporary Adult Trap. A temporary trap for adult fish will be provided as part of the monitoring and evaluation program requirements to assess the performance of the fish passage facilities and demonstrate that the requirements of the Settlement Agreement have been met. The temporary adult trap will be located in the channel upstream of a transport channel and before the five exit pools. It will consist of a trapping mechanism, holding pool, upstream diffuser, and a brail with hopper. The trapping mechanism will be an in-ladder, removable vee-trap with brail.

Facilities for Monitoring and Evaluation. The fish ladder will include other provisions for monitoring and evaluating fish, including designated space, conduit, electrical, and instrumentation and control connections for a future fish-counting system (designed by the DVWD) and the possible future addition of devices for detecting passive integrated transponder (PIT) tags. The DVWD anticipates using a VAKI Riverwatcher system with digital video camera to count and identify fish. This equipment will be placed at the downstream end of the transport channel. A conduit embedded in the sides and invert of the transport channel or other provisions will be made to facilitate future installation of a PIT-tag detector.

1.2.2.2 FIXED FLASHBOARDS AND PNEUMATIC CREST GATE

A fixed wooden flashboard section and one inflatable weir (or gate) that span the crest of the dam will be installed to establish and control the increased pool elevation. The gate provides alternative downstream passage routes for adult migratory fish that move downstream through the OSHP area. Both the fish ladder and the gates are designed to improve upstream and downstream passage conditions for migratory fish.

Fish bypass releases would enter a stilling basin adjacent to the proposed fish ladder entrance. The Fish Passage Working Group (FPWG)[3] will develop detailed protocols for operating the gates and for using BFAA releases to facilitate fish passage as part of the adaptive management effort.

1.2.3 PROPOSED OPERATIONS

The OSHP will continue to be operated as a run-of-river facility, and the minimum instream flow requirement of the current license (License Article 36) will be maintained. Spill through the pneumatic crest Auxiliary Flow Gate (AFG) and the associated concrete-lined spill channel is sized to provide a maximum total flow of 325 cfs, which, combined with the ladder flow of 30 cfs and the maximum turbine flow of 1,772.5 cfs, is slightly less than the 5% annual exceedance streamflow of 2,667 cfs. The sizing of the Auxiliary Flow Gate is being evaluated during the design phase and may be revised to accommodate a larger flow. Above the combined flow through the ladder, turbine and Auxiliary Flow Gate, the dam crest could be lowered as needed to provide sufficient cushioning flow over the roughened dam face to minimize injury and mortality and to avoid impinging on the Wild and Scenic Area boundary.

[3] As described in the Settlement Agreement, the Fish Passage Working Group means all signatories to the October, 2011, SA (DVWD, NMFS, USFWS, BIA, ODFW, TU, and CTWS (provided that the CTWS is a signatory to the Settlement Agreement)). This is the working group whose purpose is to advise the Licensee on fisheries and habitat issues as specified in this Agreement and the Amended License.

As part of the Settlement Agreement, the DVWD will be implementing the BFAA as directed by the Fish Managers. The BFAA will be used to provide additional flow releases in the bypass reach (in addition to the instream flow requirement of 50 cfs) to facilitate upstream and downstream fish passage. The total annual BFAA volumes are estimated to be on the order of 20,000 to 30,000 acre-feet. In terms of flow releases, this volume will provide a year-round BFAA flow release of 30 to 40 cfs, approximately 9 weeks of flow releases at 200 cfs, or approximately 2 weeks of flow releases at 864.5 cfs.

The Fish Managers will base their requests for additional releases on a planning process involving all parties to the Settlement Agreement to generate a BFAA Annual Allocation Plan (described in Appendices A and B of a 2011 Settlement Agreement). The DVWD will modify its operations to supply additional water, when called for, through the AFG or by overtopping the spillway.

The ability to direct flow up to the design capacity of the AFG provides greater control of the river over a wide range of flow conditions. This ability serves two important functions:

- minimizing injury and mortality of fish passing over the roughened spillway; and
- balancing the amount and location of flow in relation to the ladder entrance to provide attraction water