WR File No: CS4-02006J
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DEPARTMENT OF ECOLOGY
State of Washington

State of Washington
REPORT OF EXAMINATION
FOR WATER RIGHT CHANGE

Change in Purpose of Use
Change in Place of Use

PRIORITY DATE	WATER RIGHT NUMBER
October 24, 1919	S4-02006J

MAILING ADDRESS	CHANGE APPLICATION NUMBER
Roaring Creek Water Users C/O Trout Unlimited-WA Water Project 103 Palouse #14 Wenatchee, WA 98801	CS4-02006J

REMARKS: This change is part of a larger project to move the Roaring Creek Water Users off Roaring Creek and create a trust water right from the historic point of diversion to the confluence with Roaring Creek and the Entiat River.

Purpose, Quantity, and Season

0.1375 cubic-feet per second (cfs), 12.43 acre-feet per year (ac-ft/yr) for Instream flow in Roaring Creek from April 1 to October 31.

Place of Use (See Attachment 2)

The Primary Reach begins at approximately River Mile (RM) 0.5 on Roaring Creek at the historic point of diversion, within SW¼SW¼ of Section 3, Township 25 North, Range 20 E.W.M.extending to the confluence of Roaring Creek and the Entiat River.

PORTION OF WATER RIGHT BEING RETAINED AND CHANGED
WRTS File #: S4-02006J(A)

Change in Point of Diversion
Change in Place of Use

PRIORITY DATE	WATER RIGHT NUMBER
October 24, 1919	S4-02006J

MAILING ADDRESS	
Roaring Creek Water Users **C/O Trout Unlimited-Washington Water Project** **103 Palouse #14** **Wenatchee, WA 98801**	**Taylor Farms/ERV Orchards LLC** **6909 Roaring Creek Road** **Entiat, WA 98822**

REMARKS: Taylor Farms/ERV Orchards is also retaining two other Certificates: S4-02004J and Change Certificate S4-CV1P45, which have the same place of use as this change.

Total Quantity Authorized for Withdrawal or Diversion

WITHDRAWAL OR DIVERSION RATE	UNITS	ANNUAL QUANTITY (AC-FT/YR)
0.1375	cfs	12.43

Purpose

PURPOSE	WITHDRAWAL OR DIVERSION RATE			ANNUAL QUANTITY (AC-FT/YR)		PERIOD OF USE (mm/dd)
	ADDITIVE	NON-ADDITIVE	UNITS	ADDITIVE	NON-ADDITIVE	
Irrigation of 2.6 acres	0.1375		cfs	12.43		April 1 – Oct 31

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
Chelan	Entiat River	Columbia River	46

SOURCE FACILITY/DEVICE	PARCEL	TWN	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
Diversion	County ROW*	25 N.	20 E.W.M.	03	SW NW	47.696495°	120.32293°
Infiltration Gallery	County ROW	25 N.	20 E.W.M.	03	SW NW		

ROW=Right of Way

Datum: WGS84

Place of Use (See Attached Map)

PARCELS

252003230050 and 252004140050

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

Parcel No. 252003230050 & Parcel No. 252004140050 (Taylor Farms/ERV Orchards) are located in the W½ of Section 3 and the E½E½ of Section 4, Township 25 North, Range 20 E.W.M. described as follows: Commencing at the SW corner of the SW¼; Thence North 1984 feet to the True Point of Beginning: Thence East 1388 feet to the Westerly ROW of Roaring Creek Road; Thence Northerly along the ROW of Roaring Creek Road 1990 feet to a point; Thence N60°59'41"W 262 feet; Thence N8°59'42"W 280 feet; Thence N13°59'18"E 180 feet; Thence S75°50'43"E 110 feet; Thence N34°24'38"E 104 feet; Thence N18°1'38"E 35 feet; Thence N11°19'38"E 77 feet; Thence N56°27'32"W 480 feet; Thence N33°6'7"E 50 feet; Thence N71°6'48"W 176 feet; Thence S8°48'19"W 638 feet; Thence N88°48'26"W 644 feet; Thence S7°33'15"W 1643 feet; Thence S84°43'56"E 623 feet; Thence S0°5'37"E 622 feet to the True Point of Beginning.

Proposed Works

Surface water will be pumped from the proposed Entiat River diversion to connect to the existing underground pipes and irrigation system serving the Taylor Farms/ERV Orchards orchard (Parcel Nos.252003230050 and 252004140050). There will be below-tree irrigation with mains, laterals, filters, and valves throughout the orchard. Usage for the two parcels will be metered separately from other users of the diversion.

Measurement of Water Use

How often must water use be measured?	Monthly
How often must water use data be reported to Ecology?	Annually
What volume should be reported?	Total Annual Volume
What rate should be reported?	Peak Rate of Withdrawal (gpm or cfs)

Provisions

General Limitation

The Roaring Creek Water Users are limited to a total diversion of 1.410 cfs, 288.29 ac-ft/yr of which 1.122 cfs, 241.59 ac-ft/yr shall be diverted from the Entiat River (via a surface diversion or infiltration gallery), and 129.2 gpm (0.288 cfs), 46.7 ac-ft/yr from the Cada well.

Measurements, Monitoring, Metering, and Reporting

An approved measuring device must be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", WAC 173-173, which describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition the Department of Ecology for modifications to some of the requirements.

Recorded water use data shall be submitted via the Internet. To set up an Internet reporting account, contact the Central Regional Office. If you do not have Internet access, you can still submit hard copies by contacting the Central Regional Office for forms to submit your water use data.

Fish Screening Criteria

The intake(s) shall be screened in accordance with Department of Fish and Wildlife screening criteria (pursuant to RCW 77.57.010, RCW 77.57.070, and RCW 77.57.040).

Department of Fish and Wildlife	Phone:	(360) 902-2534
Attention: Habitat Program	Email:	habitatprogram@dfw.wa.gov
600 Capitol Way North	Website:	http://wdfw.wa.gov/conservation/habitat/planning/screening/
Olympia, WA 98501-1091		

No dam or weir may be constructed in connection with this diversion.

Easement and Right-of-Way

The water source and/or water transmission facilities are not wholly located upon land owned by the applicant. Issuance of a water right change authorization by this department does not convey a right of access to, or other right to use, land which the applicant does not legally possess. Obtaining such a right is a private matter between applicant and owner of that land.

Schedule and Inspections

Department of Ecology personnel, upon presentation of proper credentials, will have access at reasonable times, to the project location, and to inspect at reasonable times, records of water use, wells, diversions, measuring devices and associated distribution systems for compliance with water law.

Real Estate Excise Tax

This decision may indicate a Real Estate Excise Tax liability for the seller of water rights. The Department of Revenue has requested notification of potentially taxable water right related actions, and therefore will be given notice of this decision, including document copies. Please contact the state Department of Revenue to obtain specific requirements for your project.

Department of Revenue	Phone:	(360) 570-3265
Real Estate Excise Tax	Internet:	http://dor.wa.gov/
PO Box 47477	E-mail:	REETSP@DOR.WA.GOV
Olympia WA 98504-7477		

FINDINGS OF FACTS

Upon reviewing the Investigator's Report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I concur with the Investigator that water is available from the source in question; that there will be no impairment of existing rights; that the purpose(s) of use are beneficial; and that there will be no detriment to the public interest.

Therefore, I ORDER approval of Application No. CS4-02006J subject to existing rights and the provisions specified above.

YOUR RIGHT TO APPEAL

You have a right to appeal this decision to the Pollution Control Hearings Board (PCHB) within 30 days of the date of receipt of this decision. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do the following within 30 days of the date of receipt of this decision:

- File your appeal and a copy of this decision with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this decision on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board 1111 Israel Road SW Ste 301 Tumwater, WA 98501	**Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

For additional information visit the Environmental Hearings Office Website: http://www.eho.wa.gov
To find laws and agency rules visit the Washington State Legislature Website: http://www.leg.wa.gov/CodeReviser

Signed at Yakima, Washington, this 2 day of June, 2015.

Sage Park

Sage Park, Section Manager
Water Resources Program/CRO

If you need this document in an alternate format, please call the Water Resources Program at 509-575-2490. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

INVESTIGATOR'S REPORT

NOTE: This is a General Investigator's Report for eight change applications being processed collectively. The individual decisions for each water right are attached as coversheets to this general report.

BACKGROUND

On December 6, 2012, Trout Unlimited (TU) submitted eight change applications on behalf of the Roaring Creek Water Users (RCWU). These applications propose to eliminate the RCWU's two shared points of diversion located on Roaring Creek and switch the water users to a new point of diversion and/or infiltration gallery on the Entiat River, and switch one user, Michael Cada, to a well. The new diversion/infiltration gallery is located on the Entiat River just below the new Roaring Creek Road Bridge are also working with TU to remove the two diversions that are barriers to salmonid passage and protect up to 1.5 cubic feet per second (cfs) that will no longer be diverted in Roaring Creek by requesting to transfer the saved water to instream flow and conveying it to the Department of Ecology (Ecology) (see the *Instream Flows* section below).

During the investigation for these change applications, the project evolved and amendments were made to the applications to better describe what the RCWU are proposing to change. On November 19, 2013, the RCWU eliminated its class system for the water rights its members hold by passing the *RCWU Association Directors' Resolution Regarding Discontinuing the Class System for Association Water Rights*. Ecology cannot ignore the class system for the water rights in the investigation, but acknowledges the group's intent to manage the water rights collectively. To that end, Ecology suggested that the places of use be redefined to more accurately describe the irrigated acres and parcel boundaries. Instead of several small users sharing a larger water right, the larger right is reassigned to a larger user within the RCWU. Redefining the places of use simplifies ownership and eliminates some of the overlapping places of use. Several of the existing places of use are much larger than the authorized irrigated acreages and overlap as many as five parcels.

Instead of describing each application and subsequent changes to them, Attachment 1 provides a comparison of the existing RCWU water rights and the changes being recommended as a result of this investigation.

Legal Requirements for Proposed Change

The following is a list of requirements that must be met prior to authorizing the requested change.

Public Notice

A public notice of the application must be published in a local newspaper once a week for two consecutive weeks (RCW 90.03.280). The public notice was published in the *Wenatchee World* during the weeks of October 10 and 17, 2013. Notice was provided again when TU requested that Ecology also consider adding a goundwater infiltration gallery as an alternate source adjacent to the proposed point of diversion on the Entiat River. Notice was published on June 19, 2014, and June 26, 2014. No comments were received.

State Environmental Policy Act (SEPA)

A water right application is subject to a SEPA threshold determination (i.e., an evaluation whether there are likely to be significant adverse environmental impacts) if any one of the following conditions are met.

- It is a surface water right application for more than one cfs, unless that project is for agricultural irrigation, in which case the threshold is increased to 50 cfs, so long as that irrigation project will not receive public subsidies;
- It is a groundwater right application for more than 2250 gallons per minute (gpm);

- It is an application that, in combination with other water right applications for the same project, exceeds the amounts above;
- It is a part of a larger proposal that is subject to SEPA for other reasons (e.g., the need to obtain other permits that are not exempt from SEPA);
- It is part of a series of exempt actions that, together, trigger the need to do a threshold determination, as defined under WAC 197-11-305.

Because the project is for more than 1 cfs and public subsidies were received, Ecology determined that a SEPA threshold determination was required. TU provided an Environmental Checklist on February 13, 2014. Ecology reviewed the checklist and issued a Determination of Non-Significance on March 24, 2014. No comments were received.

Water Resources Statutes and Case Law

Based on the provisions of RCW 43.21A.690 and RCW 90.03.265, this application has been processed by Licensed Hydrogeologists with GeoEngineers, Inc. (GeoEngineers), under Ecology Cost-Reimbursement Agreement No. GEO005 (Master Contract No. C1000187).

RCW 90.03.380(1) states that a water right that has been put to beneficial use may be changed. The point of diversion, place of use, and purpose of use, may be changed if it would not result in detriment or injury to other water right holders.

The Washington Supreme Court has held that Ecology, when processing an application for change to a water right, is required to make a tentative determination of extent and validity of the claim or right. This is necessary to establish whether the claim or right is eligible for change. *R.D. Merrill v. PCHB* and *Okanogan Wilderness League v. Town of Twisp.*

INVESTIGATION

The following investigation was initiated by consultants from GeoEngineers as part of the Ecology's cost reimbursement program to facilitate the processing of the application. Kelsey Collins of the Water Resources Program, Ecology, oversaw the investigation and provided review.

The investigation included the review of:

- The State Water Code, specifically Title 173 Washington Administrative Code (WAC) and Title 90 Revised Code of Washington (RCW).
- United States Geological Survey (USGS) topographic maps.
- Washington State Department of Ecology, 2013, Washington State Well Log Viewer website, <http://apps.ecy.wa.gov/welllog/index.asp> (Accessed November 2012).
- Washington State Department of Ecology, 2013, Water Rights Tracking System (WRTS) website <http://www.ecy.wa.gov/programs/wr/rights/tracking-apps.html> (Accessed November, 2012).
- Kirk, T., P. Kerr, and H. Riddle, 1995, Draft: Initial Watershed Assessment, Water Resources Inventory Area (WRIA) 46, Entiat River Watershed. Washington Department of Ecology Open File Report 95-02.
- Long, W. A., 1951, Glacial Geology of the Wenatchee-Entiat Area, Washington. Northwest Science 25, 3-16.
- Tabor, R. W., V. A. Frizzell, Jr., J. T. Whetten, R. B. Waitt, D. A. Swanson, G. R. Byerly, D. B. Booth, M. J. Hetherington, and R. E. Zartman, 1987, Geologic Map of the Chelan 30-Minute by

60-Minute Quadrangle, Washington. Map 1-1661. U.S. Geological Survey. Miscellaneous Investigations Series.

- Chelan County Conservation District (CCCD), October 2004, Entiat WRIA 46 Management Plan.
- Walker, K., 2009, Technical Memorandum: Hydrogeologic technical analysis for Water Right Change Application Nos. CS4-069703CL@1, CS4-069703CL@2, CS4-069703CL@3, CS4-069703CL@4 and CS4-069703CL@5, Chelan County, Washington. Report by Kurt Walker and reviewed by Thomas Mackie.
- Google Earth aerial photographs of 1998, 2005, 2006, 2009, and 2011.
- Photocopies of aerial photographs of the Entiat River area from 1965, 1988, and 1994, were obtained from the Chelan County Assessor's office in Wenatchee.
- Information submitted by and conversations and/or meetings with the applicants and TU.

History of Water Use

Construction of the Erickson Ditch began on February 25, 1897, according to court documents in the Roaring Creek Adjudication (*State vs. Packwood*). The court case began in 1917 and ended with a decree on October 24, 1919. Certificates Nos. 3 through 21 were issued with a priority date of October 1919, and designated into classes 1 through 5. These classes are based on dates that fall between initiating ditch construction and signing of the decree on October 24, 1919. The certificates were issued with instantaneous quantities in miners' inches under 6-inch pressure, but no annual quantity was stated. Only four of the certificates indicated the number of irrigated acres. For the most part, the water duty is 0.025 cfs per acre. No season of use is specified on the certificates, but in a Statement of Claim, signed on March 10, 1919, P.B. Packwood stated that he used water from the middle of May and ending about October 1.

The certificates identify various points of diversion (see Attachment 1), but over time the diversions were consolidated into an Upper Diversion and Lower Diversion. According to TU, the Lower Diversion is now located in the SW¼SE¼ of Section 4, Township 25 North, Range 20 E.W.M., and the Upper Diversion is now located in the NW¼NW¼ of Section 9, Township 25 North, Range 20 E.W.M. The certificates and certificates of change authorize diversion points other than the current consolidated ditch diversion points. Table 1 describes all the Roaring Creek Certificates resulting from the adjudication. In preparation for submitting change applications to Ecology, TU determined that eight water rights account for all the water being diverted from Roaring Creek. The eight rights are shaded in Table 1. The comments provided in the table indicate why many of the Roaring Creek Certificates were not included in the RCWUs rights being changed. The comment "No recent beneficial use noted" refers to water rights where irrigation is not taking place according to recent air photos. These lands are farther upstream where there is very little flood plain between the steep valley walls.

The acres indicated in Table 1 are inferred from the certificates and not a tentative determination of the rights. There is significant overlap in the places of use, so simply adding the inferred authorized acreage is not meaningful.

Table 1: Roaring Creek Adjudicated Certificates

Certificates	Comments	Acres (based on 0.025 cfs per acre duty)
Certificate 3 (as changed and replaced by Certificate of Change S4-CV1P45)	TU project	25
Certificate 4	TU project	15
Certificate 5	No beneficial use noted	
Certificate 6 (as partially changed by Certificates of Change S4-CV1P20B and S4-CV1P21)	TU project (three change applications)	1.6 (Certificate 6) 3.12 (S4-CV1P20B) 2.38 (S4-CV1P21)
Certificate 7	No beneficial use noted	
Certificate 8	No beneficial use noted	
Certificate 9	No beneficial use noted	
Certificate 10	No beneficial use noted	
Certificate 11	No beneficial use noted	
Certificate 12	TU project	9.6
Certificate 13	TU project	3.0
Certificate 14	Completely overlaps with Certificate 6	
Certificate 15	Source is a spring and place of use completely overlaps with Certificate 6	
Certificate 16	Source is Entiat River	
Certificate 17	No beneficial use noted	
Certificate 18	No beneficial use noted	
Certificate 19	No beneficial use noted	
Certificate 20	TU project	7.1
Certificate 21	No recent beneficial use noted	

The following paragraphs provide a brief discussion about the classes of the water rights involved in this investigation. See Figure 1 for an illustration of these water rights.

Class 1

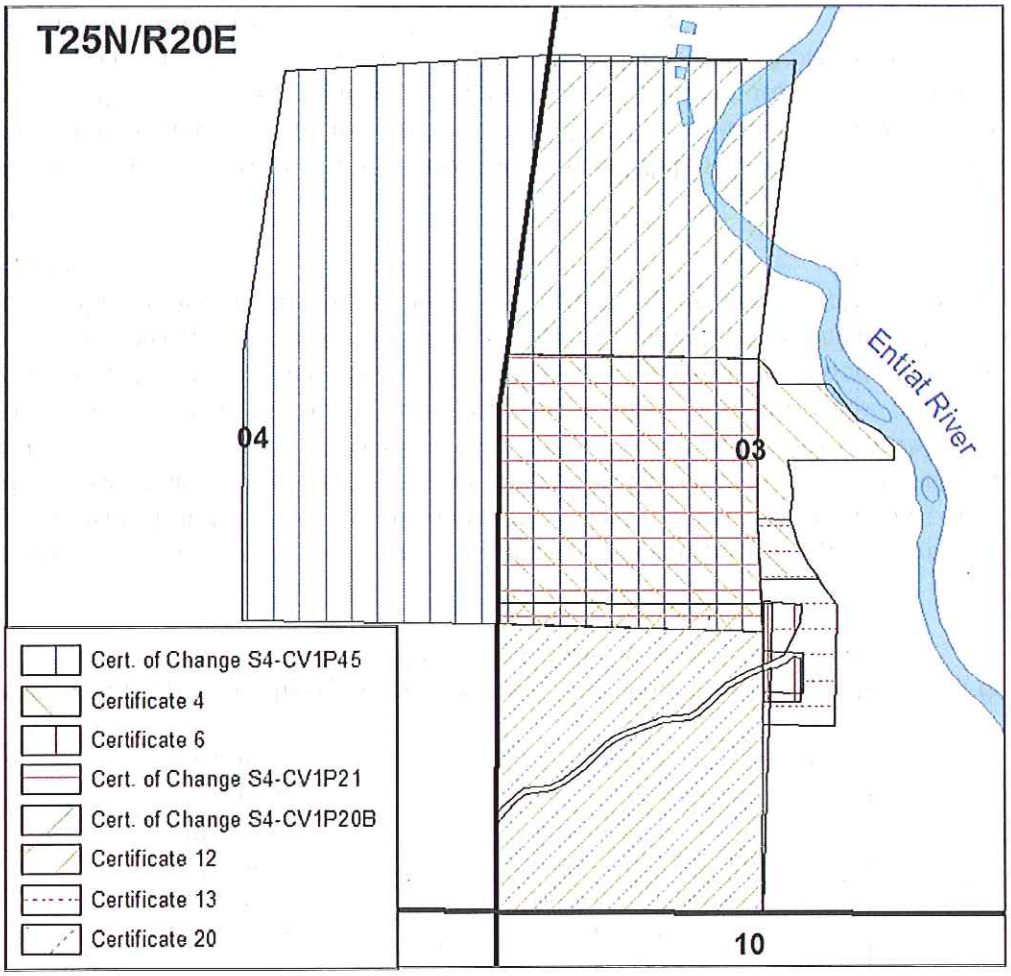
Certificates 3 and 4 were issued to Packwood and Finley respectively (the court records did not mention a Certificate 1 or 2; a reason for the omission of these numbers was not found). The places of use for these Class 1 Rights significantly overlap. These Certificates have a higher per acre water duty than the other Certificates based on an Order of Stipulation from August 2, 1919, in which Packwood and Finley stated that 1 miners' inch of water per acre was required for their irrigated lands. Packwood and Finley shared the Erickson Ditch that was started in 1897, from which Packwood claimed to be irrigating 25 acres and Finley, 15 acres. Certificate of Change No. CV1P45 was issued in 1926 to change the place of use and point of diversion for Certificate 3. This change completely replaced Certificate 3, making it inactive.

Class 2

Certificate 6 is a Class 2 Right originally issued to the Whitehalls for 0.275 cfs. At that instantaneous rate, they could irrigate approximately 11 acres (at 0.025 cfs per acre), however, the described place of use is only 1.6 acres, likely a mistake. This is the same place of use described in Certificate 14, also awarded to the Whitehalls, and also likely issued with an incorrect place of use description. In 1922, certificates of change were issued transferring half of the Whitehalls' water right; 0.078 cfs transferred to Packwood under Certificate of Change No. CV1P20B and 0.0595 cfs transferred to O.D. & E. Finely under Certificate of Change No. CV1P21. Packwood and Finley changed the point of diversion and place

of use for their portion of Certificate 6 to mimic their Class 1 rights. The Whitehalls retained half of Certificate 6 giving them 0.1375 cfs for the original 1.6-acre place of use, which was not corrected.

Figure 1: Overlapping places of use for the RCWU's water rights.



Class 3

Certificates 12 and 13 are Class 3 Rights. Certificate 12 was issued to Detwiler for 0.24 cfs for the irrigation of 9.6 acres within the SW¼SW¼ of Section 4, Township 25 North, Range 20 E.W.M. This place of use completely overlaps with that of Certificate 20. Certificate 13 was issued to Tussey for 0.075 cfs for the irrigation of 3.0 acres within an approximately six acre place of use located within the SW¼NE¼SW¼ and the NW¼SE¼SW¼ of Section 3, Township 25 North, Range 20 E.W.M. (abbreviated description). This place of use is partially overlapped by Certificate 4 and Certificate 6.

Class 5

Certificate 20 is a Class 5 Right issued to Detwiler for 0.1775 cfs for the irrigation of 7.1 acres within the SW¼SW¼ of Section 4, Township 25 North, Range 20 E.W.M. This place of use exactly overlaps that of Certificate 12, also issued to Detwiler.

Site Visits

Joel Purdy of GeoEngineers conducted a site visit on February 12, 2013. Snow was covering the ground and the existing Roaring Creek points of diversion could not be accessed. The location of the existing places of use were recorded using a GPS mapping system. Photographs of the properties and irrigation infrastructures were also taken.

Extent and Validity

There is significant overlap of the places of use for the water rights proposed for change. The authorized places of use encompass many more acres than the authorized water quantities allow for irrigation. Therefore, the RCWUs irrigated acres are described collectively (by parcel below in Table 2). The total acres are compared to the total authorized acres for the group of water rights. Publicly available aerial photographs were reviewed to assess the irrigated areas between 1967 and 2012. Based on the air photos, approximately 63.47 acres have been consistently irrigated since 1967 across the combined places of use for the eight certificates.

The RCWU do not have metering records for their diversions. The Certificates were generally issued for 0.025 cfs per acre. There is no evidence that the RCWU diverted less than the authorized quantities they were entitled. The Class 1 rights are the exception, in which the petitioners were awarded additional acres, but their instantaneous right did not increase.

Annual quantities were not stated on any of the RCWU Certificates. Therefore, annual water use was estimated based on WAC 173-546: tables 4 through 15. The estimates of water use in Table 2 below were calculated assuming average conditions and 65 percent application efficiency.

Based on the age of the irrigation system and the manner in which the irrigation is conducted, 65 percent efficiency appears to be a reasonable irrigation rate. The water duty for irrigating orchard is 4.78 acre-feet per year (ac-ft/yr) per acre, which is only used for Taylor Orchards, LLC/E.R.V. Orchards, LLC (Taylor/E.R.V. Orchards). The water duty for irrigating pasture/turf is 4.06 ac-ft/yr per acre. Table 2 provides a breakdown of the irrigated acres by parcel and owner. These parcels (Figure 2) coincide with the existing places of use for the RCWU water rights depicted in Figure 1.

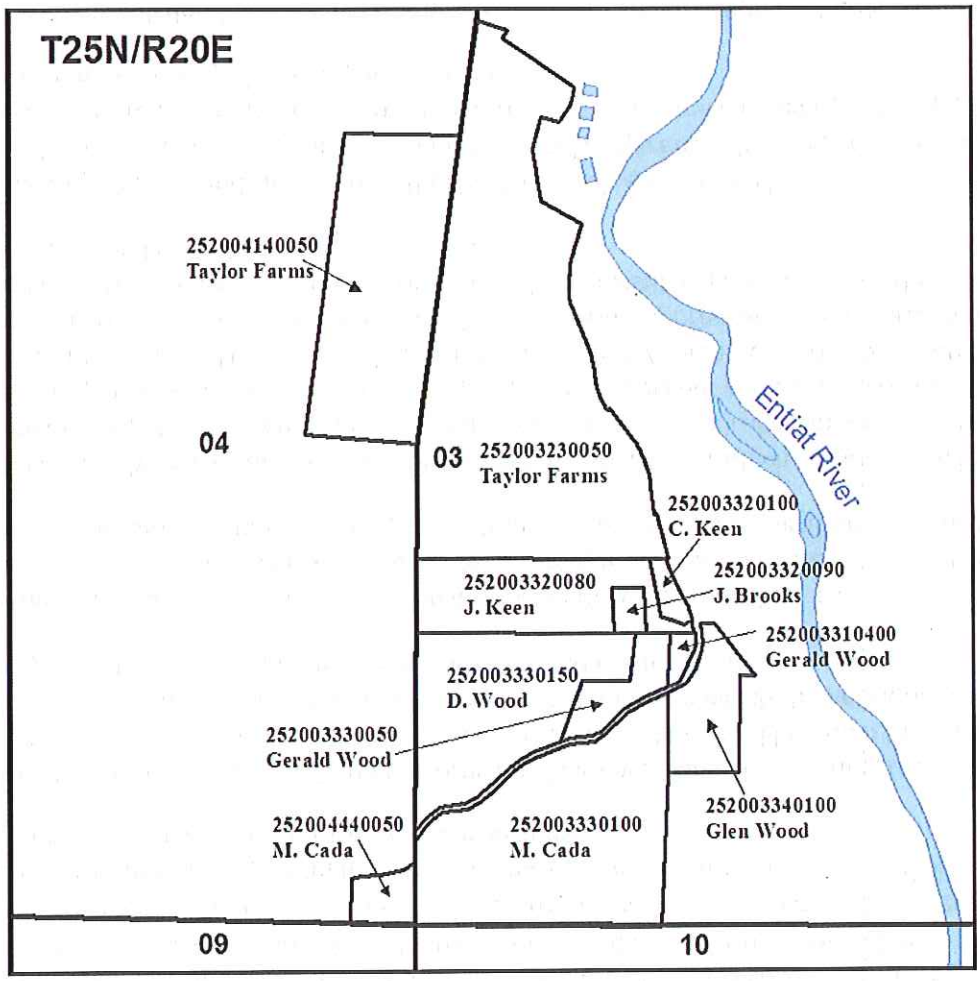
Historically, the lands irrigated by the RCWU contained more orchards, which have been converted to turf in the last 10 years, particularly in the parcels adjacent to Roaring Creek Road. These lawns and pastures are being irrigated with some permanent set sprinklers fed by buried pipe (ex. D. Wood), but most are manually placed impact sprinkers.

Orchards still dominate the northern parcels where Taylor/E.R.V. Orchards are currently irrigating. Taylor/E.R.V. Orchards which have consistently irrigated orchards in Parcel Nos. 25204140050 and 252003230050. Orchards on the western boundary of Parcel No. 25204140050 into land owned by Washington State Department of Natural Resources (WA DNR) are not within the authorized place of use. Also, it appears that a portion of their orchards extends further north and outside Parcel No. 252003230050, outside the existing place of use boundaries. The proposed change in place of use will include the northern orchards outside the existing place of use, but will not cover the irrigation on WA DNR land. Claim Nos. S4-142489CL and S4-136615CL also intersect Taylor/E.R.V. Orchards property and may account for irrigation in excess of the 42.6 acres of irrigation covered by the RCWU Water Rights.

Table 2: Parcels containing the irrigated acres associated with the RCWU's water rights.

Parcel	Owner	Irrigated acres	Qa (ac-ft/yr) (acres × water duty)
252003320080	J. Keen	1.64	6.66
252003320100	C. Keen	0.85	3.45
252003320090	J. Brooks	0.83	3.37
252003330150	D. Wood	1.45	5.89
252003330050	Gerald Wood	2.57	10.43
252003310400			
252003230050	Taylor/E.R.V. Orchards	42.60	203.63
252004140050			
252003340100	Glen Wood	2.01	8.16
252004440050	Mike Cada (surface)	1.90	7.70
252003330100	Mike Cada (surface)	9.60	8.10
	Mike Cada (well)		30.90
Total		**63.47**	**288.29**

Figure 2: Parcels containing irrigation associated with the RCWU's water rights.



Change from Surface Water to Groundwater for Micheal Cada

Mr. Cada is the only RCWU member that proposes to transfer a portion of his interest in the RCWU to a well to be located within Parcel No. 252003330100 in the SW¼SW¼ of Section 3. The well will be 6 or 8-inch diameter and drilled to a depth of less than 100 feet.

Same Source Consideration

To change from a point of diversion to a point of withdrawal, the well must be in direct hydraulic continuity with the original surface water source. Direct hydraulic continuity exists when, as a result of pumping the proposed well, additional water from the original surface water source will flow into and recharge the aquifer where it can eventually be captured as groundwater. Additionally, the proposed well must be located and constructed such that, within a short time after pumping starts, the majority of the pumped water should be derived from, or replaced by, the surface water source; and within a short time after pumping stops, the groundwater that has been removed from aquifer storage should be replaced by infiltration from the surface water source. This requirement ensures that the well can be managed in the same manner as the point of diversion. An analytical groundwater flow model that included representation of the river was used to evaluate the hydraulic relationship between the original source of water and the proposed well.

The Integrated Decision Support Alluvial Water Accounting System (IDS AWAS) was used to compute amount and timing of pumping-induced stream flow depletion from operation of the proposed well based on the Analytical Stream Depletion Model (ASDM) (Schroeder, 1987). The rate and timing of stream depletion are dependent on the properties of the subject aquifer and the distance between the pumping well and the stream. In general, the greater the distance between the pumping well and the stream, the greater the time period is between pumping and stream flow impact. The aquifer characteristics and well properties described above were used to define the ASDM parameters. An average pumping rate of 85 gpm and a transmissivity of 30,000 gallons per day (gpd)/ft were used to predict the rate and timing of stream depletion of Roaring Creek. The model predicts that after three days of continuous pumping, stream depletion accounts for approximately 93 percent of the water drawn from the proposed well. As a result, the proposed well is considered to be in direct hydraulic continuity with the Roaring Creek, and the proposed well can be effectively managed in the same manner as the historic point of diversion.

Other Water Rights Overlapping RCWU's Authorized Places of Use

The places of use for the RCWU's water rights intersect the place of use for other water rights in the area. Those other water rights are summarized in Table 3. These other water rights authorize diversions other than Roaring Creek and are not counted in the RCWU's water rights.

Table 3: Water rights whose place of use overlap that of RCWU's places of use

Water Right No.	Document Type	Instantaneous Quantity	Annual Quantity	Acres	Purpose of Use	Water Right Holder	Source
G4-163206CL	Claim L	13 gpm	1	--	Domestic	Gerald Wood	Well
S4-142489CL	Claim L	1.2 cfs	200	50	Irrigation	Frank Gollaher	Entiat River
S4-136615CL	Claim L	0.1 cfs	20	5	Irrigation	Frank Gollaher	Spring
G4-103705CL	Claim L	25 gpm	4	--	Domestic	Raymond West	Well
G4-064227CL	Claim S	--	--	--	Domestic	Elmer Rush	Well
G4-057144CL	Claim S	--	--	--	Domestic/ Irrigation	Dee Wolf	Well
G4-057282CL	Claim S	--	--	--	Domestic	Raymond West	Well
G4-034808CL	Claim S	--	--	--	Domestic/ Irrigation	Herman Bick	Well
S4-012728CL	Claim L	0.01 cfs	1	--	Stockwater Wildlife Propagation	Dept. of Natural Resources	Spring
S4-*02015JWRIS	Adj. Cert	--	--	--	Domestic/ Irrigation	N.C. and Ella Whitehall	Spring
S4-*02016JWRIS	Adj. Cert	0.35 cfs	--	--	Domestic/ Irrigation	Wenatchee Produce Company	Entiat River
S4-*02019ALJWRIS	Adj. Cert	0.3025 cfs	--	--	Domestic/ Irrigation	Northwestern & Pacific Hypotheekbank	Roaring Creek
S4-*00257CWRIS	Certificate	0.4 cfs	--	21	Irrigation	Finley O D	Entiat River
G4-25874CWRIS	Certificate	1300 gpm	699.0	--	Fish Propagation	US Dept Fish & Wildlife	Well
G4-25490CWRIS	Certificate	100 gpm	61.0	12.00	Irrigation	Wood Gerald R	Well
G4-*05719CWRIS	Certificate	800 gpm	800.0	--	Fish Propagation	US Dept Fish & Wildlife	Well
G4-CV1-4P301	Certificate of Change	140 gpm	36.4	14.00	Irrigation	Harold Deatherage	Well
S4-CV1P205	Certificate of Change	6 cfs	--	33.78	Domestic/ Irrigation	U.S. Bureau Reclamation	Unnamed Spring
S4-300367CL	Claim 98	0.1 cfs	38.0	10.00	Irrigation	Michael Cada	Roaring Creek
S4-300146CL	Claim 98	0.4 cfs	30	6	Irrigation	Timothy Holderness	Entiat River

Claim L=Claim Long Form; Claim S=Claim Short Form

Instream Flows

Entiat River

The Entiat River originates from the eastside of the Cascade Mountains, flows southeast through the valley between the Chelan and Entiat Mountains, and joins the Columbia River near Entiat, WA. A large portion of the annual precipitation in the basin falls as snow and forms the winter snowpack. Spring temperatures and rain release water accumulated in the snowpack. The snowpack runoff is the dominant source of streamflow and groundwater recharge in the basin. For the USGS gage at Entiat (RM 0.5) from 1911 through 1925, and 1951 through 1958, the mean annual flow ranged from 275 to 800 cfs, peak annual flow ranged from 1100 to 10800 cfs, and the 7-day mean low-flow ranged from 45 to 120 cfs (CCCD, 2004). The Entiat River gage was moved to near Keystone (RM 1.4) in 1996. The average flow at the new location from 1997 to 2012 was 489 cfs, with a maximum flow of 5600 cfs in 1999 and a minimum flow of 56 cfs in 2005 (USGS Water-Data Report WY 2012).

Roaring Creek

Roaring Creek generally flows west to east and originates approximately eight miles west of the confluence with the Entiat River, located at Entiat RM 6. There is an Ecology stream gage on Roaring Creek near the mouth, which was established in approximately 2002. Maximum flow for the period of record from 2002 to 2012 was estimated at 98.4 cfs and the minimum flow was estimated at 0.2 cfs. Roaring Creek has been identified as being flow-limited due to the RCWUs diversions. The diversions can be full or partial passage barriers, depending on flow levels, with both diversions maintaining push-up dams.

The RCWU intend to cease diverting from Roaring Creek in favor of a diversion or infiltration gallery withdrawing water from the Entiat River (and one well). Eliminating the diversions will increase flows in Roaring Creek. That increase of flows occurs within the portion of Roaring Creek referred to as the primary reach. The primary reach begins at the authorized point of diversion and extends downstream to where return flows rejoin the creek. The diversions currently being used are located farther upstream than what was authorized in the Roaring Creek certificates. Ecology can only recognize instream flows from the authorized points of diversion (see Attachment 2). The RCWU certificates authorized diversion from either the "upper diversion", "lower diversion", or something in the middle. Primary Reach A likely begins at what is referred to as the upper diversion in the court records. Primary Reach A+B likely begins at what is referred to as the lower diversion. Both Primary Reach A and A+B extend to the mouth of Roaring Creek at its confluence with the Entiat River. Table 4 lists the water rights assigned to each reach.

Table 4: Instream flow quantities associated with RCWU water rights.

	Change Application No.	Recommended cfs	Recommended ac-ft/yr
Primary Reach A	CS4-CV1P45	0.425	119.50
	CS4-02004JC	0.325	71.70
	CS4-CV1P20B	0.021	3.45
	CS4-CV1P21	0.048	7.7
	Sub Total	0.819	202.35
Primary Reach A+B	CS4-02006JC	0.1375	12.43
	CS4-02012JC	0.240	39.0
	CS4-02013JC	0.062	10.03
	CS4-02020JC	0.151	24.48
	Sub Total	0.591	85.94
TOTAL		1.410	288.29

Impairment

The eight Roaring Creek certificates being changed as part of this project have different priority dates within the class system defined by the court. The new diversion and well will be managed collectively by the RCWU. This was formalized in the *RCWU Association Directors' Resolution Regarding Discontinuing the Class System for Association Water Rights* signed November 19, 2013. The group recognizes that any reduction in water use will be shared by the group as a whole.

Any impact to the Entiat River or other water rights within the basin as a result of the change in point of diversion would be restricted to the 2500-foot reach of the Entiat River between the proposed point of diversion and the confluence with Roaring Creek. As described in Table 5, there are several existing water rights in that reach. While numerous, these water users withdraw a relatively small amount of water from the Entiat River. The largest water right in the reach is based on a surface water claim submitted by Whithall for 300 gpm (0.67 cfs) from the Entiat River from a point of diversion located a few hundred feet downstream of the RCWU's proposed point of diversion.

Table 5. Claims located between Roaring Creek & the proposed point of diversion on the Entiat River.

Water Right No.	Name	Qi	Qa (ac-ft/yr)	Irrigated Acres	Source Names
		Surface Water			
S4-*00257CWRIS	O.D. Finley	0.4 cfs		21	Entiat River
S4-144720CL	Mark M. Carter	0.28 cfs	47	12	Entiat River
S4-110313CL	Marvin T. Whitehall	0.67 cfs	403	20	Entiat River
		Groundwater			
G4-26148GWRIS	Raymond West	100 gpm	45	10	Well
G4-163206CL	Gerald R. Wood	13 gpm	1		Wells
G4-128531CL	Robert D. Logan		24	6	Well
G4-128532CL	Robert D. Logan	26 gpm	2		Well
G4-108809CL	Leslie C. Julian	10 gpm	2		Well
G4-106151CL	Lael S. Dissmore	10 gpm	2		Well
G4-103704CL	Raymond West	20 gpm	2		Well
G4-103705CL	Raymond West	25 gpm	4		Well
G4-064227CL	Elmer Rush				Well
G4-057144CL	Dee E. Wolf				Well
G4-057282CL	Raymond West				Well
G4-044579CL	Manfred Botz	10 gpm	2		Well
G4-042422CL	Leslie Carter				Well
G4-035738CL	Junior Cox	10 gpm	2		Well
G4-034808CL	Herman P. Bick				
G4-008001CL	Howard Blackburn	10 gpm	2		Well

The Minimum Instream Flows established under WAC 173-546-050 were set for the Entiat River Basin (WRIA 46) in 2005. The proposed point of diversion/infiltration gallery is located within the lower stream management unit of the Entiat River minimum instream flow rule that extends from the mouth to RM 18. The gage by which the RCWU diversion would be assessed is near the mouth of the Entiat River (RM 1.4), far downstream from the proposed point of diversion and the Roaring Creek/Entiat River confluence. Since the water that has been historically diverted from Roaring Creek will remain instream and contribute to the Entiat River above the gage, the proposed changes would not affect management of low flows.

The Watermaster for the Entiat Basin, Susan Burgdorff-Beery, confirmed that Entiat River diverters have not been curtailed based on low flows recorded at the gage near the mouth of the Entiat River.

Impairment considerations for the proposed instream flow portion of the right are limited to a very small reach from the authorized point of diversion to the confluence with Roaring Creek and the Entiat River. Within that reach there are no other authorized diverters besides the RCWU.

Public Interest

Flow enhancement in Roaring Creek is part of a comprehensive fisheries restoration effort. The changes in points of diversion for the RCWU will increase flows and remove passage barriers in the only perennially accessible tributary to anadromous salmonids in the lower Entiat basin.

Consideration of Protests and Comments

No protests or comments were received during this investigation.

CONCLUSIONS

Approving the subject applications would not impair existing water users, nor would it be detrimental to the public interest.

RECOMMENDATIONS

Based on the information presented above, the author recommends that Change Application No.'s CS4-02020JC, CS4-CV1P45, CS4-02004JC, CS4-02006JC, CS4-CV1P20B, CS4-02013JC, CS4-02012JC, CS4-CV1P21 be approved as described in Attachment 1 and as described and provisioned in the individual Orders for Report of Examination for each water right change authorization.

Report by:

Joel W. Purdy

State of Washington Hydrogeologist 588 Licensed Geologist JOEL W. PURDY

Joel W. Purdy, LG, LHG — Date

And

Kelsey Collins

8/27/15

Kelsey Collins, Water Resources, Ecology — Date

Change Application No.		Name	Instantaneous Quantity	Annual Quantity (ac-ft/yr)	Purpose of Use	Period of Use	Irrigated Acres	Place of Use	Point of Diversion/Withdrawal
CS4-CV1P45 (change & replacement of Cert 3; Class 1)	**Existing**	P. B. & A. O. Packwood	0.425 cfs	Not stated	Irrigation & Domestic	Irrigation Season	25	SW¼NW¼ & NW¼SW¼ of Sec. 3; & SE¼NE¼ & NE¼SE¼ of Sec. 4, T. 25 N., R. 20 E.W.M.	SW¼SE¼ of Sec. 4, T. 25 N. R. 20 E.W.M.
	Recommended	Taylor Farms/ERV Orchards	0.425 cfs	119.5	Irrigation, Instream Flow	April 1 to October 31	25	Parcels 252003230050 & 252004140050, located in the W½ of Sec. 3 & the E½E½ of Sec. 4, T. 25 N., R. 20 E.W.M.	Entiat River diversion and/or infiltration gallery well adjacent to the river, located within the SW¼NW¼ of Sec. 3, T. 25 N., R. 20 E.W.M.
CS4-02004JC (Cert 4; Class 1)	**Existing**	O. D. & Nannie E. Finley	0.325 cfs	Not stated	Irrigation & Domestic	Irrigation season	15	NW¼SW¼ & portions of the W½NE¼ SW¼, & of Sec. 3, T. 25 N., R. 20 E.W.M.	10 yards above the Middle Ditch (closest to the Roaring Creek Upper Diversion in the SW¼SE¼ of Sec. 4, T. 25 N., R. 20 E.W.M.)
	Recommended	Taylor Farms/ERV Orchards	0.325 cfs	71.7	Irrigation, Instream Flow	April 1 to October 31	15	Same as CS4-CV1P45	Entiat River diversion described in CS4-CV1P45
CS4-02006JC (Cert 6; Class 2)	**Existing**	N. C. & Ella J. Whitehall	0.1375 cfs	Not stated	Irrigation & Domestic	Irrigation Season	Not stated	Approximately 1.6 acres within the NW¼SE¼SW¼ of Sec. 3, T. 25 N., R. 20 E.W.M.	SW¼SW¼ of Sec. 3, T. 25 N., R. 20 E.W.M.
	Recommended	Taylor Farms/ERV Orchards	0.1375 cfs	12.43	Irrigation, Instream Flow	April 1 to October 31	2.6	Same as CS4-CV1P45	Entiat River diversion described in CS4-CV1P45
CS4-CV1P20B (change to a portion of Cert. 6)	**Existing**	P. B. & A. O. Packwood	0.078 cfs	Not stated	Irrigation & Domestic	Irrigation Season	Not stated	SW¼NW¼ of Sec. 3, T. 25 N., R. 20 E.W.M.	SW¼SE¼ of Sec. 4, T. 25 N., R. 20 E.W.M.
	Recommended	Carl Keen	0.021 cfs	3.45	Irrigation, Instream Flow	April 1 to October 31	0.85	Parcel 252003320100 located in the NW¼SW¼ & in the SW¼NE¼SW¼ of Section 3, T. 25 N., R. 20 E.W.M.	Entiat River diversion described in CS4-CV1P45

Change Application No.		Name	Instantaneous Quantity	Annual Quantity (ac-ft/yr)	Purpose of Use	Period of Use	Irrigated Acres	Place of Use	Point of Diversion/Withdrawal
CS4-CV1P21 (change to a portion of Cert. 6)	**Existing**	O. D. & N. E. Finley	0.0595 cfs	Not stated	Irrigation	Irrigation Season	Not stated	NW¼SW¼ of Sec. 3, T. 25 N., R. 20 E.W.M.	SW¼SE¼ of Sec. 4, T. 25 N., R. 20 E.W.M.
	Recommended	Michael Cada	21.5 gpm (0.048 cfs)	7.7	Irrigation, Instream Flow	April 1 to October 31	1.9	Parcel 252004440050 located in the SE¼SE¼SE¼ of Sec.4, T. 25 N., R. 20 E.W.M.	A well in the SW¼SW¼ of Section 3, T. 25 N., R. 20 E.W.M.
CS4-02012JC (Cert 12; Class 3)	**Existing**	A. R. Detwiler	0.24 cfs	Not stated	Irrigation & Domestic	Irrigation Season	Not stated	SW¼SW¼ of Sec. 3, T. 25 N., R. 20 E.W.M.	SE¼SE¼ of Sec. 4; & SW¼SW¼ of Section 3, T. 25 N., R. 20 E.W.M.
	Recommended	Michael Cada	107.7 gpm (0.240 cfs)	39	Irrigation, Instream Flow	April 1 to October 31	9.6	Parcel 252003330100 located in the SW¼SW¼ of Section 3, T. 25 N., R. 20 E.W.M.	A well in the SW¼SW¼ of Section 3, T. 25 N., R. 20 E.W.M.
CS4-02013JC (Cert 13; Class 3)	**Existing**	J. G. Tussey	0.075 cfs	Not stated	Irrigation & Domestic	Irrigation Season	3	SW¼NE¼SW¼ & NW¼SE¼SW¼ of Section 3, T.25 N., R. 20 E.W.M.	SW¼SW¼ of Sec. 3, T. 25 N., R. 20 E.W.M.
	Recommended	Joyce Keen & James Brooks	0.062 cfs	10.03	Irrigation, Instream Flow	April 1 to October 31	2.47	Parcel 252003320080 (Keen) located in the NW¼SW¼ & in the SW¼NE¼SW¼ of Section 3, & Parcel 252003320090 (Brooks) located in the NW¼SW¼ of Section 3; All in T. 25 N., R. 20 E.W.M.	Entiat River diversion described in CS4-CV1P45
CS4-02020JC (Cert 20; Class 5)	**Existing**	Alzina Russell Detwiler	0.1775 cfs	Not stated	Irrigation & Domestic	Irrigation Season	Not stated	SW¼SW¼ of Sec. 3, T. 25 N., R. 20 E.W.M.	SE¼SE¼ of Sec. 4; & SW¼SW¼ of Section 3, T. 25 N., R. 20 E.W.M.
	Recommended	Gerald Wood, Dan Wood, & Glen Wood	0.151 cfs	24.48	Irrigation, Instream Flow	April 1 to October 31	6.03	Parcels 252003330050 & 252003310400 (Gerald Wood) located in the SW¼ of Section 3, & Parcel 252003330150 (Daniel Wood) & Parcel 252003340100 (Glen Wood) located in the W½SW¼ of Section 3; All in T. 25 N., R. 20 E.W.M.	Entiat River diversion described in CS4-CV1P45

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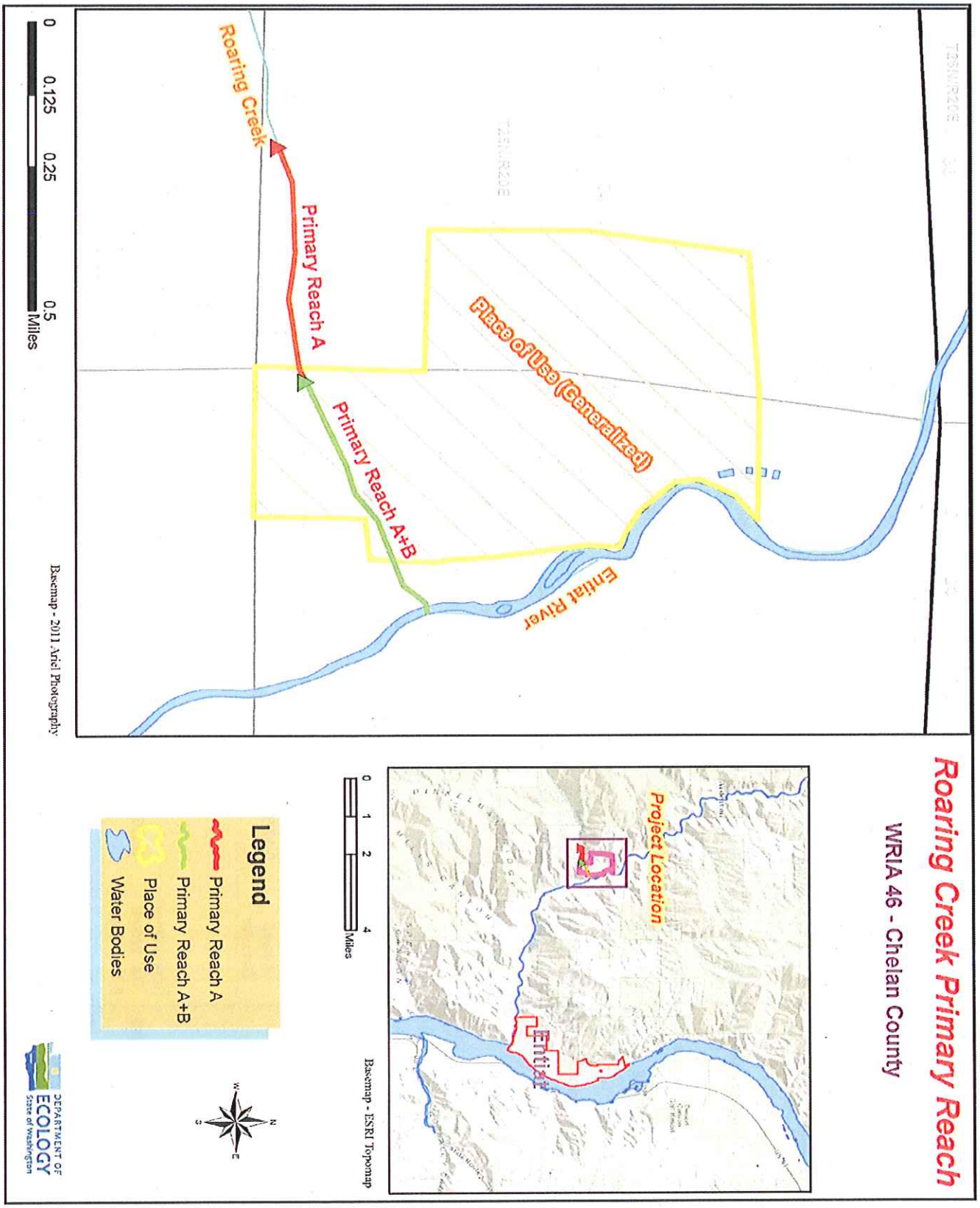
Attachment 2: