



Oregon

Kate Brown, Governor

Department of Fish and Wildlife
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December 18, 2019

Dwight French
Oregon Water Resources Department
North Mall Office Building
725 Summer Street NE, Suite A
Salem, OR 97301



REFERENCE: Transfer T-12837

The Oregon Department of Fish and Wildlife (ODFW) received notification of the Oregon Water Resources Department's (OWRD) finding that the proposed use in transfer application T-12837 results in injury to an existing instream water right and that OWRD has issued a Preliminary Determination proposing to deny the transfer. As a result, the applicant has sought approval under ORS 540.530(1)(b) – (e), and WRD has requested ODFW to make a recommendation on whether OWRD should consent to injury of the instream water right. To make the recommendation, ODFW must find that the transfer will provide a net benefit to the resource consistent with the purpose of the instream water right.

ODFW has evaluated the proposed transfer and mitigation measures and found that the overall benefits of the project provide a net benefit to the resource and offset the injury to the instream water right caused by the transfer. The attached analysis provides ODFW's reasoning for recommending that OWRD consent to injury of the instream water right.

If you have any questions, please contact Peter Samarin in our Central Point office (541-826-8774) or Danette Faucera in our Salem office (503-947-6092).

Bruce McIntosh
Deputy Fish Division Administrator – Inland Fisheries

Cc: Peter Samarin and Dan Van Dyke, ODFW Central Point (via e-mail)
Anna Pakenham Stevenson, ODFW Salem (via e-mail)
Jake Johnstone, District 14 Watermaster (via e-mail)
Andreas and Carole Blech, applicant (via e-mail)
Elizabeth Howard, applicant's agent (via e-mail)

Attachment: ODFW's Discussion and Analysis of Transfer T-12837 (December 18, 2019)



Oregon

Kate Brown, Governor

Water Resources Department

725 Summer St NE, Suite A

Salem, OR 97301

(503) 986-0900

Fax (503) 986-0904

June 14, 2018

Ed Bowles, Administrator
Fish Division
Department of Fish and Wildlife
4034 Fairview Industrial Drive SE
Salem, Oregon 97302

REFERENCE: Transfer Application file T-12837

Dear Ed:

The Water Resources Department has determined that approval of water right transfer T-12837 would result in injury to instream water right Certificate 72697 on Graves Creek, due to reduction of flow within the reach between the authorized POD and the upstream POD, unless the transfer were conditioned so as to avoid or mitigate for injury. The transfer proposes to move the point of diversion on Graves Creek approximately 560 feet upstream from the authorized diversion point in the NE ¼ of the SW ¼ of Section 8, T34S, R5W, WM to the NW ¼ of the SE ¼ of Section 8, T35S, R5W, WM.

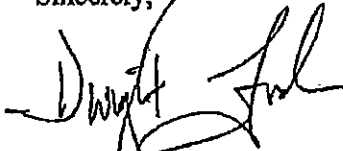
The Department's streamflow model predicts that natural flow in Graves Creek is insufficient to meet the requirements of the instream right. Based on potential impacts on the instream water right, we issued a draft Preliminary Determination on April 19, 2018, proposing to deny the transfer unless the Oregon Department of Fish and Wildlife (ODFW) recommends that the Water Resources Department consent to injury of the instream water right as per OAR 690-380-5050.

The applicant has requested that we pursue ODFW's recommendations on whether we should consent to the injury of the instream water right pursuant to ORS 540.530(c).

We hereby request a recommendation on whether we should consent to the injury to the instream water right that would result if water right transfer T-12837 were to be approved. We are enclosing a copy of the transfer application, our Preliminary Determination, and other supporting information to assist you in determining if the project would result in net benefits to the resource and in preparing a recommendation.

Please send your recommendation c/o Jessica Joye at the address above. Do not hesitate to contact me at 503-986-0814 or Jessica.L.Joye@oregon.gov, if you have questions or need additional information about this proposed transfer.

Sincerely,



Dwight French
Water Right Services Administrator

cc: Transfer Application file T-12837
Andreas and Carole Blech, transfer applicant
Steve Bruce, CWRE
Elizabeth Howard, Agent (via email)
Shonee Langford, Agent (via email)
Danette Faucera, Oregon Department of Fish and Wildlife
Peter Samarin, Oregon Department of Fish and Wildlife
Jake Johnstone, District 14 Watermaster (via email)
Confederated Tribes of Siletz, (via email)
Confederated Tribes of Grand Ronde, (via email)
Cow Creek band of Umpqua tribe of Indians, (via email)

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**Oregon Department of Fish and Wildlife's
CONSENT TO INJURY RECOMMENDATION
for T-12837
12-18-19**

The Water Resources Department (WRD) has determined that this transfer will injure at least one instream water right (ISWR). ORS 540.530 allows the WRD to consent to injury of an instream water right only if the agency who applied for the instream water right recommends that WRD consent to the injury. For the recommendation and consent to injury to occur, the agency that requested the instream water right must describe the extent of the injury to the instream water right, the effect on the resource, and the net benefit that will occur as a result of the proposed change. Consent to injury can only occur if the "change will result in net benefit to resource consistent with the purposes of the instream water right" (ORS 540.530(1)(c)). The recommendation may include any proposed conditions that are necessary to ensure that the proposed change will be consistent with the purposes of instream water right. In determining whether a net benefit will result from the proposed change, the recommendation of an agency must include an analysis of the cumulative impact of any previous changes that allow injury to the affected instream water right.

This is ODFW's analysis of the transfer and determination of whether a net benefit to the resource will occur based on consistency with the goals and standards of OAR 635-415-0025 (ODFW Habitat Mitigation Recommendations).

Section 1: Location of Proposed Transfer

Basin: Rogue Stream: Grave Creek Tributary to: Rogue River
TRSQQ: type here (optional)

Section 2: Extent of Injury to the Instream Water Right(s)

- A) Description of the proposed transfer: The applicant proposes to permanently transfer 0.81 cfs (C3943) from a seasonally-constructed gravel pushup dam upstream approximately 560 feet on Grave Creek during April – November. This transfer consolidates diversions of water at a new, gravity-fed point of diversion. The new diversion structure will be equipped with ODFW-approved fish screening and will allow volitional fish passage.
- B) Description of alternatives to the proposed transfer: ODFW considered 3 alternatives presented by the applicant.

Alternative 1: No Transfer

This alternative was rejected because it would require ongoing, annual construction and removal of a push-up dam in the creek. This option was also eliminated because the applicant does not have electricity at the location of the diversion. Therefore, he is reliant on a gas diesel generator and pump to run the pump

required to divert at this location. The generator and pump have been vandalized and stolen during his ownership. Reportedly, the noise of the generator and pump is disliked by neighbors. It is an inefficient, loud and non-friendly way to convey the water.

Alternative 2: Move POD Downstream

This alternative was rejected because it would have at least the same instream impacts and other issues as Alternative 1. The gradient downstream would also require a larger push up dam and larger pump to convey the water further uphill.

Alternative 3: Move POD Upstream Less than 560 feet

This alternative was rejected because of insufficient elevation to provide the necessary head pressure to use gravity to move water from the screened intake to the property. In other words, it also would have required an annual push up dam and generator and pump to divert the water at this location. Areas between the preferred POD and existing POD are also heavily treed. Therefore, constructing a ditch or pipeline in this area would have required removal of large riparian trees that provide shade and are a potential source of large woody debris in the stream.

- C) There is an instream water right(s) (ISWR) that supports biological flows for aquatic life that will be injured by the proposed transfer.

Certificate(s): C72697

Purpose of the instream water right: Providing required stream flows for coho and fall Chinook salmon, cutthroat trout, and winter and summer steelhead for migration, spawning, egg incubation, fry emergence, and juvenile rearing.

Period of Injury¹: WRD has determined that flows within this reach are frequently below the levels allocated under the instream water right (C 72697) during the full period of use, April - November.

Section 3: Potential Impacts to the Resource

- A) The following species are present during the period of injury:

Species	Listing Status ¹				Life Stage Present			Habitat Impacted by Proposed Use		
	S	T	E	N/A	Egg	Juvenile	Adult	Spawning	Rearing	Migration
<input checked="" type="checkbox"/> Chinook, fall	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Coho	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Steelhead, summer	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Steelhead, winter	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Cutthroat trout	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Pacific lamprey	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
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¹ S = sensitive; T = threatened; E = endangered; N/A = not applicable

- B) Description of habitat within the impacted reach: During April – November, the injured reach provides predominantly rearing habitat for juvenile coho, summer steelhead, and Pacific lamprey. In addition, upstream and downstream migration of juvenile fish occurs year-round, and adult salmonids migrate through this reach October through May, depending on stream flow.

¹ The period of injury is when the instream water right is not met during the proposed use.

Rearing habitat currently consists primarily of a straightened channel lacking instream habitat complexity. Small boulders and cobble are the most common substrate, providing minimal foraging and escape cover. One lateral scour pool was observed in the injured reach, which provides the only quality rearing habitat for juvenile salmonids in the area. There is limited spawning habitat within the injured reach, although ODFW has documented coho salmon spawning in the vicinity.

- C) Impacts to biologically necessary flow: Available information from WRD or local stream gauges shows flows within the impacted reach are currently wholly or partially below those essential to support the biological needs of fish. Without appropriate mitigation, a further reduction in flow or alteration of habitat from the proposed transfer will impair or be detrimental to fish and/or their habitat. The proposed use will diminish physical habitat and alter the flow regime to which fish are naturally adapted, negatively impacting their distribution, productivity, and abundance.

Other Impacts: This transfer has the potential to injure the instream water right by reducing flows by 0.81 cfs within a 560 foot reach of marginal habitat. Potential impacts from the transfer include reduced availability of foraging habitat, reduced availability of edge habitat (hiding cover offered by stream bank sedges and slightly submerged vegetation), reduced water depth, and any effects that less water in the channel would have on water quality, such as increased water temperature. The current gravel pushup dam may slow fish passage for some life stages of salmonids under low flow conditions, but ODFW does not perceive it as a full fish barrier.

- D) Based on this evaluation, the proposed transfer will impact the following Habitat Category per OAR 635-415-0025: The proposed transfer will reduce/degrade essential but not limited spawning, rearing, and/or migration habitat that will result in depletion of a species if diminished (Habitat Category 3).

Section 4: Evaluation of Net Benefit

- A) Per OAR 635-415, the mitigation goal (plus a net benefit, as required in ORS 540.530) is as follows:

Category 3 Habitat

The mitigation goal is no net loss of either habitat quantity or quality. ODFW recommends mitigation of impacts through reliable in-kind, in-proximity habitat mitigation to achieve no net loss in either pre-development habitat quantity or quality. Mitigation should provide habitat of the same quantity and quality that may be harmed by the proposed action to meet biological requirements of the same population affected by the proposed action.

REQUIREMENT: No net loss of habitat quality or quantity plus a *net benefit* (as required in ORS 540.530) through in-kind, in-proximity mitigation

- B) Cumulative impacts of any previously approved transfers injuring the same instream water right as the proposed transfer (as identified by WRD): none identified by WRD
- C) Overview of mitigation actions from the proposed Mitigation Plan (OAR 635-0415-0020(8)) and corresponding benefit intended to achieve a net benefit to the resource:

Action 1: Placement of Large Wood and Habitat Structures

Large wood jams comprised of root wads, logs, and whole trees with root wads will be installed at four designated locations along the impact area and in strategic downstream locations to create more structural complexity. Logs will be keyed into existing riparian trees and /or anchored using large boulders as ballast. Restoration will be targeted along the northern side of the stream in order to utilize the best location for debris jams.

Approximately four large wood debris jams comprised of five to six pieces of large wood (18-22 inches DBH) will be installed along the injured reach. Logs will be keyed into existing riparian trees, stream substrates or anchored into place using large boulders as ballast. Boulders will be effective at reducing the downstream movement of wood when other anchor points are limited. Conifer logs will be removed from upland portions of the property with the a rootwad still attached and placed instream. Keyed in logs will be at least one and one-half times (1.5X) the bank full width. Logs will be installed using ground-based equipment (excavator and/or crane) with the rootwad being placed within the active channel. Conceptual plans are included in the attached Mitigation Plan, and large wood structures will be monitored as outlined in the Mitigation Monitoring section below.

Riparian setbacks (as required by the County, DOGAMI, or other agency) will provide ongoing protection of the maturing riparian habitat that will be allowed to mature and fall into Grave Creek so as to naturally contribute future large wood habitat beyond the life span of the habitat structures.

Benefit: The addition of large wood structures to this reach will immediately increase rearing habitat by improving stream complexity and providing cover, which will result in increased productivity and abundance. The large wood complexes will trap streambed materials and gravel, create pools, and improve spawning habitat. Over time, the protected riparian habitat will provide stability to the stream reach, which will enhance edge habitat and contribute to improved foraging habitat.

Action 2: Backfilling Existing "Coyote Hole" Depressions Within the Floodplain

Two existing depressions (Coyote Holes) within the floodplain will be backfilled and sealed with fine sediments to reduce potential for fish stranding. One depression is located beyond Ordinary High Water but within the floodplain; the second is located within Ordinary High Water. Fish salvage operations will occur if water is present within coyote holes at the time of operation (the likelihood of fish presence is low).

Benefit: Removing the "Coyote Holes" will directly reduce fish stranding and likely mortality. This will improve fish abundance.

Action 3: Restoring the Existing Diversion Point (Pushup Dam Location and Diversion Channel)

The earthen pushup dam at the current POD will be removed and the existing intake channel will be contoured to prevent juvenile fish stranding during high flow events. Approximately ten cubic yards of cobbles, gravels, sands and fine substrates will be contoured throughout this zone.

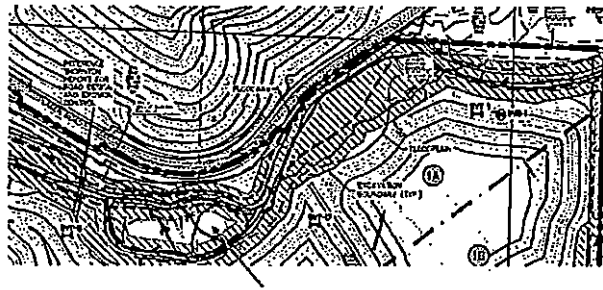
Benefit: Removing the earthen pushup dam will yield volitional fish passage through the system at all flow levels, which will aide fish distribution. Re-contouring the intake channel to eliminate fish stranding will improve fish abundance.

Action 4: Increasing Native Plant Cover within the Riparian Area

Riparian area improvements include removal of invasive vegetation and installation of native riparian plants within disturbed areas and in areas where existing vegetation is sparse. Plantings are in addition to those identified as mitigation to fulfill County, DOGAMI, or other agency requirements.

Prescribed quantities of trees, shrubs, and plugs are to consist of healthy stock; plants will be inspected and approved by a qualified landscape consultant prior to installation. Bareroot and stake materials will then be installed within target habitat zones using trowels and/ or shovels. It is intended that woody materials are to be installed in clusters of five (5) to ten (10) individuals at ten (10) to fifteen (15) foot offsets. During plant installation, a qualified landscape consultant will make periodic site inspections to ensure the planting plans are adequately implemented.

The area within the floodplain not covered by existing requirements for riparian protection (identified by the blue arrow in the figure below) will be protected in the same manner as the existing riparian buffers.



Details of the riparian planting are included in the attached Mitigation Plan.

Benefit: Enhancement and protection of riparian buffers through setbacks will allow the riparian area to mature and naturally contribute to fish habitat into the future, which will improve fish productivity and abundance. In addition, improved riparian shading, at a minimum, should also curtail warming of the stream and has the potential to allow the stream to maintain cooler water temperatures that are essential for cold-water fish.

D) Protocols, methods, and reporting schedule for monitoring mitigation actions:

Mitigation Monitoring

Note: Details of the monitoring plan are included in the attached Mitigation Plan and are conditions of this Consent to Injury recommendation.

ODFW will be invited onsite following implementation to evaluate compliance with terms and conditions of the Mitigation Plan and any associated work plans (photos will be taken pre-implementation, during implementation, and post implementation to document onsite work). This evaluation may be counted toward the annual reporting per the monitoring requirements detailed below.

Within ninety days of completion of mitigation construction, the applicant will prepare a report to establish baseline conditions for future monitoring reports. The construction report will include construction diagrams and photograph documentation as necessary to document final as-built conditions of the mitigation effort. This initial report will also discuss grading and any other variations (if any) from the authorized mitigation

plan.

Annual monitoring site visits will occur for a period of 25 years to evaluate the success of the mitigation and to identify corrective measures necessary to meet mitigation goals. Any significant changes to the mitigation (e.g., movement of the large wood complexes out of the impacted reach, mortality of riparian plantings) noted on the site visits will be reported to ODFW within 30 days. Upon notification, ODFW will assess the reach and determine if corrective measures are necessary to continue meeting mitigation goals.

Monitoring reports will be submitted annually for the first 5 years, then every 5 years for a total period of 25 years to ODFW (ODFW Rogue District Fish Biologist, 1495 East Gregory Road, Central Point OR 97502); each report will include narrative, supporting data and photographs to document the progress of the mitigation.

ODFW finds that this Monitoring Plan adequately addresses the needs outlined in OAR 635-415-0025(8)(e)-(h). Project success, in this instance, will be determined at the end of 5 years for the riparian planting (e.g., 80% survival) and at the end of 25 years for the project as a whole. Overall project success will be in the form of actively improving habitat through the large wood complexes, then passively allowing the protected riparian area to naturally contribute to instream habitat.

Section 5: Recommendation and Conditions

A) Overview: In considering this water right transfer, ODFW estimates that a series of benefits will offset the injury and result in a net benefit to the resource consistent with the purpose of instream water right. ODFW believes fish migration will not be impacted by the reduction in flow caused by the 560-foot upstream transfer and any adverse impacts to aquatic life caused by flow reductions will be offset by an in-kind, in-proximity increase in quantity and quality of fish habitat as a result of the proposed mitigation measures. Enhanced habitat and stream complexity through the placement of large wood will occur within a minimum of 560 feet in Grave Creek, improving rearing habitat within the reach above current levels. This, in combination with active riparian enhancement and protection that will allow riparian vegetation to mature in the area, will provide improved escape and forage habitat for fish over time, thereby improving fish productivity and abundance. The improved riparian shading, at a minimum, should also curtail warming of the stream and has the potential to allow the stream to maintain cooler water temperatures that are essential for cold-water fish. In addition, the applicant has proposed to fill existing "coyote holes" to eliminate fish stranding and potential mortality, which will inherently improve fish abundance. In summary, the proposed mitigation measures will increase habitat structure and function by providing instream complexity and refuge habitat, reduced probability of stranding, and improved riparian conditions. This enhanced instream and riparian habitat provides benefits that support aquatic life year round and that increase over time, so the proposal offsets the injury and yields a net benefit to the resource.

B) Recommendation

The proposed transfer, with conditions, provides a net benefit to the resource. ODFW hereby recommends that WRD consent to the injury with the following condition(s):

ODFW recommends the permittee comply with terms of the associated Mitigation Plan to minimize

detrimental impacts to fish, wildlife, and/or their habitat. ODFW understands that the mitigation and following conditions will be fully incorporated into the requirements of the new certificate and may only be altered by written mutual agreement of all parties. ODFW recommends

- the mitigation provided be legally protected and maintained for the life of the permit and subsequent certificate and/or
- regulation of the use and/or cancellation of the certificate(s) if the required mitigation is not maintained.
- This recommendation to consent to injury is contingent upon: implementation of the mitigation measures outlined in the attached Mitigation Plan prior to diversion of water.
- The permittee shall not construct, operate, or maintain any dam or artificial obstruction to fish passage without obtaining approval from the Oregon Department of Fish and Wildlife (ODFW). The permittee is hereby directed to contact an ODFW Fish Passage Coordinator prior to construction of any in-channel obstruction or prior to diversion of water that may create an artificial obstruction due to low flow.
 - A Fish Passage Plan, Waiver, or Exemption has been granted for the proposed POD that fulfills the fish passage requirements for this use.
- The permittee shall install, maintain, and operate fish screening on the new point of diversion consistent with current Oregon Department of Fish and Wildlife (ODFW) standards. Fish screening is to prevent fish from entering the proposed diversion. The required screen is to be in place and functional, and approved in writing by ODFW prior to diversion of water. The permittee is hereby directed to contact the ODFW Fish Screening Coordinator prior to diversion of water.
 - The new POD is currently equipped with an appropriate fish screen.
- If the riparian area is disturbed in the process of *developing the new point of diversion*, the permittee shall be responsible for restoration and enhancement of such riparian area in accordance with the Oregon Department of Fish and Wildlife's Fish and Wildlife Habitat Mitigation Policy OAR 635-415. Prior to development of the new point of diversion, the permittee shall submit, to the Oregon Water Resources Department, a Riparian Mitigation Plan approved in writing by ODFW unless ODFW provides documentation that riparian mitigation is not necessary. The permittee shall maintain the riparian area for the life of the permit and subsequent certificate per the approved Riparian Mitigation Plan. If ODFW determines the riparian area is not being maintained, and is unsuccessful in working with the water user to fulfill the obligation, ODFW may request that OWRD regulate the use of water until OWRD receives notification from ODFW that the mitigation is sufficient. The permittee is hereby directed to contact the local ODFW Fish Biologist prior to development of the new point of diversion.
- Construction must occur during the established in-water work period (~~June 15 - September 15~~) unless otherwise approved by ODFW.
- Site-specific condition(s): Riparian plantings in Mitigation Action 4 must be maintained to ensure a minimum 80% survival five years post-implementation.
- Other comments: type here

- ODFW cannot support the proposed transfer because it does not provide a net benefit to the resource consistent with the criteria in OAR 635-415.**
 - The proposed mitigation will result in a net loss of habitat for: list species here
 - Other goals and standards not met and why: type here

Injury

On January 18, 2018, landowners Andreas and Carol Blech (Applicants or Blech) filed a transfer application with the Oregon Water Resources Department (OWRD) to move the point of diversion for Certificate 3943 upstream approximately 560 feet (see attached map outlining the diversion point locations). Certificate 3943 authorizes the use of up to 0.81 cubic feet per second (cfs) of Grave Creek between April 1 and November 1. OWRD has preliminarily determined that the transfer will be denied unless the Oregon Department of Fish and Wildlife (ODFW) consents to injury to instream water right Certificate 72697, which is partially located within the 560 foot reach between the present point of diversion and proposed point of diversion (the “injured reach”).

Mitigation Thresholds

ODFW has classified the habitat within the injured reach as Habitat Category 3 under its *Fish and Wildlife Habitat Mitigation Policy*. Category 3 is essential habitat for fish and wildlife or important habitat that is limited on a physiographic province or on a site-specific basis. If impacts are unavoidable, ODFW requires **in-kind, in-proximity replacement** of impacted habitat and **no net loss of habitat quantity or quality**. In addition, the OWRD transfer statute requires a **net benefit** to the resource.

This Mitigation Plan will address these thresholds for mitigation in light of the following criteria developed in conjunction with ODFW:

A) In-kind Habitat in Need of Replacement:

- Habitat Structure: small boulders and cobble, large woody debris (LWD), minimal refuge
- Habitat Function: primarily juvenile rearing, adult and juvenile migration

B) Habitat Quantity and Quality in Need of Replacement:

- Habitat Quantity: 560 feet; 0.81 cfs
- Habitat Quality: marginal, lacks complexity

C) Months of Impact: April – November

D) In-proximity location: the geographic boundaries of the Middle Rogue / Applegate rivers coho salmon population.

Baseline Conditions

The Applicant worked in conjunction with ODFW to determine habitat and current conditions within the injured reach.

I. Fish Use and Habitat Needs

As identified by ODFW, the injured reach provides primarily **rearing habitat** for juvenile coho, summer steelhead, and Pacific lamprey during April – November.



Salmonid Rearing Habitat: In general, juvenile salmonids require a variety of habitats during each season of their freshwater rearing phase. During the summer, the quantities of pool habitat is important for providing for suitable territories that are available. In addition, deep water pools with hyporheic flows is important for providing cool refugia during low summer flows. During the winter, juvenile salmon require habitats with low water velocities such as side channels, backwaters, beaver ponds, deep pools, and pools formed by large woody debris and root wads. Streamside (riparian) vegetation also plays an important role in regulating the temperature in rearing streams in addition to acting as habitat for terrestrial insects and a source of leaf litter utilized by stream invertebrates. Both factors act to increase the food available to juvenile salmon rearing in streams.

Habitat Baseline: Rearing habitat within the injured reach currently consists of a primarily straightened channel lacking instream habitat complexity. Small boulders and cobble are the primary substrate. There is very little large wood or other structurally complex habitats. Flood plain connectivity is limited due to high incised banks. There is a lateral scour pool within the injured reach according to ODFW, which provides some rearing habitat for juvenile salmonids. There is limited spawning habitat within the injured reach. It is highly likely that juvenile salmonids (more specifically coho salmon) occur year-round, and that adult salmonids migrate through this reach October through May, depending on stream flow.

Furthermore, there are very few areas within the injured reach that provide areas of low velocity and fine substrates for Pacific Lamprey ammocoetes.

II. ODFW Habitat Quality Assessment

ODFW has determined that the injured reach is of **moderate habitat quality** and is primarily utilized for juvenile rearing by juvenile coho, summer steelhead, and Pacific lamprey.

Mitigation Plan

The Applicant will replace the habitat that is being lost prior to or concurrent with the diversion of water at the new point of diversion through a combination of instream and restoration measures. Identified measures will address and fully mitigate for impacts that ODFW has identified within the injured reach. The habitat created will provide greater habitat structure and function within an area equal to or greater than the injured reach (approximately 560 feet).

Applicant's mitigation measures target enhancement of instream complexity via: 1) placement of large wood and habitat structures; 2) backfilling existing "Coyote Hole" depressions within the flood plain; 3) removing and restoring the existing diversion point (push-up dam and diversion channel); and 4) increasing native plant cover within the riparian area. The enhanced habitat will occur within Grave Creek and encompass a minimum of 560 feet. The following describes identified mitigation measures:

1. Placement of Large Wood and Habitat Structures:

Large wood jams comprised of root wads, logs, and whole trees with root wads will be installed at four designated locations along the impact area and in strategic downstream locations to create more structural complexity. Logs will be keyed into existing riparian trees and/or anchored using large boulders as ballast. Restoration will be targeted along the northern side of the stream in order to utilize the best location for debris jams.

Four large wood debris jams comprised of five to six pieces of large wood (18-22 inches diameter at breast height (DBH)) will be installed along the injured reach. Logs will be keyed into existing riparian trees, stream substrates or anchored into place using large boulders as ballast. Boulders will be effective at reducing the downstream movement of wood when other anchor points are limited. Conifer logs will be removed from upland portions of the property with the rootwad still attached and placed instream. Keyed in logs will be at least one and one-half times (1.5X) the bank full width. Logs will be installed using ground-based equipment (excavator and/or by cable) with the rootwad being placed within the active channel. Large wood structures will be monitored as outlined in the Mitigation Monitoring section below. Conceptual plans are attached and included with this plan.

Riparian setbacks (as required by the County, DOGAMI, or other agency) will provide ongoing protection of the maturing riparian habitat. The protected riparian habitat will be allowed to mature and fall into Grave Creek so as to naturally contribute future large wood habitat beyond the life span of the habitat structures.

2. Backfilling Existing "Coyote Hole" Depressions Within the Floodplain

Two existing depressions (Coyote Holes) within the floodplain will be backfilled and sealed with fine sediments to reduce potential for fish stranding. One depression is located beyond the ordinary high water (OHW) but is within the floodplain; the second is located within the OHW. Fish salvage operations will occur if water is present within the Coyote Holes at the time of operation (the likelihood of fish presence is low).

3. Restoring the Existing Diversion Point (Pushup Dam Location and Diversion Channel)

The earthen pushup dam at the current point of diversion (POD) will be removed and the existing intake channel will be contoured to prevent juvenile fish stranding during high flow events. Approximately ten cubic yards of cobbles, gravels, sands and fine substrates will be contoured throughout this zone.

4. Increasing Native Plant Cover within the Riparian Area

Identified restoration actions will be followed by: removal of invasive vegetation and installation of native riparian plants within disturbed areas and in areas where existing vegetation is sparse. Plantings will be in addition to those identified as mitigation to fulfill County, DOGAMI, or other agency requirements.



Installation of native trees and shrubs would create a diverse and structural riparian plant community that would increase forage, shelter and resting areas for small mammals, birds and related wildlife. Planting native trees and shrubs will also increase food chain support, primary production, thermoregulation of existing water features, and nutrient uptake. Table 1 outlines target species for plantings. Exhibit 1 (attached) depicts approximate riparian planting zones.

Table 1 – Target species for riparian planting and restoration.

Common Name / Scientific Name	Container Size	Quantity
Oregon ash (<i>Fraxinus latifolia</i>)	Bareroot	50
Big-leaf maple (<i>Acer macrophyllum</i>)	Bareroot	50
Oregon black oak (<i>Quercus kelloggii</i>)	Bareroot	20
Ponderosa pine (<i>Pinus ponderosa</i>)	Bareroot	75
Incense cedar (<i>Calocedrus decurrens</i>)	Bareroot	75
Big-leaf maple (<i>Acer macrophyllum</i>)	1 gallon	20
Arroyo willow (<i>Salix exigua</i>)	Stakes	100

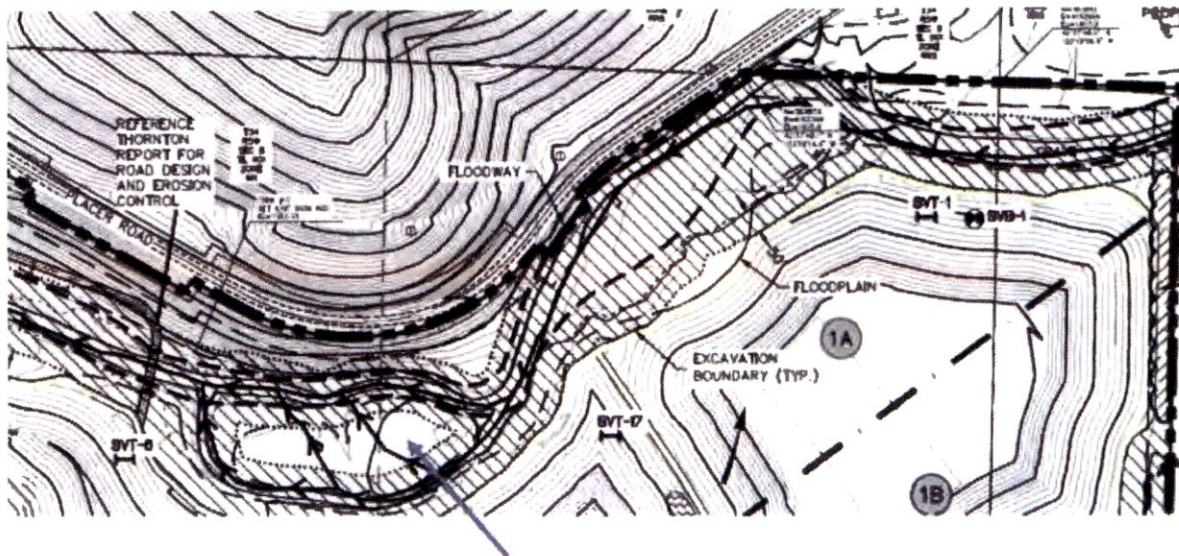
Prescribed quantities of trees, shrubs, and plugs are to consist of healthy stock; plants will be inspected and approved by a qualified landscape consultant prior to installation. Bareroot and stake materials will then be installed within target habitat zones using trowels and/or shovels. Woody materials will be installed in clusters of five (5) to ten (10) individuals at ten (10) to fifteen (15) foot offsets. During plant installation, a qualified landscape consultant will make periodic site inspections to ensure the planting plans are adequately implemented.

5. Additional Floodplain Protections

The area within the floodplain not covered by existing requirements for riparian protection (identified by the blue arrow in the Figure 1 below) will be protected in the same manner as other riparian buffers within the project area.

Figure 1 – Additional area identified for riparian protection.





6. Onsite Inspection

ODFW will be invited onsite following implementation to evaluate compliance with terms and conditions of this consent to injury mitigation plan and any associated workplans (photos will be taken pre implementation, during implementation, and post implementation to document onsite work). This evaluation may be counted toward the annual mitigation follow-up per the monitoring section below.

Net Benefit Analysis

Identified measures will address and fully mitigate the impacts identified by ODFW to the injured reach. The habitat created will provide greater habitat structure and more flood plain connectivity within an area equal to or greater than the injured reach. The following increases are anticipated:

A) In-kind Habitat Replaced:

- Habitat Structure:
 - The addition of large wood and increase in flood plain connectivity provides for more complex habitat than that currently existing in the injured reach.
 - The enhanced riparian area will result in increased shade in Grave Creek over time and improved floodplain habitat, providing improved structure within the injured reach.
- Habitat Function:
 - The addition of large wood and complexity to the stream channel will provided better habitat than is currently provided in the injured reach.

- The enhanced riparian area will provide better function than the riparian area in the injured reach.

B) Habitat Quantity and Quality Replaced:

• Habitat Quantity:

- The addition of large wood and complexity to the stream channel will provided better habitat quantity than what is currently provided in the injured reach.
- The enhanced riparian area provides habitat of greater quantity.

• Habitat Quality:

- The addition of large wood and complexity to the stream channel will provided better habitat quality than is currently available in the injured reach.
- The enhanced riparian area provides habitat of greater quality.

C) Months:

- The improved instream habitat is accessible beyond the period of impact (year round).
- The pushup dam location is now accessible during all flows.
- The enhanced riparian area will be protected by a riparian setback (50 feet). In addition, all riparian protections will allow for an increase in shade and naturally occurring large wood debris to enter the system in the future.

D) Location of Mitigation:

The location of the mitigation is consistent with location requirements identified under the Mitigation Policy (i.e., within the geographic boundaries of the Middle Rogue / Applegate rivers coho salmon population). It is located within and immediately adjacent to the injured reach.

Monitoring

Within ninety days of completion of mitigation construction, the Applicant will prepare a report to establish baseline conditions for future monitoring reports. The construction report will include construction diagrams and photograph documentation as necessary to document final as-built conditions of the mitigation effort. This report will also discuss grading and any other variations (if any) from the Mitigation Plan.

Annual monitoring site visits will occur to evaluate the success of the mitigation and to identify corrective measures necessary to meet mitigation goals. Monitoring reports will be submitted annually for the first 5 years, then every 5 years for a total time period of 25 years, to ODFW (ODFW Rogue District Fish Biologist, 1495 East Gregory Road, Central Point, Oregon 97502). Each report will include narrative, supporting data and photographs to document the progress of the mitigation.

Monitoring reports will include data necessary to document compliance with authorized mitigation conditions and success in meeting the goals outlined within this plan. Each report will include plant survival data, community composition, aerial images outlining riparian setback and showing riparian vegetation on the length of the property each year (if available), hydrologic data (or observations), assessment of log-jam condition (photo points of each logjam/woody

debris site and documentation of repairs to wood sites and new input from riparian set back), and other related information to describe the evolution of the mitigation. Recommendations for maintenance and corrective actions will also be outlined. The monitoring reports will include a comparison of the plant densities, diversity of native species, percent aerial cover of non-native species and related factors. Several plots will be established to adequately represent the mitigation area.

Riparian planting success will be measured by annual stem count. Photographs will also be taken from designated photo locations to document on-site conditions for progress and comparative purposes. Finally, monitoring reports will document specific problems in meeting the performance goals and prescribe corrective measures.

Determination

This mitigation plan provides in-kind, in-proximity replacement of impacted habitat and no net loss of habitat quantity or quality. The mitigation measures will also increase habitat structure and function by providing instream complexity and refuge habitat, access to the flood plain, reduced probability of stranding, and improved riparian conditions. Identified measures will increase the habitat quality and quantity within Grave Creek. Overall these measures will improve the existing baseline conditions and provide a net benefit.

In addition, because the 560 feet of enhanced habitat provides benefits to impacted species during the times when these species would utilize the area and within the geographic boundaries of the Middle Rogue/Applegate Rivers (coho salmon population), and the beneficial impacts will increase over time, the plan yields a net benefit to the resource.

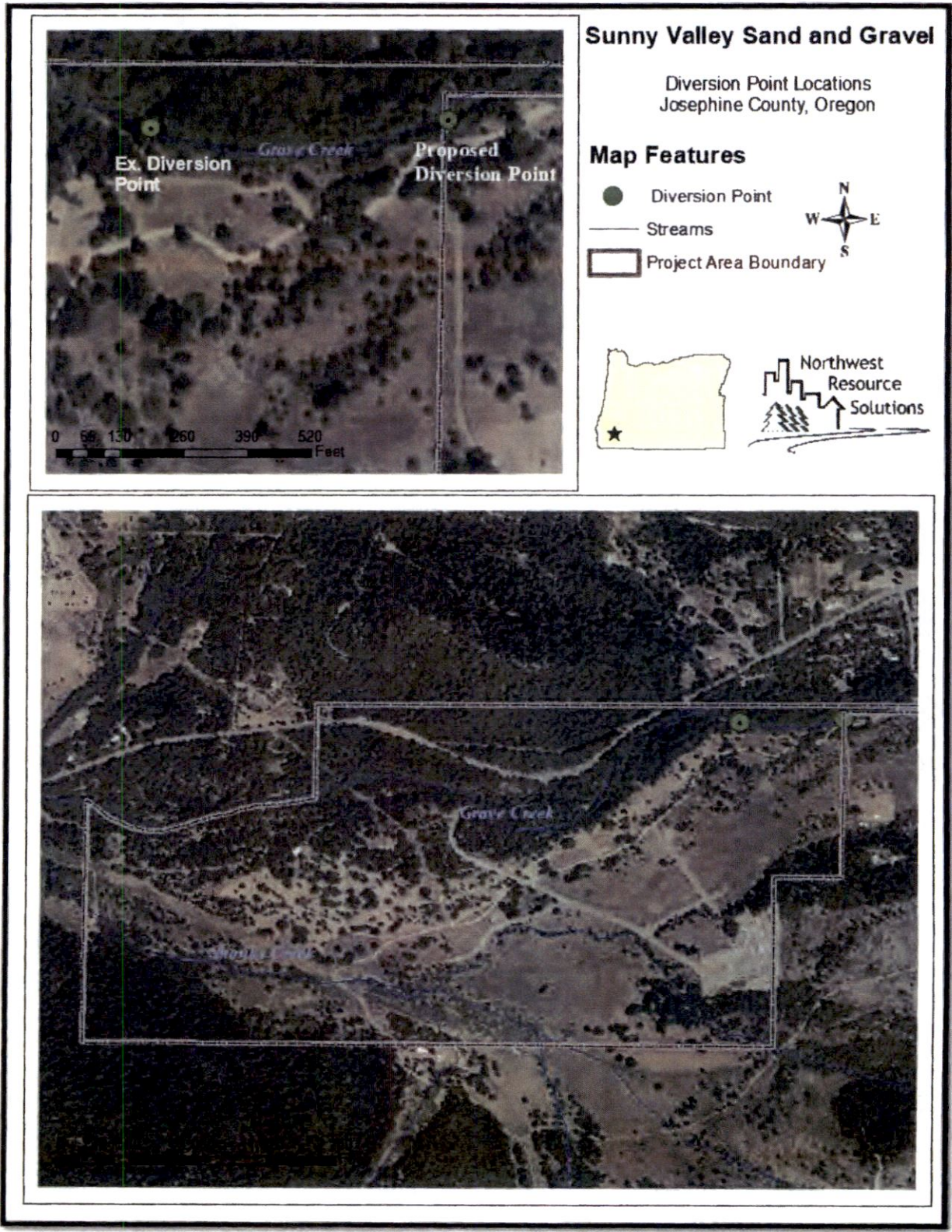




Photo 1 – Existing diversion location showing remnant cobbles from pushup dam. Potential passage barrier during low flows.



Photo 2 – Existing diversion channel and potential stranding hazard located south of the pushup dam location. Notice the non-native blackberry and lack of vegetation within the riparian area.



Photo 3 –Channel area located up stream of the current pushup dam location. Notice the non-native blackberry and lack of vegetation, and limited number of large conifer within the riparian area.

**Large Wood Placement Conceptual Designs
Sunny Valley Sand and Gravel
Grave Creek, Tributary to Rogue River
Josephine County, Oregon**

Site 1: N42° 37.778' W123° 19.048'

Active Channel Width: 42 feet

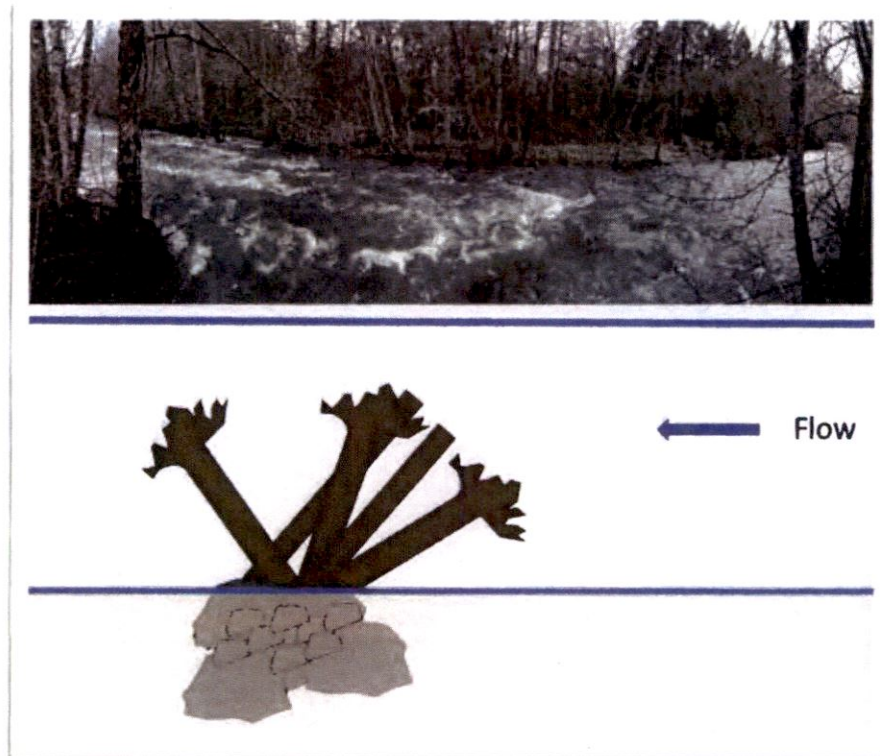
No. Pieces of wood: 5 (3 key pieces with attached rootward)

Diameter of key pieces: 18-22 inches

Minimum Length of key pieces: 63 feet or 1.5 ACW

Site notes: The site is dominated by small hardwoods < 6 inches DBH with very few standing conifers. Slope is less than 2 percent over 150 feet. No flows were measured at the time of survey. Key logs will require ballast to maintain location over time due to lack of large standing tree. The stream segment is cobble dominated. There is limited floodplain connectivity. All restoration will be conducted from the South side of the stream due to access and potential challenges with neighboring landowners.

Methods: Excavator and cable/crane placement will be required. Logs will be ballast with boulders, partially buried in slope, and the slope will be recontoured and planted. The site will function as barbs instead of full spanning structure.



Site 2: N42° 37.770' W123° 19.096'

Active Channel Width: 67 feet

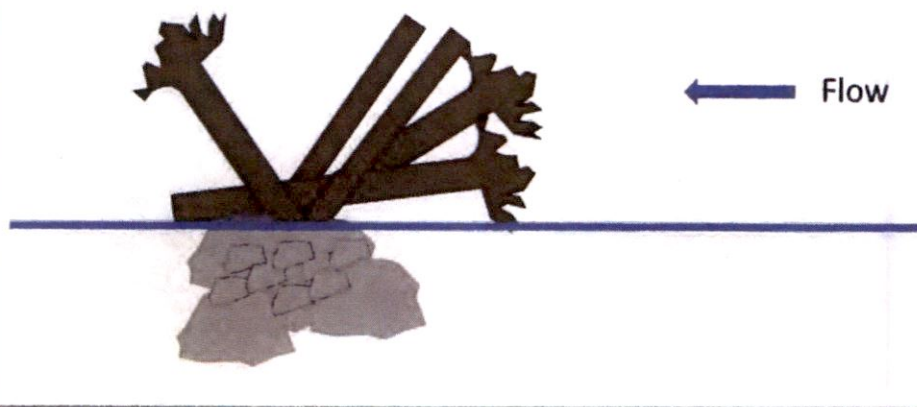
No. Pieces of wood: 5 (3 key pieces with attached rootward)

Diameter of key pieces: 18-22 inches

Minimum Length of key pieces: 100 feet or 1.5 ACW

Site notes: Like site 1, this site is also dominated by small hardwoods < 6 inches DBH with very few standing conifers. Slope is less than 2 percent over 150 feet. No flows were measured at the time of survey. Key logs will require ballast to maintain location over time due to lack of large standing tree. The stream segment is cobble dominated. There is limited floodplain connectivity. All restoration will be conducted from the South side of the stream due to access and neighboring landowners.

Methods: Excavator and cable/crane placement will be required. Logs will be ballast with boulders, partially buried in slope, and the slope will be recontoured and planted. The site will function as barbs instead of full spanning structure.



Site 3: N42° 37.773' W123° 19.149'

Active Channel Width: 56 feet

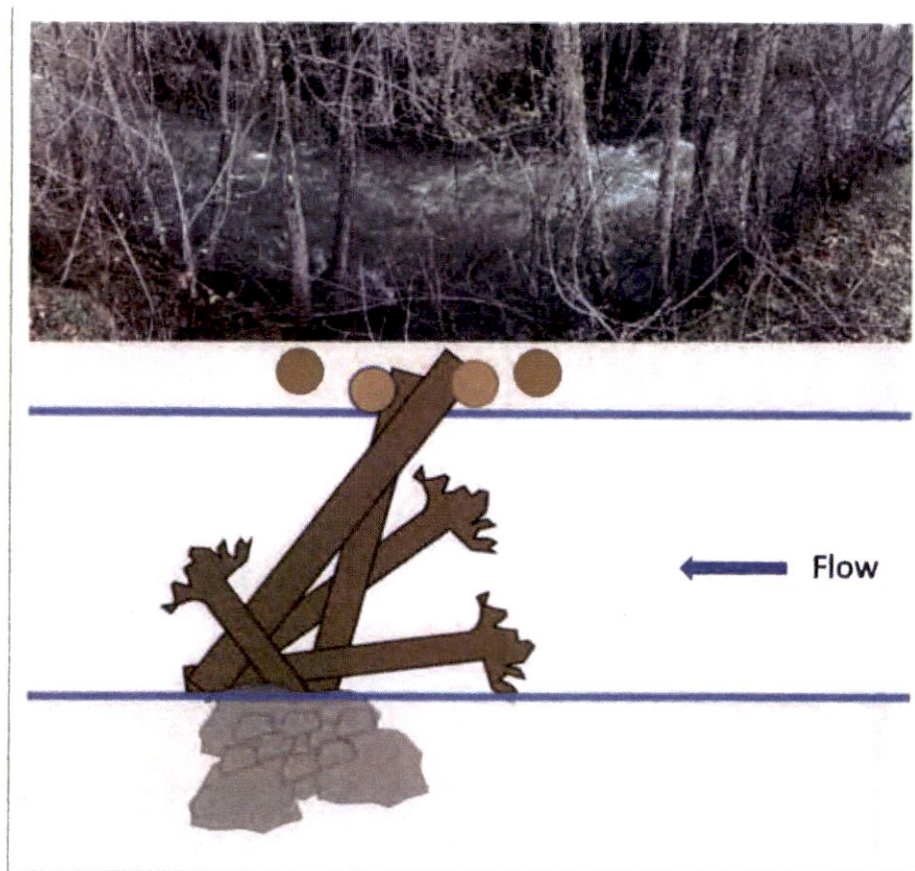
No. Pieces of wood: 5 (3 key pieces with attached rootward)

Diameter of key pieces: 18-22 inches

Minimum Length of key pieces: 84 feet or 1.5 ACW

Site notes: The south side of the site is dominated by small hardwoods < 6 inches DBH with very few standing conifers. The north side of the site contains some large conifers which could be used to key in logs from the north side of the stream. Slope is less than 2 percent over 150 feet. No flows were measured at the time of survey. Key logs will require ballast along the southern portion of the site to maintain location over time due to lack of large standing trees. The banks on the south side are steep and removal of material and contouring of the slope will be required to ensure secure placement of key logs. The stream segment is cobble dominated. There is limited floodplain connectivity. All restoration will be conducted from the South side of the stream. A crane/cable machine will be used to set logs on the north side of the stream.

Methods: Excavator and cable/crane placement will be required. Logs will be ballast with boulders, partially buried in slope on the south side of the stream, and the slope will be recontoured and planted. The site will function as a full spanning structure.



Site 4: 42° 37' 46.9956", - 123° 19' 10.6356"

Active Channel Width: 49 feet

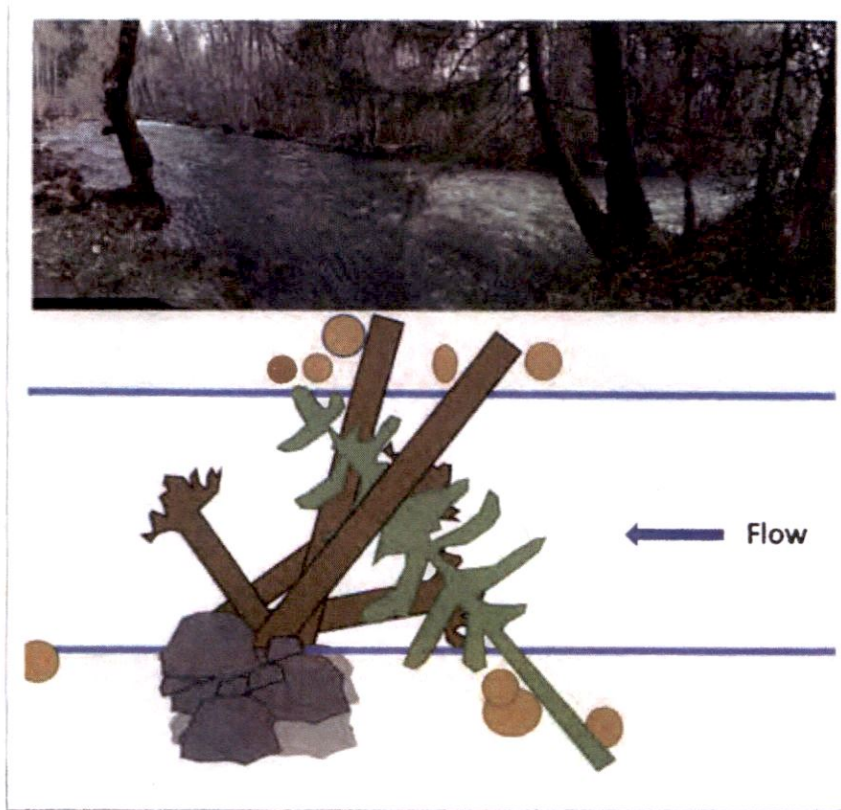
No. Pieces of wood: 6 (3 key pieces with attached rootward), 1 whole tree with branches

Diameter of key pieces: 18-22 inches

Minimum Length of key pieces: 73 feet or 1.5 ACW

Site notes: The south side of the site is open with one larger conifer and a larger hardwood (> 10 inches dbh) which could be used for keying in portions of the structure. The north side of the site is dominated by smaller hardwoods < 6 inches; however, there are a few larger conifers which could be used to key in logs from the north side of the stream. Slope is less than 1 percent over 150 feet. No flows were measured at the time of survey (flows are dramatically less at this site than in sites 1-3). Key logs will require ballast along the southern portion of the site to maintain location over time due to lack of large standing trees. The banks on the south side are gradual and excavation and contouring of the slope will not be required to ensure secure placement of key logs; however, boulder ballasts will be required. The stream segment is cobble dominated. There is some floodplain connectivity at higher flows on the north and south sides of the stream. All restoration will be conducted from the South side of the stream. A crane/cable machine will be used to set logs on the north side of the stream.

Methods: Excavator and cable/crane placement will be required. Logs will be ballast with boulders, partially buried in slope on the south side of the stream, and the slope will be recontoured and planted. The site will function as a full spanning structure.



Disclaimer: These sites designs are conceptual and may require additional field work to finalize and verify the exact placement of wood and materials. In addition, due to the channel dynamics, flow/hydrology considerations, downstream infrastructure, and potential issues with neighboring landowners, it is recommended that the final plans be fully engineered.

