Lower Columbia Barrier Inventory and Decision-Support Tool

Final report for Recreation and Conservation Office (RCO) Project # 22-1212

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Finally, we'd like to thank Kristen Jurica and Robyn Pepin at Aspect Consulting, for development of the Decision-Support Tool model.

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List of Acronyms Used in This Report

DNR	Washington State Department of Natural Resources
EP	Lower Columbia River Estuary Partnership
DST	Decision-Support Tool
FBRB	Washington State Fish Barrier Removal Board
FPDSI	WDFW's Fish Passage and Diversion Screening Inventory Database
IP	Habitat Intrinsic Potential data
LCBI	Lower Columbia Barrier Inventory
LCFRB	Lower Columbia Fish Recovery Board
PO	Washington Department of Fish & Wildlife Region 5 Potential Occupancy fish distribution data set
RCO	Washington State Recreation & Conservation Office
RMAP	Washington DNR's Road Maintenance & Abandonment Program
SWIFD	WDFW's Statewide Integrated Fish Distribution data set
USGS NHD	U.S. Geological Survey's National Hydrography Dataset
WDFW	Washington Department of Fish & Wildlife
WRIA	Washington Resource Inventory Area

Executive Summary

From 2023 through 2025, the Lower Columbia Estuary Partnership and Lower Columbia Fish Recovery Board partnered with a Technical Advisory Group to develop the Lower Columbia Barrier Inventory and Decision-Support Tool. The goal of this project was to identify the most important fish passage corrections across the lower Columbia River region of southwest Washington to ensure limited resources maximized passage improvement benefits for recovery of Endangered Species Act (ESA) listed salmon and steelhead. This effort involved the development of a centralized fish barrier database and creation of a GIS model to prioritize individual barriers for correction. The GIS model, or Decision-Support Tool, is designed to generate the highest scores for passage barriers that:

- block habitat for the highest number of populations of importance for salmon Evolutionary Significant Unit (ESU) or steelhead Distinct Population Segment (DPS) recovery;
- block a large quantity of high-quality habitat; and
- are accessible to salmon and steelhead from downstream (i.e. lack a total barrier downstream which would prevent access by salmon)

The inventory effort resulted in the identification of 2,597 artificial, natural and unknown barriers within the extent of anadromy, with 1,584 of these consisting of culverts and tide gates. 40% of these culverts and tide gates are identified as 100% passable for salmon, steelhead and trout, but the remaining 60% (969 sites) are estimated to constrain salmon, steelhead, and trout passage completely (0% passage: 241 sites), mostly (33%: 234 sites), and partly (50% and 67%: 494 sites). The majority of these blockages are road culverts, primarily at county (384 culverts) and private (294 culverts) road crossings. The inventory and prioritization efforts do not consider trap and haul reintroduction efforts through the Cowlitz River and Lewis River hydroelectric systems, nor fish passage needs upstream of the Sediment Retention Structure in the North Fork Toutle River.

A total of 969 barriers received scores in the Decision-Support Tool model. This includes all anadromous tide gates and culverts with < 100% passability (942), plus 27 features of other types. 13 Tier 1 and 27 Tier 2 barriers were identified based on the Decision-Support Tool model scores, representing the highest priority passage improvement sites in the lower Columbia River region. Combined, these barriers block all or partial access to 245 miles of salmon and steelhead habitat. Improving fish passage at these 40 Tier 1 and Tier 2 sites is estimated to address 22% of the total blocked salmon and steelhead habitat in the lower Columbia River region.

An assessment of fish passage blockages at population and species-scales was also completed to better understand how cumulative barrier improvements within a watershed may also maximize passage improvements from a salmon and steelhead recovery perspective. Over 35% of salmon and steelhead total potential habitat are blocked today by artificial barriers. Coho salmon are most impacted species by blocked habitat, with 36% of their potential range blocked by 0 – 67% passable artificial barriers. Salmon Creek coho salmon are the most impacted population, followed by Grays-Chinook, East Fork Lewis, Kalama, and Toutle River coho salmon populations, all of which are blocked from 29 – 29.5% of their potential freshwater habitat. Although chum salmon and Chinook salmon are less impacted at species-scales, Grays-Chinook chum salmon and Toutle

River fall Chinook salmon are blocked from over 20% of their potential freshwater habitat by 0 – 33% passable artificial barriers.

Barrier inventory data and prioritization scores are available on the Lower Columbia Estuary Partnership and Lower Columbia Fish Recovery Board websites to support assessment and implementation of fish passage correction efforts. As barriers are corrected and inventory data gaps are addressed, it is essential to update the inventory and re-run the Decision-Support Tool so that published data and barrier priorities reflect the best available information. Estuary Partnership and Lower Columbia Fish Recovery Board staff plan to work with grant managers, permitters, and Washington Department of Fish and Wildlife fish passage program staff to ensure local barrier data are incorporated into the statewide Fish Passage and Diversion Screening Inventory (FPDSI) database. FPDSI data will then be downloaded annually, with updated barrier records incorporated into the lower Columbia inventory and prioritization outputs.

This project approach and the GIS model build on previous barrier inventory and prioritization efforts, including those completed by the Coast Salmon Partnership and partners (Olympic Peninsula, Chehalis, and Willapa prioritizations), Upper Columbia Salmon Recovery Board (Upper Columbia prioritization), Yakima Basin Fish and Wildlife Recovery Board (Yakima prioritization), Snake River Salmon Recovery Board, and King County, Washington. The project was completed concurrently with Washington Department of Fish and Wildlife's (WDFW's) development of a Statewide Fish Passage Prioritization Strategy and supports incorporation of regional priorities into the statewide strategy.

1. Introduction

The lower Columbia River region of southwest Washington supports four ESA-listed salmon and steelhead species, which historically reared and spawned throughout approximately 3,100 miles of anadromous stream habitat. Fish access to much of these habitat areas are constrained today due to artificial blockages, including undersized road culverts, tide gates, and dams. Fish passage barriers are identified as one of the primary limiting factors to salmon and steelhead recovery in the Lower Columbia Salmon Recovery and Fish & Wildlife Subbasin Plan (LCFRB 2010) and based on results of this project it is estimated that approximately 900 barriers block more than 1,100 miles of salmon and steelhead habitat across the lower Columbia River region.

Restoring fish passage is one of the most certain habitat restoration strategies to date, with multiple studies finding salmon and steelhead quickly access and use reconnected habitat areas (Bilby et al. 2022, Clark et al. 2025, ISRP 2025). Given the large number of fish passage constraints across the lower Columbia River region, it is critical to prioritize barriers for improvements to ensure projects maximize salmon and steelhead recovery benefits. A comprehensive inventory of passage barriers that includes accurate information about location and passability of features by fish is essential for maximizing the effectiveness of a prioritization effort. Prior to this project, a region-wide compilation of fish passage information had not occurred since 2007 (LCFRB 2007), necessitating an updated inventory of barrier sites before prioritizing sites for improvements. Creation of this updated inventory also required assessments of passage features to fill fish passage information data gaps. In 2022, the Lower Columbia Estuary Partnership and Lower Columbia Fish Recovery Board partnered on this barrier inventory and prioritization effort, with funding provided by the Washington State Recreation & Conservation Office (RCO) Salmon Recovery Funding Board (RCO PRISM grant # 22-1212) and matching resources provided by the Cowlitz Restoration & Recovery habitat grant program (grant # CRR-2022-01).

1.1 Project Area

The inventory and prioritization effort includes all salmon and steelhead streams within the lower Columbia Lead Entity area. This includes full coverage of Washington Resource Inventory Areas (WRIAs) 25–28 and partial coverage of WRIAs 24 and 29 (Figure 1). Salmon and steelhead species are only included if they are part of natural-origin populations identified in the Lower Columbia Salmon Recovery and Fish & Wildlife Subbasin Plan (LCFRB 2010).

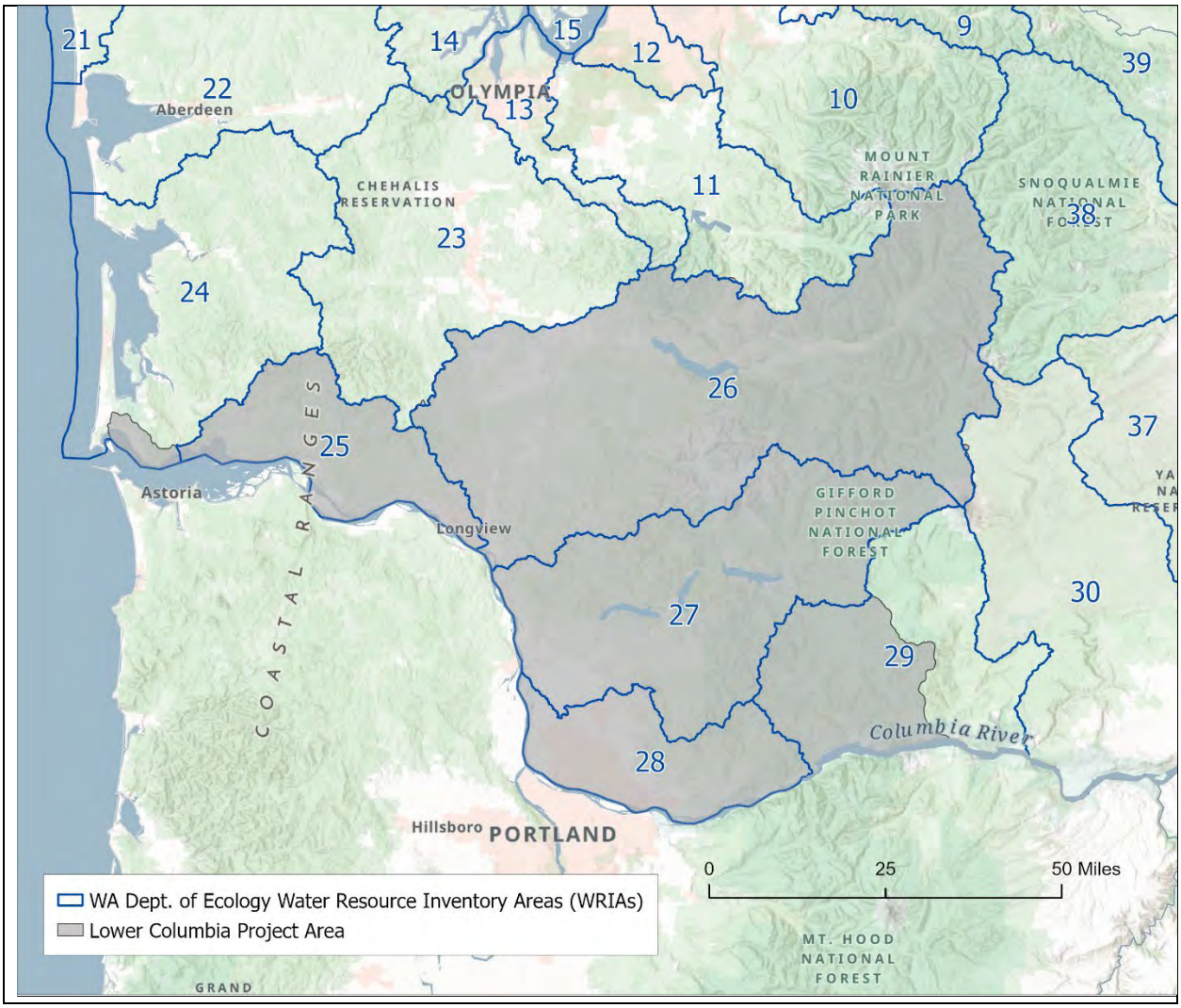

Figure 1. Geographic extent of the Lower Columbia Barrier Inventory and Decision-Support Tool project area. The project covers Washington Water Resources Inventory Areas (WRIAs) 25–28 and portions of WRIAs 24 and 29.

1.2 Goals

The Lower Columbia barrier inventory and Decision-Support Tool project accomplished four goals:

A. Created an updated inventory of existing salmon and steelhead passage barriers from all known data sources for the region.
B. Completed desktop and field fish passage assessments of inventoried features with missing fish passage information.
C. Developed a Decision-Support Tool (DST) intended to help prioritize the selection of fish passage barriers for passage improvement projects based on estimated benefits to salmon and steelhead.
D. Shared data and fish passage priorities to support implementation of high priority fish passage projects.

The DST is designed to generate the highest scores for passage barriers which:

- block habitat for the highest number of populations of importance for salmon Evolutionary Significant Unit (ESU) or steelhead Distinct Population Segment (DPS) recovery;
- block a large quantity of high-quality habitat; and
- are accessible to salmon and steelhead from downstream (i.e. lack a total barrier downstream which would prevent access by salmon)

2. Methods

This project builds on previous barrier inventory and prioritization efforts, including those completed by the Coast Salmon Partnership and partners (Olympic Peninsula, Chehalis, and Willapa prioritizations), Upper Columbia Salmon Recovery Board (Upper Columbia prioritization), Yakima Basin Fish and Wildlife Recovery Board (Yakima prioritization), Snake River Salmon Recovery Board, and King County, Washington. The project was completed concurrently with Washington Department of Fish and Wildlife's (WDFW's) development of a Statewide Fish Passage Prioritization Strategy.

2.1 Technical Advisory Group

A Technical Advisory Group was convened to guide project development. The group included key landowners, data managers and scientists from across the lower Columbia region and Washington State, including representatives from the Cowlitz Indian Tribe, Yakama Nation Fisheries, U.S. Forest Service, Washington Department of Natural Resources, WDFW, counties, and conservation districts. Five Technical Advisory Group workshops, plus an additional barrier prioritization sub-committee meeting, were held over the course of the project from April 2023 through May 2025 to discuss project goals, data sources, and development of the Decision-Support Tool. Some of the key questions and issues that workshop participants helped to resolve included the following:

A) Barrier Inventory compilation
   - Identified data sources and contacts for data sharing.
   - Provided information about the current status of barrier assessments happening in the region.
   - Provided feedback on data attributes for various data sets. For example, how fish passability is determined.
   - Provided feedback on the passability of individual natural barrier features, information that is not readily available in the Statewide Fish Passage and Diversion Screening Inventory database.

B) DST schema
   - Review of metrics applied in other watershed models, and what has worked best. Which of these are most appropriate for the lower Columbia DST?
   - Which metrics are being adopted by the Statewide Fish Passage Prioritization Strategy, and how can we be most consistent with that approach?
   - How to treat tide gates in the DST model?

- How to account for barriers upstream of major dams where trap and haul programs support salmon and steelhead reintroduction?
- Which types of barriers should be scored in the model (anadromous, non-anadromous, natural and/or anthropogenic, culverts and/or dams, fishways, etc.)?
- How should the identified metrics be weighed in the DST? Which are the most important for all salmonid species?
- What adaptive management strategies should be considered for maintaining the model in the future and coordinating data updates with the Statewide Fish Passage and Diversion Screening Inventory and others?

C) DST habitat metrics

- Identify and review anadromous species distribution data sources (Statewide Washington Integrated Fish Distribution, StreamNet, NOAA critical habitat, WDFW Region 5 Potential Occupancy). Which are the most suitable for application in the lower Columbia DST?
- Identify and review habitat quality data sources. What is available, what has been applied elsewhere, and what can be generated if needed?
- Identify and review sources of current and future predicted flow and temperature data.

2.2 Barrier Inventory

2.2.1 Barrier Data Sources

The Technical Advisory Group identified the following seven sources of barrier information for inclusion in the lower Columbia Barrier Inventory (LCBI):

1. Washington Dept. of Fish & Wildlife Statewide Fish Passage Inventory (WDFW FPDSI)
2. Lower Columbia Estuary Partnership tide gate and culvert inventory
3. Washington Dept. of Natural Resources Road Maintenance & Abandonment Plan (R-MAP)
4. Washington Dept. of Natural Resources Family Forest Fish Passage Program (FFFPP)
5. Wahkiakum and Clark Conservation Districts' 2007 lower Columbia inventory
6. U.S. Forest Service culvert inventory
7. Columbia River Estuary Study Taskforce culvert and tide gate inventory for Grays River

Of the seven sources compiled, the WDFW FPDSI has the greatest number of features. It also has by far the most complete set of feature attributes, including information about fish passage given as a percent passability (the passability score is based on given assumptions about the capability of a 6" trout to pass through a given feature). Given the large size and relatively high data quality of the WDFW FPDSI, it served as the data model and primary data source for the LCBI. Part of the quality assurance process (2.2.2 below) for preparing the LCBI involved standardizing the other data sets to this baseline model, as best as possible.

The inventory does not include the Cowlitz River and Lewis River hydroelectric system blockages, nor the Sediment Retention Structure in the North Fork Toutle River. Trap and haul programs to support reintroduction of salmon and steelhead upstream of these blockages are in process and considered through separate programs. Habitat upstream of these blockages are included in the scope of the barrier inventory and upstream habitat quantity and quality estimates.

2.2.2 Barrier Data QA/QC

The primary QA/QC steps in compiling the LCBI data and preparing it for use with the DST involved removing duplicate features, resolving discrepancies in fish passability information where they occurred for duplicate features, and aligning all features correctly along the hydrographic stream network used by the DST model. Several of the data sets identified for inclusion in the LCBI have duplicate features. Identifying and removing these duplicates proved challenging for two reasons: a) data sets typically use different ID numbers; and b) duplicate features often are not spatially concurrent. Aligning features to the stream network used an automated process in GIS was also challenging in locations near stream confluences. This is because multiple snapping options were present and may not have been resolved correctly through automation. Due to these challenges and those presented by the duplicate features, it was required that each individual barrier feature included in the inventory was reviewed manually. This process involved over 9,000 features and required a substantial amount of time to complete.

2.2.3 Barrier Assessments

Fish passability of any given barrier feature is a required attribute for calculating priority scores in the DST model. This attribute is not available in all data sources used. Despite all the effort by WDFW staff in assessing barriers in the FPDSI for passability, we found that many of the lower Columbia barriers included in this data set are still not attributed with this information. When the data was downloaded in early 2023 for inclusion in the LCBI, we noted 413 anadromous anthropogenic barriers that were missing passability information, as well as several hundred more natural barriers such as waterfalls.

We conducted barrier assessments throughout the project, to determine passability of features where this information was lacking. Assessment consisted of an initial desktop GIS-based review, with additional field visits of features whose passability could not be determined through the desktop analysis. The desktop review was sufficient for some of the FPDSI features which contained information in the available reports that had not been correctly attributed in the database. But in most cases, field visits were required. With several hundred features lacking information and limited time and budget to conduct field assessments, we initially focused on features that met the following criteria:

a) Included in the WDFW FPDSI
b) Easiest access, based on landowner information and presumed physical access
c) Have the highest number of upstream anadromous stream miles
d) Are located close together, to reduce travel times
e) Are from data sources other than the WDFW FPDSI but are located very close to a FPDSI feature targeted for assessment.

Once these options were exhausted, we selected additional features for field assessments that did not meet these criteria but were accessible with landowner permission.

We used the passage protocols established by the WDFW Fish Passage Inventory Program to conduct our assessments. These can be found in WDFW's Fish Inventory, Assessment, and Prioritization Manual (WDFW 2019). Estuary Partnership staff and other volunteers enlisted to participate in field assessments attended a 1-day training session with WDFW Fish Passage staff in July 2023 to learn how to carry out the field assessments.

For barriers that required only a Level A assessment, passability determination was straightforward and carried out by project staff. For barriers that required a Level B assessment, WDFW carried out the analysis and returned passability results to the Estuary Partnership for inclusion in the LCBI. All field assessment data collected was entered into a spreadsheet template provided by WDFW that facilitated transfer of data to WDFW for entry into the FPDSI.

The Washington DNR R-MAP data was the second-largest source of information for the LCBI. This data has limited passage information relative to the FPDSI and is attributed differently. R-MAP uses a yes/no attribute, versus an actual estimated passability percentage score (0%, 33%, 67%, 100%) which is applied in the FPDSI. Furthermore, R-MAP features are not assessed using the rigorous protocols adopted by the FPDSI, and so there is some level uncertainty with the data. We initially planned to assess some R-MAP features to get a sense of the accuracy of passability information, however we were denied access to Weyerhauser lands, on which many R-MAP features are located. Instead, we opted to assign a 0% passability rating to features designated as 'Fish Barrier' and a 100% passability rating to those designated as 'Not a Fish Barrier' in R-MAP, to maintain consistency with the SFPI passage attribute values.

Project staff conducted a separate desktop review of natural barrier features with unknown passability, with Steve VanderPloeg of WDFW Region 5. Steve has extensive knowledge of fish passage in the region and was able to provide passage information for approximately 300 natural features, which was not previously in the SFPI. This information contributed greatly to the accuracy of the DST model.

2.2.4 Barrier Data Follow Up

As part of our assessments we analyzed stream-road junctions for the complete study area, using GIS, to determine where additional barriers may be present that are not currently included in any inventory. Through this process we identified nearly 1,000 junctions where additional passage features may exist. We then reviewed these individually in GIS using aerial imagery and LiDAR surfaces to quickly assess which are obvious passable bridge features, and which need closer evaluation in the field. Assessment of these features may be carried out in the future and is addressed in the Discussion section below (Data Gaps and Uncertainties, Sec. 4.4).

2.3 Decision-Support Tool (DST)

The purpose of the barrier prioritization DST is to help identify fish passage barriers that will provide the greatest benefits to salmonids if passage correct projects were to be implemented. This is critical to recovery success due to the limited funding available for correction projects, and the time it would take to correct all barriers. In prioritizing barriers for correction, the DST generates a

score for each feature which is indicative of its relative importance, with highest scores indicating features that would provide the greatest benefits. The scores are calculated based on a formula that combines weighted values from the various habitat and connectivity metrics that are included in the model. The model scheme determines how these various metrics are weighed and scored. In developing the lower Columbia DST, we benefited from the fact that several similar models have already been developed for other regions of Washington. This offered us the opportunity to evaluate previous model schemes and identify habitat metrics that have been used previously and select those most appropriate for the region and salmonid species that it supports.

Because multiple species are important for recovery in the lower Columbia, the DST was designed to calculate species-specific scores. This was made possible through the availability of species-specific habitat metric data, as well as the recovery priorities outlined for each subbasin in the Lower Columbia Salmon Recovery and Fish & Wildlife Plan (Lower Columbia Fish Recovery Board, 2010). Species-specific scores are outlined in Table 1. The DST also calculates overall score representing the average of the 6 species scores.

Table 1. Lower Columbia salmon and steelhead species included in the DST scoring. Species-specific scores are generated, in addition to an overall average score for the species shown.

Species	Note
Winter steelhead	
Summer steelhead	
Spring Chinook salmon	
Fall Chinook salmon	
Coho salmon	
Chum salmon	
All species	Average of the scores for the 6 individual species shown

2.3.1 Prioritization Metrics

Intuitively, the ideal prioritization formula would score barriers highest if they:

- Block substantial amounts of high-quality habitat,
- Are not blocked by other downstream barriers, so that salmon can access them,
- Have good connectivity to high quality upstream and downstream habitats, and,
- Occur on streams utilized by one or more salmon and steelhead populations of interest.

Our objective then in developing the model scheme was to select metrics that capture these parameters, and for which high quality data are available.

Habitat quantity

Multiple efforts have created species-specific fish distribution GIS layers for the state of Washington. These typically consist of linear segments selected from the National Hydrography Dataset (NHD), along which a particular species has been found to, is presumed to, or could potentially, based on historical or other parameters, be present. Sources include WDFW's Statewide Integrated Fish Distribution (SWIFD), StreamNet, the Ecosystem Diagnosis and

Treatment (EDT) model developed for the LCFRB, and NOAA's Critical Habitat dataset. These data were reviewed during our Technical Advisory Group workshops, and it was determined that the latest iteration of the SWIFD data was likely the highest quality.

More recently, WDFW Region 5 staff have developed Potential Occupancy models for selected species (lower Columbia steelhead, coho, and Chinook salmon), which are statistical regression models which predict species upstream extents based on observational data. It is their opinion that these models, once fully developed and validated, provide the best information about species distribution. To date, they have high confidence in the coho and steelhead distributions, with the Chinook model needing additional review.

Based on our data review, and additional recommendations from WDFW Region 5, we opted to use SWIFD data as the Habitat Quantity metric for Chinook and chum salmon species, and Region 5's Potential Occupancy model data as the Habitat Quantity metric for coho salmon and steelhead, as shown in Table 2. It should be noted that the Potential Occupancy data has since been incorporated into the latest SWIFD dataset, as an additional attribute field.

Table 2. Species-specific data sources used for the habitat quantity metric in the lower Columbia DST.

Species	Habitat Quantity Data Source
Winter steelhead	WDFW Region 5 Potential Occupancy Model
Summer steelhead	WDFW Region 5 Potential Occupancy Model
Spring Chinook salmon	WDFW Statewide Integrated Fish Distribution (SWIFD documented or presumed)
Fall Chinook salmon	WDFW Statewide Integrated Fish Distribution (SWIFD documented or presumed)
Coho salmon	WDFW Region 5 Potential Occupancy Model
Chum salmon	WDFW Statewide Integrated Fish Distribution (SWIFD documented or presumed)

These species distribution stream layers and the DST flow network are both built on the USGS National Hydrography Data (NHD) Stream Network. However, the DST network is based on a later version of NHD which was downloaded in early 2023 and has been updated for various parts of the lower Columbia. These updates have been completed primarily in the Upper Gorge, Wind, Upper Cowlitz, and Lewis subbasins. Thus, to perform properly in the model we had to first align the species distribution layers to the updated NHD network used in the DST. An example of where the two differ is illustrated in Figure 2.

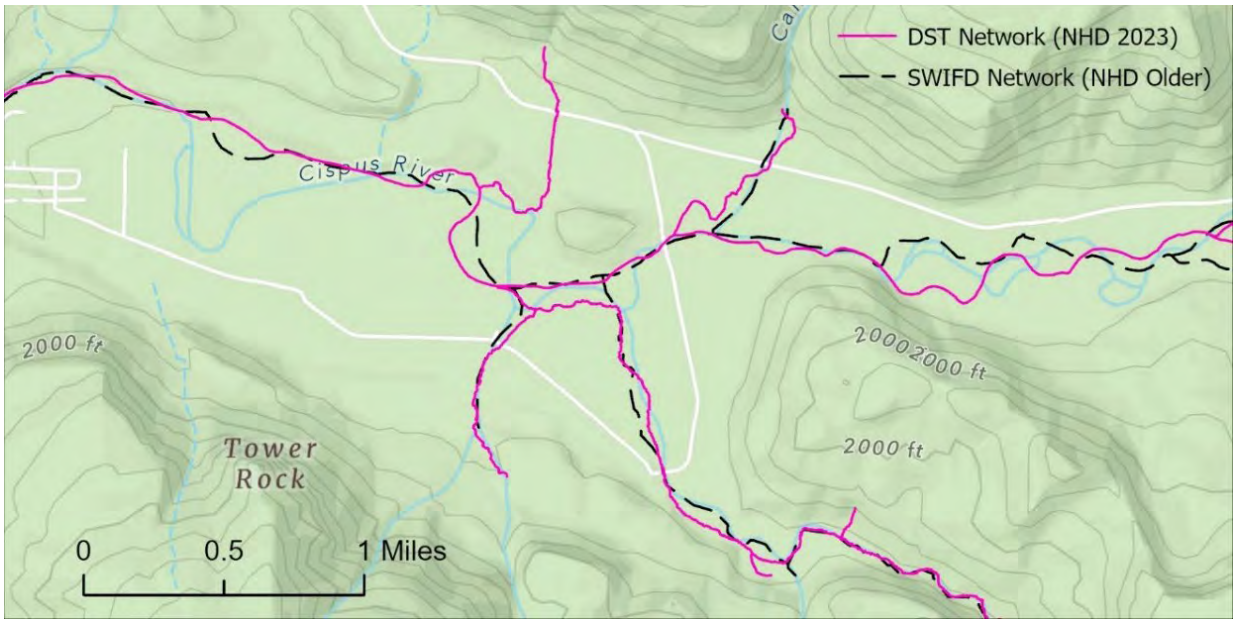

Figure 2. NHD misalignment between recent version used for the DST model (solid lines) and older version which SWIFD distribution data is based on (dashed lines). Location: upper Cispus River.

Habitat Quality

Other regions have used habitat intrinsic potential (IP) (Agrawal et al. 2005; Burnett et al., 2007; McMahon, 1983; Rosenfeld, et al., 2016; Rosenfeld, et al., 2000, Williams, et al., 2006) data as the primary metric of instream habitat quality. High-quality IP data was not available for the lower Columbia at the onset of the project, however Damon Holzer at NOAA's National Marine Fisheries Service generously offered to produce this data for our project at no cost. Damon has developed similar IP data products for other regions. The IP analysis evaluates habitat suitability for salmon based on physical attributes of 200-meter stream segments. The analysis applies suitability curves to evaluate the value of each stream segment based on stream gradient, valley width confinement, and stream flow/depth. These curves can be customized for particular species and life stages (spawning or rearing) depending on the desired outcome.

Physical attribute data (stream gradient, valley width confinement, and stream flow/depth) were generated previously through the Beaver Restoration Assessment Tool (BRAT) (Macfarlane et al. 2015), developed by the Ecogeomorphology and Topographic Analysis Lab at the University of Utah. Species curves were adopted from other regions and tailored to lower Columbia species as needed. WDFW Region 5 assisted with this process and provided presence/absence data to NOAA to help refine and validate the model. The model is based on curves adopted for adult chum and Chinook salmon and steelhead. For coho, a rearing curve was applied because adult information was lacking for this species while redd counts were available. A more detailed report on the IP data methods is included in Appendix A of this report.

Other prioritizations, including the King County Fish Passage Barrier Prioritization, have included watershed quality as a habitat metric, using land cover data. For salmon, forested cover over more area of a watershed is associated with high quality stream habitat, while higher percentage of impervious land cover types has been shown to result in lower quality stream habitat (King County,

2022). Although high quality land cover data is available for the full region, due to the large spatial extent considered it was determined that incorporation of this data into the model was beyond the project scope. This metric may be added in future updates to the DST.

Connectivity

The number and severity of barriers along a stream determines how "connected' the stream habitat is for migrating salmon (King County 2022). When considering a barrier correction project, connectivity is important both upstream, for salmon to access newly accessible habitat, and downstream, for salmon to be able to reach the corrected barrier. With this in mind, we included the following metrics related to Connectivity, which are consistent with those applied in other regions: a) severity of the barrier itself; b) number and severity of downstream barriers; and c) number and severity of upstream barriers. For severity of upstream and downstream barriers, we included both the minimum overall passability (i.e. the passability of the most severe upstream or downstream barrier), as well as the cumulative passability, which calculates the combined effects of all downstream or upstream barriers. Cumulative passability can be calculated as follows:

$$Cumlative\ Passability = Passability_{Barrier1} * Passability_{Barrier2} * \ Passability_{Barrier3} * \ldots$$

for all barriers either upstream or downstream of the scored barrier.

We felt that the cumulative passability was a better indicator of connectivity than the minimum individual passability and thus weighed it higher in the prioritization formula.

Species Presence and Recovery Priority

Barriers with the highest number of species present should receive the highest priority scores. For a given species, its recovery priority within the subwatershed containing the barrier is also important. Both metrics are included in the prioritization formula.

Stream Order

In the National Hydrography Dataset, stream order is based on a modification of the Stahler method (Strahler, 1957) and is used to rank streams according to relative size or position in the network. Higher order streams are larger and lower down in the network relative to lower order streams. Stream order, then, is a proxy for stream size, which is an important consideration when prioritizing barriers. Larger streams may offer better, and significantly more, upstream habitat relative to smaller streams. During our Technical Advisory Group workshops it was also noted that stream order is used in the Statewide Strategy. For these reasons, we felt it was important to include this metric in the DST model.

2.3.2 Prioritization Formula

Once all metrics were agreed on, we considered the relative importance of each metric in the overall prioritization score. To do this we placed metrics in three separate categories, which are assigned roughly equal percentage weights. We then assigned weights to individual metrics within categories, to arrive at individual percent contributions to the overall prioritization score for each metric. The breakdown is shown in Table 3.

Table 3. Prioritization metrics used in the lower Columbia DST model.

Metric Category & Category Weight	Metric	Metric Weight in Category (%)	Metric Individual % Value in Prioritization	Multiplier (Individual % Value/5)
Habitat Quantity (35%)	Upstream Habitat Gain	90	**31.5**	6.3
	Number of Species with Upstream Habitat	10	**3.5**	0.7
Habitat Quality (30%)	Upstream Habitat Quality (IP)	60	**18**	3.6
	Number of Species Documented	5	**1.5**	0.25
	Stream Order	5	**1.5**	0.3
	Population Recovery Priority	30	**9**	1.8
Connectivity (35%)	Barrier Severity (Passability)	40	**14**	2.80
	Upstream Count	4	**1.4**	0.28
	Upstream Minimum Passability	4	**1.4**	0.28
	Upstream Cumulative Passabiltiy	12	**4.2**	0.84
	Downstream Count	4	**1.4**	0.28
	Downstream Minimum Passability	12	**4.2**	0.84
	Downstream Cumulative Passability	24	**8.4**	1.68
Total			**100**	

$$Metric\ Individual\ \%\ Value = \ Category\ weight\ (\%) * Metric\ Weight\ in\ Category\ (\%)$$

The Multiplier shown in the right-most column in Table 3 is used in the prioritization along with scoring bins defined for each metric, to generate the final prioritization score. The scoring bins are used to convert the GIS-derived raw values for each metric into useable values for the prioritization scoring. Each bin has five possible values (six, including 0), and thus the multiplier is obtained by dividing the Individual % Value by 5 for each metric (as an example, for Stream Order the Multiplier is equal to 1.5/5, or 0.3). The scoring bins are shown in Table 4. To determine the scoring bin breaks, we looked at the overall distribution of the raw data for each individual metric to determine the minimum and maximum values and then adjusted the values within this range.

Table 4. Scoring bins assigned for converting raw GIS-derived metric values.

Effective Habitat Quantity	
Miles of Habitat	Bin Value
0	0
0.01	1
0.2	2
1	3
9	4
15	5

IP Habitat Quality	
IP value	Bin Value
0	0
0.05	1
0.1	2
0.2	3
0.4	4
0.5	5

Number of Species	
#	Bin Value
1	1
2	2
3	3
4	4
5–6	5

Stream Order	
Stream Order	Bin Value
0	0
1	1
2	2
3	3
4	4
7	5

Population Recovery Priority	
Priority	Bin Value
Primary	5
Stabilizing	3
Contributing	1
None	0

Barrier Severity	
Passable Percentage	Bin Value
0	5
33	4
50	3
67	1

Barrier Connectivity Count	
Number of Barriers	Bin Value
0	5
1	4
2	3
3	2
4	1
5	0

Barrier Connectivity Passability (Minimum or Compounded)	
Min Percent	Bin Value
0	0
33	1
50	3
67	4
100	5

The overall prioritization score for a given feature is obtained by summing the product of the Multiplier and the scoring bin value for all metrics, which produces a score on a 0–100 scale with the highest scores indicating the highest value barriers:

$$Prioritization\ Score = \sum (Multiplier * Bin\ Value)\ for\ all\ metrics$$

We experimented with different category weights and individual metric weights until we arrived at a result which produced a relatively normal distribution. For example, when the Habitat Quantity category was given a high weight relative to the other two categories, the barrier scores tended to be very low. This is because most of the barriers do not have significant amounts of upstream habitat. Conversely, when the Connectivity category was weighted high relative to the other two categories, the scores trended towards the higher end of the scale. Assigning relatively equal percentages to all categories resulted in a bell curve distribution. Individual metric weights were largely determined by the Technical Advisory Group, and to some extent by what has been done in other regions.

Prioritization scores for the DST are calculated in a spreadsheet, using raw data imported from GIS. This allows significant flexibility in assigning category weights, individual metric weights, and scoring bin breaks. Thus, it is easy to adjust the scoring if so desired in the future.

3. Results

3.1 Barrier Inventory

The LCBI ended up including a total of 8,843 features once the QA/QC process was completed and all duplicate features were removed. Figure 3 shows the extent of the LCBI, with features symbolized by the fish-passability attribute. Table 5 provides statistics on the makeup of the inventory, including breakdowns by data source, feature type, and stream-type (anadromous vs. non-anadromous)

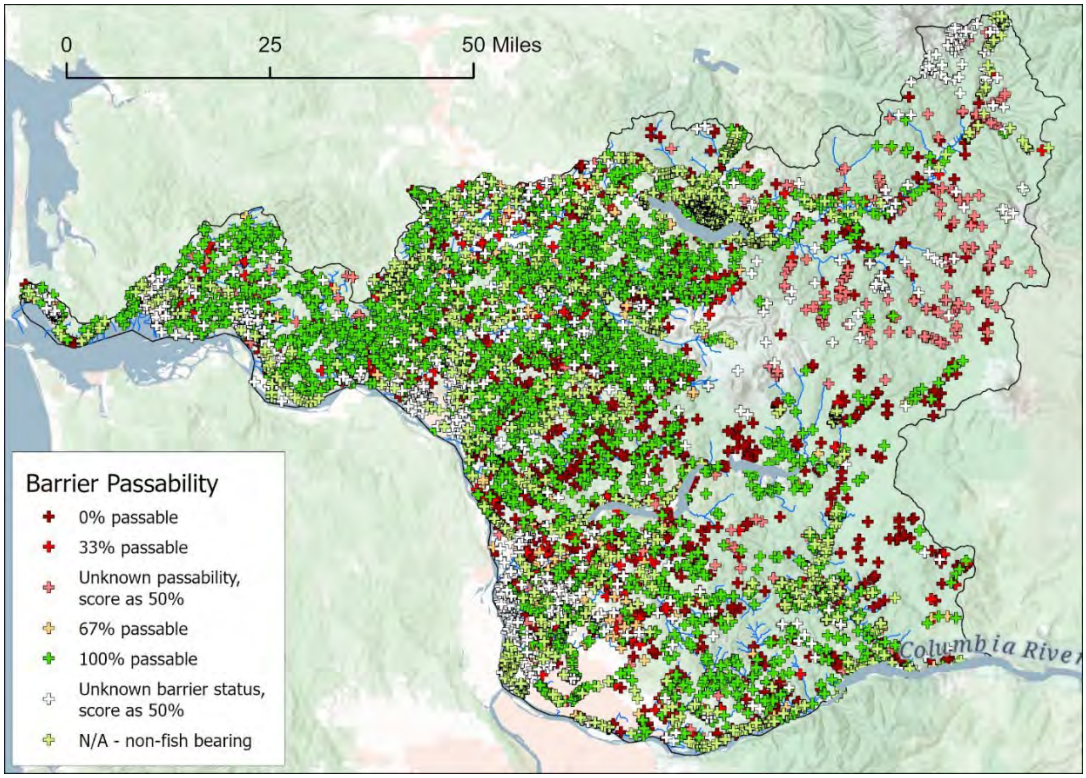

Figure 3. Lower Columbia Barrier Inventory, with features symbolized by the fish-passability attribute.

Table 5a. Barrier features included in the LCBI by data source and stream type.

Data Source	Anadromous Features (#)	Non-anadromous features (#)	Total # of features
WDFW FPDSI	2,132	4,212	6,344
DNR R-MAP	240	1,510	1,750
USFS	20	166	186
Est. Partnership	199	352	551
CREST Grays R.	6	6	12
*Lewis CD	Unknown	Unknown	Unknown
*Wahkiakum CD	Unknown	Unknown	Unknown
Sum	2,597	6,246	8,843

*Conservation District (CD) data were included in the WDFW FPDSI data download, so the number of features from those sources was unable to be determined.

Table 5b. Barrier features included in the LCBI by feature type of interest and stream type.

Feature Type	Anadromous Features (#)	Non-anadromous features (#)	Total # of features
Culvert	1,558	5,138	6,696
Tide Gate	26	74	100
Natural Barrier	316	452	768
Other anthropogenic	648	465	1,113
Unknown type	49	117	166
Sum	2,597	6,246	8,843

Table 5c. Culverts and tide gates included in the LCBI by passability rating and stream type.

Passability	Anadromous Culverts & Tide Gates (#)	Non-anadromous culverts & Tide Gates (#)	Total # of culverts & Tide Gates
0%	235	1,259	1,494
33%	226	325	551
67%	219	218	437
100%	642	1,776	2,418
Unknown (scored as 50%)	231	510	741
N/A (non-fish bearing)	*31	1,124	1,155
Sum	1,584	5,212	6,796

*Anadromous features are presumably fish bearing and should not receive a N/A passage rating. Either the WDFW rating is incorrect or the extent of anadromy is incorrect. These features will be upated at a later date.

3.2 Barrier Assessments

3.2.1 Anthropogenic barrier assessments

When the LCBI was compiled and QA/QC was completed, 413 of the 2,597 anadromous, anthropogenic features were lacking fish passage status and/or passability information. This included 226 features from the WDFW Statewide Fish Passage Inventory (FPDSI), and most features from other data sources. We did not expect to have passage information for non-WDFW features, as this was not an included attribute.

We prioritized our field collection of fish passage information using the method outlined in Section 3.2.3 above. Through a combination of desktop-GIS and field assessments, we were able to assign fish passage status to 159 of these features, including 96 of the 226 FPDSI features. At the time of project completion, 254 features remained with incomplete passage status and/or passability information. Table 6 summarizes passage assessment efforts completed for the project, including both GIS and field-based efforts to assign passage status and/or passability information to features where this information was initially missing.

Table 6. Passage assessment statistics for the project, including the number of anadromous, anthropogenic features with unknown passage status and/or passability at the beginning and end of the project, and how many were able to be addressed by project efforts.

	WDFW	Other Source (Non-DNR)	Total
Features with unknown passage status or passability at beginning of project	226	187	413
Field visits	107	94	201
Assessed based on Field data including application of WDFW FP Training Protocols	56	21	77
Assessed by other means (GIS and/or online report review)	40	42	82
Remaining features with unknown passage status or passability	130	124	254

The remaining 254 features with missing fish passage information may potentially be impacting up to 317 anadromous stream miles. This represents 10% of the overall 3,100 miles of estimated anadromous stream miles within the lower Columbia Region, and 29% of approximately 1,100 anadromous stream miles currently blocked by known features based on results of this project (see Section 3.4.)

The Estuary Partnership completed a secondary GIS analysis to identify locations where additional passage features might exist at locations not currently mapped in the inventory, as an optional project task. This analysis consisted of GIS overlay of the latest roads and streams polyline datasets, identifying locations where these layers intersect, and filtering out locations which

already have a mapped feature. From this analysis we identified approximately 600 locations where passage features may exist but have not yet been mapped. These 600 locations could be impacting approximately 292 miles of anadromous stream, depending on what type of feature may be present at each location. A summary of potential impacts due to the remaining uncertainty about passage information for the lower Columbia region is presented in Table 7.

Table 7. Potential impact on available anadromous stream habitat associated with uncertainty about fish passage information for existing and potential fish passage features in the lower Columbia region.

	FPBI Features	*Potential Features	Total
Number of passage features with missing passage information (unknown passage status and/or passability) at completion of project	254	600	854
Stream miles blocked, or potentially blocked, by features w/ missing passage information	317	292	609
% of overall estimated anadromous stream habitat (3,100 miles) represented by stream miles blocked, or potentially blocked by features w/ missing passage information	10.2%	9.4%	19.6%
% of currently estimated blocked anadromous stream habitat (1,100 miles) represented by stream miles blocked, or potentially blocked by features w/ missing passage information	28.8%	26.5%	55.3%

*Potential features include locations Estuary Partnership has identified where stream/road crossings exist but are not currently mapped in the LCBI.

3.2.2 Natural Barrier Assessments

The LCBI includes 768 natural barrier features, including 316 anadromous natural barriers. These features were included with the Statewide Fish Passage Inventory (WDFW FPDSI) but did not have associated passage information (passage status and/or fish-passability). This information can impact the DST scoring because even though these features would not be considered for passage correction, they can impact fish access to anthropogenic features further upstream which might be considered for correction. Similarly, they can potentially reduce the amount of stream miles available for barrier correction projects implemented at locations downstream of them.

Project staff conducted a separate desktop review of natural barrier features with unknown passability, with Steve VanderPloeg of WDFW Region 5. Steve has extensive knowledge of fish passage in the region and was able to provide passage information for 271 of these 316 natural features, which was not previously in the SFPI. At project completion, 45 natural features remain with missing fish passage information.

3.3 Decision Support Tool Results Validation

Three successive GIS model iterations were completed for the DST. Results for each iteration were reviewed to identify locations where scoring did not make sense (typically due to incorrect stream alignment or passability attribute information), and adjustments were made to the metric weights

and scoring breaks as outlined in the methods above (Section 3.3.2). A broader review of the results from the second iteration was undertaken through a workshop with our Technical Advisory Group (Workshop # 5 of 5). During, and following, this workshop, group members reviewed scores and provided feedback on results for barriers that were familiar to them. This resulted in several updates to incorrect passage information in the LCBI, which were incorporated into the third and final iteration.

We utilized data from the Washington State Fish Barrier Removal Board (FBRB) inventory as one means of performing model calibration. Presumably these features, identified for correction project funding, should score relatively high in the DST if it is working correctly. Table 8 summarizes this calibration effort. Prioritization scores, and associated prioritization ranks, output by the DST are shown for the FBRB barriers currently proposed for funding. Six out of the eight total features score very high for at least one species. Two features, Boone Creek and the Rock Creek tributary, received relatively low scores. This is particularly true for the Rock Creek tributary, which scored ~22/100 for both Winter steelhead (associated rank = 727th out of 969) and coho (associated rank = 934/969). When examining the results, we noted that both features have very limited upstream mileage, and thus we would expect them to score low. It is unclear why these features were proposed for correction projects.

Table 8. Final DST model scores for features that have received FBRB funding for correction projects. Presumably, these features should score relatively high.

Barrier ID (WDFW)	Loc.	Species: Prioritization Score (0-100)	Prioritization Rank (out of 969 features scored)	Note
934498/499	East Fork Deep R.	Coho: 77 Fall Chinook: 62	9 15	934498 and 499 are adjacent features that are combined in the model due to errors in the NHD stream network.
106c0080	Stillwater Cr.	Coho: 84.7 Winter Steelhead: 70.3	3 9	
106c0057	Delameter Cr.	Coho: 76.1 Fall Chinook: 61.4 Winter steelhead: 68.9	16 17 11	
601773	North Fork Ostrander Cr.	Coho: 75.99 Winter steelhead: 65.9	17 22	
1350003	Mason Cr.	Coho: 58.95 Winter steelhead: 69.75	186 10	
602365	Pup Cr.	Spring Chinook: 59.84 Winter steelhead: 59.84 Chum: 54.44	8 68 36	
021(56001) (00000)	Boone Cr.	Coho: 54.83	267	Barrier has limited upstream mileage so it is correctly scored low.
132142259A	Trib. of upper Rock Cr.	Coho: 22.2 Winter steelhead: 22.2	934 727	Barrier has limited upstream mileage so it is correctly scored low.

3.4 Decision-Support Tool Results

Results from the final model iteration are accessible in interactive ArcGIS Online map format at both the EP website, and the LCFRB's Salmon Resource Map, along with other supporting information. The barrier scores are symbolized using four tiers, or categories, based on the score on a scale from 0–100. A total of 969 barriers received scores in the model. This includes all anadromous tide gates and culverts with < 100% passability (942), plus 27 features of other types. Tier 1 and Tier 2 barriers have the highest average prioritization scores across all species and run-types of salmon and steelhead in the lower Columbia River region, while Tier 3 and Tier 4 barriers are identified as lower priority corrections based on multi-species benefits (Figure 4). Only 40 of the 969 barrier sites (4%) are identified as Tier 1 and Tier 2 fish passage corrections, supporting the project goal to prioritize a subset of sites that provide the most habitat benefits for salmon and steelhead populations of importance for ESU and DPS-scale recovery. Features with the highest scores, and Tier 1 or Tier 2 ratings, are estimated to produce the most habitat benefit, if corrected. Separate scoring results layers are included for the six priority species (lower Columbia coho, lower Columbia winter steelhead, lower Columbia summer steelhead, lower Columbia spring Chinook, lower Columbia fall Chinook, and lower Columbia chum salmon) and the combined score (mean score for the 6 species). Scoring results for the individual prioritization metrics (described in Section 2.3.1 above) are included in the attribute fields for each scoring layer.

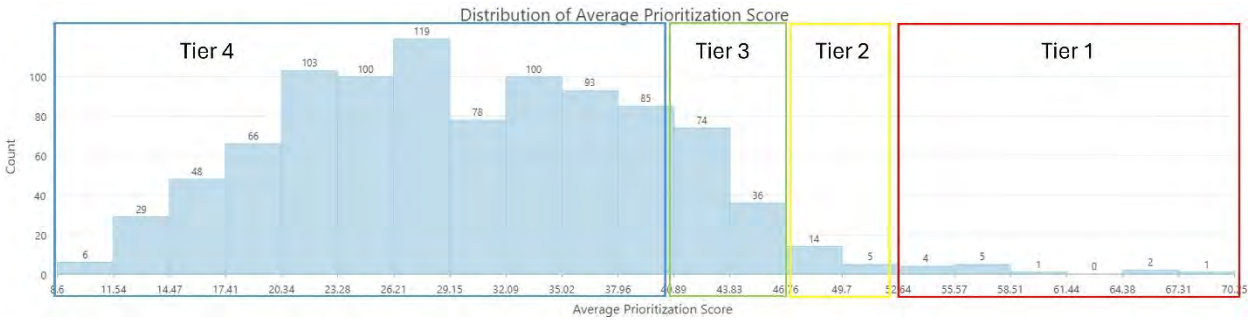

Figure 4. A histogram of the 969 barrier sites based on the average multi-species prioritization scores for each site. Tier 1 – 4 bins identified based on these average prioritization scores: Tier 1 barrier sites have the highest scores (52 – 80) while Tier 4 barrier sites have the lowest scores (less than 40).

Barrier scores are also provided in spreadsheet format, with accompanying prioritization metrics information. A snapshot of the scoring spreadsheet, sorted by overall average score from highest to lowest, is included as Appendix B of this report. The scoring spreadsheet file is available from the Lower Columbia Fish Recovery Board upon request.

The quantity of habitat blocked by fish passage barriers is of interest to the LCFRB to help inform its salmon recovery priorities. We calculated quantities of upstream habitat blocked for each species, overall anadromy, and within each subbasin. Results are displayed graphically in in Table 9a – 9h below. Quantities are shown separately by barrier severity (all barriers ranging from 0-67% pass-ability, and the more severe barriers ranging from 0-33%), and barrier type (artificial barriers, and natural barriers). The Lower Cowlitz, Toutle, and Salmon subbasins have the highest overall miles blocked by artificial barriers. This is true also for coho and fall Chinook salmon, and to some degree for winter steelhead, although other subbasins also exhibit large quantities of blocked habitat for this species (Elochoman-Skamokowa, Tilton, and North Fork Lewis).

The percentage of total anadromous stream habitat blocked within each subbasin and by species is of interest for recovery strategy planning. Total anadromous stream habitat includes stream habitat blocked by barriers and currently accessible stream habitat. Table 9 shows the blocked and accessible stream miles as well as the percentage of habitat blocked by artificial and natural barriers for each subbasin and species.

Table 9a. Upstream mileage blocked as a percentage of total anadromous habitat for <u>all salmon species</u>, for each LCR subbasin and the LCR overall.

Subbasin	Total stream habitat (mi.)	Upstream miles blocked by: Artificial 0-67% barriers	Artificial 0-33% barriers	Natural 0-67% barriers	% of Total miles blocked by: Artificial 0-67% barriers	Artificial 0-33% barriers	Natural 0-67% barriers	Currently accessible stream habitat (mi.)	%
Estuary Tributaries	57.1	35	32.7	0	61.3%	57.2%	0.0%	22	39%
Grays	210.4	65.3	43.5	72.3	31.0%	20.7%	34.4%	145	69%
Elochoman-Skamokawa	172.2	71.4	22.4	14.4	41.5%	13.0%	8.4%	101	59%
M-A-G	119.8	20.6	12.7	41.9	17.2%	10.6%	35.0%	99	83%
Lower Cowlitz	536.0	247.7	156.1	65.9	46.2%	29.1%	12.3%	288	54%
Upper Cowlitz	204.5	20.5	10.2	68.2	10.0%	5.0%	33.3%	184	90%
Cispus	76.2	8.8	0.9	10.2	11.6%	1.2%	13.4%	67	88%
Tilton	123.3	70.7	6.6	2.5	57.4%	5.4%	2.0%	53	43%
Toutle	370.8	153	63.6	60.9	41.3%	17.2%	16.4%	218	59%
Coweeman	111.4	25.8	11.3	14.1	23.2%	10.1%	12.7%	86	77%
Kalama	137.4	24.9	18.8	104.6	18.1%	13.7%	76.1%	113	82%
NF Lewis	283.5	86.5	34.2	10.8	30.5%	12.1%	3.8%	197	69%
EF Lewis	223.6	79.5	52.1	84	35.5%	23.3%	37.6%	144	64%
Salmon	161.5	118.1	56.5	2.5	73.1%	35.0%	1.5%	43	27%
Washougal	137.8	37.2	13.2	45	27.0%	9.6%	32.6%	101	73%
Lower Gorge Tributaries	75.9	19.3	12.2	12.1	25.4%	16.1%	16.0%	57	75%
Wind	142.3	15.4	10.7	137.6	10.8%	7.5%	96.7%	127	89%
Upper Gorge Tributaries	25.7	4.4	2.7	4.9	17.1%	10.5%	19.1%	21	83%
LCR Totals:	**3,169.5**	**1104.1**	**560.4**	**751.9**	**34.8%**	**17.7%**	**23.7%**	**2,065**	**65%**

Table 9b. Upstream coho salmon mileage blocked as a percentage of total coho salmon habitat, for each LCR subbasin and the LCR overall. Estuary Tributaries and Grays R. subbasins both support the Grays-Chinook coho salmon population; the Wind River and Upper Gorge Tributaries support the Upper Gorge Tributaries coho salmon population.

Subbasin	Total habitat (mi.)	Upstream miles blocked by:			% of Total miles blocked by:			Currently accessible habitat	
		Artificial 0-67% barriers	Artificial 0-33% barriers	Natural 0-67% barriers	Artificial 0-67% barriers	Artificial 0-33% barriers	Natural 0-67% barriers	(mi.)	%
Estuary Tributaries	48.9	28.7	26.3	0	58.7%	53.8%	0.0%	20	41%
Grays	165.1	52.7	32	32.3	31.9%	19.4%	19.6%	112	68%
Elochoman-Skamokawa	138.2	52.2	18	4.5	37.8%	13.0%	3.3%	86	62%
Mill-Abernathy-Germany	79.5	13.3	8.5	19.6	16.7%	10.7%	24.6%	66	83%
Lower Cowlitz	443.4	195.3	115.6	3.4	44.0%	26.1%	0.8%	248	56%
Upper Cowlitz	174.1	16.3	8.3	49.2	9.4%	4.8%	28.3%	158	91%
Cispus	68.1	7.4	0.9	8.2	10.9%	1.3%	12.0%	61	89%
Tilton	117.6	64.3	6.6	2.1	54.7%	5.6%	1.8%	53	45%
Toutle	241.7	99.1	48.8	17.8	41.0%	20.2%	7.4%	143	59%
Coweeman	76.5	14.8	7.1	1.4	19.4%	9.3%	1.8%	62	81%
Kalama	27.5	10	5.7	1.8	36.3%	20.7%	6.5%	18	64%
NF Lewis	242.4	66.7	22.8	3.5	27.5%	9.4%	1.4%	176	72%
EF Lewis	122.6	55.8	36.1	4.6	45.5%	29.5%	3.8%	67	54%
Salmon	138.8	105.1	50.7	2.2	75.7%	36.5%	1.6%	34	24%
Washougal	51.2	7.2	4.5	0.1	14.1%	8.8%	0.2%	44	86%
Lower Gorge Tributaries	51.2	5.6	3.5	5	10.9%	6.8%	9.8%	46	89%
Wind	7.7	0	0	3	0.0%	0.0%	39.2%	8	100%
Upper Gorge Tributaries	13.7	2.4	2.4	1.3	17.5%	17.5%	9.5%	11	83%
LCR Totals:	**2,208.2**	**796.9**	**397.8**	**160.0**	**36.1%**	**18.0%**	**7.2%**	**1,411**	**64%**

Table 9c. Upstream winter steelhead salmon mileage blocked as a percentage of total winter steelhead habitat, for each LCR subbasin and the LCR overall. Estuary Tributaries and Grays R. subbasins both support the Grays-Chinook winter steelhead population; the Wind River and Upper Gorge Tributaries subbasins both support the Upper Gorge Tributaries winter steelhead population.

Subbasin		Upstream miles blocked by:			% of Total miles blocked by:			Currently accessible habitat	
	Total habitat (mi.)	Artificial 0-67% barriers	Artificial 0-33% barriers	Natural 0-67% barriers	Artificial 0-67% barriers	Artificial 0-33% barriers	Natural 0-67% barriers	(mi.)	%
Estuary Tributaries	8.4	5.1	5.1	0	60.8%	60.8%	0.0%	3	39%
Grays	94.1	15.2	6.7	37.6	16.2%	7.1%	40.0%	79	84%
Elochoman-Skamokawa	89.6	29.7	3.5	4.4	33.1%	3.9%	4.9%	60	67%
Mill-Abernathy-Germany	57.4	2.2	0	15.6	3.8%	0.0%	27.2%	55	96%
Lower Cowlitz	180.9	31.3	16.2	4.2	17.3%	9.0%	2.3%	150	83%
Upper Cowlitz	177.9	11.6	5.6	17	6.5%	3.1%	9.6%	166	93%
Cispus	62.9	2.5	0	8	4.0%	0.0%	12.7%	60	96%
Tilton	93.2	50.5	0	1.2	54.2%	0.0%	1.3%	43	46%
Toutle	186.2	62.3	17	16.7	33.5%	9.1%	9.0%	124	67%
Coweeman	55.7	9.5	4.5	3.7	17.1%	8.1%	6.6%	46	83%
Kalama	14.7	1.7	0.5	0	11.5%	3.4%	0.0%	13	88%
NF Lewis	152.1	30	1.4	1.6	19.7%	0.9%	1.1%	122	80%
EF Lewis	74.8	7.7	4.4	24.4	10.3%	5.9%	32.6%	67	90%
Salmon	68.1	43.9	14.5	0	64.5%	21.3%	0.0%	24	36%
Washougal	58.0	16	3.5	0.04	27.6%	6.0%	0.1%	42	72%
Lower Gorge Tributaries	28.9	2.5	0.5	2.2	8.6%	1.7%	7.6%	26	91%
Wind	6.9	0	0	2.3	0.0%	0.0%	33.5%	7	100%
Upper Gorge Tributaries	2.9	0.1	0.1	0.3	3.4%	3.4%	10.3%	3	97%
LCR Totals:	**1,412.8**	**321.8**	**83.5**	**139.2**	**22.8%**	**5.9%**	**9.9%**	**1,091**	**77%**

Table 9d. Upstream summer steelhead mileage blocked as a percentage of total summer steelhead habitat, for each LCR subbasin and the LCR overall. Summer steelhead populations are only identified in the Kalama, North Fork Lewis, East Fork Lewis, Washougal, and Wind subbasins.

Subbasin		Upstream miles blocked by:			% of Total miles blocked by:			Currently accessible habitat	
	Total habitat (mi.)	Artificial 0-67% barriers	Artificial 0-33% barriers	Natural 0-67% barriers	Artificial 0-67% barriers	Artificial 0-33% barriers	Natural 0-67% barriers	(mi.)	%
Estuary Tributaries	--	--	--	--	--	--	--	--	--
Grays	--	--	--	--	--	--	--	--	--
Elochoman-Skamokawa	--	--	--	--	--	--	--	--	--
Mill-Abernathy-Germany	--	--	--	--	--	--	--	--	--
Lower Cowlitz	--	--	--	--	--	--	--	--	--
Upper Cowlitz	--	--	--	--	--	--	--	--	--
Cispus	--	--	--	--	--	--	--	--	--
Tilton	--	--	--	--	--	--	--	--	--
Toutle	--	--	--	--	--	--	--	--	--
Coweeman	--	--	--	--	--	--	--	--	--
Kalama	71.9	1.2	1.2	61	1.7%	1.7%	84.8%	71	98%
NF Lewis	0.9	0	0	0	0.0%	0.0%	0.0%	1	100%
EF Lewis	47.5	0	0	23.3	0.0%	0.0%	49.0%	48	100%
Salmon	--	--	--	--	--	--	--	--	--
Washougal	39.3	0.1	0	14.9	0.3%	0.0%	37.9%	39	100%
Lower Gorge Tributaries	--	--	--	--	--	--	--	--	--
Wind	77.4	0.6	0.6	74.2	0.8%	0.8%	95.9%	77	99%
Upper Gorge Tributaries	--	--	--	--	--	--	--	--	--
LCR Totals:	**237.0**	**1.9**	**1.8**	**173.4**	**0.8%**	**0.8%**	**73.2%**	**235**	**99%**

Table 9e. Upstream spring Chinook salmon mileage blocked as a percentage of total spring Chinook salmon habitat, for each LCR subbasin and the LCR overall. Spring Chinook populations are only identified in the Tilton, Upper Cowlitz, Cispus, Toutle, Kalama, and North Fork Lewis subbasins.

Subbasin	Total habitat (mi.)	Upstream miles blocked by:			% of Total miles blocked by:			Currently accessible habitat	
		Artificial 0-67% barriers	Artificial 0-33% barriers	Natural 0-67% barriers	Artificial 0-67% barriers	Artificial 0-33% barriers	Natural 0-67% barriers	(mi.)	%
Estuary Tributaries	--	--	--	--	--	--	--	--	--
Grays	--	--	--	--	--	--	--	--	--
Elochoman-Skamokawa	--	--	--	--	--	--	--	--	--
Mill-Abernathy-Germany	--	--	--	--	--	--	--	--	--
Lower Cowlitz	--	--	--	--	--	--	--	--	--
Upper Cowlitz	88.2	0	0	0.1	0.0%	0.0%	0.1%	88	100%
Cispus	47.1	0	0	7.6	0.0%	0.0%	16.1%	47	100%
Tilton	39.5	16.7	0	0	42.3%	0.0%	0.0%	23	58%
Toutle	93.3	30.1	6.5	0.3	32.3%	7.0%	0.3%	63	68%
Coweeman	--	--	--	--	--	--	--	--	--
Kalama	50.4	0	0	38.2	0.0%	0.0%	75.8%	50	100%
NF Lewis	158.4	30.8	9.2	3.2	19.4%	5.8%	2.0%	128	81%
EF Lewis	--	--	--	--	--	--	--	--	--
Salmon	--	--	--	--	--	--	--	--	--
Washougal	--	--	--	--	--	--	--	--	--
Lower Gorge Tributaries	--	--	--	--	--	--	--	--	--
Wind	--	--	--	--	--	--	--	--	--
Upper Gorge Tributaries	--	--	--	--	--	--	--	--	--
LCR Totals:	**476.8**	**77.6**	**15.7**	**49.4**	**16.3%**	**3.3%**	**10.4%**	**399**	**84%**

Table 9f. Upstream fall Chinook salmon mileage blocked as a percentage of total fall Chinook salmon habitat, for each LCR subbasin and the LCR overall. Estuary Tributaries and Grays R. subbasins both support the Grays-Chinook fall Chinook salmon population; the Upper Cowlitz, Cispus, and Tilton all support the Upper Cowlitz fall Chinook salmon population; the North Fork Lewis and East Fork Lewis both support the Lewis fall Chinook salmon population; the Wind River and Upper Gorge Tributaries subbasin both support the Upper Gorge Tributaries fall Chinook salmon population.

Subbasin		Upstream miles blocked by:			% of Total miles blocked by:			Currently accessible habitat	
	Total habitat (mi.)	Artificial 0-67% barriers	Artificial 0-33% barriers	Natural 0-67% barriers	Artificial 0-67% barriers	Artificial 0-33% barriers	Natural 0-67% barriers	(mi.)	%
Estuary Tributaries	1.0	0	0	0	0.0%	0.0%	0.0%	1	100%
Grays	73.6	12.3	8.1	20.1	16.7%	11.0%	27.3%	61	83%
Elochoman-Skamokawa	51.2	13.8	0.9	0	27.0%	1.8%	0.0%	37	73%
Mill-Abernathy-Germany	51.7	1.2	0.9	11.4	2.3%	1.7%	22.0%	51	98%
Lower Cowlitz	158.8	37.1	21.9	10	23.4%	13.8%	6.3%	122	77%
Upper Cowlitz	72.0	0	0	0.1	0.0%	0.0%	0.1%	72	100%
Cispus	47.8	0	0	7.8	0.0%	0.0%	16.3%	48	100%
Tilton	34.9	12	0	0	34.4%	0.0%	0.0%	23	66%
Toutle	99.5	48.3	20.3	1.3	48.5%	20.4%	1.3%	51	51%
Coweeman	44.2	3.9	0.4	0.6	8.8%	0.9%	1.4%	40	91%
Kalama	12.2	0.04	0.04	0	0.3%	0.3%	0.0%	12	100%
NF Lewis	55.0	20.8	4.3	0.2	37.8%	7.8%	0.4%	34	62%
EF Lewis	29.0	1.2	0	0	4.1%	0.0%	0.0%	28	96%
Salmon	44.6	17.4	0	0	39.0%	0.0%	0.0%	27	61%
Washougal	30.8	0.6	0.6	1.1	1.9%	1.9%	3.6%	30	98%
Lower Gorge Tributaries	4.6	0.3	0.3	0	6.5%	6.5%	0.0%	4	93%
Wind	3.6	0	0	0	0.0%	0.0%	0.0%	4	100%
Upper Gorge Tributaries	3.0	1.1	0	1.5	37.3%	0.0%	50.8%	2	63%
LCR Totals:	**817.5**	**170.04**	**57.7**	**54.1**	**20.8%**	**7.1%**	**6.6%**	**647**	**79%**

Table 9g. Upstream <u>chum salmon</u> mileage blocked as a percentage of total chum salmon habitat, for each LCR subbasin and the LCR overall. Estuary Tributaries and Grays R. subbasins both support the Grays-Chinook chum salmon population; the Lower Cowlitz, Toutle, and Coweeman all supper the Cowlitz chum salmon population; the North Fork Lewis and East Fork Lewis both support the Lewis fall Chinook salmon population; the Wind River and Upper Gorge Tributaries subbasin both support the Upper Gorge Tributaries chum salmon population.

Subbasin		Upstream miles blocked by:			% of Total miles blocked by:			Currently accessible habitat	
	Total habitat (mi.)	Artificial 0-67% barriers	Artificial 0-33% barriers	Natural 0-67% barriers	Artificial 0-67% barriers	Artificial 0-33% barriers	Natural 0-67% barriers	(mi.)	%
Estuary Tributaries	17.5	12.5	12.5	0	71.3%	71.3%	0.0%	5	29%
Grays	54.6	5.1	4.1	19	9.3%	7.5%	34.8%	50	91%
Elochoman-Skamokawa	52.3	6.9	1.7	0	13.2%	3.2%	0.0%	45	87%
Mill-Abernathy-Germany	8.9	0	0	0	0.0%	0.0%	0.0%	9	100%
Lower Cowlitz	142.9	36.8	21.3	0.9	25.8%	14.9%	0.6%	106	74%
Upper Cowlitz	--	--	--	--	--	--	--	--	--
Cispus	--	--	--	--	--	--	--	--	--
Tilton	--	--	--	--	--	--	--	--	--
Toutle	55.1	2.9	2.5	0	5.3%	4.5%	0.0%	52	95%
Coweeman	67.3	11.4	4.4	1.4	16.9%	6.5%	2.1%	56	83%
Kalama	6.6	0	0	0	0.0%	0.0%	0.0%	7	100%
NF Lewis	65.1	30.9	2.3	0.3	47.5%	3.5%	0.5%	34	53%
EF Lewis	56.8	11.8	6.2	0	20.8%	10.9%	0.0%	45	79%
Salmon	20.7	0.1	0	0	0.5%	0.0%	0.0%	21	100%
Washougal	16.4	0	0	0	0.0%	0.0%	0.0%	16	100%
Lower Gorge Tributaries	26.0	1.7	0.8	1.3	6.5%	3.1%	5.0%	24	93%
Wind	0.0	0	0	0	N/A	N/A	N/A	0	0%
Upper Gorge Tributaries	0.0	0	0	0	N/A	N/A	N/A	0	0%
LCR Totals:	**590.2**	**120.1**	**55.8**	**22.9**	**20.3%**	**9.5%**	**3.9%**	**470**	**80%**

Table 9h. Summary of statistics presented in Tables 9a-g, for the full lower Columbia region. Artificially blocked upstream habitat miles are for habitat upstream of barriers rated 0 – 67% passable.

Species	Total stream habitat (mi.)	Artificially blocked upstream habitat (mi.)	% of artificially blocked upstream habitat relative to total stream habitat	Currently available (100% passable) stream habitat (mi.)	% of currently accessible (100% passable) stream habitat
Coho	2,208	797	36%	1,411	64%
Winter Steelhead	1,413	322	23%	1,091	77%
Summer Steelhead	237	2	1%	235	99%
Spring Chinook	477	78	16%	399	84%
Fall Chinook	818	170	21%	647	79%
Chum	590	120	20%	470	80%
All Species	3,170	1,104	35%	2,065	65%

4. Discussion

4.1 Barrier Site Priorities

Over 40% of artificial barriers identified in the inventory that are located within the extent of anadromy are identified as 100% passable. However, 29% of artificial barriers within the extent of anadromy still have passability estimates of 0 – 33%, meaning they limit passage for most salmon and steelhead. There are many additional locations with missing data and unknown fish passage statuses that could also be constraining fish access to upstream habitat areas. Given limited resources for field assessments and barrier corrections, the Decision-Support Tool will help direct fish passage efforts towards improving the highest priority inventory data gaps and fish passage constraints.

The decision support tool identifies 13 Tier 1 barriers based on multi-species prioritization scores, less than 2% of the total barrier locations within the extent of anadromy. Although a small number of locations, these high priority barriers limit access to over 130 miles of salmon and steelhead habitat, representing 12% of the total habitat blocked by artificial barriers. The Lower Cowlitz and Toutle subbasins both have three Tier 1 barriers, the highest number per subbasin. Each of these Tier 1 barriers limit fish passage for three or more populations and have average IP scores of 45% for upstream habitat. None of these barriers have downstream total blockages (0% passability ratings). Addressing these Tier 1 barriers align with the overall project goal of reconnecting large quantities of high-quality habitat for one or more populations of importance.

27 additional sites are identified as Tier 2 barriers based on multi-species prioritization scores. These barriers block another 115 miles of anadromous habitat, representing 11% of the total habitat blocked by artificial barriers. The Upper Cowlitz subbasin has six Tier 2 barriers, the highest number identified at the subbasin scale. These barriers block one or more populations and have a lower average IP score for upstream habitat than Tier 1 barriers (34%). None of these barriers have

downstream total blockages (0% passability ratings). Addressing both Tier 1 and Tier 2 barriers will expand the amount of accessible habitat to more populations of salmon and steelhead.

4.2 Population and Watershed Priorities

Recovering salmon and steelhead is measured at population and species scales, so it is important to understand how improving access at individual fish passage sites may benefit populations that are most impacted by habitat blockages. At a species-scale, coho salmon are blocked from the greatest proportion of their potential habitat by artificial barriers: 18% of coho salmon habitat is blocked by 0 – 33% passable artificial barriers and 36% of coho salmon habitat is blocked by 0 – 67% passable artificial barriers. At a population-scale, Salmon Creek coho are limited the most by 0 – 33% artificial barriers, with 36.5% of their potential habitat fully or mostly blocked. There are no Tier 1 – 3 barriers identified in the Salmon Creek subbasin, but there are multiple Tier 4 sites that appear to culminate in blocking over a third of potential coho salmon habitat. Salmon Creek coho salmon are identified as a Stabilizing population, the lowest priority recovery designation, in part because of the high degree of development impacts in the Salmon Creek subbasin. However, Grays-Chinook, East Fork Lewis, Kalama, and Toutle River coho salmon are all blocked from 20 – 29.5% of their potential habitat. These populations have Primary (Grays-Chinook, East Fork Lewis, North Fork Toutle, South Fork Toutle) and Contributing (Kalama) recovery designations, higher priority population designations for recovery than Salmon Creek coho salmon. With the exception of the Kalama River subbasin, all of these subbasins include Tier 1 and Tier 2 barriers, indicating a strong connection between individual barrier priorities and population and species-scale needs.

Less than 10% of total chum salmon and fall Chinook salmon potential habitat are blocked by 0 – 33% artificial barriers, but a few populations are more impacted by blocked habitat, and may benefit from increased fish passage. Grays-Chinook chum salmon, a Primary population, are estimated to be disconnected from 23% of their population habitat in the Estuary Tributaries and Grays subbasins combined. This includes a mile of fall Chinook and almost nine miles of chum habitat upstream of a state culvert with a tide gate identified as Tier 1 barrier in the Estuary Tributaries subbasin. This site is currently managed by WDFW for fish passage through the culvert as well as upland wildlife benefits on the Chinook Wildlife Unit. Habitat quality estimates for both populations are high as well for this barrier, with an IP score for upstream habitat of 94% for chum salmon and 72% for fall Chinook salmon. Toutle River fall Chinook salmon, another Primary population for recovery, have no to limited access to 20% of their potential habitat upstream of 0 – 33% artificial barriers. This includes three Tier 1 barriers that combined block almost five miles of potential fall Chinook salmon habitat with upstream habitat quality scores ranging from 49% - 63%. Cowlitz County has proposed barrier correction designs for two of these sites through the Brian Abbott Fish Barrier Removal Board, but both of these are not identified for funding through the 2025 – 2027 grant allocation.

4.3 Applications

Inventoried barriers and associated prioritization scores are available to support future barrier correction projects. Many of the prioritization metrics were developed in ArcGIS, and it is highly recommended that barrier sites and upstream habitats are surveyed in order to better understand on the ground conditions and needs. Barrier prioritization scores do not indicate feasibility or

landowner willingness either for field assessments or future projects. If barrier data requires corrections following field visits and assessments using WDFW's Fish Passage Inventory, Assessment, and Prioritization Manual protocols, revised data should be provided to the FPDSI program.

If landowners are supportive and field assessments align with high priority barrier scores, project sponsors are encouraged to apply for funding to develop designs and implement barrier corrections. Table 10 includes primary funding sources for fish passage corrections. To support the application of the barrier inventory and prioritization scores, a quick guide was also created to help project sponsors access and interpret newly developed data and priorities.

Table 10. Grant programs that fund fish passage improvement projects.

Funding Program	Program Webpages
Brian Abbott Fish Barrier Removal Board	https://rco.wa.gov/grant/brian-abbott-fish-barrier-removal-board/
Family Forest Fish Passage Program	https://dnr.wa.gov/forest-regulation/small-forest-landowner-office/family-forest-fish-passage-program
Salmon Recovery Funding Board	https://lcfrb.org/our-work/salmon-recovery-funding-board-grants
PROTECT Program	https://wsdot.wa.gov/business-wsdot/support-local-programs/funding-programs/protect-program
Cowlitz Restoration & Recovery Habitat Grants	https://lcfrb.org/our-work/cowlitz-restoration-and-recovery-grants

4.4 Data Gaps and Uncertainties

A few uncertainties and data gaps were identified over the course of this project. Addressing these will reduce the number of unknown or low certainty barrier data records, improving the accuracy of barrier prioritization scores calculated with the Decision-Support Tool. It is recommended the following data gaps are addressed in future updates of the barrier inventory and Decision-Support Tool model runs.

1. Road stream crossings are the most likely fish passage impairments to upstream habitat. However, when road intersections with salmon and steelhead streams were compared, approximately 600 road crossings do not have a fish passage status data record. Filling this data gap is a key next step to ensuring all potential barriers are included in the prioritization scoring process.
2. There are 26 tide gates in the barrier inventory, all of which are identified as Tier 2 or Tier 3 priority barriers. Most of these are assumed to full block fish passage but upstream habitat quantity, quality and fish passage status are uncertain given passage is impacted by tidal changes in addition to stream flow. Upstream habitat can be quantified in acres rather than stream miles for tide gates given these structures can block wetland and other more ponded habitats while culverts more commonly block stream channel habitats. Given these

differences, the regional Decision-Support Tool may not effectively capture fish passage and habitat conditions associated with tide gates, and an assessment focused on the unique nature of tide gates may better capture needs and benefits for salmon and steelhead from managing or replacing these structures.

3. The Decision-Support Tool relies on distribution and habitat quality estimates for blocked habitat areas for 49.5% of a total barrier priority score. Improved estimates of distribution and habitat quality could change barrier priorities given such a large proportion of a score is determined by these two metrics. Updates to distribution and habitat quality scores are especially important for Chinook salmon and summer steelhead, which currently have the most uncertain distribution data source due to high variability in Chinook salmon life histories and the importance of natural, seasonal barriers in informing summer steelhead ranges. Intrinsic potential estimates of habitat quality incorporate local winter steelhead and coho salmon density data sets, but expanding WDFW's ongoing work to develop spatial-temporal models of salmon and steelhead distribution could provide estimates of habitat quality that are more grounded in current observations of fish distribution and density.

4.5 Adaptive Management

Barrier priorities are expected to change as barrier locations are assessed and inventory data are updated, barrier corrections are completed, and fish distribution estimates are updated. The LCFRB and Estuary Partnership will work with barrier correction grant managers at Washington Recreation and Conservation Office, WDFW permitting staff and FPDSI program staff to update the barrier inventory and prioritization scores each year (Figure 5). Published barrier data sets and priorities will also be updated annually to reflect any changes. This adaptive management partnership is essential to maintaining accurate information on high priority barrier correction needs, as well as tracking how fish passage conditions are changing as corrections are completed.

Figure 5. Planned annual adaptive management process to maintain up to date barrier inventory data set and recommended priority corrections.

References

Bilby, R., A. Johnson, J. R. Foltz, A. L. Puls. 2022. Management implications from Pacific Northwest intensively monitored watersheds. Pacific Northwest Aquatic Monitoring Partnership. 99 pages. Available at: https://www.pnamp.org/document/15207

Clark, C.L., P. Roni, J. Keeton, G.R. Pess. 2025. Evaluation of the removal of impassable barriers on anadromous salmon and steelhead in the Columbia River Basin. Fisheries Management and Ecology. 27(1):102-110. DOI: 10.1111/fme.12410

King County Department of Natural Resources and Parks. 2022. King County Fish Passage Barrier Prioritization Summary Report. Available at: https://kingcounty.gov/en/dept/dnrp/nature-recreation/environment-ecology-conservation/wildlife/fish-and-shellfish/fish-passage-program

Lower Columbia Fish Recovery Board. 2010. Washington Lower Columbia Salmon Recovery and Fish & Wildlife Subbasin Plan. Longview, Washington. Available at: https://lcfrb.org/library/recovery-plans

Independent Scientific Review Panel (ISRP) for the Northwest Power and Conservation Council. 2025. Habitat Retrospective Report: Review and Synthesis of Progress and Challenges in Columbia River Basin Fish and Wildlife Program Habitat Protection and Restoration Projects. ISRP 2025-2. Available at: www.nwcouncil.org/reports/isrp-habitat-retrospective-report/.

Macfarlane W.W. , Wheaton J.M., Bouwes N., Jensen M., Gilbert J.T., Hough-Snee N., and Shivick J. 2015. Modeling the capacity of riverscapes to support beaver dams. Geomorphology. DOI: 10.1016/j.geomorph.2015.11.019

Strahler, A.N., 1957, Quantitative analysis of watershed geomorphology: Eos, Transactions American Geophysical Union, v. 38, no. 6, p. 913–920. [Also available at https://doi.org/10.1029/TR038i006p00913.]

Washington Department of Fish and Wildlife. 2019. Fish Passage Inventory, Assessment, and Prioritization Manual. Olympia, Washington. Available at: https://wdfw.wa.gov/sites/default/files/publications/02061/Fish%20Passage%20Inventory%2C%20Assessment%2C%20and%20Prioritization%20Manual.pdf

Appendix A – Lower Columbia River Intrinsic Potential Analysis

Damon Holzer with the National Oceanic and Atmospheric Administration (NOAA) Northwest Fisheries Science Center developed the Lower Columbia Intrinsic Potential model for this project and provided the below analysis details.

Introduction

Salmon and steelhead populations within the Lower Columbia River have evolved to exploit complex landscapes, creating challenges for identifying high-quality habitats across diverse multi-species watersheds. While anadromous salmonids occupy streams flowing through varied upland environments, their freshwater habitat preferences require specific hydrological and geomorphological conditions (Agrawal et al., 2005; Burnett et al., 2007; Reiser and Bjornn, 1979; Rosenfeld et al., 2016). This interaction between in-stream characteristics and basin-wide processes determines habitat suitability, which should inform restoration strategies (such as barrier removal) for maximizing species recovery.

Intrinsic Potential Modeling

To assess habitat quality within the Lower Columbia River Evolutionarily Significant Units (ESU) and Distinct Population Segments (DPS) we used an intrinsic potential (IP) approach, which estimates a stream's inherent habitat value based on natural characteristics, regardless of current occupancy - vital for identifying recovery potential within extirpated watersheds. While IP can be applied to any life stage, we focused on spawning due to its critical role in productivity, temporally constrained opportunity window, and narrower strata of environmental conditions.

Using a Geographic Information System (GIS) based model, we integrated regional spatial data, including National Hydrography Dataset (NHDPlus) high resolution stream features (Moore et al., 2019), Washington Department of Fish and Wildlife (WDFW) redd surveys, Beaver Restoration Assessment Tool (BRAT) datasets (Macfarlane et al., 2017), and professional expertise to evaluate spawning suitability across current and historically accessible reaches. The final hydrography framework used for our IP analysis was based on the ~300m reach length BRAT stream layers, and all attributes were compiled to this spatial coverage.

Habitat Preference Curves and Scoring

For each listed species (Chinook[1], Chum[2], Coho and steelhead) we identified key reach attributes necessary for an IP analysis: gradient (%), channel width (m), mean annual flow (cfs), and confinement (valley width/channel width ratio) and derived suitability scores using habitat preference curves. These curves describe the relationship between stream channel attributes (such as gradient or channel width) and the likelihood of a site being selected for spawning, establishing scores that characterize relative habitat quality.

[1] The scope of this project limited our analysis to only fall-run Chinook. Future work should consider expanding IP to the other Chinook life-histories.
[2] The Chum IP model uses mean annual flow as a proxy for stream size; all other species use channel width.

Fall-run Chinook and Chum curves (Figure 1, panel C and D) were sourced from published reports (Busch et al., 2013; Romey, 2018), with Chum values adapted from a Southeast Alaska study due to a lack of local information (future efforts should verify model accuracy with in-basin spawning data). For steelhead and Coho salmon, we developed our own suitability values using WDFW

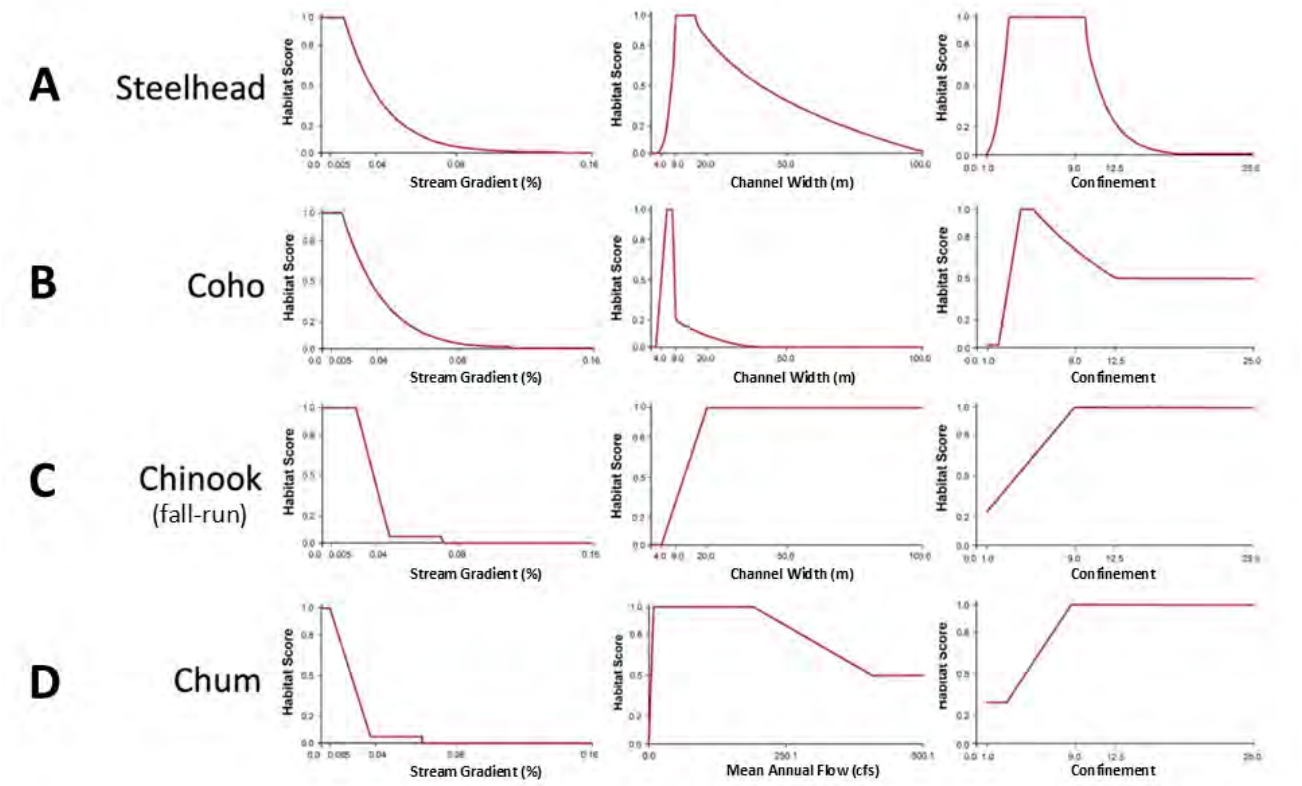

Figure 2. Spawning Habitat Suitability Curves for Salmon and Steelhead in the Lower Columbia River. Panels (A-D) display suitability scores (0-1) for stream gradient (%), width (m) [Steelhead, Coho, and fall-run Chinook], flow (cfs) [Chum only], and channel confinement (valley width/channel width ratio) for (A) Steelhead, (B) Coho, (C) fall-run Chinook, and (D) Chum. Each panel shows three curves derived from (Busch et al., 2013) and (Romey 2018) for Chinook and Chum, respectively, and WDFW redd surveys for steelhead and Coho. These curves apply to non-tidal reaches below complete natural barriers, as tidal reaches and those above WDFW-verified impassable features were assigned IP scores of 0. Note: Chum curves, based on Southeast Alaska data, may require refinement with local surveys.

spawning surveys (Figure 1, panels A and B). Utilizing a proximity analysis, we assigned redds to the nearest stream segment and summarized densities by their associated attributes (gradient, flow, channel width, and confinement). By relating summed redds to their closest reach (values) we were able to develop a set of preference curves calibrated by the amount of spatially coincident spawning use. Suitability attributes for each metric were calculated independently for all species, normalized to a 0-1 scale, and combined into an overall IP value.

Geometric Mean

To derive a final IP score, we calculated the geometric mean of the normalized suitability scores, adapted to each species' key attributes. For steelhead, Coho, and fall-run Chinook, the IP score is based on stream gradient (S_g), channel width (S_w), and confinement (S_c), calculated as:

$$IP = \sqrt[3]{S_g * S_w * S_c}$$

For Chum, channel width (S_w) was substituted with mean annual flow (S_f), and is calculated as:

$$IP = \sqrt[3]{S_g * S_f * S_c}$$

Here, S_g, S_w, S_f, and S_c represent the normalized suitability scores (ranging from 0 to 1) for each attribute, and the cube root ($\sqrt[3]{}$) accounts for the three attributes per species. Using a geometric mean is valuable because it reflects the multiplicative nature of habitat suitability, where the overall quality depends on the combined effect of all attributes. Unlike the arithmetic mean, which could average out a low score and overestimate habitat potential, the geometric mean ensures that a limiting factor (e.g., narrow channel width for Steelhead/Coho/Chinook or inadequate flow for Chum) reduces the IP score proportionally, aligning with ecological principles. This methodology enhances prioritization accuracy by identifying reaches where all relevant attributes support spawning, making it a critical tool for prioritizing barrier removal efforts.

Habitat Screens

To further refine our assessment, we implemented additional habitat screens as binary filters within the model. Specifically, any stream reach classified as tidal in the NHDPlus dataset was excluded, as tidal environments generally do not support salmonid spawning. Additionally, reaches located upstream of Washington Department of Fish and Wildlife (WDFW)-verified complete natural barriers, such as impassable waterfalls or cascades, were also assigned an IP score of zero. We applied these exclusions on a species-specific basis, recognizing that certain barriers may only restrict the passage of particular salmonids. By systematically removing reaches that are either ecologically unsuitable (tidal) or physically inaccessible (above complete barriers), these habitat screens enhance the accuracy of data supporting the prioritization process.

Application to Barrier Removal Prioritization

The final IP scores for steelhead, Coho, fall-run Chinook, and Chum (Figure 2, panels A – D), reviewed by WDFW staff, integrate with the barrier removal framework by highlighting the most favorable spawning habitats (e.g., IP > 0.7) and optimizing strategies for species recovery. Limitations, such as the use of non-local Chum analyses and potential variability in barrier verification, suggest ongoing local surveys and field validation could enhance accuracy. Our approach ensures that management efforts and restoration resources are directed toward stream segments that offer realistic opportunities for spawning, thereby increasing the efficacy of barrier removal and cost-effective habitat enhancement initiatives.

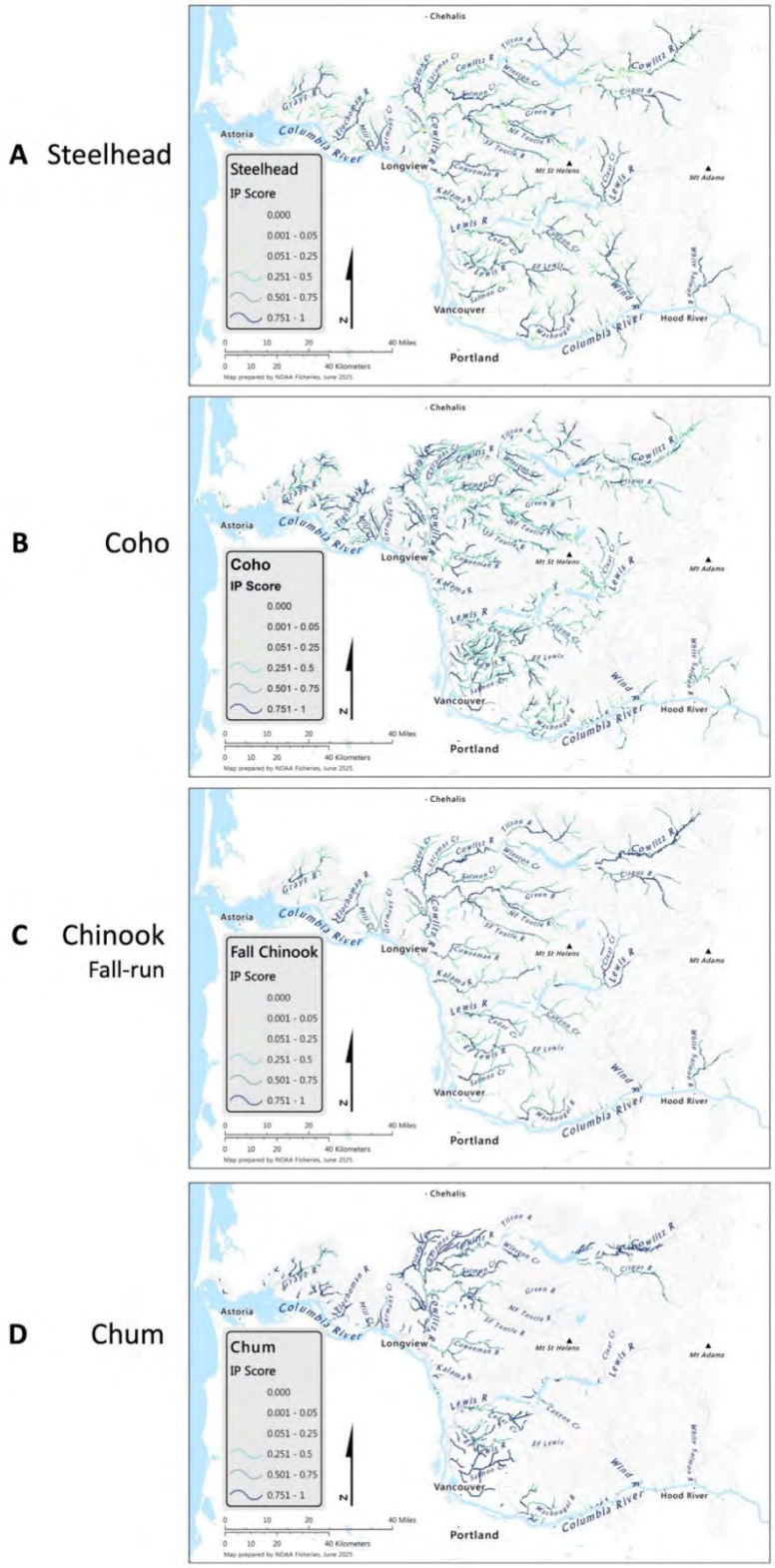

Figure 3**. Intrinsic Potential Scores.** Final IP scores for steelhead, Coho, fall-run Chinook, and Chum. Results exclude NHD reaches classified as tidal and areas above complete natural barriers (WDFW).

References

Agrawal, A., Schick, R. S., Bjorkstedt, E. P., Szerlong, R. G., Goslin, M. N., Spence, B. C. Williams, T. H., & Burnett, K. M. (2005). Predicting the potential for historical coho, Chinook, and steelhead habitat in Northern California. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-SWFSC-379.

Burnett, K. M., Reeves, G. H., Miller, D. J., Clarke, S., Vance-Borland, K., & Christiansen, K. (2007). Distribution of salmon-habitat potential relative to landscape characteristics and implications for conservation. Ecological Applications, 17(1), 66–80. https://doi.org/10.1890/05-1761

Busch, D. S., Sheer, M., Burnett, K., McElhany, P., & Cooney, T. (2013). Landscape-level model to predict spawning habitat for Lower Columbia River fall Chinook salmon (Oncorhynchus tshawytscha). River Research and Applications, 29(3), 297–312. https://doi.org/10.1002/rra.1597

Macfarlane, W. W., Wheaton, J. M., Bouwes, N., Jensen, M., Gilbert, J., Hough-Snee, N., & Shivik, J. (2017). Modeling the capacity of riverscapes to support beaver dams. Geomorphology, 277, 72–99. https://doi.org/10.1016/j.geomorph.2015.11.019

Moore, R.B., McKay, L.D., Rea, A.H., Bondelid, T.R., Price, C.V., Dewald, T.G., and Johnston, C.M., 2019, User's guide for the national hydrography dataset plus (NHDPlus) high resolution: U.S. Geological Survey Open-File Report 2019– 1096, 66 p., https://doi.org/10.3133/ofr20191096.

Reiser, D. W., & Bjornn, T. C. (1979). Influence of forest and rangeland management on anadromous fish habitat in Western North America: Habitat requirements of anadromous salmonids. General Technical Report PN)(W-GTR-096. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, 1–54.

Romey, B. T. (2018). Modeling spawning habitat potential for chum (Oncorhynchus keta) and pink salmon (O. gorbuscha) in relation to landscape characteristics in coastal Southeast Alaska [Doctoral dissertation, Portland State University]. Dissertations and Theses, Paper 4252. https://doi.org/10.15760/etd.6136

Rosenfeld, J. S., Beecher, H., & Ptolemy, R. (2016). Developing bioenergetic-based habitat suitability curves to improve the biological accuracy of instream flow models. North American Journal of Fisheries Management, 36(5), 1205–1219. https://doi.org/10.1080/02755947.2016.1206642

Rosenfeld, J. S., Porter, M., & Parkinson, E. (2000). Habitat factors affecting the abundance and distribution of juvenile cutthroat trout (Oncorhynchus clarki) and coho salmon (Oncorhynchus kisutch). Canadian Journal of Fisheries and Aquatic Sciences, 57(4), 766–774. https://doi.org/10.1139/f00-013

Williams, T. H., Bjorkstedt, E. P., Duffy, W., Hillemeier, D., Kautsky, G., Lisle, T. E., McCain, M., & Rode, M. (2006). Population structure of threatened coho salmon in the Southern Oregon/Northern California Coast Evolutionarily Significant Unit. U.S. Department of Commerce, NOAA Technical Memorandum NOAA-TM-NMFS-SWFSC-390.

Appendix B – Decision-Support Prioritization Model Documentation

DECISION SUPPORT TOOL DOCUMENTATION

FISH BARRIER REMOVAL PRIORITIZATION TOOL

Prepared for: Lower Columbia Estuary Partnership

Project No. AS220100 ○ May 20, 2025

VERSION 1.0

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1 Tool Background and Overview

The Lower Columbia region of Washington state contains approximately 3,200 miles of anadromous streams that provide essential habitat for several threatened and endangered salmonid populations. Fish access to this habitat is limited due to the presence of anthropogenic flow structures, such as dams and culverts. Approximately 2,600 such features have been mapped to date along anadromous streams and of these, approximately 1,025 have been determined to be fish passage barriers. Partners throughout the basin are working to remove or replace fish passage barriers to improve habitat access. With so many features and limited resources, stakeholders in the area need a system to centralize feature locations, track the status of barriers, and prioritize potential barriers for awarding correction funding.

In partnership with the Lower Columbia Fish Recovery Board and the Lower Columbia Estuary Partnership (LCEP), Aspect Consulting, a Geosyntec company (Aspect), developed the Lower Columbia Barrier Inventory and Decision Support Tool. This geospatial tool includes a comprehensive, up-to-date geodatabase of fish passage features in the region and a Geographic Information System-based (GIS) fish barrier removal prioritization model. The model evaluates fish passage barriers in the geodatabase inventory (covering Washington's Water Resource Inventory Areas [WRIAs] 24-29a), assigning a numerical prioritization ranking score based on biological characteristics. The specific metrics evaluated in the model and their associated scoring rules are summarized in Table 1. Using ArcGIS ModelBuilder and a basin-wide geometric flow network, this tool evaluates salmon-specific biological conditions surrounding each barrier. This creates an apples-to-apples comparison between barriers, giving regional stakeholders a common language to discuss priority barriers.

This documentation includes input data requirements, directions for each custom toolbox, and details the associated workflows to maintain the Lower Columbia Barrier Inventory and Decision Support Tool. The internal components of the Decision Support Tool (Barrier Prioritization file geodatabase, Barrier Prioritization ArcGIS Geoprocessing Toolbox, and Fish Barrier Scoring Spreadsheet) are described in the following sections. As more barriers are addressed and new input datasets become available, the toolboxes and scoring spreadsheet are used to reevaluate barrier prioritization.

2 Data Input and Preparation

All input data for the Decision Support Tool is stored within the Barrier Prioritization file geodatabase. Taking advantage of the stream-based nature of fish habitat requirements, the analysis calculations performed within the toolboxes rely on a trace network. The trace network is built as an ArcGIS Trace Network, creating a spatial relationship between barriers and streams based on stream flow direction. Through this network, spatial analysis calculations use input datasets to evaluate the biological conditions surrounding each barrier. The following section describes the input datasets, software requirements, and key assumptions used in the Decision Support Tool.

2.1 Data Requirements

Before executing the Barrier Prioritization ArcGIS Geoprocessing Toolbox, input data needs to be prepared in order to produce acceptably accurate and precise results. Where possible, data cleanup steps are included as model steps (see section 3.1). Due to the variability in input datasets, modifications may be needed for these cleanup model steps, and some manual modifications to input data may be necessary as updated data becomes available. The data input and preparation steps are only required to be run when new data is updated or introduced.

All input data needs to be organized in an ArcGIS file geodatabase with required feature datasets, naming conventions, and field names. **Failure to do so will generate model run errors.** Each project area (WRIAs 27, 28, 29 and WRIAs 24, 25, 26) have their own geodatabase, all of which follow the same structure. Figure 1 below highlights the WAECY WRIAs included for each project area.

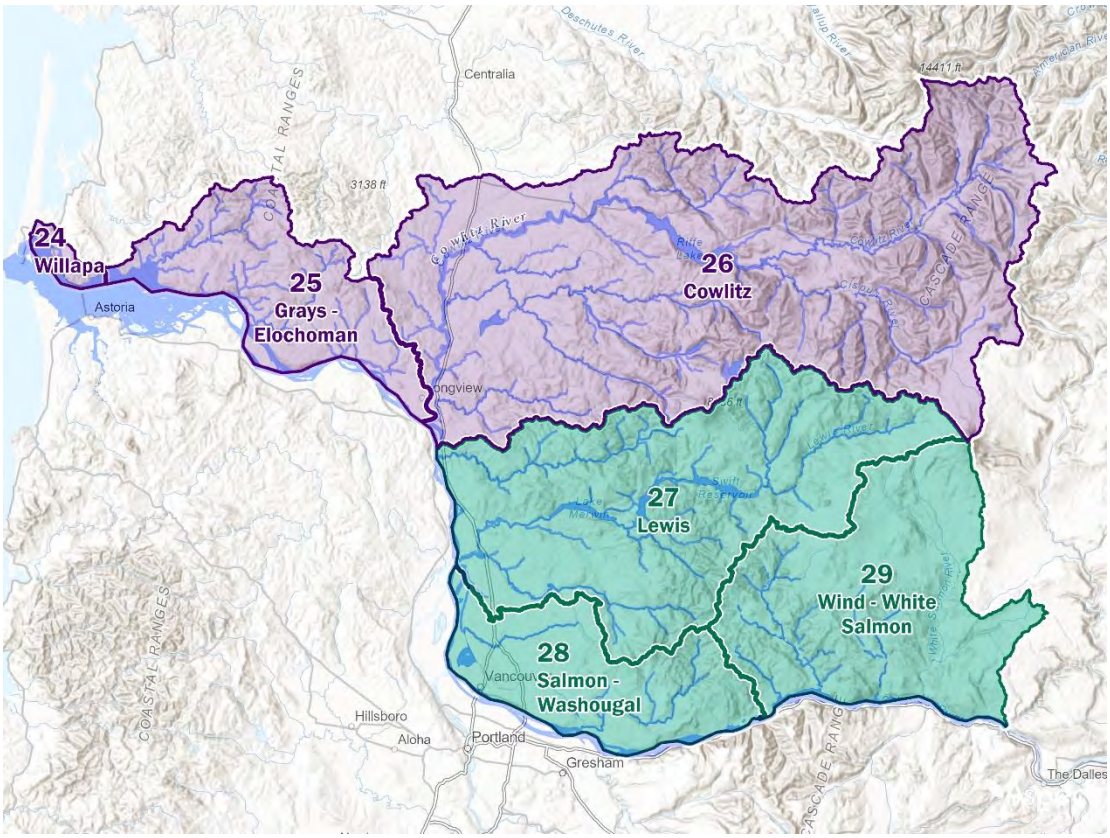

Figure 1. *WRIA Database Boundaries*

The geodatabase structure includes two feature datasets, addressed below and on Figure 2.

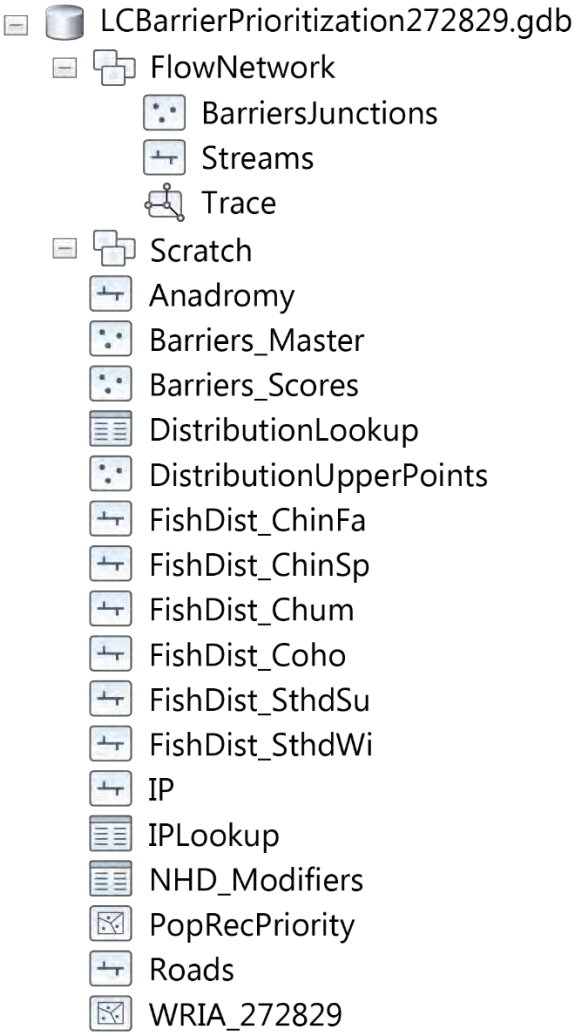

Figure 2: Barrier Prioritization File Geodatabase Structure

NOTE: All input datasets need to be projected in North American Datum of 1983 (NAD83) State Plane South, U.S. Feet. National Hydrography Dataset (NHD) lines are the priority locations, and all other datasets should be snapped to NHD. The Anadromy field was manually calculated and should be updated when new features are added. Stream line-based datasets (NHD, intrinsic potential [IP], Fish Distribution, Intrinsic Potential) need to have their geometries split at each barrier intersection, using a search distance of at least 100 feet to account for imperfections in the alignment of these datasets with NHD. Tools in section 3 noted with "00" numbering are included to help with this geometry requirement where datasets match existing input structures.

The tools, scripts, and geodatabases need to follow a designated folder structure in order to predict the location of necessary datasets. The main folder may be saved anywhere appropriate for the client, and the tools will know the appropriate relative pathways to follow to operate accordingly. See Figure 3 for this folder structure.

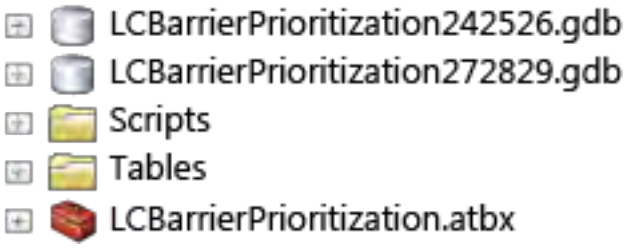

Figure 3: Barrier Prioritization Folder Structure

2.2 Required Licenses

The Barrier Prioritization Toolbox requires:

- Environmental Systems Research Institute (ESRI) ArcGIS Pro 3.2.2 Standard (Editor) License (or better)
- Spatial Analyst Extension to complete the necessary analysis steps

2.3 Key Assumptions

- Barriers that are categorized as nonbarriers within Washington State Department of Fish and Wildlife (WDFW) database export, those that are assigned 100 percent passability, dams and natural barriers, or barriers that are not located on the anadromous stream network are assumed to not have projects and are removed from the analysis.
- Barriers from the Washington State Department of Natural Resources (WDNR) Road Maintenance and Abandonment Plan (RMAP) database, which were classified as barriers without a specified passability were assigned a passability, if possible, based on field notes, or else assumed to be 50 percent passable.
- Barrier locations may not be accurate and, when possible, were aligned with NHD stream lines to participate in model calculations. With the exception of minor edits, NHD stream lines were not modified for the purposes of this model development.

3 Geoprocessing Models

The Barrier Prioritization Toolbox contains ArcGIS Geoprocessing Models, Tools, and Scripts designed to prepare input datasets and populate data values for each barrier prioritization metric. This section outlines the model and tool contents in each toolbox, describes the inputs and outputs of each model, and provides comments specific to each step.

3.1 Barrier Prioritization Toolbox

The Barrier Prioritization Toolbox contains ModelBuilder models and script tools to perform the spatial analysis for barrier prioritization. The toolbox is organized in numerical order:

- Tools beginning with 00 are input data processing tools for some basic data cleanup needs. These tools are not inclusive of all data cleanup that needs to be completed before running the remaining tools, as not all data cleanup needs are predictable. See input data requirements in section 2.1. These tools only need to be run as new datasets become available and will need to be completed before running the remaining model steps. See figure 3 for toolbox structure.
- Many calculations rely on a Trace Network to trace up and down stream lines. Manual cleanup of "dirty areas" generated by the trace network creation may be necessary.
- Tools 01 through 08 perform the various analysis tasks as further described in this section below. Tools with multiple interim, but similar steps are denoted with a, b, etc.
- Script tools in the toolbox have no preceding number and are not run directly by the user. Instead, the ModelBuilder models themselves reference these script tools.

Figure 4 shows the layout of the toolbox, and the following subsections describe the input data requirements and analysis performed within each tool.

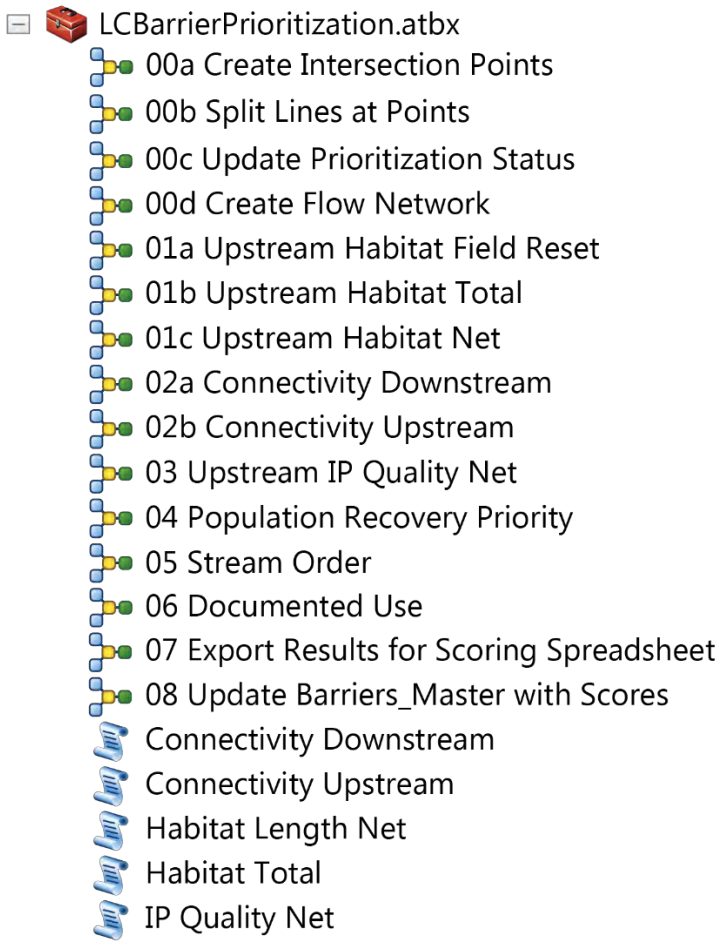

Figure 4: Barrier Prioritization Toolbox

3.1.1 00a Create Intersection Points

Overview: The Create Intersection Points Model creates a point at each barrier and at a 15-foot buffer from each barrier point along the stream lines. These points are used in the next tool to split stream and distribution data.

Input Datasets	Output
Master Barriers Streams	Geometry updates Intersections_Merge points

3.1.2 00b Split Lines at Points

Overview: The Split Lines at Points Model performs geometry updates on stream-based lines by splitting them at the Intersection Points. These updates allow the selections across trace operations to work correctly.

Input Datasets	Output
Intersection Points Master Barriers Streams Fish Distribution Layers Intrinsic Potential	Geometry updates only; no new data layers created

3.1.3 00c Update Prioritization Status

Overview: The Update Prioritization Category Model updates if a barrier is snapped to a stream line and assigns the analysis and scoring pathway for each barrier.

Input Datasets	Master Barrier Dataset Streams Anadromy
Master Barrier Dataset Fields Updated	NHD Prioritization Category
Categories	Prioritized (Culverts/Road Crossings, barrier status is yes or unknown)
	Not Prioritized (100% or NA passability) (100% passable, No Barrier status)
	Not Prioritized (Notable data gap) (barrier has a data flag)
	Not Prioritized (No stream line) (not on NHD stream line)
	Not Prioritized (Not on anadromy) (barrier is not on the anadromous stream network)
	Not Prioritized (Feature Type) (barrier type is dam or natural barrier)

3.1.4 00d Create Flow Network

Overview: The Create Flow Network Model takes the Barriers_Master dataset, exports the prioritized barriers as BarrierJunctions, then creates the Trace network using BarrierJunctions and Streams. This tool performs better when run from the ModelBuilder edit window rather than as a geoprocessing tool.

Input Datasets	Barriers_Master Streams
Output Datasets	BarrierJunctions Trace network

3.1.5 01 Upstream Habitat

Overview: The Upstream Habitat Models iterate through each barrier on anadromy, traces the upstream stream network to the end of hydrography, selects overlapping habitat data, and calculates the length. These models calculate values for one species at a time, a value selected by the user. Tools must be run in order in this collection. The habitat data source (Statewide Washington Integrated Fish Distribution [SWIFD] or Washington State Department of Fish and Wildlife Potential Occupancy [DFW PO]) for each species is determined by a lookup table in the geodatabase.

01a Upstream Habitat to Zero updates the habitat fields for a species to be zero where there is no upstream anadromy, and NULL where there is potential for upstream habitat. The remaining tools in this set run the trace only on barriers with a NULL value.

01b Upstream Habitat Total iterates through each barrier with a NULL habitat value, traces upstream, and selects the overlapping habitat to the end of distribution and populates that value into the master barrier database.

01c Upstream Habitat Net iterates through each barrier with a total upstream habitat value, traces upstream to the next low passable (0 percent or 33 percent) barrier, selects the overlapping habitat, and populates that value into the master barrier database.

Input Datasets	Master Barriers Streams Trace Network FishDist_*speciescode*
Input Species Code Options	SthdWi (Winter Steelhead) SthdSu (Summer Steelhead) ChinSp (Spring Chinook) ChinFa (Fall Chinook) Coho (Coho) Chum (Chum)
Script Tools	Habitat Length Total Habitat Length Net
Master Barriers Fields Calculated	*Species* Total Upstream Habitat Gain (miles [mi])
	Species Effective Upstream Habitat Gain (mi)
Comments	Data cleanup steps for splitting lines at barriers must be completed to avoid overestimating habitat. Distribution lines must be coincident with streamlines for accuracy. The best available data source for each species varies and can be overwritten by the user in the lookup table.

3.1.6 02 Connectivity

Overview: The Connectivity Models iterate through each barrier on anadromy, traces the flow network downstream or upstream, and populates the count, minimum passability, and compounded passability for all hydrologically connected anadromous barriers. The assumed passability for barriers denoted as unknown can be updated by the user. Models 02a and 02b perform the same functions on different trace directions.

Input Datasets	Master Barriers Streams Trace Network
Input Options	Unknown Passability Value (enter in 2 digit integer for assumed passability, if not 50%)
Script Tools	Connectivity Downstream Connectivity Upstream
Master Barriers Fields Calculated	*Direction* Barrier Count
	Direction Passability (Minimum %)
	Direction Passability (Compounded %)
Comments	Only barriers on anadromy are included.

3.1.7 03 Upstream IP Quality Net

Overview: The Upstream IP Quality Net Model iterates through each barrier with net upstream habitat (as determined by the 01c model) traces upstream to the next low passable (0 percent or 30 percent) barrier, selects the overlapping intrinsic potential, calculates the weighted average IP quality (by length) for the selected IP and populates that value into the master barrier database. The intrinsic potential quality field for each species is determined by a lookup table in the geodatabase.

Input Datasets	Master Barriers Streams Trace Network IP IPLookup
Input Species Code Options	SthdWi (Winter Steelhead) SthdSu (Summer Steelhead) ChinSp (Spring Chinook) ChinFa (Fall Chinook) Coho (Coho) Chum (Chum)
Script Tools	IP Quality Net
Master Barriers Fields Calculated	*Species* Habitat Quality
Comments	Data cleanup steps for splitting lines at barriers must be completed to avoid overestimating habitat. IP lines must be coincident with streamlines for accuracy. The IP distance upstream of a barrier may be different from the upstream habitat calculated in tool 01c. In these cases, the IP weighted average quality value is assumed to represent the entirety of the habitat quality upstream. At the time of this documentation, the IP layer is not split out by species run, so quality for each species was applied for every species run (i.e. IP for steelhead was used for both winter and summer steelhead habitat quality)

3.1.8 04 Population Recovery Priority

Overview: The Population Recovery Model creates a spatial join between prioritized barriers and population recovery priority basins, and populates the associated value by species.

Input Datasets	Master Barriers Population Recovery Priority
Master Barriers Fields Calculated	Winter Steelhead Population Recovery Priority
	Summer Steelhead Population Recovery Priority
	Spring Chinook Population Recovery Priority
	Fall Chinook Population Recovery Priority
	Coho Population Recovery Priority
	Chum Population Recovery Priority
Comments	Population Recovery Priority subbasin categories include: Primary, Stabilizing, Contributing, None.

3.1.9 05 Stream Order

Overview: The Stream Order Model creates a spatial join between barriers and stream lines, and populates the stream order field.

Input Datasets	Master Barriers Streams
Master Barriers Fields Calculated	Stream Order
Comments	Stream order values derived from NHD table documentation and are not inclusive of all stream lines.

3.1.10 06 Documented Use

Overview: The Documented Use Model creates a spatial join between prioritized barriers and SWIFD documented presence by species run, and populates the Boolean true/false designations for documented.

Input Datasets	Master Barriers SWIFD
Master Barriers Fields Calculated	Documented Use Winter Steelhead
	Documented Use Summer Steelhead
	Documented Use Spring Chinook
	Documented Use Fall Chinook
	Documented Use Coho
	Documented Use Chum
Comments	Documented use includes SWIFD designations of Documented, Presumed

3.1.11 07 Export Results for Scoring Spreadsheet

Overview: The Export Results for Scoring Spreadsheet model exports a spreadsheet of the prioritized barriers to be copied into the Scoring Spreadsheet. This tool must be run for each prioritization database (WRIAs 24, 25, 26 and WRIAs 27, 28, 29).

Input Datasets	Master Barriers
Output Dataset	Results spreadsheet excel file
Comments	Copy results from spreadsheet file (omitting ObjectID column) directly into the scoring spreadsheet GIS data raw tab. If barrier IDs have been added or removed, update the scoring spreadsheet Barrier_Scores list. Otherwise, overwrite the existing data in the GIS data raw tab.

3.1.12 08 Update Barriers_Master with Scores

Overview: The Update Barriers_Master with Scores model imports the scoring spreadsheet (see section 4.2) and joins the scoring fields to the analysis results, producing the Barrier Scores feature class.

Input Datasets	Scoring spreadsheet excel file
Output Dataset	Barrier Scores

Comments	Scoring spreadsheet must be updated with output from tool 07 before running this step.

4 Final Results and Products

The following sections describe the model outputs and how to use the barrier prioritization rankings.

4.1 Barrier Scores Feature Class

The Barrier Scores feature class contains the attributes calculated in the model steps described in section 3. This feature class serves as a summary of the biological conditions surrounding each barrier. The data calculated within this feature class is used within the scoring spreadsheet (see section 4.2) to calculate each barrier's priority ranking. The final scoring results are joined to this barrier feature class to produce an ArcGIS Online WebMap (hosted by LCEP) displaying barrier priority rankings and summary data.

4.2 Scoring Spreadsheet

Scoring of barriers provides a quantitative comparative ranking, converting the spatial analysis results via a set of scoring rules. Scoring rules are summarized in Table 1, and a detailed report on the scoring rules is in Attachment B. The scoring spreadsheet includes three tabs to store raw GIS data, organize the weighting and scoring rules, and calculate the final priority ranking of each barrier:

- **GISData_raw** is a copy of the Master Barrier Feature Class attribute table, filtered to prioritized barriers. This is created by running the 07 Export Results for Scoring Spreadsheet model. This tab is used as reference for the Barrier Scores tab.
    - **NOTE:** If the order of the column attributes changes, corresponding updates to the scoring formulas on the score tab will need to be made. The row (barrier) order does not matter; however, changes to the barrier IDs will need to be reflected in the Barrier Scores tab, as well.
- **Metric Weights Scoring Rules** contains the scoring rules and metric weightings. The tables within this tab are used in the Barrier Scores tab to calculate the scoring values.
- **Barrier Scores** calculates the scores for each metric, as well as the overall ranking for each species at each barrier. Each cell looks up the corresponding GIS data for each barrier and metric combination, then references the appropriate scoring table to define each metric score. Final prioritization scores are calculated per species using the weighting criteria. If a barrier has no habitat gain recorded for a species, the prioritization score is calculated to be 0.

4.3 How to Use Results

Barrier priority scores are for evaluation purposes only. The priority ranking system is designed to provide a quick reference for top-priority barriers. Individual barrier projects should be evaluated on a per-barrier basis and validated through field data. These preliminary barrier-priority rankings do not include metrics, such as cost or feasibility; rather, they are based solely on ecological characteristics for which reliable and representative data was available basin-wide. Barrier project determinations can and should be adjusted based on additional barrier information.

4.4 Troubleshooting

Common Issues and Fixes

Create Trace Network fails

- Occasionally, creating the trace network fails. Check that the feature dataset that will contain the network and all feature classes participating in the network are projected in NAD83 State Plane South, U.S. Feet. Be sure to run the tool from the ModelBuilder Edit window.
- Maintain a backup of your geodatabase as it is *before* creating the trace network. Deleting the trace network can cause corruption, and it is easier to delete and replace the geodatabase, verify geometry, and run the Create Trace Network tool again.

Dirty Areas in Trace Network

- Dirty Areas will show in the network as polygon areas, with further line error and point error feature classes that are made temporarily to show the error found. Refer to these tables for error descriptions.
- Repair Geometry can be run on Streams as a standalone geoprocessing tool if needed to attempt to clean dirty areas with many line errors. If this does not resolve all dirty areas, manual review and cleanup is likely needed.
- To review if dirty areas have been removed, save any edits you have made and then validate the trace network either via the Validate tool in the trace network ribbon, or in via the geoprocessing tool “validate trace network.”

Limitations

Work for this project was performed for Lower Columbia Estuary Partnership (Client), and this report was prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. This report does not represent a legal opinion. No other warranty, expressed or implied, is made.

All reports prepared by Aspect Consulting, a Geosyntec company, for the Client apply only to the services described in the Agreement(s) with the Client. Any use or reuse by any party other than the Client is at the sole risk of that party, and without liability to Aspect Consulting. Aspect Consulting's original files/reports shall govern in the event of any dispute regarding the content of electronic documents furnished to others.

TABLE

Table 1. Metrics and Scoring Rules

Project No. AS220100, Fish Barrier Removal Prioritization Tool

Metric	Scoring Rules
Effective Upstream Habitat Gain	
(weighting = 34%)	5 = >= 4 miles gained
	4 = >= 3 and < 4 miles gained
	3 = >= 2 and < 3 miles gained
	2 = >= 1 and < 2 miles gained
	1 = >= 0.001 and < 1 miles gained
	0 = 0 miles gained
Upstream Habitat Quality (IP)	
(weighting = 12%)	5 = IP Quality >= 0.67
	3 = IP Quality >= 0.33 and < 0.67
	1 = IP Quality >= 0.001 and < 0.33
	0 = IP Quality = 0
Stream Order	
	5 = stream order = >= 10
(weighting = 4.5%)	4 = stream order = >= 5 and < 10
	3 = stream order = >= 3 and < 5
	1 = stream order = >= 1 and < 3
	0 = no documented stream order
Population Recovery Priority	
(weighting = 9%)	3 = Primary
	2 = Stabilizing
	1 = Contributing
	0 = None
Barrier Severity (Passability)	
(weighting = 12%)	5 = 0% passability
	3 = 33% passability
	2 = 50% passability
	1 = 67% passability
Barrier Connectivity Count	
(weighting = 1.5%)	5 = 0 barrier
	4 = 1 barriers
	3 = 2 barriers
	2 = 3 barriers
	1 = 4 barriers
	0 = 5 or more barriers
Minimum Passability	
(weighting = 1.5%)	5 = minimim passability >= 67%
	4 = minimim passability >= 50% and < 67%
	2 = minimim passability >= 33% and < 50%
	1 = minimim passability >= 0% and < 33%
Cumulative Passability	
(weighting = 6%)	5 = cumulative passability >= 67%
	4 = cumulative passability >= 50% and < 67%
	2 = cumulative passability >= 33% and < 50%
	1 = cumulative passability >= 0% and < 33%

APPENDIX A

Acronyms

Acronyms

Aspect	Aspect Consulting, a Geosyntec company
BT	bull trout
ChinFa	Fall Chinook
ChinSP	Spring Chinook
Chum	Chum
Coho	Coho
DFW PO	Washington State Department of Fish and Wildlife Potential Occupancy dataset
ESRI	Environmental Systems Research Institute
GIS	Geographic Information System
HUC	Hydrologic Unit Code
IP	intrinsic potential
LCEP	Lower Columbia Estuary Partnership
NAD83	North American Datum of 1983
mi	miles
NHD	National Hydrography Dataset
NorWeST	Northwest stream temperature model dataset
RMAP	
SthdSu	Summer Steelhead
SthdWi	Winter Steelhead
SWIFD	Statewide Washington Integrated Fish Distribution
WDNR	Washington State Department of Natural Resources
WDFW	Washington State Department of Fish and Wildlife
WRIA	Water Resource Inventory Area

Appendix C – Decision-Support Prioritization Model Scores

The following sheets show the scoring results for each barrier feature that was scored in the decision- support prioritization model. The scores are sorted in descending order of the overall mean score for the six species.

Unique ID	Barrier Type	Average Score, all species	Winter Steelhead score	*Effective Upstream Habitat Gain SthdWi Score*	*Upstream Habitat Quality SthdWi Score*	Summer Steelhead score	*Effective Upstream Habitat Gain SthdSu Score*	*Upstream Habitat Quality SthdSu Score*	Spring Chinook score	*Effective Upstream Habitat Gain ChinSp Score*	*Upstream Habitat Quality ChinSp Score*	Fall Chinook score	*Effective Upstream Habitat Gain ChinFa Score*	*Upstream Habitat Quality ChinFa Score*	Coho score	*Effective Upstream Habitat Gain Coho Score*	*Upstream Habitat Quality Coho Score*	Chum score	*Effective Upstream Habitat Gain Chum Score*	*Upstream Habitat Quality Chum Score*	Barrier Severity Score
1350257	Culvert	**66.64**	**70.69**	*3*	*3*	**31.99**	*0*	*0*	***70.69***	*3*	*5*	***77.89***	*3*	*5*	***77.89***	*3*	*5*	***70.69***	*3.0*	*5*	4
602754	Culvert	**64.75**	**78.70**	*3*	*3*	**40.00**	*0*	*0*	***40.00***	*0*	*0*	***72.40***	*2*	*3*	***78.70***	*3*	*3*	***78.70***	*3.0*	*5*	5
107-046	Culvert	63.45	**35.00**	*5*	*4*	***33.50***	*0*	*0*	***86.60***	*5*	*5*	***86.60***	*5*	*5*	***61.40***	*5*	*0*	**77.60**	5.0	5	3
1350210	Culvert	**60.80**	**76.70**	*3*	*4*	**34.40**	*0*	*0*	***34.40***	*0*	*0*	***73.10***	*3*	*3*	***76.70***	*3*	*4*	***69.50***	*3.0*	*4*	3
992823	Culvert	**57.79**	**65.89**	*3*	*2*	**30.79**	*0*	*0*	***30.79***	*0*	*0*	***69.49***	*3*	*5*	***82.09***	*5*	*3*	***67.69***	*3.0*	*5*	4
106c0080	Culvert	**57.25**	**70.30**	*3*	*3*	**38.80**	*0*	*0*	***38.80***	*0*	*0*	***70.30***	*3*	*3*	***84.70***	*3*	*5*	***40.60***	*0.0*	*0*	5
106c0044	Culvert	**57.12**	**66.57**	*4*	*3*	**28.77**	*0*	*0*	***28.77***	*0*	*0*	***63.87***	*3*	*4*	***87.27***	*5*	*5*	***67.47***	*3.0*	*5*	3
1350256	Culvert	**55.82**	**67.22**	*3*	*3*	**28.52**	*0*	*0*	***63.62***	*3*	*4*	***70.82***	*3*	*4*	***74.42***	*3*	*5*	***30.32***	*0.0*	*0*	4
106w063	Culvert	**54.58**	**68.68**	*3*	*5*	**29.98**	*0*	*0*	***29.98***	*0*	*0*	***62.38***	*2*	*3*	***75.88***	*3*	*5*	***60.58***	*2.0*	*5*	4
26.0239 1.22	Culvert	**53.28**	**71.73**	*4*	*3*	**26.73**	*0*	*0*	***28.53***	*0*	*0*	***78.93***	*4*	*5*	***85.23***	*5*	*5*	***28.53***	*0.0*	*0*	4
106c0057	Culvert	**53.00**	**68.90**	*3*	*5*	**30.20**	*0*	*0*	***30.20***	*0*	*0*	***61.70***	*3*	*3*	***76.10***	*3*	*5*	***50.90***	*3.0*	*0*	4
UNKLCEP364	Other	51.00	**21.70**	*3*	*2*	***38.68***	*0*	*0*	***79.18***	*3*	*5*	***79.18***	*3*	*5*	***53.98***	*3*	*0*	**33.28**	0.0	0	5
421661	Culvert	**50.20**	**66.40**	*2*	*2*	**37.60**	*0*	*0*	***46.60***	*0*	*0*	***43.00***	*0*	*0*	***70.00***	*2*	*3*	***37.60***	*0.0*	*0*	5
106c0163	Culvert	**49.95**	**51.60**	*2*	*3*	**26.40**	*0*	*0*	***26.40***	*0*	*0*	***57.90***	*3*	*3*	***72.30***	*3*	*5*	***65.10***	*3.0*	*5*	3
992282	Culvert	**49.90**	**63.70**	*1*	*3*	**37.60**	*0*	*0*	***46.60***	*0*	*0*	***43.00***	*0*	*0*	***70.90***	*1*	*5*	***37.60***	*0.0*	*0*	5
700251	Culvert	**49.80**	**60.60**	*0*	*4*	**37.20**	*0*	*0*	***37.20***	*0*	*0*	***57.00***	*0*	*5*	***69.60***	*2*	*3*	***37.20***	*0.0*	*0*	5
421650	Culvert	**49.20**	**67.20**	*2*	*3*	**34.80**	*0*	*0*	***43.80***	*0*	*0*	***40.20***	*0*	*0*	***74.40***	*2*	*5*	***34.80***	*0.0*	*0*	4
601773	Culvert	**48.09**	**65.19**	*3*	*4*	**30.09**	*0*	*0*	***30.09***	*0*	*0*	***55.29***	*2*	*3*	***75.99***	*3*	*5*	***31.89***	*0.0*	*0*	5
UNKLCEP012	Tidegate	**48.08**	**70.43**	*3*	*4*	**28.13**	*0*	*0*	***28.13***	*0*	*0*	***63.23***	*3*	*4*	***70.43***	*3*	*4*	***28.13***	*0.0*	*0*	3
1350430	Culvert	**47.86**	**61.06**	*3*	*3*	**22.36**	*0*	*0*	***53.86***	*3*	*3*	***61.06***	*3*	*3*	***64.66***	*3*	*4*	***24.16***	*0.0*	*0*	4
980921	Culvert	**47.40**	**57.30**	*1*	*2*	**34.80**	*0*	*0*	***43.80***	*0*	*0*	***40.20***	*0*	*0*	***73.50***	*3*	*3*	***34.80***	*0.0*	*0*	4
106c0605	Culvert	**46.95**	**45.90**	*0*	*0*	**36.90**	*0*	*0*	***38.70***	*0*	*0*	***45.90***	*0*	*0*	***75.60***	*3*	*3*	***38.70***	*0.0*	*0*	5
1350258	Culvert	**46.94**	**61.04**	*2*	*5*	**21.44**	*0*	*0*	***53.84***	*2*	*5*	***61.04***	*2*	*5*	***61.04***	*2*	*5*	***23.24***	*0.0*	*0*	1
106c0067	Culvert	**46.93**	**54.73**	*2*	*3*	**29.53**	*0*	*0*	***29.53***	*0*	*0*	***31.33***	*0*	*0*	***68.23***	*3*	*3*	***68.23***	*3.0*	*5*	4
991388	Culvert	**46.75**	**47.05**	*0*	*0*	**38.05**	*0*	*0*	***38.05***	*0*	*0*	***39.85***	*0*	*0*	***66.85***	*2*	*2*	***50.65***	*2.0*	*0*	5
931560	Tidegate	**46.42**	**41.47**	*0*	*0*	**32.47**	*0*	*0*	***32.47***	*0*	*0*	***34.27***	*0*	*0*	***74.77***	*3*	*4*	***63.07***	*2.0*	*5*	5
931098	Culvert	**46.34**	**58.34**	*2*	*1*	**33.14**	*0*	*0*	***42.14***	*0*	*0*	***38.54***	*0*	*0*	***72.74***	*2*	*5*	***33.14***	*0.0*	*0*	5
609947	Tidegate	**46.25**	**46.40**	*0*	*0*	**37.40**	*0*	*0*	***37.40***	*0*	*0*	***39.20***	*0*	*0*	***79.70***	*3*	*4*	***37.40***	*0.0*	*0*	5
1350409	Culvert	**46.23**	**66.03**	*3*	*2*	**30.93**	*0*	*0*	***30.93***	*0*	*0*	***56.13***	*2*	*1*	***62.43***	*3*	*3*	***30.93***	*0.0*	*0*	3
421762	Culvert	**46.20**	**56.40**	*2*	*0*	**34.80**	*0*	*0*	***43.80***	*0*	*0*	***40.20***	*0*	*0*	***67.20***	*2*	*3*	***34.80***	*0.0*	*0*	4
UNKLCEP070	Tidegate	**45.83**	**33.68**	*0*	*0*	**31.88**	*0*	*0*	***31.88***	*0*	*0*	***40.88***	*0*	*0*	***74.18***	*3*	*4*	***62.48***	*2.0*	*5*	5
934499	Tidegate	**45.75**	**40.35**	*0*	*0*	**31.35**	*0*	*0*	***31.35***	*0*	*0*	***62.85***	*3*	*3*	***77.25***	*3*	*5*	***31.35***	*0.0*	*0*	5
921263	Culvert	45.70	**14.70**	*2*	*3*	***48.30***	*0*	*0*	***39.30***	*0*	*0*	***78.90***	*2*	*5*	***53.70***	*2*	*0*	**39.30**	0.0	0	5
421706	Culvert	**45.48**	**32.58**	*0*	*0*	**30.78**	*0*	*0*	***30.78***	*0*	*0*	***32.58***	*0*	*0*	***76.68***	*3*	*5*	***69.48***	*3.0*	*5*	5
422226	Culvert	**45.45**	**32.55**	*0*	*0*	**30.75**	*0*	*0*	***30.75***	*0*	*0*	***32.55***	*0*	*0*	***76.65***	*3*	*5*	***69.45***	*3.0*	*5*	3
UNKLCEP185	Other	**45.30**	**40.35**	*0*	*0*	**31.35**	*0*	*0*	***31.35***	*0*	*0*	***70.95***	*2*	*5*	***66.45***	*3*	*4*	***31.35***	*0.0*	*0*	5
106c0121	Culvert	**45.05**	**46.40**	*0*	*0*	**37.40**	*0*	*0*	***37.40***	*0*	*0*	***46.40***	*0*	*0*	***63.50***	*1*	*3*	***39.20***	*0.0*	*0*	5
1080203	Culvert	**45.00**	**39.60**	*0*	*0*	**30.60**	*0*	*0*	***30.60***	*0*	*0*	***32.40***	*0*	*0*	***69.30***	*3*	*3*	***67.50***	*3.0*	*5*	5
UNKLCEP044	Tidegate	**44.80**	**45.55**	*0*	*0*	**36.55**	*0*	*0*	***36.55***	*0*	*0*	***38.35***	*0*	*0*	***75.25***	*3*	*3*	***36.55***	*0.0*	*0*	5
106c0096	Culvert	**44.80**	**46.30**	*0*	*0*	**37.30**	*0*	*0*	***37.30***	*0*	*0*	***46.30***	*0*	*0*	***56.20***	*1*	*1*	***45.40***	*1.0*	*0*	5
106c0188	Culvert	**44.73**	**43.68**	*0*	*0*	**34.68**	*0*	*0*	***36.48***	*0*	*0*	***43.68***	*0*	*0*	***73.38***	*3*	*3*	***36.48***	*0.0*	*0*	5
1320549	Culvert	**44.55**	**45.60**	*0*	*0*	**36.60**	*0*	*0*	***38.40***	*0*	*0*	***45.60***	*0*	*0*	***62.70***	*1*	*3*	***38.40***	*0.0*	*0*	5
106c0084	Culvert	**44.45**	**38.90**	*0*	*0*	**37.10**	*0*	*0*	***37.10***	*0*	*0*	***38.90***	*0*	*0*	***75.80***	*3*	*3*	***38.90***	*0.0*	*0*	5
700249	Culvert	**44.36**	**64.31**	*3*	*3*	**25.61**	*0*	*0*	***25.61***	*0*	*0*	***57.11***	*3*	*3*	***67.91***	*3*	*4*	***25.61***	*0.0*	*0*	3
UNKLCEP310	Culvert	**44.30**	**57.95**	*3*	*3*	**26.45**	*0*	*0*	***26.45***	*0*	*0*	***57.95***	*3*	*3*	***68.75***	*3*	*4*	***28.25***	*0.0*	*0*	3
609955	Culvert	**44.18**	**39.23**	*0*	*0*	**30.23**	*0*	*0*	***30.23***	*0*	*0*	***32.03***	*0*	*0*	***66.23***	*2*	*4*	***67.13***	*3.0*	*5*	4
609957	Culvert	**44.05**	**45.85**	*0*	*0*	**36.85**	*0*	*0*	***36.85***	*0*	*0*	***38.65***	*0*	*0*	***69.25***	*2*	*3*	***36.85***	*0.0*	*0*	5
106w054	Culvert	**44.00**	**39.20**	*0*	*0*	**37.40**	*0*	*0*	***37.40***	*0*	*0*	***46.40***	*0*	*0*	***66.20***	*2*	*2*	***37.40***	*0.0*	*0*	5
UnknownFS81	Culvert	43.87	**1.40**	*0*	*0*	***43.00***	*0*	*0*	***76.30***	*3*	*3*	***46.60***	*0*	*0*	***58.30***	*3*	*0*	**37.60**	0.0	0	5
UNKLCEP023	Tidegate	**43.80**	**45.60**	*0*	*0*	**36.60**	*0*	*0*	***36.60***	*0*	*0*	***38.40***	*0*	*0*	***69.00***	*2*	*3*	***36.60***	*0.0*	*0*	5
992818	Culvert	**43.75**	**45.55**	*0*	*0*	**36.55**	*0*	*0*	***36.55***	*0*	*0*	***38.35***	*0*	*0*	***68.95***	*2*	*3*	***36.55***	*0.0*	*0*	5
981158	Culvert	**43.50**	**38.40**	*0*	*0*	**36.60**	*0*	*0*	***42.00***	*0*	*0*	***42.00***	*0*	*0*	***65.40***	*2*	*3*	***36.60***	*0.0*	*0*	5
981229	Culvert	**43.40**	**43.10**	*0*	*0*	**34.10**	*0*	*0*	***43.10***	*0*	*0*	***39.50***	*0*	*0*	***66.50***	*2*	*3*	***34.10***	*0.0*	*0*	4
990401	Culvert	**43.40**	**43.10**	*0*	*0*	**34.10**	*0*	*0*	***43.10***	*0*	*0*	***39.50***	*0*	*0*	***66.50***	*2*	*3*	***34.10***	*0.0*	*0*	4
1350240	Culvert	**43.40**	**38.90**	*0*	*0*	**37.10**	*0*	*0*	***37.10***	*0*	*0*	***38.90***	*0*	*0*	***69.50***	*2*	*3*	***38.90***	*0.0*	*0*	5
132191698B	Culvert	**43.40**	**38.90**	*0*	*0*	**37.10**	*0*	*0*	***37.10***	*0*	*0*	***38.90***	*0*	*0*	***69.50***	*2*	*3*	***38.90***	*0.0*	*0*	5
700149	Culvert	**43.35**	**37.20**	*0*	*0*	**35.40**	*0*	*0*	***35.40***	*0*	*0*	***37.20***	*0*	*0*	***77.70***	*3*	*4*	***37.20***	*0.0*	*0*	5
421575	Culvert	**43.25**	**53.60**	*2*	*2*	**32.00**	*0*	*0*	***37.40***	*0*	*0*	***37.40***	*0*	*0*	***67.10***	*3*	*3*	***32.00***	*0.0*	*0*	3
609948	Tidegate	**43.25**	**45.05**	*0*	*0*	**36.05**	*0*	*0*	***36.05***	*0*	*0*	***37.85***	*0*	*0*	***68.45***	*2*	*3*	***36.05***	*0.0*	*0*	5
935429	Other	43.23	**34.30**	*5*	*4*	***21.80***	*0*	*0*	***21.80***	*0*	*0*	***76.70***	*5*	*5*	***58.70***	*5*	*0*	**46.10**	1.0	5	1
106c0026	Culvert	**43.15**	**44.95**	*0*	*0*	**35.95**	*0*	*0*	***35.95***	*0*	*0*	***44.95***	*0*	*0*	***61.15***	*2*	*3*	***35.95***	*0.0*	*0*	5
106c0099	Culvert	**43.05**	**39.30**	*0*	*0*	**30.30**	*0*	*0*	***30.30***	*0*	*0*	***39.30***	*0*	*0*	***62.70***	*2*	*3*	***56.40***	*1.0*	*5*	4
1320396	Culvert	**42.99**	**36.69**	*0*	*0*	**27.69**	*0*	*0*	***29.49***	*0*	*0*	***36.69***	*0*	*0*	***67.29***	*2*	*5*	***60.09***	*2.0*	*5*	4
990120	Culvert	42.82	**1.40**	*0*	*0*	***43.00***	*0*	*0*	***76.30***	*3*	*3*	***46.60***	*0*	*0*	***52.00***	*2*	*0*	**37.60**	0.0	0	5
1350182	Culvert	**42.77**	**35.87**	*0*	*0*	**26.87**	*0*	*0*	***26.87***	*0*	*0*	***35.87***	*0*	*0*	***65.57***	*3*	*3*	***65.57***	*3.0*	*5*	3
106w043	Culvert	**42.70**	**37.30**	*0*	*0*	**35.50**	*0*	*0*	***35.50***	*0*	*0*	***44.50***	*0*	*0*	***67.90***	*2*	*3*	***35.50***	*0.0*	*0*	5
421590	Culvert	**42.65**	**50.60**	*1*	*1*	**31.70**	*0*	*0*	***40.70***	*0*	*0*	***37.10***	*0*	*0*	***64.10***	*2*	*3*	***31.70***	*0.0*	*0*	3
UNKLCEP007	Tidegate	**42.63**	**43.38**	*0*	*0*	**34.38**	*0*	*0*	***34.38***	*0*	*0*	***36.18***	*0*	*0*	***73.08***	*3*	*3*	***34.38***	*0.0*	*0*	5
602232	Culvert	**42.55**	**36.40**	*0*	*0*	**34.60**	*0*	*0*	***34.60***	*0*	*0*	***36.40***	*0*	*0*	***76.90***	*3*	*4*	***36.40***	*0.0*	*0*	4

Unique ID	Barrier Type	Average Score, all species	Winter Steelhead score	*Effective Upstream Habitat Gain SthdWi Score*	*Upstream Habitat Quality SthdWi Score*	Summer Steelhead score	*Effective Upstream Habitat Gain SthdSu Score*	*Upstream Habitat Quality SthdSu Score*	Spring Chinook score	*Effective Upstream Habitat Gain ChinSp Score*	*Upstream Habitat Quality ChinSp Score*	Fall Chinook score	*Effective Upstream Habitat Gain ChinFa Score*	*Upstream Habitat Quality ChinFa Score*	Coho score	*Effective Upstream Habitat Gain Coho Score*	*Upstream Habitat Quality Coho Score*	Chum score	*Effective Upstream Habitat Gain Chum Score*	*Upstream Habitat Quality Chum Score*	Barrier Severity Score
992231	Culvert	**42.50**	**54.50**	*1*	*2*	**32.00**	*0*	*0*	***41.00***	*0*	*0*	***37.40***	*0*	*0*	***58.10***	*1*	*3*	***32.00***	*0.0*	*0*	4
421579	Culvert	**42.45**	**38.40**	*0*	*0*	**36.60**	*0*	*0*	***42.00***	*0*	*0*	***42.00***	*0*	*0*	***59.10***	*1*	*3*	***36.60***	*0.0*	*0*	5
992802	Culvert	**42.30**	**41.70**	*0*	*0*	**32.70**	*0*	*0*	***34.50***	*0*	*0*	***41.70***	*0*	*0*	***68.70***	*2*	*4*	***34.50***	*0.0*	*0*	5
106w006	Culvert	**42.10**	**38.95**	*0*	*0*	**37.15**	*0*	*0*	***37.15***	*0*	*0*	***46.15***	*0*	*0*	***56.05***	*1*	*1*	***37.15***	*0.0*	*0*	5
602871	Culvert	**42.05**	**35.90**	*0*	*0*	**34.10**	*0*	*0*	***34.10***	*0*	*0*	***35.90***	*0*	*0*	***76.40***	*3*	*4*	***35.90***	*0.0*	*0*	4
1650002	Tidegate	**42.00**	**45.60**	*0*	*0*	**36.60**	*0*	*0*	***36.60***	*0*	*0*	***38.40***	*0*	*0*	***58.20***	*2*	*0*	***36.60***	*0.0*	*0*	5
422105	Culvert	**41.98**	**35.83**	*0*	*0*	**34.03**	*0*	*0*	***34.03***	*0*	*0*	***35.83***	*0*	*0*	***76.33***	*3*	*4*	***35.83***	*0.0*	*0*	5
1659002	Culvert	**41.80**	**43.60**	*0*	*0*	**34.60**	*0*	*0*	***34.60***	*0*	*0*	***36.40***	*0*	*0*	***67.00***	*2*	*3*	***34.60***	*0.0*	*0*	4
106w024	Culvert	**41.80**	**36.40**	*0*	*0*	**34.60**	*0*	*0*	***34.60***	*0*	*0*	***43.60***	*0*	*0*	***67.00***	*2*	*3*	***34.60***	*0.0*	*0*	4
106c0504	Culvert	**41.80**	**45.70**	*0*	*0*	**36.70**	*0*	*0*	***38.50***	*0*	*0*	***45.70***	*0*	*0*	***45.70***	*0*	*0*	***38.50***	*0.0*	*0*	5
700304	Culvert	**41.78**	**30.08**	*0*	*0*	**28.28**	*0*	*0*	***28.28***	*0*	*0*	***59.78***	*3*	*3*	***74.18***	*3*	*5*	***30.08***	*0.0*	*0*	4
990371	Tidegate	**41.70**	**45.30**	*0*	*0*	**36.30**	*0*	*0*	***36.30***	*0*	*0*	***38.10***	*0*	*0*	***57.90***	*2*	*0*	***36.30***	*0.0*	*0*	5
1651028	Tidegate	**41.70**	**45.30**	*0*	*0*	**36.30**	*0*	*0*	***36.30***	*0*	*0*	***38.10***	*0*	*0*	***57.90***	*2*	*0*	***36.30***	*0.0*	*0*	5
421473	Culvert	**41.60**	**35.90**	*0*	*0*	**34.10**	*0*	*0*	***39.50***	*0*	*0*	***39.50***	*0*	*0*	***66.50***	*2*	*4*	***34.10***	*0.0*	*0*	4
40001876	Culvert	**41.60**	**45.20**	*0*	*0*	**36.20**	*0*	*0*	***45.20***	*0*	*0*	***41.60***	*0*	*0*	***45.20***	*0*	*0*	***36.20***	*0.0*	*0*	5
700252	Culvert	**41.56**	**61.51**	*3*	*3*	**22.81**	*0*	*0*	***22.81***	*0*	*0*	***54.31***	*3*	*3*	***65.11***	*3*	*4*	***22.81***	*0.0*	*0*	3
1350164	Culvert	**41.55**	**43.05**	*0*	*0*	**34.05**	*0*	*0*	***34.05***	*0*	*0*	***43.05***	*0*	*0*	***59.25***	*2*	*1*	***35.85***	*0.0*	*0*	4
990321	Culvert	**41.53**	**60.73**	*2*	*5*	**21.13**	*0*	*0*	***22.93***	*0*	*0*	***60.73***	*2*	*5*	***60.73***	*2*	*5*	***22.93***	*0.0*	*0*	1
991359	Culvert	**41.50**	**46.15**	*0*	*0*	**37.15**	*0*	*0*	***37.15***	*0*	*0*	***38.95***	*0*	*0*	***52.45***	*1*	*0*	***37.15***	*0.0*	*0*	5
106c0124	Culvert	**41.50**	**45.70**	*0*	*0*	**36.70**	*0*	*0*	***36.70***	*0*	*0*	***45.70***	*0*	*0*	***45.70***	*0*	*0*	***38.50***	*0.0*	*0*	5
421039	Culvert	**41.50**	**36.40**	*0*	*0*	**34.60**	*0*	*0*	***34.60***	*0*	*0*	***36.40***	*0*	*0*	***70.60***	*2*	*4*	***36.40***	*0.0*	*0*	4
1350331	Culvert	41.47	**21.00**	*3*	*3*	***38.00***	*0*	*0*	***29.00***	*0*	*0*	***38.00***	*0*	*0*	***56.90***	*3*	*0*	65.90	3.0	5	4
UNKLCEP021	Tidegate	**41.40**	**45.00**	*0*	*0*	**36.00**	*0*	*0*	***36.00***	*0*	*0*	***37.80***	*0*	*0*	***57.60***	*2*	*0*	***36.00***	*0.0*	*0*	5
421874	Culvert	**41.35**	**35.20**	*0*	*0*	**33.40**	*0*	*0*	***33.40***	*0*	*0*	***35.20***	*0*	*0*	***75.70***	*3*	*4*	***35.20***	*0.0*	*0*	4
326328681	Culvert	**41.30**	**44.90**	*0*	*0*	**35.90**	*0*	*0*	***44.90***	*0*	*0*	***41.30***	*0*	*0*	***44.90***	*0*	*0*	***35.90***	*0.0*	*0*	5
421667	Culvert	**41.30**	**44.90**	*0*	*0*	**35.90**	*0*	*0*	***44.90***	*0*	*0*	***41.30***	*0*	*0*	***44.90***	*0*	*0*	***35.90***	*0.0*	*0*	5
UNKLCEP037	Tidegate	**41.28**	**43.08**	*0*	*0*	**34.08**	*0*	*0*	***34.08***	*0*	*0*	***35.88***	*0*	*0*	***66.48***	*2*	*3*	***34.08***	*0.0*	*0*	5
609776	Culvert	**41.28**	**43.08**	*0*	*0*	**34.08**	*0*	*0*	***34.08***	*0*	*0*	***35.88***	*0*	*0*	***66.48***	*2*	*3*	***34.08***	*0.0*	*0*	5
602980	Culvert	**41.21**	**56.51**	*3*	*2*	**21.41**	*0*	*0*	***21.41***	*0*	*0*	***56.51***	*3*	*4*	***70.01***	*4*	*4*	***21.41***	*0.0*	*0*	1
420849	Culvert	**41.10**	**35.55**	*0*	*0*	**33.75**	*0*	*0*	***33.75***	*0*	*0*	***35.55***	*0*	*0*	***72.45***	*3*	*3*	***35.55***	*0.0*	*0*	4
106c0174	Culvert	**41.05**	**43.15**	*1*	*2*	**27.85**	*0*	*0*	***27.85***	*0*	*0*	***56.65***	*2*	*4*	***61.15***	*1*	*5*	***29.65***	*0.0*	*0*	1
106c0838	Culvert	**41.00**	**44.90**	*0*	*0*	**35.90**	*0*	*0*	***37.70***	*0*	*0*	***44.90***	*0*	*0*	***44.90***	*0*	*0*	***37.70***	*0.0*	*0*	5
106c0245	Culvert	**41.00**	**45.20**	*0*	*0*	**36.20**	*0*	*0*	***36.20***	*0*	*0*	***45.20***	*0*	*0*	***45.20***	*0*	*0*	***38.00***	*0.0*	*0*	5
1107E08B	Culvert	**41.00**	**44.60**	*0*	*0*	**35.60**	*0*	*0*	***44.60***	*0*	*0*	***41.00***	*0*	*0*	***44.60***	*0*	*0*	***35.60***	*0.0*	*0*	5
993872	Culvert	**40.95**	**34.20**	*0*	*0*	**32.40**	*0*	*0*	***37.80***	*0*	*0*	***37.80***	*0*	*0*	***71.10***	*3*	*4*	***32.40***	*0.0*	*0*	5
1350242	Culvert	**40.95**	**44.85**	*0*	*0*	**35.85**	*0*	*0*	***37.65***	*0*	*0*	***44.85***	*0*	*0*	***44.85***	*0*	*0*	***37.65***	*0.0*	*0*	5
106c0151	Culvert	**40.90**	**45.10**	*0*	*0*	**36.10**	*0*	*0*	***36.10***	*0*	*0*	***45.10***	*0*	*0*	***45.10***	*0*	*0*	***37.90***	*0.0*	*0*	5
UNKLCEP016	Tidegate	**40.65**	**45.30**	*0*	*0*	**36.30**	*0*	*0*	***36.30***	*0*	*0*	***38.10***	*0*	*0*	***51.60***	*1*	*0*	***36.30***	*0.0*	*0*	5
UNKLCEP029	Tidegate	**40.65**	**45.30**	*0*	*0*	**36.30**	*0*	*0*	***36.30***	*0*	*0*	***38.10***	*0*	*0*	***51.60***	*1*	*0*	***36.30***	*0.0*	*0*	5
602978	Culvert	**40.65**	**45.30**	*0*	*0*	**36.30**	*0*	*0*	***36.30***	*0*	*0*	***38.10***	*0*	*0*	***51.60***	*1*	*0*	***36.30***	*0.0*	*0*	5
106c0133	Culvert	**40.65**	**44.85**	*0*	*0*	**35.85**	*0*	*0*	***35.85***	*0*	*0*	***44.85***	*0*	*0*	***44.85***	*0*	*0*	***37.65***	*0.0*	*0*	5
700303	Culvert	**40.63**	**49.03**	*3*	*2*	**21.13**	*0*	*0*	***21.13***	*0*	*0*	***56.23***	*3*	*4*	***73.33***	*4*	*5*	***22.93***	*0.0*	*0*	1
106c0483	Culvert	**40.60**	**40.00**	*0*	*0*	**31.00**	*0*	*0*	***32.80***	*0*	*0*	***40.00***	*0*	*0*	***67.00***	*2*	*4*	***32.80***	*0.0*	*0*	3
1659001	Culvert	**40.50**	**43.35**	*0*	*0*	**34.35**	*0*	*0*	***34.35***	*0*	*0*	***36.15***	*0*	*0*	***60.45***	*1*	*3*	***34.35***	*0.0*	*0*	4
LCEPNEW011	0	**40.43**	**61.43**	*3*	*3*	**22.73**	*0*	*0*	***22.73***	*0*	*0*	***47.93***	*2*	*3*	***65.03***	*3*	*4*	***22.73***	*0.0*	*0*	3
106w079	Culvert	**40.43**	**56.63**	*2*	*2*	**27.83**	*0*	*0*	***27.83***	*0*	*0*	***43.13***	*1*	*0*	***59.33***	*3*	*3*	***27.83***	*0.0*	*0*	3
602872	lon Culvert Xin	**40.40**	**29.30**	*0*	*0*	**27.50**	*0*	*0*	***27.50***	*0*	*0*	***55.40***	*3*	*2*	***73.40***	*3*	*5*	***29.30***	*0.0*	*0*	4
609773	Culvert	**40.35**	**45.00**	*0*	*0*	**36.00**	*0*	*0*	***36.00***	*0*	*0*	***37.80***	*0*	*0*	***51.30***	*1*	*0*	***36.00***	*0.0*	*0*	5
420839	Culvert	**40.35**	**35.85**	*0*	*0*	**34.05**	*0*	*0*	***34.05***	*0*	*0*	***35.85***	*0*	*0*	***66.45***	*2*	*3*	***35.85***	*0.0*	*0*	4
1080215	Culvert	**40.20**	**55.95**	*3*	*2*	**20.85**	*0*	*0*	***20.85***	*0*	*0*	***22.65***	*0*	*0*	***63.15***	*3*	*4*	***57.75***	*3.0*	*5*	3
992151	Culvert	**40.20**	**58.80**	*2*	*3*	**26.40**	*0*	*0*	***35.40***	*0*	*0*	***31.80***	*0*	*0*	***62.40***	*2*	*4*	***26.40***	*0.0*	*0*	1
421384	Culvert	**40.20**	**37.50**	*0*	*0*	**35.70**	*0*	*0*	***35.70***	*0*	*0*	***37.50***	*0*	*0*	***57.30***	*2*	*0*	***37.50***	*0.0*	*0*	5
602365	Culvert	40.13	**15.40**	*2*	*3*	***32.84***	*0*	*0*	***59.84***	*2*	*3*	***36.44***	*0*	*0*	***41.84***	*2*	*0*	**54.44**	2.0	4	4
UNKLCEP379	Culvert	40.00	**21.00**	*3*	*3*	***35.70***	*0*	*0*	***26.70***	*0*	*0*	***35.70***	*0*	*0*	***60.90***	*4*	*0*	**60.00**	3.0	4	3
602207	Culvert	**40.00**	**34.45**	*0*	*0*	**32.65**	*0*	*0*	***32.65***	*0*	*0*	***34.45***	*0*	*0*	***71.35***	*3*	*3*	***34.45***	*0.0*	*0*	4
106c0156	Culvert	**39.98**	**40.28**	*0*	*0*	**31.28**	*0*	*0*	***31.28***	*0*	*0*	***40.28***	*0*	*0*	***63.68***	*2*	*3*	***33.08***	*0.0*	*0*	5
27.0017 0.10	ishway, Culver	39.78	**21.00**	*3*	*3*	***42.45***	*0*	*0*	***35.25***	*0*	*0*	***52.35***	*1*	*3*	***54.15***	*3*	*0*	**33.45**	0.0	0	3
421871	Culvert	**39.70**	**35.20**	*0*	*0*	**33.40**	*0*	*0*	***33.40***	*0*	*0*	***35.20***	*0*	*0*	***65.80***	*2*	*3*	***35.20***	*0.0*	*0*	4
2009002	Tidegate	**39.57**	**39.72**	*0*	*0*	**30.72**	*0*	*0*	***30.72***	*0*	*0*	***32.52***	*0*	*0*	***73.02***	*3*	*4*	***30.72***	*0.0*	*0*	5
421124	Culvert	**39.53**	**35.78**	*0*	*0*	**33.98**	*0*	*0*	***33.98***	*0*	*0*	***35.78***	*0*	*0*	***61.88***	*3*	*0*	***35.78***	*0.0*	*0*	5
991399	Culvert	**39.50**	**35.90**	*0*	*0*	**34.10**	*0*	*0*	***34.10***	*0*	*0*	***43.10***	*0*	*0*	***55.70***	*2*	*0*	***34.10***	*0.0*	*0*	4
106w029	Culvert	**39.50**	**35.90**	*0*	*0*	**34.10**	*0*	*0*	***34.10***	*0*	*0*	***43.10***	*0*	*0*	***55.70***	*2*	*0*	***34.10***	*0.0*	*0*	4
990279	Culvert	**39.50**	**33.35**	*0*	*0*	**31.55**	*0*	*0*	***31.55***	*0*	*0*	***33.35***	*0*	*0*	***73.85***	*3*	*4*	***33.35***	*0.0*	*0*	5
999887	Culvert	**39.48**	**43.08**	*0*	*0*	**34.08**	*0*	*0*	***34.08***	*0*	*0*	***35.88***	*0*	*0*	***55.68***	*2*	*0*	***34.08***	*0.0*	*0*	5
106c0013	Culvert	**39.45**	**45.15**	*0*	*0*	**36.15**	*0*	*0*	***36.15***	*0*	*0*	***45.15***	*0*	*0*	***37.95***	*0*	*0*	***36.15***	*0.0*	*0*	5
609746	Culvert	**39.45**	**36.15**	*0*	*0*	**27.15**	*0*	*0*	***27.15***	*0*	*0*	***28.95***	*0*	*0*	***59.55***	*2*	*3*	***57.75***	*2.0*	*5*	1
609028	ishway, Culver	39.37	**1.40**	*0*	*0*	***68.20***	*2*	*3*	***48.40***	*2*	*0*	***37.60***	*0*	*0*	***44.80***	*0*	*0*	**35.80**	0.0	0	4
421259	Culvert	**39.35**	**35.90**	*0*	*0*	**34.10**	*0*	*0*	***34.10***	*0*	*0*	***35.90***	*0*	*0*	***60.20***	*1*	*3*	***35.90***	*0.0*	*0*	4
28.0295 0.10	Culvert	39.24	**2.10**	*0*	*0*	***31.19***	*0*	*0*	***31.19***	*0*	*0*	***56.39***	*2*	*3*	***52.79***	*2*	*0*	**61.79**	2.0	5	5
106c0166	Culvert	**39.24**	**22.44**	*0*	*0*	**20.64**	*0*	*0*	***20.64***	*0*	*0*	***45.84***	*2*	*3*	***66.54***	*3*	*5*	***59.34***	*3.0*	*5*	3

Unique ID	Barrier Type	Average Score, all species	Winter Steelhead score	*Effective Upstream Habitat Gain SthdWi Score*	*Upstream Habitat Quality SthdWi Score*	Summer Steelhead score	*Effective Upstream Habitat Gain SthdSu Score*	*Upstream Habitat Quality SthdSu Score*	Spring Chinook score	*Effective Upstream Habitat Gain ChinSp Score*	*Upstream Habitat Quality ChinSp Score*	Fall Chinook score	*Effective Upstream Habitat Gain ChinFa Score*	*Upstream Habitat Quality ChinFa Score*	Coho score	*Effective Upstream Habitat Gain Coho Score*	*Upstream Habitat Quality Coho Score*	Chum score	*Effective Upstream Habitat Gain Chum Score*	*Upstream Habitat Quality Chum Score*	Barrier Severity Score
1350387	Culvert	39.21	**20.30**	*3*	*3*	***44.25***	*0*	*0*	***35.25***	*0*	*0*	***44.25***	*0*	*0*	***55.95***	*3*	*0*	***35.25***	0.0	0	4
981143	Culvert	**39.20**	**38.00**	*0*	*0*	**36.20**	*0*	*0*	***41.60***	*0*	*0*	***41.60***	*0*	*0*	***41.60***	*0*	*0*	***36.20***	*0.0*	*0*	5
700063	Culvert	**39.20**	**32.60**	*0*	*0*	**30.80**	*0*	*0*	***30.80***	*0*	*0*	***32.60***	*0*	*0*	***63.20***	*2*	*3*	***45.20***	*2.0*	*0*	4
602220	Culvert	**39.05**	**35.60**	*0*	*0*	**33.80**	*0*	*0*	***33.80***	*0*	*0*	***35.60***	*0*	*0*	***59.90***	*1*	*3*	***35.60***	*0.0*	*0*	4
132142022	Culvert	**38.95**	**40.00**	*0*	*0*	**31.00**	*0*	*0*	***32.80***	*0*	*0*	***40.00***	*0*	*0*	***57.10***	*1*	*3*	***32.80***	*0.0*	*0*	4
421640	Culvert	**38.95**	**39.70**	*0*	*0*	**30.70**	*0*	*0*	***39.70***	*0*	*0*	***36.10***	*0*	*0*	***56.80***	*1*	*3*	***30.70***	*0.0*	*0*	3
990944	Culvert	**38.70**	**54.90**	*2*	*2*	**26.10**	*0*	*0*	***35.10***	*0*	*0*	***31.50***	*0*	*0*	***58.50***	*2*	*3*	***26.10***	*0.0*	*0*	5
602991	Culvert	**38.69**	**53.99**	*3*	*2*	**18.89**	*0*	*0*	***18.89***	*0*	*0*	***53.99***	*3*	*4*	***67.49***	*4*	*4*	***18.89***	*0.0*	*0*	1
106c0441	Culvert	**38.58**	**37.98**	*0*	*0*	**28.98**	*0*	*0*	***30.78***	*0*	*0*	***37.98***	*0*	*0*	***64.98***	*2*	*4*	***30.78***	*0.0*	*0*	3
602231	Culvert	**38.55**	**37.95**	*0*	*0*	**36.15**	*0*	*0*	***36.15***	*0*	*0*	***37.95***	*0*	*0*	***45.15***	*0*	*0*	***37.95***	*0.0*	*0*	5
106c0936	Culvert	**38.55**	**37.95**	*0*	*0*	**36.15**	*0*	*0*	***36.15***	*0*	*0*	***37.95***	*0*	*0*	***45.15***	*0*	*0*	***37.95***	*0.0*	*0*	5
40005783	Culvert	38.53	**1.40**	*0*	*0*	***37.68***	*0*	*0*	***41.28***	*0*	*0*	***41.28***	*0*	*0*	***46.68***	*2*	*0*	**62.88**	2.0	5	5
UNKLCEP057	Culvert	**38.50**	**40.30**	*0*	*0*	**31.30**	*0*	*0*	***31.30***	*0*	*0*	***33.10***	*0*	*0*	***63.70***	*2*	*3*	***31.30***	*0.0*	*0*	3
994157	Culvert	**38.50**	**32.80**	*0*	*0*	**31.00**	*0*	*0*	***36.40***	*0*	*0*	***36.40***	*0*	*0*	***63.40***	*2*	*4*	***31.00***	*0.0*	*0*	4
1350001	Culvert	38.50	**1.40**	*0*	*0*	***40.88***	*0*	*0*	***31.88***	*0*	*0*	***40.88***	*0*	*0*	***59.78***	*3*	*0*	**56.18**	1.0	5	5
106c0818	Culvert	**38.45**	**42.35**	*0*	*0*	**33.35**	*0*	*0*	***35.15***	*0*	*0*	***42.35***	*0*	*0*	***42.35***	*0*	*0*	***35.15***	*0.0*	*0*	4
1350384	Culvert	38.41	**14.00**	*2*	*3*	***44.55***	*0*	*0*	***35.55***	*0*	*0*	***44.55***	*0*	*0*	***56.25***	*3*	*0*	**35.55**	0.0	0	4
601761	Culvert	**38.40**	**30.60**	*0*	*0*	**28.80**	*0*	*0*	***28.80***	*0*	*0*	***30.60***	*0*	*0*	***68.40***	*2*	*5*	***43.20***	*2.0*	*0*	4
26.0429 A 0.12	Culvert	**38.30**	**37.70**	*0*	*0*	**35.90**	*0*	*0*	***35.90***	*0*	*0*	***37.70***	*0*	*0*	***44.90***	*0*	*0*	***37.70***	*0.0*	*0*	5
990089	Culvert	38.22	**0.70**	*0*	*0*	***42.30***	*0*	*0*	***45.90***	*0*	*0*	***45.90***	*0*	*0*	***57.60***	*3*	*0*	**36.90**	0.0	0	5
UNKLCEP291	Culvert	**38.20**	**27.55**	*0*	*0*	**25.75**	*0*	*0*	***25.75***	*0*	*0*	***27.55***	*0*	*0*	***64.45***	*3*	*3*	***58.15***	*2.0*	*5*	3
106c0059	Culvert	**38.19**	**48.39**	*2*	*4*	**19.59**	*0*	*0*	***19.59***	*0*	*0*	***48.39***	*2*	*4*	***59.19***	*2*	*5*	***33.99***	*2.0*	*0*	4
LCEPNEW009	Culvert	**38.19**	**35.79**	*0*	*0*	**26.79**	*0*	*0*	***26.79***	*0*	*0*	***28.59***	*0*	*0*	***60.09***	*1*	*5*	***51.09***	*1.0*	*5*	3
980655	Culvert	**38.10**	**60.90**	*3*	*3*	**22.20**	*0*	*0*	***31.20***	*0*	*0*	***27.60***	*0*	*0*	***64.50***	*3*	*4*	***22.20***	*0.0*	*0*	1
810634	Unknown	**38.05**	**50.20**	*1*	*1*	**31.30**	*0*	*0*	***33.10***	*0*	*0*	***40.30***	*0*	*0*	***40.30***	*0*	*0*	***33.10***	*0.0*	*0*	3
UNKLCEP277	Other	**38.05**	**40.15**	*0*	*0*	**31.15**	*0*	*0*	***31.15***	*0*	*0*	***40.15***	*0*	*0*	***40.15***	*0*	*0*	***45.55***	*2.0*	*0*	3
421611	Culvert	**37.95**	**32.40**	*0*	*0*	**30.60**	*0*	*0*	***30.60***	*0*	*0*	***32.40***	*0*	*0*	***69.30***	*3*	*3*	***32.40***	*0.0*	*0*	3
106c0061	Culvert	**37.93**	**48.88**	*3*	*3*	**17.38**	*0*	*0*	***17.38***	*0*	*0*	***42.58***	*2*	*3*	***63.28***	*3*	*5*	***38.08***	*3.0*	*0*	4
700294	Culvert	**37.89**	**39.69**	*0*	*0*	**30.69**	*0*	*0*	***30.69***	*0*	*0*	***32.49***	*0*	*0*	***63.09***	*2*	*3*	***30.69***	*0.0*	*0*	5
106w033	Culvert	**37.85**	**35.30**	*0*	*0*	**33.50**	*0*	*0*	***33.50***	*0*	*0*	***42.50***	*0*	*0*	***48.80***	*1*	*0*	***33.50***	*0.0*	*0*	4
1350269	Culvert	**37.80**	**41.70**	*0*	*0*	**32.70**	*0*	*0*	***34.50***	*0*	*0*	***41.70***	*0*	*0*	***41.70***	*0*	*0*	***34.50***	*0.0*	*0*	4
1350334	Culvert	37.78	**8.40**	*1*	*2*	***38.08***	*0*	*0*	***41.68***	*0*	*0*	***41.68***	*0*	*0*	***47.08***	*2*	*0*	**49.78**	1.0	3	5
980918	Culvert	**37.70**	**35.00**	*0*	*0*	**33.20**	*0*	*0*	***33.20***	*0*	*0*	***35.00***	*0*	*0*	***54.80***	*2*	*0*	***35.00***	*0.0*	*0*	4
992235	Culvert	**37.62**	**32.52**	*0*	*0*	**30.72**	*0*	*0*	***36.12***	*0*	*0*	***36.12***	*0*	*0*	***59.52***	*2*	*3*	***30.72***	*0.0*	*0*	5
1309E28A	Culvert	**37.60**	**41.20**	*0*	*0*	**32.20**	*0*	*0*	***41.20***	*0*	*0*	***37.60***	*0*	*0*	***41.20***	*0*	*0*	***32.20***	*0.0*	*0*	4
1304E25A	Culvert	**37.60**	**33.10**	*0*	*0*	**31.30**	*0*	*0*	***36.70***	*0*	*0*	***36.70***	*0*	*0*	***56.50***	*2*	*2*	***31.30***	*0.0*	*0*	3
40003690	Culvert	37.58	**0.70**	*0*	*0*	***69.80***	*2*	*3*	***39.20***	*0*	*0*	***39.20***	*0*	*0*	***39.20***	*0*	*0*	**37.40**	0.0	0	5
992590	Culvert	**37.55**	**30.95**	*0*	*0*	**29.15**	*0*	*0*	***29.15***	*0*	*0*	***30.95***	*0*	*0*	***61.55***	*2*	*3*	***43.55***	*2.0*	*0*	3
994153	Culvert	**37.51**	**30.31**	*0*	*0*	**28.51**	*0*	*0*	***28.51***	*0*	*0*	***30.31***	*0*	*0*	***64.51***	*2*	*4*	***42.91***	*2.0*	*0*	4
421173	Culvert	**37.49**	**31.34**	*0*	*0*	**29.54**	*0*	*0*	***29.54***	*0*	*0*	***31.34***	*0*	*0*	***71.84***	*3*	*4*	***31.34***	*0.0*	*0*	4
421514	Culvert	**37.45**	**46.30**	*1*	*0*	**31.00**	*0*	*0*	***40.00***	*0*	*0*	***36.40***	*0*	*0*	***40.00***	*0*	*0*	***31.00***	*0.0*	*0*	4
421682	Culvert	**37.45**	**46.30**	*1*	*0*	**31.00**	*0*	*0*	***40.00***	*0*	*0*	***36.40***	*0*	*0*	***40.00***	*0*	*0*	***31.00***	*0.0*	*0*	3
1350429	Culvert	**37.31**	**41.36**	*2*	*2*	**12.56**	*0*	*0*	***44.96***	*2*	*5*	***52.16***	*2*	*5*	***58.46***	*3*	*5*	***14.36***	*0.0*	*0*	1
991734	Culvert	**37.23**	**31.68**	*0*	*0*	**29.88**	*0*	*0*	***29.88***	*0*	*0*	***31.68***	*0*	*0*	***68.58***	*3*	*3*	***31.68***	*0.0*	*0*	5
934279	Culvert	37.22	**0.70**	*0*	*0*	***45.60***	*0*	*0*	***36.60***	*0*	*0*	***45.60***	*0*	*0*	***58.20***	*2*	*0*	**36.60**	0.0	0	5
UNKLCEP115	Culvert	**37.15**	**32.80**	*0*	*0*	**31.00**	*0*	*0*	***31.00***	*0*	*0*	***40.00***	*0*	*0*	***57.10***	*1*	*3*	***31.00***	*0.0*	*0*	3
945088	Unknown	37.13	**20.30**	*3*	*3*	***41.75***	*0*	*0*	***32.75***	*0*	*0*	***41.75***	*0*	*0*	***53.45***	*3*	*0*	**32.75**	0.0	0	3
421710	Culvert	**37.00**	**32.50**	*0*	*0*	**30.70**	*0*	*0*	***30.70***	*0*	*0*	***32.50***	*0*	*0*	***63.10***	*2*	*3*	***32.50***	*0.0*	*0*	4
421159	Culvert	**36.99**	**30.24**	*0*	*0*	**28.44**	*0*	*0*	***28.44***	*0*	*0*	***30.24***	*0*	*0*	***74.34***	*3*	*5*	***30.24***	*0.0*	*0*	4
1320241	ishway, Culver	**36.97**	**30.22**	*0*	*0*	**28.42**	*0*	*0*	***28.42***	*0*	*0*	***30.22***	*0*	*0*	***74.32***	*3*	*5*	***30.22***	*0.0*	*0*	4
1350003	Culvert	36.91	**20.30**	*3*	*3*	***40.05***	*0*	*0*	***31.05***	*0*	*0*	***40.05***	*0*	*0*	***58.95***	*3*	*0*	**31.05**	0.0	0	5
106w036	Culvert	**36.85**	**49.30**	*2*	*3*	**24.10**	*0*	*0*	***24.10***	*0*	*0*	***33.10***	*0*	*0*	***66.40***	*3*	*4*	***24.10***	*0.0*	*0*	4
992100	Culvert	**36.85**	**32.80**	*0*	*0*	**31.00**	*0*	*0*	***36.40***	*0*	*0*	***36.40***	*0*	*0*	***53.50***	*1*	*3*	***31.00***	*0.0*	*0*	4
106c0085	Culvert	**36.79**	**33.34**	*0*	*0*	**31.54**	*0*	*0*	***31.54***	*0*	*0*	***33.34***	*0*	*0*	***57.64***	*1*	*3*	***33.34***	*0.0*	*0*	5
421275	Culvert	**36.75**	**33.30**	*0*	*0*	**31.50**	*0*	*0*	***31.50***	*0*	*0*	***33.30***	*0*	*0*	***57.60***	*1*	*3*	***33.30***	*0.0*	*0*	4
106c0710	Culvert	**36.74**	**40.64**	*0*	*0*	**31.64**	*0*	*0*	***33.44***	*0*	*0*	***40.64***	*0*	*0*	***40.64***	*0*	*0*	***33.44***	*0.0*	*0*	5
602224	Culvert	**36.68**	**32.78**	*0*	*0*	**30.98**	*0*	*0*	***30.98***	*0*	*0*	***32.78***	*0*	*0*	***59.78***	*2*	*2*	***32.78***	*0.0*	*0*	4
945042	Culvert	36.67	**0.70**	*0*	*0*	***41.70***	*0*	*0*	***45.30***	*0*	*0*	***45.30***	*0*	*0*	***50.70***	*2*	*0*	**36.30**	0.0	0	5
106c0056	Culvert	**36.64**	**33.94**	*0*	*0*	**32.14**	*0*	*0*	***32.14***	*0*	*0*	***33.94***	*0*	*0*	***41.14***	*0*	*0*	***46.54***	*2.0*	*0*	5
990305	Culvert	**36.60**	**35.10**	*0*	*0*	**33.30**	*0*	*0*	***33.30***	*0*	*0*	***42.30***	*0*	*0*	***42.30***	*0*	*0*	***33.30***	*0.0*	*0*	4
421619	Culvert	**36.40**	**31.90**	*0*	*0*	**30.10**	*0*	*0*	***30.10***	*0*	*0*	***31.90***	*0*	*0*	***62.50***	*2*	*3*	***31.90***	*0.0*	*0*	3
UNKLCEP173	Culvert	**36.39**	**38.04**	*1*	*1*	**26.34**	*0*	*0*	***26.34***	*0*	*0*	***35.34***	*0*	*0*	***65.94***	*2*	*5*	***26.34***	*0.0*	*0*	3
106w005	Culvert	**36.35**	**42.20**	*1*	*2*	**26.90**	*0*	*0*	***26.90***	*0*	*0*	***35.90***	*0*	*0*	***59.30***	*2*	*3*	***26.90***	*0.0*	*0*	1
999796	Culvert	36.35	**14.70**	*2*	*3*	***30.60***	*0*	*0*	***30.60***	*0*	*0*	***32.40***	*0*	*0*	***52.20***	*2*	*0*	**57.60**	2.0	4	5
990945	Culvert	**36.34**	**53.14**	*3*	*1*	**21.64**	*0*	*0*	***30.64***	*0*	*0*	***27.04***	*0*	*0*	***63.94***	*3*	*4*	***21.64***	*0.0*	*0*	1
990338	Culvert	**36.28**	**39.88**	*0*	*0*	**30.88**	*0*	*0*	***39.88***	*0*	*0*	***36.28***	*0*	*0*	***39.88***	*0*	*0*	***30.88***	*0.0*	*0*	5
40005712	Culvert	36.24	**1.40**	*0*	*0*	***37.63***	*0*	*0*	***41.23***	*0*	*0*	***41.23***	*0*	*0*	***40.33***	*1*	*0*	**55.63**	2.0	3	5
1320726	Culvert	36.17	**0.70**	*0*	*0*	***45.60***	*0*	*0*	***36.60***	*0*	*0*	***45.60***	*0*	*0*	***51.90***	*1*	*0*	**36.60**	0.0	0	5
609943	Tidegate	**36.09**	**39.69**	*0*	*0*	**30.69**	*0*	*0*	***30.69***	*0*	*0*	***32.49***	*0*	*0*	***52.29***	*2*	*0*	***30.69***	*0.0*	*0*	5
994514	Culvert	36.05	**0.70**	*0*	*0*	***44.20***	*0*	*0*	***35.20***	*0*	*0*	***44.20***	*0*	*0*	***56.80***	*2*	*0*	**35.20**	0.0	0	5

Unique ID	Barrier Type	Average Score, all species	Winter Steelhead score	Effective Upstream Habitat Gain SthdWi Score	Upstream Habitat Quality SthdWi Score	Summer Steelhead score	Effective Upstream Habitat Gain SthdSu Score	Upstream Habitat Quality SthdSu Score	Spring Chinook score	Effective Upstream Habitat Gain ChinSp Score	Upstream Habitat Quality ChinSp Score	Fall Chinook score	Effective Upstream Habitat Gain ChinFa Score	Upstream Habitat Quality ChinFa Score	Coho score	Effective Upstream Habitat Gain Coho Score	Upstream Habitat Quality Coho Score	Chum score	Effective Upstream Habitat Gain Chum Score	Upstream Habitat Quality Chum Score	Barrier Severity Score
992592	Culvert	**36.03**	**40.68**	*1*	*3*	**21.78**	*0*	*0*	***21.78***	*0*	*0*	***23.58***	*0*	*0*	***54.18***	*2*	*3*	***54.18***	*2.0*	*5*	1
132171290	Culvert	**36.03**	**30.48**	*0*	*0*	**28.68**	*0*	*0*	***28.68***	*0*	*0*	***30.48***	*0*	*0*	***67.38***	*3*	*3*	***30.48***	*0.0*	*0*	4
600566	Unknown	**36.00**	**39.60**	*0*	*0*	**30.60**	*0*	*0*	***39.60***	*0*	*0*	***36.00***	*0*	*0*	***39.60***	*0*	*0*	***30.60***	*0.0*	*0*	3
240346677	Culvert	**36.00**	**39.60**	*0*	*0*	**30.60**	*0*	*0*	***39.60***	*0*	*0*	***36.00***	*0*	*0*	***39.60***	*0*	*0*	***30.60***	*0.0*	*0*	3
1350163	Culvert	**36.00**	**35.85**	*0*	*0*	**26.85**	*0*	*0*	***26.85***	*0*	*0*	***35.85***	*0*	*0*	***55.65***	*2*	*2*	***34.95***	*1.0*	*0*	1
UNKLCEP506	Culvert	35.93	**1.40**	*0*	*0*	***41.40***	*0*	*0*	***32.40***	*0*	*0*	***41.40***	*0*	*0*	***54.00***	*2*	*0*	**45.00**	2.0	0	3
106c0598	Culvert	**35.92**	**39.82**	*0*	*0*	**30.82**	*0*	*0*	***32.62***	*0*	*0*	***39.82***	*0*	*0*	***39.82***	*0*	*0*	***32.62***	*0.0*	*0*	5
40005792	Culvert	**35.90**	**39.80**	*0*	*0*	**30.80**	*0*	*0*	***32.60***	*0*	*0*	***39.80***	*0*	*0*	***39.80***	*0*	*0*	***32.60***	*0.0*	*0*	3
UNKLCEP001	Culvert	**35.80**	**32.20**	*0*	*0*	**30.40**	*0*	*0*	***30.40***	*0*	*0*	***39.40***	*0*	*0*	***52.00***	*2*	*0*	***30.40***	*0.0*	*0*	3
UNKLCEP298	Culvert	35.68	**1.40**	*0*	*0*	***34.98***	*0*	*0*	***25.98***	*0*	*0*	***34.98***	*0*	*0*	***53.88***	*3*	*0*	**62.88**	3.0	5	3
106c0189	Culvert	**35.63**	**30.53**	*0*	*0*	**21.53**	*0*	*0*	***23.33***	*0*	*0*	***30.53***	*0*	*0*	***53.93***	*2*	*3*	***53.93***	*2.0*	*5*	5
40003042	Culvert	**35.60**	**39.80**	*0*	*0*	**30.80**	*0*	*0*	***30.80***	*0*	*0*	***39.80***	*0*	*0*	***39.80***	*0*	*0*	***32.60***	*0.0*	*0*	3
LCEPNEW036	Culvert	35.57	**1.40**	*0*	*0*	***36.10***	*0*	*0*	***27.10***	*0*	*0*	***36.10***	*0*	*0*	***55.00***	*3*	*0*	**57.70**	2.0	5	3
UNKLCEP306	Culvert	**35.55**	**29.40**	*0*	*0*	**27.60**	*0*	*0*	***27.60***	*0*	*0*	***29.40***	*0*	*0*	***69.90***	*3*	*4*	***29.40***	*0.0*	*0*	3
UNKLCEP386	Culvert	35.54	**1.40**	*0*	*0*	***43.45***	*0*	*0*	***34.45***	*0*	*0*	***43.45***	*0*	*0*	***49.75***	*1*	*0*	**40.75**	1.0	0	4
106c0023	Culvert	**35.47**	**37.72**	*0*	*0*	**28.72**	*0*	*0*	***28.72***	*0*	*0*	***37.72***	*0*	*0*	***51.22***	*1*	*4*	***28.72***	*0.0*	*0*	4
981153	Culvert	**35.40**	**51.00**	*2*	*2*	**22.20**	*0*	*0*	***31.20***	*0*	*0*	***27.60***	*0*	*0*	***58.20***	*2*	*4*	***22.20***	*0.0*	*0*	1
LCEPNEW024	Culvert	35.40	**1.40**	*0*	*0*	***34.10***	*0*	*0*	***34.10***	*0*	*0*	***35.90***	*0*	*0*	***55.70***	*2*	*0*	**51.20**	1.0	3	4
422014	Culvert	**35.39**	**22.49**	*0*	*0*	**20.69**	*0*	*0*	***20.69***	*0*	*0*	***22.49***	*0*	*0*	***66.59***	*3*	*5*	***59.39***	*3.0*	*5*	1
26.0239 1.24	Culvert	**35.36**	**53.81**	*4*	*3*	**8.81**	*0*	*0*	***10.61***	*0*	*0*	***61.01***	*4*	*5*	***67.31***	*5*	*5*	***10.61***	*0.0*	*0*	1
UNKLCEP081	Culvert	**35.35**	**40.00**	*0*	*0*	**31.00**	*0*	*0*	***31.00***	*0*	*0*	***32.80***	*0*	*0*	***46.30***	*1*	*0*	***31.00***	*0.0*	*0*	3
810635	Unknown	**35.35**	**39.25**	*0*	*0*	**30.25**	*0*	*0*	***32.05***	*0*	*0*	***39.25***	*0*	*0*	***39.25***	*0*	*0*	***32.05***	*0.0*	*0*	3
421153	Culvert	**35.20**	**32.50**	*0*	*0*	**30.70**	*0*	*0*	***30.70***	*0*	*0*	***32.50***	*0*	*0*	***52.30***	*2*	*0*	***32.50***	*0.0*	*0*	3
106W065	Culvert	**35.19**	**46.29**	*2*	*2*	**24.69**	*0*	*0*	***24.69***	*0*	*0*	***33.69***	*0*	*0*	***57.09***	*2*	*3*	***24.69***	*0.0*	*0*	4
994599	Culvert	35.13	**1.40**	*0*	*0*	***31.80***	*0*	*0*	***68.70***	*3*	*4*	***35.40***	*0*	*0*	***47.10***	*3*	*0*	**26.40**	0.0	0	1
25.0281 0.20	ishway, Culver	**35.05**	**28.00**	*0*	*0*	**26.20**	*0*	*0*	***26.20***	*0*	*0*	***35.20***	*0*	*0*	***68.50***	*3*	*4*	***26.20***	*0.0*	*0*	1
UNKLCEP002	0	**35.05**	**39.70**	*0*	*0*	**30.70**	*0*	*0*	***30.70***	*0*	*0*	***32.50***	*0*	*0*	***46.00***	*1*	*0*	***30.70***	*0.0*	*0*	3
1350448	Culvert	**35.05**	**32.50**	*0*	*0*	**30.70**	*0*	*0*	***30.70***	*0*	*0*	***39.70***	*0*	*0*	***46.00***	*1*	*0*	***30.70***	*0.0*	*0*	3
UNKLCEP179	Culvert	**35.05**	**32.50**	*0*	*0*	**30.70**	*0*	*0*	***30.70***	*0*	*0*	***39.70***	*0*	*0*	***46.00***	*1*	*0*	***30.70***	*0.0*	*0*	3
UNKLCEP036	Tidegate	**35.03**	**39.68**	*0*	*0*	**30.68**	*0*	*0*	***30.68***	*0*	*0*	***32.48***	*0*	*0*	***45.98***	*1*	*0*	***30.68***	*0.0*	*0*	5
106c0062	Culvert	**35.00**	**45.80**	*2*	*3*	**20.60**	*0*	*0*	***20.60***	*0*	*0*	***22.40***	*0*	*0*	***59.30***	*3*	*3*	***41.30***	*3.0*	*0*	4
602223	Culvert	**34.98**	**33.33**	*0*	*0*	**31.53**	*0*	*0*	***31.53***	*0*	*0*	***33.33***	*0*	*0*	***46.83***	*1*	*0*	***33.33***	*0.0*	*0*	5
132161864A	Culvert	**34.95**	**33.30**	*0*	*0*	**31.50**	*0*	*0*	***31.50***	*0*	*0*	***33.30***	*0*	*0*	***46.80***	*1*	*0*	***33.30***	*0.0*	*0*	4
1652002b	Culvert	**34.94**	**32.99**	*0*	*0*	**23.99**	*0*	*0*	***23.99***	*0*	*0*	***38.39***	*2*	*0*	***66.29***	*3*	*4*	***23.99***	*0.0*	*0*	5
UNKLCEP300	Culvert	34.92	**2.10**	*0*	*0*	***38.78***	*0*	*0*	***29.78***	*0*	*0*	***57.68***	*3*	*0*	***45.08***	*1*	*0*	**36.08**	1.0	0	3
994342	Culvert	34.88	**21.00**	*3*	*3*	***25.60***	*0*	*0*	***25.60***	*0*	*0*	***61.60***	*2*	*5*	***49.90***	*3*	*0*	**25.60**	0.0	0	3
991657	Culvert	34.88	**0.70**	*0*	*0*	***42.80***	*0*	*0*	***33.80***	*0*	*0*	***42.80***	*0*	*0*	***55.40***	*2*	*0*	**33.80**	0.0	0	4
106c0653	Culvert	**34.88**	**55.28**	*2*	*2*	**26.48**	*0*	*0*	***28.28***	*0*	*0*	***35.48***	*0*	*0*	***35.48***	*0*	*0*	***28.28***	*0.0*	*0*	3
421890	Culvert	**34.85**	**34.25**	*0*	*0*	**32.45**	*0*	*0*	***32.45***	*0*	*0*	***34.25***	*0*	*0*	***41.45***	*0*	*0*	***34.25***	*0.0*	*0*	4
400E0111a	Culvert	**34.80**	**38.70**	*0*	*0*	**29.70**	*0*	*0*	***31.50***	*0*	*0*	***38.70***	*0*	*0*	***38.70***	*0*	*0*	***31.50***	*0.0*	*0*	3
992334	Culvert	**34.79**	**31.34**	*0*	*0*	**29.54**	*0*	*0*	***29.54***	*0*	*0*	***31.34***	*0*	*0*	***55.64***	*1*	*3*	***31.34***	*0.0*	*0*	5
26.0239 2.00	Culvert	**34.76**	**53.81**	*4*	*3*	**8.81**	*0*	*0*	***10.61***	*0*	*0*	***57.41***	*4*	*4*	***67.31***	*5*	*5*	***10.61***	*0.0*	*0*	1
UNKLCEP180	Culvert	**34.75**	**32.20**	*0*	*0*	**30.40**	*0*	*0*	***30.40***	*0*	*0*	***39.40***	*0*	*0*	***45.70***	*1*	*0*	***30.40***	*0.0*	*0*	3
602994	Culvert	**34.73**	**35.48**	*0*	*0*	**26.48**	*0*	*0*	***26.48***	*0*	*0*	***28.28***	*0*	*0*	***65.18***	*3*	*3*	***26.48***	*0.0*	*0*	4
1350217	Culvert	34.69	**0.70**	*0*	*0*	***46.35***	*0*	*0*	***39.15***	*0*	*0*	***39.15***	*0*	*0*	***45.45***	*1*	*0*	**37.35**	0.0	0	5
106c0442	Culvert	**34.68**	**34.68**	*0*	*0*	**25.68**	*0*	*0*	***27.48***	*0*	*0*	***34.68***	*0*	*0*	***58.08***	*2*	*3*	***27.48***	*0.0*	*0*	3
1320062	Culvert	**34.64**	**40.34**	*0*	*0*	**31.34**	*0*	*0*	***31.34***	*0*	*0*	***40.34***	*0*	*0*	***33.14***	*0*	*0*	***31.34***	*0.0*	*0*	5
1350080	Culvert	34.63	**0.00**	*0*	*0*	***45.15***	*0*	*0*	***36.15***	*0*	*0*	***45.15***	*0*	*0*	***45.15***	*0*	*0*	**36.15**	0.0	0	5
1921	Culvert	34.63	**0.00**	*0*	*0*	***45.15***	*0*	*0*	***36.15***	*0*	*0*	***45.15***	*0*	*0*	***45.15***	*0*	*0*	**36.15**	0.0	0	5
COW49	Culvert	**34.58**	**21.68**	*0*	*0*	**19.88**	*0*	*0*	***19.88***	*0*	*0*	***21.68***	*0*	*0*	***65.78***	*3*	*5*	***58.58***	*3.0*	*5*	1
982440	Culvert	**34.56**	**50.91**	*3*	*2*	**15.81**	*0*	*0*	***15.81***	*0*	*0*	***17.61***	*0*	*0*	***54.51***	*3*	*3*	***52.71***	*3.0*	*5*	3
106w068	Culvert	**34.53**	**52.83**	*3*	*3*	**21.33**	*0*	*0*	***21.33***	*0*	*0*	***30.33***	*0*	*0*	***60.03***	*3*	*3*	***21.33***	*0.0*	*0*	4
UNKLCEP066	Tidegate	**34.53**	**27.48**	*0*	*0*	**25.68**	*0*	*0*	***25.68***	*0*	*0*	***34.68***	*0*	*0*	***67.98***	*3*	*4*	***25.68***	*0.0*	*0*	3
992273	Culvert	**34.48**	**31.03**	*0*	*0*	**29.23**	*0*	*0*	***29.23***	*0*	*0*	***31.03***	*0*	*0*	***55.33***	*1*	*3*	***31.03***	*0.0*	*0*	5
421287	Culvert	**34.45**	**32.80**	*0*	*0*	**31.00**	*0*	*0*	***31.00***	*0*	*0*	***32.80***	*0*	*0*	***46.30***	*1*	*0*	***32.80***	*0.0*	*0*	4
999448	Culvert	**34.45**	**31.90**	*0*	*0*	**30.10**	*0*	*0*	***30.10***	*0*	*0*	***39.10***	*0*	*0*	***45.40***	*1*	*0*	***30.10***	*0.0*	*0*	4
602511	Culvert	**34.45**	**27.85**	*0*	*0*	**26.05**	*0*	*0*	***26.05***	*0*	*0*	***27.85***	*0*	*0*	***58.45***	*2*	*3*	***40.45***	*2.0*	*0*	1
973057	Culvert	34.39	**0.70**	*0*	*0*	***36.45***	*0*	*0*	***36.45***	*0*	*0*	***38.25***	*0*	*0*	***45.45***	*0*	*0*	**49.05**	2.0	0	5
LCEPNEW016	Culvert	**34.39**	**32.74**	*0*	*0*	**30.94**	*0*	*0*	***30.94***	*0*	*0*	***32.74***	*0*	*0*	***46.24***	*1*	*0*	***32.74***	*0.0*	*0*	5
1350002	Culvert	34.38	**0.00**	*0*	*0*	***44.85***	*0*	*0*	***35.85***	*0*	*0*	***44.85***	*0*	*0*	***44.85***	*0*	*0*	**35.85**	0.0	0	5
600595	Culvert	34.23	**0.70**	*0*	*0*	***40.75***	*0*	*0*	***31.75***	*0*	*0*	***40.75***	*0*	*0*	***59.65***	*3*	*0*	**31.75**	0.0	0	3
106c0167	Culvert	**34.20**	**17.40**	*0*	*0*	**15.60**	*0*	*0*	***15.60***	*0*	*0*	***40.80***	*2*	*3*	***61.50***	*3*	*5*	***54.30***	*3.0*	*5*	3
UNKLCEP271	Culvert	**34.15**	**32.50**	*0*	*0*	**30.70**	*0*	*0*	***30.70***	*0*	*0*	***32.50***	*0*	*0*	***46.00***	*1*	*0*	***32.50***	*0.0*	*0*	3
1080201	Culvert	**34.12**	**28.12**	*0*	*0*	**19.12**	*0*	*0*	***19.12***	*0*	*0*	***20.92***	*0*	*0*	***61.42***	*3*	*4*	***56.02***	*3.0*	*5*	3
991439	Culvert	34.12	**0.00**	*0*	*0*	***41.30***	*0*	*0*	***44.90***	*0*	*0*	***44.90***	*0*	*0*	***37.70***	*0*	*0*	**35.90**	0.0	0	5
990152	Culvert	**34.11**	**29.46**	*0*	*0*	**27.66**	*0*	*0*	***27.66***	*0*	*0*	***29.46***	*0*	*0*	***60.96***	*1*	*5*	***29.46***	*0.0*	*0*	4
600225	Culvert	34.09	**0.00**	*0*	*0*	***45.95***	*0*	*0*	***36.95***	*0*	*0*	***38.75***	*0*	*0*	***45.95***	*0*	*0*	**36.95**	0.0	0	5
700077	Culvert	**33.98**	**37.88**	*0*	*0*	**28.88**	*0*	*0*	***30.68***	*0*	*0*	***37.88***	*0*	*0*	***37.88***	*0*	*0*	***30.68***	*0.0*	*0*	5
UNKLCEP678	Culvert	**33.90**	**39.60**	*0*	*0*	**30.60**	*0*	*0*	***30.60***	*0*	*0*	***32.40***	*0*	*0*	***39.60***	*0*	*0*	***30.60***	*0.0*	*0*	3
UNKLCEP076	Culvert	**33.90**	**39.60**	*0*	*0*	**30.60**	*0*	*0*	***30.60***	*0*	*0*	***32.40***	*0*	*0*	***39.60***	*0*	*0*	***30.60***	*0.0*	*0*	3

Unique ID	Barrier Type	Average Score, all species	Winter Steelhead score	*Effective Upstream Habitat Gain SthdWi Score*	*Upstream Habitat Quality SthdWi Score*	Summer Steelhead score	*Effective Upstream Habitat Gain SthdSu Score*	*Upstream Habitat Quality SthdSu Score*	Spring Chinook score	*Effective Upstream Habitat Gain ChinSp Score*	*Upstream Habitat Quality ChinSp Score*	Fall Chinook score	*Effective Upstream Habitat Gain ChinFa Score*	*Upstream Habitat Quality ChinFa Score*	Coho score	*Effective Upstream Habitat Gain Coho Score*	*Upstream Habitat Quality Coho Score*	Chum score	*Effective Upstream Habitat Gain Chum Score*	*Upstream Habitat Quality Chum Score*	Barrier Severity Score
1350232	Culvert	**33.85**	**32.20**	*0*	*0*	**30.40**	*0*	*0*	***30.40***	*0*	*0*	***32.20***	*0*	*0*	***45.70***	*1*	*0*	***32.20***	*0.0*	*0*	3
1956	Culvert	33.84	**0.00**	*0*	*0*	***45.65***	*0*	*0*	***36.65***	*0*	*0*	***38.45***	*0*	*0*	***45.65***	*0*	*0*	**36.65**	0.0	0	5
1085406991	Culvert	33.84	**0.00**	*0*	*0*	***45.65***	*0*	*0*	***36.65***	*0*	*0*	***38.45***	*0*	*0*	***45.65***	*0*	*0*	**36.65**	0.0	0	5
107-016	Culvert	33.83	**0.70**	*0*	*0*	***40.28***	*0*	*0*	***31.28***	*0*	*0*	***40.28***	*0*	*0*	***59.18***	*3*	*0*	**31.28**	0.0	0	5
132041906	Culvert	33.82	**0.70**	*0*	*0*	***45.30***	*0*	*0*	***38.10***	*0*	*0*	***38.10***	*0*	*0*	***44.40***	*1*	*0*	**36.30**	0.0	0	5
1350246	Culvert	**33.80**	**33.80**	*0*	*0*	**24.80**	*0*	*0*	***26.60***	*0*	*0*	***33.80***	*0*	*0*	***57.20***	*2*	*3*	***26.60***	*0.0*	*0*	1
1350231	Culvert	**33.80**	**31.10**	*0*	*0*	**29.30**	*0*	*0*	***29.30***	*0*	*0*	***31.10***	*0*	*0*	***50.90***	*2*	*0*	***31.10***	*0.0*	*0*	3
990110	Culvert	**33.78**	**29.43**	*0*	*0*	**20.43**	*0*	*0*	***20.43***	*0*	*0*	***22.23***	*0*	*0*	***59.13***	*3*	*3*	***51.03***	*2.0*	*5*	1
107-012	Culvert	33.77	**0.70**	*0*	*0*	***40.20***	*0*	*0*	***31.20***	*0*	*0*	***40.20***	*0*	*0*	***59.10***	*3*	*0*	**31.20**	0.0	0	4
602234	Culvert	**33.67**	**30.22**	*0*	*0*	**28.42**	*0*	*0*	***28.42***	*0*	*0*	***30.22***	*0*	*0*	***54.52***	*1*	*3*	***30.22***	*0.0*	*0*	4
990190	Culvert	**33.64**	**46.84**	*2*	*3*	**21.64**	*0*	*0*	***27.04***	*0*	*0*	***27.04***	*0*	*0*	***57.64***	*2*	*5*	***21.64***	*0.0*	*0*	1
601763	Culvert	**33.62**	**27.02**	*0*	*0*	**25.22**	*0*	*0*	***25.22***	*0*	*0*	***27.02***	*0*	*0*	***57.62***	*2*	*3*	***39.62***	*2.0*	*0*	5
1350352	Culvert	33.59	**0.00**	*0*	*0*	***45.35***	*0*	*0*	***36.35***	*0*	*0*	***45.35***	*0*	*0*	***38.15***	*0*	*0*	**36.35**	0.0	0	5
106c0075	Culvert	**33.55**	**28.00**	*0*	*0*	**26.20**	*0*	*0*	***26.20***	*0*	*0*	***28.00***	*0*	*0*	***64.90***	*3*	*3*	***28.00***	*0.0*	*0*	3
UNKLCEP367	Culvert	33.42	**21.70**	*3*	*2*	***20.46***	*0*	*0*	***53.76***	*3*	*3*	***53.76***	*3*	*3*	***35.76***	*3*	*0*	**15.06**	0.0	0	3
421701	Culvert	**33.33**	**27.18**	*0*	*0*	**25.38**	*0*	*0*	***25.38***	*0*	*0*	***27.18***	*0*	*0*	***67.68***	*3*	*4*	***27.18***	*0.0*	*0*	4
994856	Culvert	33.22	**0.70**	*0*	*0*	***36.30***	*0*	*0*	***36.30***	*0*	*0*	***38.10***	*0*	*0*	***51.60***	*1*	*0*	**36.30**	0.0	0	5
UNKLCEP035	0	**33.07**	**33.82**	*0*	*0*	**24.82**	*0*	*0*	***24.82***	*0*	*0*	***26.62***	*0*	*0*	***63.52***	*3*	*3*	***24.82***	*0.0*	*0*	3
1350066	Culvert	33.04	**0.70**	*0*	*0*	***41.85***	*0*	*0*	***32.85***	*0*	*0*	***41.85***	*0*	*0*	***48.15***	*1*	*0*	**32.85**	0.0	0	4
1350118	Culvert	32.98	**0.00**	*0*	*0*	***45.70***	*0*	*0*	***38.50***	*0*	*0*	***38.50***	*0*	*0*	***38.50***	*0*	*0*	**36.70**	0.0	0	5
421135	Culvert	**32.95**	**27.40**	*0*	*0*	**25.60**	*0*	*0*	***25.60***	*0*	*0*	***27.40***	*0*	*0*	***64.30***	*3*	*3*	***27.40***	*0.0*	*0*	1
982013	Culvert	32.93	**0.00**	*0*	*0*	***44.55***	*0*	*0*	***35.55***	*0*	*0*	***44.55***	*0*	*0*	***37.35***	*0*	*0*	**35.55**	0.0	0	5
1350016	Culvert	32.89	**0.70**	*0*	*0*	***39.15***	*0*	*0*	***30.15***	*0*	*0*	***39.15***	*0*	*0*	***58.05***	*3*	*0*	**30.15**	0.0	0	5
982442	Culvert	**32.88**	**49.23**	*3*	*2*	**14.13**	*0*	*0*	***14.13***	*0*	*0*	***15.93***	*0*	*0*	***52.83***	*3*	*3*	***51.03***	*3.0*	*5*	3
UNKLCEP292	Culvert	**32.88**	**22.23**	*0*	*0*	**20.43**	*0*	*0*	***20.43***	*0*	*0*	***22.23***	*0*	*0*	***59.13***	*3*	*3*	***52.83***	*2.0*	*5*	3
40003506	Culvert	**32.83**	**36.73**	*0*	*0*	**27.73**	*0*	*0*	***29.53***	*0*	*0*	***36.73***	*0*	*0*	***36.73***	*0*	*0*	***29.53***	*0.0*	*0*	3
1350458	Culvert	32.81	**0.70**	*0*	*0*	***39.05***	*0*	*0*	***30.05***	*0*	*0*	***39.05***	*0*	*0*	***57.95***	*3*	*0*	**30.05**	0.0	0	5
421143	Culvert	**32.80**	**28.30**	*0*	*0*	**26.50**	*0*	*0*	***26.50***	*0*	*0*	***28.30***	*0*	*0*	***58.90***	*2*	*3*	***28.30***	*0.0*	*0*	3
1080212	Culvert	**32.75**	**28.40**	*0*	*0*	**19.40**	*0*	*0*	***19.40***	*0*	*0*	***21.20***	*0*	*0*	***58.10***	*3*	*3*	***50.00***	*2.0*	*5*	3
999906	Other	**32.74**	**44.14**	*1*	*2*	**21.64**	*0*	*0*	***30.64***	*0*	*0*	***27.04***	*0*	*0*	***51.34***	*1*	*4*	***21.64***	*0.0*	*0*	1
40005847	Culvert	32.73	**0.00**	*0*	*0*	***45.40***	*0*	*0*	***38.20***	*0*	*0*	***38.20***	*0*	*0*	***38.20***	*0*	*0*	**36.40**	0.0	0	5
40003089	Culvert	32.73	**0.00**	*0*	*0*	***45.40***	*0*	*0*	***38.20***	*0*	*0*	***38.20***	*0*	*0*	***38.20***	*0*	*0*	**36.40**	0.0	0	5
400B0004	Culvert	32.73	**0.00**	*0*	*0*	***45.40***	*0*	*0*	***38.20***	*0*	*0*	***38.20***	*0*	*0*	***38.20***	*0*	*0*	**36.40**	0.0	0	5
UNKLCEP316	Culvert	**32.73**	**27.18**	*0*	*0*	**25.38**	*0*	*0*	***25.38***	*0*	*0*	***27.18***	*0*	*0*	***64.08***	*3*	*3*	***27.18***	*0.0*	*0*	3
945214	Culvert	32.68	**0.00**	*0*	*0*	***44.25***	*0*	*0*	***35.25***	*0*	*0*	***37.05***	*0*	*0*	***44.25***	*0*	*0*	**35.25**	0.0	0	5
106w002	Culvert	**32.60**	**27.20**	*0*	*0*	**25.40**	*0*	*0*	***25.40***	*0*	*0*	***34.40***	*0*	*0*	***57.80***	*2*	*3*	***25.40***	*0.0*	*0*	1
945053	Culvert	**32.56**	**27.46**	*0*	*0*	**25.66**	*0*	*0*	***25.66***	*0*	*0*	***27.46***	*0*	*0*	***61.66***	*2*	*4*	***27.46***	*0.0*	*0*	5
421144	Culvert	**32.55**	**29.70**	*0*	*0*	**27.90**	*0*	*0*	***27.90***	*0*	*0*	***29.70***	*0*	*0*	***50.40***	*1*	*2*	***29.70***	*0.0*	*0*	3
UNKLCEP124	Tidegate	**32.53**	**29.98**	*0*	*0*	**28.18**	*0*	*0*	***28.18***	*0*	*0*	***37.18***	*0*	*0*	***43.48***	*1*	*0*	***28.18***	*0.0*	*0*	3
400B0018	Culvert	32.53	**0.00**	*0*	*0*	***45.15***	*0*	*0*	***37.95***	*0*	*0*	***37.95***	*0*	*0*	***37.95***	*0*	*0*	**36.15**	0.0	0	5
132161905A	Culvert	**32.52**	**26.97**	*0*	*0*	**25.17**	*0*	*0*	***25.17***	*0*	*0*	***26.97***	*0*	*0*	***57.57***	*2*	*3*	***33.27***	*1.0*	*0*	4
992593	Culvert	**32.48**	**25.88**	*0*	*0*	**24.08**	*0*	*0*	***24.08***	*0*	*0*	***25.88***	*0*	*0*	***56.48***	*2*	*3*	***38.48***	*2.0*	*0*	1
421920	Culvert	**32.45**	**26.30**	*0*	*0*	**24.50**	*0*	*0*	***29.90***	*0*	*0*	***29.90***	*0*	*0*	***59.60***	*3*	*3*	***24.50***	*0.0*	*0*	1
993489	Culvert	**32.45**	**27.95**	*0*	*0*	**26.15**	*0*	*0*	***26.15***	*0*	*0*	***27.95***	*0*	*0*	***58.55***	*2*	*3*	***27.95***	*0.0*	*0*	4
1350469	Culvert	32.43	**1.40**	*0*	*0*	***27.83***	*0*	*0*	***31.43***	*0*	*0*	***31.43***	*0*	*0*	***43.13***	*3*	*0*	**59.33**	3.0	5	3
992602	Culvert	**32.42**	**30.32**	*0*	*0*	**21.32**	*0*	*0*	***23.12***	*0*	*0*	***30.32***	*0*	*0*	***53.72***	*2*	*3*	***35.72***	*2.0*	*0*	4
UNKLCEP308	Culvert	**32.40**	**29.70**	*0*	*0*	**27.90**	*0*	*0*	***27.90***	*0*	*0*	***29.70***	*0*	*0*	***49.50***	*2*	*0*	***29.70***	*0.0*	*0*	3
1350344	Culvert	32.38	**0.70**	*0*	*0*	***42.50***	*0*	*0*	***33.50***	*0*	*0*	***42.50***	*0*	*0*	***41.60***	*1*	*0*	**33.50**	0.0	0	4
601792	Culvert	**32.34**	**37.44**	*1*	*2*	**22.14**	*0*	*0*	***22.14***	*0*	*0*	***23.94***	*0*	*0*	***64.44***	*3*	*4*	***23.94***	*0.0*	*0*	1
UNKLCEP299	Culvert	32.30	**0.70**	*0*	*0*	***39.70***	*0*	*0*	***30.70***	*0*	*0*	***39.70***	*0*	*0*	***52.30***	*2*	*0*	**30.70**	0.0	0	3
UNKLCEP513	Culvert	32.30	**0.70**	*0*	*0*	***39.70***	*0*	*0*	***30.70***	*0*	*0*	***39.70***	*0*	*0*	***52.30***	*2*	*0*	**30.70**	0.0	0	3
700214	Culvert	32.25	**0.00**	*0*	*0*	***42.30***	*0*	*0*	***33.30***	*0*	*0*	***42.30***	*0*	*0*	***42.30***	*0*	*0*	**33.30**	0.0	0	4
1350104	Culvert	32.25	**0.00**	*0*	*0*	***42.30***	*0*	*0*	***33.30***	*0*	*0*	***42.30***	*0*	*0*	***42.30***	*0*	*0*	**33.30**	0.0	0	4
931124	Culvert	**32.20**	**35.80**	*0*	*0*	**26.80**	*0*	*0*	***26.80***	*0*	*0*	***28.60***	*0*	*0*	***48.40***	*2*	*0*	***26.80***	*0.0*	*0*	3
991656	Culvert	32.17	**0.70**	*0*	*0*	***40.80***	*0*	*0*	***31.80***	*0*	*0*	***40.80***	*0*	*0*	***47.10***	*1*	*0*	**31.80**	0.0	0	4
421743	Culvert	**32.12**	**40.52**	*1*	*1*	**21.62**	*0*	*0*	***30.62***	*0*	*0*	***27.02***	*0*	*0*	***51.32***	*1*	*4*	***21.62***	*0.0*	*0*	4
1320700	Culvert	32.12	**20.30**	*3*	*3*	***28.54***	*0*	*0*	***28.54***	*0*	*0*	***33.94***	*0*	*0*	***52.84***	*3*	*0*	**28.54**	0.0	0	5
021(56001)(0000	Culvert	**32.03**	**26.93**	*0*	*0*	**25.13**	*0*	*0*	***25.13***	*0*	*0*	***26.93***	*0*	*0*	***54.83***	*1*	*4*	***33.23***	*1.0*	*0*	4
1350484	Culvert	31.99	**0.00**	*0*	*0*	***38.75***	*0*	*0*	***42.35***	*0*	*0*	***42.35***	*0*	*0*	***35.15***	*0*	*0*	**33.35**	0.0	0	4
973054	Culvert	31.97	**7.70**	*1*	*0*	***32.14***	*0*	*0*	***32.14***	*0*	*0*	***33.94***	*0*	*0*	***53.74***	*2*	*0*	**32.14**	0.0	0	5
990967	Culvert	31.93	**0.00**	*0*	*0*	***36.15***	*0*	*0*	***36.15***	*0*	*0*	***37.95***	*0*	*0*	***45.15***	*0*	*0*	**36.15**	0.0	0	5
SCWC03	Culvert	31.92	**20.30**	*3*	*3*	***28.30***	*0*	*0*	***28.30***	*0*	*0*	***33.70***	*0*	*0*	***52.60***	*3*	*0*	**28.30**	0.0	0	5
UNKLCEP395	Culvert	31.92	**0.70**	*0*	*0*	***33.48***	*0*	*0*	***33.48***	*0*	*0*	***38.88***	*0*	*0*	***51.48***	*2*	*0*	**33.48**	0.0	0	5
1320562	Culvert	31.88	**0.70**	*0*	*0*	***65.84***	*2*	*4*	***31.64***	*0*	*0*	***31.64***	*0*	*0*	***31.64***	*0*	*0*	**29.84**	0.0	0	4
994302	Culvert	31.88	**0.00**	*0*	*0*	***36.10***	*0*	*0*	***36.10***	*0*	*0*	***41.50***	*0*	*0*	***41.50***	*0*	*0*	**36.10**	0.0	0	5
1350314	Culvert	31.83	**0.00**	*0*	*0*	***41.80***	*0*	*0*	***32.80***	*0*	*0*	***41.80***	*0*	*0*	***41.80***	*0*	*0*	**32.80**	0.0	0	5
132131598	Culvert	31.83	**0.00**	*0*	*0*	***41.80***	*0*	*0*	***32.80***	*0*	*0*	***41.80***	*0*	*0*	***41.80***	*0*	*0*	**32.80**	0.0	0	4
421695	Culvert	**31.82**	**19.97**	*0*	*0*	**18.17**	*0*	*0*	***18.17***	*0*	*0*	***19.97***	*0*	*0*	***64.07***	*3*	*5*	***50.57***	*2.0*	*5*	1
106w037	Culvert	**31.78**	**26.38**	*0*	*0*	**24.58**	*0*	*0*	***24.58***	*0*	*0*	***33.58***	*0*	*0*	***56.98***	*2*	*3*	***24.58***	*0.0*	*0*	5
106c0889	Culvert	**31.70**	**27.20**	*0*	*0*	**25.40**	*0*	*0*	***25.40***	*0*	*0*	***27.20***	*0*	*0*	***57.80***	*2*	*3*	***27.20***	*0.0*	*0*	1

Unique ID	Barrier Type	Average Score, all species	Winter Steelhead score	Effective Upstream Habitat Gain SthdWi Score	Upstream Habitat Quality SthdWi Score	Summer Steelhead score	Effective Upstream Habitat Gain SthdSu Score	Upstream Habitat Quality SthdSu Score	Spring Chinook score	Effective Upstream Habitat Gain ChinSp Score	Upstream Habitat Quality ChinSp Score	Fall Chinook score	Effective Upstream Habitat Gain ChinFa Score	Upstream Habitat Quality ChinFa Score	Coho score	Effective Upstream Habitat Gain Coho Score	Upstream Habitat Quality Coho Score	Chum score	Effective Upstream Habitat Gain Chum Score	Upstream Habitat Quality Chum Score	Barrier Severity Score
999036	Culvert	31.68	0.00	0	0	35.85	0	0	35.85	0	0	37.65	0	0	44.85	0	0	35.85	0.0	0	5
945317	Culvert	31.68	0.00	0	0	35.85	0	0	35.85	0	0	37.65	0	0	44.85	0	0	35.85	0.0	0	5
600224	Culvert	31.51	0.00	0	0	42.85	0	0	33.85	0	0	35.65	0	0	42.85	0	0	33.85	0.0	0	4
991411	Culvert	31.50	34.95	0	0	25.95	0	0	25.95	0	0	27.75	0	0	48.45	1	2	25.95	0.0	0	1
981154	Culvert	31.48	47.08	2	2	18.28	0	0	27.28	0	0	23.68	0	0	54.28	2	4	18.28	0.0	0	1
106c0160	Culvert	31.30	27.40	0	0	25.60	0	0	25.60	0	0	27.40	0	0	54.40	2	2	27.40	0.0	0	1
602880	Culvert	31.30	25.75	0	0	23.95	0	0	23.95	0	0	25.75	0	0	62.65	3	3	25.75	0.0	0	1
UNKLCEP380	Culvert	31.25	0.70	0	0	39.70	0	0	30.70	0	0	39.70	0	0	46.00	1	0	30.70	0.0	0	3
1805	Culvert	31.22	0.70	0	0	36.42	0	0	46.32	1	0	40.02	0	0	32.82	0	0	31.02	0.0	0	5
994625	Culvert	31.17	0.70	0	0	36.36	0	0	39.96	0	0	39.96	0	0	39.06	1	0	30.96	0.0	0	5
1350062	Culvert	31.12	0.00	0	0	40.94	0	0	31.94	0	0	40.94	0	0	40.94	0	0	31.94	0.0	0	5
40002862	Culvert	31.09	0.00	0	0	42.35	0	0	33.35	0	0	42.35	0	0	35.15	0	0	33.35	0.0	0	5
UNKLCEP134	Culvert	31.08	27.48	0	0	25.68	0	0	25.68	0	0	34.68	0	0	47.28	2	0	25.68	0.0	0	3
1350367	Culvert	31.01	0.00	0	0	42.25	0	0	33.25	0	0	42.25	0	0	35.05	0	0	33.25	0.0	0	4
1350038	Culvert	31.00	1.40	0	0	34.40	0	0	25.40	0	0	34.40	0	0	40.70	1	0	49.70	1.0	5	4
UNKLCEP347	Culvert	30.95	0.70	0	0	36.10	0	0	39.70	0	0	39.70	0	0	38.80	1	0	30.70	0.0	0	3
UNKLCEP098	Culvert	30.92	32.72	0	0	23.72	0	0	23.72	0	0	25.52	0	0	56.12	2	3	23.72	0.0	0	5
132171065A	Culvert	30.88	0.70	0	0	33.50	0	0	33.50	0	0	38.90	0	0	45.20	1	0	33.50	0.0	0	4
421432	Culvert	30.80	26.30	0	0	24.50	0	0	24.50	0	0	26.30	0	0	56.90	2	3	26.30	0.0	0	1
LCEPNEW032	Culvert	30.80	0.00	0	0	42.00	0	0	33.00	0	0	42.00	0	0	34.80	0	0	33.00	0.0	0	4
UNKLCEP503	Culvert	30.66	0.70	0	0	37.73	0	0	28.73	0	0	37.73	0	0	37.73	0	0	41.33	2.0	0	3
SCBar36	Culvert	30.50	14.00	2	3	29.12	0	0	29.12	0	0	34.52	0	0	47.12	2	0	29.12	0.0	0	5
1350499	Culvert	30.47	0.70	0	0	33.00	0	0	36.60	0	0	36.60	0	0	48.30	3	0	27.60	0.0	0	4
810342	Unknown	30.42	0.00	0	0	40.10	0	0	31.10	0	0	40.10	0	0	40.10	0	0	31.10	0.0	0	3
997193	Culvert	30.38	0.70	0	0	32.90	0	0	32.90	0	0	38.30	0	0	44.60	1	0	32.90	0.0	0	5
UNKLCEP521	Culvert	30.36	0.70	0	0	34.13	0	0	37.73	0	0	37.73	0	0	43.13	2	0	28.73	0.0	0	3
UNKLCEP552	Culvert	30.35	0.70	0	0	30.34	0	0	30.34	0	0	35.74	0	0	54.64	3	0	30.34	0.0	0	5
1350487	Culvert	30.32	0.70	0	0	34.08	0	0	37.68	0	0	37.68	0	0	30.48	0	0	41.28	2.0	0	4
1350350	Culvert	30.26	0.70	0	0	39.95	0	0	30.95	0	0	39.95	0	0	39.05	1	0	30.95	0.0	0	4
1350074	ishway, Culver	30.17	0.00	0	0	39.80	0	0	30.80	0	0	39.80	0	0	39.80	0	0	30.80	0.0	0	3
UNKLCEP359	Tidegate	30.15	0.70	0	0	33.88	0	0	37.48	0	0	37.48	0	0	42.88	2	0	28.48	0.0	0	3
1206E20A	Culvert	30.10	33.70	0	0	24.70	0	0	33.70	0	0	30.10	0	0	33.70	0	0	24.70	0.0	0	1
1350353	Culvert	30.09	0.70	0	0	38.49	0	0	29.49	0	0	38.49	0	0	43.89	2	0	29.49	0.0	0	4
422061	Culvert	30.08	17.18	0	0	15.38	0	0	15.38	0	0	17.18	0	0	61.28	3	5	54.08	3.0	5	4
992781	Culvert	30.05	33.50	0	0	24.50	0	0	24.50	0	0	26.30	0	0	47.00	1	2	24.50	0.0	0	1
COW131	Culvert	30.05	44.00	2	2	15.20	0	0	24.20	0	0	20.60	0	0	61.10	3	5	15.20	0.0	0	3
40003507	Culvert	30.03	33.93	0	0	24.93	0	0	26.73	0	0	33.93	0	0	33.93	0	0	26.73	0.0	0	3
931114	Culvert	30.03	34.68	0	0	25.68	0	0	25.68	0	0	27.48	0	0	40.98	1	0	25.68	0.0	0	4
420998	Culvert	30.02	28.52	0	0	19.52	0	0	28.52	0	0	24.92	0	0	59.12	2	5	19.52	0.0	0	3
SCBar44	Culvert	30.02	0.70	0	0	31.20	0	0	31.20	0	0	36.60	0	0	49.20	2	0	31.20	0.0	0	4
1080209	Culvert	29.99	25.04	0	0	16.04	0	0	16.04	0	0	17.84	0	0	58.34	3	4	46.64	2.0	5	1
1350052	Culvert	29.96	0.00	0	0	39.55	0	0	30.55	0	0	39.55	0	0	39.55	0	0	30.55	0.0	0	3
UNKLCEP368	Culvert	29.95	21.70	3	2	14.86	0	0	51.76	3	4	51.76	3	4	30.16	3	0	9.46	0.0	0	1
602930	Culvert	29.90	24.35	0	0	22.55	0	0	22.55	0	0	24.35	0	0	61.25	3	3	24.35	0.0	0	1
1350239	Culvert	29.90	27.20	0	0	25.40	0	0	25.40	0	0	27.20	0	0	47.00	2	0	27.20	0.0	0	1
1350508	Culvert	29.89	0.00	0	0	36.23	0	0	39.83	0	0	39.83	0	0	32.63	0	0	30.83	0.0	0	5
132161562	Culvert	29.89	29.89	0	0	20.89	0	0	22.69	0	0	29.89	0	0	53.29	2	3	22.69	0.0	0	1
602998	Culvert	29.78	54.68	3	3	15.98	0	0	15.98	0	0	17.78	0	0	58.28	3	4	15.98	0.0	0	1
998685	Culvert	29.75	34.40	0	0	25.40	0	0	25.40	0	0	27.20	0	0	40.70	1	0	25.40	0.0	0	1
UNKLCEP123	Culvert	29.73	27.18	0	0	25.38	0	0	25.38	0	0	34.38	0	0	40.68	1	0	25.38	0.0	0	3
945086	Unknown	29.68	25.90	4	3	35.48	0	0	26.48	0	0	35.48	0	0	28.28	0	0	26.48	0.0	0	3
945049	Unknown	29.67	0.70	0	0	32.04	0	0	32.04	0	0	33.84	0	0	47.34	1	0	32.04	0.0	0	5
UNKLCEP346	Culvert	29.65	0.70	0	0	33.28	0	0	36.88	0	0	36.88	0	0	42.28	2	0	27.88	0.0	0	3
UNKLCEP370	Culvert	29.62	0.00	0	0	35.90	0	0	39.50	0	0	39.50	0	0	32.30	0	0	30.50	0.0	0	3
610000	Culvert	29.56	0.70	0	0	37.67	0	0	28.67	0	0	37.67	0	0	43.97	1	0	28.67	0.0	0	4
931107	Culvert	29.49	28.59	0	0	19.59	0	0	19.59	0	0	21.39	0	0	61.89	3	4	25.89	1.0	0	1
602527	Culvert	29.47	23.92	0	0	22.12	0	0	22.12	0	0	23.92	0	0	54.52	2	3	30.22	1.0	0	4
106c0180	Culvert	29.45	33.35	0	0	24.35	0	0	26.15	0	0	33.35	0	0	33.35	0	0	26.15	0.0	0	1
UNKLCEP131	Culvert	29.43	26.88	0	0	25.08	0	0	25.08	0	0	34.08	0	0	40.38	1	0	25.08	0.0	0	3
1320176	Culvert	29.33	20.30	3	2	25.20	0	0	25.20	0	0	30.60	0	0	49.50	3	0	25.20	0.0	0	4
934060	Culvert	29.31	0.70	0	0	34.13	0	0	37.73	0	0	37.73	0	0	36.83	1	0	28.73	0.0	0	4
992290	Culvert	29.30	26.60	0	0	24.80	0	0	24.80	0	0	26.60	0	0	46.40	2	0	26.60	0.0	0	1
106w064	Culvert	29.29	25.54	0	0	23.74	0	0	23.74	0	0	32.74	0	0	46.24	1	2	23.74	0.0	0	4
421133	Culvert	29.29	24.64	0	0	22.84	0	0	22.84	0	0	24.64	0	0	56.14	1	5	24.64	0.0	0	4
610001	Culvert	29.21	0.70	0	0	35.99	0	0	26.99	0	0	35.99	0	0	48.59	2	0	26.99	0.0	0	5
1350427	Culvert	29.20	33.10	0	0	24.10	0	0	25.90	0	0	33.10	0	0	33.10	0	0	25.90	0.0	0	1
UNKLCEP318	Culvert	29.16	24.66	0	0	22.86	0	0	22.86	0	0	24.66	0	0	55.26	2	3	24.66	0.0	0	3
994354	Culvert	29.15	23.00	0	0	21.20	0	0	21.20	0	0	23.00	0	0	63.50	3	4	23.00	0.0	0	4
421151	Culvert	29.14	24.64	0	0	22.84	0	0	22.84	0	0	24.64	0	0	55.24	2	3	24.64	0.0	0	4
602222	Culvert	29.12	27.47	0	0	25.67	0	0	25.67	0	0	27.47	0	0	40.97	1	0	27.47	0.0	0	3

Unique ID	Barrier Type	Average Score, all species	Winter Steelhead score	Effective Upstream Habitat Gain SthdWi Score	Upstream Habitat Quality SthdWi Score	Summer Steelhead score	Effective Upstream Habitat Gain SthdSu Score	Upstream Habitat Quality SthdSu Score	Spring Chinook score	Effective Upstream Habitat Gain ChinSp Score	Upstream Habitat Quality ChinSp Score	Fall Chinook score	Effective Upstream Habitat Gain ChinFa Score	Upstream Habitat Quality ChinFa Score	Coho score	Effective Upstream Habitat Gain Coho Score	Upstream Habitat Quality Coho Score	Chum score	Effective Upstream Habitat Gain Chum Score	Upstream Habitat Quality Chum Score	Barrier Severity Score
602236	Culvert	**29.08**	**23.53**	*0*	*0*	**21.73**	*0*	*0*	**21.73**	*0*	*0*	**23.53**	*0*	*0*	**60.43**	*3*	*3*	**23.53**	*0.0*	*0*	4
990119	Culvert	29.07	**1.40**	*0*	*0*	**27.40**	*0*	*0*	**27.40**	*0*	*0*	**48.10**	*3*	*0*	**42.70**	*1*	*0*	**27.40**	0.0	0	1
1350033	Culvert	29.05	**0.70**	*0*	*0*	**35.80**	*0*	*0*	**26.80**	*0*	*0*	**35.80**	*0*	*0*	**48.40**	*2*	*0*	**26.80**	0.0	0	3
106w067	Culvert	**29.01**	**37.71**	*1*	*3*	**18.81**	*0*	*0*	**18.81**	*0*	*0*	**27.81**	*0*	*0*	**52.11**	*1*	*5*	**18.81**	*0.0*	*0*	4
999466	Culvert	29.00	**0.70**	*0*	*0*	**31.24**	*0*	*0*	**31.24**	*0*	*0*	**33.04**	*0*	*0*	**46.54**	*1*	*0*	**31.24**	0.0	0	5
106c0089	Culvert	**28.95**	**29.10**	*0*	*0*	**20.10**	*0*	*0*	**20.10**	*0*	*0*	**29.10**	*0*	*0*	**55.20**	*3*	*4*	**20.10**	*0.0*	*0*	4
106c0181	Culvert	**28.94**	**32.84**	*0*	*0*	**23.84**	*0*	*0*	**25.64**	*0*	*0*	**32.84**	*0*	*0*	**32.84**	*0*	*0*	**25.64**	*0.0*	*0*	3
421121	Culvert	**28.88**	**24.38**	*0*	*0*	**22.58**	*0*	*0*	**22.58**	*0*	*0*	**24.38**	*0*	*0*	**54.98**	*2*	*3*	**24.38**	*0.0*	*0*	4
421499	Culvert	**28.83**	**22.68**	*0*	*0*	**20.88**	*0*	*0*	**20.88**	*0*	*0*	**22.68**	*0*	*0*	**63.18**	*3*	*4*	**22.68**	*0.0*	*0*	4
UNKLCEP439	Culvert	28.80	**0.70**	*0*	*0*	**31.00**	*0*	*0*	**31.00**	*0*	*0*	**36.40**	*0*	*0*	**42.70**	*1*	*0*	**31.00**	0.0	0	3
994588	Culvert	28.78	**7.70**	*1*	*3*	**37.86**	*0*	*0*	**30.66**	*0*	*0*	**30.66**	*0*	*0*	**36.96**	*1*	*0*	**28.86**	0.0	0	4
999797	Culvert	28.73	**0.70**	*0*	*0*	**30.91**	*0*	*0*	**30.91**	*0*	*0*	**32.71**	*0*	*0*	**46.21**	*1*	*0*	**30.91**	0.0	0	5
106c0596	Culvert	**28.67**	**32.57**	*0*	*0*	**23.57**	*0*	*0*	**25.37**	*0*	*0*	**32.57**	*0*	*0*	**32.57**	*0*	*0*	**25.37**	*0.0*	*0*	5
106c0051	Culvert	**28.59**	**21.84**	*0*	*0*	**20.04**	*0*	*0*	**20.04**	*0*	*0*	**21.84**	*0*	*0*	**65.94**	*3*	*5*	**21.84**	*0.0*	*0*	1
132041003	Culvert	**28.59**	**29.64**	*0*	*0*	**20.64**	*0*	*0*	**22.44**	*0*	*0*	**29.64**	*0*	*0*	**46.74**	*1*	*3*	**22.44**	*0.0*	*0*	4
UNKLCEP307	Culvert	**28.55**	**22.40**	*0*	*0*	**20.60**	*0*	*0*	**20.60**	*0*	*0*	**22.40**	*0*	*0*	**62.90**	*3*	*4*	**22.40**	*0.0*	*0*	1
993887	Culvert	28.55	**7.70**	*1*	*3*	**37.58**	*0*	*0*	**30.38**	*0*	*0*	**30.38**	*0*	*0*	**36.68**	*1*	*0*	**28.58**	0.0	0	4
945177	Culvert	28.53	**0.00**	*0*	*0*	**39.27**	*0*	*0*	**30.27**	*0*	*0*	**32.07**	*0*	*0*	**39.27**	*0*	*0*	**30.27**	0.0	0	5
106c0074	Culvert	**28.51**	**22.96**	*0*	*0*	**21.16**	*0*	*0*	**21.16**	*0*	*0*	**22.96**	*0*	*0*	**59.86**	*3*	*3*	**22.96**	*0.0*	*0*	3
UNKLCEP053	Culvert	**28.50**	**23.55**	*0*	*0*	**14.55**	*0*	*0*	**14.55**	*0*	*0*	**16.35**	*0*	*0*	**56.85**	*3*	*4*	**45.15**	*2.0*	*5*	3
1350039	Culvert	28.43	**1.40**	*0*	*0*	**28.80**	*0*	*0*	**19.80**	*0*	*0*	**28.80**	*0*	*0*	**41.40**	*2*	*0*	**50.40**	2.0	5	1
996970	Culvert	28.37	**1.40**	*0*	*0*	**26.74**	*0*	*0*	**30.34**	*0*	*0*	**30.34**	*0*	*0*	**35.74**	*2*	*0*	**45.64**	1.0	5	4
UNKLCEP423	Culvert	28.30	**0.70**	*0*	*0*	**30.40**	*0*	*0*	**30.40**	*0*	*0*	**35.80**	*0*	*0*	**42.10**	*1*	*0*	**30.40**	0.0	0	3
LCEPNEW025	Culvert	28.30	**0.70**	*0*	*0*	**30.40**	*0*	*0*	**30.40**	*0*	*0*	**32.20**	*0*	*0*	**45.70**	*1*	*0*	**30.40**	0.0	0	3
602932	Culvert	28.25	**0.70**	*0*	*0*	**31.60**	*0*	*0*	**35.20**	*0*	*0*	**35.20**	*0*	*0*	**40.60**	*2*	*0*	**26.20**	0.0	0	1
106c0024	Culvert	**28.24**	**33.94**	*0*	*0*	**24.94**	*0*	*0*	**24.94**	*0*	*0*	**33.94**	*0*	*0*	**26.74**	*0*	*0*	**24.94**	*0.0*	*0*	5
930131	Culvert	**28.14**	**31.14**	*0*	*0*	**31.14**	*0*	*0*	**22.14**	*0*	*0*	**31.14**	*0*	*0*	**31.14**	*0*	*0*	**22.14**	*0.0*	*0*	5
601513	Culvert	**28.12**	**15.82**	*0*	*0*	**14.02**	*0*	*0*	**14.02**	*0*	*0*	**15.82**	*0*	*0*	**56.32**	*3*	*4*	**52.72**	*3.0*	*5*	3
600387	Culvert	**28.12**	**29.92**	*0*	*0*	**20.92**	*0*	*0*	**20.92**	*0*	*0*	**22.72**	*0*	*0*	**53.32**	*2*	*3*	**20.92**	*0.0*	*0*	4
945040	Culvert	28.10	**0.70**	*0*	*0*	**37.18**	*0*	*0*	**29.98**	*0*	*0*	**29.98**	*0*	*0*	**42.58**	*2*	*0*	**28.18**	0.0	0	5
931126	Culvert	**28.10**	**29.90**	*0*	*0*	**20.90**	*0*	*0*	**20.90**	*0*	*0*	**22.70**	*0*	*0*	**53.30**	*2*	*3*	**20.90**	*0.0*	*0*	1
421489	Culvert	**28.07**	**24.62**	*0*	*0*	**22.82**	*0*	*0*	**28.22**	*0*	*0*	**28.22**	*0*	*0*	**41.72**	*1*	*2*	**22.82**	*0.0*	*0*	5
999460	Culvert	28.05	**0.70**	*0*	*0*	**30.10**	*0*	*0*	**30.10**	*0*	*0*	**35.50**	*0*	*0*	**41.80**	*1*	*0*	**30.10**	0.0	0	5
2009004	Culvert	**28.04**	**32.69**	*0*	*0*	**23.69**	*0*	*0*	**23.69**	*0*	*0*	**25.49**	*0*	*0*	**38.99**	*1*	*0*	**23.69**	*0.0*	*0*	5
700123	Culvert	**28.04**	**22.94**	*0*	*0*	**21.14**	*0*	*0*	**21.14**	*0*	*0*	**22.94**	*0*	*0*	**57.14**	*2*	*4*	**22.94**	*0.0*	*0*	1
27.0305 1.00	ishway, Culver	28.02	**0.70**	*0*	*0*	**31.32**	*0*	*0*	**34.92**	*0*	*0*	**34.92**	*0*	*0*	**40.32**	*2*	*0*	**25.92**	0.0	0	4
1350485	Culvert	28.00	**9.10**	*1*	*3*	**23.32**	*0*	*0*	**44.02**	*1*	*3*	**26.92**	*0*	*0*	**26.02**	*1*	*0*	**38.62**	1.0	4	1
1350260	Culvert	**28.00**	**27.40**	*0*	*0*	**18.40**	*0*	*0*	**20.20**	*0*	*0*	**27.40**	*0*	*0*	**54.40**	*2*	*4*	**20.20**	*0.0*	*0*	3
1350478	Culvert	28.00	**0.70**	*0*	*0*	**31.30**	*0*	*0*	**34.90**	*0*	*0*	**34.90**	*0*	*0*	**40.30**	*2*	*0*	**25.90**	0.0	0	1
021(56001)(0006	Culvert	**27.97**	**20.77**	*0*	*0*	**18.97**	*0*	*0*	**18.97**	*0*	*0*	**20.77**	*0*	*0*	**54.97**	*2*	*4*	**33.37**	*2.0*	*0*	5
999221	Culvert	27.96	**7.70**	*1*	*1*	**28.59**	*0*	*0*	**28.59**	*0*	*0*	**30.39**	*0*	*0*	**43.89**	*1*	*0*	**28.59**	0.0	0	5
810149	Unknown	27.93	**0.70**	*0*	*0*	**28.70**	*0*	*0*	**28.70**	*0*	*0*	**34.10**	*0*	*0*	**46.70**	*2*	*0*	**28.70**	0.0	0	3
LCEPNEW037	Culvert	27.87	**0.70**	*0*	*0*	**34.38**	*0*	*0*	**25.38**	*0*	*0*	**34.38**	*0*	*0*	**46.98**	*2*	*0*	**25.38**	0.0	0	3
1080208	Culvert	**27.84**	**29.64**	*0*	*0*	**20.64**	*0*	*0*	**20.64**	*0*	*0*	**22.44**	*0*	*0*	**53.04**	*2*	*3*	**20.64**	*0.0*	*0*	3
LCEPNEW034	Culvert	27.83	**0.70**	*0*	*0*	**34.33**	*0*	*0*	**25.33**	*0*	*0*	**46.93**	*2*	*0*	**34.33**	*0*	*0*	**25.33**	0.0	0	3
132071558	Culvert	**27.81**	**29.61**	*0*	*0*	**20.61**	*0*	*0*	**20.61**	*0*	*0*	**22.41**	*0*	*0*	**53.01**	*2*	*3*	**20.61**	*0.0*	*0*	4
40003440	Culvert	**27.81**	**31.71**	*0*	*0*	**22.71**	*0*	*0*	**24.51**	*0*	*0*	**31.71**	*0*	*0*	**31.71**	*0*	*0*	**24.51**	*0.0*	*0*	3
602233	Culvert	**27.73**	**20.98**	*0*	*0*	**19.18**	*0*	*0*	**19.18**	*0*	*0*	**20.98**	*0*	*0*	**65.08**	*3*	*5*	**20.98**	*0.0*	*0*	4
107-002	Culvert	27.72	**0.70**	*0*	*0*	**29.70**	*0*	*0*	**33.30**	*0*	*0*	**33.30**	*0*	*0*	**45.00**	*3*	*0*	**24.30**	0.0	0	3
992099	Culvert	**27.69**	**22.44**	*0*	*0*	**20.64**	*0*	*0*	**26.04**	*0*	*0*	**26.04**	*0*	*0*	**50.34**	*1*	*5*	**20.64**	*0.0*	*0*	1
610143	Culvert	**27.66**	**27.06**	*0*	*0*	**18.06**	*0*	*0*	**19.86**	*0*	*0*	**27.06**	*0*	*0*	**54.06**	*2*	*4*	**19.86**	*0.0*	*0*	4
UNKLCEP381	Culvert	27.65	**0.70**	*0*	*0*	**34.12**	*0*	*0*	**25.12**	*0*	*0*	**34.12**	*0*	*0*	**46.72**	*2*	*0*	**25.12**	0.0	0	3
981319	Ion Culvert Xin	**27.64**	**27.04**	*0*	*0*	**25.24**	*0*	*0*	**25.24**	*0*	*0*	**27.04**	*0*	*0*	**34.24**	*0*	*0*	**27.04**	*0.0*	*0*	5
700062	Culvert	**27.62**	**22.52**	*0*	*0*	**20.72**	*0*	*0*	**20.72**	*0*	*0*	**22.52**	*0*	*0*	**50.42**	*1*	*4*	**28.82**	*1.0*	*0*	1
1350008	Culvert	27.62	**0.00**	*0*	*0*	**36.74**	*0*	*0*	**27.74**	*0*	*0*	**36.74**	*0*	*0*	**36.74**	*0*	*0*	**27.74**	0.0	0	4
UNKLCEP240	Tidegate	**27.59**	**27.14**	*0*	*0*	**18.14**	*0*	*0*	**18.14**	*0*	*0*	**27.14**	*0*	*0*	**56.84**	*3*	*5*	**18.14**	*0.0*	*0*	5
LCEPNEW030	Culvert	27.58	**0.70**	*0*	*0*	**29.54**	*0*	*0*	**29.54**	*0*	*0*	**31.34**	*0*	*0*	**44.84**	*1*	*0*	**29.54**	0.0	0	4
992804	Culvert	27.58	**0.70**	*0*	*0*	**30.80**	*0*	*0*	**34.40**	*0*	*0*	**34.40**	*0*	*0*	**39.80**	*2*	*0*	**25.40**	0.0	0	1
601757	Culvert	**27.58**	**37.78**	*2*	*4*	**8.98**	*0*	*0*	**8.98**	*0*	*0*	**37.78**	*2*	*4*	**48.58**	*2*	*5*	**23.38**	*2.0*	*0*	1
999800	Culvert	27.56	**0.70**	*0*	*0*	**29.51**	*0*	*0*	**29.51**	*0*	*0*	**31.31**	*0*	*0*	**44.81**	*1*	*0*	**29.51**	0.0	0	5
1080206	Culvert	**27.53**	**27.68**	*0*	*0*	**18.68**	*0*	*0*	**18.68**	*0*	*0*	**20.48**	*0*	*0*	**60.98**	*3*	*4*	**18.68**	*0.0*	*0*	3
LCEPNEW013	Culvert	27.45	**0.00**	*0*	*0*	**30.78**	*0*	*0*	**30.78**	*0*	*0*	**36.18**	*0*	*0*	**36.18**	*0*	*0*	**30.78**	0.0	0	5
994524	Culvert	27.44	**0.70**	*0*	*0*	**31.89**	*0*	*0*	**35.49**	*0*	*0*	**35.49**	*0*	*0*	**34.59**	*1*	*0*	**26.49**	0.0	0	3
421702	Culvert	**27.43**	**21.28**	*0*	*0*	**19.48**	*0*	*0*	**19.48**	*0*	*0*	**21.28**	*0*	*0*	**61.78**	*3*	*4*	**21.28**	*0.0*	*0*	1
991039	Culvert	27.39	**0.00**	*0*	*0*	**38.99**	*0*	*0*	**31.79**	*0*	*0*	**31.79**	*0*	*0*	**31.79**	*0*	*0*	**29.99**	0.0	0	5
993869	Culvert	**27.34**	**21.04**	*0*	*0*	**19.24**	*0*	*0*	**24.64**	*0*	*0*	**24.64**	*0*	*0*	**55.24**	*2*	*5*	**19.24**	*0.0*	*0*	1
106c0352	Culvert	**27.31**	**26.71**	*0*	*0*	**24.91**	*0*	*0*	**24.91**	*0*	*0*	**26.71**	*0*	*0*	**33.91**	*0*	*0*	**26.71**	*0.0*	*0*	5
1350285	Culvert	27.31	**0.00**	*0*	*0*	**33.13**	*0*	*0*	**36.73**	*0*	*0*	**36.73**	*0*	*0*	**29.53**	*0*	*0*	**27.73**	0.0	0	4
UNKLCEP502	Culvert	27.28	**0.70**	*0*	*0*	**34.93**	*0*	*0*	**25.93**	*0*	*0*	**34.93**	*0*	*0*	**34.93**	*0*	*0*	**32.23**	1.0	0	3
106w069	Culvert	**27.25**	**45.55**	*3*	*3*	**14.05**	*0*	*0*	**14.05**	*0*	*0*	**23.05**	*0*	*0*	**52.75**	*3*	*3*	**14.05**	*0.0*	*0*	1

Unique ID	Barrier Type	Average Score, all species	Winter Steelhead score	Effective Upstream Habitat Gain SthdWi Score	Upstream Habitat Quality SthdWi Score	Summer Steelhead score	Effective Upstream Habitat Gain SthdSu Score	Upstream Habitat Quality SthdSu Score	Spring Chinook score	Effective Upstream Habitat Gain ChinSp Score	Upstream Habitat Quality ChinSp Score	Fall Chinook score	Effective Upstream Habitat Gain ChinFa Score	Upstream Habitat Quality ChinFa Score	Coho score	Effective Upstream Habitat Gain Coho Score	Upstream Habitat Quality Coho Score	Chum score	Effective Upstream Habitat Gain Chum Score	Upstream Habitat Quality Chum Score	Barrier Severity Score
106c0178	Culvert	**27.22**	**22.72**	*0*	*0*	**20.92**	*0*	*0*	***20.92***	*0*	*0*	***22.72***	*0*	*0*	***53.32***	*2*	*3*	***22.72***	*0.0*	*0*	5
LCEPNEW027	Culvert	27.22	**0.70**	*0*	*0*	***27.84***	*0*	*0*	***27.84***	*0*	*0*	***29.64***	*0*	*0*	***49.44***	*2*	*0*	**27.84**	0.0	0	4
UNKLCEP474	Tidegate	27.22	**0.00**	*0*	*0*	***30.50***	*0*	*0*	***30.50***	*0*	*0*	***35.90***	*0*	*0*	***35.90***	*0*	*0*	**30.50**	0.0	0	3
421497	Culvert	**27.15**	**21.00**	*0*	*0*	**19.20**	*0*	*0*	***19.20***	*0*	*0*	***21.00***	*0*	*0*	***61.50***	*3*	*4*	***21.00***	*0.0*	*0*	4
LCEPNEW057	unknown	**27.02**	**14.12**	*0*	*0*	**12.32**	*0*	*0*	***12.32***	*0*	*0*	***14.12***	*0*	*0*	***58.22***	*3*	*5*	***51.02***	*3.0*	*5*	3
LCEPNEW056	Culvert	**27.00**	**14.10**	*0*	*0*	**12.30**	*0*	*0*	***12.30***	*0*	*0*	***14.10***	*0*	*0*	***58.20***	*3*	*5*	***51.00***	*3.0*	*5*	3
UNKLCEP372	Culvert	26.98	**0.70**	*0*	*0*	***31.33***	*0*	*0*	***34.93***	*0*	*0*	***34.93***	*0*	*0*	***34.03***	*1*	*0*	**25.93**	0.0	0	3
1080207	Culvert	**26.97**	**27.12**	*0*	*0*	**18.12**	*0*	*0*	***18.12***	*0*	*0*	***19.92***	*0*	*0*	***60.42***	*3*	*4*	***18.12***	*0.0*	*0*	3
1350518	Culvert	26.95	**14.00**	*2*	*2*	***26.12***	*0*	*0*	***29.72***	*0*	*0*	***29.72***	*0*	*0*	***41.42***	*3*	*0*	**20.72**	0.0	0	3
1350201	Culvert	26.95	**0.70**	*0*	*0*	***35.80***	*0*	*0*	***28.60***	*0*	*0*	***28.60***	*0*	*0*	***41.20***	*2*	*0*	**26.80**	0.0	0	4
132182009B	Culvert	**26.93**	**31.58**	*0*	*0*	**22.58**	*0*	*0*	***22.58***	*0*	*0*	***24.38***	*0*	*0*	***37.88***	*1*	*0*	***22.58***	*0.0*	*0*	5
602205	Culvert	**26.92**	**21.82**	*0*	*0*	**20.02**	*0*	*0*	***20.02***	*0*	*0*	***21.82***	*0*	*0*	***56.02***	*2*	*4*	***21.82***	*0.0*	*0*	1
1350195	Culvert	**26.89**	**25.24**	*0*	*0*	**23.44**	*0*	*0*	***23.44***	*0*	*0*	***25.24***	*0*	*0*	***38.74***	*1*	*0*	***25.24***	*0.0*	*0*	5
UNKLCEP283	Culvert	**26.88**	**22.38**	*0*	*0*	**20.58**	*0*	*0*	***20.58***	*0*	*0*	***22.38***	*0*	*0*	***52.98***	*2*	*3*	***22.38***	*0.0*	*0*	3
421126	Culvert	**26.85**	**21.30**	*0*	*0*	**19.50**	*0*	*0*	***19.50***	*0*	*0*	***21.30***	*0*	*0*	***58.20***	*3*	*3*	***21.30***	*0.0*	*0*	3
421625	Culvert	**26.80**	**26.20**	*0*	*0*	**24.40**	*0*	*0*	***24.40***	*0*	*0*	***26.20***	*0*	*0*	***33.40***	*0*	*0*	***26.20***	*0.0*	*0*	1
994650	Culvert	26.80	**1.40**	*0*	*0*	***23.60***	*0*	*0*	***27.20***	*0*	*0*	***27.20***	*0*	*0*	***32.60***	*2*	*0*	**48.80**	2.0	5	4
945048	Unknown	26.80	**0.00**	*0*	*0*	***30.00***	*0*	*0*	***30.00***	*0*	*0*	***31.80***	*0*	*0*	***39.00***	*0*	*0*	**30.00**	0.0	0	3
994591	Culvert	26.79	**0.70**	*0*	*0*	***36.87***	*0*	*0*	***29.67***	*0*	*0*	***29.67***	*0*	*0*	***35.97***	*1*	*0*	**27.87**	0.0	0	4
700238	Culvert	**26.69**	**25.79**	*0*	*0*	**16.79**	*0*	*0*	***16.79***	*0*	*0*	***24.89***	*1*	*0*	***59.09***	*3*	*4*	***16.79***	*0.0*	*0*	4
992276	Culvert	**26.68**	**22.18**	*0*	*0*	**20.38**	*0*	*0*	***20.38***	*0*	*0*	***22.18***	*0*	*0*	***52.78***	*2*	*3*	***22.18***	*0.0*	*0*	4
132191513C	Culvert	26.68	**0.70**	*0*	*0*	***28.45***	*0*	*0*	***28.45***	*0*	*0*	***33.85***	*0*	*0*	***40.15***	*1*	*0*	**28.45**	0.0	0	3
UNKLCEP006	Culvert	**26.67**	**27.42**	*0*	*0*	**18.42**	*0*	*0*	***18.42***	*0*	*0*	***20.22***	*0*	*0*	***57.12***	*3*	*3*	***18.42***	*0.0*	*0*	3
1350092	Culvert	26.58	**0.70**	*0*	*0*	***34.10***	*0*	*0*	***25.10***	*0*	*0*	***34.10***	*0*	*0*	***40.40***	*1*	*0*	**25.10**	0.0	0	1
945087	Unknown	26.53	**19.60**	*3*	*3*	***32.96***	*0*	*0*	***23.96***	*0*	*0*	***32.96***	*0*	*0*	***25.76***	*0*	*0*	**23.96**	0.0	0	3
UNKLCEP361	Culvert	26.52	**0.70**	*0*	*0*	***30.78***	*0*	*0*	***34.38***	*0*	*0*	***34.38***	*0*	*0*	***33.48***	*1*	*0*	**25.38**	0.0	0	3
610144	Culvert	**26.50**	**26.50**	*0*	*0*	**17.50**	*0*	*0*	***19.30***	*0*	*0*	***26.50***	*0*	*0*	***49.90***	*2*	*3*	***19.30***	*0.0*	*0*	3
1350278	Culvert	26.48	**0.70**	*0*	*0*	***32.72***	*0*	*0*	***23.72***	*0*	*0*	***32.72***	*0*	*0*	***45.32***	*2*	*0*	**23.72**	0.0	0	5
600389	Culvert	**26.45**	**24.95**	*0*	*0*	**15.95**	*0*	*0*	***15.95***	*0*	*0*	***30.35***	*2*	*0*	***55.55***	*2*	*5*	***15.95***	*0.0*	*0*	4
994653	Culvert	26.44	**0.70**	*0*	*0*	***35.19***	*0*	*0*	***27.99***	*0*	*0*	***27.99***	*0*	*0*	***40.59***	*2*	*0*	**26.19**	0.0	0	5
-1389069174	Culvert	26.43	**0.70**	*0*	*0*	***29.42***	*0*	*0*	***45.62***	*2*	*0*	***33.02***	*0*	*0*	***25.82***	*0*	*0*	**24.02**	0.0	0	5
UNKLCEP438	Culvert	26.42	**0.70**	*0*	*0*	***25.62***	*0*	*0*	***25.62***	*0*	*0*	***31.02***	*0*	*0*	***49.92***	*3*	*0*	**25.62**	0.0	0	3
1350479	Culvert	26.41	**0.70**	*0*	*0*	***29.39***	*0*	*0*	***32.99***	*0*	*0*	***32.99***	*0*	*0*	***38.39***	*2*	*0*	**23.99**	0.0	0	5
UNKLCEP294	Culvert	**26.40**	**21.90**	*0*	*0*	**20.10**	*0*	*0*	***20.10***	*0*	*0*	***21.90***	*0*	*0*	***52.50***	*2*	*3*	***21.90***	*0.0*	*0*	3
UNKLCEP317	Culvert	**26.36**	**21.86**	*0*	*0*	**20.06**	*0*	*0*	***20.06***	*0*	*0*	***21.86***	*0*	*0*	***52.46***	*2*	*3*	***21.86***	*0.0*	*0*	3
421712	Culvert	**26.34**	**19.14**	*0*	*0*	**17.34**	*0*	*0*	***17.34***	*0*	*0*	***19.14***	*0*	*0*	***53.34***	*2*	*4*	***31.74***	*2.0*	*0*	1
132091215	Culvert	**26.31**	**24.66**	*0*	*0*	**22.86**	*0*	*0*	***22.86***	*0*	*0*	***24.66***	*0*	*0*	***38.16***	*1*	*0*	***24.66***	*0.0*	*0*	5
106c0165	Culvert	**26.31**	**24.66**	*0*	*0*	**22.86**	*0*	*0*	***22.86***	*0*	*0*	***24.66***	*0*	*0*	***38.16***	*1*	*0*	***24.66***	*0.0*	*0*	3
UNKLCEP282	Culvert	**26.29**	**20.14**	*0*	*0*	**18.34**	*0*	*0*	***18.34***	*0*	*0*	***20.14***	*0*	*0*	***60.64***	*3*	*4*	***20.14***	*0.0*	*0*	3
UNKLCEP345	Culvert	26.27	**0.70**	*0*	*0*	***30.48***	*0*	*0*	***34.08***	*0*	*0*	***34.08***	*0*	*0*	***33.18***	*1*	*0*	**25.08**	0.0	0	3
132161864B	Culvert	**26.25**	**24.60**	*0*	*0*	**22.80**	*0*	*0*	***22.80***	*0*	*0*	***24.60***	*0*	*0*	***38.10***	*1*	*0*	***24.60***	*0.0*	*0*	1
021(95002)(1173	Culvert	**26.15**	**21.05**	*0*	*0*	**19.25**	*0*	*0*	***19.25***	*0*	*0*	***21.05***	*0*	*0*	***48.95***	*1*	*4*	***27.35***	*1.0*	*0*	1
994351	Culvert	**26.13**	**19.38**	*0*	*0*	**17.58**	*0*	*0*	***17.58***	*0*	*0*	***19.38***	*0*	*0*	***63.48***	*3*	*5*	***19.38***	*0.0*	*0*	4
602203	Culvert	**26.07**	**19.32**	*0*	*0*	**17.52**	*0*	*0*	***17.52***	*0*	*0*	***19.32***	*0*	*0*	***63.42***	*3*	*5*	***19.32***	*0.0*	*0*	1
1350254	Culvert	**26.05**	**27.10**	*0*	*0*	**18.10**	*0*	*0*	***19.90***	*0*	*0*	***27.10***	*0*	*0*	***44.20***	*1*	*3*	***19.90***	*0.0*	*0*	3
994154	Culvert	**25.99**	**19.39**	*0*	*0*	**17.59**	*0*	*0*	***17.59***	*0*	*0*	***19.39***	*0*	*0*	***49.99***	*2*	*3*	***31.99***	*2.0*	*0*	4
106c0070	Culvert	**25.98**	**23.28**	*0*	*0*	**21.48**	*0*	*0*	***21.48***	*0*	*0*	***23.28***	*0*	*0*	***43.08***	*2*	*0*	***23.28***	*0.0*	*0*	4
994827	Culvert	25.92	**14.00**	*2*	*3*	***26.14***	*0*	*0*	***29.74***	*0*	*0*	***29.74***	*0*	*0*	***35.14***	*2*	*0*	**20.74**	0.0	0	1
1350327	Culvert	25.85	**0.70**	*0*	*0*	***27.46***	*0*	*0*	***31.06***	*0*	*0*	***31.06***	*0*	*0*	***42.76***	*3*	*0*	**22.06**	0.0	0	4
1350438	Culvert	25.84	**0.70**	*0*	*0*	***30.69***	*0*	*0*	***21.69***	*0*	*0*	***30.69***	*0*	*0*	***49.59***	*3*	*0*	**21.69**	0.0	0	5
999967	Culvert	25.83	**21.00**	*3*	*3*	***19.24***	*0*	*0*	***10.24***	*0*	*0*	***19.24***	*0*	*0*	***38.14***	*3*	*0*	**47.14**	3.0	5	1
106c0709	Culvert	**25.82**	**29.72**	*0*	*0*	**20.72**	*0*	*0*	***22.52***	*0*	*0*	***29.72***	*0*	*0*	***29.72***	*0*	*0*	***22.52***	*0.0*	*0*	4
422094	Culvert	**25.77**	**19.62**	*0*	*0*	**17.82**	*0*	*0*	***17.82***	*0*	*0*	***19.62***	*0*	*0*	***60.12***	*3*	*4*	***19.62***	*0.0*	*0*	3
LCEPNEW038	Culvert	25.77	**0.70**	*0*	*0*	***31.86***	*0*	*0*	***22.86***	*0*	*0*	***31.86***	*0*	*0*	***44.46***	*2*	*0*	**22.86**	0.0	0	3
1320563	Culvert	25.75	**0.00**	*0*	*0*	***37.02***	*0*	*0*	***29.82***	*0*	*0*	***29.82***	*0*	*0*	***29.82***	*0*	*0*	**28.02**	0.0	0	4
1080210	Culvert	**25.74**	**29.34**	*0*	*0*	**20.34**	*0*	*0*	***20.34***	*0*	*0*	***22.14***	*0*	*0*	***41.94***	*2*	*0*	***20.34***	*0.0*	*0*	3
421945	Culvert	**25.73**	**20.18**	*0*	*0*	**18.38**	*0*	*0*	***18.38***	*0*	*0*	***20.18***	*0*	*0*	***57.08***	*3*	*3*	***20.18***	*0.0*	*0*	3
106c0382	Culvert	**25.72**	**23.02**	*0*	*0*	**21.22**	*0*	*0*	***21.22***	*0*	*0*	***23.02***	*0*	*0*	***30.22***	*0*	*0*	***35.62***	*2.0*	*0*	4
1320788	Culvert	**25.67**	**25.07**	*0*	*0*	**23.27**	*0*	*0*	***23.27***	*0*	*0*	***25.07***	*0*	*0*	***32.27***	*0*	*0*	***25.07***	*0.0*	*0*	4
COW139	Culvert	**25.63**	**20.08**	*0*	*0*	**18.28**	*0*	*0*	***18.28***	*0*	*0*	***20.08***	*0*	*0*	***56.98***	*3*	*3*	***20.08***	*0.0*	*0*	3
601764	Culvert	**25.53**	**23.28**	*0*	*0*	**21.48**	*0*	*0*	***21.48***	*0*	*0*	***23.28***	*0*	*0*	***40.38***	*1*	*1*	***23.28***	*0.0*	*0*	4
1350035	Culvert	25.53	**0.00**	*0*	*0*	***34.23***	*0*	*0*	***25.23***	*0*	*0*	***34.23***	*0*	*0*	***34.23***	*0*	*0*	**25.23**	0.0	0	3
106c0068	Culvert	**25.49**	**23.84**	*0*	*0*	**22.04**	*0*	*0*	***22.04***	*0*	*0*	***23.84***	*0*	*0*	***37.34***	*1*	*0*	***23.84***	*0.0*	*0*	4
LCEPNEW008	0	25.47	**0.70**	*0*	*0*	***28.26***	*0*	*0*	***31.86***	*0*	*0*	***31.86***	*0*	*0*	***37.26***	*2*	*0*	**22.86**	0.0	0	5
1350034	Culvert	25.46	**0.00**	*0*	*0*	***34.15***	*0*	*0*	***25.15***	*0*	*0*	***34.15***	*0*	*0*	***34.15***	*0*	*0*	**25.15**	0.0	0	5
1350497	Culvert	25.35	**0.70**	*0*	*0*	***29.38***	*0*	*0*	***32.98***	*0*	*0*	***32.98***	*0*	*0*	***32.08***	*1*	*0*	**23.98**	0.0	0	5
1080199	Culvert	**25.32**	**27.12**	*0*	*0*	**18.12**	*0*	*0*	***18.12***	*0*	*0*	***19.92***	*0*	*0*	***50.52***	*2*	*3*	***18.12***	*0.0*	*0*	3
UNKLCEP054	Culvert	**25.32**	**27.12**	*0*	*0*	**18.12**	*0*	*0*	***18.12***	*0*	*0*	***19.92***	*0*	*0*	***50.52***	*2*	*3*	***18.12***	*0.0*	*0*	3
930298	Culvert	25.30	**0.70**	*0*	*0*	***31.30***	*0*	*0*	***22.30***	*0*	*0*	***31.30***	*0*	*0*	***43.90***	*2*	*0*	**22.30**	0.0	0	5
132121787	Culvert	**25.27**	**22.42**	*0*	*0*	**20.62**	*0*	*0*	***20.62***	*0*	*0*	***22.42***	*0*	*0*	***43.12***	*1*	*2*	***22.42***	*0.0*	*0*	4

Unique ID	Barrier Type	Average Score, all species	Winter Steelhead score	Effective Upstream Habitat Gain SthdWi Score	Upstream Habitat Quality SthdWi Score	Summer Steelhead score	Effective Upstream Habitat Gain SthdSu Score	Upstream Habitat Quality SthdSu Score	Spring Chinook score	Effective Upstream Habitat Gain ChinSp Score	Upstream Habitat Quality ChinSp Score	Fall Chinook score	Effective Upstream Habitat Gain ChinFa Score	Upstream Habitat Quality ChinFa Score	Coho score	Effective Upstream Habitat Gain Coho Score	Upstream Habitat Quality Coho Score	Chum score	Effective Upstream Habitat Gain Chum Score	Upstream Habitat Quality Chum Score	Barrier Severity Score
1350235	Culvert	**25.21**	**19.66**	*0*	*0*	**17.86**	*0*	*0*	***17.86***	*0*	*0*	***19.66***	*0*	*0*	***56.56***	*3*	*3*	***19.66***	*0.0*	*0*	3
1350517	Culvert	25.20	**0.70**	*0*	*0*	***27.94***	*0*	*0*	***31.54***	*0*	*0*	***31.54***	*0*	*0*	***36.94***	*2*	*0*	**22.54**	0.0	0	3
1350067	Culvert	25.19	**1.40**	*0*	*0*	***24.91***	*0*	*0*	***15.91***	*0*	*0*	***24.91***	*0*	*0*	***37.51***	*2*	*0*	**46.51**	2.0	5	4
935415	Culvert	25.18	**14.70**	*2*	*2*	***17.73***	*0*	*0*	***17.73***	*0*	*0*	***47.43***	*1*	*5*	***35.73***	*2*	*0*	**17.73**	0.0	0	1
421943	0	**25.17**	**19.62**	*0*	*0*	**17.82**	*0*	*0*	***17.82***	*0*	*0*	***19.62***	*0*	*0*	***56.52***	*3*	*3*	***19.62***	*0.0*	*0*	3
421129	Culvert	**25.17**	**19.02**	*0*	*0*	**17.22**	*0*	*0*	***17.22***	*0*	*0*	***19.02***	*0*	*0*	***59.52***	*3*	*4*	***19.02***	*0.0*	*0*	3
132191691B	Culvert	25.13	**0.70**	*0*	*0*	***29.11***	*0*	*0*	***32.71***	*0*	*0*	***32.71***	*0*	*0*	***31.81***	*1*	*0*	**23.71**	0.0	0	5
992331	Culvert	**25.12**	**22.42**	*0*	*0*	**20.62**	*0*	*0*	***20.62***	*0*	*0*	***22.42***	*0*	*0*	***42.22***	*2*	*0*	***22.42***	*0.0*	*0*	4
132191513M	Culvert	25.12	**0.00**	*0*	*0*	***27.98***	*0*	*0*	***27.98***	*0*	*0*	***33.38***	*0*	*0*	***33.38***	*0*	*0*	**27.98**	0.0	0	5
UNKLCEP414	Culvert	25.12	**0.00**	*0*	*0*	***27.98***	*0*	*0*	***27.98***	*0*	*0*	***33.38***	*0*	*0*	***33.38***	*0*	*0*	**27.98**	0.0	0	3
UNKLCEP212	Culvert	**25.07**	**24.62**	*0*	*0*	**15.62**	*0*	*0*	***15.62***	*0*	*0*	***24.62***	*0*	*0*	***54.32***	*3*	*5*	***15.62***	*0.0*	*0*	3
UNKLCEP170	Culvert	**25.06**	**19.66**	*0*	*0*	**17.86**	*0*	*0*	***17.86***	*0*	*0*	***26.86***	*0*	*0*	***50.26***	*2*	*3*	***17.86***	*0.0*	*0*	3
106c0439	Culvert	**25.04**	**28.94**	*0*	*0*	**19.94**	*0*	*0*	***21.74***	*0*	*0*	***28.94***	*0*	*0*	***28.94***	*0*	*0*	***21.74***	*0.0*	*0*	4
106c0648	Culvert	**25.01**	**28.91**	*0*	*0*	**19.91**	*0*	*0*	***21.71***	*0*	*0*	***28.91***	*0*	*0*	***28.91***	*0*	*0*	***21.71***	*0.0*	*0*	3
602227	Culvert	**24.99**	**22.14**	*0*	*0*	**20.34**	*0*	*0*	***20.34***	*0*	*0*	***22.14***	*0*	*0*	***42.84***	*1*	*2*	***22.14***	*0.0*	*0*	3
UNKLCEP431	Culvert	24.93	**0.70**	*0*	*0*	***25.10***	*0*	*0*	***25.10***	*0*	*0*	***30.50***	*0*	*0*	***43.10***	*2*	*0*	**25.10**	0.0	0	3
UNKLCEP424	Culvert	24.90	**7.70**	*1*	*3*	***22.40***	*0*	*0*	***22.40***	*0*	*0*	***27.80***	*0*	*0*	***46.70***	*3*	*0*	**22.40**	0.0	0	3
998173	Culvert	24.88	**14.00**	*2*	*2*	***22.38***	*0*	*0*	***22.38***	*0*	*0*	***27.78***	*0*	*0*	***40.38***	*2*	*0*	**22.38**	0.0	0	4
132091766	Culvert	**24.84**	**24.24**	*0*	*0*	**22.44**	*0*	*0*	***22.44***	*0*	*0*	***24.24***	*0*	*0*	***31.44***	*0*	*0*	***24.24***	*0.0*	*0*	5
LCEPNEW035	Culvert	24.83	**0.70**	*0*	*0*	***30.74***	*0*	*0*	***21.74***	*0*	*0*	***30.74***	*0*	*0*	***43.34***	*2*	*0*	**21.74**	0.0	0	3
990085	Culvert	24.80	**0.70**	*0*	*0*	***23.68***	*0*	*0*	***23.68***	*0*	*0*	***29.08***	*0*	*0*	***47.98***	*3*	*0*	**23.68**	0.0	0	5
994568	Culvert	24.79	**0.70**	*0*	*0*	***30.69***	*0*	*0*	***21.69***	*0*	*0*	***30.69***	*0*	*0*	***43.29***	*2*	*0*	**21.69**	0.0	0	1
945209	Culvert	24.76	**0.00**	*0*	*0*	***34.75***	*0*	*0*	***25.75***	*0*	*0*	***27.55***	*0*	*0*	***34.75***	*0*	*0*	**25.75**	0.0	0	1
992674	Culvert	**24.75**	**21.30**	*0*	*0*	**19.50**	*0*	*0*	***19.50***	*0*	*0*	***21.30***	*0*	*0*	***45.60***	*1*	*3*	***21.30***	*0.0*	*0*	4
994152	Culvert	**24.63**	**17.43**	*0*	*0*	**15.63**	*0*	*0*	***15.63***	*0*	*0*	***17.43***	*0*	*0*	***51.63***	*2*	*4*	***30.03***	*2.0*	*0*	3
602874	Culvert	**24.61**	**18.46**	*0*	*0*	**16.66**	*0*	*0*	***16.66***	*0*	*0*	***18.46***	*0*	*0*	***58.96***	*3*	*4*	***18.46***	*0.0*	*0*	1
421127	Culvert	**24.61**	**19.06**	*0*	*0*	**17.26**	*0*	*0*	***17.26***	*0*	*0*	***19.06***	*0*	*0*	***55.96***	*3*	*3*	***19.06***	*0.0*	*0*	3
601766	Culvert	**24.59**	**19.04**	*0*	*0*	**17.24**	*0*	*0*	***17.24***	*0*	*0*	***19.04***	*0*	*0*	***55.94***	*3*	*3*	***19.04***	*0.0*	*0*	1
992275	Culvert	**24.55**	**20.50**	*0*	*0*	**18.70**	*0*	*0*	***18.70***	*0*	*0*	***20.50***	*0*	*0*	***48.40***	*1*	*4*	***20.50***	*0.0*	*0*	5
990177	Culvert	24.53	**2.10**	*0*	*0*	***23.07***	*0*	*0*	***23.07***	*0*	*0*	***31.17***	*1*	*0*	***38.37***	*1*	*0*	**29.37**	1.0	0	5
981332	Culvert	**24.46**	**18.76**	*0*	*0*	**16.96**	*0*	*0*	***16.96***	*0*	*0*	***18.76***	*0*	*0*	***56.56***	*2*	*5*	***18.76***	*0.0*	*0*	5
993494	Culvert	**24.45**	**21.00**	*0*	*0*	**19.20**	*0*	*0*	***19.20***	*0*	*0*	***21.00***	*0*	*0*	***45.30***	*1*	*3*	***21.00***	*0.0*	*0*	4
992220	Culvert	**24.43**	**21.58**	*0*	*0*	**19.78**	*0*	*0*	***19.78***	*0*	*0*	***21.58***	*0*	*0*	***42.28***	*1*	*2*	***21.58***	*0.0*	*0*	4
SCBar42	Culvert	24.40	**0.00**	*0*	*0*	***27.12***	*0*	*0*	***27.12***	*0*	*0*	***32.52***	*0*	*0*	***32.52***	*0*	*0*	**27.12**	0.0	0	5
991665	Culvert	24.38	**14.00**	*2*	*3*	***30.05***	*0*	*0*	***22.85***	*0*	*0*	***22.85***	*0*	*0*	***35.45***	*2*	*0*	**21.05**	0.0	0	5
132131008	Culvert Xin	24.34	**0.00**	*0*	*0*	***34.25***	*0*	*0*	***25.25***	*0*	*0*	***34.25***	*0*	*0*	***27.05***	*0*	*0*	**25.25**	0.0	0	1
SCWC08	ishway, Culver	24.32	**0.70**	*0*	*0*	***23.10***	*0*	*0*	***23.10***	*0*	*0*	***28.50***	*0*	*0*	***47.40***	*3*	*0*	**23.10**	0.0	0	1
1350495	Culvert	24.32	**0.70**	*0*	*0*	***26.88***	*0*	*0*	***30.48***	*0*	*0*	***30.48***	*0*	*0*	***35.88***	*2*	*0*	**21.48**	0.0	0	4
999457	Culvert	24.32	**0.70**	*0*	*0*	***23.10***	*0*	*0*	***23.10***	*0*	*0*	***28.50***	*0*	*0*	***47.40***	*3*	*0*	**23.10**	0.0	0	5
27.0218 0.30	ishway, Culver	24.29	**0.70**	*0*	*0*	***30.09***	*0*	*0*	***21.09***	*0*	*0*	***30.09***	*0*	*0*	***42.69***	*2*	*0*	**21.09**	0.0	0	1
1350234	Culvert	**24.26**	**21.56**	*0*	*0*	**19.76**	*0*	*0*	***19.76***	*0*	*0*	***21.56***	*0*	*0*	***41.36***	*2*	*0*	***21.56***	*0.0*	*0*	3
945085	Unknown	24.20	**19.60**	*3*	*3*	***30.16***	*0*	*0*	***21.16***	*0*	*0*	***30.16***	*0*	*0*	***22.96***	*0*	*0*	**21.16**	0.0	0	3
106c0093	Culvert	**24.18**	**26.58**	*0*	*0*	***17.58***	*0*	*0*	***17.58***	*0*	*0*	***26.58***	*0*	*0*	***39.18***	*2*	*2*	**17.58**	0.0	0	3
1350371	Culvert	24.17	**0.70**	*0*	*0*	***32.64***	*0*	*0*	***23.64***	*0*	*0*	***32.64***	*0*	*0*	***31.74***	*1*	*0*	**23.64**	0.0	0	4
422058	Culvert	**24.16**	**19.06**	*0*	*0*	**17.26**	*0*	*0*	***17.26***	*0*	*0*	***19.06***	*0*	*0*	***53.26***	*2*	*4*	***19.06***	*0.0*	*0*	3
1350087	Culvert	24.15	**0.00**	*0*	*0*	***32.58***	*0*	*0*	***23.58***	*0*	*0*	***32.58***	*0*	*0*	***32.58***	*0*	*0*	**23.58**	0.0	0	5
601739	Culvert	**24.14**	**19.64**	*0*	*0*	**17.84**	*0*	*0*	***17.84***	*0*	*0*	***19.64***	*0*	*0*	***50.24***	*2*	*3*	***19.64***	*0.0*	*0*	3
992635	Culvert	**24.14**	**19.04**	*0*	*0*	**17.24**	*0*	*0*	***17.24***	*0*	*0*	***19.04***	*0*	*0*	***53.24***	*2*	*4*	***19.04***	*0.0*	*0*	5
1350307	Culvert	24.13	**0.70**	*0*	*0*	***29.90***	*0*	*0*	***20.90***	*0*	*0*	***29.90***	*0*	*0*	***42.50***	*2*	*0*	**20.90**	0.0	0	4
940459	Culvert	**24.12**	**17.97**	*0*	*0*	**16.17**	*0*	*0*	***16.17***	*0*	*0*	***17.97***	*0*	*0*	***45.87***	*1*	*4*	***30.57***	*2.0*	*0*	4
991398	Culvert	**24.09**	**21.54**	*0*	*0*	**19.74**	*0*	*0*	***19.74***	*0*	*0*	***28.74***	*0*	*0*	***35.04***	*1*	*0*	***19.74***	*0.0*	*0*	1
1350501	Culvert	24.08	**0.70**	*0*	*0*	***26.60***	*0*	*0*	***30.20***	*0*	*0*	***30.20***	*0*	*0*	***35.60***	*2*	*0*	**21.20**	0.0	0	4
421977	Culvert	**24.08**	**19.58**	*0*	*0*	**17.78**	*0*	*0*	***17.78***	*0*	*0*	***19.58***	*0*	*0*	***50.18***	*2*	*3*	***19.58***	*0.0*	*0*	3
1350471	Culvert	24.05	**20.30**	*3*	*2*	***21.38***	*0*	*0*	***24.98***	*0*	*0*	***24.98***	*0*	*0*	***36.68***	*3*	*0*	**15.98**	0.0	0	1
LCEPNEW033	Culvert	24.05	**0.00**	*0*	*0*	***33.90***	*0*	*0*	***24.90***	*0*	*0*	***33.90***	*0*	*0*	***26.70***	*0*	*0*	**24.90**	0.0	0	1
1350364	Culvert	24.01	**0.00**	*0*	*0*	***33.85***	*0*	*0*	***24.85***	*0*	*0*	***33.85***	*0*	*0*	***26.65***	*0*	*0*	**24.85**	0.0	0	1
1350006	Culvert	23.98	**0.70**	*0*	*0*	***28.46***	*0*	*0*	***19.46***	*0*	*0*	***28.46***	*0*	*0*	***47.36***	*3*	*0*	**19.46**	0.0	0	1
1080202	Culvert	**23.93**	**23.48**	*0*	*0*	**14.48**	*0*	*0*	***14.48***	*0*	*0*	***16.28***	*0*	*0*	***60.38***	*3*	*5*	***14.48***	*0.0*	*0*	4
27.0142 0.50	Culvert	23.92	**0.70**	*0*	*0*	***32.16***	*0*	*0*	***24.96***	*0*	*0*	***24.96***	*0*	*0*	***37.56***	*2*	*0*	**23.16**	0.0	0	5
1320380	Culvert Xin	23.87	**14.00**	*2*	*3*	***19.90***	*0*	*0*	***19.90***	*0*	*0*	***25.30***	*0*	*0*	***44.20***	*3*	*0*	**19.90**	0.0	0	1
UNKLCEP213	Culvert	**23.86**	**25.66**	*0*	*0*	**16.66**	*0*	*0*	***16.66***	*0*	*0*	***25.66***	*0*	*0*	***41.86***	*2*	*3*	***16.66***	*0.0*	*0*	3
602246	Culvert	23.84	**0.00**	*0*	*0*	***33.65***	*0*	*0*	***24.65***	*0*	*0*	***33.65***	*0*	*0*	***26.45***	*0*	*0*	**24.65**	0.0	0	1
935372	Culvert	23.83	**14.00**	*2*	*2*	***19.86***	*0*	*0*	***19.86***	*0*	*0*	***25.26***	*0*	*0*	***44.16***	*3*	*0*	**19.86**	0.0	0	4
132142002	Culvert	23.78	**0.70**	*0*	*0*	***23.72***	*0*	*0*	***23.72***	*0*	*0*	***29.12***	*0*	*0*	***41.72***	*2*	*0*	**23.72**	0.0	0	5
UNKLCEP096	Culvert	**23.67**	**27.12**	*0*	*0*	**18.12**	*0*	*0*	***18.12***	*0*	*0*	***19.92***	*0*	*0*	***40.62***	*1*	*2*	***18.12***	*0.0*	*0*	3
970009	Culvert	23.65	**0.00**	*0*	*0*	***34.50***	*0*	*0*	***27.30***	*0*	*0*	***27.30***	*0*	*0*	***27.30***	*0*	*0*	**25.50**	0.0	0	1
700131	ishway, Culver	23.59	**0.00**	*0*	*0*	***28.67***	*0*	*0*	***32.27***	*0*	*0*	***32.27***	*0*	*0*	***25.07***	*0*	*0*	**23.27**	0.0	0	4
106w035	Culvert	**23.59**	**17.14**	*0*	*0*	**15.34**	*0*	*0*	***15.34***	*0*	*0*	***24.34***	*0*	*0*	***54.04***	*3*	*3*	***15.34***	*0.0*	*0*	4
990037	Culvert	23.56	**1.40**	*0*	*0*	***19.71***	*0*	*0*	***23.31***	*0*	*0*	***23.31***	*0*	*0*	***28.71***	*2*	*0*	**44.91**	2.0	5	1
UNKLCEP558	Culvert	23.52	**0.70**	*0*	*0*	***23.40***	*0*	*0*	***23.40***	*0*	*0*	***28.80***	*0*	*0*	***41.40***	*2*	*0*	**23.40**	0.0	0	3

Unique ID	Barrier Type	Average Score, all species	Winter Steelhead score	Effective Upstream Habitat Gain SthdWi Score	Upstream Habitat Quality SthdWi Score	Summer Steelhead score	Effective Upstream Habitat Gain SthdSu Score	Upstream Habitat Quality SthdSu Score	Spring Chinook score	Effective Upstream Habitat Gain ChinSp Score	Upstream Habitat Quality ChinSp Score	Fall Chinook score	Effective Upstream Habitat Gain ChinFa Score	Upstream Habitat Quality ChinFa Score	Coho score	Effective Upstream Habitat Gain Coho Score	Upstream Habitat Quality Coho Score	Chum score	Effective Upstream Habitat Gain Chum Score	Upstream Habitat Quality Chum Score	Barrier Severity Score
106c0164	Culvert	**23.51**	**21.86**	*0*	*0*	**20.06**	*0*	*0*	***20.06***	*0*	*0*	***21.86***	*0*	*0*	***35.36***	*1*	*0*	***21.86***	*0.0*	*0*	3
1080211	Culvert	**23.50**	**27.10**	*0*	*0*	**18.10**	*0*	*0*	***18.10***	*0*	*0*	***19.90***	*0*	*0*	***39.70***	*2*	*0*	***18.10***	*0.0*	*0*	3
1320064	Culvert	**23.47**	**29.17**	*0*	*0*	**20.17**	*0*	*0*	***20.17***	*0*	*0*	***29.17***	*0*	*0*	***21.97***	*0*	*0*	***20.17***	*0.0*	*0*	4
990055	Culvert	23.45	**0.70**	*0*	*0*	***31.60***	*0*	*0*	***24.40***	*0*	*0*	***24.40***	*0*	*0*	***37.00***	*2*	*0*	**22.60**	0.0	0	5
994518	Culvert	23.44	**1.40**	*0*	*0*	***20.83***	*0*	*0*	***24.43***	*0*	*0*	***24.43***	*0*	*0*	***23.53***	*1*	*0*	**46.03**	2.0	5	1
970059	Culvert	**23.40**	**21.75**	*0*	*0*	**19.95**	*0*	*0*	***19.95***	*0*	*0*	***21.75***	*0*	*0*	***28.95***	*0*	*0*	***28.05***	*1.0*	*0*	4
945183	ishway, Culver	23.34	**0.00**	*0*	*0*	***33.05***	*0*	*0*	***24.05***	*0*	*0*	***25.85***	*0*	*0*	***33.05***	*0*	*0*	**24.05**	0.0	0	1
106c0069	Culvert	**23.32**	**11.62**	*0*	*0*	**9.82**	*0*	*0*	***9.82***	*0*	*0*	***11.62***	*0*	*0*	***48.52***	*3*	*3*	***48.52***	*3.0*	*5*	1
LCEPNEW031	Culvert	23.30	**0.70**	*0*	*0*	***23.14***	*0*	*0*	***23.14***	*0*	*0*	***24.94***	*0*	*0*	***44.74***	*2*	*0*	**23.14**	0.0	0	4
UNKLCEP171	Culvert	**23.26**	**19.66**	*0*	*0*	**17.86**	*0*	*0*	***17.86***	*0*	*0*	***26.86***	*0*	*0*	***39.46***	*2*	*0*	***17.86***	*0.0*	*0*	3
132091216	Ion Culvert Xin	**23.23**	**21.58**	*0*	*0*	**19.78**	*0*	*0*	***19.78***	*0*	*0*	***21.58***	*0*	*0*	***35.08***	*1*	*0*	***21.58***	*0.0*	*0*	5
601769	Culvert	**23.23**	**21.58**	*0*	*0*	**19.78**	*0*	*0*	***19.78***	*0*	*0*	***21.58***	*0*	*0*	***35.08***	*1*	*0*	***21.58***	*0.0*	*0*	1
107-036	Culvert	23.20	**0.00**	*0*	*0*	***31.44***	*0*	*0*	***22.44***	*0*	*0*	***31.44***	*0*	*0*	***31.44***	*0*	*0*	**22.44**	0.0	0	5
1350108	Culvert	23.20	**0.00**	*0*	*0*	***31.44***	*0*	*0*	***22.44***	*0*	*0*	***31.44***	*0*	*0*	***31.44***	*0*	*0*	**22.44**	0.0	0	5
999966	Culvert	23.15	**14.70**	*2*	*3*	***17.28***	*0*	*0*	***8.28***	*0*	*0*	***17.28***	*0*	*0*	***36.18***	*3*	*0*	**45.18**	3.0	5	1
1350490	Culvert	23.15	**0.70**	*0*	*0*	***25.48***	*0*	*0*	***29.08***	*0*	*0*	***29.08***	*0*	*0*	***34.48***	*2*	*0*	**20.08**	0.0	0	3
LCEPNEW029	Culvert	23.00	**0.00**	*0*	*0*	***25.44***	*0*	*0*	***25.44***	*0*	*0*	***27.24***	*0*	*0*	***34.44***	*0*	*0*	**25.44**	0.0	0	5
UNKLCEP274	Other	**22.95**	**17.40**	*0*	*0*	**15.60**	*0*	*0*	***15.60***	*0*	*0*	***17.40***	*0*	*0*	***54.30***	*3*	*3*	***17.40***	*0.0*	*0*	3
1350015	Culvert	22.95	**0.00**	*0*	*0*	***31.14***	*0*	*0*	***22.14***	*0*	*0*	***31.14***	*0*	*0*	***31.14***	*0*	*0*	**22.14**	0.0	0	4
997890	Culvert	22.93	**0.70**	*0*	*0*	***30.98***	*0*	*0*	***23.78***	*0*	*0*	***23.78***	*0*	*0*	***36.38***	*2*	*0*	**21.98**	0.0	0	5
992265	Culvert	**22.93**	**21.28**	*0*	*0*	**19.48**	*0*	*0*	***19.48***	*0*	*0*	***21.28***	*0*	*0*	***34.78***	*1*	*0*	***21.28***	*0.0*	*0*	1
1350028	Culvert	22.75	**0.00**	*0*	*0*	***30.90***	*0*	*0*	***21.90***	*0*	*0*	***30.90***	*0*	*0*	***30.90***	*0*	*0*	**21.90**	0.0	0	4
1350012	Culvert	22.75	**0.00**	*0*	*0*	***30.90***	*0*	*0*	***21.90***	*0*	*0*	***30.90***	*0*	*0*	***30.90***	*0*	*0*	**21.90**	0.0	0	5
1350135	Culvert	22.73	**0.00**	*0*	*0*	***30.88***	*0*	*0*	***21.88***	*0*	*0*	***30.88***	*0*	*0*	***30.88***	*0*	*0*	**21.88**	0.0	0	4
1350504	Culvert	22.65	**0.70**	*0*	*0*	***24.88***	*0*	*0*	***28.48***	*0*	*0*	***28.48***	*0*	*0*	***33.88***	*2*	*0*	**19.48**	0.0	0	4
1350273	Culvert	22.63	**0.70**	*0*	*0*	***26.84***	*0*	*0*	***17.84***	*0*	*0*	***26.84***	*0*	*0*	***45.74***	*3*	*0*	**17.84**	0.0	0	3
601734	Culvert	**22.62**	**19.92**	*0*	*0*	**18.12**	*0*	*0*	***18.12***	*0*	*0*	***19.92***	*0*	*0*	***39.72***	*2*	*0*	***19.92***	*0.0*	*0*	3
106c0091	Culvert	**22.62**	**23.22**	*0*	*0*	**14.22**	*0*	*0*	***14.22***	*0*	*0*	***23.22***	*0*	*0*	***46.62***	*2*	*5*	***14.22***	*0.0*	*0*	4
930291	Culvert	22.62	**0.70**	*0*	*0*	***29.34***	*0*	*0*	***20.34***	*0*	*0*	***29.34***	*0*	*0*	***35.64***	*1*	*0*	**20.34**	0.0	0	4
994858	Culvert	22.59	**0.70**	*0*	*0*	***22.29***	*0*	*0*	***22.29***	*0*	*0*	***24.09***	*0*	*0*	***43.89***	*2*	*0*	**22.29**	0.0	0	5
UNKLCEP562	Culvert	22.58	**0.70**	*0*	*0*	***22.28***	*0*	*0*	***22.28***	*0*	*0*	***27.68***	*0*	*0*	***40.28***	*2*	*0*	**22.28**	0.0	0	5
UNKLCEP411	Tidegate	22.53	**0.00**	*0*	*0*	***24.88***	*0*	*0*	***24.88***	*0*	*0*	***30.28***	*0*	*0*	***30.28***	*0*	*0*	**24.88**	0.0	0	3
UNKLCEP480	Culvert	22.53	**0.00**	*0*	*0*	***24.88***	*0*	*0*	***24.88***	*0*	*0*	***30.28***	*0*	*0*	***30.28***	*0*	*0*	**24.88**	0.0	0	3
UNKLCEP542	Culvert	22.53	**0.00**	*0*	*0*	***24.88***	*0*	*0*	***24.88***	*0*	*0*	***30.28***	*0*	*0*	***30.28***	*0*	*0*	**24.88**	0.0	0	3
981335	Culvert	**22.50**	**16.80**	*0*	*0*	**15.00**	*0*	*0*	***15.00***	*0*	*0*	***16.80***	*0*	*0*	***54.60***	*2*	*5*	***16.80***	*0.0*	*0*	4
UNKLCEP022	Culvert	**22.47**	**27.12**	*0*	*0*	**18.12**	*0*	*0*	***18.12***	*0*	*0*	***19.92***	*0*	*0*	***33.42***	*1*	*0*	***18.12***	*0.0*	*0*	3
1827	Culvert	22.44	**0.00**	*0*	*0*	***31.97***	*0*	*0*	***22.97***	*0*	*0*	***24.77***	*0*	*0*	***31.97***	*0*	*0*	**22.97**	0.0	0	5
421049	Culvert	**22.42**	**21.52**	*0*	*0*	**12.52**	*0*	*0*	***21.52***	*0*	*0*	***17.92***	*0*	*0*	***48.52***	*2*	*4*	***12.52***	*0.0*	*0*	1
610014	Culvert	22.39	**0.70**	*0*	*0*	***42.57***	*1*	*2*	***20.07***	*0*	*0*	***29.07***	*0*	*0*	***21.87***	*0*	*0*	**20.07**	0.0	0	1
992022	Culvert	**22.37**	**21.77**	*0*	*0*	**12.77**	*0*	*0*	***14.57***	*0*	*0*	***21.77***	*0*	*0*	***48.77***	*2*	*4*	***14.57***	*0.0*	*0*	1
994070	Culvert	22.35	**7.70**	*1*	*2*	***28.88***	*0*	*0*	***21.68***	*0*	*0*	***21.68***	*0*	*0*	***34.28***	*2*	*0*	**19.88**	0.0	0	1
106c0100	Culvert	**22.34**	**22.64**	*0*	*0*	**13.64**	*0*	*0*	***13.64***	*0*	*0*	***22.64***	*0*	*0*	***46.04***	*2*	*3*	***15.44***	*0.0*	*0*	1
106c0171	Unknown	**22.34**	**16.79**	*0*	*0*	**14.99**	*0*	*0*	***14.99***	*0*	*0*	***16.79***	*0*	*0*	***53.69***	*3*	*3*	***16.79***	*0.0*	*0*	1
106c0438	Culvert	**22.22**	**26.12**	*0*	*0*	**17.12**	*0*	*0*	***18.92***	*0*	*0*	***26.12***	*0*	*0*	***26.12***	*0*	*0*	***18.92***	*0.0*	*0*	3
994758	Culvert	22.18	**0.70**	*0*	*0*	***20.54***	*0*	*0*	***20.54***	*0*	*0*	***25.94***	*0*	*0*	***44.84***	*3*	*0*	**20.54**	0.0	0	4
945184	ishway, Culver	22.18	**0.00**	*0*	*0*	***31.65***	*0*	*0*	***22.65***	*0*	*0*	***24.45***	*0*	*0*	***31.65***	*0*	*0*	**22.65**	0.0	0	1
1350023	Culvert	22.15	**0.70**	*0*	*0*	***26.26***	*0*	*0*	***17.26***	*0*	*0*	***26.26***	*0*	*0*	***45.16***	*3*	*0*	**17.26**	0.0	0	1
1350306	Culvert	22.15	**0.70**	*0*	*0*	***28.78***	*0*	*0*	***19.78***	*0*	*0*	***28.78***	*0*	*0*	***35.08***	*1*	*0*	**19.78**	0.0	0	4
421114	Culvert	**22.14**	**17.64**	*0*	*0*	**15.84**	*0*	*0*	***15.84***	*0*	*0*	***17.64***	*0*	*0*	***48.24***	*2*	*3*	***17.64***	*0.0*	*0*	1
991426	Culvert	**22.14**	**17.64**	*0*	*0*	**15.84**	*0*	*0*	***15.84***	*0*	*0*	***17.64***	*0*	*0*	***48.24***	*2*	*3*	***17.64***	*0.0*	*0*	4
LCEPNEW039	Culvert	22.13	**0.70**	*0*	*0*	***28.76***	*0*	*0*	***19.76***	*0*	*0*	***28.76***	*0*	*0*	***35.06***	*1*	*0*	**19.76**	0.0	0	3
991844	Culvert	22.13	**1.40**	*0*	*0*	***23.57***	*0*	*0*	***14.57***	*0*	*0*	***23.57***	*0*	*0*	***42.47***	*3*	*0*	**27.17**	2.0	0	4
132201208	Culvert	22.12	**0.70**	*0*	*0*	***21.72***	*0*	*0*	***21.72***	*0*	*0*	***27.12***	*0*	*0*	***39.72***	*2*	*0*	**21.72**	0.0	0	4
UNKLCEP528	Tidegate	22.08	**0.00**	*0*	*0*	***24.34***	*0*	*0*	***24.34***	*0*	*0*	***29.74***	*0*	*0*	***29.74***	*0*	*0*	**24.34**	0.0	0	3
1350180	ishway, Culver	**22.06**	**22.06**	*0*	*0*	**13.06**	*0*	*0*	***14.86***	*0*	*0*	***22.06***	*0*	*0*	***45.46***	*2*	*3*	***14.86***	*0.0*	*0*	3
106c0390	Culvert	**22.02**	**22.02**	*0*	*0*	**13.02**	*0*	*0*	***14.82***	*0*	*0*	***22.02***	*0*	*0*	***45.42***	*2*	*3*	***14.82***	*0.0*	*0*	1
421120	Culvert	**22.02**	**19.32**	*0*	*0*	**17.52**	*0*	*0*	***17.52***	*0*	*0*	***19.32***	*0*	*0*	***39.12***	*2*	*0*	***19.32***	*0.0*	*0*	3
1350061	Culvert	22.02	**0.00**	*0*	*0*	***30.02***	*0*	*0*	***21.02***	*0*	*0*	***30.02***	*0*	*0*	***30.02***	*0*	*0*	**21.02**	0.0	0	4
1320564	Culvert	22.02	**0.00**	*0*	*0*	***32.54***	*0*	*0*	***25.34***	*0*	*0*	***25.34***	*0*	*0*	***25.34***	*0*	*0*	**23.54**	0.0	0	4
601754	Culvert	**21.96**	**16.86**	*0*	*0*	**15.06**	*0*	*0*	***15.06***	*0*	*0*	***16.86***	*0*	*0*	***51.06***	*2*	*4*	***16.86***	*0.0*	*0*	4
601512	Culvert	**21.92**	**10.22**	*0*	*0*	**8.42**	*0*	*0*	***8.42***	*0*	*0*	***10.22***	*0*	*0*	***47.12***	*3*	*3*	***47.12***	*3.0*	*5*	1
UNKLCEP172	Culvert	**21.91**	**19.36**	*0*	*0*	**17.56**	*0*	*0*	***17.56***	*0*	*0*	***26.56***	*0*	*0*	***32.86***	*1*	*0*	***17.56***	*0.0*	*0*	3
UNKLCEP210	Culvert	**21.89**	**26.54**	*0*	*0*	**17.54**	*0*	*0*	***17.54***	*0*	*0*	***26.54***	*0*	*0*	***25.64***	*1*	*0*	***17.54***	*0.0*	*0*	3
UNKLCEP211	Culvert	**21.89**	**26.54**	*0*	*0*	**17.54**	*0*	*0*	***17.54***	*0*	*0*	***26.54***	*0*	*0*	***25.64***	*1*	*0*	***17.54***	*0.0*	*0*	3
106c0050	Culvert	**21.87**	**15.12**	*0*	*0*	**13.32**	*0*	*0*	***13.32***	*0*	*0*	***15.12***	*0*	*0*	***59.22***	*3*	*5*	***15.12***	*0.0*	*0*	1
991846	Culvert	21.87	**8.40**	*1*	*1*	***17.00***	*0*	*0*	***8.00***	*0*	*0*	***17.00***	*0*	*0*	***35.90***	*3*	*0*	**44.90**	3.0	5	1
COW60	Culvert	**21.85**	**15.70**	*0*	*0*	**13.90**	*0*	*0*	***13.90***	*0*	*0*	***15.70***	*0*	*0*	***56.20***	*3*	*4*	***15.70***	*0.0*	*0*	3
810121	ishway, Culver	21.83	**0.70**	*0*	*0*	***29.84***	*0*	*0*	***20.84***	*0*	*0*	***29.84***	*0*	*0*	***28.94***	*1*	*0*	**20.84**	0.0	0	1
40003002	Culvert	**21.75**	**21.15**	*0*	*0*	**19.35**	*0*	*0*	***19.35***	*0*	*0*	***21.15***	*0*	*0*	***28.35***	*0*	*0*	***21.15***	*0.0*	*0*	3
1350007	Culvert	21.75	**0.00**	*0*	*0*	***29.70***	*0*	*0*	***20.70***	*0*	*0*	***29.70***	*0*	*0*	***29.70***	*0*	*0*	**20.70**	0.0	0	5

Unique ID	Barrier Type	Average Score, all species	Winter Steelhead score	Effective Upstream Habitat Gain SthdWi Score	Upstream Habitat Quality SthdWi Score	Summer Steelhead score	Effective Upstream Habitat Gain SthdSu Score	Upstream Habitat Quality SthdSu Score	Spring Chinook score	Effective Upstream Habitat Gain ChinSp Score	Upstream Habitat Quality ChinSp Score	Fall Chinook score	Effective Upstream Habitat Gain ChinFa Score	Upstream Habitat Quality ChinFa Score	Coho score	Effective Upstream Habitat Gain Coho Score	Upstream Habitat Quality Coho Score	Chum score	Effective Upstream Habitat Gain Chum Score	Upstream Habitat Quality Chum Score	Barrier Severity Score
132101756	Culvert	21.74	0.00	0	0	26.45	0	0	30.05	0	0	30.05	0	0	22.85	0	0	21.05	0.0	0	4
999881	Culvert	21.73	0.70	0	0	22.51	0	0	22.51	0	0	24.31	0	0	37.81	1	0	22.51	0.0	0	5
600388	Culvert	21.67	16.27	0	0	7.27	0	0	7.27	0	0	38.77	3	3	53.17	3	5	7.27	0.0	0	1
422066	0	21.60	17.10	0	0	15.30	0	0	15.30	0	0	17.10	0	0	47.70	2	3	17.10	0.0	0	3
UNKLCEP286	Culvert	21.59	19.34	0	0	17.54	0	0	17.54	0	0	19.34	0	0	36.44	1	1	19.34	0.0	0	3
1350094	Culvert	21.58	0.70	0	0	26.84	0	0	17.84	0	0	26.84	0	0	39.44	2	0	17.84	0.0	0	3
700235	Culvert	21.52	0.70	0	0	22.26	0	0	22.26	0	0	27.66	0	0	33.96	1	0	22.26	0.0	0	3
700132	Culvert	21.48	0.00	0	0	26.13	0	0	29.73	0	0	29.73	0	0	22.53	0	0	20.73	0.0	0	4
981331	Culvert	21.38	15.68	0	0	13.88	0	0	13.88	0	0	15.68	0	0	53.48	2	5	15.68	0.0	0	4
994555	Culvert	21.35	0.00	0	0	31.74	0	0	24.54	0	0	24.54	0	0	24.54	0	0	22.74	0.0	0	5
931128	Culvert	21.33	25.98	0	0	16.98	0	0	16.98	0	0	18.78	0	0	32.28	1	0	16.98	0.0	0	1
993572	Culvert	21.33	0.00	0	0	31.71	0	0	24.51	0	0	24.51	0	0	24.51	0	0	22.71	0.0	0	5
UNKLCEP218	Culvert	21.27	26.97	0	0	17.97	0	0	17.97	0	0	26.97	0	0	19.77	0	0	17.97	0.0	0	3
SCWC07	Culvert	21.17	14.00	2	2	17.92	0	0	17.92	0	0	23.32	0	0	35.92	2	0	17.92	0.0	0	1
998176	Culvert	21.15	20.30	3	4	15.38	0	0	15.38	0	0	20.78	0	0	39.68	3	0	15.38	0.0	0	4
935371	Culvert	21.13	20.30	3	1	15.36	0	0	15.36	0	0	20.76	0	0	39.66	3	0	15.36	0.0	0	4
921228	Culvert	21.13	0.70	0	0	20.54	0	0	20.54	0	0	25.94	0	0	38.54	2	0	20.54	0.0	0	4
1350107	Culvert	21.10	0.70	0	0	26.26	0	0	17.26	0	0	26.26	0	0	38.86	2	0	17.26	0.0	0	5
992800	Culvert	21.07	21.52	0	0	12.52	0	0	14.32	0	0	21.52	0	0	42.22	1	4	14.32	0.0	0	1
992801	Culvert	21.07	21.52	0	0	12.52	0	0	14.32	0	0	21.52	0	0	42.22	1	4	14.32	0.0	0	1
SCWC04	Culvert	20.93	7.70	1	3	17.64	0	0	17.64	0	0	23.04	0	0	41.94	3	0	17.64	0.0	0	4
998212	Culvert	20.92	20.30	3	2	15.10	0	0	15.10	0	0	20.50	0	0	39.40	3	0	15.10	0.0	0	4
601752	Culvert	20.91	16.86	0	0	15.06	0	0	15.06	0	0	16.86	0	0	44.76	1	4	16.86	0.0	0	4
992272	Culvert	20.88	16.83	0	0	15.03	0	0	15.03	0	0	16.83	0	0	44.73	1	4	16.83	0.0	0	4
997896	Culvert	20.86	0.00	0	0	31.15	0	0	23.95	0	0	23.95	0	0	23.95	0	0	22.15	0.0	0	5
700350	Culvert	20.85	0.00	0	0	31.14	0	0	23.94	0	0	23.94	0	0	23.94	0	0	22.14	0.0	0	4
UNKLCEP169	Culvert	20.79	14.34	0	0	12.54	0	0	12.54	0	0	21.54	0	0	51.24	3	3	12.54	0.0	0	3
106c0064	Culvert	20.77	14.62	0	0	12.82	0	0	12.82	0	0	14.62	0	0	55.12	3	4	14.62	0.0	0	1
UNKLCEP434	Culvert	20.73	0.70	0	0	20.06	0	0	20.06	0	0	25.46	0	0	38.06	2	0	20.06	0.0	0	3
999241	ishway, Culver	20.73	7.70	1	1	19.91	0	0	19.91	0	0	21.71	0	0	35.21	1	0	19.91	0.0	0	1
997244	Culvert	20.70	1.40	0	0	20.24	0	0	23.84	0	0	23.84	0	0	22.94	1	0	31.94	1.0	3	1
998186	Culvert	20.68	20.30	3	2	14.82	0	0	14.82	0	0	20.22	0	0	39.12	3	0	14.82	0.0	0	4
SCBar41	Culvert	20.67	0.00	0	0	22.64	0	0	22.64	0	0	28.04	0	0	28.04	0	0	22.64	0.0	0	5
993573	Culvert	20.62	0.70	0	0	28.20	0	0	21.00	0	0	21.00	0	0	33.60	2	0	19.20	0.0	0	5
1350505	Culvert	20.58	0.70	0	0	22.40	0	0	26.00	0	0	26.00	0	0	31.40	2	0	17.00	0.0	0	4
991394	Culvert	20.53	22.33	0	0	13.33	0	0	13.33	0	0	15.13	0	0	45.73	2	3	13.33	0.0	0	3
132051636a	Culvert	20.53	20.68	0	0	11.68	0	0	11.68	0	0	13.48	0	0	53.98	3	4	11.68	0.0	0	3
132051636b	Culvert	20.53	20.68	0	0	11.68	0	0	11.68	0	0	13.48	0	0	53.98	3	4	11.68	0.0	0	3
132082044	Culvert	20.52	0.00	0	0	22.46	0	0	22.46	0	0	24.26	0	0	31.46	0	0	22.46	0.0	0	5
991754	Culvert	20.48	0.70	0	0	19.76	0	0	19.76	0	0	25.16	0	0	37.76	2	0	19.76	0.0	0	4
132142259B	Culvert	20.47	0.00	0	0	22.40	0	0	22.40	0	0	27.80	0	0	27.80	0	0	22.40	0.0	0	5
700297	Culvert	20.43	0.70	0	0	20.96	0	0	24.56	0	0	24.56	0	0	36.26	3	0	15.56	0.0	0	4
UNKLCEP543	Culvert	20.43	0.00	0	0	22.36	0	0	22.36	0	0	27.76	0	0	27.76	0	0	22.36	0.0	0	3
421697	Culvert	20.43	18.78	0	0	16.98	0	0	16.98	0	0	18.78	0	0	32.28	1	0	18.78	0.0	0	1
999467	Culvert	20.42	0.00	0	0	22.34	0	0	22.34	0	0	24.14	0	0	31.34	0	0	22.34	0.0	0	5
1350045	Culvert	20.40	0.00	0	0	28.08	0	0	19.08	0	0	28.08	0	0	28.08	0	0	19.08	0.0	0	4
994553	Culvert	20.38	7.70	1	3	27.78	0	0	20.58	0	0	20.58	0	0	26.88	1	0	18.78	0.0	0	4
994654	Culvert	20.37	0.70	0	0	27.90	0	0	20.70	0	0	20.70	0	0	33.30	2	0	18.90	0.0	0	1
1350496	Culvert	20.35	0.70	0	0	22.12	0	0	25.72	0	0	25.72	0	0	31.12	2	0	16.72	0.0	0	4
810035	Unknown	20.34	19.74	0	0	17.94	0	0	17.94	0	0	19.74	0	0	26.94	0	0	19.74	0.0	0	3
602847	Culvert	20.30	0.70	0	0	24.04	0	0	15.04	0	0	24.04	0	0	42.94	3	0	15.04	0.0	0	1
993571	Culvert	20.30	0.70	0	0	29.08	0	0	21.88	0	0	21.88	0	0	28.18	1	0	20.08	0.0	0	4
993492	Culvert	20.29	16.24	0	0	14.44	0	0	14.44	0	0	16.24	0	0	44.14	1	4	16.24	0.0	0	4
992675	Culvert	20.27	16.82	0	0	15.02	0	0	15.02	0	0	16.82	0	0	41.12	1	3	16.82	0.0	0	4
1320181	Culvert	20.27	0.70	0	0	19.50	0	0	19.50	0	0	24.90	0	0	37.50	2	0	19.50	0.0	0	4
994069	Culvert	20.25	7.70	1	2	26.36	0	0	19.16	0	0	19.16	0	0	31.76	2	0	17.36	0.0	0	1
973126	Culvert	20.22	0.00	0	0	22.10	0	0	22.10	0	0	23.90	0	0	31.10	0	0	22.10	0.0	0	5
UNKLCEP426	Culvert	20.02	0.70	0	0	19.20	0	0	19.20	0	0	24.60	0	0	37.20	2	0	19.20	0.0	0	3
993570	Culvert	19.95	0.70	0	0	27.40	0	0	20.20	0	0	20.20	0	0	32.80	2	0	18.40	0.0	0	5
930296	Culvert	19.82	0.70	0	0	25.98	0	0	16.98	0	0	25.98	0	0	32.28	1	0	16.98	0.0	0	5
SCWC17	Culvert	19.80	0.00	0	0	21.60	0	0	21.60	0	0	27.00	0	0	27.00	0	0	21.60	0.0	0	1
1653001	Culvert	19.72	21.52	0	0	12.52	0	0	12.52	0	0	14.32	0	0	44.92	2	3	12.52	0.0	0	1
700293	Culvert	19.69	21.49	0	0	12.49	0	0	12.49	0	0	14.29	0	0	44.89	2	3	12.49	0.0	0	3
935363	Culvert	19.67	0.70	0	0	20.04	0	0	20.04	0	0	25.44	0	0	31.74	1	0	20.04	0.0	0	4
1350203	Culvert	19.60	0.70	0	0	28.24	0	0	21.04	0	0	21.04	0	0	27.34	1	0	19.24	0.0	0	1
1350186	Culvert	19.59	12.99	0	0	11.19	0	0	11.19	0	0	12.99	0	0	49.89	3	3	19.29	1.0	0	1
700147	Culvert	19.57	14.02	0	0	12.22	0	0	12.22	0	0	14.02	0	0	50.92	3	3	14.02	0.0	0	1
422064	0	19.57	14.02	0	0	12.22	0	0	12.22	0	0	14.02	0	0	50.92	3	3	14.02	0.0	0	3
992332	Culvert	19.54	18.94	0	0	17.14	0	0	17.14	0	0	18.94	0	0	26.14	0	0	18.94	0.0	0	5
992671	Culvert	19.43	15.98	0	0	14.18	0	0	14.18	0	0	15.98	0	0	40.28	1	3	15.98	0.0	0	4

Unique ID	Barrier Type	Average Score, all species	Winter Steelhead score	Effective Upstream Habitat Gain SthdWi Score	Upstream Habitat Quality SthdWi Score	Summer Steelhead score	Effective Upstream Habitat Gain SthdSu Score	Upstream Habitat Quality SthdSu Score	Spring Chinook score	Effective Upstream Habitat Gain ChinSp Score	Upstream Habitat Quality ChinSp Score	Fall Chinook score	Effective Upstream Habitat Gain ChinFa Score	Upstream Habitat Quality ChinFa Score	Coho score	Effective Upstream Habitat Gain Coho Score	Upstream Habitat Quality Coho Score	Chum score	Effective Upstream Habitat Gain Chum Score	Upstream Habitat Quality Chum Score	Barrier Severity Score
994627	Culvert	19.38	0.70	0	0	20.96	0	0	24.56	0	0	24.56	0	0	29.96	2	0	15.56	0.0	0	4
422063	0	19.33	13.18	0	0	11.38	0	0	11.38	0	0	13.18	0	0	53.68	3	4	13.18	0.0	0	3
990067	Culvert	19.28	0.70	0	0	18.31	0	0	18.31	0	0	20.11	0	0	39.91	2	0	18.31	0.0	0	5
602845	Culvert	19.25	0.70	0	0	24.04	0	0	15.04	0	0	24.04	0	0	36.64	2	0	15.04	0.0	0	1
UNKLCEP435	Culvert	19.20	0.70	0	0	19.48	0	0	19.48	0	0	24.88	0	0	31.18	1	0	19.48	0.0	0	3
930232	Culvert	19.12	0.70	0	0	25.14	0	0	16.14	0	0	25.14	0	0	31.44	1	0	16.14	0.0	0	3
1350083	Culvert	19.12	0.70	0	0	25.14	0	0	16.14	0	0	25.14	0	0	31.44	1	0	16.14	0.0	0	1
994353	Culvert	19.10	14.60	0	0	12.80	0	0	12.80	0	0	14.60	0	0	45.20	2	3	14.60	0.0	0	1
981312	Culvert	19.09	10.24	0	0	8.44	0	0	8.44	0	0	22.84	2	0	54.34	3	5	10.24	0.0	0	1
999090	Culvert	19.05	7.70	1	0	17.90	0	0	17.90	0	0	19.70	0	0	33.20	1	0	17.90	0.0	0	5
930276	Culvert	19.02	0.70	0	0	23.76	0	0	14.76	0	0	23.76	0	0	36.36	2	0	14.76	0.0	0	4
931735	Culvert	18.97	0.70	0	0	19.20	0	0	19.20	0	0	24.60	0	0	30.90	1	0	19.20	0.0	0	4
810141	Culvert	18.95	0.70	0	0	20.44	0	0	24.04	0	0	24.04	0	0	29.44	2	0	15.04	0.0	0	1
1350337	Culvert	18.90	0.70	0	0	22.36	0	0	13.36	0	0	22.36	0	0	41.26	3	0	13.36	0.0	0	1
990073	Culvert	18.89	1.40	0	0	14.11	0	0	17.71	0	0	17.71	0	0	23.11	2	0	39.31	2.0	5	1
106c0053	Culvert	18.89	11.09	0	0	9.29	0	0	9.29	0	0	11.09	0	0	48.89	2	5	23.69	2.0	0	1
UNKLCEP371	Culvert	18.88	0.00	0	0	23.02	0	0	26.62	0	0	26.62	0	0	19.42	0	0	17.62	0.0	0	3
1320179	Culvert	18.87	0.70	0	0	17.82	0	0	17.82	0	0	23.22	0	0	35.82	2	0	17.82	0.0	0	5
700275	Culvert	18.85	20.65	0	0	11.65	0	0	11.65	0	0	13.45	0	0	44.05	2	3	11.65	0.0	0	1
1320188	Culvert	18.85	0.70	0	0	17.80	0	0	17.80	0	0	23.20	0	0	35.80	2	0	17.80	0.0	0	3
993876	Culvert	18.84	13.74	0	0	11.94	0	0	17.34	0	0	17.34	0	0	40.74	2	3	11.94	0.0	0	1
992079	Culvert	18.82	13.72	0	0	11.92	0	0	11.92	0	0	13.72	0	0	47.92	2	4	13.72	0.0	0	1
990488	Culvert	18.82	0.00	0	0	20.42	0	0	20.42	0	0	22.22	0	0	29.42	0	0	20.42	0.0	0	4
991847	Culvert	18.78	0.70	0	0	23.47	0	0	14.47	0	0	23.47	0	0	36.07	2	0	14.47	0.0	0	4
28.0038 6.00	Culvert	18.75	0.70	0	0	16.42	0	0	16.42	0	0	21.82	0	0	40.72	3	0	16.42	0.0	0	5
LCEPNEW006	Culvert	18.75	19.50	0	0	10.50	0	0	10.50	0	0	19.50	0	0	42.00	3	3	10.50	0.0	0	3
997891	Culvert	18.73	0.70	0	0	25.94	0	0	18.74	0	0	18.74	0	0	31.34	2	0	16.94	0.0	0	5
1320178	Culvert	18.63	0.70	0	0	17.54	0	0	17.54	0	0	22.94	0	0	35.54	2	0	17.54	0.0	0	5
1205E15A	Culvert	18.62	22.22	0	0	13.22	0	0	22.22	0	0	18.62	0	0	22.22	0	0	13.22	0.0	0	1
UNKLCEP394	Culvert	18.62	0.70	0	0	17.52	0	0	17.52	0	0	22.92	0	0	35.52	2	0	17.52	0.0	0	3
1320377	Culvert	18.60	0.70	0	0	17.50	0	0	17.50	0	0	22.90	0	0	35.50	2	0	17.50	0.0	0	4
SCBar38	Culvert	18.60	0.00	0	0	20.16	0	0	20.16	0	0	25.56	0	0	25.56	0	0	20.16	0.0	0	4
945050	Unknown	18.58	0.00	0	0	20.14	0	0	20.14	0	0	21.94	0	0	29.14	0	0	20.14	0.0	0	3
998204	Culvert	18.57	14.00	2	1	14.80	0	0	14.80	0	0	20.20	0	0	32.80	2	0	14.80	0.0	0	4
991549	Culvert	18.50	0.70	0	0	18.64	0	0	18.64	0	0	20.44	0	0	33.94	1	0	18.64	0.0	0	5
106c0092	Culvert	18.49	20.14	0	0	11.14	0	0	11.14	0	0	20.14	0	0	37.24	1	5	11.14	0.0	0	3
601735	Culvert	18.49	16.84	0	0	15.04	0	0	15.04	0	0	16.84	0	0	30.34	1	0	16.84	0.0	0	4
1320561	Culvert	18.45	0.70	0	0	19.84	0	0	23.44	0	0	23.44	0	0	28.84	2	0	14.44	0.0	0	3
27.0348 0.20	ishway, Culver	18.45	0.70	0	0	19.84	0	0	23.44	0	0	23.44	0	0	28.84	2	0	14.44	0.0	0	1
999450	Culvert	18.37	0.70	0	0	17.22	0	0	17.22	0	0	22.62	0	0	35.22	2	0	17.22	0.0	0	5
999456	Culvert	18.37	0.70	0	0	17.22	0	0	17.22	0	0	22.62	0	0	35.22	2	0	17.22	0.0	0	5
LCEPNEW007	Culvert	18.34	18.94	0	0	9.94	0	0	9.94	0	0	18.94	0	0	42.34	2	5	9.94	0.0	0	3
973061	Culvert	18.32	0.00	0	0	19.82	0	0	19.82	0	0	21.62	0	0	28.82	0	0	19.82	0.0	0	4
930295	Culvert	18.30	0.70	0	0	22.90	0	0	13.90	0	0	22.90	0	0	35.50	2	0	13.90	0.0	0	4
981337	Culvert	18.30	12.60	0	0	10.80	0	0	10.80	0	0	12.60	0	0	50.40	2	5	12.60	0.0	0	1
991794	Culvert	18.28	0.70	0	0	18.38	0	0	18.38	0	0	23.78	0	0	30.08	1	0	18.38	0.0	0	5
LCEPNEW001	Culvert	18.27	0.70	0	0	18.36	0	0	18.36	0	0	23.76	0	0	30.06	1	0	18.36	0.0	0	3
107-017	Culvert	18.13	0.70	0	0	23.96	0	0	14.96	0	0	23.96	0	0	30.26	1	0	14.96	0.0	0	4
UNKLCEP540	Culvert	18.10	0.00	0	0	19.56	0	0	19.56	0	0	24.96	0	0	24.96	0	0	19.56	0.0	0	3
LCEPNEW047	Culvert	18.10	0.70	0	0	16.90	0	0	16.90	0	0	22.30	0	0	34.90	2	0	16.90	0.0	0	3
991436	Culvert	18.03	0.70	0	0	25.10	0	0	17.90	0	0	17.90	0	0	30.50	2	0	16.10	0.0	0	1
1350084	Culvert	17.95	0.70	0	0	23.74	0	0	14.74	0	0	23.74	0	0	30.04	1	0	14.74	0.0	0	1
LCEPNEW048	Culvert	17.93	0.70	0	0	16.70	0	0	16.70	0	0	22.10	0	0	34.70	2	0	16.70	0.0	0	3
994651	Culvert	17.90	1.40	0	0	16.88	0	0	20.48	0	0	20.48	0	0	19.58	1	0	28.58	1.0	3	1
601502	lon Culvert Xin	17.89	11.74	0	0	9.94	0	0	9.94	0	0	11.74	0	0	52.24	3	4	11.74	0.0	0	1
601721	Culvert	17.87	10.22	0	0	8.42	0	0	8.42	0	0	10.22	0	0	47.12	3	3	22.82	2.0	0	1
UNKLCEP483	Culvert	17.87	0.00	0	0	19.28	0	0	19.28	0	0	24.68	0	0	24.68	0	0	19.28	0.0	0	3
998179	ishway, Culver	17.85	20.30	3	2	11.42	0	0	11.42	0	0	16.82	0	0	35.72	3	0	11.42	0.0	0	3
997892	Culvert	17.68	0.70	0	0	25.94	0	0	18.74	0	0	18.74	0	0	25.04	1	0	16.94	0.0	0	5
UNKLCEP563	Culvert	17.68	0.70	0	0	16.40	0	0	16.40	0	0	21.80	0	0	34.40	2	0	16.40	0.0	0	3
992668	Culvert	17.68	13.18	0	0	11.38	0	0	11.38	0	0	13.18	0	0	43.78	2	3	13.18	0.0	0	3
SCBar37	Culvert	17.67	0.70	0	0	16.38	0	0	16.38	0	0	21.78	0	0	34.38	2	0	16.38	0.0	0	4
UNKLCEP484	Culvert	17.63	0.00	0	0	19.00	0	0	19.00	0	0	24.40	0	0	24.40	0	0	19.00	0.0	0	3
UNKLCEP437	Culvert	17.58	0.70	0	0	17.54	0	0	17.54	0	0	22.94	0	0	29.24	1	0	17.54	0.0	0	3
1320194	lon Culvert Xin	17.53	0.70	0	0	14.96	0	0	14.96	0	0	20.36	0	0	39.26	3	0	14.96	0.0	0	4
1350082	Culvert	17.48	0.70	0	0	23.18	0	0	14.18	0	0	23.18	0	0	29.48	1	0	14.18	0.0	0	1
700274	Culvert	17.45	19.25	0	0	10.25	0	0	10.25	0	0	12.05	0	0	42.65	2	3	10.25	0.0	0	1
LCEPNEW005	Culvert	17.42	19.22	0	0	10.22	0	0	10.22	0	0	19.22	0	0	35.42	2	3	10.22	0.0	0	3
1350009	Culvert	17.37	0.00	0	0	24.44	0	0	15.44	0	0	24.44	0	0	24.44	0	0	15.44	0.0	0	1
999459	Culvert	17.32	0.70	0	0	17.22	0	0	17.22	0	0	22.62	0	0	28.92	1	0	17.22	0.0	0	5

Unique ID	Barrier Type	Average Score, all species	Winter Steelhead score	Effective Upstream Habitat Gain SthdWi Score	Upstream Habitat Quality SthdWi Score	Summer Steelhead score	Effective Upstream Habitat Gain SthdSu Score	Upstream Habitat Quality SthdSu Score	Spring Chinook score	Effective Upstream Habitat Gain ChinSp Score	Upstream Habitat Quality ChinSp Score	Fall Chinook score	Effective Upstream Habitat Gain ChinFa Score	Upstream Habitat Quality ChinFa Score	Coho score	Effective Upstream Habitat Gain Coho Score	Upstream Habitat Quality Coho Score	Chum score	Effective Upstream Habitat Gain Chum Score	Upstream Habitat Quality Chum Score	Barrier Severity Score
999458	Culvert	17.32	**0.70**	*0*	*0*	***17.22***	*0*	*0*	***17.22***	*0*	*0*	***22.62***	*0*	*0*	***28.92***	*1*	*0*	**17.22**	0.0	0	5
999074	Culvert	17.32	**0.70**	*0*	*0*	***17.22***	*0*	*0*	***17.22***	*0*	*0*	***22.62***	*0*	*0*	***28.92***	*1*	*0*	**17.22**	0.0	0	5
1350029	Culvert	17.20	**0.70**	*0*	*0*	***20.32***	*0*	*0*	***11.32***	*0*	*0*	***20.32***	*0*	*0*	***39.22***	*3*	*0*	**11.32**	0.0	0	3
LCEPNEW004	Culvert	**17.14**	**18.94**	*0*	*0*	**9.94**	*0*	*0*	***9.94***	*0*	*0*	***18.94***	*0*	*0*	***35.14***	*2*	*3*	***9.94***	*0.0*	*0*	3
601531	Other	17.08	**20.30**	*3*	*3*	***16.25***	*0*	*0*	***7.25***	*0*	*0*	***16.25***	*0*	*0*	***35.15***	*3*	*0*	**7.25**	0.0	0	1
930294	Culvert	17.02	**0.70**	*0*	*0*	***22.62***	*0*	*0*	***13.62***	*0*	*0*	***22.62***	*0*	*0*	***28.92***	*1*	*0*	**13.62**	0.0	0	4
998158	Culvert	16.93	**7.70**	*1*	*1*	***15.36***	*0*	*0*	***15.36***	*0*	*0*	***20.76***	*0*	*0*	***27.06***	*1*	*0*	**15.36**	0.0	0	4
999970	Culvert	16.92	**1.40**	*0*	*0*	***16.06***	*0*	*0*	***7.06***	*0*	*0*	***16.06***	*0*	*0*	***34.96***	*3*	*0*	**25.96**	3.0	0	1
981336	Culvert	**16.90**	**11.20**	*0*	*0*	**9.40**	*0*	*0*	***9.40***	*0*	*0*	***11.20***	*0*	*0*	***49.00***	*2*	*5*	***11.20***	*0.0*	*0*	1
106c0102	Culvert	**16.88**	**21.08**	*0*	*0*	**12.08**	*0*	*0*	***12.08***	*0*	*0*	***21.08***	*0*	*0*	***21.08***	*0*	*0*	***13.88***	*0.0*	*0*	1
106w048	Culvert	**16.87**	**13.72**	*0*	*0*	**11.92**	*0*	*0*	***11.92***	*0*	*0*	***20.92***	*0*	*0*	***30.82***	*1*	*1*	***11.92***	*0.0*	*0*	1
1320560	Culvert	16.82	**0.70**	*0*	*0*	***17.88***	*0*	*0*	***21.48***	*0*	*0*	***21.48***	*0*	*0*	***26.88***	*2*	*0*	**12.48**	0.0	0	3
UNKLCEP351	Culvert	16.82	**0.70**	*0*	*0*	***17.88***	*0*	*0*	***21.48***	*0*	*0*	***21.48***	*0*	*0*	***26.88***	*2*	*0*	**12.48**	0.0	0	3
930293	Culvert	16.78	**0.70**	*0*	*0*	***22.34***	*0*	*0*	***13.34***	*0*	*0*	***22.34***	*0*	*0*	***28.64***	*1*	*0*	**13.34**	0.0	0	4
931116	Culvert	**16.78**	**20.38**	*0*	*0*	**11.38**	*0*	*0*	***11.38***	*0*	*0*	***13.18***	*0*	*0*	***32.98***	*2*	*0*	***11.38***	*0.0*	*0*	1
994151	Culvert	**16.75**	**10.15**	*0*	*0*	**8.35**	*0*	*0*	***8.35***	*0*	*0*	***10.15***	*0*	*0*	***40.75***	*2*	*3*	***22.75***	*2.0*	*0*	1
994584	Culvert	16.68	**0.00**	*0*	*0*	***26.14***	*0*	*0*	***18.94***	*0*	*0*	***18.94***	*0*	*0*	***18.94***	*0*	*0*	**17.14**	0.0	0	5
27.0139 0.60	Culvert	16.68	**0.70**	*0*	*0*	***23.48***	*0*	*0*	***16.28***	*0*	*0*	***16.28***	*0*	*0*	***28.88***	*2*	*0*	**14.48**	0.0	0	4
997894	Culvert	16.63	**0.70**	*0*	*0*	***23.42***	*0*	*0*	***16.22***	*0*	*0*	***16.22***	*0*	*0*	***28.82***	*2*	*0*	**14.42**	0.0	0	4
700234	Culvert	16.62	**0.70**	*0*	*0*	***16.38***	*0*	*0*	***16.38***	*0*	*0*	***21.78***	*0*	*0*	***28.08***	*1*	*0*	**16.38**	0.0	0	3
UNKLCEP352	Culvert	16.58	**0.70**	*0*	*0*	***17.60***	*0*	*0*	***21.20***	*0*	*0*	***21.20***	*0*	*0*	***26.60***	*2*	*0*	**12.20**	0.0	0	3
UNKLCEP355	Culvert	16.58	**0.70**	*0*	*0*	***17.60***	*0*	*0*	***21.20***	*0*	*0*	***21.20***	*0*	*0*	***26.60***	*2*	*0*	**12.20**	0.0	0	3
600391	Culvert	**16.53**	**17.28**	*0*	*0*	**8.28**	*0*	*0*	***8.28***	*0*	*0*	***10.08***	*0*	*0*	***46.98***	*3*	*3*	***8.28***	*0.0*	*0*	1
601746	Culvert	**16.53**	**14.88**	*0*	*0*	**13.08**	*0*	*0*	***13.08***	*0*	*0*	***14.88***	*0*	*0*	***28.38***	*1*	*0*	***14.88***	*0.0*	*0*	1
999798	Culvert	16.53	**0.70**	*0*	*0*	***15.01***	*0*	*0*	***15.01***	*0*	*0*	***16.81***	*0*	*0*	***36.61***	*2*	*0*	**15.01**	0.0	0	4
021(65503)(0027	Culvert	**16.35**	**12.90**	*0*	*0*	**11.10**	*0*	*0*	***11.10***	*0*	*0*	***12.90***	*0*	*0*	***37.20***	*1*	*3*	***12.90***	*0.0*	*0*	1
UNKLCEP353	Culvert	16.35	**0.70**	*0*	*0*	***17.32***	*0*	*0*	***20.92***	*0*	*0*	***20.92***	*0*	*0*	***26.32***	*2*	*0*	**11.92**	0.0	0	3
UNKLCEP354	Culvert	16.35	**0.70**	*0*	*0*	***17.32***	*0*	*0*	***20.92***	*0*	*0*	***20.92***	*0*	*0*	***26.32***	*2*	*0*	**11.92**	0.0	0	3
700057	Culvert	**16.34**	**20.24**	*0*	*0*	**11.24**	*0*	*0*	***13.04***	*0*	*0*	***20.24***	*0*	*0*	***20.24***	*0*	*0*	***13.04***	*0.0*	*0*	1
931258	Culvert	**16.31**	**20.96**	*0*	*0*	**11.96**	*0*	*0*	***11.96***	*0*	*0*	***13.76***	*0*	*0*	***27.26***	*1*	*0*	***11.96***	*0.0*	*0*	1
931257	Culvert	**16.24**	**19.84**	*0*	*0*	**10.84**	*0*	*0*	***10.84***	*0*	*0*	***12.64***	*0*	*0*	***32.44***	*2*	*0*	***10.84***	*0.0*	*0*	1
998189	Culvert	16.23	**7.70**	*1*	*1*	***14.52***	*0*	*0*	***14.52***	*0*	*0*	***19.92***	*0*	*0*	***26.22***	*1*	*0*	**14.52**	0.0	0	4
1350142	Culvert	16.20	**0.00**	*0*	*0*	***23.04***	*0*	*0*	***14.04***	*0*	*0*	***23.04***	*0*	*0*	***23.04***	*0*	*0*	**14.04**	0.0	0	1
994757	Culvert	16.12	**0.70**	*0*	*0*	***15.78***	*0*	*0*	***15.78***	*0*	*0*	***21.18***	*0*	*0*	***27.48***	*1*	*0*	**15.78**	0.0	0	4
930250	Culvert	16.10	**0.70**	*0*	*0*	***21.52***	*0*	*0*	***12.52***	*0*	*0*	***21.52***	*0*	*0*	***27.82***	*1*	*0*	**12.52**	0.0	0	1
994352	Culvert	**16.05**	**9.30**	*0*	*0*	**7.50**	*0*	*0*	***7.50***	*0*	*0*	***9.30***	*0*	*0*	***53.40***	*3*	*5*	***9.30***	*0.0*	*0*	1
601725	Culvert	**16.02**	**11.52**	*0*	*0*	**9.72**	*0*	*0*	***9.72***	*0*	*0*	***11.52***	*0*	*0*	***42.12***	*2*	*3*	***11.52***	*0.0*	*0*	1
421498	Culvert	**15.95**	**9.80**	*0*	*0*	**8.00**	*0*	*0*	***8.00***	*0*	*0*	***9.80***	*0*	*0*	***50.30***	*3*	*4*	***9.80***	*0.0*	*0*	1
1350057	Culvert	15.94	**1.40**	*0*	*0*	***16.51***	*0*	*0*	***7.51***	*0*	*0*	***16.51***	*0*	*0*	***29.11***	*2*	*0*	**24.61**	1.0	3	1
107-301	ishway, Culver	15.92	**0.70**	*0*	*0*	***20.04***	*0*	*0*	***11.04***	*0*	*0*	***20.04***	*0*	*0*	***32.64***	*2*	*0*	**11.04**	0.0	0	3
132142259C	Culvert	15.80	**0.00**	*0*	*0*	***16.80***	*0*	*0*	***16.80***	*0*	*0*	***22.20***	*0*	*0*	***22.20***	*0*	*0*	**16.80**	0.0	0	5
132142259A	Culvert	15.80	**0.00**	*0*	*0*	***16.80***	*0*	*0*	***16.80***	*0*	*0*	***22.20***	*0*	*0*	***22.20***	*0*	*0*	**16.80**	0.0	0	5
UNKLCEP481	Culvert	15.77	**0.00**	*0*	*0*	***16.76***	*0*	*0*	***16.76***	*0*	*0*	***22.16***	*0*	*0*	***22.16***	*0*	*0*	**16.76**	0.0	0	3
1350040	Culvert	15.72	**0.70**	*0*	*0*	***19.80***	*0*	*0*	***10.80***	*0*	*0*	***19.80***	*0*	*0*	***32.40***	*2*	*0*	**10.80**	0.0	0	1
935366	Culvert	15.70	**0.70**	*0*	*0*	***15.28***	*0*	*0*	***15.28***	*0*	*0*	***20.68***	*0*	*0*	***26.98***	*1*	*0*	**15.28**	0.0	0	4
601747	Culvert	**15.69**	**14.04**	*0*	*0*	**12.24**	*0*	*0*	***12.24***	*0*	*0*	***14.04***	*0*	*0*	***27.54***	*1*	*0*	***14.04***	*0.0*	*0*	1
1350459	Culvert	15.68	**0.70**	*0*	*0*	***19.76***	*0*	*0*	***10.76***	*0*	*0*	***19.76***	*0*	*0*	***32.36***	*2*	*0*	**10.76**	0.0	0	3
1350461	Culvert	15.68	**0.70**	*0*	*0*	***19.76***	*0*	*0*	***10.76***	*0*	*0*	***19.76***	*0*	*0*	***32.36***	*2*	*0*	**10.76**	0.0	0	3
1350460	Culvert	15.68	**0.70**	*0*	*0*	***19.76***	*0*	*0*	***10.76***	*0*	*0*	***19.76***	*0*	*0*	***32.36***	*2*	*0*	**10.76**	0.0	0	3
421978	Culvert	**15.63**	**13.98**	*0*	*0*	**12.18**	*0*	*0*	***12.18***	*0*	*0*	***13.98***	*0*	*0*	***27.48***	*1*	*0*	***13.98***	*0.0*	*0*	1
930233	Culvert	15.62	**0.70**	*0*	*0*	***20.94***	*0*	*0*	***11.94***	*0*	*0*	***20.94***	*0*	*0*	***27.24***	*1*	*0*	**11.94**	0.0	0	1
107-003	Culvert	15.57	**0.70**	*0*	*0*	***17.64***	*0*	*0*	***21.24***	*0*	*0*	***21.24***	*0*	*0*	***20.34***	*1*	*0*	**12.24**	0.0	0	1
973128	Culvert	15.55	**0.00**	*0*	*0*	***16.50***	*0*	*0*	***16.50***	*0*	*0*	***18.30***	*0*	*0*	***25.50***	*0*	*0*	**16.50**	0.0	0	5
1350131	Culvert	15.50	**0.00**	*0*	*0*	***22.20***	*0*	*0*	***13.20***	*0*	*0*	***22.20***	*0*	*0*	***22.20***	*0*	*0*	**13.20**	0.0	0	1
1320193	lon Culvert Xin	15.43	**0.70**	*0*	*0*	***14.96***	*0*	*0*	***14.96***	*0*	*0*	***20.36***	*0*	*0*	***26.66***	*1*	*0*	**14.96**	0.0	0	4
1350014	Culvert	15.40	**14.00**	*2*	*2*	***15.50***	*0*	*0*	***6.50***	*0*	*0*	***15.50***	*0*	*0*	***34.40***	*3*	*0*	**6.50**	0.0	0	1
811298	Culvert	15.35	**0.70**	*0*	*0*	***23.14***	*0*	*0*	***15.94***	*0*	*0*	***15.94***	*0*	*0*	***22.24***	*1*	*0*	**14.14**	0.0	0	4
106c0090	Culvert	**15.34**	**15.94**	*0*	*0*	**6.94**	*0*	*0*	***6.94***	*0*	*0*	***15.94***	*0*	*0*	***39.34***	*2*	*5*	***6.94***	*0.0*	*0*	1
UNKLCEP553	Culvert	15.18	**0.70**	*0*	*0*	***12.14***	*0*	*0*	***12.14***	*0*	*0*	***17.54***	*0*	*0*	***36.44***	*3*	*0*	**12.14**	0.0	0	3
997385	Culvert	15.12	**0.70**	*0*	*0*	***13.32***	*0*	*0*	***13.32***	*0*	*0*	***18.72***	*0*	*0*	***31.32***	*2*	*0*	**13.32**	0.0	0	1
LCEPNEW041	Culvert	14.97	**0.70**	*0*	*0*	***11.88***	*0*	*0*	***11.88***	*0*	*0*	***17.28***	*0*	*0*	***36.18***	*3*	*0*	**11.88**	0.0	0	3
994628	Culvert	14.89	**1.40**	*0*	*0*	***14.89***	*0*	*0*	***5.89***	*0*	*0*	***14.89***	*0*	*0*	***33.79***	*3*	*0*	**18.49**	2.0	0	1
LCEPNEW040	Culvert	14.73	**0.70**	*0*	*0*	***11.60***	*0*	*0*	***11.60***	*0*	*0*	***17.00***	*0*	*0*	***35.90***	*3*	*0*	**11.60**	0.0	0	3
LCEPNEW046	Culvert	14.73	**0.70**	*0*	*0*	***11.60***	*0*	*0*	***11.60***	*0*	*0*	***17.00***	*0*	*0*	***35.90***	*3*	*0*	**11.60**	0.0	0	3
700065	Culvert	**14.73**	**14.13**	*0*	*0*	**12.33**	*0*	*0*	***12.33***	*0*	*0*	***14.13***	*0*	*0*	***21.33***	*0*	*0*	***14.13***	*0.0*	*0*	1
999230	Culvert	14.73	**0.70**	*0*	*0*	***14.11***	*0*	*0*	***14.11***	*0*	*0*	***15.91***	*0*	*0*	***29.41***	*1*	*0*	**14.11**	0.0	0	4
700136	Other	14.63	**0.70**	*0*	*0*	***16.52***	*0*	*0*	***20.12***	*0*	*0*	***20.12***	*0*	*0*	***19.22***	*1*	*0*	**11.12**	0.0	0	1
LCEPNEW042	Culvert	14.50	**0.70**	*0*	*0*	***11.32***	*0*	*0*	***11.32***	*0*	*0*	***16.72***	*0*	*0*	***35.62***	*3*	*0*	**11.32**	0.0	0	3
LCEPNEW045	Culvert	14.50	**0.70**	*0*	*0*	***11.32***	*0*	*0*	***11.32***	*0*	*0*	***16.72***	*0*	*0*	***35.62***	*3*	*0*	**11.32**	0.0	0	3
UNKLCEP555	Culvert	14.42	**0.70**	*0*	*0*	***12.48***	*0*	*0*	***12.48***	*0*	*0*	***17.88***	*0*	*0*	***30.48***	*2*	*0*	**12.48**	0.0	0	3

Unique ID	Barrier Type	Average Score, all species	Winter Steelhead score	Effective Upstream Habitat Gain SthdWi Score	Upstream Habitat Quality SthdWi Score	Summer Steelhead score	Effective Upstream Habitat Gain SthdSu Score	Upstream Habitat Quality SthdSu Score	Spring Chinook score	Effective Upstream Habitat Gain ChinSp Score	Upstream Habitat Quality ChinSp Score	Fall Chinook score	Effective Upstream Habitat Gain ChinFa Score	Upstream Habitat Quality ChinFa Score	Coho score	Effective Upstream Habitat Gain Coho Score	Upstream Habitat Quality Coho Score	Chum score	Effective Upstream Habitat Gain Chum Score	Upstream Habitat Quality Chum Score	Barrier Severity Score
1320177	Culvert	14.40	**20.30**	*3*	*1*	***7.28***	*0*	*0*	***7.28***	*0*	*0*	***12.68***	*0*	*0*	***31.58***	*3*	*0*	**7.28**	0.0	0	1
LCEPNEW043	Culvert	14.27	**0.70**	*0*	*0*	***11.04***	*0*	*0*	***11.04***	*0*	*0*	***16.44***	*0*	*0*	***35.34***	*3*	*0*	**11.04**	0.0	0	3
LCEPNEW044	Culvert	14.27	**0.70**	*0*	*0*	***11.04***	*0*	*0*	***11.04***	*0*	*0*	***16.44***	*0*	*0*	***35.34***	*3*	*0*	**11.04**	0.0	0	3
1350227	Culvert	14.23	**0.70**	*0*	*0*	***21.80***	*0*	*0*	***14.60***	*0*	*0*	***14.60***	*0*	*0*	***20.90***	*1*	*0*	**12.80**	0.0	0	1
UNKLCEP560	Culvert	14.07	**0.70**	*0*	*0*	***13.32***	*0*	*0*	***13.32***	*0*	*0*	***18.72***	*0*	*0*	***25.02***	*1*	*0*	**13.32**	0.0	0	3
UNKLCEP561	Culvert	14.07	**0.70**	*0*	*0*	***13.32***	*0*	*0*	***13.32***	*0*	*0*	***18.72***	*0*	*0*	***25.02***	*1*	*0*	**13.32**	0.0	0	3
1350093	Culvert	14.02	**0.70**	*0*	*0*	***16.50***	*0*	*0*	***7.50***	*0*	*0*	***16.50***	*0*	*0*	***35.40***	*3*	*0*	**7.50**	0.0	0	1
940460	Culvert	**13.83**	**8.73**	*0*	*0*	**6.93**	*0*	*0*	**6.93**	*0*	*0*	***8.73***	*0*	*0*	***36.63***	*1*	*4*	***15.03***	*1.0*	*0*	1
UNKLCEP482	Culvert	13.67	**0.00**	*0*	*0*	***14.24***	*0*	*0*	***14.24***	*0*	*0*	***19.64***	*0*	*0*	***19.64***	*0*	*0*	**14.24**	0.0	0	3
1350468	Culvert	13.58	**0.00**	*0*	*0*	***19.90***	*0*	*0*	***10.90***	*0*	*0*	***19.90***	*0*	*0*	***19.90***	*0*	*0*	**10.90**	0.0	0	1
1350133	Culvert	13.40	**0.00**	*0*	*0*	***19.68***	*0*	*0*	***10.68***	*0*	*0*	***19.68***	*0*	*0*	***19.68***	*0*	*0*	**10.68**	0.0	0	1
1350226	Culvert	13.30	**0.70**	*0*	*0*	***20.68***	*0*	*0*	***13.48***	*0*	*0*	***13.48***	*0*	*0*	***19.78***	*1*	*0*	**11.68**	0.0	0	1
945047	Unknown	13.22	**0.00**	*0*	*0*	***13.70***	*0*	*0*	***13.70***	*0*	*0*	***15.50***	*0*	*0*	***22.70***	*0*	*0*	**13.70**	0.0	0	4
995003	Other	13.14	**0.70**	*0*	*0*	***12.21***	*0*	*0*	***12.21***	*0*	*0*	***14.01***	*0*	*0*	***27.51***	*1*	*0*	**12.21**	0.0	0	1
700184	Culvert	13.13	**0.00**	*0*	*0*	***21.88***	*0*	*0*	***14.68***	*0*	*0*	***14.68***	*0*	*0*	***14.68***	*0*	*0*	**12.88**	0.0	0	1
1350462	Culvert	13.12	**0.00**	*0*	*0*	***19.34***	*0*	*0*	***10.34***	*0*	*0*	***19.34***	*0*	*0*	***19.34***	*0*	*0*	**10.34**	0.0	0	3
931725	Culvert	13.10	**0.70**	*0*	*0*	***9.64***	*0*	*0*	***9.64***	*0*	*0*	***15.04***	*0*	*0*	***33.94***	*3*	*0*	**9.64**	0.0	0	1
935368	Culvert	13.08	**14.00**	*2*	*1*	***6.96***	*0*	*0*	***6.96***	*0*	*0*	***12.36***	*0*	*0*	***31.26***	*3*	*0*	**6.96**	0.0	0	1
999999	Culvert	13.07	**0.70**	*0*	*0*	***15.36***	*0*	*0*	***6.36***	*0*	*0*	***15.36***	*0*	*0*	***34.26***	*3*	*0*	**6.36**	0.0	0	1
998185	Culvert	12.63	**14.00**	*2*	*2*	***6.42***	*0*	*0*	***6.42***	*0*	*0*	***11.82***	*0*	*0*	***30.72***	*3*	*0*	**6.42**	0.0	0	1
132131486	Culvert	12.63	**0.70**	*0*	*0*	***9.08***	*0*	*0*	***9.08***	*0*	*0*	***14.48***	*0*	*0*	***33.38***	*3*	*0*	**9.08**	0.0	0	1
1350013	Culvert	12.60	**0.70**	*0*	*0*	***14.80***	*0*	*0*	***5.80***	*0*	*0*	***14.80***	*0*	*0*	***33.70***	*3*	*0*	**5.80**	0.0	0	1
992667	Culvert	**12.38**	**7.88**	*0*	*0*	**6.08**	*0*	*0*	***6.08***	*0*	*0*	***7.88***	*0*	*0*	***38.48***	*2*	*3*	***7.88***	*0.0*	*0*	1
991753	Culvert	12.28	**14.00**	*2*	*2*	***7.26***	*0*	*0*	***7.26***	*0*	*0*	***12.66***	*0*	*0*	***25.26***	*2*	*0*	**7.26**	0.0	0	1
992274	Culvert	**12.23**	**8.18**	*0*	*0*	**6.38**	*0*	*0*	***6.38***	*0*	*0*	***8.18***	*0*	*0*	***36.08***	*1*	*4*	***8.18***	*0.0*	*0*	1
930272	Culvert	12.22	**0.70**	*0*	*0*	***15.60***	*0*	*0*	***6.60***	*0*	*0*	***15.60***	*0*	*0*	***28.20***	*2*	*0*	**6.60**	0.0	0	1
602596	Culvert	12.07	**14.00**	*2*	*2*	***7.00***	*0*	*0*	***7.00***	*0*	*0*	***12.40***	*0*	*0*	***25.00***	*2*	*0*	**7.00**	0.0	0	1
930230	Culvert	12.00	**0.70**	*0*	*0*	***15.34***	*0*	*0*	***6.34***	*0*	*0*	***15.34***	*0*	*0*	***27.94***	*2*	*0*	**6.34**	0.0	0	1
990041	Culvert	**11.93**	**7.28**	*0*	*0*	**5.48**	*0*	*0*	***5.48***	*0*	*0*	***7.28***	*0*	*0*	***38.78***	*1*	*5*	***7.28***	*0.0*	*0*	1
930231	Culvert	11.88	**0.70**	*0*	*0*	***16.46***	*0*	*0*	***7.46***	*0*	*0*	***16.46***	*0*	*0*	***22.76***	*1*	*0*	**7.46**	0.0	0	1
998205	Culvert	11.80	**14.00**	*2*	*1*	***6.68***	*0*	*0*	***6.68***	*0*	*0*	***12.08***	*0*	*0*	***24.68***	*2*	*0*	**6.68**	0.0	0	1
1350280	Culvert	11.76	**0.70**	*0*	*0*	***15.05***	*0*	*0*	***6.05***	*0*	*0*	***15.05***	*0*	*0*	***27.65***	*2*	*0*	**6.05**	0.0	0	1
930279	Culvert	11.65	**0.70**	*0*	*0*	***16.18***	*0*	*0*	***7.18***	*0*	*0*	***16.18***	*0*	*0*	***22.48***	*1*	*0*	**7.18**	0.0	0	1
921122	Culvert	11.55	**0.70**	*0*	*0*	***14.80***	*0*	*0*	***5.80***	*0*	*0*	***14.80***	*0*	*0*	***27.40***	*2*	*0*	**5.80**	0.0	0	1
930273	Culvert	11.54	**0.70**	*0*	*0*	***14.79***	*0*	*0*	***5.79***	*0*	*0*	***14.79***	*0*	*0*	***27.39***	*2*	*0*	**5.79**	0.0	0	1
931723	Culvert	11.47	**0.70**	*0*	*0*	***7.68***	*0*	*0*	***7.68***	*0*	*0*	***13.08***	*0*	*0*	***31.98***	*3*	*0*	**7.68**	0.0	0	1
1320200	Culvert	11.47	**0.70**	*0*	*0*	***7.68***	*0*	*0*	***7.68***	*0*	*0*	***13.08***	*0*	*0*	***31.98***	*3*	*0*	**7.68**	0.0	0	1
SCWC02	Culvert	11.35	**0.00**	*0*	*0*	***11.46***	*0*	*0*	***11.46***	*0*	*0*	***16.86***	*0*	*0*	***16.86***	*0*	*0*	**11.46**	0.0	0	1
SCBar43	Culvert	11.35	**0.00**	*0*	*0*	***11.46***	*0*	*0*	***11.46***	*0*	*0*	***16.86***	*0*	*0*	***16.86***	*0*	*0*	**11.46**	0.0	0	1
2009003	Culvert	**11.24**	**15.89**	*0*	*0*	**6.89**	*0*	*0*	***6.89***	*0*	*0*	***8.69***	*0*	*0*	***22.19***	*1*	*0*	***6.89***	*0.0*	*0*	1
931722	Culvert	11.23	**0.70**	*0*	*0*	***7.40***	*0*	*0*	***7.40***	*0*	*0*	***12.80***	*0*	*0*	***31.70***	*3*	*0*	**7.40**	0.0	0	1
1320106	Culvert	11.22	**0.00**	*0*	*0*	***13.82***	*0*	*0*	***17.42***	*0*	*0*	***17.42***	*0*	*0*	***10.22***	*0*	*0*	**8.42**	0.0	0	1
132191691A	Culvert	11.13	**0.70**	*0*	*0*	***12.31***	*0*	*0*	***15.91***	*0*	*0*	***15.91***	*0*	*0*	***15.01***	*1*	*0*	**6.91**	0.0	0	1
993491	Culvert	**11.05**	**7.00**	*0*	*0*	**5.20**	*0*	*0*	***5.20***	*0*	*0*	***7.00***	*0*	*0*	***34.90***	*1*	*4*	***7.00***	*0.0*	*0*	1
930137	Culvert	11.05	**0.70**	*0*	*0*	***14.20***	*0*	*0*	***5.20***	*0*	*0*	***14.20***	*0*	*0*	***26.80***	*2*	*0*	**5.20**	0.0	0	1
993490	Culvert	**11.05**	**7.00**	*0*	*0*	**5.20**	*0*	*0*	***5.20***	*0*	*0*	***7.00***	*0*	*0*	***34.90***	*1*	*4*	***7.00***	*0.0*	*0*	1
931721	Culvert	11.00	**0.70**	*0*	*0*	***7.12***	*0*	*0*	***7.12***	*0*	*0*	***12.52***	*0*	*0*	***31.42***	*3*	*0*	**7.12**	0.0	0	1
930136	Culvert	10.82	**0.70**	*0*	*0*	***13.92***	*0*	*0*	***4.92***	*0*	*0*	***13.92***	*0*	*0*	***26.52***	*2*	*0*	**4.92**	0.0	0	1
999464	Ion Culvert Xin	10.67	**0.00**	*0*	*0*	***10.64***	*0*	*0*	***10.64***	*0*	*0*	***12.44***	*0*	*0*	***19.64***	*0*	*0*	**10.64**	0.0	0	1
930135	Culvert	10.58	**0.70**	*0*	*0*	***13.64***	*0*	*0*	***4.64***	*0*	*0*	***13.64***	*0*	*0*	***26.24***	*2*	*0*	**4.64**	0.0	0	1
1320199	Culvert	10.53	**0.70**	*0*	*0*	***6.56***	*0*	*0*	***6.56***	*0*	*0*	***11.96***	*0*	*0*	***30.86***	*3*	*0*	**6.56**	0.0	0	1
930032	Culvert	10.47	**0.70**	*0*	*0*	***14.76***	*0*	*0*	***5.76***	*0*	*0*	***14.76***	*0*	*0*	***21.06***	*1*	*0*	**5.76**	0.0	0	1
991877	Culvert	10.23	**0.70**	*0*	*0*	***14.48***	*0*	*0*	***5.48***	*0*	*0*	***14.48***	*0*	*0*	***20.78***	*1*	*0*	**5.48**	0.0	0	1
930275	Culvert	10.03	**0.70**	*0*	*0*	***14.24***	*0*	*0*	***5.24***	*0*	*0*	***14.24***	*0*	*0*	***20.54***	*1*	*0*	**5.24**	0.0	0	1
930297	Culvert	10.02	**0.70**	*0*	*0*	***14.22***	*0*	*0*	***5.22***	*0*	*0*	***14.22***	*0*	*0*	***20.52***	*1*	*0*	**5.22**	0.0	0	1
935375	Culvert	9.93	**7.70**	*1*	*2*	***6.96***	*0*	*0*	***6.96***	*0*	*0*	***12.36***	*0*	*0*	***18.66***	*1*	*0*	**6.96**	0.0	0	1
1350452	Culvert	9.67	**0.00**	*0*	*0*	***15.20***	*0*	*0*	***6.20***	*0*	*0*	***15.20***	*0*	*0*	***15.20***	*0*	*0*	**6.20**	0.0	0	1
931732	Culvert	9.30	**0.70**	*0*	*0*	***6.34***	*0*	*0*	***6.34***	*0*	*0*	***11.74***	*0*	*0*	***24.34***	*2*	*0*	**6.34**	0.0	0	1
999880	Culvert	7.73	**0.70**	*0*	*0*	***5.71***	*0*	*0*	***5.71***	*0*	*0*	***7.51***	*0*	*0*	***21.01***	*1*	*0*	**5.71**	0.0	0	1
973063	Culvert	6.22	**0.00**	*0*	*0*	***5.30***	*0*	*0*	***5.30***	*0*	*0*	***7.10***	*0*	*0*	***14.30***	*0*	*0*	**5.30**	0.0	0	1