

REPORT



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Chinook Salmon Spawning Habitat Availability in the Lower Columbia River

Submitted to:

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Executive Summary

The completion of Grand Coulee Dam in 1942 stopped the natural migration of salmon stocks into the upper Columbia River. First Nations groups have been on the forefront of reintroduction of anadromous salmon stocks into the Columbia River upstream of the dam. A key part of this work is to assess the availability of habitat for the early life stages of salmon species that may once again utilize this reach of the Columbia River. The Canadian Columbia River Inter-tribal Fisheries Commission (CCRFC) contracted Golder Associates Ltd. (Golder) to conduct preliminary assessments on the amount of potential spawning habitat available for Chinook Salmon (*Oncorhynchus tshawytscha*) on portions of the lower Columbia River basin in Canada.

In this report we summarize the most recent 15 years of hydrographic information available from the Kootenay and Columbia rivers for the time period when Chinook Salmon are most likely to spawn, if they were transplanted into the area. Based on literature review and consultation, that time period was estimated to be between September 1 and December 1. The hydrographic data were summarized, and all combinations of median, low and high discharges of the Kootenay and Columbia rivers were estimated. These data were used to model Chinook Salmon spawning habitat at two different reaches of the lower Kootenay and Columbia rivers that are thought to have potential for supporting Chinook Salmon spawning.

A River2D model, previously used to model Mountain Whitefish (*Prosopium williamsoni*) spawning in the area, was used to simulate depth and velocities at a variety of flows, based on the recent hydrographs. Habitat Suitability Criteria (HSC) developed in the Washington State for the Columbia-Snake rivers and other Large Rivers (Beecher et al. 2016), were used in conjunction with the hydraulic model, to project Weighted Usable Area (WUA) for Chinook Salmon spawning in two reaches that have been previously modelled. The model predicted spawning areas ranging from 53,000 m² to 260,000 m² in the Columbia River Reach with the median flow at 72,000 m² with the Large River HSC and 166,000 m² using the Columbia-Snake HSC. The Kootenay River Reach model predicted a range of 21,000 m² to 224,000 m² with the median estimate of 33,000 and 177,000 m² using the Large Rivers and Columbia-Snake HSC respectively. The combined areas estimate at the median values were 104,000 m² and 343,000 m² using the Large Rivers and Columbia-Snake HSC respectively. The median values for the Columbia reach represented 11% (Large Rivers HSC) to 25% (Columbia-Snake HSC) of the wetted area available and for the Kootenay River Reach, 6% (Large Rivers HSC) to 34% (Columbia-Snake HSC) of the wetted area was available for Chinook Salmon spawning.

Using literature defined values for required area of useable habitat per redd of 45 m² developed for the Hanford Reach of the Columbia River and observed actual use of available habitat of 15%, it was estimated that 349 to 1144 redds (depending upon the HSC used) could be supported by this habitat for the combined reaches investigated, at the median flow scenario.

These estimates are preliminary and address only a small portion of the Columbia Basin in Canada with Chinook Salmon spawning potential. The range of flows used in the models, which reflect rare flow conditions during the fall spawning seasons (maximum flows that are only exceeded once in 10 years and minimum flows that are exceeded 9 out of 10 years), did not have major effects on spawning habitat availability, while assumptions used in the modelling (HSC Criteria selected and assumed habitat use), had major impacts on the estimates of the number of spawners likely to use the available habitat.



Recommendations provided for future work include:

- 1) Expand investigations into the entire reach of the Columbia and Kootenay rivers, including significant tributaries, between Lake Roosevelt and the barriers at Brilliant and Hugh L. Keenleyside (HLK) dams. A geomorphological approach should be used to determine additional study sites for detailed habitat modelling;
- 2) For the existing models, once the BC Hydro substrate mapping results for the Lower Columbia and Kootenay rivers become available, incorporate them into this analysis to examine substrate characteristics within the hydraulic model boundaries;
- 3) Compare model predictions with Rainbow Trout (*Oncorhynchus mykiss*) spawning habitat use as a method of validation of the model predictions;
- 4) If the spawning habitat models suggest sufficient habitat is available to support a viable population of Chinook Salmon, expand the habitat modelling to other life history stages that could constrain the populations, such as incubation and juvenile rearing.



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Lower Columbia and Kootenay River WUA Estimates



1.0 INTRODUCTION

The completion of Grand Coulee Dam in 1942 stopped the natural migration of salmon stocks into the upper Columbia River. First Nations groups have been on the forefront of investigations into the potential reintroduction of anadromous salmon stocks into the Columbia River upstream of the dam. A key part of this work is to assess the availability of habitat for the early life stages of salmon species that may once again utilize this reach of the Columbia River. The Canadian Columbia River Inter-tribal Fisheries Commission (CCRFC) contracted Golder Associates Ltd. (Golder) to conduct preliminary assessments on the amount of potential spawning habitat available for Chinook Salmon (*Oncorhynchus tshawytscha*) within the Keenleyside Reach of the Columbia River (LCR; defined as the Columbia River from Hugh L. Keenleyside Dam [HLK] to the Canada-US Border and including the lower Kootenay River below Brilliant Dam [BRD]).

1.1 Study Objectives

The specific study objectives of this program are as follows:

- 1) Develop, by literature review, spawning habitat suitability criteria (HSC) for depth and velocity of Chinook Salmon in large rivers (the Columbia River if possible);
- 2) Determine, by literature review, the potential spawning period of Chinook Salmon within the program study area;
- 3) Apply the HSCs to the outputs of the River 2D model for the area covered by the BC Hydro CLBMON-47 Lower Columbia River Whitefish Spawning Topography Program;
- 4) Provide estimates of available spawning habitat (m^2 and proportion of total wetted area within modelled boundaries) over a broad range of flows during the potential spawning period;
- 5) Provide a brief report outlining methods and results of the analysis;
- 6) Provide (in attachments to this document) detailed figures that outline the amount of suitable habitat over the range of flows examined; and
- 7) Provide a figure of the amount of watered channel during the lowest yearly flow period for which data is available in the last 10 years.

1.2 Report Scope

This report includes a literature review to estimate the potential spawning period of Chinook Salmon within the study area. The literature review was also conducted to provide preferred spawning habitat criteria (depth and velocity preferences) of Chinook Salmon to provide a range of both depths and velocities in which spawning activity rates are the highest. The depth and velocity ranges were then compared to data from outputs of the CLBMON-47 Lower Columbia River Whitefish Spawning Ground Topography Program River 2D Hydraulic Models that BC Hydro has provided for this program (Golder 2014). All data analyzed and presented are limited to the sections of the overall study area that are contained within these models.



Data from 99 runs of each of the RIVER 2D hydraulic models (a total of 198) were used to estimate available spawning habitat for another species (Mountain Whitefish over a wide range of flow levels (Golder 2014). A selection from these runs was used to complete a similar analysis for Chinook Salmon in the same area. Lastly, the hydrographs from 2001 to 2015 in the lower Columbia and Kootenay rivers were examined to determine what range of discharges have occurred over the estimated spawning period.

2.0 METHODS

2.1 Study Area

The study area for this program encompasses the area of the CLBMON-47 River 2D Hydraulic Models. These hydraulic models cover the section of the Lower Columbia River from Norn's Fan to the upstream end of Tin Cup Rapids, and the lower Kootenay River from the Highway 3 Bridge to the confluence with the Columbia River. The lower Kootenay River model also includes a 1 km section of the Columbia River (500 m of river both upstream and downstream of the confluence).

2.2 Selection of Potential Chinook Salmon Spawning Period

To estimate the potential spawning period for Chinook Salmon in the study area, a literature review examining the range of water temperatures during the spawning period of populations in other systems was conducted (Bjornn and Reiser, 1991; Carter 2005; Healey 1991; McCullough et al; 2001). The results of the review were then compared to water temperatures recorded at the Norn's Fan Water Gauging Station on the lower Columbia River, and from temperature thermistors deployed in the Lower Kootenay River. The potential spawning period was estimated between 1 September and 1 December so that the historical local water temperatures were consistent with temperatures recorded for the spawning period of populations in other systems.

2.3 River 2D Hydraulic Model Output Selections

The two study area reaches that were modelled using River 2D are located at the confluence of the Kootenay and Columbia rivers. Both sites are hydraulically influenced by the discharge of both rivers as a result of backwater effects. Consequently combinations of flows from the two rivers are needed for the model to predict depths and velocities throughout the study areas (Golder 2014). The September-November hydrographs from 2001-2015 for both the Columbia and Kootenay rivers (see Appendix A) were examined and used to calculate the 7Q10 value, the annual 7-day minimum and maximum flows with a 10-year recurrence interval (i.e., flows that are only likely to be exceeded once every 10 years). For this, the rolling 7-day average discharges were calculated within each year and each river. Then, the minimum and maximum values of the rolling 7-day averages were calculated for every year, resulting in 15 data points of minimum and maximum yearly discharges for the two rivers. These were used to perform frequency analysis – the flow data were ordered from smallest to largest, ranked, and fitted to a log Pearson type III distribution, a distribution commonly distribution in the analysis of flood recurrence periods. A cutoff discharge value was then calculated, where a cutoff value of 1/10 represented one exceedance for every 10 years (for the maximum flow), and a cutoff of 9/10 represented 9 exceedances every 10 years (for the minimum flow [i.e., identifying a flow so low that a lower discharge value would only be likely to occur once per 10 years]).



In addition to the 7Q10 values, the median discharge value during September-November of 2001-2015 was calculated for both Columbia and Kootenay rivers using daily flow values.

Once the 7Q10 and median values were calculated, all possible combinations of minimum 7Q10, median flow, and maximum 7Q10 flows at Columbia and Kootenay rivers were created. These were matched with model runs from the CLBMON-47 River 2D Hydraulic Models, so that the modeled discharges were as close as possible to the constructed combinations of 7Q10 and median values (Table 1). Note that for the Columbia River, there was no difference between the three models representing lowest Kootenay River discharge (calculated 7Q10 of 223.3 m³/s, modeled discharge 375 m³/s) and the median Kootenay River discharge (calculated 464.8 m³/s, modeled 375 m³/s). The output of the Columbia River models was therefore reduced to six scenarios, whereas the Kootenay River output included all nine possible scenarios.

Table 1: Flow scenarios and chosen River2D model runs, detailed by river.

| Calculated discharge values | | River2D Hydraulic Model Run | | |
|-----------------------------|------------------|-----------------------------|--------------------------|--------------------------|
| Columbia River Q | Kootenay River Q | River | Columbia River Q Modeled | Kootenay River Q Modeled |
| 449.4 | 223.3 | Columbia River | 412.5 | 375 |
| 1091.2 | 223.3 | | 1062.5 | 375 |
| 2047.6 | 223.3 | | 2037.5 | 375 |
| 449.4 | 464.8 | | 412.5 | 375 |
| 1091.2 | 464.8 | | 1062.5 | 375 |
| 2047.6 | 464.8 | | 2037.5 | 375 |
| 449.4 | 946.6 | | 412.5 | 875 |
| 1091.2 | 946.6 | | 1062.5 | 875 |
| 2047.6 | 946.6 | | 2037.5 | 875 |
| 449.4 | 223.3 | | 412.5 | 375 |
| 1091.2 | 223.3 | | 1062.5 | 375 |
| 2047.6 | 223.3 | | 2037.5 | 375 |
| 449.4 | 223.3 | Kootenay River | 575 | 250 |
| 1091.2 | 223.3 | | 1225 | 250 |
| 2047.6 | 223.3 | | 2200 | 250 |
| 449.4 | 464.8 | | 575 | 500 |
| 1091.2 | 464.8 | | 1225 | 500 |
| 2047.6 | 464.8 | | 2200 | 500 |
| 449.4 | 946.6 | | 575 | 1000 |
| 1091.2 | 946.6 | | 1225 | 1000 |
| 2047.6 | 946.6 | | 2200 | 1000 |
| 449.4 | 223.3 | | 575 | 250 |
| 1091.2 | 223.3 | | 1225 | 250 |
| 2047.6 | 223.3 | | 2200 | 250 |



2.4 Data Analysis

For each model node, the outputs of the different flow scenarios from the River2D model included the depth and water velocity predicted under the modeled flow, as well as each node's area (m^2). These data were used to produce maps of depths and velocities at both sites under the individual flow scenarios.

Chinook Salmon habitat suitability index (HSI) curves, developed as a function of depth and water velocity (Beecher et al. 2016) were used to calculate the weighted usable area (WUA) available to Chinook Salmon for spawning. Two separate HSI curves were available for each of depth and velocity – one developed for large rivers, with mean annual flow $\geq 3,000$ cfs ($85 m^3/s$) and for Columbia-Snake rivers, with mean annual flow $\geq 100,000$ cfs ($2,832 m^3/s$; Table 2).

Table 2: Chinook Salmon spawning preference in relation to depth and velocity, detailed by type of river (large rivers and Columbia-Snake; see Beecher et al. [2016] for details).

| Parameter | Value | Preference | |
|-------------------|-------|--------------|------------------|
| | | Large Rivers | Columbia - Snake |
| Depth (ft) | 0.00 | 0.0 | 0.0 |
| | 0.55 | 0.0 | --- |
| | 1.05 | 0.75 | --- |
| | 1.55 | 1.0 | 0.0 |
| | 5.05 | 1.0 | 0.4 |
| | 8.15 | --- | 1.0 |
| | 10 | 0.0 | --- |
| | 30 | 0.0 | 1.0 |
| | 35 | 0.0 | 0.0 |
| | 99 | 0.0 | 0.0 |
| Velocity (ft/sec) | 0.00 | 0.0 | 0.0 |
| | 0.35 | --- | 0.0 |
| | 0.55 | 0.0 | --- |
| | 0.75 | 0.79 | --- |
| | 1.55 | 1.0 | --- |
| | 1.65 | --- | 0.50 |
| | 2.45 | --- | 1.0 |
| | 3.55 | 0.0 | 1.0 |
| | 4.95 | 0.0 | 0.2 |
| | 6.55 | 0.0 | 0.1 |
| | 7.0 | 0.0 | 0.0 |
| | 99 | 0.0 | 0.0 |



The two curves were transformed into metric units (m for depth and m/s for velocity) and interpolated to a resolution of 0.01, with a linear interpolation between every two specified preference values. These two curves were used to calculate separate HSI values for the study area. For each model node, three types of HSI values were calculated: 1) HSI based on depth only; 2) HSI based on velocity only; and 3) HSI based on combined depth and velocity, calculated by multiplying the former two HSI values. These three HSI estimates were calculated using both the larger river HSI curves and the Columbia-Snake HSI curves, resulting in six distinct HSI values for each node within each model run.

Once the HSI values of each model node were calculated, the WUA value of the node was estimated by multiplying the node's area by each of the six HSI values associated with the node. To estimate the distribution of the depths and velocities available within each flow scenario, the percent of available spawning habitat within each depth or velocity value (to 0.01 m or 0.01 m/s) was estimated by dividing the total WUA value within each depth or velocity bin by the total available wetted area within each flow scenario. The total WUA value available within each flow scenario under the combined (depth and velocity) HSI curves was calculated by summing the WUA values of all model nodes.

All analyses were performed in R v.3.1.0 (R Core Team 2014); plotting was performed using the packages ggplot2 (Wickham 2009) and ggmap (Kahle and Wickham 2013).

3.0 RESULTS

3.1 River 2D Hydraulic Model Output Selection

Frequency analysis of the minimum 7Q10 flows at Columbia River during 2001-2015 estimated that the minimum flow, expected to only be lower once in 10 years (i.e., flow exceedance in 9 out of 10 years) was 449.4 m³/s (Figure 1). Frequency analysis of the maximum 7Q10 flows at Columbia River during 2001-2015 estimated that the maximum flow, expected to only be higher once in 10 years (i.e., flow exceedance in 1 out of 10 years) was 2,047.6 m³/s (Figure 2).

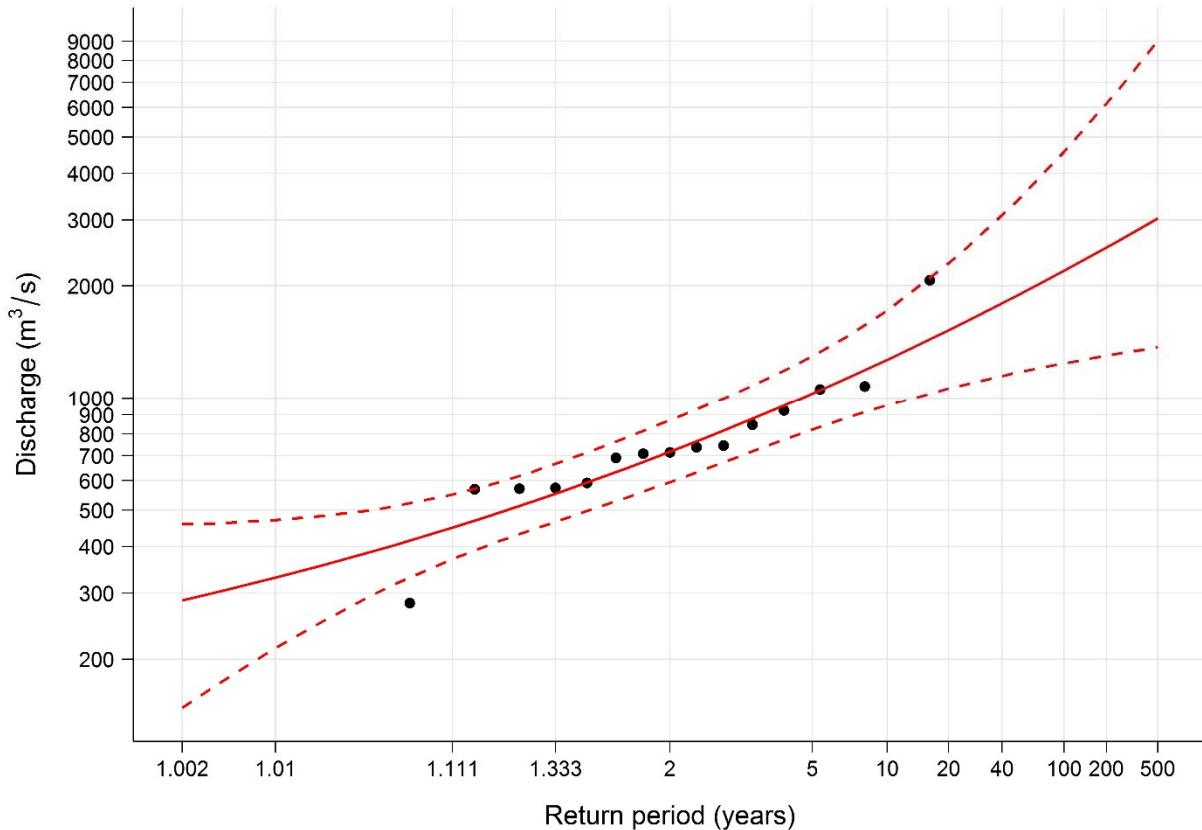


Figure 1: Frequency analysis of Columbia River 7Q10 minimum flows based on minimum 7-day rolling averages from 2001-2015 (black dots); solid red line represents the fitted distribution curve; dashed red lines represent the 95% confidence interval.

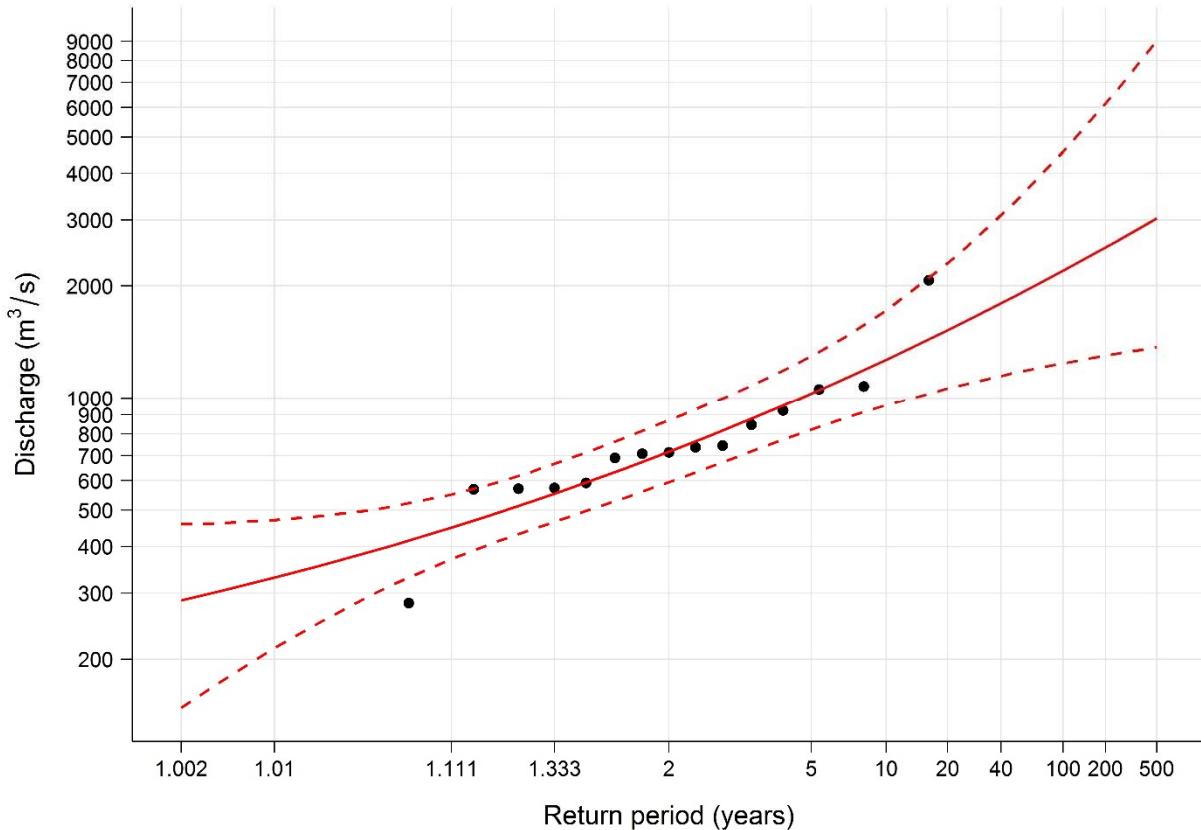


Figure 2: Frequency analysis of Columbia River 7Q10 maximum flows based on maximum 7-day rolling averages from 2001-2015 (black dots); solid red line represents the fitted distribution curve; dashed red lines represent the 95% confidence interval.

Frequency analysis of the minimum 7Q10 flows at Kootenay River during 2001-2015 estimated that the minimum flow, expected to only be lower once in 10 years (i.e., flow exceedance in 9 out of 10 years) was 223.3 m³/s (Figure 3). Frequency analysis of the maximum 7Q10 flows at Kootenay River during 2001-2015 estimated that the maximum flow, expected to only be higher once in 10 years (i.e., flow exceedance in 1 out of 10 years) was 946.6 m³/s (Figure 4).

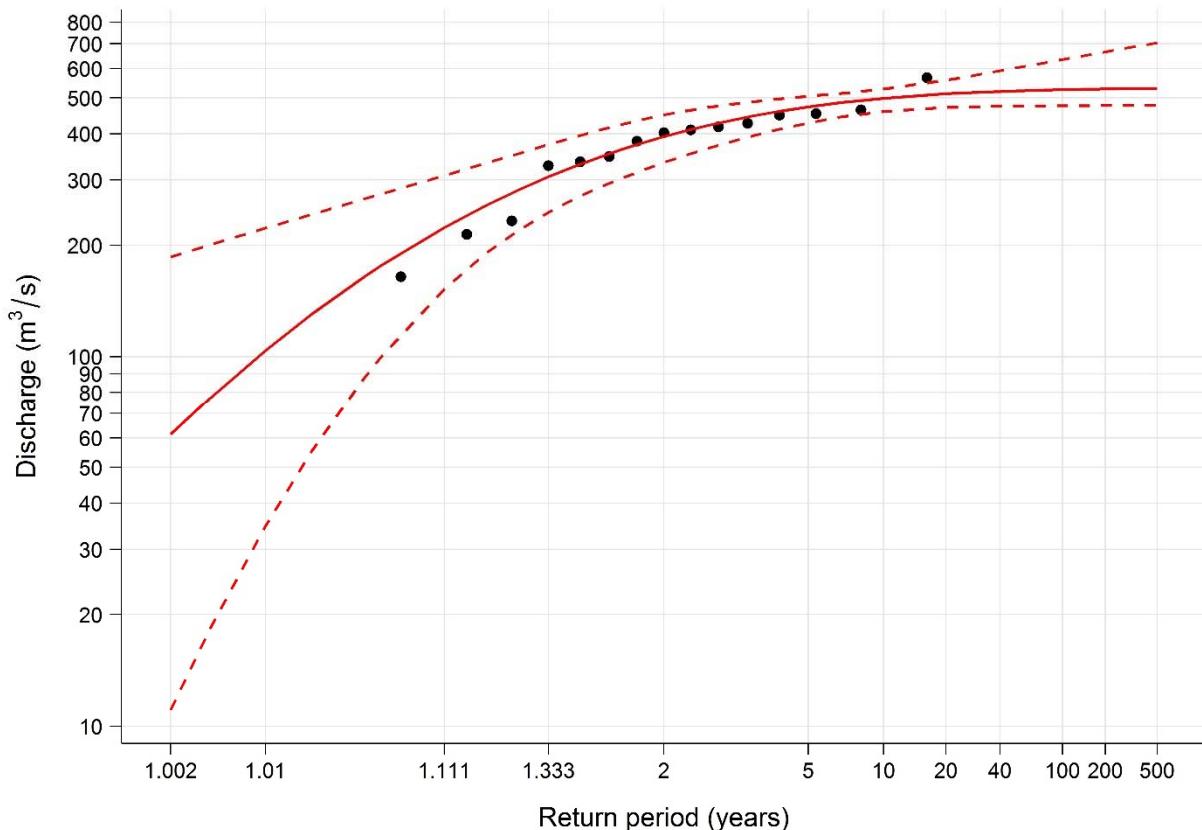


Figure 3: Frequency analysis of Kootenay River 7Q10 minimum flows based on minimum 7-day rolling averages from 2001-2015 (black dots); solid red line represents the fitted distribution curve; dashed red lines represent the 95% confidence interval.

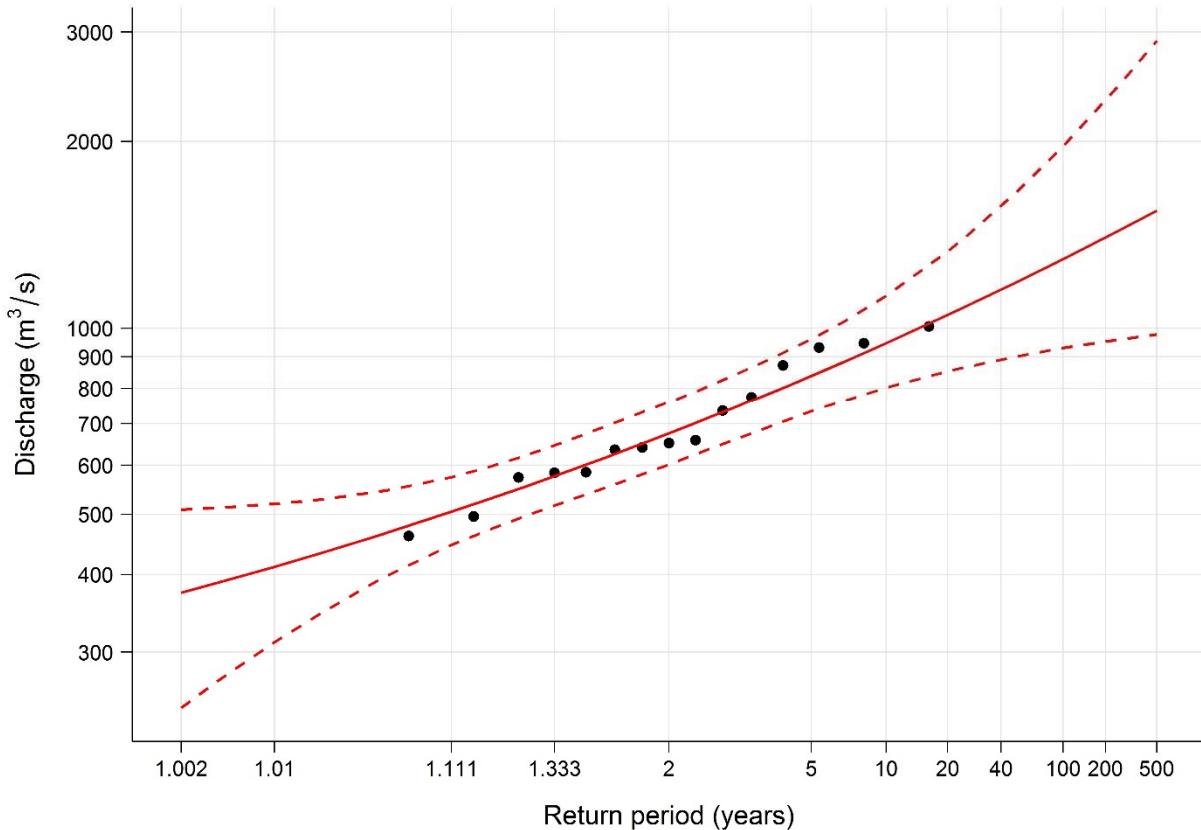


Figure 4: Frequency analysis of Kootenay River 7Q10 maximum flows based on maximum 7-day rolling averages from 2001-2015 (black dots); solid red line represents the fitted distribution curve; dashed red lines represent the 95% confidence interval.

3.2 Lower Columbia River 2D Hydraulic Model

For the cumulative distribution of WUA available to Chinook Salmon spawning at the modeled section of the Columbia River based on depth-only HSI, Kootenay discharge had little, if any, effect (Figure 5). Estimated total WUA based on large rivers HSI curves generally reached its maximum value at approximately 2-3 m, whereas total WUA based on the Columbia-Snake HSI curves reached its maximum values only at 9-10 m depths. Under the Columbia-Snake HSI curves, a substantially higher proportion of the total wetted area was available for spawning (approximately 60-75% of total wetted area depending on discharge scenario) in comparison to the total WUA under the large rivers curves (approximately 20-35% of total wetted area). The WUA for depths and velocities separate and combined are summarized in tabular form in Appendix C by incremental depths (0.5 m bin size) and velocities (0.15 m/s bin size).

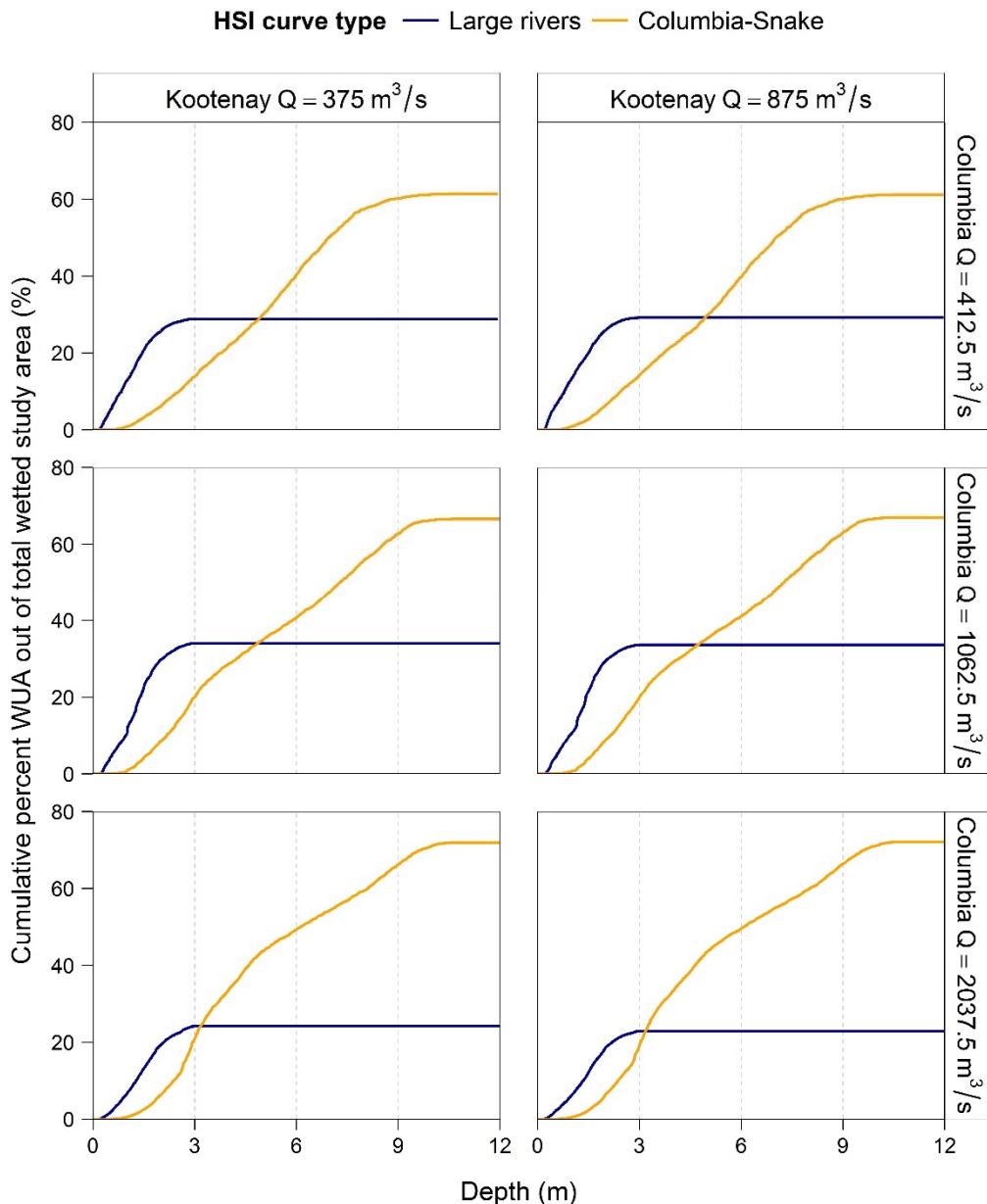


Figure 5: Cumulative distribution of weighted usable area (WUA) out of total wetted area for each model run for the Columbia River, estimated using depth-based HSI values; data plotted by model flow level (panels) and colour-coded by type of HSI curve.

For the cumulative distribution of WUA available to Chinook Salmon spawning at the modeled section of the Columbia River based on velocity-only HSI, Kootenay River discharge only influenced the availability of very fast ($> 2.5 \text{ m/s}$) habitat (Figure 6). This had little effect on the distribution of WUA, since these habitats had a suitability index of 0. The differences between WUA values based on the two types of HSI curves were substantially smaller than observed for depth-based HSI curves, approximately 10-20%, depending on flow scenario. In addition, as



opposed to depth-based WUA estimates, the Large River curves of velocity-based WUA estimates resulted in a higher availability of suitable spawning habitat (approximately 40-50% of total wetted area depending on discharge scenario) than the Columbia-Snake HSI curve (approximately 30-40% of total wetted area). This result is a direct outcome of a narrower HSI curve – while large river HSI values were 1.0 for velocities of 1.55 to 3.55 ft/sec (0.47 m/s and 1.08 m/s, respectively), the Columbia-Snake HSI values were 1.0 only for velocities between 2.45 and 3.55 ft/sec (0.75 m/s and 1.08 m/s, respectively), thereby reducing the resulting WUA estimate. Estimated cumulative WUA curves from the Large Rivers HSI curves reached their maximum values at approximately 1-1.5 m/s, whereas the Columbia-Snake cumulative WUA curves reached their maximum values at approximately 1.5-2.0 m/s.

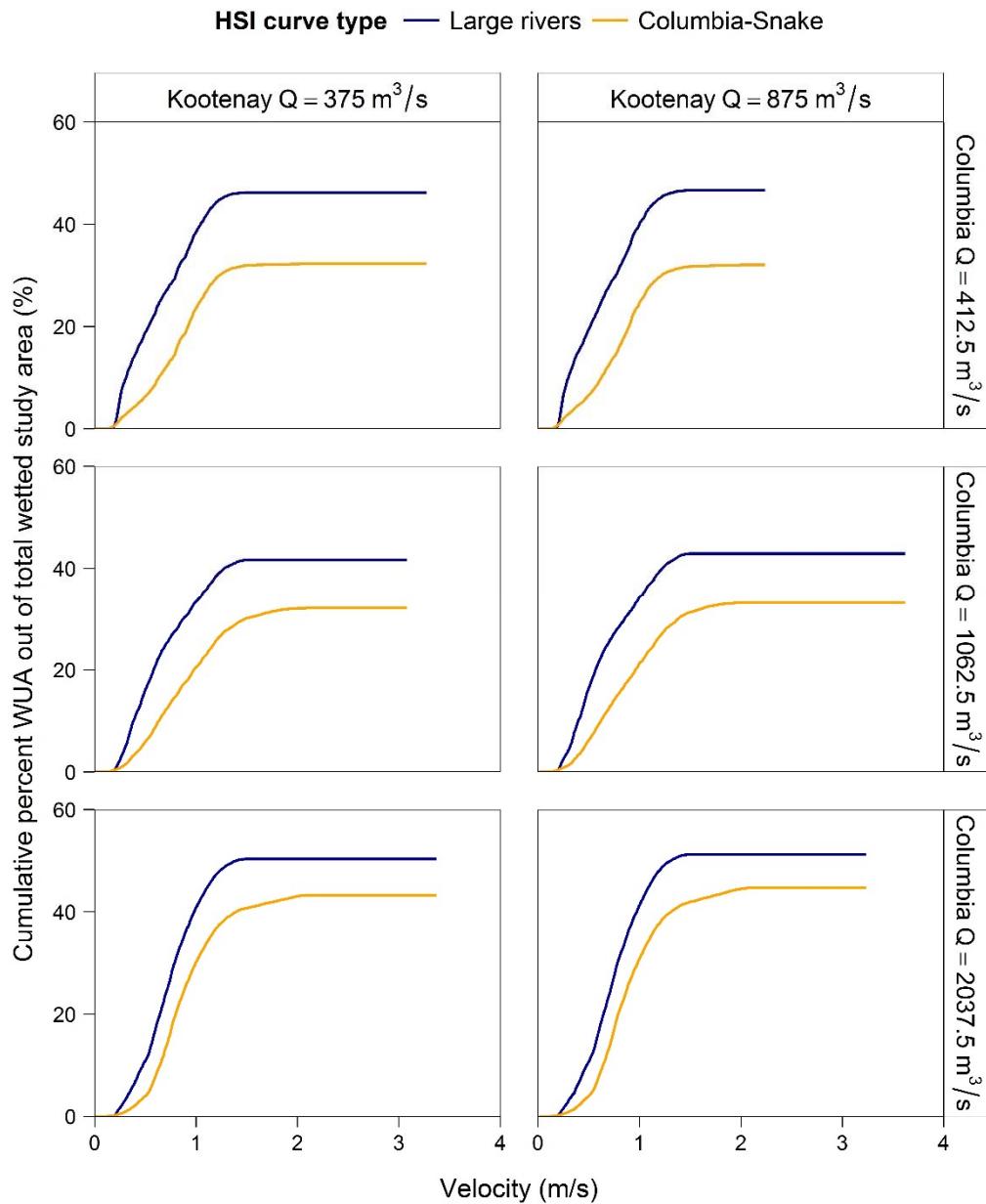


Figure 6: Cumulative distribution of weighted usable area (WUA) out of total wetted area for each model run for the Columbia River, estimated using velocity-based HSI values; data plotted by model flow level (panels) and colour-coded by type of HSI curve.



Total available WUA values based on the combined (depth and velocity) large river HSI values for the Columbia River ranged from 52,930 m² under low flows at both Columbia and Kootenay rivers to 97,155 m² under high flows for the Columbia River and low flows for the Kootenay River (Table 3). The percentage of WUA out of total wetted area remained similar across all scenarios, only ranging between 10.2% and 12.4%. Under the Columbia-Snake combined HSI curve, available WUA values ranged from 138,801 m² under low flows from both rivers to 260,275 m² under high flows from both rivers. The percentage of WUA out of total wetted area was higher and more variable than under the Large River HSI curve, ranging from 25.1% to 32.8%.

Table 3: Total WUA estimate under each modeled flow scenario using the combined (depth and velocity) HSI curve, detailed by river and type of HSI curve.

| P River | Modeled Discharge (m ³ /s) | | Large Rivers | | Columbia-Snake | |
|----------|---------------------------------------|----------|-----------------------|-------|-----------------------|-------|
| | Columbia | Kootenay | WUA (m ²) | % WUA | WUA (m ²) | % WUA |
| Columbia | 412.5 | 375 | 52,930 | 10.3 | 138,801 | 26.9 |
| | 1062.5 | 375 | 71,875 | 10.8 | 166,288 | 25.1 |
| | 2037.5 | 375 | 97,155 | 12.4 | 246,097 | 31.4 |
| | 412.5 | 875 | 54,838 | 10.2 | 148,236 | 27.5 |
| | 1062.5 | 875 | 71,127 | 10.6 | 176,575 | 26.2 |
| | 2037.5 | 875 | 89,747 | 11.3 | 260,275 | 32.8 |
| Kootenay | 2200 | 250 | 21,085 | 2.9 | 88,560 | 12.2 |
| | 575 | 500 | 41,125 | 9.1 | 147,635 | 32.5 |
| | 1225 | 500 | 32,930 | 6.3 | 176,795 | 33.6 |
| | 2200 | 500 | 41,257 | 5.4 | 176,588 | 23.1 |
| | 575 | 1000 | 41,457 | 7.8 | 126,723 | 24 |
| | 1225 | 1000 | 53,714 | 8.2 | 147,337 | 22.4 |
| | 2200 | 1000 | 34,593 | 4 | 224,225 | 26 |
| | 575 | 250 | 54,586 | 13.7 | 144,572 | 36.2 |
| | 1225 | 250 | 50,244 | 10.4 | 151,575 | 31.3 |

Maps of Columbia River habitat depth, velocity, and HSI values based on both Large Rivers and Columbia-Snake HSI curves are provided in Appendix B, Figures B1-B4.

3.3 Lower Kootenay River 2D Hydraulic Model

For the cumulative distribution of WUA available to Chinook Salmon spawning at the modeled section of the Kootenay River based on depth-only HSI, WUA values generally decreased with an increase in the discharge of both Columbia and Kootenay rivers (Figure 7). Similar to the Columbia River, estimated WUA values based on large rivers HSI curves generally reached their maximum value at approximately 2-3 m, whereas WUA values based on the Columbia-Snake HSI curves reached their maximum values only at 9-10 m depths. Under the Columbia-Snake HSI curves, a substantially higher proportion of the total wetted area was available for spawning (approximately 60-75% of total wetted area depending on discharge scenario) in comparison to the total WUA under the large rivers curves (approximately 30-40% of total wetted area).

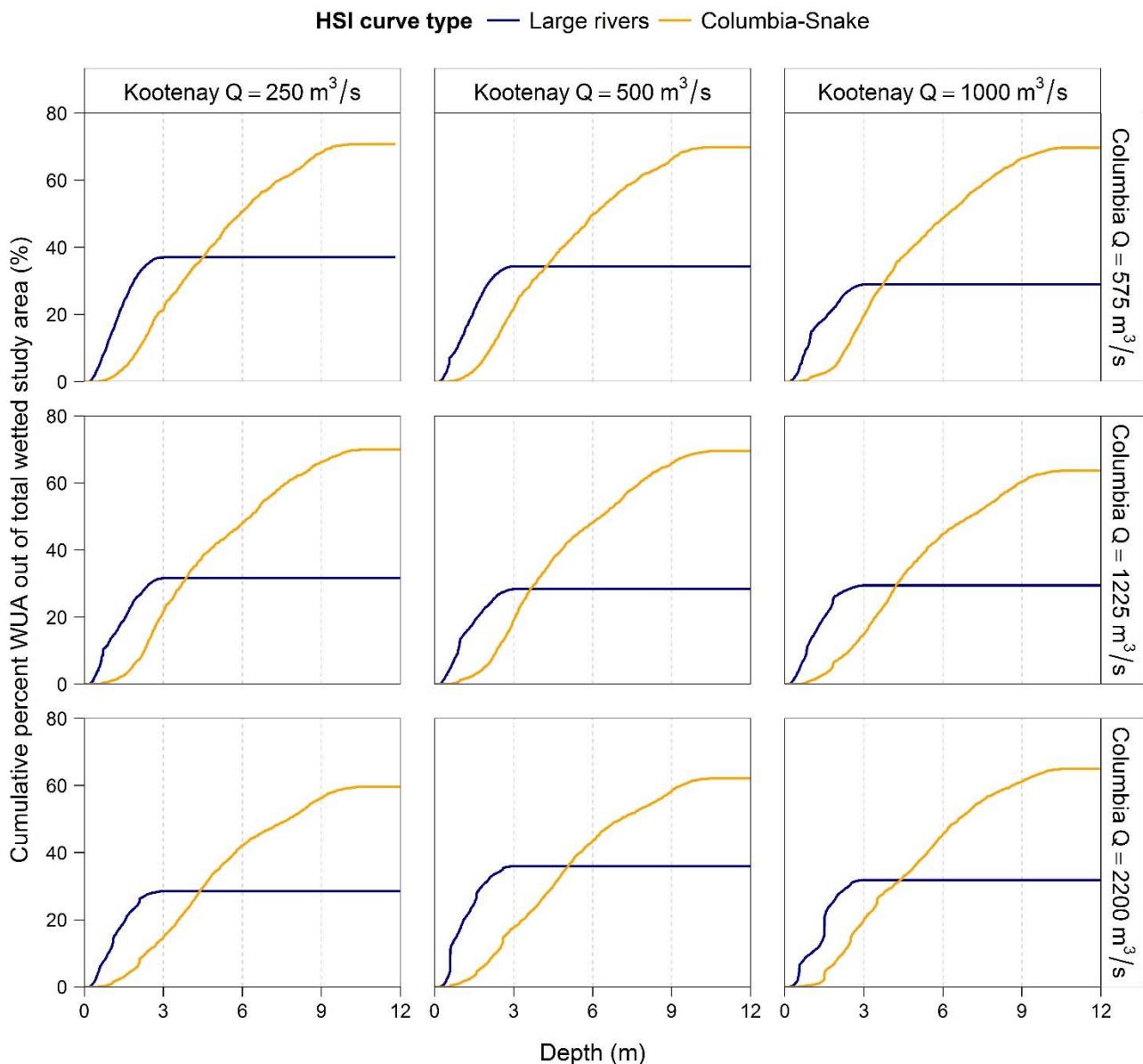


Figure 7: Cumulative distribution of weighted usable area (WUA) out of total wetted area for each model run for the Kootenay River, estimated using depth-based HSI values; data plotted by model flow level (panels) and colour-coded by type of HSI curve.

For the cumulative distribution of WUA available to Chinook Salmon spawning at the modeled section of the Kootenay River based on velocity-only HSI, an increase in Kootenay discharge resulted in substantial decreases in available WUA (Figure 8). The differences between WUA values based on the two types of HSI curves were smaller than observed for depth-based HSI curves, except for the scenario with low Kootenay flow (250 m³/s) and high Columbia flow (2,200 m³/s), where the difference between the two HSI curves was largest. Similar to the Columbia River results, for velocity-based WUA estimates, the large river HSI curves resulted in a higher availability of suitable spawning habitat (approximately 30-50% of total wetted area depending on discharge



scenario) than the Columbia-Snake HSI curve (approximately 10-40% of total wetted area). As opposed to the Columbia River results, where WUA estimates were overall similar across the modeled discharge scenarios, the Kootenay results suggested a strong influence of discharge from either river on the available spawning habitat. Under the low Kootenay flow (250 m³/s) and the Columbia-Snake HSI habitat, available WUA decreased from approximately 40% at low Columbia flow to approximately 10% under high Columbia flow. Similarly, at low Columbia flow (575 m³/s), available WUA decreased from approximately 40% under low Kootenay discharge to approximately 25% under high Kootenay discharge.

Estimated cumulative WUA curves from the large rivers HSI curves reached their maximum values at approximately 1-1.5 m/s, whereas the Columbia-Snake cumulative WUA curves reached their maximum values at approximately 1.5-2.0 m/s.

Total available WUA values based on the combined (depth and velocity) large river HSI values for the Kootenay River ranged from 21,085 m² under high flows at both Columbia and Kootenay to 54,586 m² under low flows for both rivers (Table 3). The percentage of WUA out of total wetted area ranged from as low as 2.9% at high flows from both rivers to 13.7 at low flows from both rivers. Under the Columbia-Snake combined HSI curve, available WUA values ranged from 88,560 m² under high flows from both rivers to 224,225 m² under low flows from both rivers. The percentage of WUA out of total wetted area was higher and more variable than under the Large River HSI curve, ranging from 12.2% at high flows from both rivers to 36.2% under low flows from both rivers.

Maps of lower Kootenay River habitat depth, velocity, and HSI values based on both large rivers and Columbia-Snake HSI curves are provided in Appendix B, Figures B5-B8.

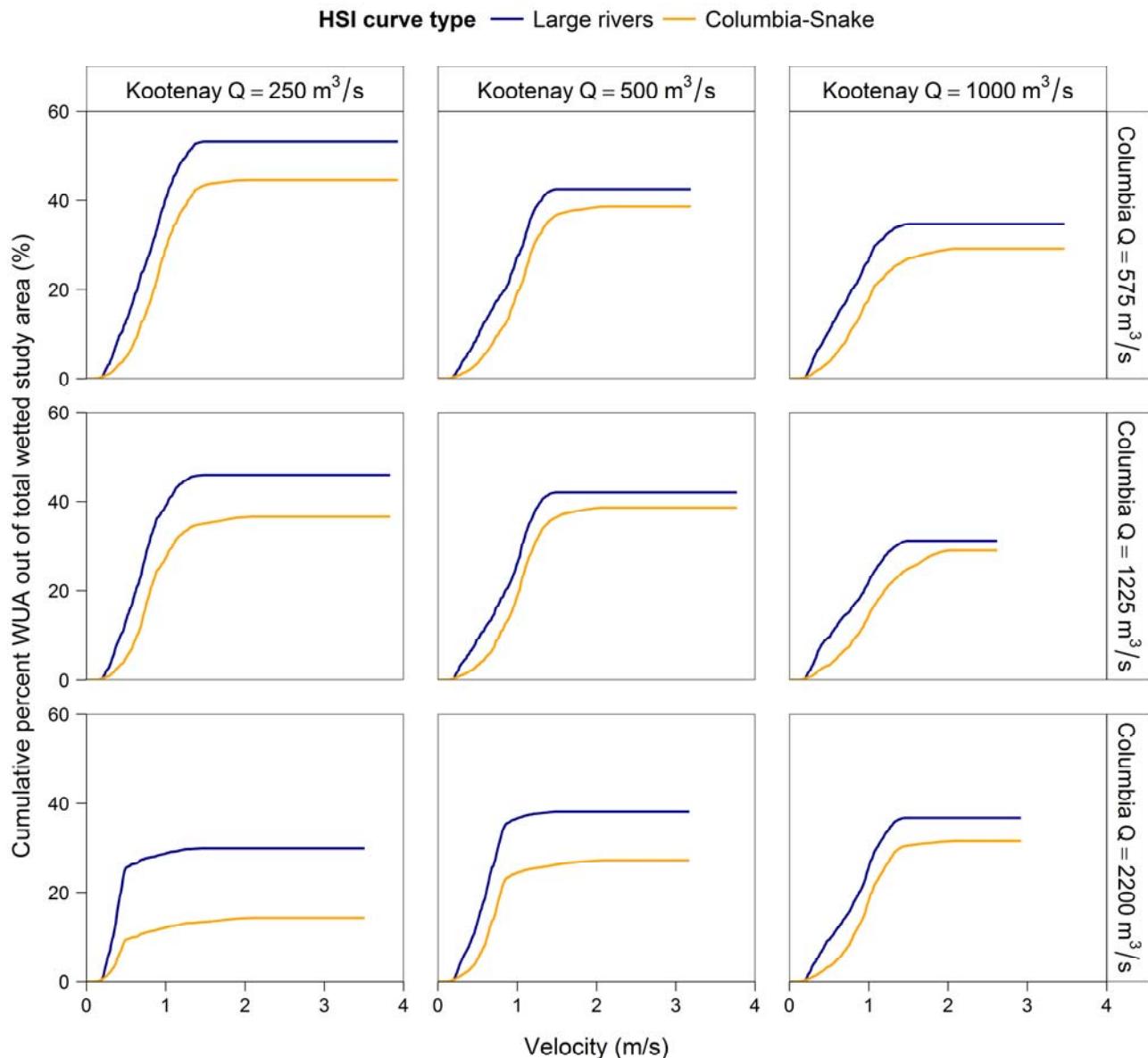


Figure 8: Cumulative distribution of weighted usable area (WUA) out of total wetted area for each model run for the Kootenay River, estimated using velocity-based HSI values; data plotted by model flow level (panels) and colour-coded by type of HSI curve.



4.0 DISCUSSION

The objectives of this report and the approaches taken to address them are discussed below.

The first objective was to develop, by literature review, spawning habitat suitability criteria for depth and velocity of Chinook Salmon in large rivers (the Columbia River if possible). After discussions with CCRIFC, two velocity and two depth HSC curves were selected from (Beecher et al. 2016) for meeting this objective. The habitat depths and velocities from the Columbia River and Snake River curves appear to reflect habitat that is deeper and slower than that found near our study areas at the confluence of the Kootenay and Columbia rivers in BC. Therefore, a separate analysis using the HSC curves for the “Large River” HSC criteria also found in Beecher et al. (2016) was conducted. Although these curves are developed for large rivers, they would typically be smaller than the mainstem Kootenay and Columbia rivers, but likely have depths and velocities that approximate those projected by the 2D model used in this study. Both curves were used to provide a comparison using the alternative assumptions.

The potential spawning period of Chinook Salmon within the program study area was determined by literature review. Based on the range of spawning timing identified by Healy (1991) and discussions with CCRIFC on maximum temperatures associated with spawning, the time period from September 1 to December 1 was selected as the likely spawning window of the Chinook Salmon that would likely be from stocks introduced into the study area. Consequently the hydrographs used in the analysis targeted this time period. Only spawning habitat available during this time period was assessed, since other issues that could potentially impact incubation success, such as egg stranding, bed scouring, temperatures, etc. were beyond the scope of this study.

The HSCs were applied to the outputs of the River 2D model for the area covered by the BC Hydro CLBMON-47 Lower Columbia River Whitefish Spawning Topography Program (Golder 2014). The projected available habitat was limited to the geographical area that has been the target of this program. Although this habitat is likely highly suited for successful spawning of large salmonids, based on spring use of the area for large Rainbow Trout (*Oncorhynchus mykiss*) spawning (Irvine et al. 2014), there are other areas within the Columbia River above Lake Roosevelt and below HLK that may be equally or more suitable for Chinook spawning. Consequently, the model output that indicates percentage of the area of the total wetted area at the discharges indicated, may be of equal or more value in determining the quality of habitat available in the Columbia River above Lake Roosevelt. There are also extensive reaches of the Columbia River drainage upstream from the study area that have historical pre-dam records of Chinook Salmon spawning, but have significant barriers from upper Columbia River Basin dams that would need to be addressed to provide access. Alternatively, the model did not employ HSC curves for other constraining habitat parameters, such as substrate, that would further constrain the available habitat for our study areas. When BC Hydro develops substrate maps of the study area, the models used can easily be updated to determine how this parameter further constrains available spawning habitat in this reach.

This report included mapped distributions (Appendix B) and modelled estimates of available spawning habitat (m^2 and proportion of total area within modelled boundaries) over a broad range of flows during the potential spawning period. The results report approximate median discharge weighted usable area of 33,000 (Large River HSC) to 177,000 m^2 (Columbia-Snake HSC) in the Kootenay confluence area and 72,000 m^2 (Large River HSC) to 166,000 m^2 (Columbia-Snake HSC) in the mainstem reach of the Columbia River. These estimates were based on the median river flows that were estimated from the past 15 years of hydrology data used in this study. In general, during the putative spawning period of Chinook Salmon, river flows have not resulted in highly variable WUA, suggesting significant habitat will be available during the low and high flow years. Moreover, the model suggests that at the median flow, the available spawning habitat based on combined depth and velocity



HSC results in WUA composing 10.8 to 25.1 % of the wetted area of these Columbia study areas and 6.3% to 33.6 % of the Kootenay Study Area (using Large River and Columbia-Snake HSC, respectively). Although these estimates may be further constrained when other habitat variables, such as substrate, are included in the model, there appear to be significant amounts of spawning habitat available for Chinook Salmon in the reaches examined.

A literature review of spawning habitat requirements of Fall Chinook Salmon by Levy and Slaney (1993) indicated redds occupy 5.1 m², with a recommended area of 20.1 m² per spawning pair. Connor et al. (2001), using empirical data for redd size determination, estimated ~70 m² per red based on the highest density area of spawners in the Snake River, but only 11 redds were observed at this site. Hanrahan et al. (2004) used redd sizes ranging from 83 to 117 m² based on distances between redds observed in the Columbia and Snake rivers. A recent more detailed investigation of spawning Chinook Salmon habitat requirements of the Hanford Reach of the Columbia River (Geist et al. 2006) indicated redd size of 17 m² with 45 m² needed to account for observed mean distances between redds, likely related to territorial defense of the redds by the spawners. Because of the large range in redd size and associated territories, and their likely dependence on spawner abundance when the data were collected, a large range of alternatives could be explored to determine spawner capacity. Hanrahan et al. (2004) and Geist et al. (2006) also used the proportion of useable habitat that was occupied, which ranged from 5% to 30%, in determining redd capacity of the Hanford Reach.

In Table 4, we have applied the estimate of redd size (45 m²) that includes additional observed spatial separation and percent occupancy from Geist et al. (2006) to determine the number of redds, that the two study areas could potentially support.. These projections, using approximate median flows, range from 116 to 2,287 redds that may be supported by the habitat within these areas, depending upon assumptions. River discharge had relatively less effect on the number of supported redds, compared to the chosen suitability curve. The proportion of habitat available that is utilized also has a large effect, using the ranges suggested by Geist et al. (2006). Using a 15% midpoint of the range (bold values in table) summary as a “best estimate”, the number of redds supported would range from 349 to 1,144 for both areas combined at the median flow, dependent upon the selected HSC curve. These estimates have high uncertainty based on previously discussed limitations of the model used in this study. Although it is not the intent of this study to estimate total spawning capacity of the reach of the Columbia basin accessible above Lake Roosevelt, the distribution of Rainbow Trout spawners suggests significant numbers of spawners are likely to occur outside of the study areas (Irvine et al. 2014). Expansion of investigations into other habitats is needed to provide a realistic estimate of spawning habitat potential in the greater area of the Columbia River within this region.



Table 4: Number of Redds supported based on estimated WUA of Chinook Spawning Habitat with alternative assumptions. Values in bold represent the median flow scenario.

| Assumptions | | | WUA | | # of Redds | | | |
|-------------|----------------|--------|-----------------|----------|---|------------|------------|--------------|
| Reach | HSC | | Discharge (cms) | | % Utilization--45 m ² per redd | | | |
| | | | Columbia | Kootenay | m ² | 5 | 10 | 15 |
| Columbia | Large Rivers | 412.5 | 375 | 52,930 | 59 | 118 | 176 | 353 |
| | | 1062.5 | 375 | 71,875 | 80 | 160 | 240 | 479 |
| | | 2037.5 | 375 | 97,155 | 108 | 216 | 324 | 648 |
| | | 412.5 | 875 | 54,838 | 61 | 122 | 183 | 366 |
| | | 1062.5 | 875 | 71,127 | 79 | 158 | 237 | 474 |
| | | 2037.5 | 875 | 89,747 | 100 | 199 | 299 | 598 |
| | Columbia/Snake | 412.5 | 375 | 138,801 | 154 | 308 | 463 | 925 |
| | | 1062.5 | 375 | 166,288 | 185 | 370 | 554 | 1,109 |
| | | 2037.5 | 375 | 246,097 | 273 | 547 | 820 | 1,641 |
| | | 412.5 | 875 | 148,236 | 165 | 329 | 494 | 988 |
| | | 1062.5 | 875 | 176,575 | 196 | 392 | 589 | 1,177 |
| | | 2037.5 | 875 | 260,275 | 289 | 578 | 868 | 1,735 |
| Kootenay | Large Rivers | 2200 | 250 | 21,085 | 23 | 47 | 70 | 141 |
| | | 575 | 500 | 41,125 | 46 | 91 | 137 | 274 |
| | | 1225 | 500 | 32,930 | 37 | 73 | 110 | 220 |
| | | 2200 | 500 | 41,257 | 46 | 92 | 138 | 275 |
| | | 575 | 1000 | 41,457 | 46 | 92 | 138 | 276 |
| | | 1225 | 1000 | 53,714 | 60 | 119 | 179 | 358 |
| | | 2200 | 1000 | 34,593 | 38 | 77 | 115 | 231 |
| | | 575 | 250 | 54,586 | 61 | 121 | 182 | 364 |



| Assumptions | | | | WUA | # of Redds | | | |
|-------------|----------------|-----------------|----------|---------|----------------------------------|-----|-------|-------|
| Reach | HSC | Discharge (cms) | | m^2 | % Utilization--45 m^2 per redd | | | |
| | | Columbia | Kootenay | | 5 | 10 | 15 | 30 |
| | | 1225 | 250 | 50,244 | 56 | 112 | 167 | 335 |
| | Columbia/Snake | 2200 | 250 | 88,560 | 98 | 197 | 295 | 590 |
| | | 575 | 500 | 147,635 | 164 | 328 | 492 | 984 |
| | | 1225 | 500 | 176,795 | 196 | 393 | 589 | 1,179 |
| | | 2200 | 500 | 176,588 | 196 | 392 | 589 | 1,177 |
| | | 575 | 1000 | 126,723 | 141 | 282 | 422 | 845 |
| | | 1225 | 1000 | 147,337 | 164 | 327 | 491 | 982 |
| | | 2200 | 1000 | 224,225 | 249 | 498 | 747 | 1,495 |
| | | 575 | 250 | 144,572 | 161 | 321 | 482 | 964 |
| | | 1225 | 250 | 151,575 | 168 | 337 | 505 | 1,011 |
| Combined | Large Rivers | | | | 116 | 233 | 349 | 699 |
| | Columbia/Snake | | | | 381 | 762 | 1,144 | 2,287 |

This study is considered very preliminary and is designed to provide a quick snapshot of potential spawning habitat for Chinook Salmon if passage into this reach of the Columbia River occurs in the future. Geist et al. (2006) have established protocols for conducting estimates of Fall Chinook spawning habitat. They contend that Chinook Salmon spawning habitat quantity and quality should be evaluated in a hierarchical spatial approach to minimize errors associated with scale dependence. These authors envisioned an approach that begins at the watershed scale and becomes increasingly detailed at progressively finer scales, and that ultimately provides estimates of habitat quality at the scale of individual redds. In their spatial hierarchy from watershed to reach to site, Geist et al. (2006) advised obtaining more specific information to align habitat predictions with actual use. In the case of the reaches examined in this study, there are no historical data, other than current use by other salmonids, that can be used to determine why some areas of suitable habitat are being used and others are not. Consequently these predictions will likely always rely on analogies with other habitats currently being used by spawning Chinook Salmon to determine likely capacities and will have greater uncertainty than studies conducted where Chinook Salmon spawning is occurring. However, much more refinement can be obtained to determine available spawning habitat within the entire 60+ km reach of the Columbia River that extends from Lake Roosevelt to HLK and Brilliant dams. Geomorphological investigations to determine likely spawning habitat could provide the



basis for detailed hydraulic modelling and substrate mapping of other subsections of this entire reach of the Columbia River. Based on observed use by large Rainbow Trout in the spring, suitable spawning habitat likely occurs at the mouths of the major tributaries, within the tributaries, and within other reaches of the mainstem, such as the area near Genelle (Irvine et al. 2014). Much more refinement of the 2D models presented in this study can be accomplished by examining substrate, upwelling and interstitial flow, in addition to using the observed use of the same habitat by spawning Rainbow Trout (Irvine et al. 2014). Because of the larger size of Chinook Salmon, their habitat availability is expected to be larger due to their ability to dig redds in larger substrate and to tolerate increased velocities. However, matching up spatial predictions with actual redd presence from Rainbow Trout can provide some confidence in the models' predictive ability.

Based on the provided limited evidence and modeling, our qualified conclusions suggest significant presence of spawning habitat for Chinook Salmon in these areas over the realistic range of flows encountered during the past 15 years. Because of the rapid growth observed in other salmonids and the abundance of macroinvertebrates within this reach, it is likely that rearing habitat will be available as well; however, this component of Chinook Salmon life history will require further investigation.

5.0 RECOMMENDATIONS

The following recommendations are presented to strengthen the analysis and dataset:

- 1) Expand investigations into the entire reach of the Columbia and Kootenay rivers, including significant tributaries, between Lake Roosevelt and the barrier at Brilliant and Hugh L. Keenelyside dams. A geomorphological approach should be used to determine additional study sites for detailed habitat modelling.
- 2) For the existing models, once the BC Hydro substrate mapping results for the lower Columbia and Kootenay rivers become available, incorporate them into this analysis to examine substrate characteristics within the hydraulic model boundaries.
- 3) Compare model predictions with Rainbow Trout spawning habitat use as a method of validation of the model predictions.
- 4) If the spawning habitat models suggest sufficient habitat is available to support a viable population of Chinook Salmon, expand the habitat modelling to other life history stages that could constrain the populations, such as incubation and juvenile rearing.



6.0 CLOSURE

We trust that this report meets your current requirements. If you have any further questions, please do not hesitate to contact the undersigned.

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Project Analyst, Biological Scientist

BH/SU/DS/cmc

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APPENDIX A

Lower Columbia and Kootenay River Annual Hydrographs

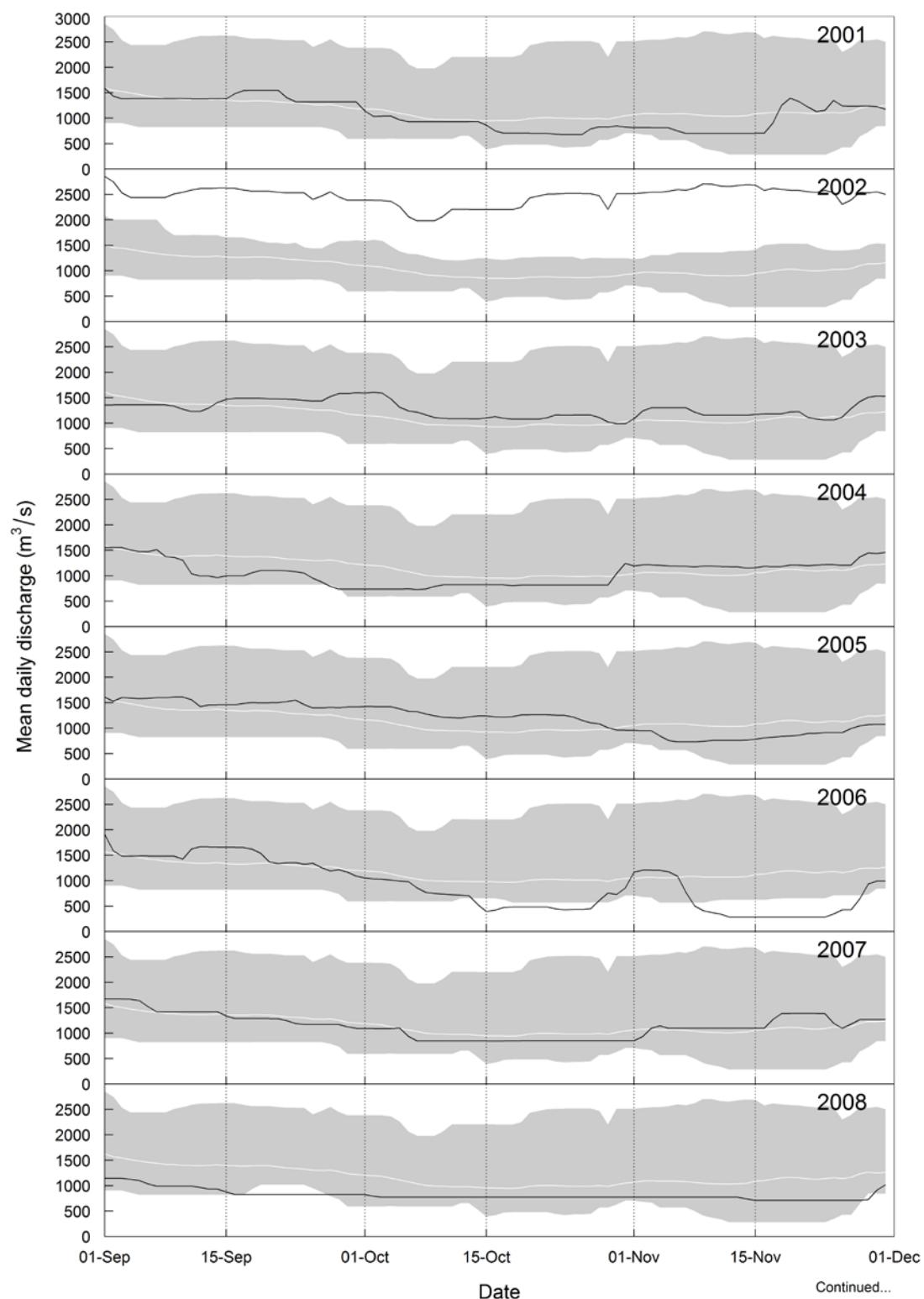


Figure A1. Mean daily discharge (m^3/s) for the Columbia River at Hugh L. Keenleyside Dam, 2001-2015. The shaded area represents minimum and maximum mean daily discharge values recorded during other study years (between 2001 and 2015). The white line represents average mean daily discharge values over the same time period.

Continued...

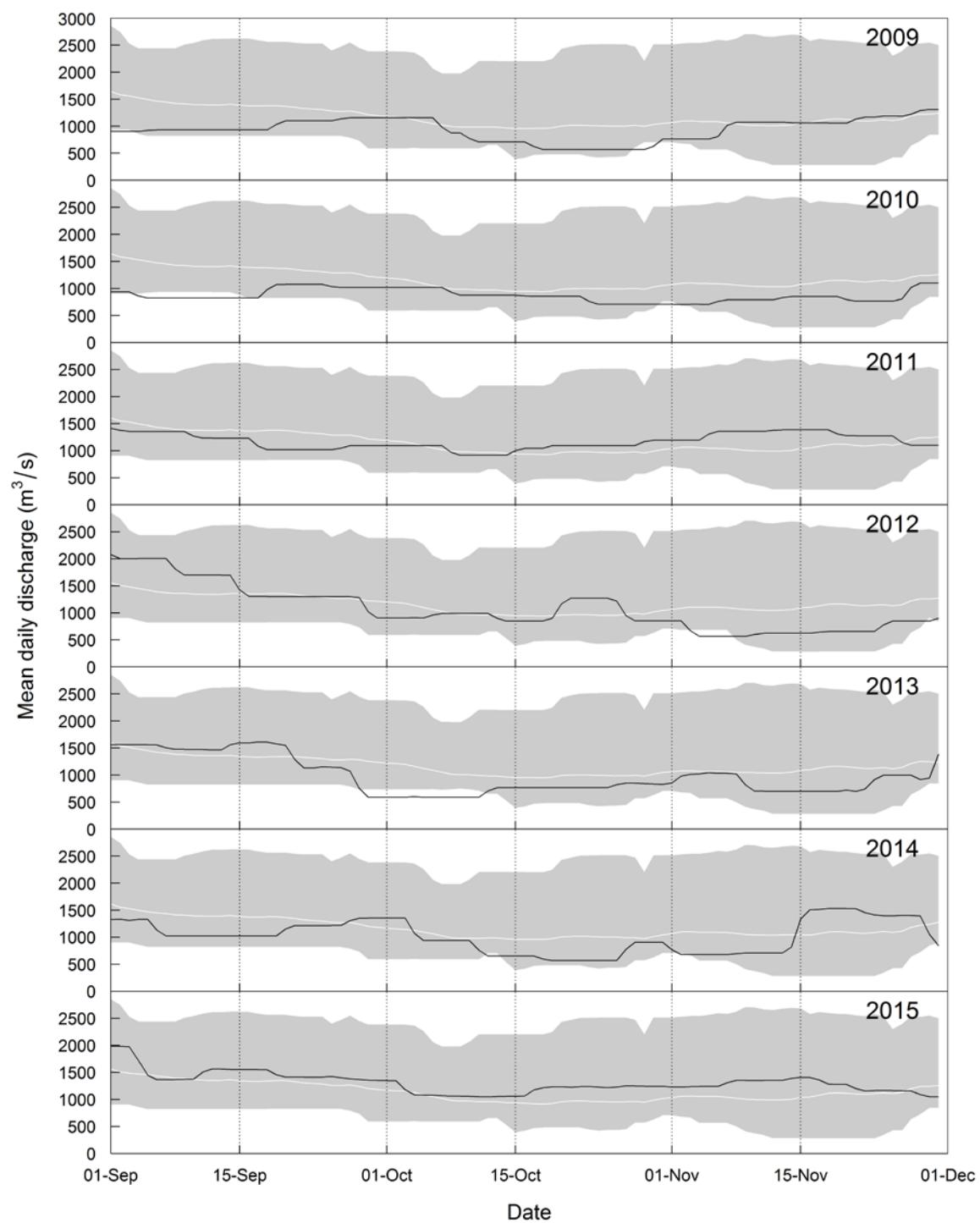


Figure A1. Concluded.

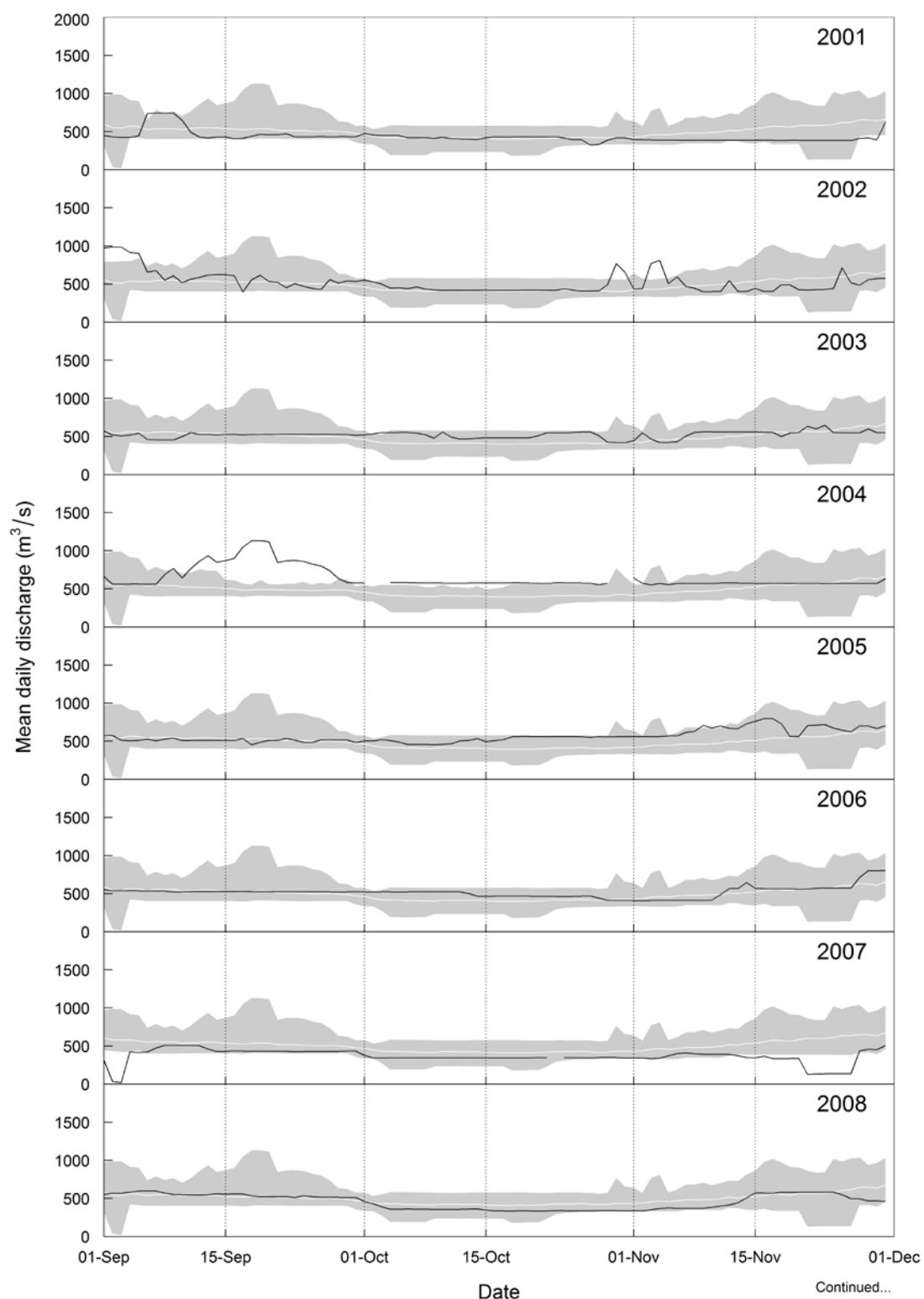


Figure A2. Mean daily discharge (m^3/s) for the Kootenay River at Brilliant Dam, 2001-2015. The shaded area represents minimum and maximum mean daily discharge values recorded during other study years (between 2001 and 2015). The white line represents average mean daily discharge values over the same time period.

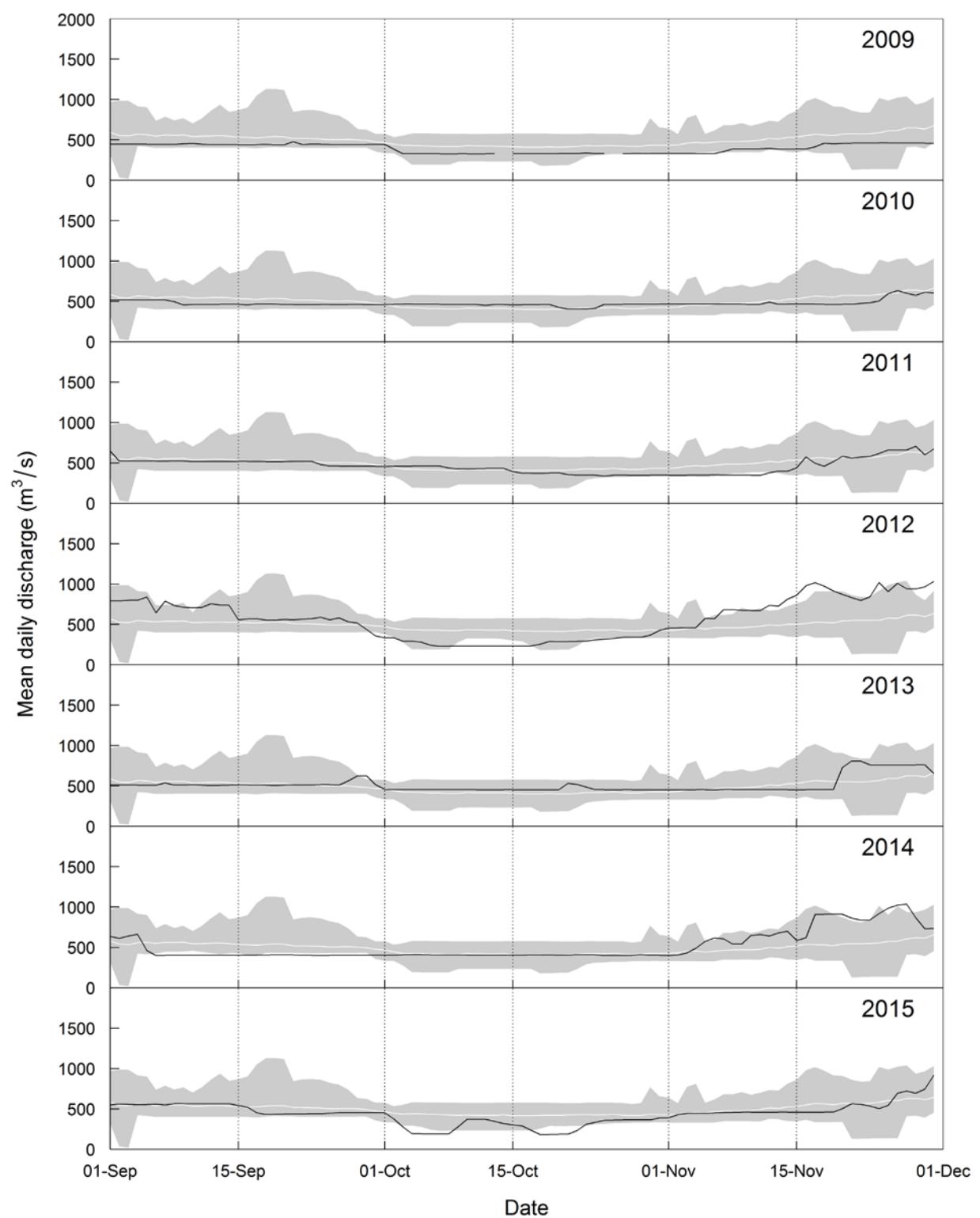


Figure A2. Concluded.



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APPENDIX B

River 2D Hydraulic Model Outputs

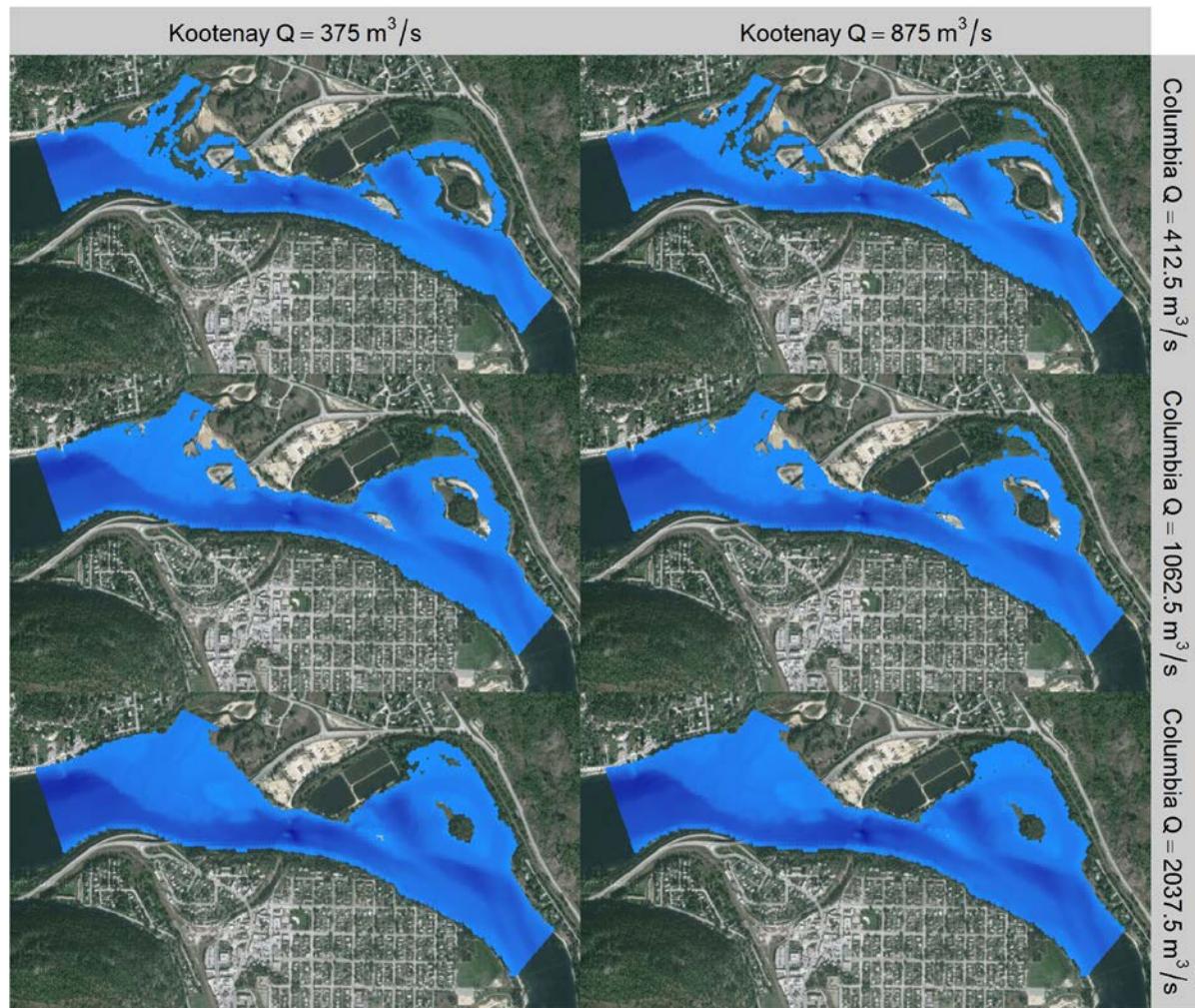


Figure B1. Map of depth (m) at Columbia River, plotted by River2D model run (panels).

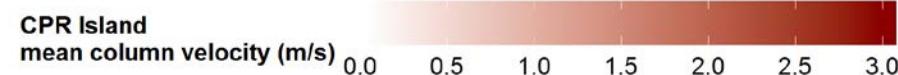
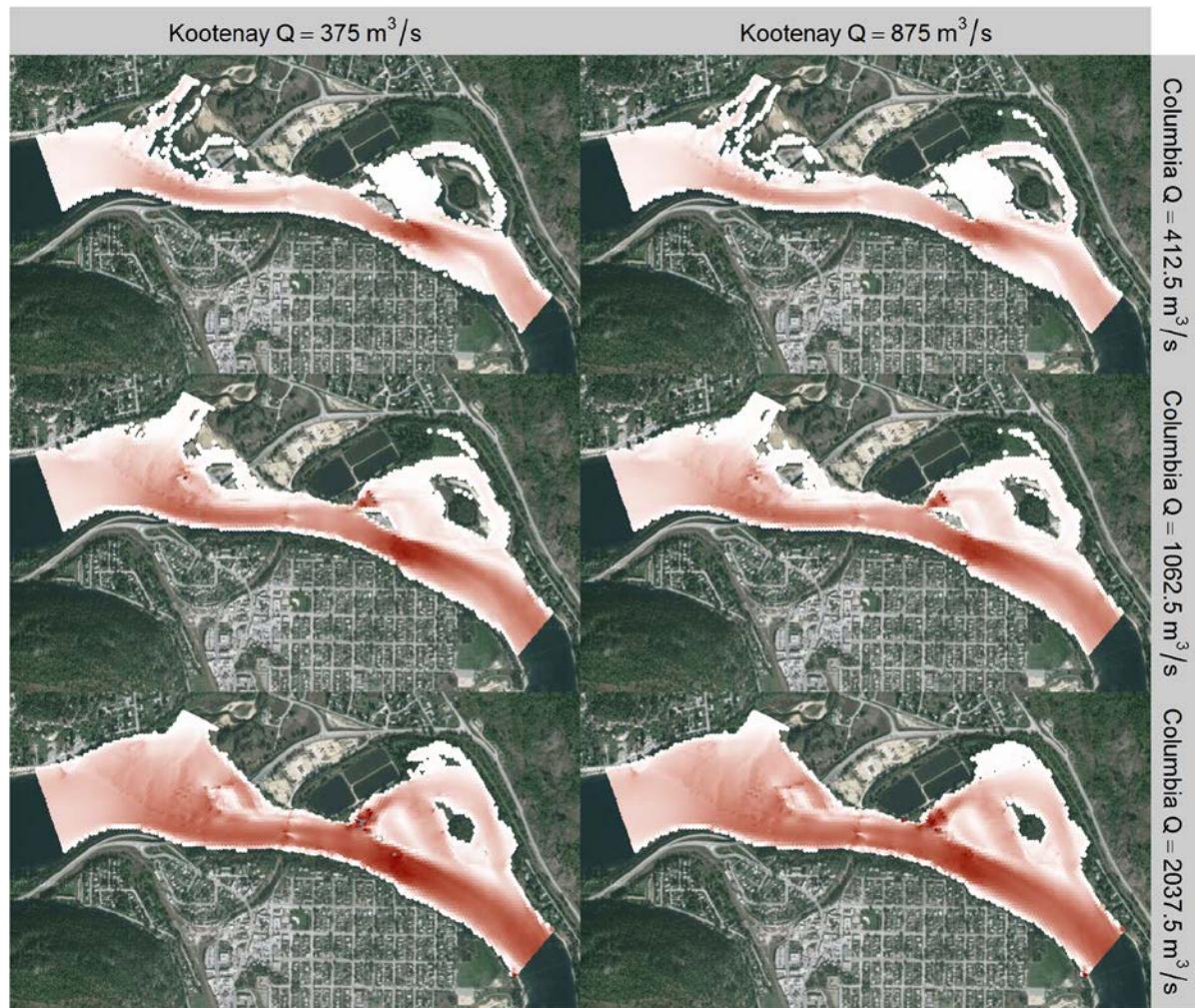


Figure B2. Map of velocity (m/s) at Columbia River, plotted by River2D model run (panels).

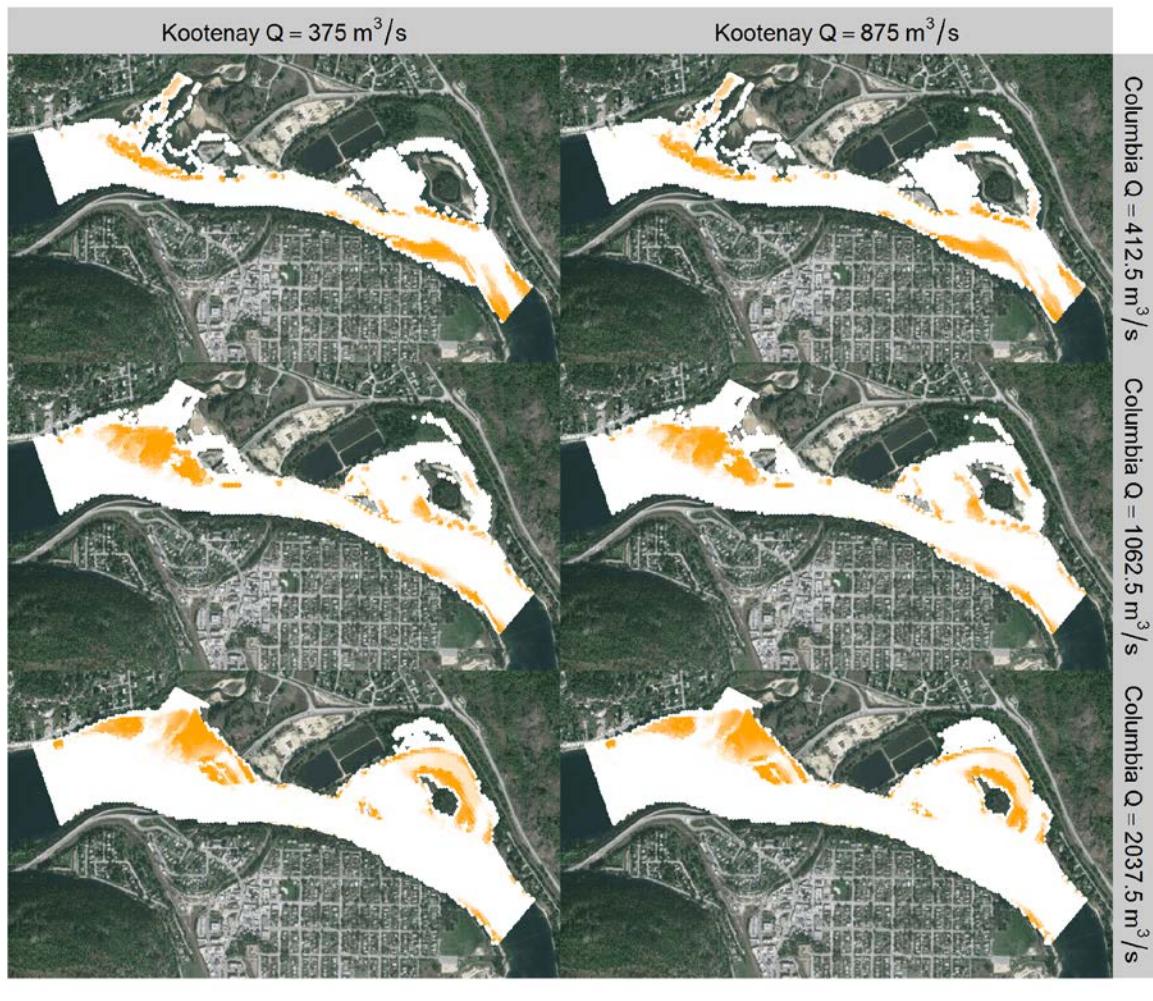


Figure B3. Combined HSI (both depth- and velocity-based) at Columbia River, plotted by River2D model run (panels). HSI calculations were based on the large river HSI curve (for rivers with mean annual discharge $\geq 85.0 \text{ m}^3/\text{s}$).

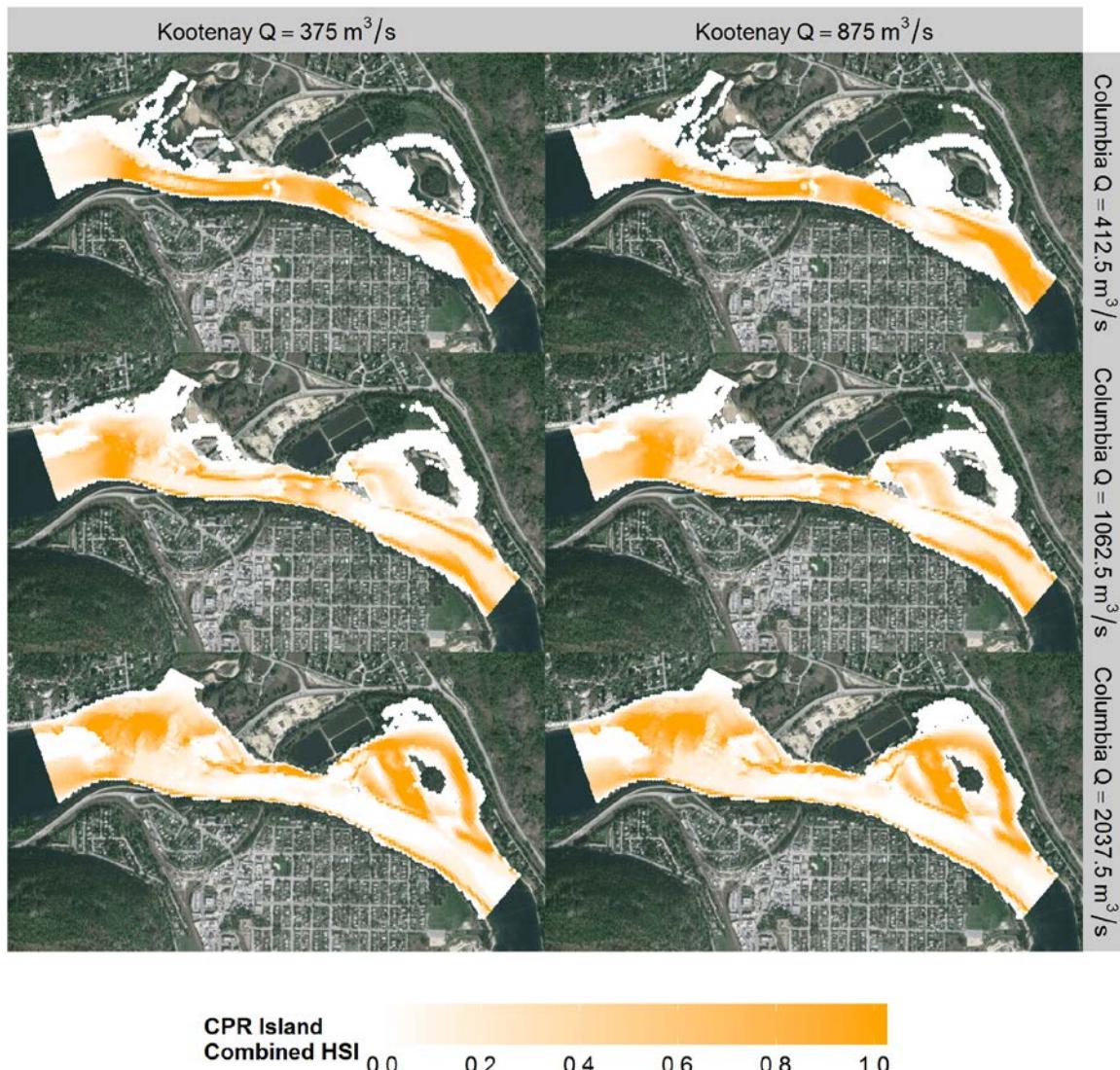


Figure B4. Combined HSI (both depth- and velocity-based) at Columbia River, plotted by River2D model run (panels). HSI calculations were based on the Columbia-Snake HSI curve (for rivers with mean annual discharge $\geq 2,831.7 \text{ m}^3/\text{s}$).

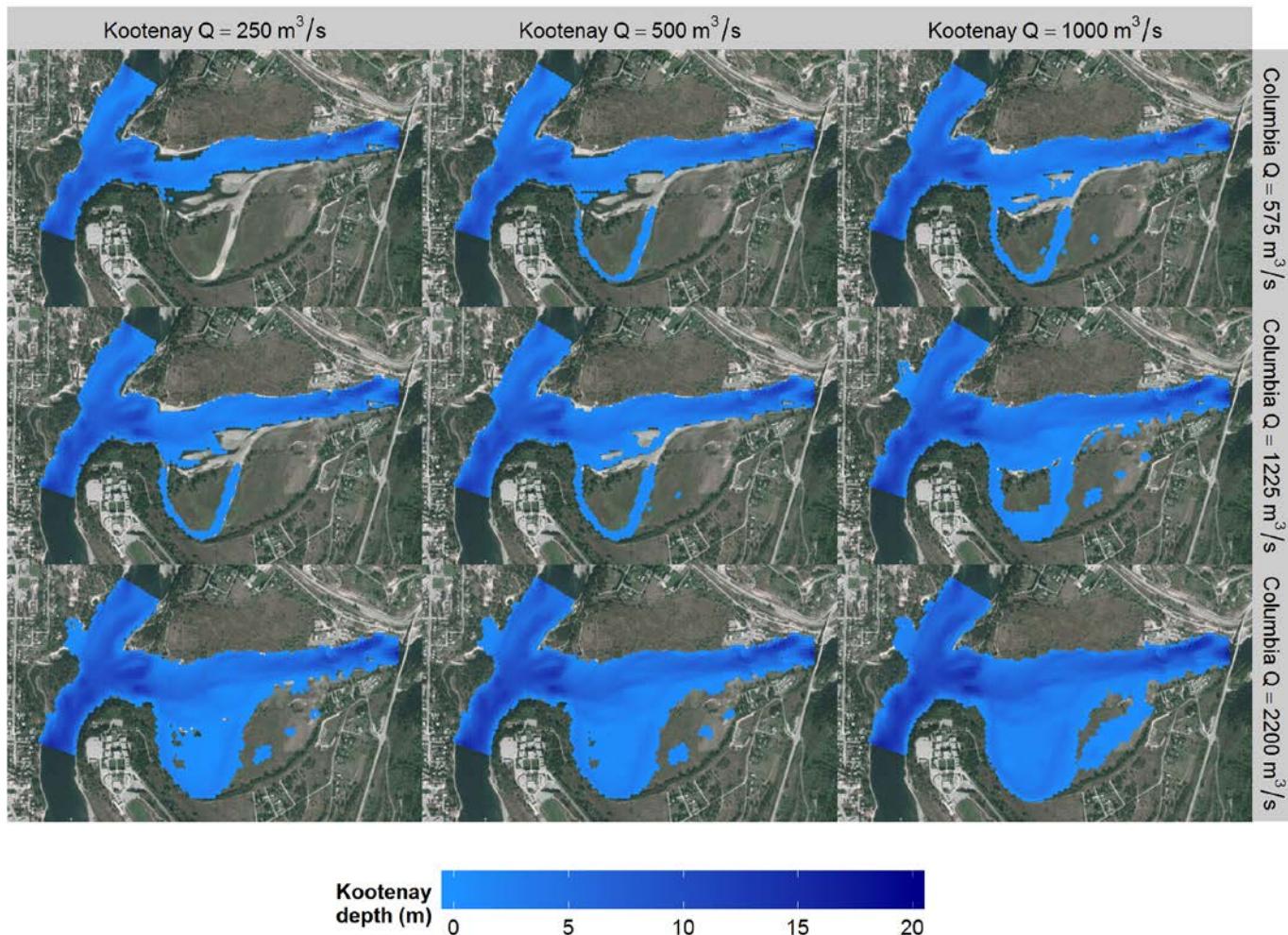


Figure B5. Map of depth (m) at Kootenay River, plotted by River2D model run (panels).

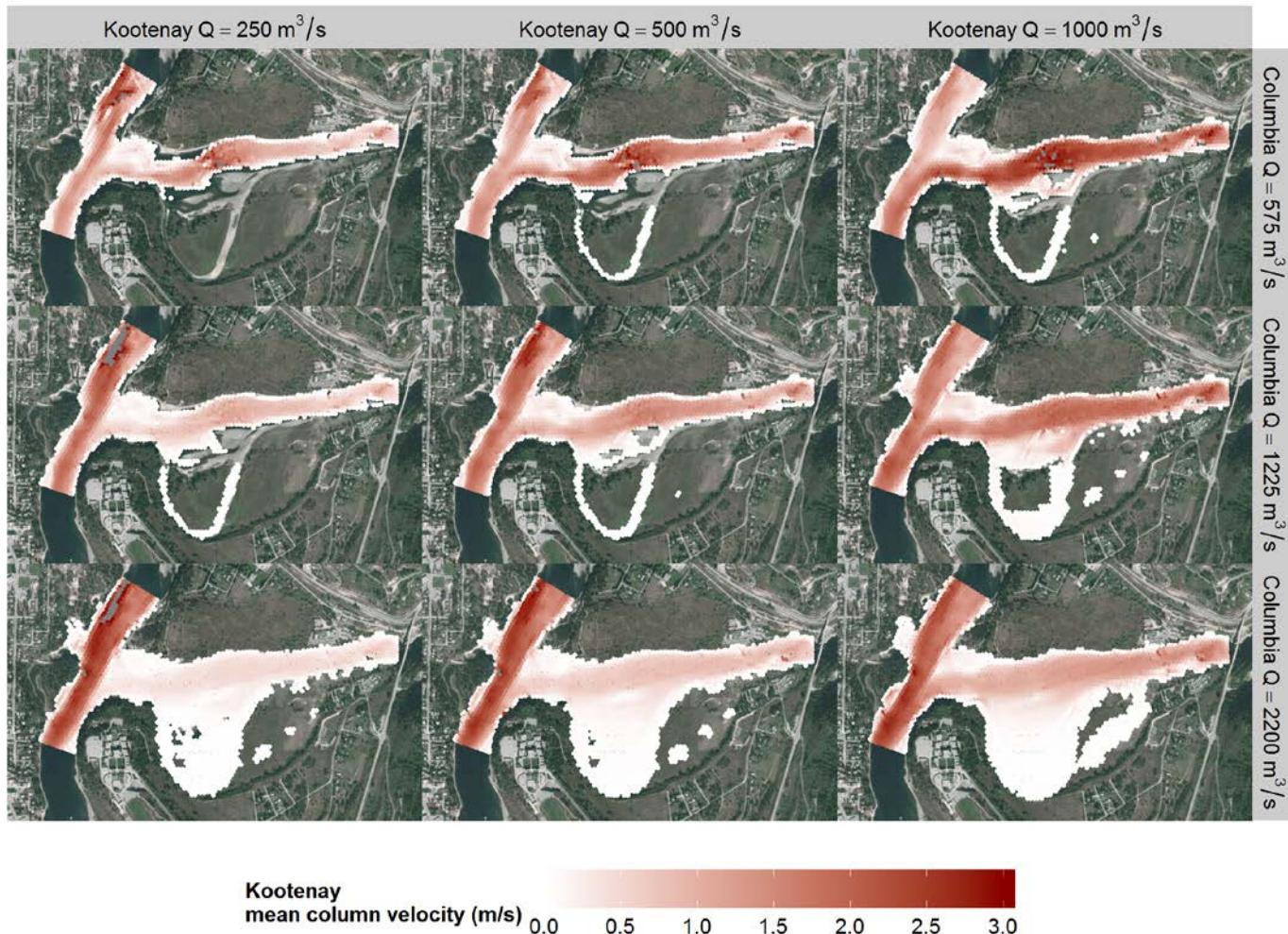


Figure B6. Map of velocity (m/s) at Kootenay River, plotted by River2D model run (panels).

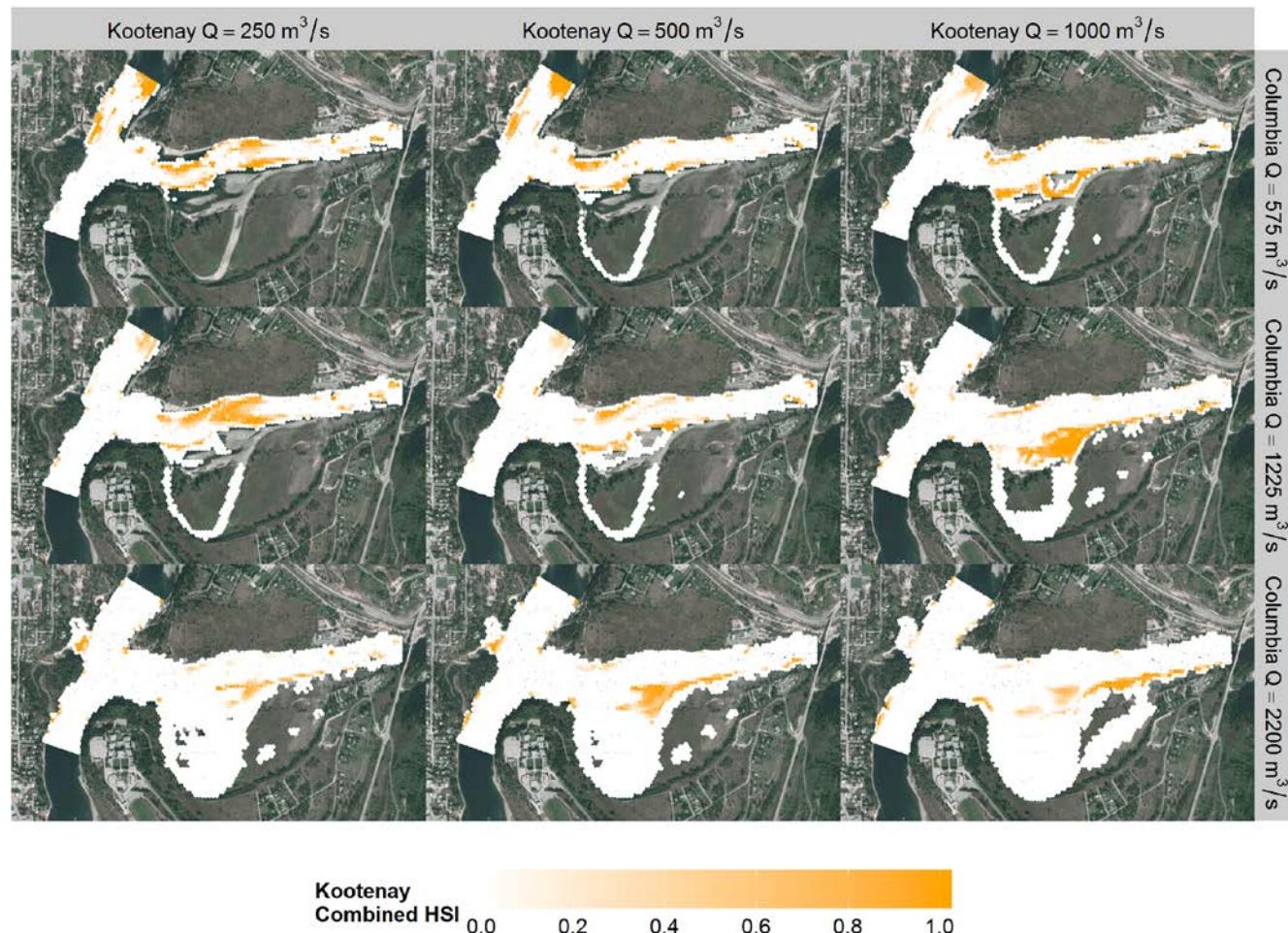


Figure B7. Combined HSI (both depth- and velocity-based) at Kootenay River, plotted by River2D model run (panels). HSI calculations were based on the large river HSI curve (for rivers with mean annual discharge $\geq 85.0 \text{ m}^3/\text{s}$).

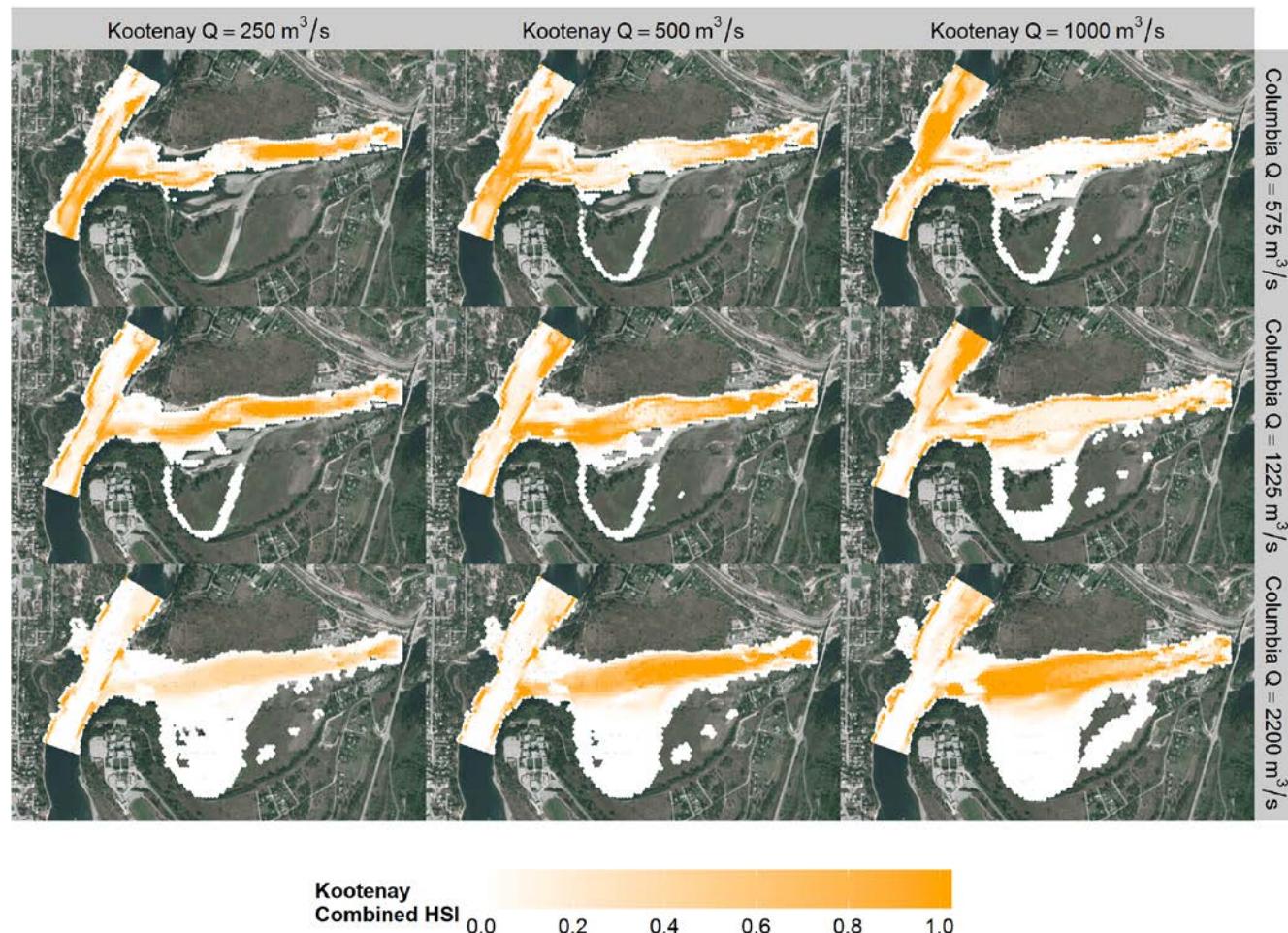


Figure B8. Combined HSI (both depth- and velocity-based) at Kootenay River, plotted by River2D model run (panels). HSI calculations were based on the Columbia-Snake HSI curve (for rivers with mean annual discharge $\geq 2,831.7 \text{ m}^3/\text{s}$)



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APPENDIX C

Lower Columbia and Kootenay River WUA Estimates

Table C1. Weighted Usable Area (WUA, m²), calculated by modeled water depths, binned to 0.5 m.

| River | Modeled Discharge (m ³ /s) | | | Weighted Usable Area (m ²) | | River | Modeled Discharge (m ³ /s) | | | Depth Bin (m) | Weighted Usable Area (m ²) | |
|----------|---------------------------------------|----------|---------------|--|----------------|----------|---------------------------------------|----------|---------------|---------------|--|--|
| | Columbia | Kootenay | Depth Bin (m) | Large Rivers | Columbia-Snake | | Columbia | Kootenay | Depth Bin (m) | Large Rivers | Columbia-Snake | |
| Columbia | 412.5 | 375 | 0 | 23,988 | 6 | Kootenay | 575 | 250 | 0 | 13,804 | 5 | |
| Columbia | 412.5 | 375 | 0.5 | 41,605 | 4,217 | Kootenay | 575 | 250 | 0.5 | 39,688 | 4,133 | |
| Columbia | 412.5 | 375 | 1 | 41,027 | 12,052 | Kootenay | 575 | 250 | 1 | 40,016 | 11,539 | |
| Columbia | 412.5 | 375 | 1.5 | 25,282 | 14,736 | Kootenay | 575 | 250 | 1.5 | 30,962 | 18,931 | |
| Columbia | 412.5 | 375 | 2 | 12,599 | 18,566 | Kootenay | 575 | 250 | 2 | 17,723 | 27,998 | |
| Columbia | 412.5 | 375 | 2.5 | 4,457 | 21,642 | Kootenay | 575 | 250 | 2.5 | 5,400 | 22,257 | |
| Columbia | 412.5 | 375 | 3 | 29 | 21,169 | Kootenay | 575 | 250 | 3 | 73 | 21,958 | |
| Columbia | 412.5 | 375 | 3.5 | 0 | 20,190 | Kootenay | 575 | 250 | 3.5 | 0 | 22,297 | |
| Columbia | 412.5 | 375 | 4 | 0 | 19,726 | Kootenay | 575 | 250 | 4 | 0 | 17,572 | |
| Columbia | 412.5 | 375 | 4.5 | 0 | 21,246 | Kootenay | 575 | 250 | 4.5 | 0 | 18,068 | |
| Columbia | 412.5 | 375 | 5 | 0 | 26,872 | Kootenay | 575 | 250 | 5 | 0 | 21,885 | |
| Columbia | 412.5 | 375 | 5.5 | 0 | 26,770 | Kootenay | 575 | 250 | 5.5 | 0 | 15,357 | |
| Columbia | 412.5 | 375 | 6 | 0 | 28,231 | Kootenay | 575 | 250 | 6 | 0 | 15,793 | |
| Columbia | 412.5 | 375 | 6.5 | 0 | 24,169 | Kootenay | 575 | 250 | 6.5 | 0 | 11,863 | |
| Columbia | 412.5 | 375 | 7 | 0 | 20,571 | Kootenay | 575 | 250 | 7 | 0 | 11,351 | |
| Columbia | 412.5 | 375 | 7.5 | 0 | 16,459 | Kootenay | 575 | 250 | 7.5 | 0 | 8,816 | |
| Columbia | 412.5 | 375 | 8 | 0 | 8,009 | Kootenay | 575 | 250 | 8 | 0 | 11,957 | |
| Columbia | 412.5 | 375 | 8.5 | 0 | 5,929 | Kootenay | 575 | 250 | 8.5 | 0 | 10,260 | |
| Columbia | 412.5 | 375 | 9 | 0 | 3,403 | Kootenay | 575 | 250 | 9 | 0 | 7,666 | |
| Columbia | 412.5 | 375 | 9.5 | 0 | 2,084 | Kootenay | 575 | 250 | 9.5 | 0 | 1,827 | |
| Columbia | 412.5 | 375 | 10 | 0 | 812 | Kootenay | 575 | 250 | 10 | 0 | 628 | |
| Columbia | 412.5 | 375 | 10.5 | 0 | 116 | Kootenay | 575 | 250 | 10.5 | 0 | 26 | |
| Columbia | 412.5 | 375 | 11 | 0 | 0 | Kootenay | 575 | 250 | 11 | 0 | 0 | |
| Columbia | 412.5 | 375 | 11.5 | 0 | 0 | Kootenay | 575 | 250 | 11.5 | 0 | 0 | |
| Columbia | 412.5 | 375 | 12 | 0 | 0 | Kootenay | 575 | 250 | 12 | 0 | 0 | |
| Columbia | 412.5 | 375 | 12.5 | 0 | 0 | Kootenay | 575 | 250 | 12.5 | 0 | 0 | |
| Columbia | 412.5 | 375 | 13 | 0 | 0 | Kootenay | 575 | 500 | 0 | 16,954 | 12 | |
| Columbia | 412.5 | 375 | 13.5 | 0 | 0 | Kootenay | 575 | 500 | 0.5 | 39,311 | 3,672 | |
| Columbia | 412.5 | 375 | 14 | 0 | 0 | Kootenay | 575 | 500 | 1 | 39,207 | 11,436 | |
| Columbia | 412.5 | 875 | 0 | 31,001 | 11 | Kootenay | 575 | 500 | 1.5 | 35,226 | 22,057 | |
| Columbia | 412.5 | 875 | 0.5 | 39,696 | 4,161 | Kootenay | 575 | 500 | 2 | 18,787 | 30,247 | |
| Columbia | 412.5 | 875 | 1 | 36,278 | 10,332 | Kootenay | 575 | 500 | 2.5 | 6,233 | 30,178 | |
| Columbia | 412.5 | 875 | 1.5 | 32,320 | 19,210 | Kootenay | 575 | 500 | 3 | 72 | 27,486 | |
| Columbia | 412.5 | 875 | 2 | 14,439 | 22,687 | Kootenay | 575 | 500 | 3.5 | 0 | 21,551 | |
| Columbia | 412.5 | 875 | 2.5 | 3,784 | 19,525 | Kootenay | 575 | 500 | 4 | 0 | 18,996 | |
| Columbia | 412.5 | 875 | 3 | 50 | 21,853 | Kootenay | 575 | 500 | 4.5 | 0 | 19,777 | |
| Columbia | 412.5 | 875 | 3.5 | 0 | 20,361 | Kootenay | 575 | 500 | 5 | 0 | 18,091 | |
| Columbia | 412.5 | 875 | 4 | 0 | 18,287 | Kootenay | 575 | 500 | 5.5 | 0 | 21,874 | |
| Columbia | 412.5 | 875 | 4.5 | 0 | 23,831 | Kootenay | 575 | 500 | 6 | 0 | 15,301 | |
| Columbia | 412.5 | 875 | 5 | 0 | 25,621 | Kootenay | 575 | 500 | 6.5 | 0 | 15,464 | |
| Columbia | 412.5 | 875 | 5.5 | 0 | 28,141 | Kootenay | 575 | 500 | 7 | 0 | 11,764 | |
| Columbia | 412.5 | 875 | 6 | 0 | 27,511 | Kootenay | 575 | 500 | 7.5 | 0 | 13,144 | |
| Columbia | 412.5 | 875 | 6.5 | 0 | 26,627 | Kootenay | 575 | 500 | 8 | 0 | 8,144 | |
| Columbia | 412.5 | 875 | 7 | 0 | 19,855 | Kootenay | 575 | 500 | 8.5 | 0 | 11,152 | |
| Columbia | 412.5 | 875 | 7.5 | 0 | 20,336 | Kootenay | 575 | 500 | 9 | 0 | 10,676 | |
| Columbia | 412.5 | 875 | 8 | 0 | 8,237 | Kootenay | 575 | 500 | 9.5 | 0 | 4,491 | |
| Columbia | 412.5 | 875 | 8.5 | 0 | 7,466 | Kootenay | 575 | 500 | 10 | 0 | 1,399 | |
| Columbia | 412.5 | 875 | 9 | 0 | 3,473 | Kootenay | 575 | 500 | 10.5 | 0 | 78 | |
| Columbia | 412.5 | 875 | 9.5 | 0 | 1,951 | Kootenay | 575 | 500 | 11 | 0 | 0 | |
| Columbia | 412.5 | 875 | 10 | 0 | 815 | Kootenay | 575 | 500 | 11.5 | 0 | 0 | |
| Columbia | 412.5 | 875 | 10.5 | 0 | 40 | Kootenay | 575 | 500 | 12 | 0 | 0 | |
| Columbia | 412.5 | 875 | 11 | 0 | 0 | Kootenay | 575 | 500 | 12.5 | 0 | 0 | |
| Columbia | 412.5 | 875 | 11.5 | 0 | 0 | Kootenay | 575 | 500 | 13 | 0 | 0 | |
| Columbia | 412.5 | 875 | 12 | 0 | 0 | Kootenay | 575 | 500 | 13.5 | 0 | 0 | |
| Columbia | 412.5 | 875 | 12.5 | 0 | 0 | Kootenay | 575 | 1000 | 0 | 13,553 | 6 | |
| Columbia | 412.5 | 875 | 13 | 0 | 0 | Kootenay | 575 | 1000 | 0.5 | 63,985 | 7,178 | |
| Columbia | 412.5 | 875 | 13.5 | 0 | 0 | Kootenay | 575 | 1000 | 1 | 20,373 | 5,724 | |
| Columbia | 412.5 | 875 | 14 | 0 | 0 | Kootenay | 575 | 1000 | 1.5 | 25,174 | 16,289 | |
| Columbia | 412.5 | 875 | 14.5 | 0 | 0 | Kootenay | 575 | 1000 | 2 | 21,558 | 33,863 | |
| Columbia | 1062.5 | 375 | 0 | 25,518 | 14 | Kootenay | 575 | 1000 | 2.5 | 8,160 | 39,499 | |
| Columbia | 1062.5 | 375 | 0.5 | 42,499 | 4,232 | Kootenay | 575 | 1000 | 3 | 82 | 37,763 | |
| Columbia | 1062.5 | 375 | 1 | 79,724 | 22,760 | Kootenay | 575 | 1000 | 3.5 | 0 | 28,476 | |
| Columbia | 1062.5 | 375 | 1.5 | 48,896 | 29,186 | Kootenay | 575 | 1000 | 4 | 0 | 28,340 | |
| Columbia | 1062.5 | 375 | 2 | 20,341 | 33,386 | Kootenay | 575 | 1000 | 4.5 | 0 | 19,742 | |
| Columbia | 1062.5 | 375 | 2.5 | 8,369 | 42,214 | Kootenay | 575 | 1000 | 5 | 0 | 20,794 | |
| Columbia | 1062.5 | 375 | 3 | 74 | 33,380 | Kootenay | 575 | 1000 | 5.5 | 0 | 18,549 | |
| Columbia | 1062.5 | 375 | 3.5 | 0 | 24,360 | Kootenay | 575 | 1000 | 6 | 0 | 17,192 | |
| Columbia | 1062.5 | 375 | 4 | 0 | 20,514 | Kootenay | 575 | 1000 | 6.5 | 0 | 21,538 | |
| Columbia | 1062.5 | 375 | 4.5 | 0 | 20,218 | Kootenay | 575 | 1000 | 7 | 0 | 14,472 | |
| Columbia | 1062.5 | 375 | 5 | 0 | 18,764 | Kootenay | 575 | 1000 | 7.5 | 0 | 16,725 | |
| Columbia | 1062.5 | 375 | 5.5 | 0 | 19,877 | Kootenay | 575 | 1000 | 8 | 0 | 12,316 | |
| Columbia | 1062.5 | 375 | 6 | 0 | 20,170 | Kootenay | 575 | 1000 | 8.5 | 0 | 13,144 | |
| Columbia | 1062.5 | 375 | 6.5 | 0 | 26,356 | Kootenay | 575 | 1000 | 9 | 0 | 6,514 | |
| Columbia | 1062.5 | 375 | 7 | 0 | 25,620 | Kootenay | 575 | 1000 | 9.5 | 0 | 6,796 | |
| Columbia | 1062.5 | 375 | 7.5 | 0 | 28,711 | Kootenay | 575 | 1000 | 10 | 0 | 3,518 | |
| Columbia | 1062.5 | 375 | 8 | 0 | 23,293 | Kootenay | 575 | 1000 | 10.5 | 0 | 78 | |
| Columbia | 1062.5 | 375 | 8.5 | 0 | 22,744 | Kootenay | 575 | 1000 | 11 | 0 | 0 | |
| Columbia | 1062.5 | 375 | 9 | 0 | 18,383 | Kootenay | 575 | 1000 | 11.5 | 0 | 0 | |

| River | Modeled Discharge (m³/s) | | | Weighted Usable Area (m²) | | River | Modeled Discharge (m³/s) | | | Depth Bin (m) | Weighted Usable Area (m²) | | |
|----------|--------------------------|----------|---------------|---------------------------|----------------|----------|--------------------------|----------|---------------|---------------|---------------------------|---|---|
| | Columbia | Kootenay | Depth Bin (m) | Large Rivers | Columbia-Snake | | Columbia | Kootenay | Depth Bin (m) | Large Rivers | Columbia-Snake | | |
| Columbia | 1062.5 | 375 | 9.5 | 0 | 4,723 | Kootenay | 575 | 1000 | 12 | 0 | 0 | 0 | 0 |
| Columbia | 1062.5 | 375 | 10 | 0 | 2,208 | Kootenay | 575 | 1000 | 12.5 | 0 | 0 | 0 | 0 |
| Columbia | 1062.5 | 375 | 10.5 | 0 | 41 | Kootenay | 575 | 1000 | 13 | 0 | 0 | 0 | 0 |
| Columbia | 1062.5 | 375 | 11 | 0 | 0 | Kootenay | 575 | 1000 | 13.5 | 0 | 0 | 0 | 0 |
| Columbia | 1062.5 | 375 | 11.5 | 0 | 0 | Kootenay | 575 | 1000 | 14 | 0 | 0 | 0 | 0 |
| Columbia | 1062.5 | 375 | 12 | 0 | 0 | Kootenay | 575 | 1000 | 14.5 | 0 | 0 | 0 | 0 |
| Columbia | 1062.5 | 375 | 12.5 | 0 | 0 | Kootenay | 1225 | 250 | 0 | 18,142 | 13 | 0 | 0 |
| Columbia | 1062.5 | 375 | 13 | 0 | 0 | Kootenay | 1225 | 250 | 0.5 | 46,675 | 4,311 | 0 | 0 |
| Columbia | 1062.5 | 375 | 13.5 | 0 | 0 | Kootenay | 1225 | 250 | 1 | 26,850 | 7,786 | 0 | 0 |
| Columbia | 1062.5 | 375 | 14 | 0 | 0 | Kootenay | 1225 | 250 | 1.5 | 33,867 | 20,791 | 0 | 0 |
| Columbia | 1062.5 | 375 | 14.5 | 0 | 0 | Kootenay | 1225 | 250 | 2 | 19,479 | 32,791 | 0 | 0 |
| Columbia | 1062.5 | 375 | 15 | 0 | 0 | Kootenay | 1225 | 250 | 2.5 | 8,010 | 37,956 | 0 | 0 |
| Columbia | 1062.5 | 375 | 15.5 | 0 | 0 | Kootenay | 1225 | 250 | 3 | 93 | 30,011 | 0 | 0 |
| Columbia | 1062.5 | 375 | 16 | 0 | 0 | Kootenay | 1225 | 250 | 3.5 | 0 | 28,074 | 0 | 0 |
| Columbia | 1062.5 | 875 | 0 | 26,674 | 12 | Kootenay | 1225 | 250 | 4 | 0 | 23,299 | 0 | 0 |
| Columbia | 1062.5 | 875 | 0.5 | 43,156 | 4,269 | Kootenay | 1225 | 250 | 4.5 | 0 | 17,401 | 0 | 0 |
| Columbia | 1062.5 | 875 | 1 | 73,582 | 21,992 | Kootenay | 1225 | 250 | 5 | 0 | 13,901 | 0 | 0 |
| Columbia | 1062.5 | 875 | 1.5 | 53,676 | 32,061 | Kootenay | 1225 | 250 | 5.5 | 0 | 15,996 | 0 | 0 |
| Columbia | 1062.5 | 875 | 2 | 20,784 | 33,545 | Kootenay | 1225 | 250 | 6 | 0 | 16,019 | 0 | 0 |
| Columbia | 1062.5 | 875 | 2.5 | 8,086 | 41,279 | Kootenay | 1225 | 250 | 6.5 | 0 | 20,731 | 0 | 0 |
| Columbia | 1062.5 | 875 | 3 | 93 | 36,455 | Kootenay | 1225 | 250 | 7 | 0 | 16,510 | 0 | 0 |
| Columbia | 1062.5 | 875 | 3.5 | 0 | 25,862 | Kootenay | 1225 | 250 | 7.5 | 0 | 12,450 | 0 | 0 |
| Columbia | 1062.5 | 875 | 4 | 0 | 20,445 | Kootenay | 1225 | 250 | 8 | 0 | 10,348 | 0 | 0 |
| Columbia | 1062.5 | 875 | 4.5 | 0 | 21,081 | Kootenay | 1225 | 250 | 8.5 | 0 | 12,397 | 0 | 0 |
| Columbia | 1062.5 | 875 | 5 | 0 | 19,667 | Kootenay | 1225 | 250 | 9 | 0 | 8,132 | 0 | 0 |
| Columbia | 1062.5 | 875 | 5.5 | 0 | 18,950 | Kootenay | 1225 | 250 | 9.5 | 0 | 7,364 | 0 | 0 |
| Columbia | 1062.5 | 875 | 6 | 0 | 21,262 | Kootenay | 1225 | 250 | 10 | 0 | 2,387 | 0 | 0 |
| Columbia | 1062.5 | 875 | 6.5 | 0 | 25,114 | Kootenay | 1225 | 250 | 10.5 | 0 | 151 | 0 | 0 |
| Columbia | 1062.5 | 875 | 7 | 0 | 27,477 | Kootenay | 1225 | 250 | 11 | 0 | 0 | 0 | 0 |
| Columbia | 1062.5 | 875 | 7.5 | 0 | 26,905 | Kootenay | 1225 | 250 | 11.5 | 0 | 0 | 0 | 0 |
| Columbia | 1062.5 | 875 | 8 | 0 | 23,804 | Kootenay | 1225 | 250 | 12 | 0 | 0 | 0 | 0 |
| Columbia | 1062.5 | 875 | 8.5 | 0 | 23,442 | Kootenay | 1225 | 250 | 12.5 | 0 | 0 | 0 | 0 |
| Columbia | 1062.5 | 875 | 9 | 0 | 19,310 | Kootenay | 1225 | 250 | 13 | 0 | 0 | 0 | 0 |
| Columbia | 1062.5 | 875 | 9.5 | 0 | 5,672 | Kootenay | 1225 | 500 | 0 | 17,234 | 13 | 0 | 0 |
| Columbia | 1062.5 | 875 | 10 | 0 | 2,238 | Kootenay | 1225 | 500 | 0.5 | 54,170 | 6,579 | 0 | 0 |
| Columbia | 1062.5 | 875 | 10.5 | 0 | 72 | Kootenay | 1225 | 500 | 1 | 25,656 | 7,510 | 0 | 0 |
| Columbia | 1062.5 | 875 | 11 | 0 | 0 | Kootenay | 1225 | 500 | 1.5 | 24,559 | 14,975 | 0 | 0 |
| Columbia | 1062.5 | 875 | 11.5 | 0 | 0 | Kootenay | 1225 | 500 | 2 | 20,621 | 33,309 | 0 | 0 |
| Columbia | 1062.5 | 875 | 12 | 0 | 0 | Kootenay | 1225 | 500 | 2.5 | 6,587 | 36,511 | 0 | 0 |
| Columbia | 1062.5 | 875 | 12.5 | 0 | 0 | Kootenay | 1225 | 500 | 3 | 74 | 38,897 | 0 | 0 |
| Columbia | 1062.5 | 875 | 13 | 0 | 0 | Kootenay | 1225 | 500 | 3.5 | 0 | 29,142 | 0 | 0 |
| Columbia | 1062.5 | 875 | 13.5 | 0 | 0 | Kootenay | 1225 | 500 | 4 | 0 | 29,612 | 0 | 0 |
| Columbia | 1062.5 | 875 | 14 | 0 | 0 | Kootenay | 1225 | 500 | 4.5 | 0 | 23,478 | 0 | 0 |
| Columbia | 1062.5 | 875 | 14.5 | 0 | 0 | Kootenay | 1225 | 500 | 5 | 0 | 17,559 | 0 | 0 |
| Columbia | 1062.5 | 875 | 15 | 0 | 0 | Kootenay | 1225 | 500 | 5.5 | 0 | 15,316 | 0 | 0 |
| Columbia | 1062.5 | 875 | 15.5 | 0 | 0 | Kootenay | 1225 | 500 | 6 | 0 | 14,939 | 0 | 0 |
| Columbia | 1062.5 | 875 | 16 | 0 | 0 | Kootenay | 1225 | 500 | 6.5 | 0 | 17,034 | 0 | 0 |
| Columbia | 2037.5 | 375 | 0 | 12,388 | 7 | Kootenay | 1225 | 500 | 7 | 0 | 20,131 | 0 | 0 |
| Columbia | 2037.5 | 375 | 0.5 | 38,096 | 4,020 | Kootenay | 1225 | 500 | 7.5 | 0 | 17,030 | 0 | 0 |
| Columbia | 2037.5 | 375 | 1 | 51,939 | 15,228 | Kootenay | 1225 | 500 | 8 | 0 | 12,921 | 0 | 0 |
| Columbia | 2037.5 | 375 | 1.5 | 47,405 | 29,184 | Kootenay | 1225 | 500 | 8.5 | 0 | 10,360 | 0 | 0 |
| Columbia | 2037.5 | 375 | 2 | 24,695 | 38,343 | Kootenay | 1225 | 500 | 9 | 0 | 11,287 | 0 | 0 |
| Columbia | 2037.5 | 375 | 2.5 | 14,446 | 75,401 | Kootenay | 1225 | 500 | 9.5 | 0 | 5,392 | 0 | 0 |
| Columbia | 2037.5 | 375 | 3 | 149 | 60,028 | Kootenay | 1225 | 500 | 10 | 0 | 3,194 | 0 | 0 |
| Columbia | 2037.5 | 375 | 3.5 | 0 | 40,237 | Kootenay | 1225 | 500 | 10.5 | 0 | 211 | 0 | 0 |
| Columbia | 2037.5 | 375 | 4 | 0 | 43,025 | Kootenay | 1225 | 500 | 11 | 0 | 0 | 0 | 0 |
| Columbia | 2037.5 | 375 | 4.5 | 0 | 35,622 | Kootenay | 1225 | 500 | 11.5 | 0 | 0 | 0 | 0 |
| Columbia | 2037.5 | 375 | 5 | 0 | 24,375 | Kootenay | 1225 | 500 | 12 | 0 | 0 | 0 | 0 |
| Columbia | 2037.5 | 375 | 5.5 | 0 | 20,019 | Kootenay | 1225 | 500 | 12.5 | 0 | 0 | 0 | 0 |
| Columbia | 2037.5 | 375 | 6 | 0 | 21,364 | Kootenay | 1225 | 500 | 13 | 0 | 0 | 0 | 0 |
| Columbia | 2037.5 | 375 | 6.5 | 0 | 18,365 | Kootenay | 1225 | 500 | 13.5 | 0 | 0 | 0 | 0 |
| Columbia | 2037.5 | 375 | 7 | 0 | 19,193 | Kootenay | 1225 | 1000 | 0 | 23,250 | 7 | 0 | 0 |
| Columbia | 2037.5 | 375 | 7.5 | 0 | 20,432 | Kootenay | 1225 | 1000 | 0.5 | 64,686 | 7,007 | 0 | 0 |
| Columbia | 2037.5 | 375 | 8 | 0 | 27,003 | Kootenay | 1225 | 1000 | 1 | 42,032 | 12,136 | 0 | 0 |
| Columbia | 2037.5 | 375 | 8.5 | 0 | 26,014 | Kootenay | 1225 | 1000 | 1.5 | 43,881 | 27,371 | 0 | 0 |
| Columbia | 2037.5 | 375 | 9 | 0 | 24,518 | Kootenay | 1225 | 1000 | 2 | 13,073 | 20,645 | 0 | 0 |
| Columbia | 2037.5 | 375 | 9.5 | 0 | 13,812 | Kootenay | 1225 | 1000 | 2.5 | 6,195 | 30,017 | 0 | 0 |
| Columbia | 2037.5 | 375 | 10 | 0 | 6,494 | Kootenay | 1225 | 1000 | 3 | 67 | 36,990 | 0 | 0 |
| Columbia | 2037.5 | 375 | 10.5 | 0 | 451 | Kootenay | 1225 | 1000 | 3.5 | 0 | 36,206 | 0 | 0 |
| Columbia | 2037.5 | 375 | 11 | 0 | 0 | Kootenay | 1225 | 1000 | 4 | 0 | 41,864 | 0 | 0 |
| Columbia | 2037.5 | 375 | 11.5 | 0 | 0 | Kootenay | 1225 | 1000 | 4.5 | 0 | 28,254 | 0 | 0 |
| Columbia | 2037.5 | 375 | 12 | 0 | 0 | Kootenay | 1225 | 1000 | 5 | 0 | 29,423 | 0 | 0 |
| Columbia | 2037.5 | 375 | 12.5 | 0 | 0 | Kootenay | 1225 | 1000 | 5.5 | 0 | 23,575 | 0 | 0 |
| Columbia | 2037.5 | 375 | 13 | 0 | 0 | Kootenay | 1225 | 1000 | 6 | 0 | 18,757 | 0 | 0 |
| Columbia | 2037.5 | 375 | 13.5 | 0 | 0 | Kootenay | 1225 | 1000 | 6.5 | 0 | 14,142 | 0 | 0 |
| Columbia | 2037.5 | 375 | 14 | 0 | 0 | Kootenay | 1225 | 1000 | 7 | 0 | 15,933 | 0 | 0 |
| Columbia | 2037.5 | 375 | 14.5 | 0 | 0 | Kootenay | 1225 | 1000 | 7.5 | 0 | 15,792 | 0 | 0 |
| Columbia | 2037.5 | 375 | 15 | 0 | 0 | Kootenay | 1225 | 1000 | 8 | 0 | 19,790 | 0 | 0 |
| Columbia | 2037.5 | 375 | 15.5 | 0 | 0 | Kootenay | 1225 | 1000 | 8.5 | 0 | 18,008 | 0 | 0 |

| River | Modeled Discharge (m³/s) | | | Weighted Usable Area (m²) | | River | Modeled Discharge (m³/s) | | | Depth Bin (m) | Weighted Usable Area (m²) | | |
|----------|--------------------------|----------|---------------|---------------------------|----------------|----------|--------------------------|----------|--------------|----------------|---------------------------|----------------|--|
| | Columbia | Kootenay | Depth Bin (m) | Large Rivers | Columbia-Snake | | Columbia | Kootenay | Large Rivers | Columbia-Snake | Large Rivers | Columbia-Snake | |
| Columbia | 2037.5 | 375 | 16 | 0 | 0 | Kootenay | 1225 | 1000 | 9 | 0 | 12,191 | | |
| Columbia | 2037.5 | 375 | 16.5 | 0 | 0 | Kootenay | 1225 | 1000 | 9.5 | 0 | 6,012 | | |
| Columbia | 2037.5 | 375 | 17 | 0 | 0 | Kootenay | 1225 | 1000 | 10 | 0 | 3,263 | | |
| Columbia | 2037.5 | 375 | 17.5 | 0 | 0 | Kootenay | 1225 | 1000 | 10.5 | 0 | 224 | | |
| Columbia | 2037.5 | 875 | 0 | 13,777 | 7 | Kootenay | 1225 | 1000 | 11 | 0 | 0 | | |
| Columbia | 2037.5 | 875 | 0.5 | 34,203 | 3,643 | Kootenay | 1225 | 1000 | 11.5 | 0 | 0 | | |
| Columbia | 2037.5 | 875 | 1 | 47,348 | 14,007 | Kootenay | 1225 | 1000 | 12 | 0 | 0 | | |
| Columbia | 2037.5 | 875 | 1.5 | 51,020 | 31,925 | Kootenay | 1225 | 1000 | 12.5 | 0 | 0 | | |
| Columbia | 2037.5 | 875 | 2 | 25,033 | 39,647 | Kootenay | 1225 | 1000 | 13 | 0 | 0 | | |
| Columbia | 2037.5 | 875 | 2.5 | 10,366 | 60,404 | Kootenay | 1225 | 1000 | 13.5 | 0 | 0 | | |
| Columbia | 2037.5 | 875 | 3 | 190 | 71,492 | Kootenay | 1225 | 1000 | 14 | 0 | 0 | | |
| Columbia | 2037.5 | 875 | 3.5 | 0 | 43,454 | Kootenay | 1225 | 1000 | 14.5 | 0 | 0 | | |
| Columbia | 2037.5 | 875 | 4 | 0 | 39,073 | Kootenay | 1225 | 1000 | 15 | 0 | 0 | | |
| Columbia | 2037.5 | 875 | 4.5 | 0 | 41,471 | Kootenay | 2200 | 250 | 0 | 24,781 | 11 | | |
| Columbia | 2037.5 | 875 | 5 | 0 | 26,828 | Kootenay | 2200 | 250 | 0.5 | 55,138 | 5,153 | | |
| Columbia | 2037.5 | 875 | 5.5 | 0 | 20,775 | Kootenay | 2200 | 250 | 1 | 58,134 | 15,731 | | |
| Columbia | 2037.5 | 875 | 6 | 0 | 22,338 | Kootenay | 2200 | 250 | 1.5 | 36,393 | 21,121 | | |
| Columbia | 2037.5 | 875 | 6.5 | 0 | 20,336 | Kootenay | 2200 | 250 | 2 | 27,176 | 37,769 | | |
| Columbia | 2037.5 | 875 | 7 | 0 | 19,203 | Kootenay | 2200 | 250 | 2.5 | 5,111 | 25,312 | | |
| Columbia | 2037.5 | 875 | 7.5 | 0 | 20,341 | Kootenay | 2200 | 250 | 3 | 124 | 33,010 | | |
| Columbia | 2037.5 | 875 | 8 | 0 | 23,131 | Kootenay | 2200 | 250 | 3.5 | 0 | 35,353 | | |
| Columbia | 2037.5 | 875 | 8.5 | 0 | 28,150 | Kootenay | 2200 | 250 | 4 | 0 | 40,637 | | |
| Columbia | 2037.5 | 875 | 9 | 0 | 23,660 | Kootenay | 2200 | 250 | 4.5 | 0 | 35,979 | | |
| Columbia | 2037.5 | 875 | 9.5 | 0 | 14,634 | Kootenay | 2200 | 250 | 5 | 0 | 26,713 | | |
| Columbia | 2037.5 | 875 | 10 | 0 | 7,332 | Kootenay | 2200 | 250 | 5.5 | 0 | 28,408 | | |
| Columbia | 2037.5 | 875 | 10.5 | 0 | 432 | Kootenay | 2200 | 250 | 6 | 0 | 19,550 | | |
| Columbia | 2037.5 | 875 | 11 | 0 | 0 | Kootenay | 2200 | 250 | 6.5 | 0 | 16,147 | | |
| Columbia | 2037.5 | 875 | 11.5 | 0 | 0 | Kootenay | 2200 | 250 | 7 | 0 | 14,590 | | |
| Columbia | 2037.5 | 875 | 12 | 0 | 0 | Kootenay | 2200 | 250 | 7.5 | 0 | 15,798 | | |
| Columbia | 2037.5 | 875 | 12.5 | 0 | 0 | Kootenay | 2200 | 250 | 8 | 0 | 18,650 | | |
| Columbia | 2037.5 | 875 | 13 | 0 | 0 | Kootenay | 2200 | 250 | 8.5 | 0 | 18,835 | | |
| Columbia | 2037.5 | 875 | 13.5 | 0 | 0 | Kootenay | 2200 | 250 | 9 | 0 | 13,744 | | |
| Columbia | 2037.5 | 875 | 14 | 0 | 0 | Kootenay | 2200 | 250 | 9.5 | 0 | 7,513 | | |
| Columbia | 2037.5 | 875 | 14.5 | 0 | 0 | Kootenay | 2200 | 250 | 10 | 0 | 3,163 | | |
| Columbia | 2037.5 | 875 | 15 | 0 | 0 | Kootenay | 2200 | 250 | 10.5 | 0 | 225 | | |
| Columbia | 2037.5 | 875 | 15.5 | 0 | 0 | Kootenay | 2200 | 250 | 11 | 0 | 0 | | |
| Columbia | 2037.5 | 875 | 16 | 0 | 0 | Kootenay | 2200 | 250 | 11.5 | 0 | 0 | | |
| Columbia | 2037.5 | 875 | 16.5 | 0 | 0 | Kootenay | 2200 | 250 | 12 | 0 | 0 | | |
| Columbia | 2037.5 | 875 | 17 | 0 | 0 | Kootenay | 2200 | 250 | 12.5 | 0 | 0 | | |
| Columbia | 2037.5 | 875 | 17.5 | 0 | 0 | Kootenay | 2200 | 250 | 13 | 0 | 0 | | |
| | | | | | | Kootenay | 2200 | 250 | 13.5 | 0 | 0 | | |
| | | | | | | Kootenay | 2200 | 250 | 14 | 0 | 0 | | |
| | | | | | | Kootenay | 2200 | 250 | 14.5 | 0 | 0 | | |
| | | | | | | Kootenay | 2200 | 500 | 0 | 20,179 | 15 | | |
| | | | | | | Kootenay | 2200 | 500 | 0.5 | 113,754 | 8,683 | | |
| | | | | | | Kootenay | 2200 | 500 | 1 | 54,287 | 15,324 | | |
| | | | | | | Kootenay | 2200 | 500 | 1.5 | 51,273 | 28,255 | | |
| | | | | | | Kootenay | 2200 | 500 | 2 | 23,189 | 34,779 | | |
| | | | | | | Kootenay | 2200 | 500 | 2.5 | 11,603 | 46,915 | | |
| | | | | | | Kootenay | 2200 | 500 | 3 | 48 | 25,913 | | |
| | | | | | | Kootenay | 2200 | 500 | 3.5 | 0 | 32,317 | | |
| | | | | | | Kootenay | 2200 | 500 | 4 | 0 | 35,699 | | |
| | | | | | | Kootenay | 2200 | 500 | 4.5 | 0 | 41,128 | | |
| | | | | | | Kootenay | 2200 | 500 | 5 | 0 | 35,150 | | |
| | | | | | | Kootenay | 2200 | 500 | 5.5 | 0 | 26,740 | | |
| | | | | | | Kootenay | 2200 | 500 | 6 | 0 | 28,377 | | |
| | | | | | | Kootenay | 2200 | 500 | 6.5 | 0 | 19,572 | | |
| | | | | | | Kootenay | 2200 | 500 | 7 | 0 | 16,434 | | |
| | | | | | | Kootenay | 2200 | 500 | 7.5 | 0 | 14,296 | | |
| | | | | | | Kootenay | 2200 | 500 | 8 | 0 | 15,237 | | |
| | | | | | | Kootenay | 2200 | 500 | 8.5 | 0 | 19,989 | | |
| | | | | | | Kootenay | 2200 | 500 | 9 | 0 | 17,106 | | |
| | | | | | | Kootenay | 2200 | 500 | 9.5 | 0 | 8,700 | | |
| | | | | | | Kootenay | 2200 | 500 | 10 | 0 | 3,617 | | |
| | | | | | | Kootenay | 2200 | 500 | 10.5 | 0 | 143 | | |
| | | | | | | Kootenay | 2200 | 500 | 11 | 0 | 0 | | |
| | | | | | | Kootenay | 2200 | 500 | 11.5 | 0 | 0 | | |
| | | | | | | Kootenay | 2200 | 500 | 12 | 0 | 0 | | |
| | | | | | | Kootenay | 2200 | 500 | 12.5 | 0 | 0 | | |
| | | | | | | Kootenay | 2200 | 500 | 13 | 0 | 0 | | |
| | | | | | | Kootenay | 2200 | 500 | 13.5 | 0 | 0 | | |
| | | | | | | Kootenay | 2200 | 500 | 14 | 0 | 0 | | |
| | | | | | | Kootenay | 2200 | 500 | 14.5 | 0 | 0 | | |
| | | | | | | Kootenay | 2200 | 500 | 15 | 0 | 0 | | |
| | | | | | | Kootenay | 2200 | 1000 | 0 | 17,829 | 16 | | |
| | | | | | | Kootenay | 2200 | 1000 | 0.5 | 67,456 | 4,057 | | |
| | | | | | | Kootenay | 2200 | 1000 | 1 | 45,233 | 14,097 | | |
| | | | | | | Kootenay | 2200 | 1000 | 1.5 | 104,168 | 52,763 | | |
| | | | | | | Kootenay | 2200 | 1000 | 2 | 27,186 | 44,753 | | |

| River | Modeled Discharge (m³/s) | | Weighted Usable Area (m²) | | River | Modeled Discharge (m³/s) | | Depth Bin (m) | Weighted Usable Area (m²) | | | |
|-------|--------------------------|----------|---------------------------|----------------|----------|--------------------------|----------|---------------|---------------------------|----------------|--|--|
| | | | Depth Bin (m) | | | | | | | | | |
| | Columbia | Kootenay | Large Rivers | Columbia-Snake | | Columbia | Kootenay | | Large Rivers | Columbia-Snake | | |
| | | | | | Kootenay | 2200 | 1000 | 2.5 | 12,857 | 54,889 | | |
| | | | | | Kootenay | 2200 | 1000 | 3 | 128 | 42,974 | | |
| | | | | | Kootenay | 2200 | 1000 | 3.5 | 0 | 39,751 | | |
| | | | | | Kootenay | 2200 | 1000 | 4 | 0 | 29,421 | | |
| | | | | | Kootenay | 2200 | 1000 | 4.5 | 0 | 32,179 | | |
| | | | | | Kootenay | 2200 | 1000 | 5 | 0 | 36,769 | | |
| | | | | | Kootenay | 2200 | 1000 | 5.5 | 0 | 39,092 | | |
| | | | | | Kootenay | 2200 | 1000 | 6 | 0 | 31,142 | | |
| | | | | | Kootenay | 2200 | 1000 | 6.5 | 0 | 29,682 | | |
| | | | | | Kootenay | 2200 | 1000 | 7 | 0 | 27,244 | | |
| | | | | | Kootenay | 2200 | 1000 | 7.5 | 0 | 19,505 | | |
| | | | | | Kootenay | 2200 | 1000 | 8 | 0 | 12,830 | | |
| | | | | | Kootenay | 2200 | 1000 | 8.5 | 0 | 16,185 | | |
| | | | | | Kootenay | 2200 | 1000 | 9 | 0 | 15,909 | | |
| | | | | | Kootenay | 2200 | 1000 | 9.5 | 0 | 12,362 | | |
| | | | | | Kootenay | 2200 | 1000 | 10 | 0 | 4,488 | | |
| | | | | | Kootenay | 2200 | 1000 | 10.5 | 0 | 348 | | |
| | | | | | Kootenay | 2200 | 1000 | 11 | 0 | 0 | | |
| | | | | | Kootenay | 2200 | 1000 | 11.5 | 0 | 0 | | |
| | | | | | Kootenay | 2200 | 1000 | 12 | 0 | 0 | | |
| | | | | | Kootenay | 2200 | 1000 | 12.5 | 0 | 0 | | |
| | | | | | Kootenay | 2200 | 1000 | 13 | 0 | 0 | | |
| | | | | | Kootenay | 2200 | 1000 | 13.5 | 0 | 0 | | |
| | | | | | Kootenay | 2200 | 1000 | 14 | 0 | 0 | | |
| | | | | | Kootenay | 2200 | 1000 | 14.5 | 0 | 0 | | |
| | | | | | Kootenay | 2200 | 1000 | 15 | 0 | 0 | | |
| | | | | | Kootenay | 2200 | 1000 | 15.5 | 0 | 0 | | |
| | | | | | Kootenay | 2200 | 1000 | 16 | 0 | 0 | | |

Table C2. Weighted Usable Area (WUA, m²), calculated by modeled water velocities, binned to 0.15 m/s.

| River | Modeled Discharge (m ³ /s) | | | Velocity Bin (m/s) | Weighted Usable Area (m ²) | | River | Modeled Discharge (m ³ /s) | | | Velocity Bin (m/s) | Weighted Usable Area (m ²) | |
|----------|---------------------------------------|----------|--------------|--------------------|--|----------|-------|---------------------------------------|----------|--------------|--------------------|--|--|
| | Columbia | Kootenay | Large Rivers | | Columbia-Snake | | | Columbia | Kootenay | Large Rivers | | Columbia-Snake | |
| Columbia | 412.5 | 375 | 0 | 0 | 377 | Kootenay | 575 | 250 | 0 | - | 304 | | |
| Columbia | 412.5 | 375 | 0.15 | 46,194 | 12,630 | Kootenay | 575 | 250 | 0.15 | 12,970 | 3,896 | | |
| Columbia | 412.5 | 375 | 0.3 | 38,536 | 13,821 | Kootenay | 575 | 250 | 0.3 | 27,677 | 9,917 | | |
| Columbia | 412.5 | 375 | 0.45 | 30,265 | 16,519 | Kootenay | 575 | 250 | 0.45 | 29,205 | 16,231 | | |
| Columbia | 412.5 | 375 | 0.6 | 30,703 | 25,353 | Kootenay | 575 | 250 | 0.6 | 30,851 | 25,593 | | |
| Columbia | 412.5 | 375 | 0.75 | 27,418 | 27,418 | Kootenay | 575 | 250 | 0.75 | 32,822 | 32,822 | | |
| Columbia | 412.5 | 375 | 0.9 | 32,533 | 32,533 | Kootenay | 575 | 250 | 0.9 | 36,901 | 36,901 | | |
| Columbia | 412.5 | 375 | 1.05 | 21,897 | 22,369 | Kootenay | 575 | 250 | 1.05 | 22,462 | 22,983 | | |
| Columbia | 412.5 | 375 | 1.2 | 8,958 | 10,270 | Kootenay | 575 | 250 | 1.2 | 14,423 | 16,826 | | |
| Columbia | 412.5 | 375 | 1.35 | 2,004 | 3,473 | Kootenay | 575 | 250 | 1.35 | 4,814 | 7,985 | | |
| Columbia | 412.5 | 375 | 1.5 | 9 | 727 | Kootenay | 575 | 250 | 1.5 | 7 | 1,919 | | |
| Columbia | 412.5 | 375 | 1.65 | 0 | 429 | Kootenay | 575 | 250 | 1.65 | 0 | 1,312 | | |
| Columbia | 412.5 | 375 | 1.8 | 0 | 302 | Kootenay | 575 | 250 | 1.8 | 0 | 1,125 | | |
| Columbia | 412.5 | 375 | 1.95 | 0 | 239 | Kootenay | 575 | 250 | 1.95 | 0 | 297 | | |
| Columbia | 412.5 | 375 | 2.1 | 0 | 13 | Kootenay | 575 | 250 | 2.1 | 0 | 15 | | |
| Columbia | 412.5 | 375 | 2.25 | 0 | 0 | Kootenay | 575 | 250 | 2.25 | 0 | 0 | | |
| Columbia | 412.5 | 375 | 2.4 | 0 | 0 | Kootenay | 575 | 250 | 2.4 | 0 | 0 | | |
| Columbia | 412.5 | 375 | 2.55 | 0 | 0 | Kootenay | 575 | 250 | 2.55 | 0 | 0 | | |
| Columbia | 412.5 | 375 | 3.15 | 0 | 0 | Kootenay | 575 | 250 | 2.7 | 0 | 0 | | |
| Columbia | 412.5 | 875 | 0 | 0 | 404 | Kootenay | 575 | 250 | 2.85 | 0 | 0 | | |
| Columbia | 412.5 | 875 | 0.15 | 51,467 | 14,175 | Kootenay | 575 | 250 | 3 | 0 | 0 | | |
| Columbia | 412.5 | 875 | 0.3 | 37,742 | 13,399 | Kootenay | 575 | 250 | 3.15 | 0 | 0 | | |
| Columbia | 412.5 | 875 | 0.45 | 35,923 | 19,506 | Kootenay | 575 | 250 | 3.3 | 0 | 0 | | |
| Columbia | 412.5 | 875 | 0.6 | 32,789 | 27,187 | Kootenay | 575 | 250 | 3.45 | 0 | 0 | | |
| Columbia | 412.5 | 875 | 0.75 | 31,390 | 31,390 | Kootenay | 575 | 250 | 3.9 | 0 | 0 | | |
| Columbia | 412.5 | 875 | 0.9 | 32,759 | 32,759 | Kootenay | 575 | 250 | 4.35 | 0 | 0 | | |
| Columbia | 412.5 | 875 | 1.05 | 20,533 | 20,914 | Kootenay | 575 | 500 | 0 | 0 | 182 | | |
| Columbia | 412.5 | 875 | 1.2 | 7,131 | 8,183 | Kootenay | 575 | 500 | 0.15 | 13,723 | 4,165 | | |
| Columbia | 412.5 | 875 | 1.35 | 1,957 | 3,288 | Kootenay | 575 | 500 | 0.3 | 19,204 | 6,922 | | |
| Columbia | 412.5 | 875 | 1.5 | 14 | 657 | Kootenay | 575 | 500 | 0.45 | 24,234 | 13,198 | | |
| Columbia | 412.5 | 875 | 1.65 | 0 | 471 | Kootenay | 575 | 500 | 0.6 | 22,223 | 18,742 | | |
| Columbia | 412.5 | 875 | 1.8 | 0 | 426 | Kootenay | 575 | 500 | 0.75 | 17,839 | 17,839 | | |
| Columbia | 412.5 | 875 | 1.95 | 0 | 367 | Kootenay | 575 | 500 | 0.9 | 33,327 | 33,327 | | |
| Columbia | 412.5 | 875 | 2.1 | 0 | 17 | Kootenay | 575 | 500 | 1.05 | 36,904 | 37,851 | | |
| Columbia | 1062.5 | 375 | 0 | 0 | 416 | Kootenay | 575 | 500 | 1.2 | 18,982 | 22,072 | | |
| Columbia | 1062.5 | 375 | 0.15 | 28,140 | 8,247 | Kootenay | 575 | 500 | 1.35 | 6,836 | 12,092 | | |
| Columbia | 1062.5 | 375 | 0.3 | 55,905 | 20,042 | Kootenay | 575 | 500 | 1.5 | 37 | 3,655 | | |
| Columbia | 1062.5 | 375 | 0.45 | 51,688 | 28,154 | Kootenay | 575 | 500 | 1.65 | 0 | 1,916 | | |
| Columbia | 1062.5 | 375 | 0.6 | 37,458 | 30,964 | Kootenay | 575 | 500 | 1.8 | 0 | 2,035 | | |
| Columbia | 1062.5 | 375 | 0.75 | 28,143 | 28,143 | Kootenay | 575 | 500 | 1.95 | 0 | 1,169 | | |
| Columbia | 1062.5 | 375 | 0.9 | 25,472 | 25,472 | Kootenay | 575 | 500 | 2.1 | 0 | 52 | | |
| Columbia | 1062.5 | 375 | 1.05 | 27,298 | 27,992 | Kootenay | 575 | 500 | 2.25 | 0 | 0 | | |
| Columbia | 1062.5 | 375 | 1.2 | 15,325 | 17,638 | Kootenay | 575 | 500 | 2.4 | 0 | 0 | | |
| Columbia | 1062.5 | 375 | 1.35 | 6,664 | 12,035 | Kootenay | 575 | 500 | 2.55 | 0 | 0 | | |
| Columbia | 1062.5 | 375 | 1.5 | 34 | 5,068 | Kootenay | 575 | 500 | 2.7 | 0 | 0 | | |
| Columbia | 1062.5 | 375 | 1.65 | 0 | 4,928 | Kootenay | 575 | 500 | 2.85 | 0 | 0 | | |
| Columbia | 1062.5 | 375 | 1.8 | 0 | 2,666 | Kootenay | 575 | 500 | 3 | 0 | 0 | | |
| Columbia | 1062.5 | 375 | 1.95 | 0 | 866 | Kootenay | 575 | 500 | 3.15 | 0 | 0 | | |
| Columbia | 1062.5 | 375 | 2.1 | 0 | 17 | Kootenay | 575 | 1000 | 0 | 0 | 240 | | |
| Columbia | 1062.5 | 375 | 2.25 | 0 | 0 | Kootenay | 575 | 1000 | 0.15 | 18,768 | 5,140 | | |
| Columbia | 1062.5 | 375 | 2.4 | 0 | 0 | Kootenay | 575 | 1000 | 0.3 | 28,085 | 9,955 | | |
| Columbia | 1062.5 | 375 | 2.55 | 0 | 0 | Kootenay | 575 | 1000 | 0.45 | 25,473 | 14,032 | | |
| Columbia | 1062.5 | 375 | 2.7 | 0 | 0 | Kootenay | 575 | 1000 | 0.6 | 25,478 | 21,550 | | |
| Columbia | 1062.5 | 375 | 2.85 | 0 | 0 | Kootenay | 575 | 1000 | 0.75 | 23,270 | 23,270 | | |
| Columbia | 1062.5 | 375 | 3 | 0 | 0 | Kootenay | 575 | 1000 | 0.9 | 28,901 | 28,901 | | |
| Columbia | 1062.5 | 375 | 4.95 | 0 | 0 | Kootenay | 575 | 1000 | 1.05 | 16,849 | 17,163 | | |
| Columbia | 1062.5 | 875 | 0 | 0 | 611 | Kootenay | 575 | 1000 | 1.2 | 11,820 | 13,672 | | |
| Columbia | 1062.5 | 875 | 0.15 | 25,334 | 7,399 | Kootenay | 575 | 1000 | 1.35 | 4,215 | 7,936 | | |
| Columbia | 1062.5 | 875 | 0.3 | 57,308 | 20,891 | Kootenay | 575 | 1000 | 1.5 | 61 | 4,055 | | |
| Columbia | 1062.5 | 875 | 0.45 | 59,381 | 31,970 | Kootenay | 575 | 1000 | 1.65 | 0 | 3,072 | | |
| Columbia | 1062.5 | 875 | 0.6 | 38,274 | 31,771 | Kootenay | 575 | 1000 | 1.8 | 0 | 3,075 | | |
| Columbia | 1062.5 | 875 | 0.75 | 28,062 | 28,062 | Kootenay | 575 | 1000 | 1.95 | 0 | 1,941 | | |
| Columbia | 1062.5 | 875 | 0.9 | 28,513 | 28,513 | Kootenay | 575 | 1000 | 2.1 | 0 | 45 | | |
| Columbia | 1062.5 | 875 | 1.05 | 27,130 | 27,808 | Kootenay | 575 | 1000 | 2.25 | 0 | 0 | | |
| Columbia | 1062.5 | 875 | 1.2 | 16,862 | 19,442 | Kootenay | 575 | 1000 | 2.4 | 0 | 0 | | |
| Columbia | 1062.5 | 875 | 1.35 | 7,897 | 13,549 | Kootenay | 575 | 1000 | 2.55 | 0 | 0 | | |
| Columbia | 1062.5 | 875 | 1.5 | 53 | 6,246 | Kootenay | 575 | 1000 | 2.7 | 0 | 0 | | |

| River | Modeled Discharge (m³/s) | | | Velocity Bin (m/s) | Weighted Usable Area (m²) | | River | Modeled Discharge (m³/s) | | | Velocity Bin (m/s) | Weighted Usable Area (m²) | |
|----------|--------------------------|----------|--------------|--------------------|---------------------------|----------|-------|--------------------------|----------|--------------|--------------------|---------------------------|--|
| | Columbia | Kootenay | Large Rivers | | Columbia-Snake | | | Columbia | Kootenay | Large Rivers | | Columbia-Snake | |
| Columbia | 1062.5 | 875 | 1.65 | 0 | 4,439 | Kootenay | 575 | 1000 | 2.85 | 0 | 0 | 0 | |
| Columbia | 1062.5 | 875 | 1.8 | 0 | 1,984 | Kootenay | 575 | 1000 | 3 | 0 | 0 | 0 | |
| Columbia | 1062.5 | 875 | 1.95 | 0 | 691 | Kootenay | 575 | 1000 | 3.15 | 0 | 0 | 0 | |
| Columbia | 1062.5 | 875 | 2.1 | 0 | 21 | Kootenay | 575 | 1000 | 3.3 | 0 | 0 | 0 | |
| Columbia | 1062.5 | 875 | 2.25 | 0 | 0 | Kootenay | 575 | 1000 | 3.45 | 0 | 0 | 0 | |
| Columbia | 1062.5 | 875 | 2.4 | 0 | 0 | Kootenay | 1225 | 250 | 0 | 0 | 0 | 317 | |
| Columbia | 1062.5 | 875 | 2.55 | 0 | 0 | Kootenay | 1225 | 250 | 0.15 | 15,059 | 4,297 | | |
| Columbia | 1062.5 | 875 | 2.7 | 0 | 0 | Kootenay | 1225 | 250 | 0.3 | 34,769 | 12,548 | | |
| Columbia | 1062.5 | 875 | 2.85 | 0 | 0 | Kootenay | 1225 | 250 | 0.45 | 38,194 | 21,260 | | |
| Columbia | 1062.5 | 875 | 3.6 | 0 | 0 | Kootenay | 1225 | 250 | 0.6 | 44,007 | 37,346 | | |
| Columbia | 2037.5 | 375 | 0 | 0 | 246 | Kootenay | 1225 | 250 | 0.75 | 43,732 | 43,732 | | |
| Columbia | 2037.5 | 375 | 0.15 | 22,887 | 6,182 | Kootenay | 1225 | 250 | 0.9 | 20,891 | 20,891 | | |
| Columbia | 2037.5 | 375 | 0.3 | 45,169 | 16,715 | Kootenay | 1225 | 250 | 1.05 | 16,714 | 17,060 | | |
| Columbia | 2037.5 | 375 | 0.45 | 60,143 | 34,371 | Kootenay | 1225 | 250 | 1.2 | 8,187 | 9,479 | | |
| Columbia | 2037.5 | 375 | 0.6 | 79,151 | 66,370 | Kootenay | 1225 | 250 | 1.35 | 1,600 | 2,844 | | |
| Columbia | 2037.5 | 375 | 0.75 | 73,260 | 73,260 | Kootenay | 1225 | 250 | 1.5 | 13 | 2,197 | | |
| Columbia | 2037.5 | 375 | 0.9 | 51,294 | 51,294 | Kootenay | 1225 | 250 | 1.65 | 0 | 2,539 | | |
| Columbia | 2037.5 | 375 | 1.05 | 36,804 | 37,644 | Kootenay | 1225 | 250 | 1.8 | 0 | 1,917 | | |
| Columbia | 2037.5 | 375 | 1.2 | 18,442 | 21,219 | Kootenay | 1225 | 250 | 1.95 | 0 | 676 | | |
| Columbia | 2037.5 | 375 | 1.35 | 6,792 | 11,366 | Kootenay | 1225 | 250 | 2.1 | 0 | 27 | | |
| Columbia | 2037.5 | 375 | 1.5 | 18 | 5,333 | Kootenay | 1225 | 250 | 2.25 | 0 | 0 | | |
| Columbia | 2037.5 | 375 | 1.65 | 0 | 5,286 | Kootenay | 1225 | 250 | 2.4 | 0 | 0 | | |
| Columbia | 2037.5 | 375 | 1.8 | 0 | 5,632 | Kootenay | 1225 | 250 | 2.55 | 0 | 0 | | |
| Columbia | 2037.5 | 375 | 1.95 | 0 | 3,722 | Kootenay | 1225 | 250 | 2.7 | 0 | 0 | | |
| Columbia | 2037.5 | 375 | 2.1 | 0 | 108 | Kootenay | 1225 | 250 | 2.85 | 0 | 0 | | |
| Columbia | 2037.5 | 375 | 2.25 | 0 | 0 | Kootenay | 1225 | 250 | 3 | 0 | 0 | | |
| Columbia | 2037.5 | 375 | 2.4 | 0 | 0 | Kootenay | 1225 | 250 | 3.15 | 0 | 0 | | |
| Columbia | 2037.5 | 375 | 2.55 | 0 | 0 | Kootenay | 1225 | 250 | 3.3 | 0 | 0 | | |
| Columbia | 2037.5 | 375 | 2.7 | 0 | 0 | Kootenay | 1225 | 250 | 3.75 | 0 | 0 | | |
| Columbia | 2037.5 | 375 | 2.85 | 0 | 0 | Kootenay | 1225 | 500 | 0 | 0 | 245 | | |
| Columbia | 2037.5 | 375 | 3 | 0 | 0 | Kootenay | 1225 | 500 | 0.15 | 18,295 | 5,198 | | |
| Columbia | 2037.5 | 375 | 3.15 | 0 | 0 | Kootenay | 1225 | 500 | 0.3 | 18,922 | 6,932 | | |
| Columbia | 2037.5 | 375 | 3.3 | 0 | 0 | Kootenay | 1225 | 500 | 0.45 | 23,631 | 12,883 | | |
| Columbia | 2037.5 | 375 | 4.2 | 0 | 0 | Kootenay | 1225 | 500 | 0.6 | 24,795 | 21,400 | | |
| Columbia | 2037.5 | 375 | 6.45 | 0 | 0 | Kootenay | 1225 | 500 | 0.75 | 25,346 | 25,346 | | |
| Columbia | 2037.5 | 875 | 0 | 0 | 272 | Kootenay | 1225 | 500 | 0.9 | 38,494 | 38,494 | | |
| Columbia | 2037.5 | 875 | 0.15 | 20,810 | 5,776 | Kootenay | 1225 | 500 | 1.05 | 41,532 | 42,347 | | |
| Columbia | 2037.5 | 875 | 0.3 | 45,196 | 16,743 | Kootenay | 1225 | 500 | 1.2 | 23,800 | 27,425 | | |
| Columbia | 2037.5 | 875 | 0.45 | 60,257 | 34,225 | Kootenay | 1225 | 500 | 1.35 | 6,308 | 11,055 | | |
| Columbia | 2037.5 | 875 | 0.6 | 84,946 | 71,297 | Kootenay | 1225 | 500 | 1.5 | 47 | 5,306 | | |
| Columbia | 2037.5 | 875 | 0.75 | 76,350 | 76,350 | Kootenay | 1225 | 500 | 1.65 | 0 | 2,637 | | |
| Columbia | 2037.5 | 875 | 0.9 | 52,946 | 52,946 | Kootenay | 1225 | 500 | 1.8 | 0 | 2,131 | | |
| Columbia | 2037.5 | 875 | 1.05 | 40,095 | 40,965 | Kootenay | 1225 | 500 | 1.95 | 0 | 1,373 | | |
| Columbia | 2037.5 | 875 | 1.2 | 19,358 | 22,325 | Kootenay | 1225 | 500 | 2.1 | 0 | 0 | | |
| Columbia | 2037.5 | 875 | 1.35 | 6,615 | 11,599 | Kootenay | 1225 | 500 | 2.25 | 0 | 0 | | |
| Columbia | 2037.5 | 875 | 1.5 | 56 | 6,333 | Kootenay | 1225 | 500 | 2.4 | 0 | 0 | | |
| Columbia | 2037.5 | 875 | 1.65 | 0 | 5,886 | Kootenay | 1225 | 500 | 2.55 | 0 | 0 | | |
| Columbia | 2037.5 | 875 | 1.8 | 0 | 6,482 | Kootenay | 1225 | 500 | 2.7 | 0 | 0 | | |
| Columbia | 2037.5 | 875 | 1.95 | 0 | 3,531 | Kootenay | 1225 | 500 | 2.85 | 0 | 0 | | |
| Columbia | 2037.5 | 875 | 2.1 | 0 | 65 | Kootenay | 1225 | 500 | 3.15 | 0 | 0 | | |
| Columbia | 2037.5 | 875 | 2.25 | 0 | 0 | Kootenay | 1225 | 500 | 3.75 | 0 | 0 | | |
| Columbia | 2037.5 | 875 | 2.4 | 0 | 0 | Kootenay | 1225 | 1000 | 0 | 0 | 426 | | |
| Columbia | 2037.5 | 875 | 2.55 | 0 | 0 | Kootenay | 1225 | 1000 | 0.15 | 21,079 | 5,930 | | |
| Columbia | 2037.5 | 875 | 2.7 | 0 | 0 | Kootenay | 1225 | 1000 | 0.3 | 36,215 | 12,863 | | |
| Columbia | 2037.5 | 875 | 2.85 | 0 | 0 | Kootenay | 1225 | 1000 | 0.45 | 20,357 | 11,466 | | |
| Columbia | 2037.5 | 875 | 3.15 | 0 | 0 | Kootenay | 1225 | 1000 | 0.6 | 20,357 | 16,590 | | |
| Columbia | 2037.5 | 875 | 4.2 | 0 | 0 | Kootenay | 1225 | 1000 | 0.75 | 23,510 | 23,510 | | |
| Columbia | 2037.5 | 875 | 6.75 | 0 | 0 | Kootenay | 1225 | 1000 | 0.9 | 32,494 | 32,494 | | |
| | | | | | Kootenay | 1225 | 1000 | 1.05 | 25,670 | 26,289 | | | |
| | | | | | Kootenay | 1225 | 1000 | 1.2 | 17,106 | 19,768 | | | |
| | | | | | Kootenay | 1225 | 1000 | 1.35 | 7,963 | 14,495 | | | |
| | | | | | Kootenay | 1225 | 1000 | 1.5 | 55 | 8,496 | | | |
| | | | | | Kootenay | 1225 | 1000 | 1.65 | 0 | 10,430 | | | |
| | | | | | Kootenay | 1225 | 1000 | 1.8 | 0 | 6,290 | | | |
| | | | | | Kootenay | 1225 | 1000 | 1.95 | 0 | 1,772 | | | |
| | | | | | Kootenay | 1225 | 1000 | 2.1 | 0 | 14 | | | |
| | | | | | Kootenay | 1225 | 1000 | 2.25 | 0 | 0 | | | |
| | | | | | Kootenay | 1225 | 1000 | 2.4 | 0 | 0 | | | |

| River | Modeled Discharge (m³/s) | | | Velocity Bin (m/s) | Modeled Discharge (m³/s) | | | Velocity Bin (m/s) | Modeled Discharge (m³/s) | | |
|----------|--------------------------|----------|--------------|--------------------|--------------------------|---------|----------|--------------------|--------------------------|----------------|--|
| | Columbia | Kootenay | Large Rivers | | Columbia-Snake | River | Columbia | Kootenay | Large Rivers | Columbia-Snake | |
| Kootenay | 1225 | | 1000 | 2.55 | | 0 | | 0 | | 0 | |
| Kootenay | 2200 | | 250 | 0 | | 0 | | 506 | | | |
| Kootenay | 2200 | | 250 | 0.15 | | 46,965 | | | 12,960 | | |
| Kootenay | 2200 | | 250 | 0.3 | | 102,359 | | | 37,612 | | |
| Kootenay | 2200 | | 250 | 0.45 | | 41,320 | | | 19,741 | | |
| Kootenay | 2200 | | 250 | 0.6 | | 9,552 | | | 8,019 | | |
| Kootenay | 2200 | | 250 | 0.75 | | 4,334 | | | 4,334 | | |
| Kootenay | 2200 | | 250 | 0.9 | | 5,279 | | | 5,279 | | |
| Kootenay | 2200 | | 250 | 1.05 | | 4,010 | | | 4,128 | | |
| Kootenay | 2200 | | 250 | 1.2 | | 1,982 | | | 2,236 | | |
| Kootenay | 2200 | | 250 | 1.35 | | 1,018 | | | 1,764 | | |
| Kootenay | 2200 | | 250 | 1.5 | | 1 | | | 1,783 | | |
| Kootenay | 2200 | | 250 | 1.65 | | 0 | | | 2,426 | | |
| Kootenay | 2200 | | 250 | 1.8 | | 0 | | | 1,692 | | |
| Kootenay | 2200 | | 250 | 1.95 | | 0 | | | 817 | | |
| Kootenay | 2200 | | 250 | 2.1 | | 0 | | | 24 | | |
| Kootenay | 2200 | | 250 | 2.25 | | 0 | | | 0 | | |
| Kootenay | 2200 | | 250 | 2.4 | | 0 | | | 0 | | |
| Kootenay | 2200 | | 250 | 2.55 | | 0 | | | 0 | | |
| Kootenay | 2200 | | 250 | 2.7 | | 0 | | | 0 | | |
| Kootenay | 2200 | | 250 | 2.85 | | 0 | | | 0 | | |
| Kootenay | 2200 | | 250 | 3 | | 0 | | | 0 | | |
| Kootenay | 2200 | | 250 | 3.15 | | 0 | | | 0 | | |
| Kootenay | 2200 | | 250 | 3.3 | | 0 | | | 0 | | |
| Kootenay | 2200 | | 250 | 3.45 | | 0 | | | 0 | | |
| Kootenay | 2200 | | 500 | 0 | | 0 | | | 517 | | |
| Kootenay | 2200 | | 500 | 0.15 | | 33,439 | | | 9,641 | | |
| Kootenay | 2200 | | 500 | 0.3 | | 42,892 | | | 15,712 | | |
| Kootenay | 2200 | | 500 | 0.45 | | 65,235 | | | 35,645 | | |
| Kootenay | 2200 | | 500 | 0.6 | | 77,789 | | | 64,555 | | |
| Kootenay | 2200 | | 500 | 0.75 | | 52,624 | | | 52,624 | | |
| Kootenay | 2200 | | 500 | 0.9 | | 9,596 | | | 9,596 | | |
| Kootenay | 2200 | | 500 | 1.05 | | 4,768 | | | 4,854 | | |
| Kootenay | 2200 | | 500 | 1.2 | | 2,803 | | | 3,253 | | |
| Kootenay | 2200 | | 500 | 1.35 | | 1,930 | | | 3,634 | | |
| Kootenay | 2200 | | 500 | 1.5 | | 17 | | | 2,824 | | |
| Kootenay | 2200 | | 500 | 1.65 | | 0 | | | 1,877 | | |
| Kootenay | 2200 | | 500 | 1.8 | | 0 | | | 1,569 | | |
| Kootenay | 2200 | | 500 | 1.95 | | 0 | | | 1,134 | | |
| Kootenay | 2200 | | 500 | 2.1 | | 0 | | | 98 | | |
| Kootenay | 2200 | | 500 | 2.25 | | 0 | | | 0 | | |
| Kootenay | 2200 | | 500 | 2.4 | | 0 | | | 0 | | |
| Kootenay | 2200 | | 500 | 2.55 | | 0 | | | 0 | | |
| Kootenay | 2200 | | 500 | 2.7 | | 0 | | | 0 | | |
| Kootenay | 2200 | | 500 | 2.85 | | 0 | | | 0 | | |
| Kootenay | 2200 | | 500 | 3 | | 0 | | | 0 | | |
| Kootenay | 2200 | | 500 | 3.15 | | 0 | | | 0 | | |
| Kootenay | 2200 | | 1000 | 0 | | 0 | | | 462 | | |
| Kootenay | 2200 | | 1000 | 0.15 | | 29,596 | | | 8,437 | | |
| Kootenay | 2200 | | 1000 | 0.3 | | 38,695 | | | 14,214 | | |
| Kootenay | 2200 | | 1000 | 0.45 | | 30,777 | | | 16,973 | | |
| Kootenay | 2200 | | 1000 | 0.6 | | 32,426 | | | 27,358 | | |
| Kootenay | 2200 | | 1000 | 0.75 | | 43,145 | | | 43,145 | | |
| Kootenay | 2200 | | 1000 | 0.9 | | 62,374 | | | 62,374 | | |
| Kootenay | 2200 | | 1000 | 1.05 | | 42,740 | | | 43,640 | | |
| Kootenay | 2200 | | 1000 | 1.2 | | 30,288 | | | 35,069 | | |
| Kootenay | 2200 | | 1000 | 1.35 | | 6,751 | | | 10,920 | | |
| Kootenay | 2200 | | 1000 | 1.5 | | 26 | | | 3,182 | | |
| Kootenay | 2200 | | 1000 | 1.65 | | 0 | | | 2,100 | | |
| Kootenay | 2200 | | 1000 | 1.8 | | 0 | | | 2,158 | | |
| Kootenay | 2200 | | 1000 | 1.95 | | 0 | | | 1,404 | | |
| Kootenay | 2200 | | 1000 | 2.1 | | 0 | | | 52 | | |
| Kootenay | 2200 | | 1000 | 2.25 | | 0 | | | 0 | | |
| Kootenay | 2200 | | 1000 | 2.4 | | 0 | | | 0 | | |
| Kootenay | 2200 | | 1000 | 2.55 | | 0 | | | 0 | | |
| Kootenay | 2200 | | 1000 | 2.7 | | 0 | | | 0 | | |
| Kootenay | 2200 | | 1000 | 2.85 | | 0 | | | 0 | | |

Table C3. Weighted Usable Area (WUA, m²), calculated by modeled water depths, binned to 0.5 m; WUA is based on combined (depth and velocity) HSI.

| River | Modeled Discharge (m³/s) | | Depth Bin (m) | Weighted Usable Area (m²) | | River | Modeled Discharge (m³/s) | | Depth Bin (m) | Weighted Usable Area (m²) | |
|----------|--------------------------|----------|---------------|---------------------------|----------------|----------|--------------------------|----------|---------------|---------------------------|----------------|
| | Columbia | Kootenay | | Large Rivers | Columbia-Snake | | Columbia | Kootenay | | Large Rivers | Columbia-Snake |
| Columbia | 412.5 | 375 | 0 | 3,844 | 0 | Kootenay | 575 | 250 | 0 | 2,997 | 0 |
| Columbia | 412.5 | 375 | 0.5 | 13,692 | 731 | Kootenay | 575 | 250 | 0.5 | 14,035 | 1,193 |
| Columbia | 412.5 | 375 | 1 | 17,947 | 3,571 | Kootenay | 575 | 250 | 1 | 13,826 | 3,542 |
| Columbia | 412.5 | 375 | 1.5 | 9,046 | 4,468 | Kootenay | 575 | 250 | 1.5 | 12,575 | 6,289 |
| Columbia | 412.5 | 375 | 2 | 6,272 | 7,326 | Kootenay | 575 | 250 | 2 | 8,133 | 11,839 |
| Columbia | 412.5 | 375 | 2.5 | 2,114 | 9,051 | Kootenay | 575 | 250 | 2.5 | 2,970 | 10,871 |
| Columbia | 412.5 | 375 | 3 | 15 | 8,436 | Kootenay | 575 | 250 | 3 | 51 | 12,127 |
| Columbia | 412.5 | 375 | 3.5 | 0 | 8,189 | Kootenay | 575 | 250 | 3.5 | 0 | 13,991 |
| Columbia | 412.5 | 375 | 4 | 0 | 10,882 | Kootenay | 575 | 250 | 4 | 0 | 9,864 |
| Columbia | 412.5 | 375 | 4.5 | 0 | 11,109 | Kootenay | 575 | 250 | 4.5 | 0 | 9,488 |
| Columbia | 412.5 | 375 | 5 | 0 | 13,694 | Kootenay | 575 | 250 | 5 | 0 | 10,099 |
| Columbia | 412.5 | 375 | 5.5 | 0 | 15,667 | Kootenay | 575 | 250 | 5.5 | 0 | 8,866 |
| Columbia | 412.5 | 375 | 6 | 0 | 11,685 | Kootenay | 575 | 250 | 6 | 0 | 8,618 |
| Columbia | 412.5 | 375 | 6.5 | 0 | 8,182 | Kootenay | 575 | 250 | 6.5 | 0 | 5,827 |
| Columbia | 412.5 | 375 | 7 | 0 | 8,411 | Kootenay | 575 | 250 | 7 | 0 | 7,443 |
| Columbia | 412.5 | 375 | 7.5 | 0 | 7,214 | Kootenay | 575 | 250 | 7.5 | 0 | 5,370 |
| Columbia | 412.5 | 375 | 8 | 0 | 4,757 | Kootenay | 575 | 250 | 8 | 0 | 5,940 |
| Columbia | 412.5 | 375 | 8.5 | 0 | 3,070 | Kootenay | 575 | 250 | 8.5 | 0 | 7,402 |
| Columbia | 412.5 | 375 | 9 | 0 | 1,275 | Kootenay | 575 | 250 | 9 | 0 | 4,357 |
| Columbia | 412.5 | 375 | 9.5 | 0 | 481 | Kootenay | 575 | 250 | 9.5 | 0 | 1,072 |
| Columbia | 412.5 | 375 | 10 | 0 | 138 | Kootenay | 575 | 250 | 10 | 0 | 354 |
| Columbia | 412.5 | 375 | 10.5 | 0 | 23 | Kootenay | 575 | 250 | 10.5 | 0 | 22 |
| Columbia | 412.5 | 375 | 11 | 0 | 0 | Kootenay | 575 | 250 | 11 | 0 | 0 |
| Columbia | 412.5 | 375 | 11.5 | 0 | 0 | Kootenay | 575 | 250 | 11.5 | 0 | 0 |
| Columbia | 412.5 | 375 | 12 | 0 | 0 | Kootenay | 575 | 250 | 12 | 0 | 0 |
| Columbia | 412.5 | 375 | 12.5 | 0 | 0 | Kootenay | 575 | 250 | 12.5 | 0 | 0 |
| Columbia | 412.5 | 375 | 13 | 0 | 0 | Kootenay | 575 | 500 | 0 | 620 | 0 |
| Columbia | 412.5 | 375 | 13.5 | 0 | 0 | Kootenay | 575 | 500 | 0.5 | 8,174 | 800 |
| Columbia | 412.5 | 375 | 14 | 0 | 0 | Kootenay | 575 | 500 | 1 | 11,705 | 2,885 |
| Columbia | 412.5 | 875 | 0 | 5,847 | 0 | Kootenay | 575 | 500 | 1.5 | 11,384 | 7,016 |
| Columbia | 412.5 | 875 | 0.5 | 11,893 | 675 | Kootenay | 575 | 500 | 2 | 7,225 | 9,204 |
| Columbia | 412.5 | 875 | 1 | 13,110 | 2,128 | Kootenay | 575 | 500 | 2.5 | 1,964 | 9,252 |
| Columbia | 412.5 | 875 | 1.5 | 15,452 | 6,903 | Kootenay | 575 | 500 | 3 | 18 | 9,946 |
| Columbia | 412.5 | 875 | 2 | 6,640 | 8,147 | Kootenay | 575 | 500 | 3.5 | 0 | 7,295 |
| Columbia | 412.5 | 875 | 2.5 | 1,864 | 8,163 | Kootenay | 575 | 500 | 4 | 0 | 8,828 |
| Columbia | 412.5 | 875 | 3 | 32 | 9,699 | Kootenay | 575 | 500 | 4.5 | 0 | 8,858 |
| Columbia | 412.5 | 875 | 3.5 | 0 | 7,817 | Kootenay | 575 | 500 | 5 | 0 | 10,310 |
| Columbia | 412.5 | 875 | 4 | 0 | 9,050 | Kootenay | 575 | 500 | 5.5 | 0 | 12,902 |
| Columbia | 412.5 | 875 | 4.5 | 0 | 14,517 | Kootenay | 575 | 500 | 6 | 0 | 11,038 |
| Columbia | 412.5 | 875 | 5 | 0 | 13,168 | Kootenay | 575 | 500 | 6.5 | 0 | 9,693 |
| Columbia | 412.5 | 875 | 5.5 | 0 | 16,497 | Kootenay | 575 | 500 | 7 | 0 | 7,548 |
| Columbia | 412.5 | 875 | 6 | 0 | 11,832 | Kootenay | 575 | 500 | 7.5 | 0 | 9,348 |
| Columbia | 412.5 | 875 | 6.5 | 0 | 9,163 | Kootenay | 575 | 500 | 8 | 0 | 4,693 |
| Columbia | 412.5 | 875 | 7 | 0 | 8,126 | Kootenay | 575 | 500 | 8.5 | 0 | 7,526 |
| Columbia | 412.5 | 875 | 7.5 | 0 | 8,500 | Kootenay | 575 | 500 | 9 | 0 | 7,027 |
| Columbia | 412.5 | 875 | 8 | 0 | 4,303 | Kootenay | 575 | 500 | 9.5 | 0 | 2,548 |
| Columbia | 412.5 | 875 | 8.5 | 0 | 4,282 | Kootenay | 575 | 500 | 10 | 0 | 875 |
| Columbia | 412.5 | 875 | 9 | 0 | 1,187 | Kootenay | 575 | 500 | 10.5 | 0 | 41 |
| Columbia | 412.5 | 875 | 9.5 | 0 | 478 | Kootenay | 575 | 500 | 11 | 0 | 0 |
| Columbia | 412.5 | 875 | 10 | 0 | 133 | Kootenay | 575 | 500 | 11.5 | 0 | 0 |
| Columbia | 412.5 | 875 | 10.5 | 0 | 8 | Kootenay | 575 | 500 | 12 | 0 | 0 |
| Columbia | 412.5 | 875 | 11 | 0 | 0 | Kootenay | 575 | 500 | 12.5 | 0 | 0 |
| Columbia | 412.5 | 875 | 11.5 | 0 | 0 | Kootenay | 575 | 500 | 13 | 0 | 0 |
| Columbia | 412.5 | 875 | 12 | 0 | 0 | Kootenay | 575 | 500 | 13.5 | 0 | 0 |
| Columbia | 412.5 | 875 | 12.5 | 0 | 0 | Kootenay | 575 | 1000 | 0 | 1,262 | 0 |
| Columbia | 412.5 | 875 | 13 | 0 | 0 | Kootenay | 575 | 1000 | 0.5 | 11,739 | 744 |
| Columbia | 412.5 | 875 | 13.5 | 0 | 0 | Kootenay | 575 | 1000 | 1 | 7,697 | 1,413 |
| Columbia | 412.5 | 875 | 14 | 0 | 0 | Kootenay | 575 | 1000 | 1.5 | 9,070 | 3,935 |
| Columbia | 412.5 | 875 | 14.5 | 0 | 0 | Kootenay | 575 | 1000 | 2 | 8,123 | 8,703 |
| Columbia | 1062.5 | 375 | 0 | 1,628 | 0 | Kootenay | 575 | 1000 | 2.5 | 3,543 | 16,953 |
| Columbia | 1062.5 | 375 | 0.5 | 5,597 | 457 | Kootenay | 575 | 1000 | 3 | 23 | 9,288 |
| Columbia | 1062.5 | 375 | 1 | 22,521 | 5,105 | Kootenay | 575 | 1000 | 3.5 | 0 | 7,550 |
| Columbia | 1062.5 | 375 | 1.5 | 25,117 | 11,913 | Kootenay | 575 | 1000 | 4 | 0 | 9,211 |
| Columbia | 1062.5 | 375 | 2 | 12,641 | 16,680 | Kootenay | 575 | 1000 | 4.5 | 0 | 4,932 |
| Columbia | 1062.5 | 375 | 2.5 | 4,281 | 17,038 | Kootenay | 575 | 1000 | 5 | 0 | 6,066 |
| Columbia | 1062.5 | 375 | 3 | 34 | 10,402 | Kootenay | 575 | 1000 | 5.5 | 0 | 7,233 |
| Columbia | 1062.5 | 375 | 3.5 | 0 | 7,846 | Kootenay | 575 | 1000 | 6 | 0 | 8,309 |

| River | Modeled Discharge (m³/s) | | | Depth Bin (m) | Weighted Usable Area (m²) | | River | Modeled Discharge (m³/s) | | | Depth Bin (m) | Weighted Usable Area (m²) | |
|----------|--------------------------|----------|--------------|---------------|---------------------------|----------|-------|--------------------------|--------------|----------------|---------------|---------------------------|--|
| | Columbia | Kootenay | Large Rivers | | Columbia-Snake | Columbia | | Kootenay | Large Rivers | Columbia-Snake | | | |
| Columbia | 1062.5 | 375 | 4 | 0 | 5,447 | Kootenay | 575 | 1000 | 6.5 | 0 | 11,215 | | |
| Columbia | 1062.5 | 375 | 4.5 | 0 | 5,517 | Kootenay | 575 | 1000 | 7 | 0 | 6,992 | | |
| Columbia | 1062.5 | 375 | 5 | 0 | 4,855 | Kootenay | 575 | 1000 | 7.5 | 0 | 8,702 | | |
| Columbia | 1062.5 | 375 | 5.5 | 0 | 5,813 | Kootenay | 575 | 1000 | 8 | 0 | 3,910 | | |
| Columbia | 1062.5 | 375 | 6 | 0 | 7,561 | Kootenay | 575 | 1000 | 8.5 | 0 | 5,071 | | |
| Columbia | 1062.5 | 375 | 6.5 | 0 | 7,785 | Kootenay | 575 | 1000 | 9 | 0 | 2,422 | | |
| Columbia | 1062.5 | 375 | 7 | 0 | 10,013 | Kootenay | 575 | 1000 | 9.5 | 0 | 2,648 | | |
| Columbia | 1062.5 | 375 | 7.5 | 0 | 13,491 | Kootenay | 575 | 1000 | 10 | 0 | 1,032 | | |
| Columbia | 1062.5 | 375 | 8 | 0 | 11,008 | Kootenay | 575 | 1000 | 10.5 | 0 | 23 | | |
| Columbia | 1062.5 | 375 | 8.5 | 0 | 11,120 | Kootenay | 575 | 1000 | 11 | 0 | 0 | | |
| Columbia | 1062.5 | 375 | 9 | 0 | 9,428 | Kootenay | 575 | 1000 | 11.5 | 0 | 0 | | |
| Columbia | 1062.5 | 375 | 9.5 | 0 | 2,785 | Kootenay | 575 | 1000 | 12 | 0 | 0 | | |
| Columbia | 1062.5 | 375 | 10 | 0 | 1,107 | Kootenay | 575 | 1000 | 12.5 | 0 | 0 | | |
| Columbia | 1062.5 | 375 | 10.5 | 0 | 17 | Kootenay | 575 | 1000 | 13 | 0 | 0 | | |
| Columbia | 1062.5 | 375 | 11 | 0 | 0 | Kootenay | 575 | 1000 | 13.5 | 0 | 0 | | |
| Columbia | 1062.5 | 375 | 11.5 | 0 | 0 | Kootenay | 575 | 1000 | 14 | 0 | 0 | | |
| Columbia | 1062.5 | 375 | 12 | 0 | 0 | Kootenay | 575 | 1000 | 14.5 | 0 | 0 | | |
| Columbia | 1062.5 | 375 | 12.5 | 0 | 0 | Kootenay | 1225 | 250 | 0 | 182 | 0 | | |
| Columbia | 1062.5 | 375 | 13 | 0 | 0 | Kootenay | 1225 | 250 | 0.5 | 3,374 | 340 | | |
| Columbia | 1062.5 | 375 | 13.5 | 0 | 0 | Kootenay | 1225 | 250 | 1 | 10,711 | 2,359 | | |
| Columbia | 1062.5 | 375 | 14 | 0 | 0 | Kootenay | 1225 | 250 | 1.5 | 19,900 | 10,873 | | |
| Columbia | 1062.5 | 375 | 14.5 | 0 | 0 | Kootenay | 1225 | 250 | 2 | 11,204 | 15,358 | | |
| Columbia | 1062.5 | 375 | 15 | 0 | 0 | Kootenay | 1225 | 250 | 2.5 | 4,806 | 17,900 | | |
| Columbia | 1062.5 | 375 | 15.5 | 0 | 0 | Kootenay | 1225 | 250 | 3 | 67 | 17,207 | | |
| Columbia | 1062.5 | 375 | 16 | 0 | 0 | Kootenay | 1225 | 250 | 3.5 | 0 | 15,019 | | |
| Columbia | 1062.5 | 875 | 0 | 1,653 | 1 | Kootenay | 1225 | 250 | 4 | 0 | 13,677 | | |
| Columbia | 1062.5 | 875 | 0.5 | 4,831 | 357 | Kootenay | 1225 | 250 | 4.5 | 0 | 8,286 | | |
| Columbia | 1062.5 | 875 | 1 | 19,074 | 4,333 | Kootenay | 1225 | 250 | 5 | 0 | 5,206 | | |
| Columbia | 1062.5 | 875 | 1.5 | 26,681 | 12,344 | Kootenay | 1225 | 250 | 5.5 | 0 | 6,740 | | |
| Columbia | 1062.5 | 875 | 2 | 13,978 | 17,602 | Kootenay | 1225 | 250 | 6 | 0 | 6,772 | | |
| Columbia | 1062.5 | 875 | 2.5 | 4,749 | 19,115 | Kootenay | 1225 | 250 | 6.5 | 0 | 7,878 | | |
| Columbia | 1062.5 | 875 | 3 | 38 | 12,828 | Kootenay | 1225 | 250 | 7 | 0 | 5,906 | | |
| Columbia | 1062.5 | 875 | 3.5 | 0 | 8,420 | Kootenay | 1225 | 250 | 7.5 | 0 | 4,307 | | |
| Columbia | 1062.5 | 875 | 4 | 0 | 5,678 | Kootenay | 1225 | 250 | 8 | 0 | 3,659 | | |
| Columbia | 1062.5 | 875 | 4.5 | 0 | 6,569 | Kootenay | 1225 | 250 | 8.5 | 0 | 4,116 | | |
| Columbia | 1062.5 | 875 | 5 | 0 | 5,345 | Kootenay | 1225 | 250 | 9 | 0 | 3,196 | | |
| Columbia | 1062.5 | 875 | 5.5 | 0 | 5,658 | Kootenay | 1225 | 250 | 9.5 | 0 | 1,705 | | |
| Columbia | 1062.5 | 875 | 6 | 0 | 8,645 | Kootenay | 1225 | 250 | 10 | 0 | 792 | | |
| Columbia | 1062.5 | 875 | 6.5 | 0 | 8,189 | Kootenay | 1225 | 250 | 10.5 | 0 | 58 | | |
| Columbia | 1062.5 | 875 | 7 | 0 | 11,036 | Kootenay | 1225 | 250 | 11 | 0 | 0 | | |
| Columbia | 1062.5 | 875 | 7.5 | 0 | 12,938 | Kootenay | 1225 | 250 | 11.5 | 0 | 0 | | |
| Columbia | 1062.5 | 875 | 8 | 0 | 11,505 | Kootenay | 1225 | 250 | 12 | 0 | 0 | | |
| Columbia | 1062.5 | 875 | 8.5 | 0 | 11,427 | Kootenay | 1225 | 250 | 12.5 | 0 | 0 | | |
| Columbia | 1062.5 | 875 | 9 | 0 | 10,208 | Kootenay | 1225 | 250 | 13 | 0 | 0 | | |
| Columbia | 1062.5 | 875 | 9.5 | 0 | 3,215 | Kootenay | 1225 | 500 | 0 | 160 | 0 | | |
| Columbia | 1062.5 | 875 | 10 | 0 | 1,095 | Kootenay | 1225 | 500 | 0.5 | 3,577 | 213 | | |
| Columbia | 1062.5 | 875 | 10.5 | 0 | 31 | Kootenay | 1225 | 500 | 1 | 7,213 | 1,328 | | |
| Columbia | 1062.5 | 875 | 11 | 0 | 0 | Kootenay | 1225 | 500 | 1.5 | 8,916 | 4,440 | | |
| Columbia | 1062.5 | 875 | 11.5 | 0 | 0 | Kootenay | 1225 | 500 | 2 | 8,780 | 13,130 | | |
| Columbia | 1062.5 | 875 | 12 | 0 | 0 | Kootenay | 1225 | 500 | 2.5 | 3,660 | 17,664 | | |
| Columbia | 1062.5 | 875 | 12.5 | 0 | 0 | Kootenay | 1225 | 500 | 3 | 32 | 19,024 | | |
| Columbia | 1062.5 | 875 | 13 | 0 | 0 | Kootenay | 1225 | 500 | 3.5 | 0 | 15,304 | | |
| Columbia | 1062.5 | 875 | 13.5 | 0 | 0 | Kootenay | 1225 | 500 | 4 | 0 | 18,639 | | |
| Columbia | 1062.5 | 875 | 14 | 0 | 0 | Kootenay | 1225 | 500 | 4.5 | 0 | 12,953 | | |
| Columbia | 1062.5 | 875 | 14.5 | 0 | 0 | Kootenay | 1225 | 500 | 5 | 0 | 9,643 | | |
| Columbia | 1062.5 | 875 | 15 | 0 | 0 | Kootenay | 1225 | 500 | 5.5 | 0 | 7,326 | | |
| Columbia | 1062.5 | 875 | 15.5 | 0 | 0 | Kootenay | 1225 | 500 | 6 | 0 | 7,704 | | |
| Columbia | 1062.5 | 875 | 16 | 0 | 0 | Kootenay | 1225 | 500 | 6.5 | 0 | 9,536 | | |
| Columbia | 2037.5 | 375 | 0 | 1,760 | 0 | Kootenay | 1225 | 500 | 7 | 0 | 10,067 | | |
| Columbia | 2037.5 | 375 | 0.5 | 14,238 | 904 | Kootenay | 1225 | 500 | 7.5 | 0 | 8,637 | | |
| Columbia | 2037.5 | 375 | 1 | 24,659 | 5,492 | Kootenay | 1225 | 500 | 8 | 0 | 6,050 | | |
| Columbia | 2037.5 | 375 | 1.5 | 30,506 | 14,986 | Kootenay | 1225 | 500 | 8.5 | 0 | 5,410 | | |
| Columbia | 2037.5 | 375 | 2 | 15,208 | 17,013 | Kootenay | 1225 | 500 | 9 | 0 | 6,056 | | |
| Columbia | 2037.5 | 375 | 2.5 | 10,420 | 42,330 | Kootenay | 1225 | 500 | 9.5 | 0 | 2,448 | | |
| Columbia | 2037.5 | 375 | 3 | 88 | 34,558 | Kootenay | 1225 | 500 | 10 | 0 | 1,114 | | |
| Columbia | 2037.5 | 375 | 3.5 | 0 | 22,719 | Kootenay | 1225 | 500 | 10.5 | 0 | 111 | | |
| Columbia | 2037.5 | 375 | 4 | 0 | 19,284 | Kootenay | 1225 | 500 | 11 | 0 | 0 | | |
| Columbia | 2037.5 | 375 | 4.5 | 0 | 7,874 | Kootenay | 1225 | 500 | 11.5 | 0 | 0 | | |

| River | Modeled Discharge (m³/s) | | Depth Bin (m) | Weighted Usable Area (m²) | | River | Modeled Discharge (m³/s) | | Depth Bin (m) | Weighted Usable Area (m²) | |
|----------|--------------------------|----------|---------------|---------------------------|----------------|----------|--------------------------|----------|---------------|---------------------------|----------------|
| | Columbia | Kootenay | | Large Rivers | Columbia-Snake | | Columbia | Kootenay | | Large Rivers | Columbia-Snake |
| Columbia | 2037.5 | 375 | 5 | 0 | 7,438 | Kootenay | 1225 | 500 | 12 | 0 | 0 |
| Columbia | 2037.5 | 375 | 5.5 | 0 | 4,946 | Kootenay | 1225 | 500 | 12.5 | 0 | 0 |
| Columbia | 2037.5 | 375 | 6 | 0 | 6,361 | Kootenay | 1225 | 500 | 13 | 0 | 0 |
| Columbia | 2037.5 | 375 | 6.5 | 0 | 6,003 | Kootenay | 1225 | 500 | 13.5 | 0 | 0 |
| Columbia | 2037.5 | 375 | 7 | 0 | 6,201 | Kootenay | 1225 | 1000 | 0 | 4,878 | 2 |
| Columbia | 2037.5 | 375 | 7.5 | 0 | 7,377 | Kootenay | 1225 | 1000 | 0.5 | 15,366 | 1,155 |
| Columbia | 2037.5 | 375 | 8 | 0 | 8,233 | Kootenay | 1225 | 1000 | 1 | 14,002 | 3,004 |
| Columbia | 2037.5 | 375 | 8.5 | 0 | 8,061 | Kootenay | 1225 | 1000 | 1.5 | 11,063 | 4,467 |
| Columbia | 2037.5 | 375 | 9 | 0 | 11,647 | Kootenay | 1225 | 1000 | 2 | 5,871 | 6,768 |
| Columbia | 2037.5 | 375 | 9.5 | 0 | 8,096 | Kootenay | 1225 | 1000 | 2.5 | 2,498 | 9,640 |
| Columbia | 2037.5 | 375 | 10 | 0 | 4,024 | Kootenay | 1225 | 1000 | 3 | 37 | 14,309 |
| Columbia | 2037.5 | 375 | 10.5 | 0 | 282 | Kootenay | 1225 | 1000 | 3.5 | 0 | 16,399 |
| Columbia | 2037.5 | 375 | 11 | 0 | 0 | Kootenay | 1225 | 1000 | 4 | 0 | 14,903 |
| Columbia | 2037.5 | 375 | 11.5 | 0 | 0 | Kootenay | 1225 | 1000 | 4.5 | 0 | 11,230 |
| Columbia | 2037.5 | 375 | 12 | 0 | 0 | Kootenay | 1225 | 1000 | 5 | 0 | 11,864 |
| Columbia | 2037.5 | 375 | 12.5 | 0 | 0 | Kootenay | 1225 | 1000 | 5.5 | 0 | 7,482 |
| Columbia | 2037.5 | 375 | 13 | 0 | 0 | Kootenay | 1225 | 1000 | 6 | 0 | 6,858 |
| Columbia | 2037.5 | 375 | 13.5 | 0 | 0 | Kootenay | 1225 | 1000 | 6.5 | 0 | 5,030 |
| Columbia | 2037.5 | 375 | 14 | 0 | 0 | Kootenay | 1225 | 1000 | 7 | 0 | 6,318 |
| Columbia | 2037.5 | 375 | 14.5 | 0 | 0 | Kootenay | 1225 | 1000 | 7.5 | 0 | 5,537 |
| Columbia | 2037.5 | 375 | 15 | 0 | 0 | Kootenay | 1225 | 1000 | 8 | 0 | 8,996 |
| Columbia | 2037.5 | 375 | 15.5 | 0 | 0 | Kootenay | 1225 | 1000 | 8.5 | 0 | 5,460 |
| Columbia | 2037.5 | 375 | 16 | 0 | 0 | Kootenay | 1225 | 1000 | 9 | 0 | 4,545 |
| Columbia | 2037.5 | 375 | 16.5 | 0 | 0 | Kootenay | 1225 | 1000 | 9.5 | 0 | 2,171 |
| Columbia | 2037.5 | 375 | 17 | 0 | 0 | Kootenay | 1225 | 1000 | 10 | 0 | 1,124 |
| Columbia | 2037.5 | 375 | 17.5 | 0 | 0 | Kootenay | 1225 | 1000 | 10.5 | 0 | 65 |
| Columbia | 2037.5 | 875 | 0 | 2,020 | 1 | Kootenay | 1225 | 1000 | 11 | 0 | 0 |
| Columbia | 2037.5 | 875 | 0.5 | 10,924 | 826 | Kootenay | 1225 | 1000 | 11.5 | 0 | 0 |
| Columbia | 2037.5 | 875 | 1 | 22,259 | 4,727 | Kootenay | 1225 | 1000 | 12 | 0 | 0 |
| Columbia | 2037.5 | 875 | 1.5 | 31,313 | 16,430 | Kootenay | 1225 | 1000 | 12.5 | 0 | 0 |
| Columbia | 2037.5 | 875 | 2 | 15,638 | 18,817 | Kootenay | 1225 | 1000 | 13 | 0 | 0 |
| Columbia | 2037.5 | 875 | 2.5 | 6,853 | 33,444 | Kootenay | 1225 | 1000 | 13.5 | 0 | 0 |
| Columbia | 2037.5 | 875 | 3 | 120 | 42,860 | Kootenay | 1225 | 1000 | 14 | 0 | 0 |
| Columbia | 2037.5 | 875 | 3.5 | 0 | 24,732 | Kootenay | 1225 | 1000 | 14.5 | 0 | 0 |
| Columbia | 2037.5 | 875 | 4 | 0 | 21,578 | Kootenay | 1225 | 1000 | 15 | 0 | 0 |
| Columbia | 2037.5 | 875 | 4.5 | 0 | 12,428 | Kootenay | 2200 | 250 | 0 | 564 | 0 |
| Columbia | 2037.5 | 875 | 5 | 0 | 8,033 | Kootenay | 2200 | 250 | 0.5 | 3,952 | 189 |
| Columbia | 2037.5 | 875 | 5.5 | 0 | 5,717 | Kootenay | 2200 | 250 | 1 | 4,852 | 554 |
| Columbia | 2037.5 | 875 | 6 | 0 | 6,055 | Kootenay | 2200 | 250 | 1.5 | 4,610 | 767 |
| Columbia | 2037.5 | 875 | 6.5 | 0 | 7,613 | Kootenay | 2200 | 250 | 2 | 4,432 | 3,245 |
| Columbia | 2037.5 | 875 | 7 | 0 | 6,116 | Kootenay | 2200 | 250 | 2.5 | 2,441 | 5,839 |
| Columbia | 2037.5 | 875 | 7.5 | 0 | 7,265 | Kootenay | 2200 | 250 | 3 | 39 | 8,135 |
| Columbia | 2037.5 | 875 | 8 | 0 | 8,852 | Kootenay | 2200 | 250 | 3.5 | 0 | 9,126 |
| Columbia | 2037.5 | 875 | 8.5 | 0 | 9,107 | Kootenay | 2200 | 250 | 4 | 0 | 11,219 |
| Columbia | 2037.5 | 875 | 9 | 0 | 9,815 | Kootenay | 2200 | 250 | 4.5 | 0 | 7,245 |
| Columbia | 2037.5 | 875 | 9.5 | 0 | 8,778 | Kootenay | 2200 | 250 | 5 | 0 | 7,933 |
| Columbia | 2037.5 | 875 | 10 | 0 | 4,476 | Kootenay | 2200 | 250 | 5.5 | 0 | 8,208 |
| Columbia | 2037.5 | 875 | 10.5 | 0 | 257 | Kootenay | 2200 | 250 | 6 | 0 | 5,051 |
| Columbia | 2037.5 | 875 | 11 | 0 | 0 | Kootenay | 2200 | 250 | 6.5 | 0 | 3,256 |
| Columbia | 2037.5 | 875 | 11.5 | 0 | 0 | Kootenay | 2200 | 250 | 7 | 0 | 2,448 |
| Columbia | 2037.5 | 875 | 12 | 0 | 0 | Kootenay | 2200 | 250 | 7.5 | 0 | 3,564 |
| Columbia | 2037.5 | 875 | 12.5 | 0 | 0 | Kootenay | 2200 | 250 | 8 | 0 | 3,601 |
| Columbia | 2037.5 | 875 | 13 | 0 | 0 | Kootenay | 2200 | 250 | 8.5 | 0 | 2,902 |
| Columbia | 2037.5 | 875 | 13.5 | 0 | 0 | Kootenay | 2200 | 250 | 9 | 0 | 3,291 |
| Columbia | 2037.5 | 875 | 14 | 0 | 0 | Kootenay | 2200 | 250 | 9.5 | 0 | 1,143 |
| Columbia | 2037.5 | 875 | 14.5 | 0 | 0 | Kootenay | 2200 | 250 | 10 | 0 | 551 |
| Columbia | 2037.5 | 875 | 15 | 0 | 0 | Kootenay | 2200 | 250 | 10.5 | 0 | 41 |
| Columbia | 2037.5 | 875 | 15.5 | 0 | 0 | Kootenay | 2200 | 250 | 11 | 0 | 0 |
| Columbia | 2037.5 | 875 | 16 | 0 | 0 | Kootenay | 2200 | 250 | 11.5 | 0 | 0 |
| Columbia | 2037.5 | 875 | 16.5 | 0 | 0 | Kootenay | 2200 | 250 | 12 | 0 | 0 |
| Columbia | 2037.5 | 875 | 17 | 0 | 0 | Kootenay | 2200 | 250 | 12.5 | 0 | 0 |
| Columbia | 2037.5 | 875 | 17.5 | 0 | 0 | Kootenay | 2200 | 250 | 13 | 0 | 0 |
| | | | | | Kootenay | 2200 | 250 | 13.5 | 0 | 0 | 0 |
| | | | | | Kootenay | 2200 | 250 | 14 | 0 | 0 | 0 |
| | | | | | Kootenay | 2200 | 250 | 14.5 | 0 | 0 | 0 |
| | | | | | Kootenay | 2200 | 500 | 0 | 521 | 0 | 0 |
| | | | | | Kootenay | 2200 | 500 | 0.5 | 5,422 | 211 | |
| | | | | | Kootenay | 2200 | 500 | 1 | 12,545 | 1,524 | |

| River | Modeled Discharge (m³/s) | | | Weighted Usable Area (m²) | River | Modeled Discharge (m³/s) | | | Depth Bin (m) | Weighted Usable Area (m²) |
|----------|--------------------------|----------|---------------|---------------------------|----------|--------------------------|----------|--------------|---------------|---------------------------|
| | Columbia | Kootenay | Depth Bin (m) | | | Columbia | Kootenay | Large Rivers | | |
| Kootenay | 2200 | 500 | 1.5 | 12,279 | Kootenay | 2200 | 500 | 2,888 | | |
| Kootenay | 2200 | 500 | 2 | 7,584 | Kootenay | 2200 | 500 | 4,495 | | |
| Kootenay | 2200 | 500 | 2.5 | 2,894 | Kootenay | 2200 | 500 | 8,604 | | |
| Kootenay | 2200 | 500 | 3 | 12 | Kootenay | 2200 | 500 | 11,476 | | |
| Kootenay | 2200 | 500 | 3.5 | 0 | Kootenay | 2200 | 500 | 16,614 | | |
| Kootenay | 2200 | 500 | 4 | 0 | Kootenay | 2200 | 500 | 19,338 | | |
| Kootenay | 2200 | 500 | 4.5 | 0 | Kootenay | 2200 | 500 | 21,386 | | |
| Kootenay | 2200 | 500 | 5 | 0 | Kootenay | 2200 | 500 | 13,736 | | |
| Kootenay | 2200 | 500 | 5.5 | 0 | Kootenay | 2200 | 500 | 15,420 | | |
| Kootenay | 2200 | 500 | 6 | 0 | Kootenay | 2200 | 500 | 16,011 | | |
| Kootenay | 2200 | 500 | 6.5 | 0 | Kootenay | 2200 | 500 | 10,240 | | |
| Kootenay | 2200 | 500 | 7 | 0 | Kootenay | 2200 | 500 | 6,694 | | |
| Kootenay | 2200 | 500 | 7.5 | 0 | Kootenay | 2200 | 500 | 4,985 | | |
| Kootenay | 2200 | 500 | 8 | 0 | Kootenay | 2200 | 500 | 5,804 | | |
| Kootenay | 2200 | 500 | 8.5 | 0 | Kootenay | 2200 | 500 | 6,786 | | |
| Kootenay | 2200 | 500 | 9 | 0 | Kootenay | 2200 | 500 | 5,966 | | |
| Kootenay | 2200 | 500 | 9.5 | 0 | Kootenay | 2200 | 500 | 3,162 | | |
| Kootenay | 2200 | 500 | 10 | 0 | Kootenay | 2200 | 500 | 1,140 | | |
| Kootenay | 2200 | 500 | 10.5 | 0 | Kootenay | 2200 | 500 | 59 | | |
| Kootenay | 2200 | 500 | 11 | 0 | Kootenay | 2200 | 500 | 0 | | |
| Kootenay | 2200 | 500 | 11.5 | 0 | Kootenay | 2200 | 500 | 0 | | |
| Kootenay | 2200 | 500 | 12 | 0 | Kootenay | 2200 | 500 | 0 | | |
| Kootenay | 2200 | 500 | 12.5 | 0 | Kootenay | 2200 | 500 | 0 | | |
| Kootenay | 2200 | 500 | 13 | 0 | Kootenay | 2200 | 500 | 0 | | |
| Kootenay | 2200 | 500 | 13.5 | 0 | Kootenay | 2200 | 500 | 0 | | |
| Kootenay | 2200 | 500 | 14 | 0 | Kootenay | 2200 | 500 | 0 | | |
| Kootenay | 2200 | 500 | 14.5 | 0 | Kootenay | 2200 | 500 | 0 | | |
| Kootenay | 2200 | 500 | 15 | 0 | Kootenay | 2200 | 1000 | 0 | | |
| Kootenay | 2200 | 1000 | 0 | 87 | Kootenay | 2200 | 1000 | 0.5 | 2,570 | 181 |
| Kootenay | 2200 | 1000 | 1 | 7,844 | Kootenay | 2200 | 1000 | 1.5 | 11,171 | 4,697 |
| Kootenay | 2200 | 1000 | 2 | 8,183 | Kootenay | 2200 | 1000 | 2.5 | 4,655 | 12,921 |
| Kootenay | 2200 | 1000 | 3 | 84 | Kootenay | 2200 | 1000 | 3.5 | 0 | 9,828 |
| Kootenay | 2200 | 1000 | 4 | 0 | Kootenay | 2200 | 1000 | 4 | 0 | 14,350 |
| Kootenay | 2200 | 1000 | 4.5 | 0 | Kootenay | 2200 | 1000 | 5 | 0 | 16,781 |
| Kootenay | 2200 | 1000 | 5.5 | 0 | Kootenay | 2200 | 1000 | 5.5 | 0 | 21,998 |
| Kootenay | 2200 | 1000 | 6 | 0 | Kootenay | 2200 | 1000 | 6 | 0 | 23,358 |
| Kootenay | 2200 | 1000 | 6.5 | 0 | Kootenay | 2200 | 1000 | 6.5 | 0 | 22,671 |
| Kootenay | 2200 | 1000 | 7 | 0 | Kootenay | 2200 | 1000 | 7.5 | 0 | 15,964 |
| Kootenay | 2200 | 1000 | 8 | 0 | Kootenay | 2200 | 1000 | 8 | 0 | 19,358 |
| Kootenay | 2200 | 1000 | 8.5 | 0 | Kootenay | 2200 | 1000 | 9 | 0 | 10,929 |
| Kootenay | 2200 | 1000 | 9.5 | 0 | Kootenay | 2200 | 1000 | 9.5 | 0 | 5,736 |
| Kootenay | 2200 | 1000 | 10 | 0 | Kootenay | 2200 | 1000 | 10 | 0 | 6,613 |
| Kootenay | 2200 | 1000 | 10.5 | 0 | Kootenay | 2200 | 1000 | 11 | 0 | 5,735 |
| Kootenay | 2200 | 1000 | 11.5 | 0 | Kootenay | 2200 | 1000 | 12 | 0 | 4,827 |
| Kootenay | 2200 | 1000 | 12 | 0 | Kootenay | 2200 | 1000 | 12.5 | 0 | 2,202 |
| Kootenay | 2200 | 1000 | 13 | 0 | Kootenay | 2200 | 1000 | 13 | 0 | 90 |
| Kootenay | 2200 | 1000 | 13.5 | 0 | Kootenay | 2200 | 1000 | 14 | 0 | 0 |
| Kootenay | 2200 | 1000 | 14 | 0 | Kootenay | 2200 | 1000 | 14.5 | 0 | 0 |
| Kootenay | 2200 | 1000 | 15 | 0 | Kootenay | 2200 | 1000 | 15 | 0 | 0 |
| Kootenay | 2200 | 1000 | 15.5 | 0 | Kootenay | 2200 | 1000 | 15.5 | 0 | 0 |
| Kootenay | 2200 | 1000 | 16 | 0 | Kootenay | 2200 | 1000 | 16 | 0 | 0 |

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