RA-05 LOWER SKAGIT RIVER RECREATION FLOW STUDY REPORT

SKAGIT RIVER HYDROELECTRIC PROJECT FERC NO. 553

Seattle City Light

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March 2023
Updated Study Report

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List of Acronyms and Abbreviations

CFR.....Code of Federal Regulations
cfs.....cubic feet per second
City Light.....Seattle City Light
FERC.....Federal Energy Regulatory Commission
GMP.....(RLNRA) General Management Plan
IK .....inflatable kayak
ISR .....Initial Study Report
LP.....licensing participant
MP.....milepost
NPS .....National Park Service
PRM .....Project River Mile
Project .....Skagit River Hydroelectric Project
RLNRA.....Ross Lake National Recreation Area
RSP .....Revised Study Plan
SPD .....Study Plan Determination
SR.....State Route
SRBEIC.....Skagit River Bald Eagle Interpretive Center
SUP .....stand-up paddleboard
U.S.C.....United States Code
USFS.....U.S. Forest Service
USR.....Updated Study Report
WSRA.....Wild and Scenic Rivers Act

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1.0 INTRODUCTION

The RA-05 Lower Skagit River Recreation Flow Study (Recreation Flow Study) is being conducted in support of the relicensing of the Skagit River Hydroelectric Project (Project), Federal Energy Regulatory Commission (FERC) No. 553, as identified in the Revised Study Plan (RSP) submitted by Seattle City Light (City Light) on April 7, 2021 (City Light 2021a). On June 9, 2021, City Light filed a "Notice of Certain Agreements on Study Plans for the Skagit Relicensing" (June 9, 2021 Notice)[1] that detailed additional modifications to the RSP agreed to between City Light and supporting licensing participants (LP) (which include the Swinomish Indian Tribal Community, Upper Skagit Indian Tribe, National Marine Fisheries Service, National Park Service [NPS], U.S. Fish and Wildlife Service, Washington State Department of Ecology, and Washington Department of Fish and Wildlife). The June 9, 2021 Notice proposed no changes to the Recreation Flow Study as described in the RSP.

In its July 16, 2021 Study Plan Determination (SPD), FERC approved the Recreation Flow Study without modification. On March 8, 2022, City Light filed its Initial Study Report (ISR). No requests for modifications to the Recreation Flow Study were filed. FERC's August 8, 2022 Determination on Requests for Study Modifications required no modifications to the Recreation Flow Study.

This study is complete and a report of the study efforts is being filed with FERC as part of City Light's Updated Study Report (USR).

[1] Referred to by FERC in its July 16, 2021 Study Plan Determination as the "updated RSP."

2.0 STUDY GOALS AND OBJECTIVES

The goal of this study is to document the recreation flow needs in the Skagit River from Goodell Creek Boat Launch to the Howard Miller Steelhead Park near Rockport to understand how current Project conditions may influence recreation flow opportunities, to inform future operational scenarios that may include a range of instream flow measures in a future license, and to assess potential constraints such as fish and aquatic resource protection measures, Project operations, or safety concerns. The study is not intended to estimate commercial or non-commercial use numbers on the Skagit River.

The study has the following objectives:

- Describe the recreation boating opportunity in the Skagit River from Goodell Creek Boat Launch to the Howard Miller Steelhead Park near Rockport, including delineating the respective recreation segments, access locations, whitewater difficulty, character of rapids, number of portages, watercraft types, and uniqueness of opportunity;
- Determine the range of boatable flows for watercraft types for the distinct recreation segments; and
- Quantify the frequency, timing, duration, magnitude, and rate of change of flows downstream of the Gorge Powerhouse within the boating flow range.

3.0 STUDY AREA

The study area is the 25.2 mile reach of the Skagit River from Goodell Creek Boat Launch to Howard Miller Steelhead Park. The study area was divided into three distinct recreation segments: river segment 1—Goodell Creek Boat Launch to Copper Creek Boat Access Site (Goodell to Copper); river segment 2—Copper Creek Boat Access Site to Marblemount Boat Launch (Copper to Marblemount); and river segment 3—Marblemount Boat Launch to Howard Miller Steelhead Park (Marblemount to Howard Miller). Recreation boaters may combine segments or further divide segments using both formal and informal access points along the river.

A map of the study area is provided in Figure 3.0-1.

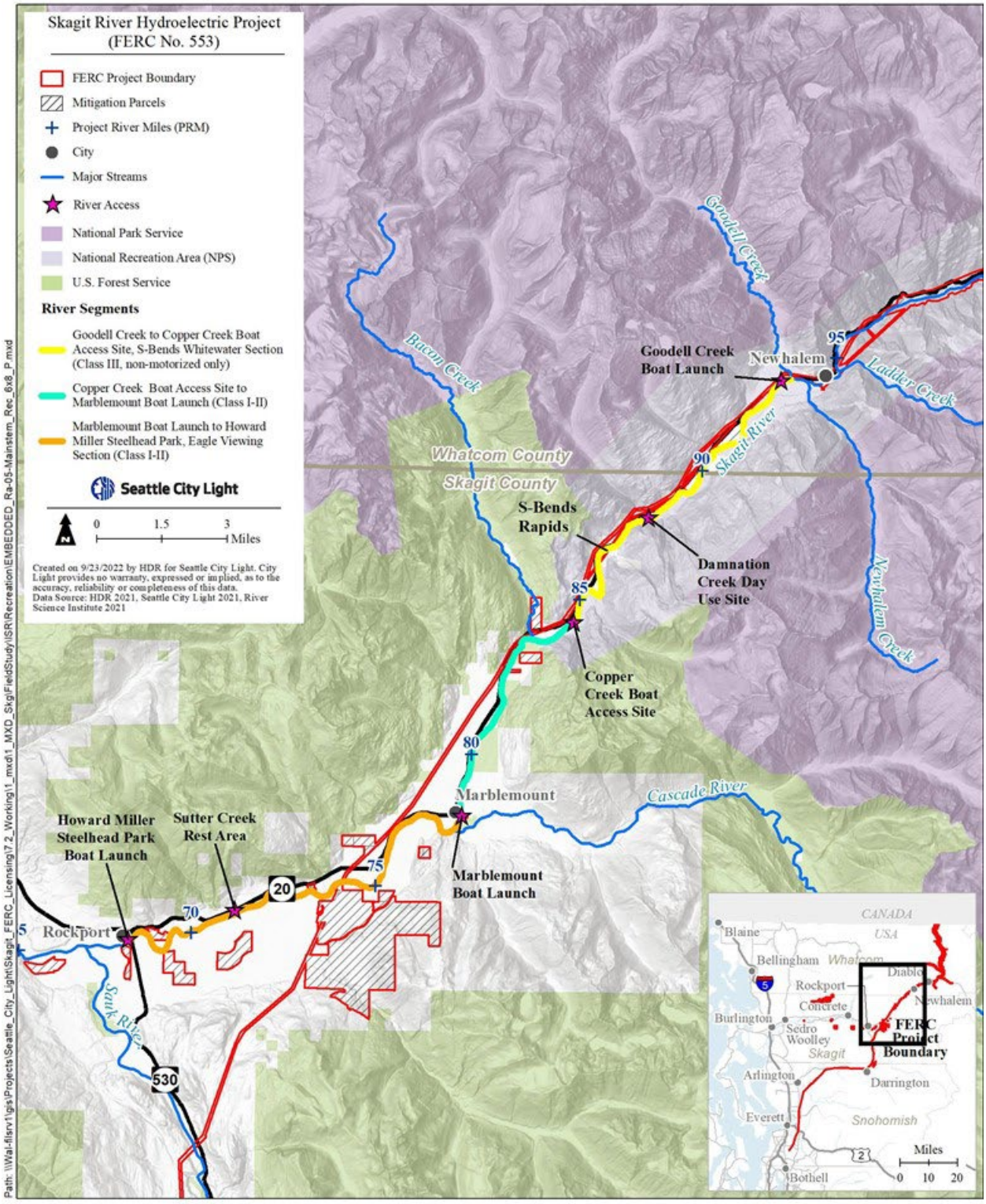


Figure 3.0-1. River segments for the Recreation Flow Study.

4.0 METHODS

The study methods consist of the following four tasks: (1) literature review; (2) boater survey and structured interviews; (3) hydrology analysis; and (4) portage trail assessment at the S-Bends (within the Goodell to Copper segment). Each of these tasks is described below.

4.1 Literature Review

Existing information sources were reviewed describing the river recreation opportunities and boatable recreation flows on this reach of the Skagit River. The literature review included whitewater guidebooks, magazine publications, electronic guidebooks available online, and internet searches for trip reports. The information collected in the literature review was used to summarize the whitewater characteristics for the respective river segments included in this study.

4.2 Boat Survey (Recreation Flow Survey) and Structured Interviews

This study included an internet-based survey focused on recreation flows as recommended by American Whitewater. The survey questions and format are similar to surveys implemented for other FERC relicense proceedings and described in Whittaker et al. (1993) and Whittaker et al. (2005). The survey was designed to obtain boatable recreation flows for respective watercraft types for the three distinct river segments. In addition, the survey included questions specific to the designated river access sites and facilities, including Goodell Creek Boat Launch, Copper Creek Boat Access Site, Damnation Creek Boat-in Picnic Site, Marblemount Boat Launch and Howard Miller Steelhead Park. The questions focused on visitor preferences and uses related to these river access sites and were consistent with similar questions in City Light's RA-01 Recreation Use and Facility Assessment survey instrument (City Light 2022).

The survey went live on November 9, 2021. Links to the survey were published on the Skagit River Hydroelectric Project Relicensing website and forwarded to all LPs. The survey link was forwarded to river recreation user groups. A list of river recreation user groups who received the survey link is provided in Table 5.2-1. The survey remained open until September 2022.

Information about the river recreation survey was posted at river access locations and other key locations. The information signs included a link to the electronic survey and a QR code for smart phone users to access the survey.

Structured interviews were conducted with resource agency staff, commercial outfitters, and individuals in the recreation boating community with knowledge of the river segments on this reach of the Skagit River. The interviews focused on resource agency management of river recreation, watercraft types, opinions on whitewater difficulty, estimated range of boatable flows for respective watercraft types, commercial and non-commercial use patterns, and identification of other individuals with knowledge of whitewater boating on these river segments. The boating community helped City Light select individuals for the structured interviews. The recreation flow survey allowed respondents to nominate themselves for a structured interview.

4.3 Hydrology Analysis

Hydrology analysis of the Skagit River downstream of Gorge Powerhouse included the annual frequency, timing, duration, magnitude, and rate of change using data from the Newhalem gage

(USGS gage 12178000) and the Marblemount gage (USGS gage 12181000). Additional analysis was conducted upon completion of the recreation flow survey combined with results from structured interviews to assess the frequency of boating opportunities for respective watercraft in the three river segments. Tributaries with the potential to increase baseflows in the Skagit River downstream of the USGS gages specified above were considered in the frequency of boating opportunities analysis for respective recreation segments.

4.4 S-Bends Portage Assessment

City Light evaluated the portage trail at the S Bends Rapid starting at Project River Mile (PRM) 87.2 in the Goodell to Copper segment as requested by American Whitewater. The evaluation included an assessment of current conditions of the portage trail, trail width relative to watercraft being portaged, tread surface, and access to the portage trail from the river. Trail features were documented with photographs, including areas of potential resource degradation.

5.0 RESULTS

The study results include the following: (1) description of the three river segments, types of river recreation, and regulations based on literature review and direct observations; (2) river recreation use patterns, flow preferences, and infrastructure needs based on recreation flow survey responses and structured interviews; (3) hydrology analysis for the respective river segments including the frequency of boating opportunities for respective watercraft based on flow preferences developed from the recreation flow survey responses and structured interviews; and (4) an assessment of the S-Bends portage trail.

5.1 Literature Review

A review of existing information sources describing the river recreation opportunities and boatable recreation flows on the three river segments of the Skagit River was initiated in the summer of 2021. Information sources included whitewater guidebooks, online guidebooks, and internet searches for trip reports. A site visit was conducted in July 2021 to supplement the literature review with direct observations of the river segments, facilities, and river recreation opportunities. Table 5.1-1 summarizes the initial results of the literature review and site visit for the river recreation opportunities on the three segments of the Skagit River combined with updates on seasonal use patterns derived from the recreation flow survey responses and structured interviews.

The three Skagit River segments included in this study have been identified in whole or part in whitewater guidebooks and maps. Wolf Bauer, founder of the Washington Kayak Club, included all three river segments in his 1965 map of Washington state whitewater opportunities (American Whitewater 2021a). Guidebook author Douglass North included a detailed map, flow recommendations, and description of the river segment from Goodell to Copper in his whitewater guidebook titled Washington Whitewater, the 34 Best Whitewater Rivers (North 1992). Jeff and Tonya Bennett's guidebook, A Guide to the Whitewater Rivers of Washington, Over 320 Trips for Raft, Kayak, and Canoe (Bennett, n.d.), includes a detailed description for the Goodell to Copper segment and the Marblemount to Howard Miller river segment. American Whitewater provides a description, map, link to flow information, and trip reports for the river segments from Goodell to Copper (American Whitewater 2021b) and from Copper to Howard Miller (American Whitewater 2021c).

From October 2007 to March 2008, American Whitewater conducted an internet-based survey to assess the quality and popularity of rivers in the North Cascades (American Whitewater 2021d). The survey results included a list of the top 25 most popular rivers based on survey responses. The river segment from Goodell to Copper was ranked the 12th most popular run in the North Cascades out of 150 river segments listed in the survey. The river segment from Copper to Howard Miller, combining two of the river segments delineated in this study, was ranked 16th most popular.

Table 5.1-1. River recreation characteristics for three segments of Skagit River.

River Segment	Put-in	Take-out	Length (miles)	Gradient (feet/mile)	Whitewater Difficulty[1]	Watercraft Type[2]	Typical Season of Use	Guidebook Flow Range[3] (cfs)	Information Source
1-Goodell to Copper	Goodell Creek Boat Launch	Copper Creek Boat Access Site	8.7	12	II-III	Non-motorized segment: kayaks, canoes, IKs, SUPs, rafts, dories	Peak use in July, August, and September (although use does occur year-round)	1,500-15,000	Bennett,[4] American Whitewater[5]
2-Copper to Marblemount	Copper Creek Boat Access Site	Marblemount Boat Launch	5.9	10	I-II	Kayaks, canoes, IKs, SUPs, rafts, dories	Peak use in July, August, and September (although use does occur year-round)	1,500-12,000	American Whitewater[6]
3-Marblemount to Howard Miller	Marblemount Boat Launch	Howard Miller Steelhead Park	10.6	8	I-II	Kayaks, canoes, IKs, SUPs, rafts, dories, motorized boats	Peak use in December, January, and February coinciding with eagle viewing (although use does occur year-round)	2,000-7,000	Bennett[4]

1 International scale of whitewater difficulty.
2 IK = inflatable kayak; SUP = stand-up paddleboard.
3 Flow range based on literature review.
4 Bennett and Bennett, n.d.
5 American Whitewater 2021b.
6 American Whitewater 2021c.

5.1.1 River Segment 1: Goodell Creek Boat Launch to Copper Creek Boat Access Site (Goodell to Copper)

The 8.7 mile river segment from Goodell to Copper is described as an excellent river section for advanced beginners to practice paddling skills (American Whitewater 2021b). The wave train in the S-Bends Rapid is the largest hydraulic feature and is rated Class III whitewater difficulty (Figure 5.1-1). This segment of the river is suitable for inflatable and hard-sided watercraft.

Goodell Creek Boat Launch serves as the put-in location. Facilities at the put-in include parking, restrooms, an information sign, and picnic tables (Figure 5.1-2). The launch site does not include a ramp with direct access to the river for trailered vehicles. Boats must be carried to the river from the unloading zone (Figure 5.1-3). Goodell Creek Campground is adjacent to the boat launch.

Damnation Creek Boat-in Picnic Site is a day use site adjacent to the river 4.9 miles downstream from the Goodell Creek put-in. The site is accessible from the river only, providing an intimate experience in the shaded northwest forest buffering the sounds of the State Route (SR) 20 corridor. The site contains picnic tables (Figure 5.1-4) and restroom.

The Copper Creek Boat Access Site, 8.7 miles from the Goodell Creek put-in, is typically used as the take-out for this river segment. The site includes a restroom, gravel boat ramp, and circular drive for efficient traffic flow of trailered vehicles. The Copper Creek Boat Access Site is accessed via a dirt road just within the downstream entrance to Ross Lake National Recreation Area (RLNRA) on SR 20.

The Goodell to Copper river segment is located entirely within the RLNRA boundary. All access and day use sites along with associated facilities are managed by the NPS. This area is designated as the Skagit River Zone in the RLNRA General Management Plan (NPS 2012). No overnight camping is allowed on the Skagit River between the Goodell Creek Boat Launch and the RLNRA downstream boundary. NPS requires all vessels operating on the Skagit River within the RLNRA to have a permit (NPS 2021b). These permits are self-issued via registration at the Goodell Creek Boat Launch site kiosk. The Skagit River Zone is managed for non-motorized river-based recreation providing visitor experiences with limited solitude; recreational motorboats are not permitted on the Skagit River within the RLNRA. The RLNRA General Management Plan (GMP) measures visitor experience based on encounters with other rafting parties (Table 3.4 in RLNRA GMP, NPS 2012). The baseline for the number of encounters is based on observations during the peak months in August and September 2010. The 2010 baseline rafting encounter numbers are not specified in the RLNRA GMP (NPS 2012). Management actions may include the following if the number of rafting encounters exceeds the 2010 threshold: visitor information, voluntary registration, registration/permit/scheduling systems (NPS 2012).

Figure 5.1-1. Rafters navigating the wave train in the S-Bends Rapid.

Figure 5.1-2. Unloading zone, information sign, and picnic tables at Goodell Creek Boat Launch.

Figure 5.1-3. Goodell Creek Boat Launch ramp.

Figure 5.1-4. Damnation Creek Boat-in Picnic Site.

5.1.2 River Segment 2: Copper Creek Boat Access Site to Marblemount Boat Launch (Copper to Marblemount)

The 5.9 mile river segment from Copper to Marblemount is rated Class I-II whitewater difficulty. This low gradient river section offers opportunities to quietly float and observe the adjacent forest, meander bends, and gravel bars set against the broad landscape views of mountains and glaciers to the east. SR 20 is visible from the river in some locations. The Marblemount Boat Launch can be used as the take-out, although some boaters combine this segment with the section downstream choosing to float to Howard Miller Steelhead Park (American Whitewater 2021c). Marblemount Boat Launch includes a gravel ramp for trailered boats (Figure 5.1-5), gravel parking lot for vehicles and trailers (Figure 5.1-6), restroom, and river trail (Figure 5.1-7). The Marblemount Boat Launch is managed by the U.S. Forest Service (USFS) (Mt. Baker-Snoqualmie National Forest).

Figure 5.1-5. Marblemount Boat Launch.

Figure 5.1-6. Parking Area at Marblemount Boat Launch.

Figure 5.1-7. River Walk Trailhead at Marblemount Boat Launch.

5.1.3 River Segment 3: Marblemount Boat Launch to Howard Miller Steelhead Park (Marblemount to Howard Miller)

The river segment from Marblemount to Howard Miller Steelhead Park is rated Class I-II whitewater difficulty. This 10.6 mile section is similar in character to the river segment from Copper Creek to Marblemount and offers opportunities to quietly float and observe the adjacent forest, meander bends, and gravel bars set against the broad landscape views of mountains and glaciers to the east (Figure 5.1-8). In addition, this section flows through the Skagit River Bald Eagle Natural Area (The Nature Conservancy 2021) where large populations of bald eagles spend the winter. This segment of the Skagit River is popular with floaters during the winter months to observe the bald eagles. Boaters are asked to launch after 11 AM during the winter season to avoid disturbing eagles in the morning hours when they typically feed on adjacent gravel bars.

Howard Miller Steelhead Park is managed by Skagit County Parks and Recreation Department (Skagit County Parks and Recreation 2021). Facilities at the 104-acre Howard Miller Steelhead Park include a paved boat ramp (Figure 5.1-9), restrooms, showers, playground, picnic area and shelter, trails for hiking, biking and horses, wildlife viewing, RV dump station, cabin rental, and camping. Skagit County charges a $5 fee to use the boat ramp.

The Skagit River Bald Eagle Interpretive Center (SRBEIC) is co-located at the Howard Miller Steelhead Park. The SRBEIC hosts guided walks in December and January along the Skagit River and provides educational programs focused on the Skagit River ecosystem (SRBEIC Programs 2021).

The Sutter Creek rest area at milepost (MP) 100 on SR 20 offers an alternative location to access the river within the Marblemount to Howard Miller segment. Older maps for the river corridor identify Sutter Creek as a boat ramp suitable for trailered boats. The boat ramp is no longer suitable for trailered boat access due to scour from Sutter Creek (Figure 5.1-10). This location is more suitable for smaller boats carried to the river down the bank. The site has limited parking and offers only a small turn-around not suited for trailered vehicles. Additional parking is available at the Sutter Creek rest area just a short walk (approximately 200 yards) away from Sutter Creek.

Figure 5.1-8. Landscape views of mountains and glaciers from Skagit River near Sutter Creek.

Figure 5.1-9. Boat ramp at Howard Miller Steelhead Park.

Figure 5.1-10. Sutter Creek boat launch eroded by Sutter Creek.

5.1.4 Special Use Permits for Commercial Uses on the Skagit River

Commercial use within the Mt. Baker-Snoqualmie National Forest and RLNRA for purposes such as filming, outfitter guides, or research requires a special use permit. Permits are required for all vessels used on the Skagit River inside the RLNRA (NPS 2021b). The NPS does not require individual persons to acquire a permit to recreate on the Skagit River in the RLNRA. Permits are not required on the Copper to Marblemount and Marblemount to Howard Miller river segments for non-commercial purposes.

The river segment from Goodell to Copper is located entirely within the RLNRA. As such, outfitters operating in this segment of the Skagit River must hold a commercial use authorization permit with the NPS to operate (NPS 2021a). This includes outfitters launching at the Copper Creek Boat Access Site and traveling downstream outside the RLNRA boundary. Five to six commercial outfitters have been authorized during the past decade by the NPS to offer trips on the Skagit River within the RLNRA boundary.

In the river segment from Copper to Marblemount, agency jurisdiction transitions from NPS to USFS (Mt. Baker-Snoqualmie National Forest) at the boundary of the RLNRA. Land ownership downstream of the RLNRA boundary is a patchwork of federal, state, county, and private lands. The USFS is authorized under the Skagit River Wild and Scenic River designation to manage the 58.5 mile recreation segment of the Skagit River from the confluence with Bacon Creek to a point just east of the town of Sedro-Woolley. Outfitters operating on the 58.5 mile recreation segment must be authorized to operate under a special use permit with the USFS. The 58.5 mile recreation segment overlaps with portions of the Copper to Marblemount river segment (Bacon Creek

confluence to Marblemount) and the entire river segment from Marblemount to Howard Miller Steelhead Park. Furthermore, the Marblemount Boat Launch is on lands managed by the USFS as part of the Mt. Baker-Snoqualmie National Forest. Outfitters utilizing the Marblemount Boat Launch must have a special use permit with the USFS.

5.1.5 Wild and Scenic Designation

The Skagit Wild and Scenic River was established in 1978. The system includes 158.5 miles of the Skagit River and its tributaries—the Sauk, Suiattle, and Cascade rivers. The 58.5 mile Skagit River segment of the Skagit Wild and Scenic River System is designated as recreational. The 58.5 mile recreation segment starts at the confluence of Bacon Creek with the Skagit River, downstream and outside of the RLNRA boundary, and extends downstream to a point just east of the town of Sedro-Woolley (USFS 2021). Land ownership on the 58.5 mile recreation segment is a patchwork of federal, state, county, and private lands with the majority in private ownership. Public access to the 58.5 mile recreation segment is restricted due to private land ownership limiting egress to and from the river.

The Skagit River Wild and Scenic River authorizing legislation designates the USFS (Mt. Baker-Snoqualmie National Forest) as the lead agency to manage the 58.5 mile recreation segment of the Skagit River. The USFS (Mt. Baker-Snoqualmie National Forest) manages the Skagit Wild and Scenic River System to protect and enhance the free-flowing condition, water quality, and outstanding values for which the river was designated, while providing for public recreation and resource uses that do not adversely impact or degrade those values. (USFS 2021). Under the recreation classification, the USFS oversees management of recreation opportunities, public access, aesthetics, and number of recreation users (USFS 1983).

The NPS identified the Skagit River from Gorge Powerhouse to Bacon Creek as eligible and suitable for status as wild and scenic, with the "recreational" classification, but this segment of the river is not yet designated (NPS 2012). The wild and scenic study identified the following outstandingly remarkable values for this river segment: fish, wildlife, geology, pre-history, history, scenery, and recreation.

5.2 Recreation Flow Survey and Structured Interviews

The recreation flow survey and structured interview questions were developed in the fall of 2021. Due to the timing of FERC's SPD, City Light shifted the study implementation schedule delaying development of the recreation flow survey and structured interview questions until the fall of 2021. Structured interviews took place with resource agency staff, commercial outfitters, and non-commercial boaters in the spring, summer, and fall of 2022.

5.2.1 Recreation Flow Survey

The recreation flow survey was launched on November 9, 2021 as an online survey. The full recreation flow survey is provided in Attachment A.

The recreation flow survey launch was announced on the Skagit River Hydroelectric Project Relicensing website recreation work group page on November 10, 2021 (City Light 2021b). LPs were informed of the recreation flow survey launch in the weekly email newsletter (Skagit Relicensing Digest Volume 23, City Light 2021c). City Light informed national and regional river

recreation organizations of the recreation flow survey (Table 5.2-1) requesting these organizations, in turn, to inform their membership of the survey. City Light shared the recreation flow survey with river recreation groups and interested persons throughout the study period. Laminated signs describing the recreation flow survey including the URL and a QR code were posted on signboards at the designated river access sites in the three river segments (Attachment B). The recreation flow survey was open for public responses through September 30, 2022.

Table 5.2-1. Recreation flow survey outreach.

Entity	Website	Contact Person	Date Distributed
Skagit Relicensing Digest, Volume 23	https://triangleassociates.sharepoint.com/sites/SkagitRelicensingSharedLocationforLicensingParticipantandCit/Facilitator%20Digests/Forms/AllItems.aspx	Alex Sweetser	Monthly starting November 16, 2021
Skagit Relicensing Recreation Work Group	https://triangleassociates.sharepoint.com/sites/SkagitRelicensingSharedLocationforLicensingParticipantandCit/RecreationalWG	Jacob Hibbeln	November 10, 2021
American Whitewater	https://www.americanwhitewater.org	Tom O'Keefe, Pacific Northwest Stewardship Director	November 12, 2021; June 22, 2022
Mountaineers	www.mountaineers.org	Conor Marshall, Advocacy and Engagement Manager	November 12, 2021
Washington Kayak Club	https://wakayakclub.clubexpress.com/content.aspx?page_id=0&club_id=821680	Tomas Tabisola, President	November 12, 2021; April 1, 2022; May 11, 2022
Washington Recreational River Runners	https://wrrr.org	Nancy Douty, President	November 12, 2021; May 11, 2022; June 22, 2022
Paddle Trails Canoe Club	https://paddletrails.org/content.aspx?page_id=0&club_id=697352	Jesse Swedlund, President	November 12, 2021; May 11, 2022; June 22, 2022

A total of 76 responses were received for the recreation flow survey. Seventy-five percent of the respondents were male and 21 percent were female (Figure 5.2-1). The remainder of the respondents identified as non-binary, indicated their preference not to answer or failed to respond to this question. Three age groups represented the majority of the survey respondents, including age 35-44 (26 percent), age 45-54 (25 percent), and age 65 and older (21 percent) (Figure 5.2-2). The majority of respondents listed Washington as their primary residence (Figure 5.2-3).

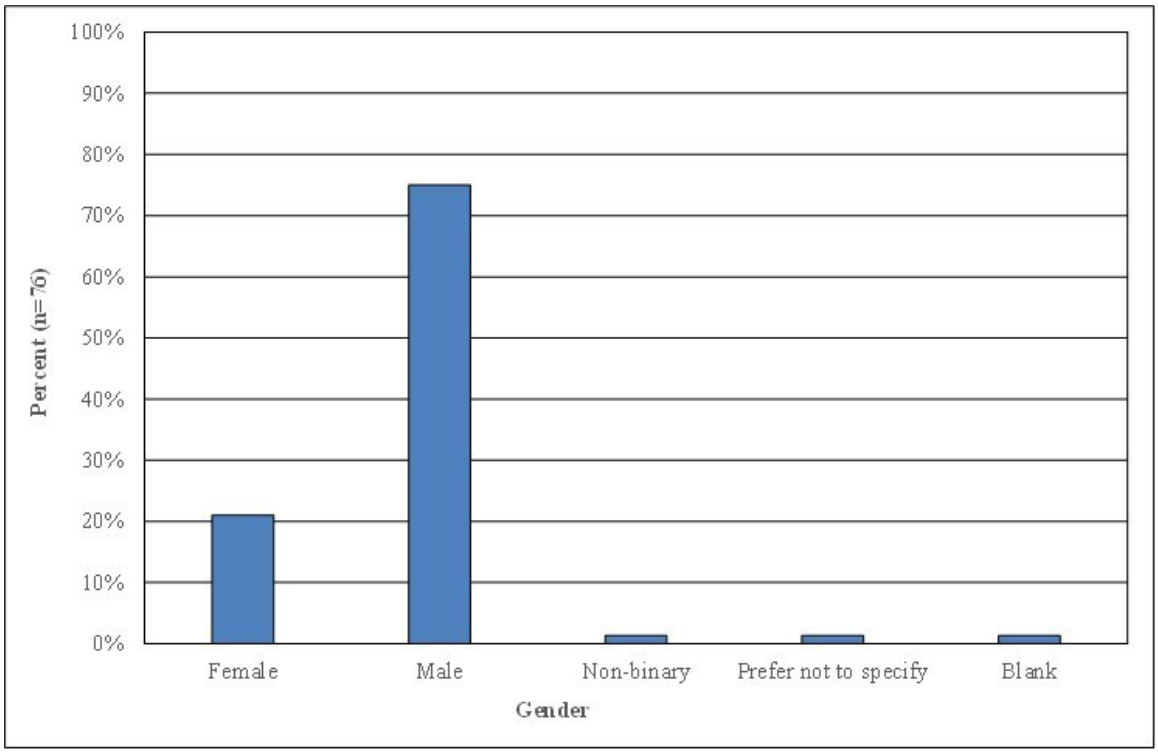


Figure 5.2-1. Recreation flow survey respondent composition.

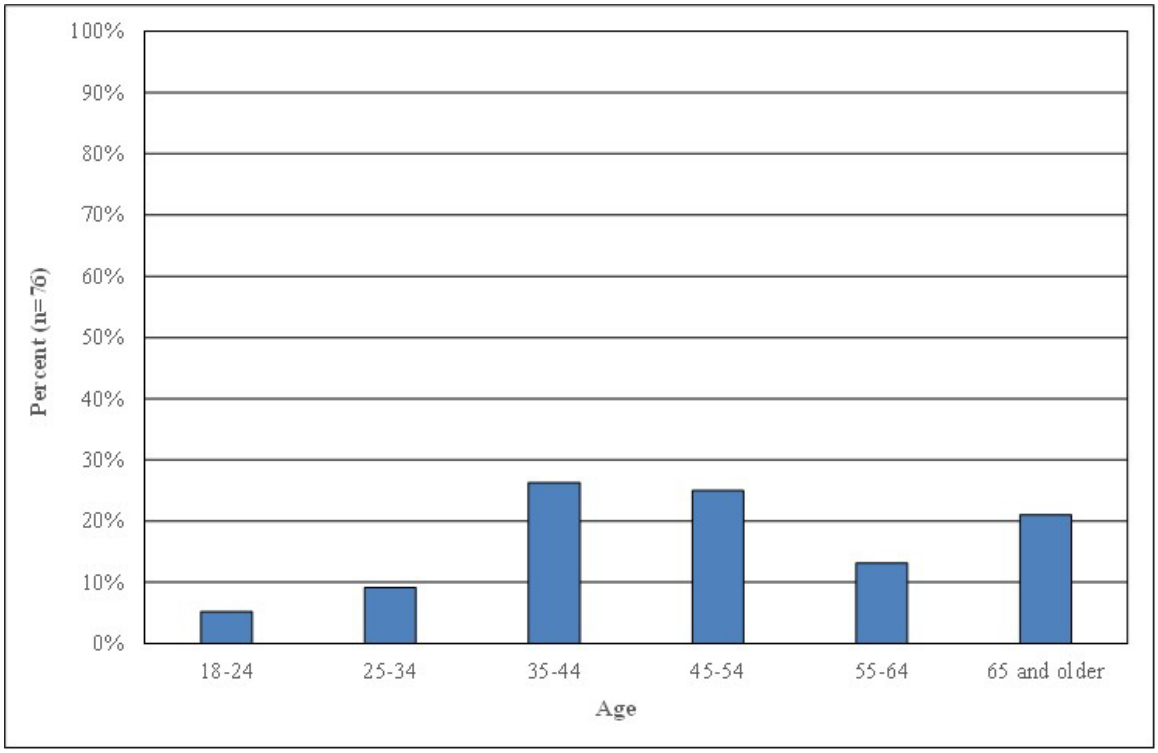


Figure 5.2-2. Recreation flow survey respondent age distribution.

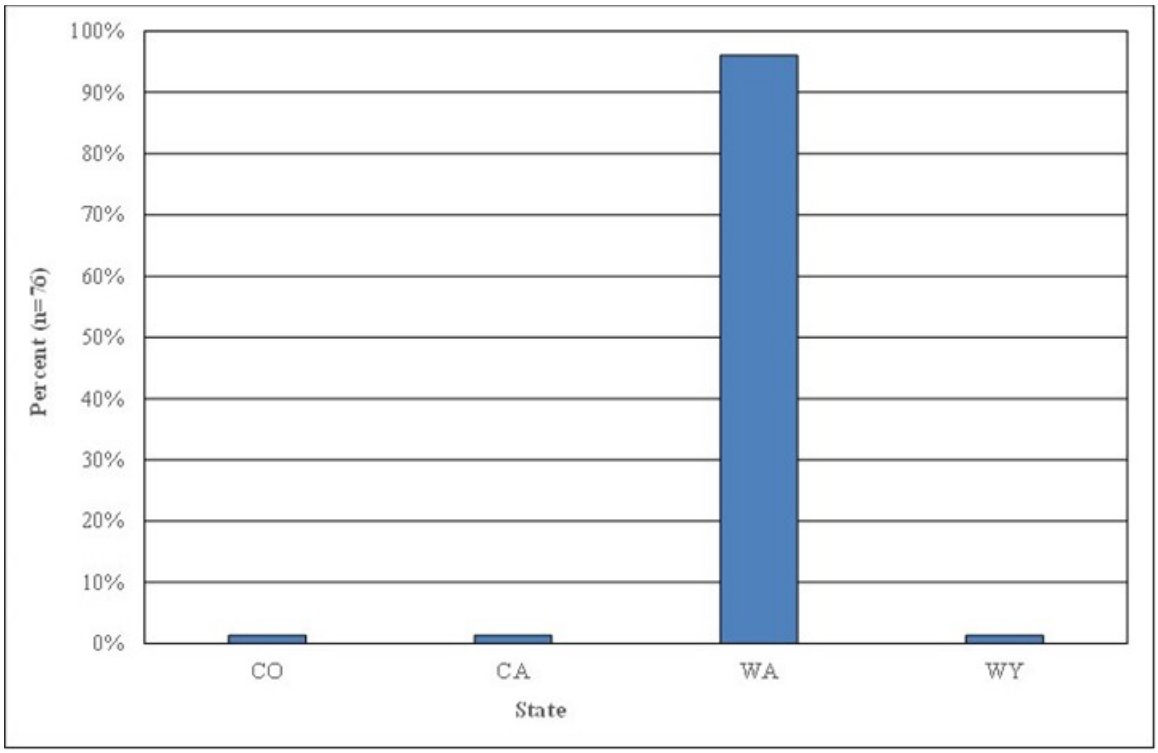
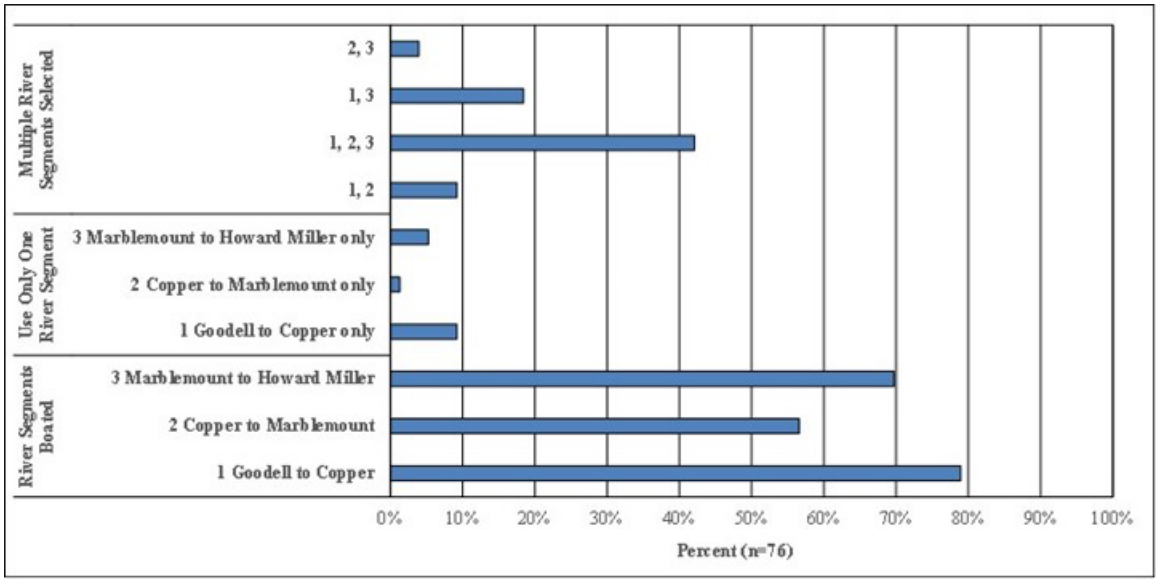


Figure 5.2-3. Recreation flow survey respondent primary residence.

Survey respondents were asked to identify which of the three river segments they have boated on the Skagit River. The largest percentage of respondents (79 percent) selected the Goodell to Copper river segment, followed by the Marblemount to Howard Miller river segment (70 percent), and lastly, the Copper to Marblemount river segment (57 percent). See Figure 5.2-4. Most survey respondents have recreated on more than one of the river segments with 42 percent of respondents having experience on all three river segments. The Copper Creek to Marblemount river segment had the least number of respondents as a stand-alone river recreation destination. In structured interviews, respondents indicated that the Copper Creek to Marblemount segment was typically done in combination with either the upstream or downstream river segment to add length to a trip but was rarely done in isolation.

Survey respondents specified how many years and days per year they had been recreating on the respective river segments (Figure 5.2-5 and Figure 5.2-6). Weekends are the most popular days of the week to recreate on all three river segments followed next by weekdays and then holidays (Figure 5.2-7). Survey respondents boat all three river segments every month of the year (Figure 5.2-8). The months of July, August and September had the highest number of survey responses for the Goodell to Copper river segment. For the river segment from Marblemount to Howard Miller, December and January had the highest number of survey responses.



1 Goodell to Copper segment (S-Bends).
2 Copper to Marblemount segment.
3 Marblemount to Howard Miller segment (eagle viewing).

Figure 5.2-4. River segments boated by recreation flow survey respondents.

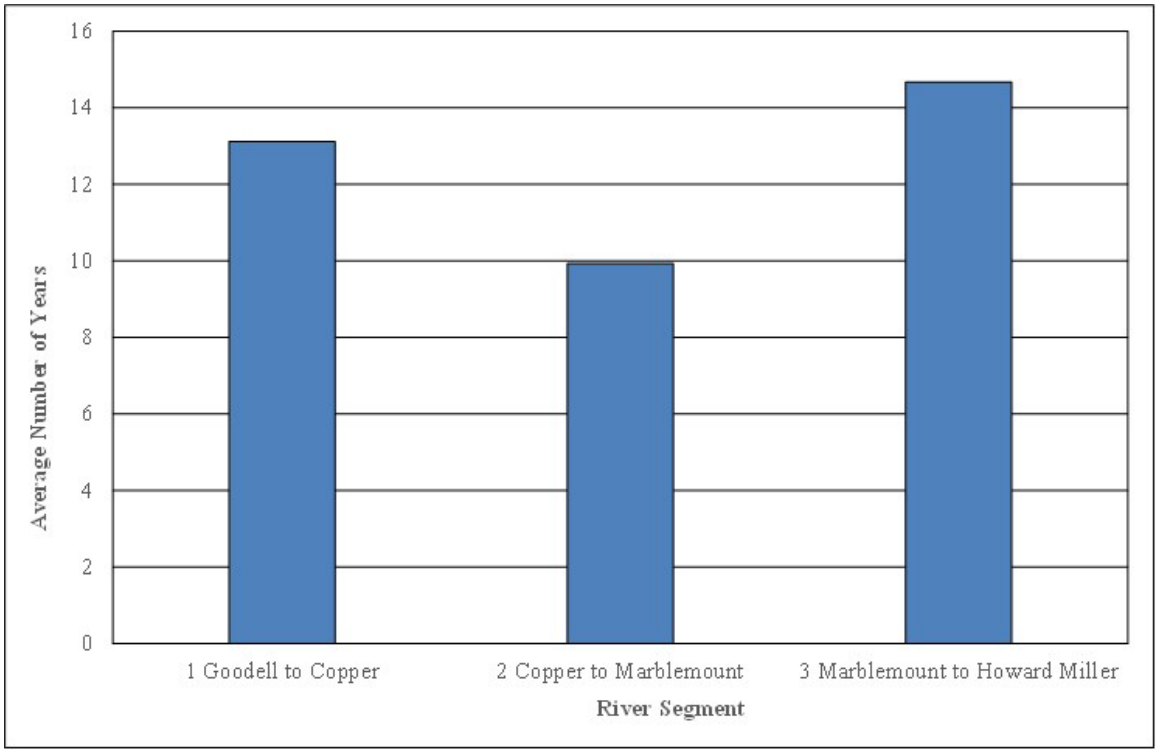


Figure 5.2-5. Average number of years survey respondents have boated on respective river segments.

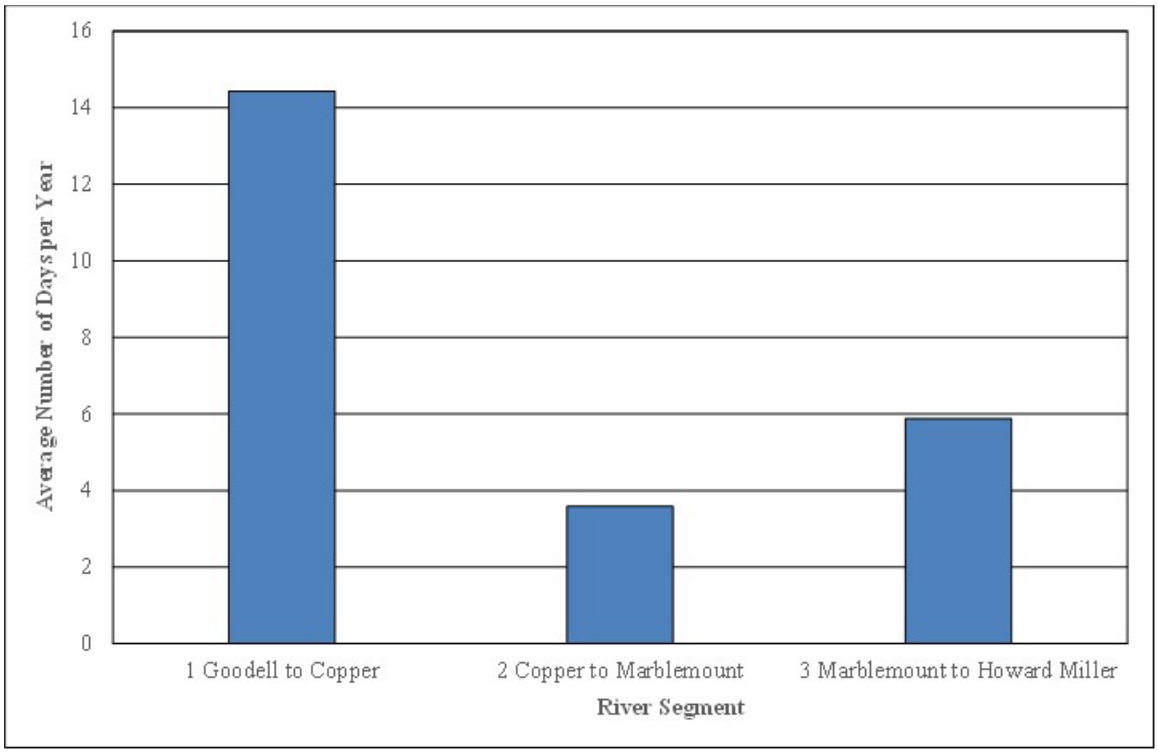


Figure 5.2-6. Average number of days per year survey respondents boat on respective river segments.

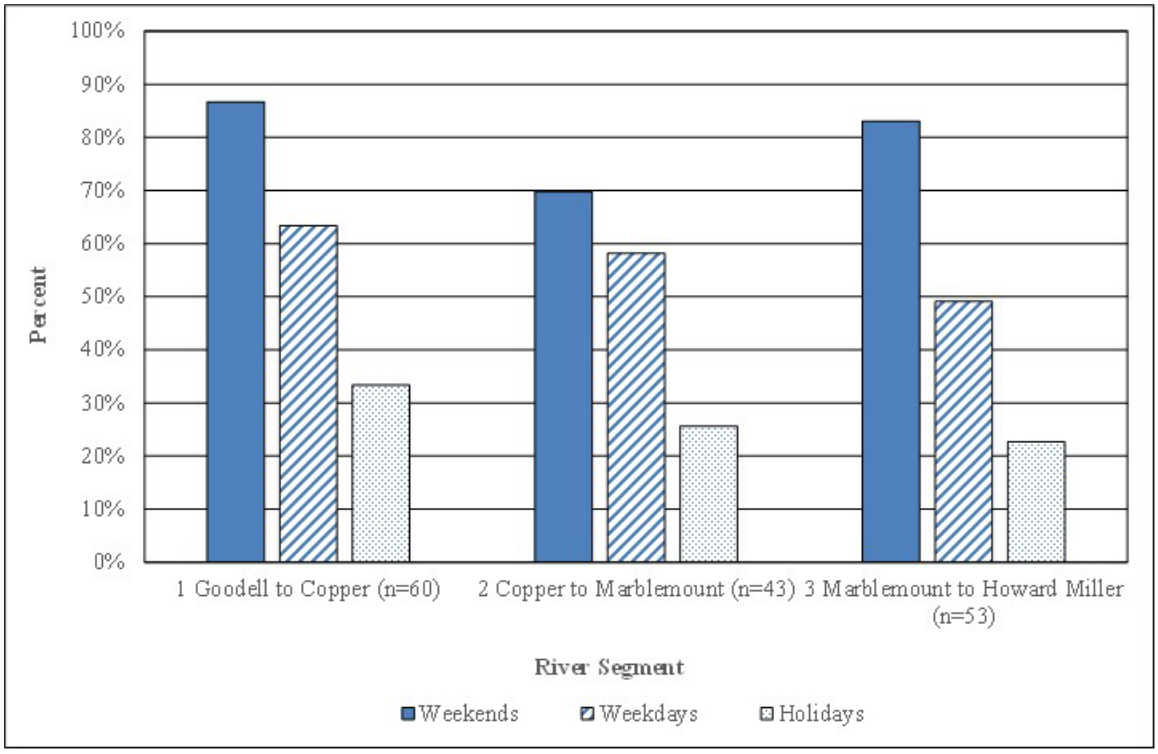


Figure 5.2-7. Day of week and holidays survey respondents boat on respective river segments.

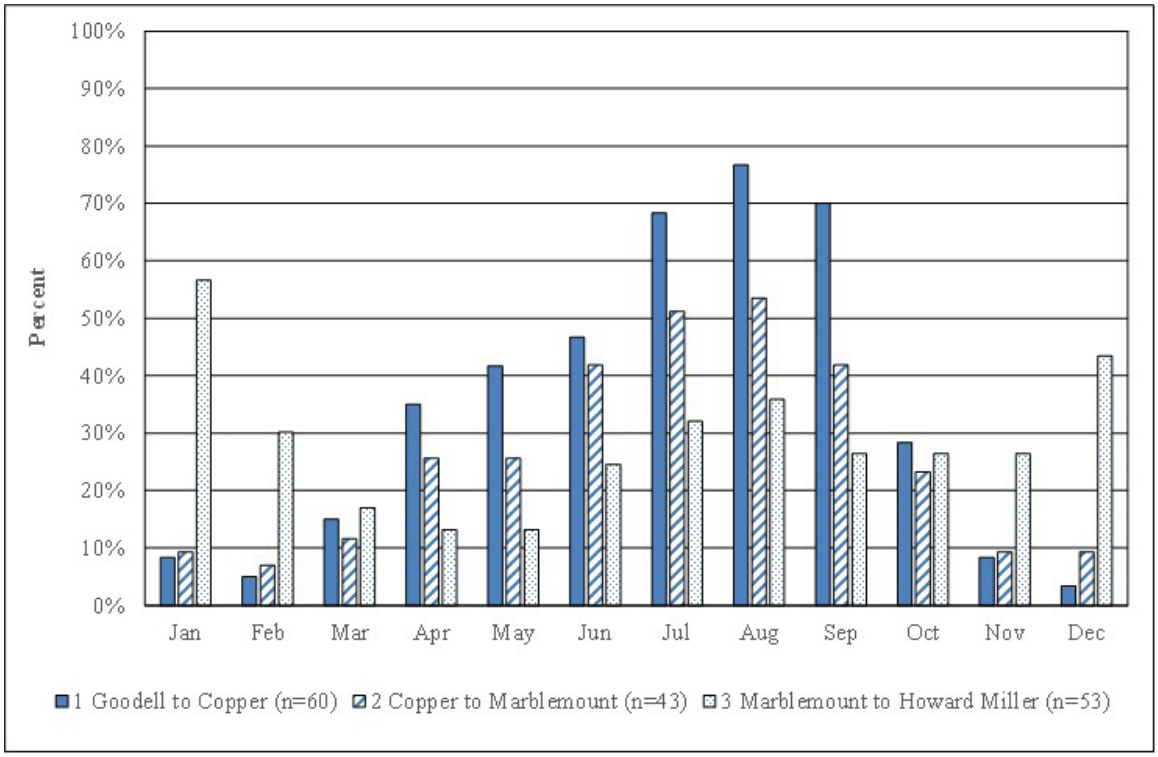


Figure 5.2-8. Time of year survey respondents boat on respective river segments.

Survey respondents selected a number of reasons why they choose to recreate on the Skagit River from a list of choices in the survey (Figure 5.2-9). The river recreation offered by the Skagit was the highest selection (95 percent) followed by eagle viewing (66 percent), whitewater difficulty (64 percent), and flows are typically suitable for skill and experience level (61 percent). Survey respondents provided additional reasons why they choose to recreate on the Skagit River. Some of these reasons included the following: beauty, suitable for beginners, great for taking kids, and employment as commercial boatman. In addition to boating, survey respondents selected from a list of other activities they participate in while recreating on the Skagit River (Figure 5.2-10). Of these other activities, birding and wildlife viewing received the highest number of survey responses (69 percent).

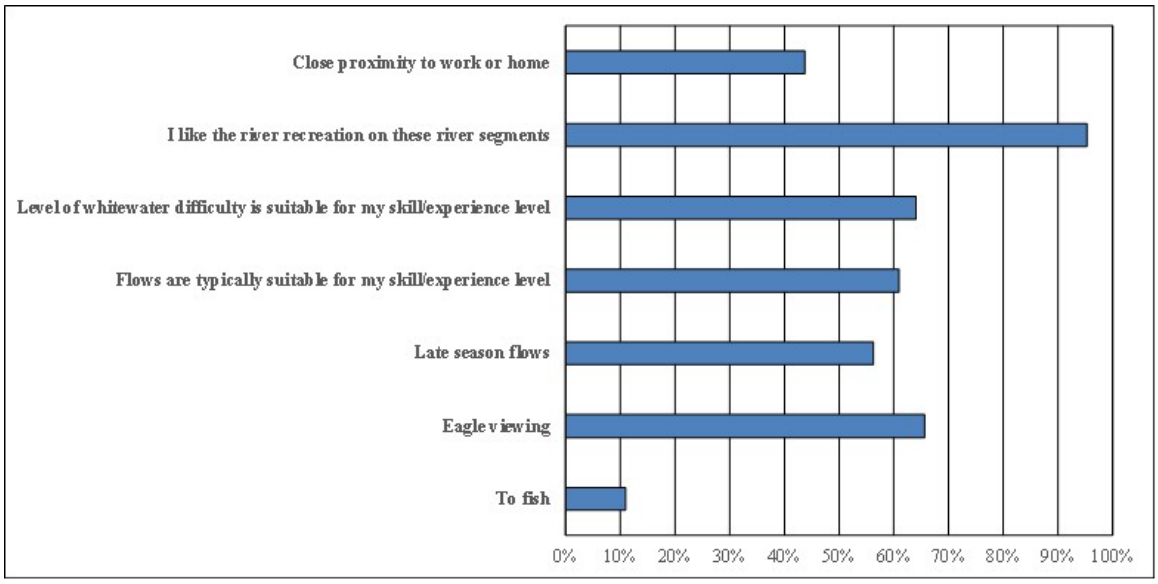


Figure 5.2-9. Survey respondent reasons for choosing to recreate on the respective river segments.

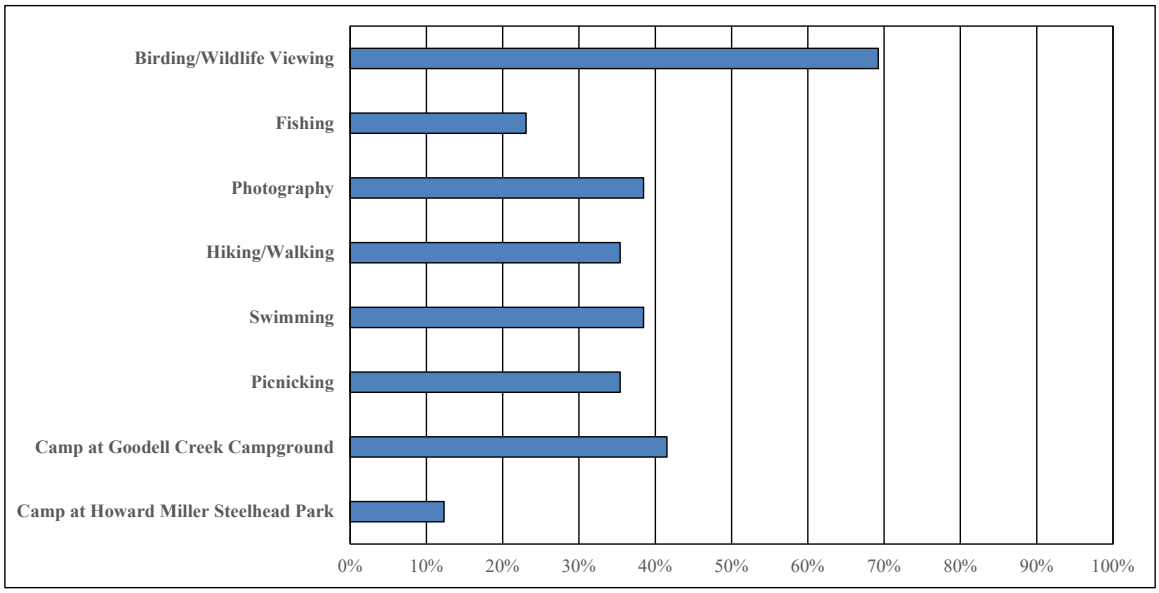


Figure 5.2-10. Other activities survey respondents participate in while boating on the respective river segments.

Survey respondents use a variety of watercraft on the three river segments (Table 5.2-2). Large inflatable boats were the most popular watercraft on all three river segments (Figure 5.2-11). Closed-deck hardshells were the second most popular watercraft on the Goodell to Copper river segment and the Copper to Marblemount river segment, followed closely by small inflatables. On the Marblemount to Howard Miller river segment, survey respondent watercraft choices were nearly evenly spread across closed-deck hardshells, open canoes, and small inflatables. Motorboats were used on the Marblemount to Howard Miller segment only.

Table 5.2-2. Watercraft used by survey respondents on the respective river segments (n=68).

River Segment	Closed-Deck Hardshell (Kayak, C1, C2)[1]	Open Canoe	Small Inflatable (Packraft, IK, SUP)	Large Inflatable (Raft or Cataraft)	Dory	Motorboat
Goodell to Copper	43%	9%	34%	63%	1%	0%
Copper to Marblemount	24%	10%	22%	43%	3%	0%
Marblemount to Howard Miller	19%	19%	16%	50%	6%	3%

1 C1: single person closed deck hardshell; C2: two-person closed deck hardshell.

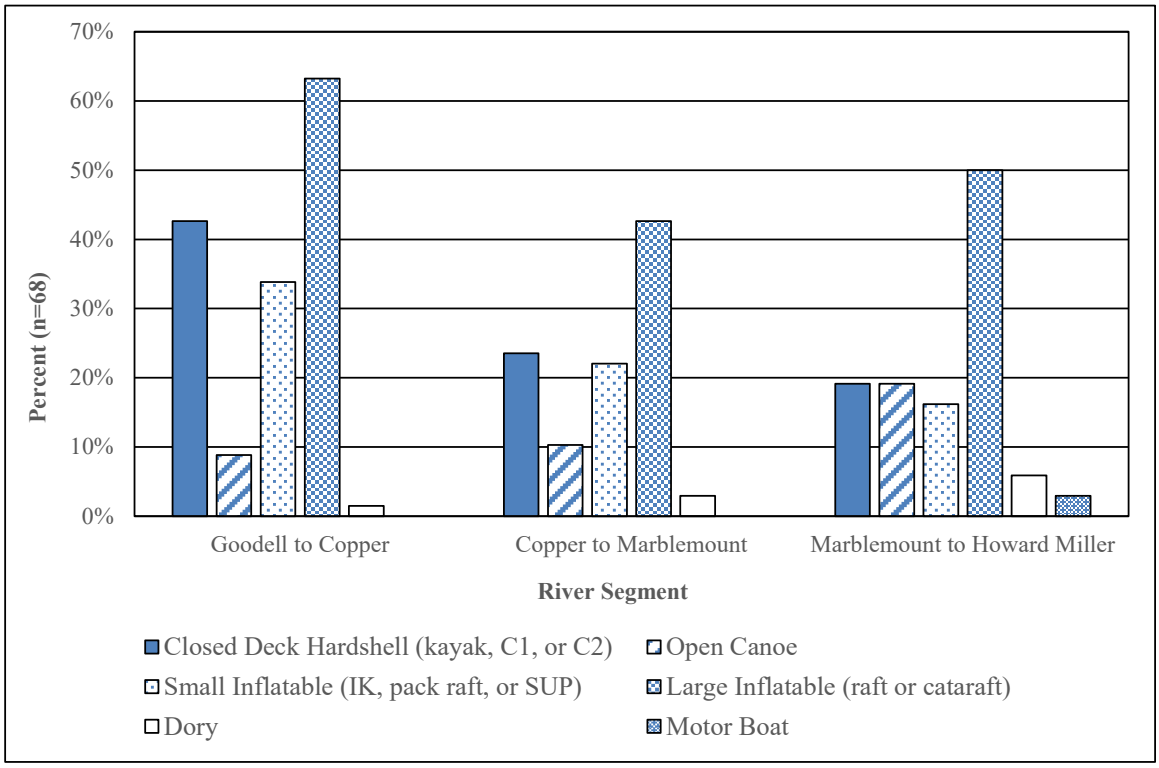


Figure 5.2-11. Watercraft used by survey respondents on the respective river segments (n=68).

Survey respondents were asked to compare and rate a range of flows using a 7-point scale for their preferred watercraft type for each of the respective river segments. In the Goodell to Copper river segment, the recreation flow survey asked survey respondents to compare flows from 500 cubic feet per second (cfs) to 5,500 cfs (in 500 cfs increments). The survey response comparisons of flows were used to develop flow preference curves for each watercraft type. Flow preference curves were similar for closed-deck hardshells, small inflatables, and large inflatables in the Goodell to Copper river segment (Figure 5.2-12). Flow preferences crossed the marginal line in the 7-point scale at 2,000 cfs for these three watercraft types suggesting that flows less than 2,000 cfs are unacceptable. Flows remained acceptable for these three watercraft types at the maximum end of the comparative flow range (i.e., 5,500 cfs). Open canoe respondents preferred lower flows

than the other three watercraft types in this river segment. The open canoe flow preference curve crosses the marginal line at just under 1,000 cfs, peaks from 2,000 to 4,000 cfs with a rating of 7, then declines below the marginal line to an unacceptable rating at greater than 5,500 cfs. The survey respondent preferring a dory as a watercraft did not complete the comparative flow survey question.

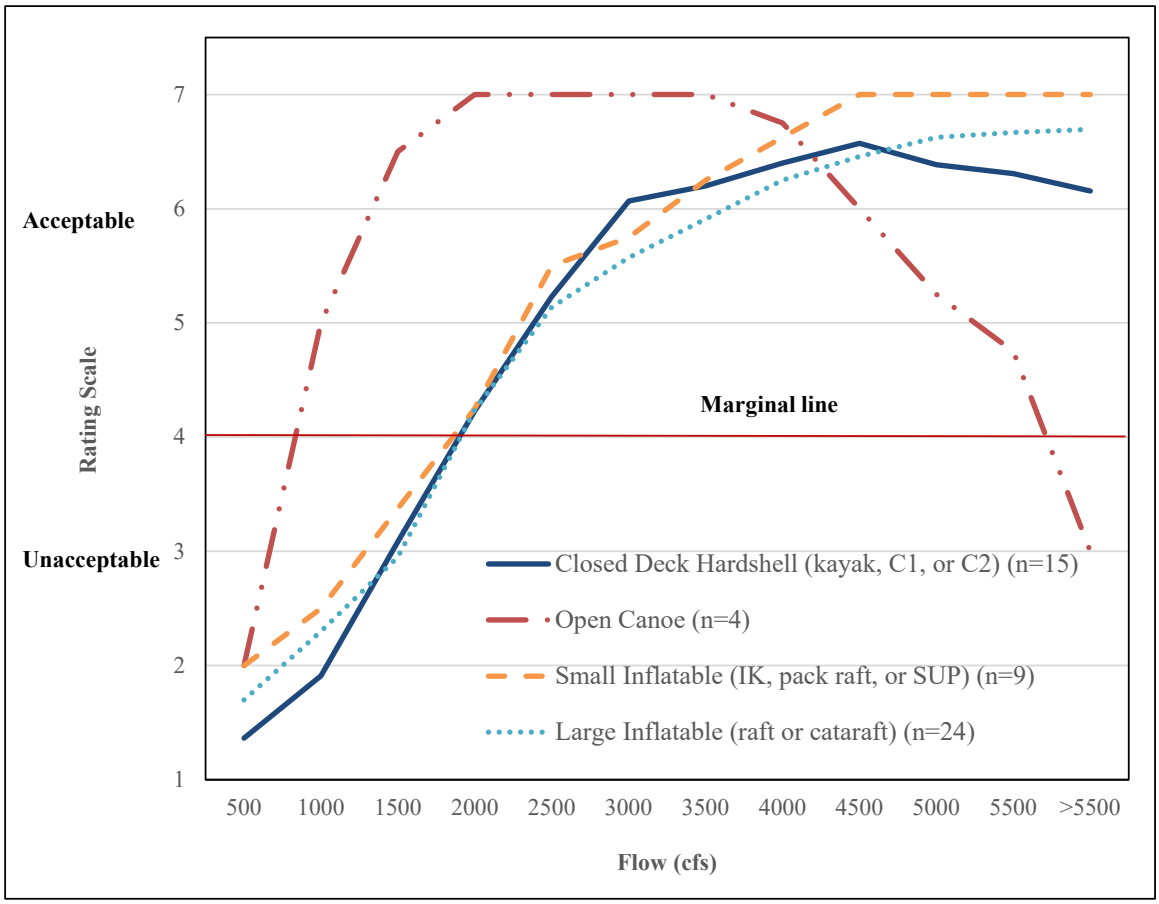


Figure 5.2-12. Survey respondent flow preference curve for the Goodell to Copper river segment.

In addition to rating a range of flows in 500 cfs increments, survey respondents were asked to specify the minimum acceptable and optimum flow for their preferred watercraft for the Goodell to Copper river segment. The range of flows between the mean minimum acceptable and mean optimum flow is referred to as the boating flow range for respective watercraft. The boating flow range represents the range of flows considered suitable to the average river enthusiast using that type of watercraft. The mean response for minimum acceptable flow for closed-deck hardshells and large inflatables was similar to the results compiled for the comparative flow preference curve ratings but higher for small inflatables (Figure 5.2-13). The mean minimum acceptable flow for open canoe respondents was slightly greater relative to the comparative flow preference curve rating for that watercraft type. The mean optimum flow preferences for each of the four respective watercraft were similar to the results illustrated in the respective comparative flow preference curve ratings.

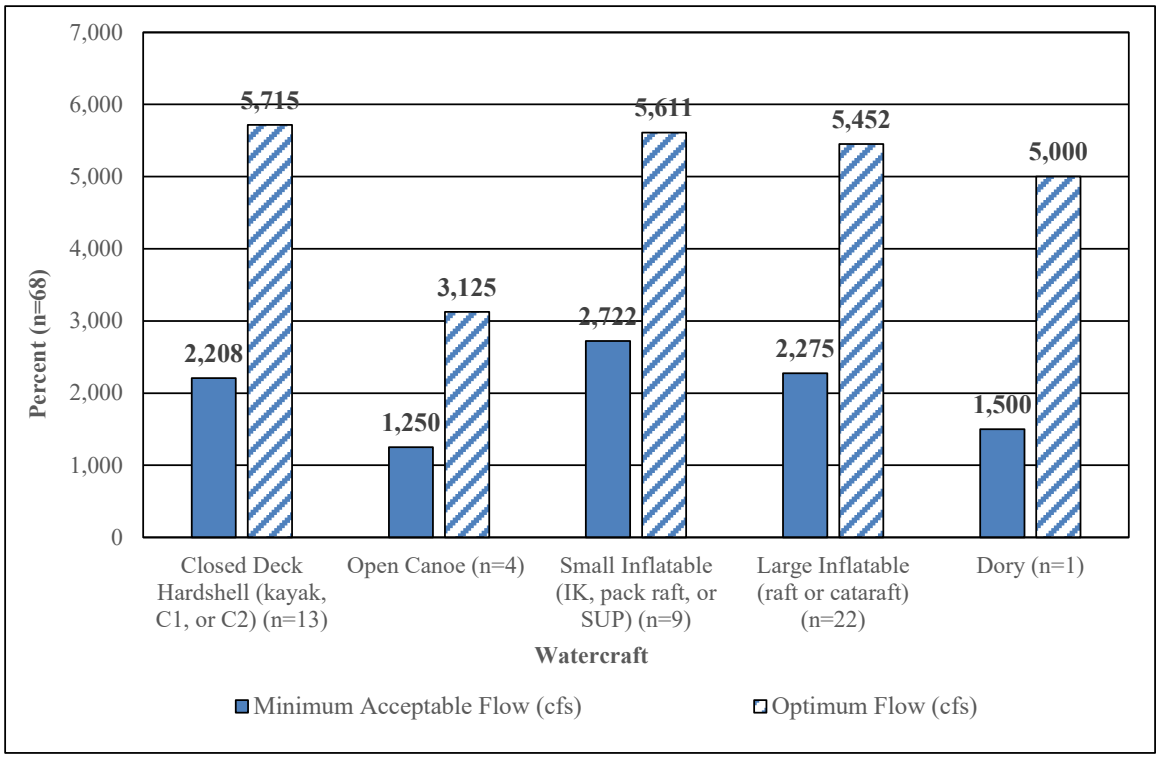


Figure 5.2-13. Mean minimum acceptable and optimum flows identified by survey respondent for the Goodell to Copper river segment.

In the Copper to Marblemount river segment, the recreation flow survey asked survey respondents to rate a range of flows from 500 cfs to 5,500 cfs (in 500 cfs increments). Closed-deck hardshells and large inflatables had a similar flow preference curve (Figure 5.2-14). Flow preferences for these two watercraft types crossed the marginal line at 2,500 cfs indicating flows less than 2,500 cfs are unacceptable. Flow preference ratings continued to increase with each flow increment for closed-deck hardshells and large inflatables but did not reach the highest rating at the maximum flow increment, >5,500 cfs, suggesting higher flows would continue to be acceptable for these two survey respondent groups. For small inflatables, flows greater than 1,500 cfs were rated acceptable. Open canoes rated all flows (500 to 5,500 cfs) as acceptable, but ratings declined to less than 7 for flows greater than 3,500 cfs, suggesting this survey respondent group prefers lower flows compared to the other types of watercraft represented in survey responses.

Survey respondents were asked to specify the minimum acceptable and optimum flow for their preferred watercraft for the Copper to Marblemount river segment. The minimum acceptable and optimum flow for large inflatables and small inflatables was similar for this river segment (Figure 5.2-15). Closed-deck hardshells identified a lower minimum acceptable flow, (2,200 cfs) but a higher optimum flow (6,800 cfs). The minimum acceptable flow for open canoes was 1,000 cfs and an optimum flow of 4,100 cfs.

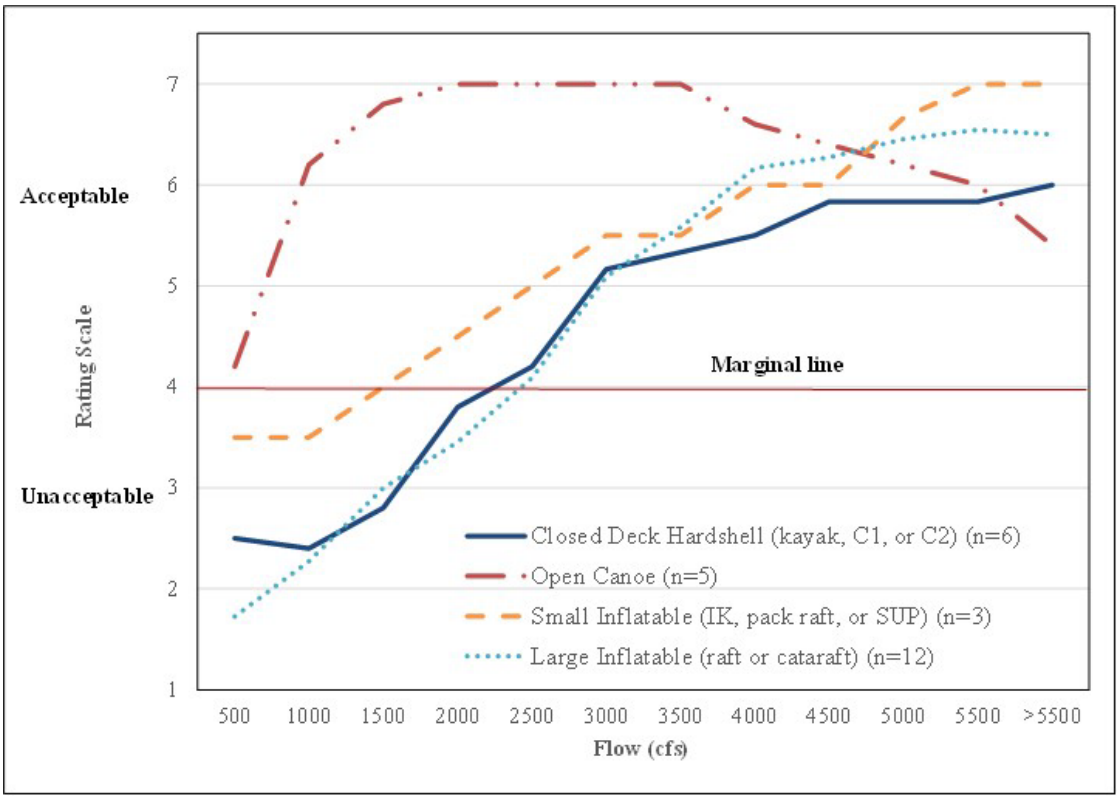


Figure 5.2-14. Survey respondent flow preference curve for the Copper to Marblemount river segment.

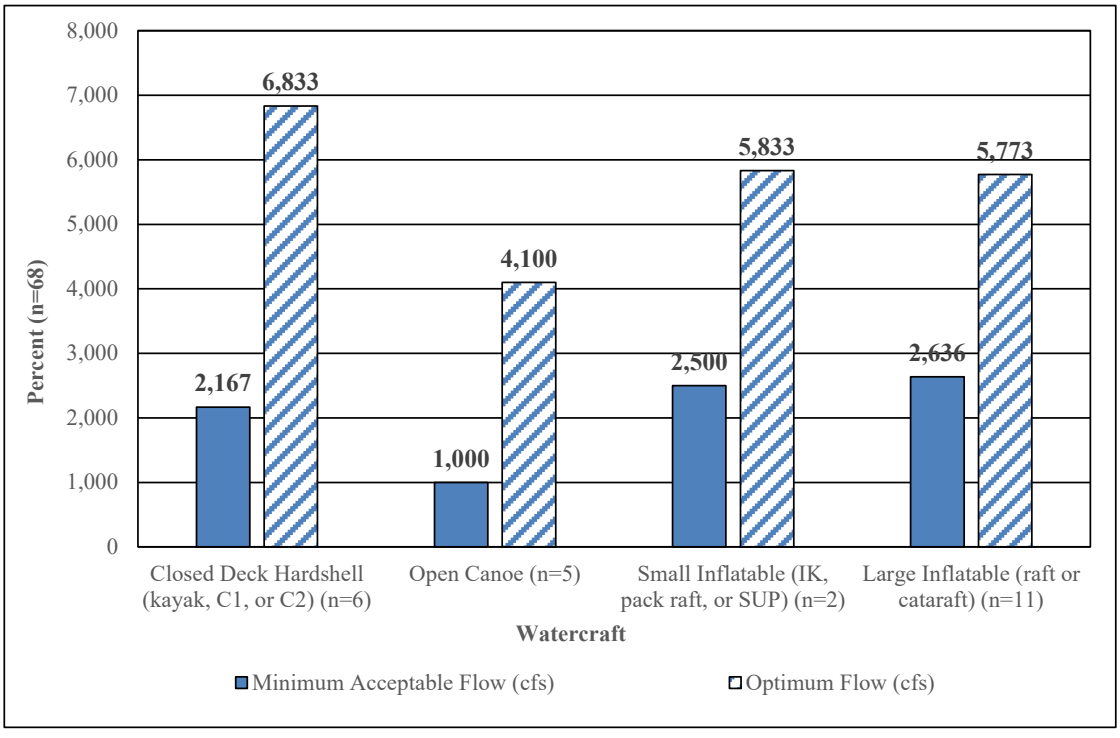


Figure 5.2-15. Mean minimum acceptable and optimum flows identified by survey respondent for the Copper to Marblemount river segment.

In the Marblemount to Howard Miller river segment, the recreation flow survey asked survey respondents to rate flows ranging from 1,000 to 10,000 cfs (in 1,000 cfs increments). Open canoe respondents rated flows from 1,000 cfs to 10,000 cfs as acceptable but flows greater than 10,000 cfs were rated unacceptable (Figure 5.2-16). Large inflatable respondents rated flows less than 3,000 cfs unacceptable. Closed-deck hardshell respondents rated flows less than 3,500 cfs unacceptable.

Large inflatable and dory respondents specified the highest mean minimum acceptable flow, 3,200 cfs and 3,000 cfs respectively, for the river segment from Marblemount to Howard Miller (Figure 5.2-17). The mean minimum acceptable flow for closed-deck hardshell respondents in this river segment was 2,500 cfs, 1,000 cfs lower than where the flow preference curve crosses the marginal line for this watercraft type. The mean minimum flow specified for open canoes was 2,000 cfs, compared to the flow preference curve that rated all flows acceptable including flows less than 2,000 cfs. The single motorboat respondent did not complete the minimum acceptable flow survey question.

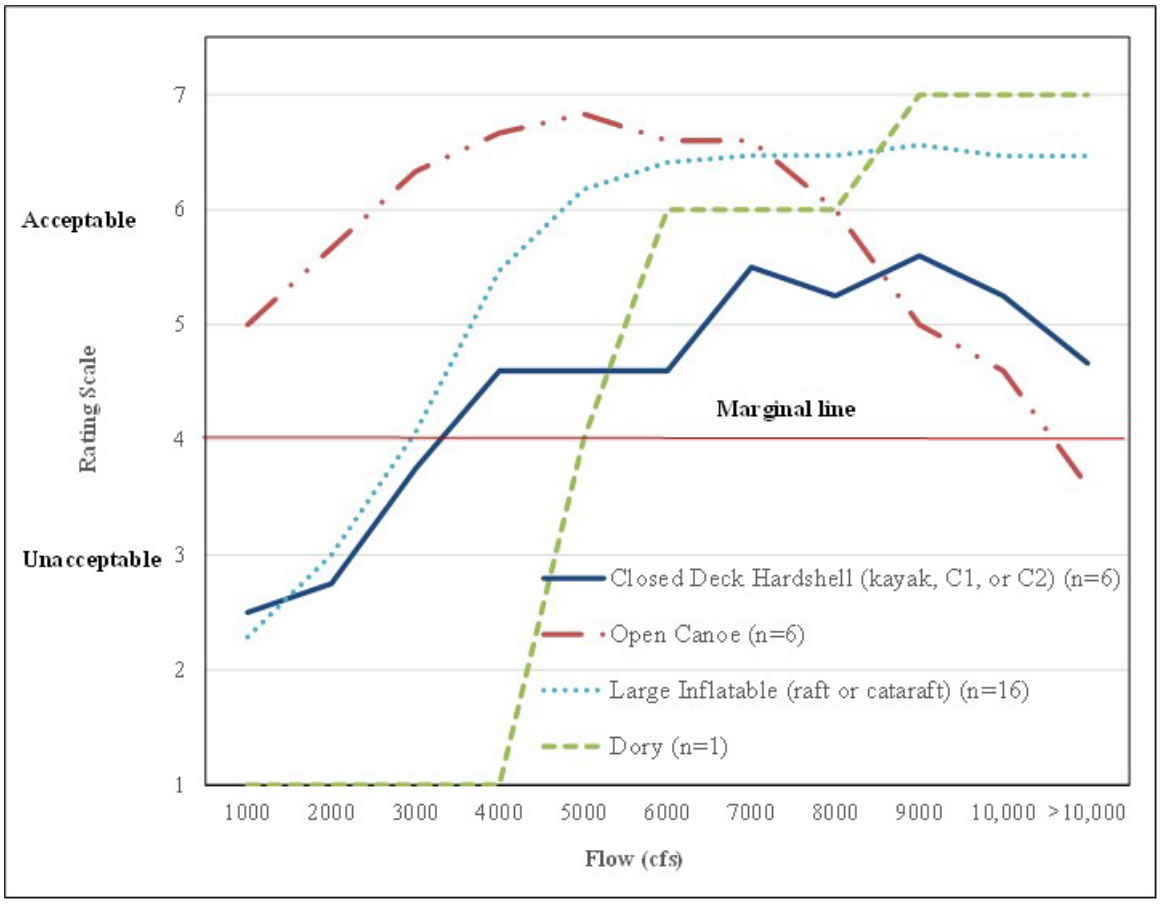


Figure 5.2-16. Survey respondent flow preference curve for the Marblemount to Howard Miller river segment.

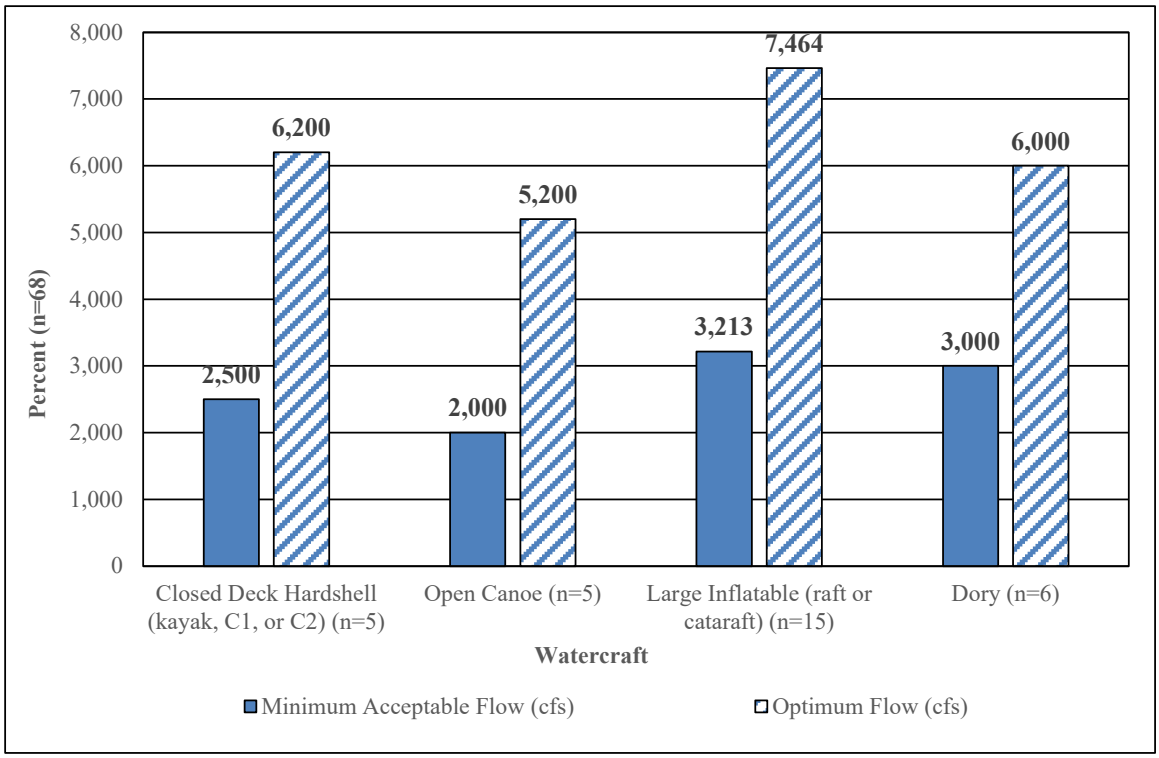


Figure 5.2-17. Mean minimum acceptable and optimum flows identified by survey respondent for the Marblemount to Howard Miller river segment.

Survey respondents predominantly use river recreation sites with vehicle access (Figure 5.2-18). The majority of survey respondents were satisfied or very satisfied with overall amenities at the respective river access locations (Figure 5.2-19). A smaller number of respondents were dissatisfied or very dissatisfied with amenities at river access sites. Survey respondents selected restrooms, trash receptacles and additional parking (vehicle and trailer) as the most needed improvements at the river access sites followed closely by pavilion and picnic tables (Figure 5.2-20). The need for trails was nearly evenly split between needed and not needed among survey responses. More survey respondents indicated fire pits were not needed than survey participants responding they were needed.

The poor condition of restrooms was listed in closing comments by a number of survey respondents as well as an item raised in structured interviews. The need for additional parking, particularly at the Copper Creek Boat Access Site, was noted in comments by a number of survey respondents and structured interview participants. Several survey respondents were emphatic that boat ramps be used solely for launching boats and land managers should not include amenities that encourage other uses at these locations that blocks the launch site. Two survey respondents commented on improved access at the S-Bend rapids and requested a trail allowing boaters to do multiple laps and/or portage.

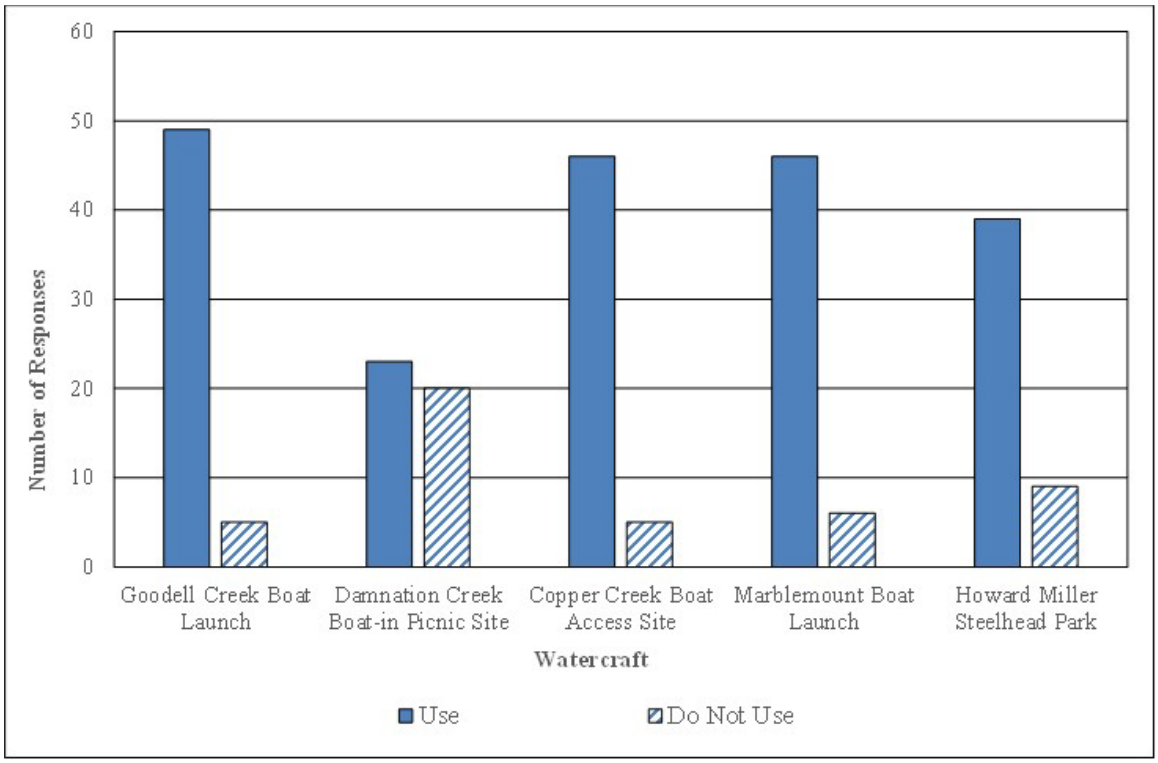


Figure 5.2-18. River access sites used by survey participants.

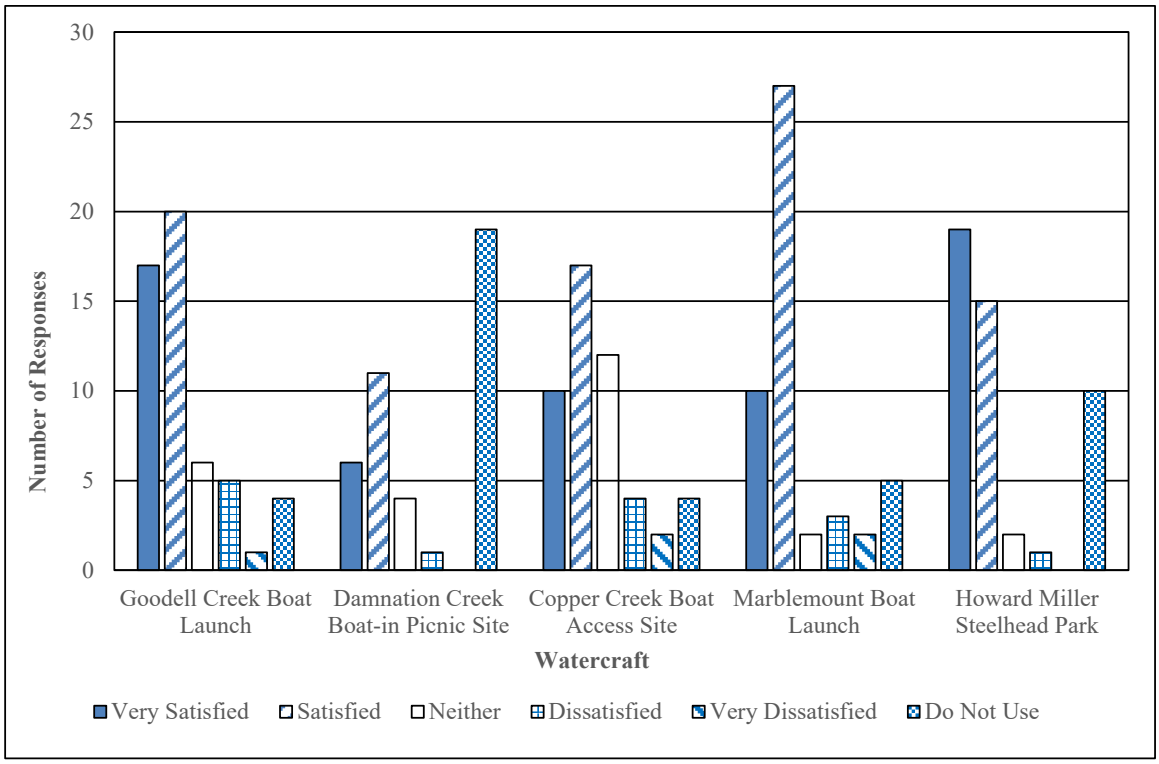


Figure 5.2-19. Survey respondent satisfaction with amenities at river access sites.

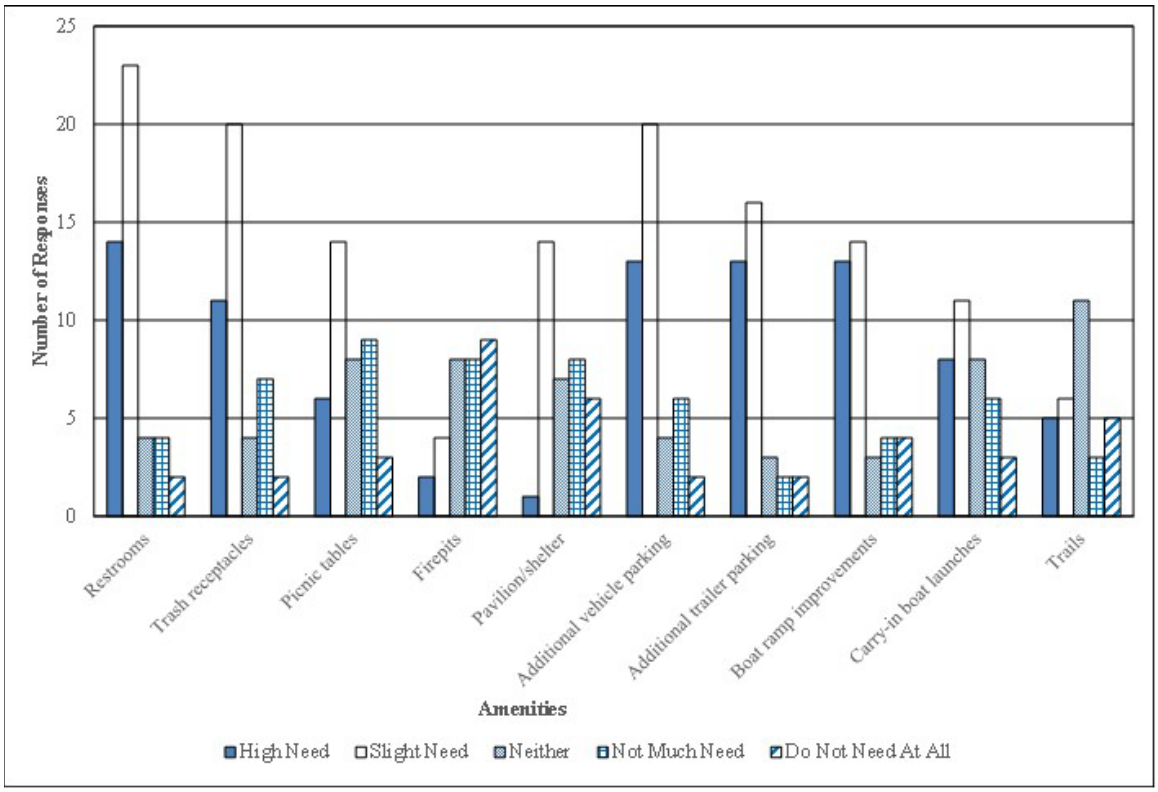


Figure 5.2-20. Need for improvements in amenities at river access sites.

5.2.2 Structured Interviews

Structured interviews were conducted in 2022 using three sets of interview questions with content overlap tailored to three distinct types of interviewees: resource agency staff, commercial outfitters, and non-commercial river recreation users. Structured interviews occurred using video conferencing computer software with a camera and microphone or phone depending on interviewees' preference. Some interviewees provided written responses to structured interview questions. Results of the structured interviews are summarized for each of the three groups below.

5.2.2.1 Resource Agency Interviews

Structured interviews occurred with NPS, USFS, and Skagit County Parks. NPS and USFS identified a list of resource agency staff with direct knowledge of the Skagit River for structured interviews. City Light used this list to schedule structured interviews with respective resource agency staff. Three staff from the USFS (Mt. Baker Snoqualmie National Forest) participated in separate structured interviews in the spring of 2022. Three NPS staff provided written responses to structured interview questions but declined to participate in a live interview via computer. The Skagit County park manager for Howard Miller Steelhead Park participated in a phone interview. Agency responses to interview questions are collated in Attachment C and summarized below.

The NPS authorizes five to six commercial river outfitters to operate on the Goodell to Copper river segment. The permits are issued for a 2 year period. Commercial outfitters are allowed to operate year-round. The number of annual user days are not specified in the individual permits.

Commercial outfitters are limited to a maximum of 45 persons per trip (including guides) and 100 persons per day.

The NPS tracks the number of river recreation users on the Goodell to Copper river segment through commercial outfitter reports and non-commercial boater registrations. Commercial outfitters provide the monthly number of passengers and the number of days the company operated on the river segment. Non-commercial boater numbers are collected through a combination of voluntary sign-in sheets at the Goodell Creek Boat Launch complemented with intermittent observations by NPS rangers.

The annual number of commercial raft passengers increased substantially in 2019 and 2021 compared to previous years (Figure 5.2-21). Commercial raft passenger numbers were 65 percent lower in 2020 compared to 2019 and 2021, likely the result of Covid-19 restrictions. Only two commercial outfitters operated on this river segment in 2020 compared to six in 2019 and five outfitters in 2021. Most commercial use occurs in rafts from June through September (Figure 5.2-22) with the majority happening in July (33 percent) and August (52 percent).

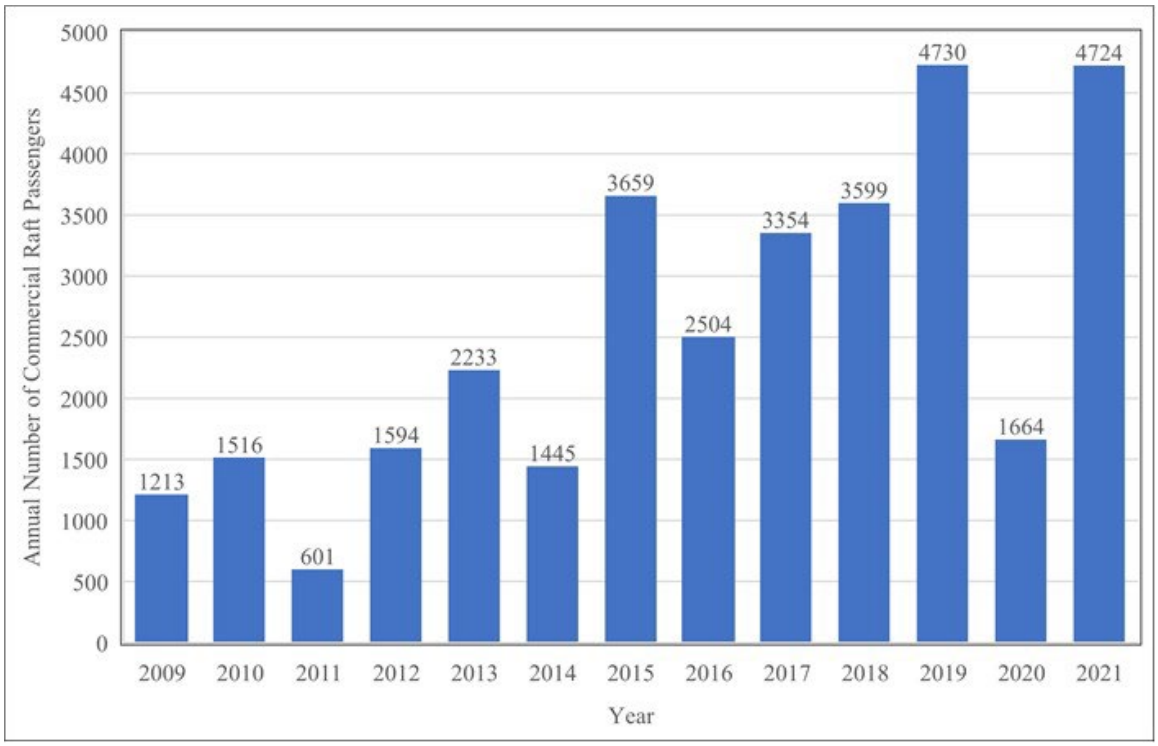


Figure 5.2-21. Annual number of commercial passengers 2009-2021; Goodell to Copper (NPS 2022).

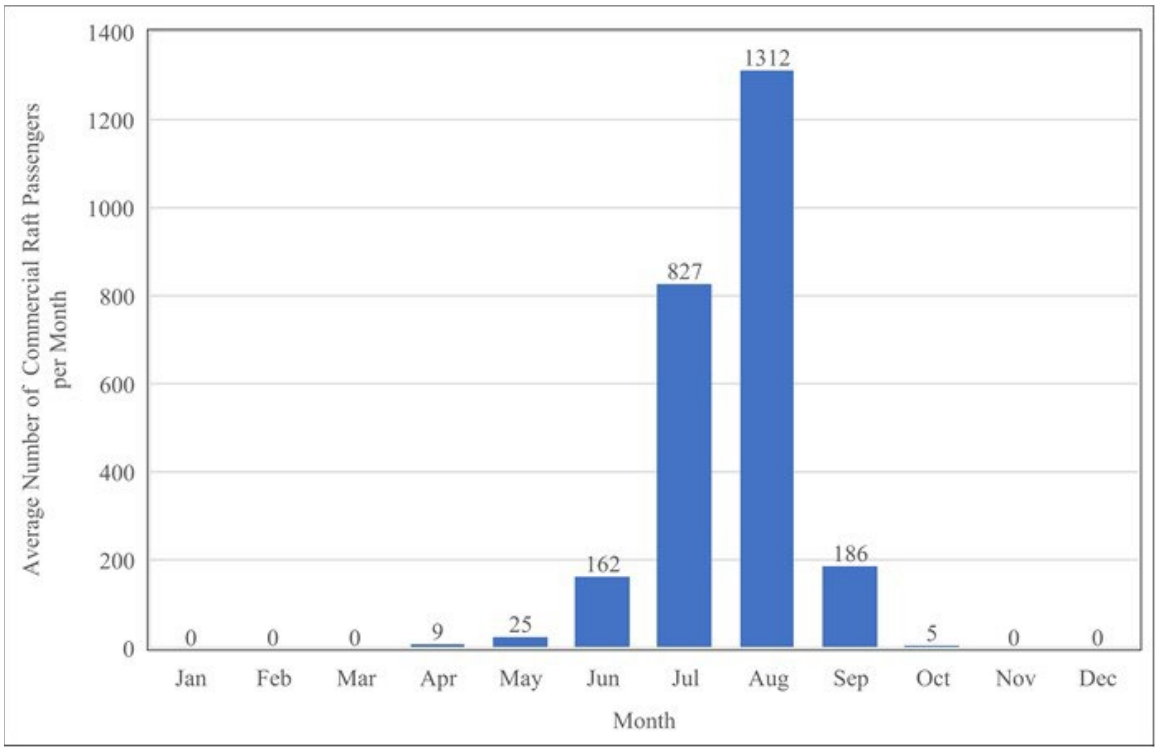


Figure 5.2-22. Monthly average number of commercial passengers 2009-2021; Goodell to Copper (NPS 2022).

Annual non-commercial use numbers were highest in 2016 with a total of 894 boaters and 2020 with a total of 808 boaters (Figure 5.2-23). Five out of the past eleven years had less than half the number of non-commercial boaters compared to peak levels in 2016 and 2020 (Table 5.2-3). Non-commercial boaters use the segment from Goodell to Copper year-round but the majority of boating occurs in July, August and September (Figure 5.2-24). The number of people exceeds the number of boats annually and monthly (Table 5.2-4), indicating that at a minimum more than half the boats counted are carrying two or more people. NPS indicated in its structured interview response that non-commercial numbers are most likely an underestimate of actual use for several reasons, which include not all boaters choosing to sign-in, unauthorized removal of sign-in sheets, weather damaged sign-in sheets, and poor penmanship. The increase in non-commercial use in 2020 contrasts sharply with the marked decline in commercial raft passengers that same year. The increase in non-commercial boaters in 2020 on the Skagit River is similar to use patterns observed in outdoor spaces throughout the western U.S. Also, Covid-19 restrictions limiting indoor events and suspending organized sports resulted in more individuals seeking dispersed outdoor recreation opportunities such as boating on the Skagit River.

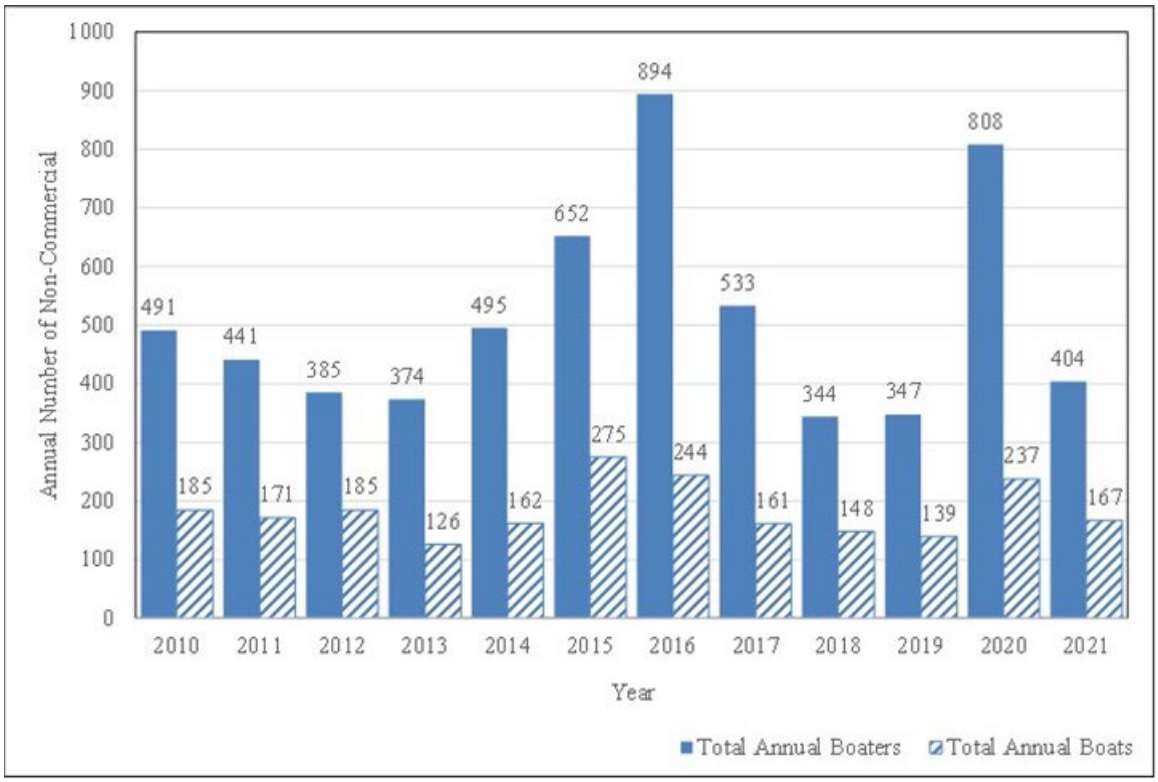


Figure 5.2-23. Annual number of non-commercial boaters and boats 2010-2021; Goodell to Copper (NPS 2022).

Table 5.2-3. Annual number of non-commercial boaters and boats 2010-2021; Goodell to Copper (NPS 2022).

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Annual Number of Non-Commercial Boaters	491	441	385	374	495	652	894	533	344	347	808	404
Annual Number of Non-Commercial Boats	185	171	185	126	162	275	244	161	148	139	237	167
Percent More People than Boats	62%	61%	52%	66%	67%	58%	73%	70%	57%	60%	71%	59%

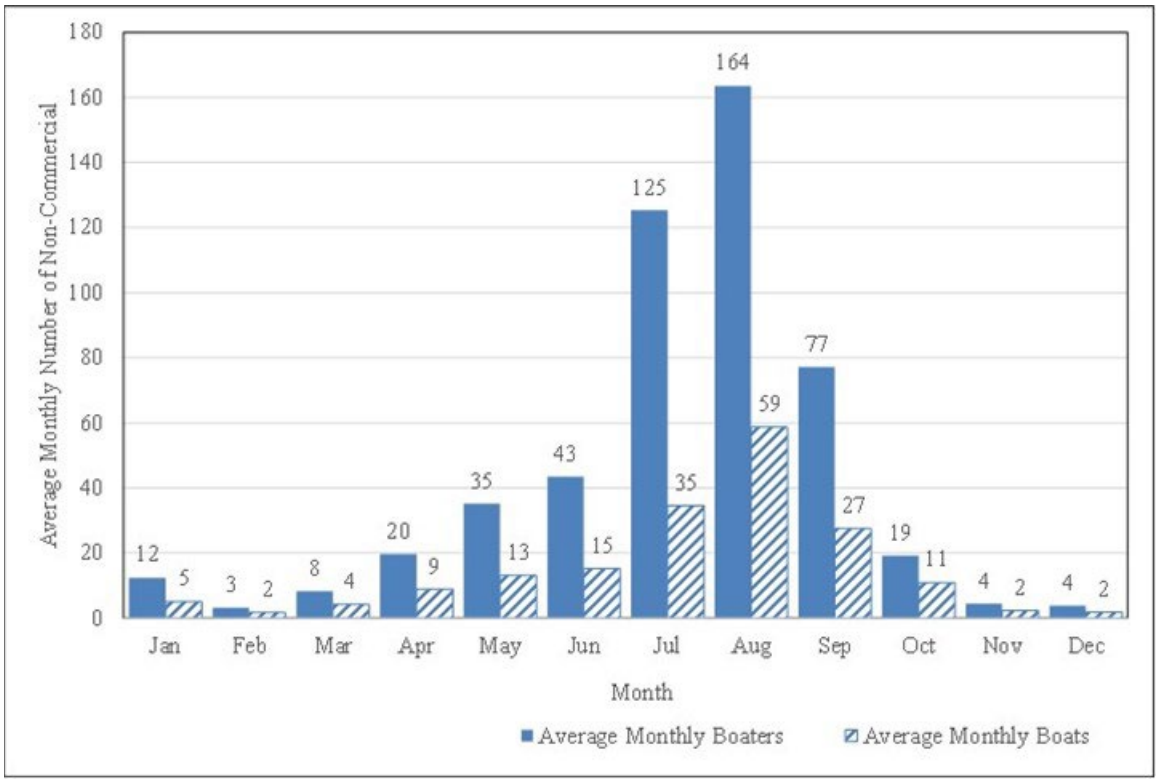


Figure 5.2-24. Average monthly number of non-commercial boats and boaters 2010 - 2021; Goodell to Copper (NPS 2022).

Table 5.2-4. Monthly average number of non-commercial boats and boaters 2010-2021; Goodell to Copper (NPS 2022).

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monthly Average Number of Non-Commercial Boaters	12	3	8	20	35	43	125	164	77	19	4	4
Annual Number of Non-Commercial Boats	5	2	4	9	13	15	35	59	27	11	2	2
Percent More People than Boats	60%	45%	50%	55%	63%	65%	72%	64%	64%	43%	45%	51%

The USFS (Mt. Baker-Snoqualmie National Forest) oversees management of recreation opportunities, public access, and a number of recreation users on the Copper to Marblemount and the Marblemount to Howard Miller river segments. As part of the structured interviews, the USFS provided annual commercial use numbers for the Marblemount Boat Launch from 2012 to 2020 for ten commercial outfitters authorized to operate on these river segments. Commercial use was highest in 2019 with 945 commercial passengers and lowest in 2017 with 108 commercial passengers (Figure 5.2-25). Monthly use patterns were not provided but the USFS indicated that most of the use occurs in the winter coinciding with eagle viewing although commercial trips do occur year-round. Most commercial trips start at Marblemount Boat Launch due in part to the

shorter day-length during the winter period. Commercial outfitters use rafts, dories, and motorized boats for winter trips. Motorized trips typically utilize the same access locations for put-in and take-out whereas non-motorized boats float between access points.

The USFS does not track non-commercial boaters in these river segments. In the past, the USFS attempted to quantify non-commercial boaters using voluntary registration at river access points but discontinued this effort because it was ineffective. USFS estimates that approximately 50 percent of use in the winter period is non-commercial boaters. The USFS noted that angler use patterns and number of anglers on these river segments shifts seasonally and annually with anadromous fish runs and regulations.

The Skagit Wild and Scenic River Management Plan established carrying capacities for the segments managed by the USFS. The summer season capacity for the combined segments from Copper to Howard Miller was 8,000 user days annually comprised of 5,200 non-commercial user days and 2,800 commercial user days (USFS 1983). The winter season capacity for the combined river segments was 6,000 user days with no distinction between commercial and non-commercial user days. Summer season was defined as April 1 to September 30 and winter season was defined as October 1 to March 31. In structured interviews, USFS staff noted that current use on the two river segments managed by the USFS are not near the capacities set in the 1983 Skagit Wild and Scenic River Management Plan. According to USFS, crowding is not an issue on the river segments but can be an issue at launch locations during peak eagle viewing periods on weekends due, in part, to the limited public access locations.

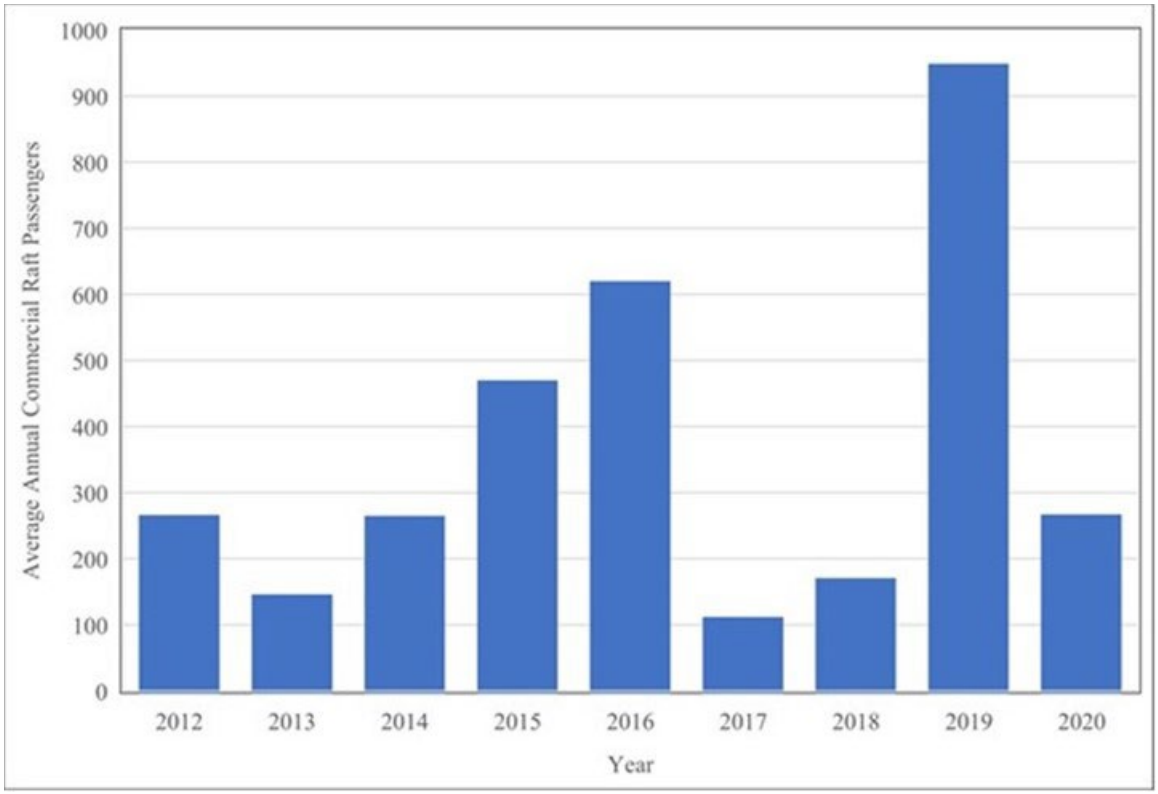


Figure 5.2-25. Annual number of commercial passengers 2012 - 2020; Marblemount Boat Launch (USFS 2022).

NPS and USFS staff noted there is very little resource degradation resulting from river recreation users. Resource degradation is limited to littering, social trails, and disturbance to eagles in the morning periods when they are feeding. USFS staff noted that the current distribution of river access points is sufficient. NPS noted additional staff are needed to enforce current rules and to work with other partners to create and implement improvement projects. NPS also noted that improvements to the boat ramps and parking areas at Goodell Creek Boat Launch and Copper Creek Boat Access Site could decrease congestion and reduce impacts to other users. Overflow raft parking at Copper Creek Boat Access Site spills out onto SR 20 at the NPS North Cascades National Park entrance station monument, making parking and photo opportunities more difficult for park visitors wishing to park and/or take photographs at the entrance sign, as well as presenting highway safety concerns. The NPS also commented that a "turnout" has been created by vehicles pulling off SR20 on both the eastbound and westbound lanes adjacent to the S-Bends. Recreational use and associated vehicles on the shoulder in this area creates traffic hazards on SR 20 as well as erosion from the social trails to the river.

Skagit County manages Howard Miller Steelhead Park. Commercial river trips are required to obtain a permit from Skagit County to use the Howard Miller Steelhead Park boat ramp. The number of commercial permits fluctuates from six to ten permits annually. Commercial permits are valid all year and do not restrict the number of passengers per permit. Skagit County does not track the annual number of commercial passengers.

5.2.2.2 Commercial River Outfitter Interviews

City Light contacted ten commercial outfitters authorized to operate on the three river segments requesting structured interviews. Three commercial outfitters agreed to participate in individual structured interviews. Responses to interview questions are collated in Attachment D and summarized below. Two of the commercial outfitters participating in the structured interviews operated trips on all three of the river segments while the third commercial outfitter operated on two of the three river segments.

River Segment 1: Goodell to Copper

Commercial outfitters describe the Goodell to Copper river segment as the perfect introductory whitewater trip suitable for less experienced passengers. This is the most popular segment for each of the three outfitters interviewed. Paddle and oar rafts are used ranging from 12 to 16 feet in length carrying up to eight guests. Trips are typically two to three hours long depending on water level. Outfitters are able to do two to three trips per day. The outfitters book trips throughout the summer season with responses ranging from April through October depending on the outfitter.

River Segment 2: Copper to Marblemount

The commercial outfitters use the Copper to Marblemount river segment infrequently. This segment serves as an alternative to the Marblemount to Howard Miller river segment or to avoid congestion at the Copper Creek Boat Access Site on busy days.

River Segment 3: Marblemount to Howard Miller

Commercial outfitters use the Marblemount to Howard Miller river segment most commonly for eagle viewing in December and January. One outfitter described this river segment as a "catch-

all" for all kinds of trips year-round including wine tasting, scenic trips in dories, and kayak instruction. Winter eagle viewing trips are typically done in rafts with oar rigs to keep passengers dry and warm. Trip length is approximately three hours.

The interviewees noted that conflicts between commercial and non-commercial boaters typically occurs at the boat ramps due to congestion. The business model for commercial operators is based in part on an efficient trip schedule to book clients. Congestion at boat ramps result in scheduling delays and potential for lost revenue. Interviewees noted that non-commercial boaters each have their own vehicle and trailer to transport boats adding to congestion. Special events advertised by non-commercial boating groups compound crowding and result in conflicts. Interviewees noted that well-designed river access locations including parking areas and ramps help to minimize conflicts between commercial and non-commercial boaters. Improvements to the Goodell Creek Boat Launch and Copper Creek Boat Access Site could help reduce conflicts. The Sauk River access on SR 530 near the confluence with the Suiattle was noted as an example of a functional design that minimizes congestion.

Commercial outfitter responses differed when asked about resource degradation associated with river users. Two interviewees have not observed resource degradation specific to river recreation users. The third interviewee noted that unauthorized outfitters have constructed obscure river access points to launch trips and observed litter along the river, including broken glass. The outfitter also noted that people bait eagles during eagle watching season. The outfitter noted that enhanced enforcement and education is needed to protect the resource.

In addition to the improvements in launch design described above, the commercial outfitters recommended additional signage at river access sites describing river difficulty and proper use of the sites to minimize congestion. The need for an improved boat ramp, parking area, and traffic flow at Copper Creek Boat Access Site were mentioned by all three respondents.

5.2.2.3 Non-commercial Boater Interviews

Non-commercial river recreation users also participated in the structured interviews. Non-commercial boaters were identified for structured interviews through nomination from other interviewees as well as self-nomination in the recreation flow survey. In addition, City Light requested structured interviews with board members for the following groups: Paddle Trails Canoe Club, Washington Kayak Club, and Washington Recreational River Runners.

Thirty-four individuals nominated themselves for structured interviews in the recreation flow survey. City Light contacted 20 of these 34 individuals to schedule a structured interview. These 20 individuals were selected for structured interviews to get a broad representation of watercraft types, river segments boated, and overall experience on the Skagit River. Of the 20 individuals contacted, seven participated in a structured interview.

The non-commercial structured interview participant composition represented all watercraft types listed in the recreation flow survey and multiple years of experience on the respective river segments (Table 5.2-5). The non-commercial responses to structured interview questions are collated in Attachment E.

Table 5.2-5. Non-commercial structured interview participant list.

Paddling club	Title	Gender	Age	Skagit River Segments	Watercraft	Years boating segments	Number of times per year per segment
Paddle Trails Canoe Club	Not Applicable	F	>65	Marblemount to Howard Miller	open canoe	20 years	1
Paddle Trails Canoe Club	Trip Leader for Skagit Eagle Watch	M	>65	Goodell to Copper	open canoe, large inflatable	16 years	2
				Copper to Marblemount	open canoe, large inflatable	16 years	1
				Marblemount to Howard Miller	open canoe, large inflatable	16 years	2
Director	League of Northwest Whitewater Racers	F	>65	Goodell to Copper	closed deck hardshell	40 years	2
				Copper to Marblemount	closed deck hardshell, open canoe	40 years	1
				Marblemount to Howard Miller	closed deck hardshell, open canoe	40 years	1
Not specified	Not Applicable	F	45-54	Goodell to Copper	small inflatable, large inflatable	22 years	60
				Copper to Marblemount	small inflatable, large inflatable	22 years	20
				Marblemount to Howard Miller	small inflatable, large inflatable	22 years	30
Not specified	Not Applicable	M	45-54	Goodell to Copper	large inflatable	33 years	1
				Copper to Marblemount	large inflatable	12 years	1
				Marblemount to Howard Miller	large inflatable	20 years	0
Not specified	Not Applicable	M	35-44	Goodell to Copper	closed deck hardshell, large inflatable	6 years	3
				Copper to Marblemount	open canoe	1 years	1
Not specified	Not Applicable	M	55-64	Goodell to Copper	small inflatable	10 years	4
				Copper to Marblemount	small inflatable	10 years	2

River Segment 1: Goodell to Copper

The Goodell to Copper river segment was rated Class II–III+ by structured interview participants. Interviewees noted the Class III rating applies to the S-Bends rapid section. Interviewees have observed a variety of watercraft on this river segment, including closed-deck boats, open canoes, small inflatables, and large inflatables. This river segment provides dependable summer season opportunities when other rivers in Washington lack sufficient flows for whitewater boating. Interviewees are attracted to this river segment for the whitewater, scenic beauty, and wildlife.

Flow preferences varied by watercraft types. In general, open boaters preferred a lower flow range than closed-deck or inflatables. Minimum acceptable flows ranged from 1,300 to 3,000 cfs, while one individual noted they had never personally observed a flow that was too low to boat in this river segment. Factors influencing the minimum acceptable flow included a decrease in overall enjoyment, safety, and increased length of time to float the segment. Interviewees did not identify specific channel features that impede navigation for their preferred watercraft at flows below the minimum acceptable, although a stand-up paddleboarder noted that low flows raise safety concerns due to the shallow water and associated injuries when falling off the board. Optimum flows ranged from 3,000 to 10,000 cfs. High challenge flows ranged from 5,000 to 20,000 cfs. One individual noted there was no upper threshold for the high challenge flow for this river segment.

River Segment 2: Copper to Marblemount

The Copper to Marblemount segment was rated Class I–II. Interviewees have observed a variety of watercraft on this river segment including closed-deck boats, open canoes, small inflatables, and large inflatables, with the latter being the most common. Interviewees are attracted to this river segment for the scenic beauty, wildlife, lack of river difficulty, and length of the run when combined with the upper or lower river segment. Several respondents noted that this river segment is typically done in combination with the upper segment (Goodell to Copper) or the lower segment (Marblemount to Howard Miller) but rarely done as a standalone segment.

Interviewees were less precise specifying flow ranges for this river segment, in part due to an insufficient number of trips coupled with a lack of experience at lower flows on the segment. Similar to the upstream river segment, open boaters preferred a lower flow range compared to individuals using larger inflatables. The primary factor influencing the minimum acceptable flow was travel time. The optimum flow for this river segment ranged from 4,000 to 10,000 cfs. High challenge flows ranged from 8,000 to 15,000 cfs with some individuals also indicating there was no upper flow threshold.

River Segment 3: Marblemount to Howard Miller

The Marblemount to Howard Miller river segment was rated Class I–II. Interviewees have observed a variety of watercraft on this river segment, including closed-deck boats, open canoes, small inflatables, large inflatables, dories, and motorized boats, with large inflatables being the most common watercraft. Interviewees are attracted to this river segment for the eagle viewing, lack of river difficulty, and length of the run. River recreation use is highest during the eagle viewing period, typically from December through February. Interviewee flow preferences for respective watercraft were higher in this river segment compared to the upstream segments due to the influence of the shallower gradient on travel time. Preferred flows range from 4,000 to 20,000

cfs with open boaters specifying the lower flows. Interviewees noted that flows are typically higher in the winter months so they have less experience on this river segment at lower flows.

5.2.2.4 Flow Information

Flow conditions are not the primary factor for interviewees when deciding to boat on these three segments of the Skagit River, in part, because the flows on these three Skagit River segments are so predictable seasonally. Interviewees typically use the USGS stream gages either directly or through the American Whitewater website to check flow conditions. Two interviewees noted that instream flows for boating should be secondary to instream flow needs for salmon.

5.2.2.5 Amenities at River Access Sites

For the most part, interviewees are happy with the amenities provided at the river access locations. Several interviewees specifically mentioned the need to replace the restrooms at Goodell Creek Boat Launch. Crowding can be an issue on summer weekends at the Copper Creek Boat Access Site and during the eagle viewing season at the Howard Miller Steelhead Park boat ramp. Interviewees noted there is a need for more parking at these two locations during the respective peak use periods. Interviewees have not observed crowding as an issue on any of the river segments.

5.2.2.6 River Comparisons

Compared to other rivers in the Skagit River basin and the Pacific Northwest, interviewees noted that these three Skagit River segments offer a safe boating opportunity when compared to hazards on other rivers with a longer period of boatable flows. These three Skagit River segments are less crowded than other whitewater rivers in Washington and offer outstanding scenery and wildlife viewing.

5.3 Hydrology Analysis

The hydrology of the three Skagit River segments delineated in the Recreation Flow Study was analyzed using hydrology data from 1991 – 2021 from two stream gages operated by the USGS: the Newhalem gage (USGS gage 12178000) and the Marblemount gage (USGS gage 12181000). The hydrology data was analyzed within the context of the range of boatable flows respondents identified in the recreation flow survey for the respective river segments. The hydrology analysis included descriptive statistics of the annual and monthly discharge volume to better understand the timing of flows throughout the year and the magnitude of discharge. The annual and monthly frequency of boating opportunities (days) was quantified by counting the number of days when the boating flow range (mean minimum acceptable to mean optimum flow) for respective watercraft was present during daylight hours (8 AM to 6 PM). And lastly, flow duration and rate of change were quantified for flows in the boatable range (minimum acceptable to optimum flow) identified by survey respondents for the respective river segment and watercraft types.

5.3.1 Flow Timing and Magnitude

Hydrology data from the Newhalem gage (USGS gage 12178000) was used to analyze recreation instream flow conditions for two of the river segments in the Recreation Flow Study: the Goodell to Copper and Copper to Marblemount river segments. Hydrology data from the Marblemount

gage (USGS gage 12181000) was used to analyze recreation instream flow conditions for the river segment between the Marblemount to Howard Miller.

Each of the three river segments receive tributary inputs longitudinally downstream from the respective USGS gage measuring locations and consequently are not reported by that gage. In the Goodell to Copper river segment, Newhalem Creek and Goodell Creek contribute additional discharge downstream of the USGS Newhalem gage. In the Copper to Marblemount segment, in addition to the tributaries listed for the Goodell to Copper segment, Bacon Creek also contributes additional discharge not measured at the USGS Newhalem gage. In the Marblemount to Howard Miller river segment, the Cascade River and Illabot Creek contribute additional discharge not measured at the USGS Marblemount gage. Tributary inputs were not included in the analysis to quantify the frequency of boating opportunities for respective recreation segments because the baseflows in the Skagit River were already equal to or exceeding the minimum instream flow identified by survey respondents for those segments.

5.3.1.1 Newhalem Gage (USGS Gage 12178000)

The annual mean, median, quartiles, minimum, and maximum discharge were graphed for the Newhalem gage (USGS gage 12178000) using data from 1991 – 2021 (Figure 5-3.1). The annual mean discharge ranged from 2,627 cfs in 2001 to 6,067 cfs in the 1997 with an annual mean discharge of 4,603 cfs over the 30-year period (Table 5.3-1). The minimum discharge recorded for the period from 1991 – 2021 at the Newhalem gage was 1,535 cfs. The maximum discharge recorded for the same 30-year period at the Newhalem gage was 36,700 cfs. The first and third quartiles (25 percent to 75 percent of discharge values) ranged from 2,000 cfs to 7,200 cfs over the 30-year period.

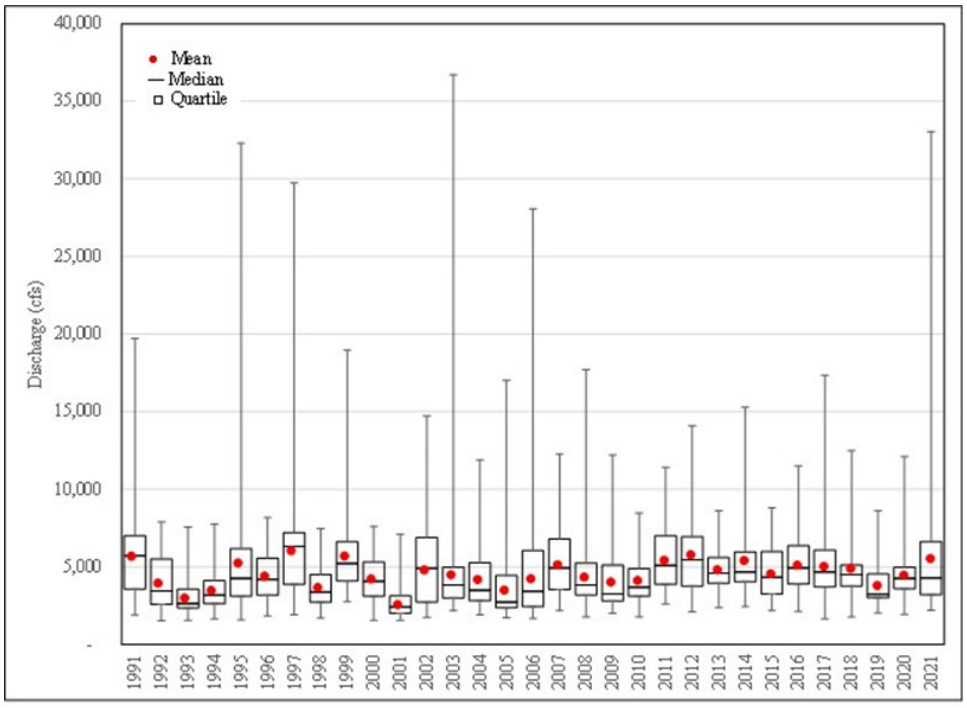


Figure 5.3-1. Skagit River annual discharge statistics for Newhalem gage (USGS gage 12178000), 1991-2021.

Table 5.3-1. Skagit River annual discharge statistics for Newhalem gage (USGS gage 12178000), 1991-2021.

Year	Newhalem Annual Discharge Statistics (cfs)					
	Min	First Quarter	Median	Mean	Third Quarter	Max
1991	1,890	3,570	5,710	5,715	7,000	19,700
1992	1,535	2,570	3,448	3,994	5,503	7,890
1993	1,550	2,350	2,620	3,033	3,550	7,555
1994	1,650	2,620	3,180	3,528	4,105	7,740
1995	1,580	3,100	4,250	5,279	6,173	32,300
1996	1,838	3,178	4,180	4,436	5,545	8,170
1997	1,923	3,880	6,300	6,067	7,200	29,750
1998	1,688	2,713	3,368	3,715	4,490	7,470
1999	2,748	4,095	5,223	5,723	6,620	18,975
2000	1,550	3,095	4,060	4,253	5,310	7,590
2001	1,550	2,000	2,415	2,627	3,130	7,085
2002	1,740	2,720	4,898	4,837	6,880	14,700
2003	2,173	2,993	3,825	4,522	4,970	36,700
2004	1,900	2,819	3,498	4,223	5,268	11,900
2005	1,710	2,365	2,730	3,550	4,448	17,025
2006	1,673	2,438	3,420	4,270	6,043	28,075
2007	2,173	3,535	4,918	5,161	6,795	12,275
2008	1,765	3,190	3,810	4,384	5,245	17,700
2009	2,015	2,804	3,248	4,066	5,110	12,200
2010	1,765	3,105	3,685	4,162	4,875	8,470
2011	2,598	3,862	5,095	5,451	7,001	11,400
2012	2,093	3,755	5,439	5,805	6,946	14,100
2013	2,360	3,935	4,585	4,841	5,590	8,618
2014	2,450	4,030	4,665	5,437	5,961	15,300
2015	2,178	3,243	4,325	4,593	5,985	8,788
2016	2,123	3,890	4,925	5,132	6,354	11,500
2017	1,653	3,720	4,660	5,065	6,078	17,350
2018	1,772	3,754	4,492	4,913	5,115	12,492
2019	2,027	2,999	3,232	3,844	4,544	8,605
2020	1,929	3,596	4,243	4,505	4,973	12,100
2021	2,198	3,204	4,275	5,560	6,630	33,046

Monthly mean, median, quartiles, minimum, and maximum discharge were graphed for the Newhalem gage (USGS gage 12178000) using data from 1991 – 2021 (Figure 5-3.2). The highest discharge typically occurs in the months of October, November, and December, followed by June and July. The mean monthly discharge ranged from 3,329 cfs in September to 5,853 cfs in February with a mean monthly discharge of 4,610 cfs over the 30-year period (Table 5.3-2). The mean discharge during the popular summer river recreation period from July through September ranged

from 3,203 cfs to 4,535 cfs. The minimum flow recorded over the 30-year period for the popular summer river recreation months was 1,535 cfs in October. For the summer recreation period from July through September, the discharge quartiles ranged from a minimum of 2,410 cfs to a maximum of 6,865 cfs for the 30-year period.

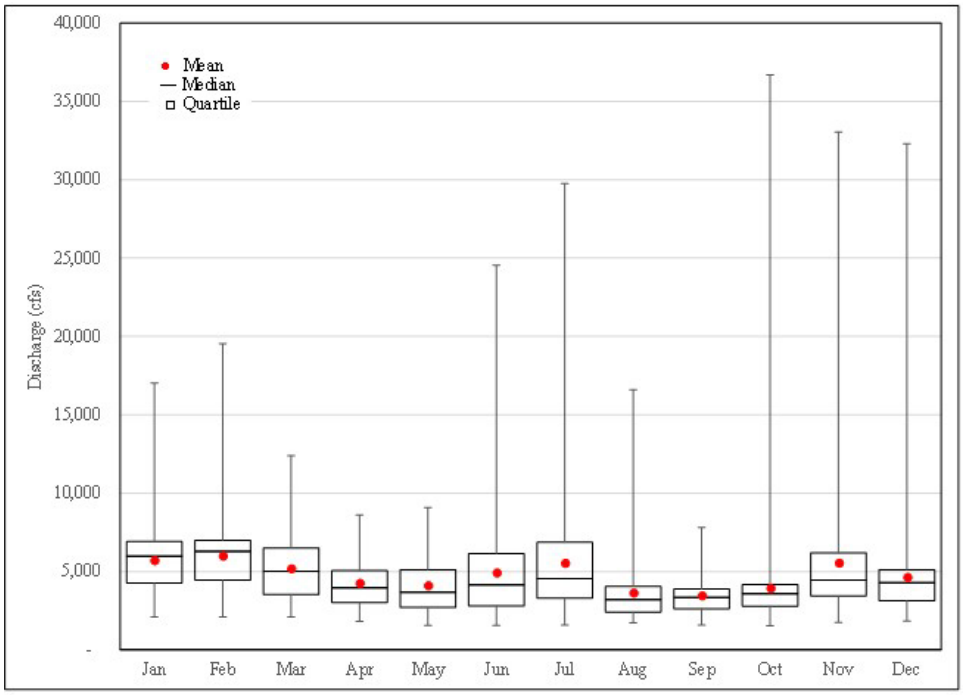


Figure 5.3-2. Skagit River monthly discharge statistics for Newhalem gage (USGS gage 12178000), 1991-2021.

Table 5.3-2. Skagit River monthly discharge statistics for Newhalem gage (USGS gage 12178000), 1991-2021.

	Newhalem Annual Discharge Statistics (cfs)					
Year	Min	First Quarter	Median	Mean	Third Quarter	Max
Jan	2,090	4,258	5,978	5,561	6,910	17,025
Feb	2,100	4,437	6,281	5,853	6,990	19,550
Mar	2,088	3,530	5,020	5,056	6,493	12,392
Apr	1,805	3,025	3,957	4,136	5,053	8,605
May	1,550	2,694	3,675	3,977	5,110	9,083
Jun	1,550	2,795	4,138	4,788	6,136	24,550
Jul	1,580	3,303	4,535	5,394	6,865	29,750
Aug	1,713	2,410	3,203	3,508	4,050	16,600
Sep	1,570	2,620	3,343	3,329	3,875	7,798
Oct	1,535	2,785	3,580	3,812	4,150	36,700
Nov	1,753	3,450	4,452	5,405	6,190	33,046
Dec	1,838	3,138	4,270	4,500	5,110	32,300

5.3.1.2 Marblemount Gage (USGS Gage 12181000)

The annual mean, median, quartiles, minimum, and maximum discharge were graphed for the USGS Marblemount gage (USGS gage 12181000) using data from 1991 – 2021 (Figure 5.3-3). The annual mean flow ranged from 3,769 cfs in 2001 to 8,239 cfs in the 1997 with a mean annual discharge of 6,201 cfs over the 30-year period (Table 5.3-3). The minimum discharge recorded for the period from 1991 – 2021 at the Marblemount gage was 1,520 cfs. The maximum discharge recorded for the same 30-year period at the Marblemount gage was 64,650 cfs. The first and third quartiles ranged from 2,878 cfs to 9,870 cfs over the 30-year period.

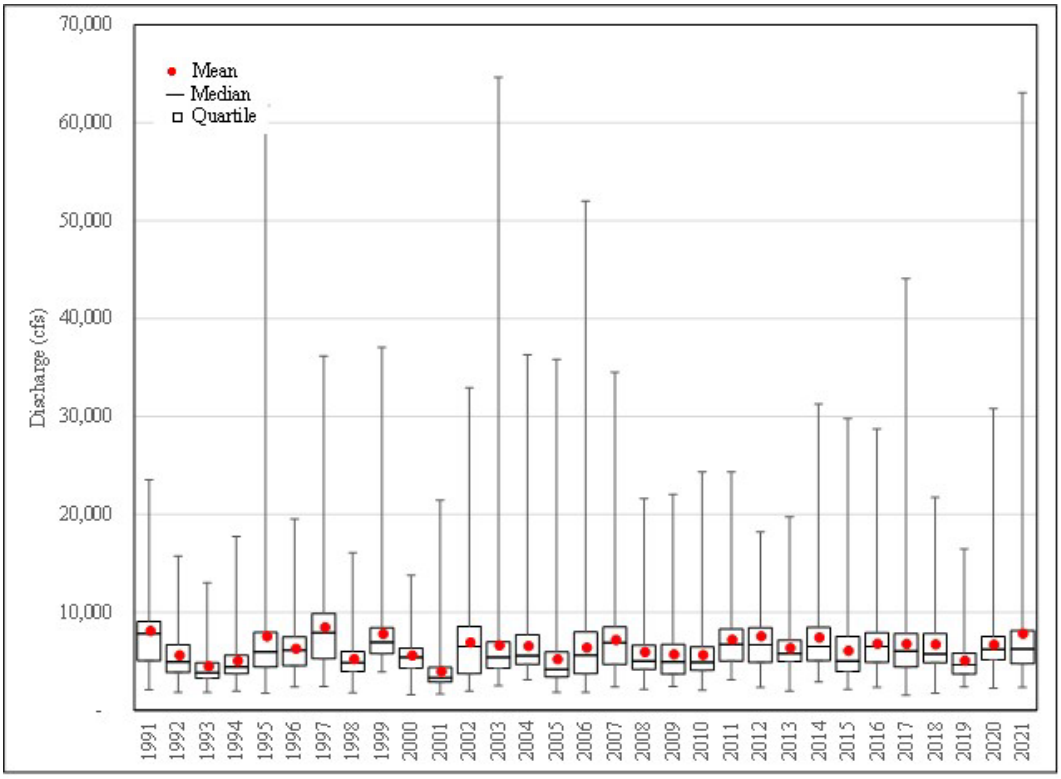


Figure 5.3-3. Skagit River annual discharge statistics for Marblemount gage (USGS gage 12181000), 1991-2021.

Table 5.3-3. Skagit River annual discharge statistics for Marblemount gage (USGS gage 12181000), 1991-2021.

	Marblemount Annual Discharge Statistics (cfs)					
Year	Min	First Quarter	Median	Mean	Third Quarter	Max
1991	2,050	5,043	7,800	7,868	9,050	23,525
1992	1,830	3,855	4,910	5,424	6,698	15,725
1993	1,800	3,260	3,813	4,284	4,838	13,000
1994	1,925	3,723	4,400	4,848	5,610	17,750
1995	1,760	4,400	5,958	7,314	7,950	61,750
1996	2,360	4,516	6,090	6,092	7,505	19,525

Year	Marblemount Annual Discharge Statistics (cfs)					
	Min	First Quarter	Median	Mean	Third Quarter	Max
1997	2,410	5,250	7,899	8,239	9,870	36,175
1998	1,770	3,960	4,845	5,021	5,991	16,100
1999	3,900	5,763	6,938	7,573	8,420	37,050
2000	1,575	4,307	5,410	5,383	6,333	13,750
2001	1,650	2,878	3,320	3,769	4,378	21,450
2002	1,950	3,713	6,490	6,705	8,560	32,950
2003	2,520	4,313	5,389	6,408	6,981	64,650
2004	3,100	4,659	5,560	6,340	7,703	36,275
2005	1,818	3,410	4,148	5,012	5,946	35,800
2006	1,810	3,750	5,613	6,194	7,980	52,000
2007	2,368	4,660	6,884	6,972	8,504	34,525
2008	2,120	4,178	5,013	5,732	6,643	21,625
2009	2,405	3,670	4,913	5,499	6,713	22,025
2010	2,043	4,073	4,875	5,432	6,476	24,350
2011	3,115	5,005	6,701	6,991	8,270	24,325
2012	2,340	4,868	6,698	7,334	8,420	18,200
2013	1,923	4,960	5,788	6,145	7,140	19,750
2014	2,880	5,058	6,495	7,200	8,450	31,275
2015	2,098	3,930	5,005	5,857	7,513	29,800
2016	2,340	4,890	6,510	6,577	7,902	28,725
2017	1,520	4,390	6,043	6,549	7,816	44,100
2018	1,740	4,845	5,730	6,524	7,793	21,725
2019	2,360	3,693	4,626	4,867	5,840	16,475
2020	2,225	5,136	6,183	6,487	7,517	30,783
2021	2,315	4,745	6,228	7,603	8,117	63,058

Monthly mean, median, quartiles, minimum and maximum discharge were graphed for the Newhalem gage (USGS gage 12181000) using data from 1991 – 2021 (Figure 5-3.4). Similar to patterns observed at the Newhalem gage upstream, the highest discharge typically occurs in the months of October, November, and December. Unlike the upstream patterns at Newhalem, winter flows in January, February, and March at Marblemount are equivalent to flows observed in June and July at this gage. The mean monthly discharge ranged from 4,007 cfs in September to 7,660 cfs in November with a mean monthly discharge of 6,210 cfs over the 30-year period (Table 5.3-4). The mean discharge during the popular eagle viewing period from December through February ranged from 6,056 cfs to 7,287 cfs. The minimum flow for the 30-year period for eagle viewing from December through January was 2,360 cfs in December. For that same three-month winter river recreation period, the discharge quartiles range from a minimum 4,344 cfs to a maximum 8,350 cfs for the 30-year period.

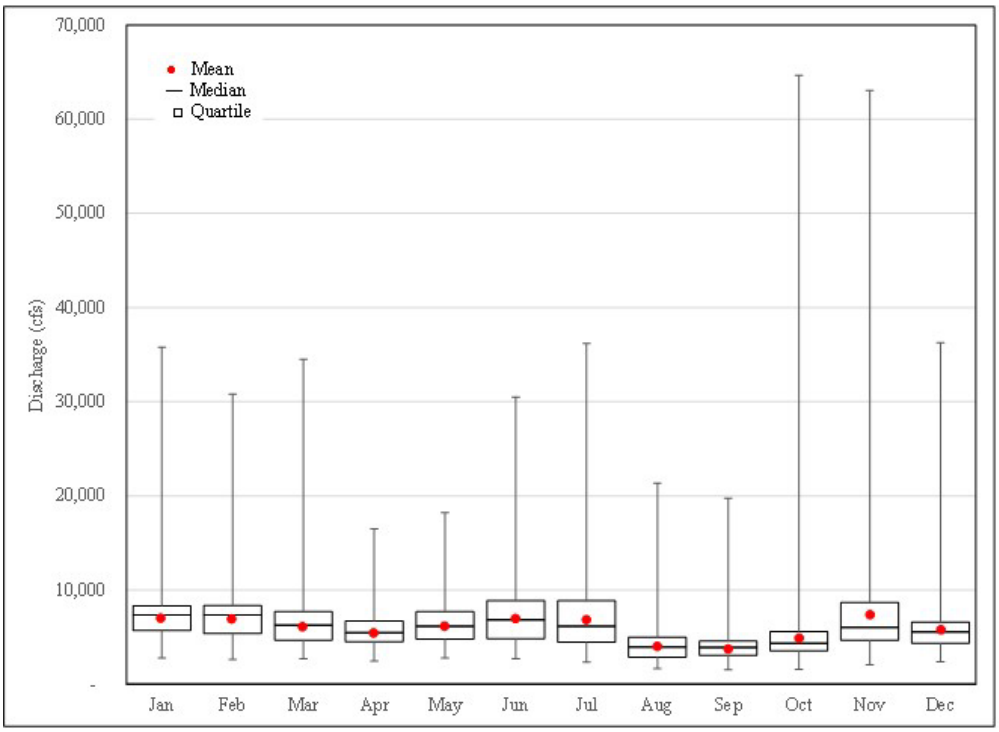


Figure 5.3-4. Skagit River monthly discharge statistics for Marblemount gage (USGS gage 12181000), 1991-2021.

Table 5.3-4. Skagit River monthly discharge statistics Marblemount gage (USGS gage 12181000), 1991-2021.

	Marblemount Annual Discharge Statistics (cfs)					
Year	Min	First Quarter	Median	Mean	Third Quarter	Max
Jan	2,780	5,695	7,333	7,287	8,320	35,800
Feb	2,643	5,380	7,340	7,210	8,350	30,783
Mar	2,670	4,680	6,255	6,363	7,727	34,525
Apr	2,470	4,518	5,453	5,707	6,715	16,475
May	2,780	4,793	6,123	6,441	7,710	18,200
Jun	2,700	4,820	6,800	7,251	8,886	30,500
Jul	2,335	4,450	6,159	7,119	8,858	36,175
Aug	1,645	2,875	3,930	4,272	4,980	21,350
Sep	1,520	3,050	3,893	4,007	4,578	19,750
Oct	1,575	3,539	4,363	5,146	5,595	64,650
Nov	2,050	4,647	6,023	7,660	8,678	63,058
Dec	2,360	4,344	5,536	6,056	6,595	36,275

5.3.2 Frequency of Boating Flows

The frequency of boating days was calculated for each of the three river segments using the boating flow range. The range of flows between the mean minimum acceptable and mean optimum flow for respective watercraft types is referred to as the boating flow range. The mean minimum acceptable and mean optimum flow were calculated from survey respondents for respective watercraft types. In order to count as a boating day, flows needed to stay between the mean minimum acceptable and mean optimum flow for respective watercraft for a 10-hour period from 8 AM to 6 PM.

5.3.2.1 River Segment 1: Goodell to Copper

The mean annual frequency of boating days on the Goodell to Copper river segment for the 30-year period from 1991 – 2021 was greater than 200 days annually for four of the five watercraft types specified by respondents in the recreation flow survey (Figure 5.3-5). Closed-deck hardshell watercraft had the highest mean annual number of days (241) for the 30-year period. The mean annual number of boating days for open canoes was 69 days. The lower number of mean annual boating days for open canoes was due to the narrow flow range between the minimum acceptable and optimum flow for open canoes. The annual number of boating days varied from year to year for each respective watercraft type (Table 5.3-5).

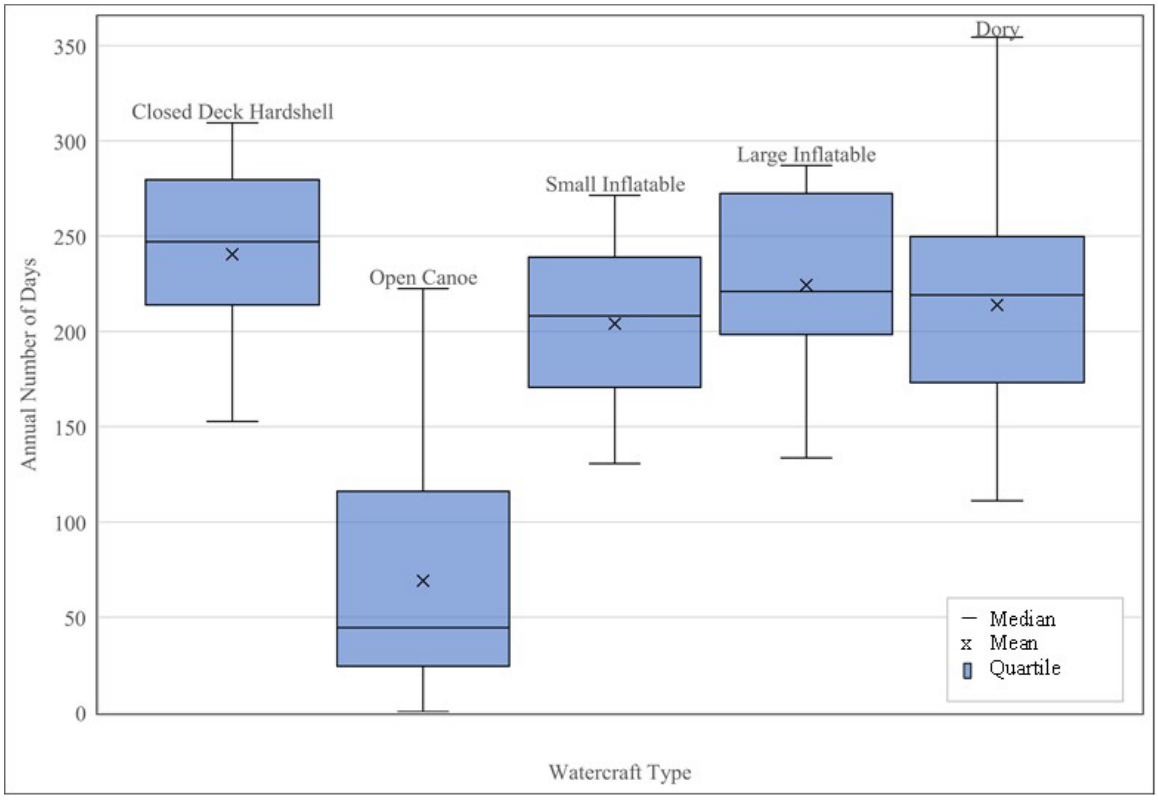


Figure 5.3-5. Annual frequency distribution of boating opportunities for respective watercraft types in the Goodell to Copper river segment (USGS gage 12178000), 1991-2021.

Table 5.3-5. Annual mean frequency of boating days for the Goodell to Copper river segment during daylight hours (8 AM – 6 PM).

Goodell to Copper River Segment					
	Watercraft Type				
Boating Flow Range[1]	Closed Deck Hardshell (Kayak, C1, or C2)	Open Canoe	Small Inflatable (IK, pack raft, or SUP)	Large Inflatable (raft or cataraft)	Dory
	2,200 to 5,700 cfs	1,200 to 3,100 cfs	2,700 to 5,600 cfs	2,300 to 5,500 cfs	1,500 to 5,000 cfs
1991	162	24	149	145	144
1992	226	124	171	203	208
1993	296	201	174	282	319
1994	302	87	256	282	269
1995	219	58	198	207	193
1996	247	41	219	219	172
1997	154	22	141	145	126
1998	306	110	228	285	269
1999	203	0	197	193	152
2000	269	45	239	247	223
2001	252	223	156	244	354
2002	162	95	131	134	180
2003	285	40	260	278	247
2004	265	116	222	250	226
2005	267	193	152	226	270
2006	214	126	171	205	234
2007	195	27	172	188	163
2008	271	47	239	258	219
2009	256	125	207	243	235
2010	280	39	264	272	250
2011	185	4	179	173	125
2012	153	11	142	139	111
2013	252	9	234	230	186
2014	221	8	208	198	173
2015	238	44	211	218	230
2016	230	21	216	218	185
2017	218	26	211	206	185
2018	287	31	271	275	224
2019	310	131	252	285	287
2020	291	51	257	287	262
2021	242	66	203	221	208

1 Boating flow range encompasses the flows between the mean minimum acceptable and mean optimum flow calculated from survey responses for respective watercraft types. Boating flow ranges were rounded to the nearest 100 cfs.

The frequency of monthly boating days was highest in August, September, October and December, followed closely by April and May for all watercraft types (Figure 5.3-6). Closed-deck hardshell boating days were available more than 80 percent of the days in August, September, and October. Similar boating frequencies occurred for dories, large inflatables, and small inflatables in the months of August and September. In contrast, open canoe boating days were least available each month of all the watercraft types due to the narrow range of boatable flows defined for open canoes. The monthly number of boating opportunities for respective watercraft types for the 30-year period from 1991 – 2021 is presented in Table 5.3-6.

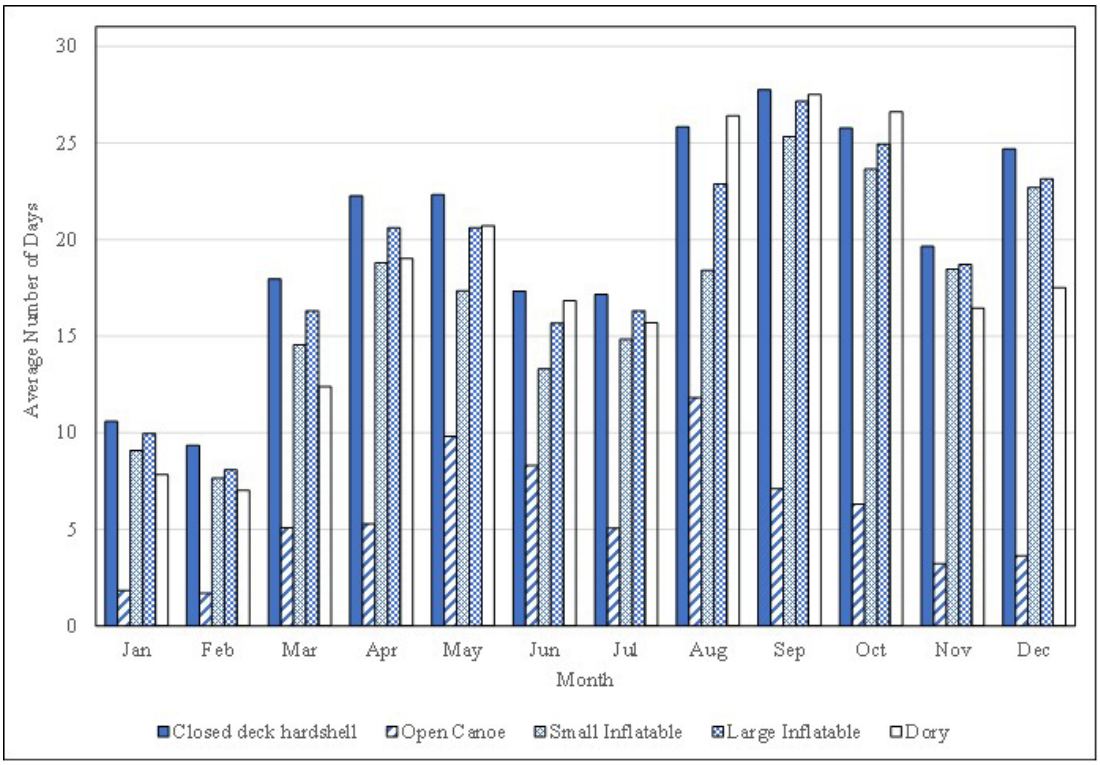


Figure 5.3-6. Monthly mean frequency of boating days for respective watercraft types in the Goodell to Copper river segment (USGS gage 12178000), 1991-2021.

Table 5.3-6. Monthly mean frequency of boating days in the Goodell to Copper river segment during daylight hours (8 AM – 6 PM) from 1991 – 2021.

Watercraft Type	Boating Flow Range[1]	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Closed Deck Hardshell	2,200 – 5,700	11	9	18	22	22	17	17	26	28	26	20	25
Open Canoe	1,200 – 3,100	2	2	5	5	10	8	5	12	7	6	3	4
Small Inflatable	2,700 – 5,600	9	8	15	19	17	13	15	18	25	24	18	23
Large Inflatable	2,300 – 5,500	10	8	16	21	21	16	16	23	27	25	19	23
Dory	1,500 – 5,000	8	7	12	19	21	17	16	26	27	27	16	18

1 Boating flow range encompasses the flows between the mean minimum acceptable and mean optimum flow calculated from survey responses for respective watercraft types. Boating flow ranges were rounded to the nearest 100 cfs.

5.3.2.2 River Segment 2: Copper Creek to Marblemount

The mean annual frequency of boating days on the Copper to Marblemount river segment for the 30-year period from 1991 – 2021 was greater for all watercraft types compared to the upstream river segment (Figure 5.3-7). Closed-deck hardshell watercraft had the highest mean annual number of days (291 days) for the 30-year period. The mean annual number of boating days for open canoes on this river segment increased to 147 days compared to 69 days on the upstream river segment (Goodell to Copper) despite no change in the hydrology. The increase in the annual frequency of boating days for open canoes is due to the expanded range of boatable flows between the minimum acceptable and optimum flow identified by respondents in the recreation flow survey. In structured interviews, participants commented that the shallower gradient increased travel time and reduced the whitewater difficulty in this river segment making higher flows more desirable. The annual number of boating days varied from year to year for each respective watercraft type (Table 5.3-7).

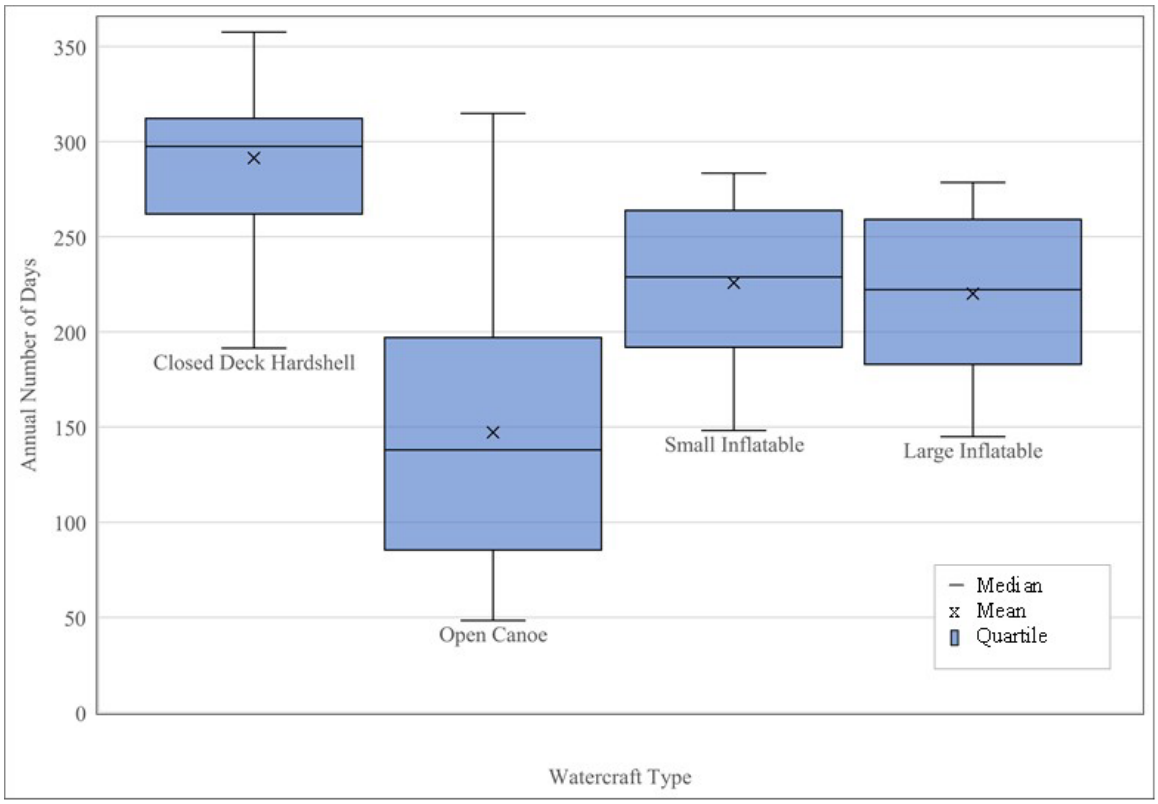


Figure 5.3-7. Annual frequency distribution of boating days for respective watercraft types in the Copper Creek to Marblemount river segment (USGS gage 12178000), 1991-2021.

Table 5.3-7. Annual mean frequency of boating days for the Copper Creek to Marblemount river segment during daylight hours (8 AM – 6 PM).

Copper to Marblemount River Segment				
Boating Flow Range[1]	Watercraft Type			
	Closed Deck Hardshell (Kayak, C1, or C2)	Open Canoe	Small Inflatable (IK, pack raft, or SUP)	Large Inflatable (raft or cataraft)
	2,200 to 6,800 cfs	1,000 to 4,100 cfs	2,500 to 5,800 cfs	2,600 to 5,800 cfs
1991	241	95	172	170
1992	293	168	205	198
1993	312	261	229	213
1994	340	205	284	279
1995	293	138	221	218
1996	307	125	246	242
1997	191	85	148	147
1998	355	215	283	257
1999	292	73	208	208
2000	348	132	264	260
2001	254	315	172	163
2002	207	158	150	145
2003	307	135	276	271
2004	282	177	234	229
2005	281	234	196	179
2006	258	215	192	181
2007	262	101	185	183
2008	298	156	263	260
2009	327	197	232	222
2010	310	192	274	271
2011	259	48	189	189
2012	239	97	161	161
2013	320	63	256	256
2014	300	84	234	232
2015	301	138	216	216
2016	292	85	228	225
2017	271	84	223	222
2018	302	85	275	275
2019	358	239	279	259
2020	340	141	275	262
2021	298	121	233	232

1 Boating flow range encompasses the flows between the mean minimum acceptable and mean optimum flow calculated from survey responses for respective watercraft types. Boating flow ranges were rounded to the nearest 100 cfs.

The frequency of monthly boating days was highest in December, followed closely by September and October for closed deck hardshells, small inflatables, and large inflatables (Figure 5.3-8). September is considered the prime opportunity for boating on the Skagit River. Closed-deck hardshell boating days were available in July (88 percent), August (93 percent), and September (87 percent). Small inflatables boating days were available in July (54 percent), August (66 percent), and September (86 percent). Large inflatables boating days were available in July (53 percent), August (63 percent), and September (86 percent).

The lower percentage of monthly days for small inflatables and large inflatables in July, August, and September was due to the narrower range of boating flows between the mean minimum acceptable and optimum flows compared to the boating range for closed deck hardshells. Open canoe boating days were least available each month of all the watercraft types due to the narrow range of boatable flows defined for open canoes. The monthly number of boating opportunities for respective watercraft types for the 30-year period from 1991 – 2021 is presented in Table 5.3-8.

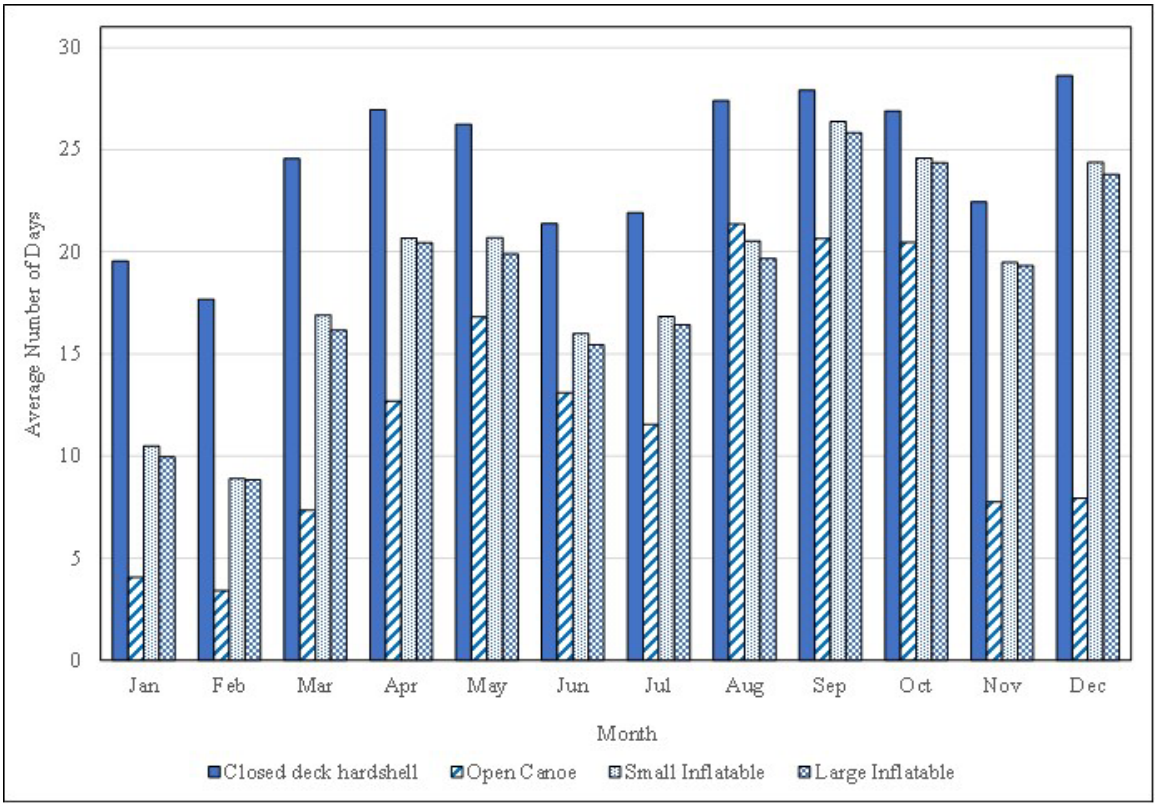


Figure 5.3-8. Monthly mean frequency of boating days for respective watercraft types in the Copper Creek to Marblemount river segment (USGS gage 12178000), 1991-2021.

Table 5.3-8. Monthly mean frequency of boating days in the Copper Creek to Marblemount river segment during daylight hours (8 AM – 6 PM) from 1991 – 2021.

Watercraft Type	Boating Flow Range[1]	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Closed Deck Hardshell	2,200 – 6,800	20	18	25	27	26	21	22	27	28	27	22	29
Open Canoe	1,000 – 4,100	4	3	7	13	17	13	12	21	21	20	8	8
Small Inflatable	2,500 – 5,800	10	9	17	21	21	16	17	21	26	25	19	24
Large Inflatable	2,600 – 5,800	10	9	16	20	20	15	16	20	26	24	19	24

1 Boating flow range encompasses the flows between the mean minimum acceptable and mean optimum flow calculated from survey responses for respective watercraft types. Boating flow ranges were rounded to the nearest 100 cfs.

5.3.2.3 River Segment 3: Marblemount to Howard Miller

The mean annual frequency of boating days on the Marblemount to Howard Miller river segment for the 30-year period from 1991 – 2021 was greatest for large inflatables and least for open canoes (Figure 5.3-9). The annual number of boating days decreased for closed-deck hardshells and dories because discharge was often times greater than the boatable flow range defined from results in the recreation flow survey. Structured interview participants often remarked there was no upper limit for the boatable flow range for this river segment due to the shallow gradient and low whitewater difficulty. Large inflatable boats were identified as the most popular watercraft on this river segment by structured interview participants. The annual number of boating days varied from year to year for each respective watercraft type (Table 5.3-9).

The frequency of monthly boating days was highest in September and October followed closely by August for all watercraft types (Figure 5.3-10). Closed-deck hardshell boating days were highest in August, September and October. Large inflatable boating opportunities were highest in April, May, September, October, and December. Large inflatable boating opportunities were greater than all other watercraft types for January through July, November, and December. Open canoe boating days were highest in August, September and October. The monthly number of boating opportunities for respective watercraft types for the 30-year period from 1991 – 2021 is presented in Table 5.3-10.

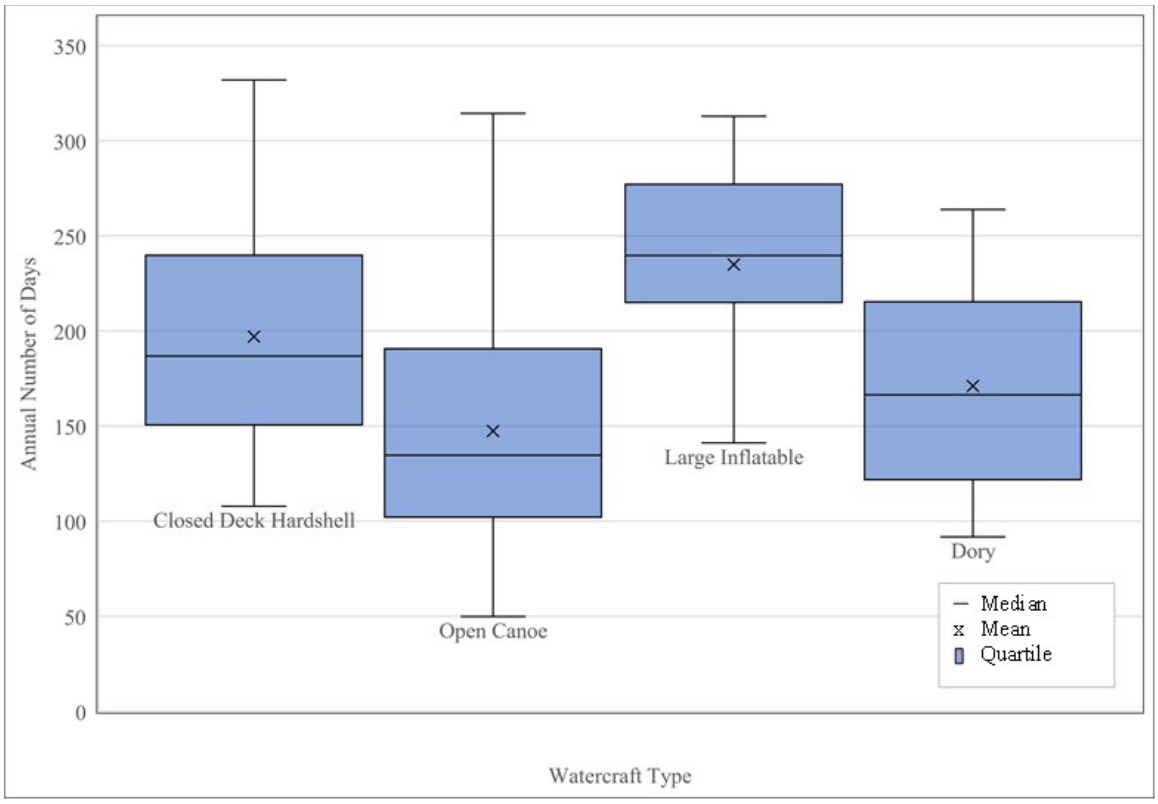


Figure 5.3-9. Annual frequency distribution of boating days for respective watercraft types in the Marblemount to Howard Miller river segment (USGS gage 12181000), 1991-2021.

Table 5.3-9. Annual mean frequency of boating days for the Marblemount to Howard Miller river segment during daylight hours (8 AM – 6 PM).

Marblemount to Howard Miller River Segment				
	Watercraft Type			
Boating Flow Range[1]	Closed Deck Hardshell (Kayak, C1, or C2)	Open Canoe	Large Inflatable (raft or cataraft)	Dory
	2,500 to 6,200 cfs	2,000 to 5,200 cfs	3,200 to 7,500 cfs	3,000 to 6,000 cfs
1991	108	77	143	92
1992	209	167	253	186
1993	297	259	283	264
1994	262	218	289	235
1995	173	133	215	159
1996	167	107	238	142
1997	116	83	141	104
1998	263	191	311	234
1999	135	50	218	121
2000	250	144	309	213

Marblemount to Howard Miller River Segment				
Boating Flow Range[1]	Watercraft Type			
	Closed Deck Hardshell (Kayak, C1, or C2)	Open Canoe	Large Inflatable (raft or cataraft)	Dory
	2,500 to 6,200 cfs	2,000 to 5,200 cfs	3,200 to 7,500 cfs	3,000 to 6,000 cfs
2001	332	314	205	231
2002	137	140	142	95
2003	209	135	255	179
2004	205	137	256	197
2005	269	237	241	215
2006	167	153	185	122
2007	151	104	167	120
2008	239	173	282	223
2009	240	191	252	197
2010	239	192	280	218
2011	146	89	215	136
2012	124	91	197	108
2013	187	117	277	166
2014	160	102	224	153
2015	191	192	240	187
2016	145	102	215	120
2017	168	130	224	151
2018	192	105	247	177
2019	286	223	313	257
2020	179	96	251	151
2021	165	119	217	152

1 Boating flow range encompasses the flows between the mean minimum acceptable and mean optimum flow calculated from survey responses for respective watercraft types. Boating flow ranges were rounded to the nearest 100 cfs.

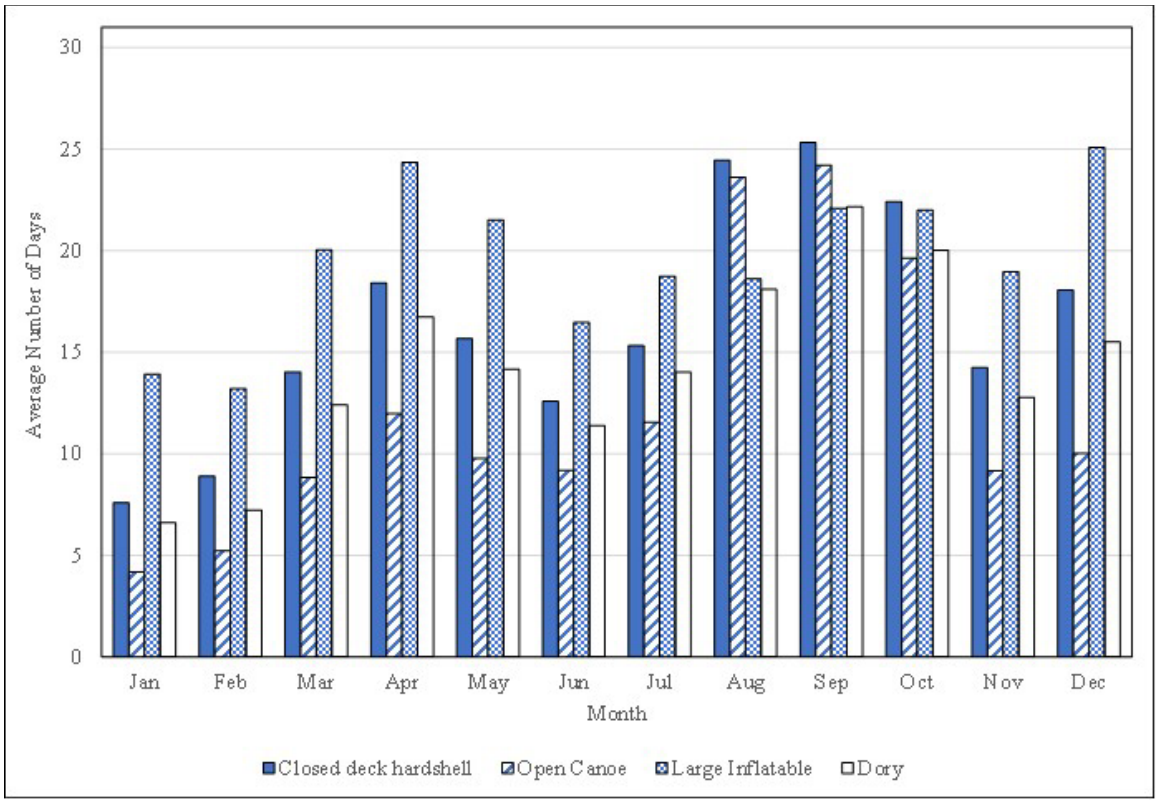


Figure 5.3-10. Monthly mean frequency of boating days for respective watercraft types in the Marblemount to Howard Miller river segment (USGS gage 12181000), 1991-2021.

Table 5.3-10. Monthly mean frequency of boating days in the Marblemount to Howard Miller river segment during daylight hours (8 AM – 6 PM) from 1991 – 2021.

Watercraft Type	Boating Flow Range[1]	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Closed Deck Hardshell	2,500 – 6,200	8	9	14	18	16	13	15	24	25	22	14	18
Open Canoe	2,000 – 5,200	4	5	9	12	10	9	12	24	24	20	9	10
Large Inflatable	3,200 – 7,500	14	13	20	24	22	16	19	19	22	22	19	25
Dory	3,000 – 6,000	7	7	12	17	14	11	14	18	22	20	13	16

1 Boating flow range encompasses the flows between the mean minimum acceptable and mean optimum flow calculated from survey responses for respective watercraft types. Boating flow ranges were rounded to the nearest 100 cfs.

5.3.3 Duration of Boating Flow

The duration of boating flows during daylight hours (8 AM to 6 PM) was analyzed using hydrology data for the period 1991 – 2021 from the Newhalem gage (USGS gage 12178000) and the Marblemount gage (USGS gage 12181000) for the respective river segments. The boating flow for the duration analysis was defined as the flow between the lowest mean minimum acceptable

for all the watercraft types and highest mean optimum flows for all the watercraft types based on responses from the recreation flow survey for each river segment.

In the river segment from Goodell to Copper, the duration of boating flows (1,200 - 5,700 cfs) lasting for an interval greater than 9 hours during daylight hours (8 AM to 6 PM) occurred 89 percent of the time (Figure 5.3-11). Similarly, in the river segment from Copper to Marblemount, the duration of boating flows (1,000 - 6,800 cfs) lasting for an interval greater than 9 hours during daylight hours occurred 89 percent of the time (Figure 5.3-12). In the river segment from Marblemount to Howard Miller, the duration of boating flows (2,000 - 7,500 cfs) lasting for an interval greater than 9 hours during daylight hours occurred 84 percent of the time (Figure 5.3-13).

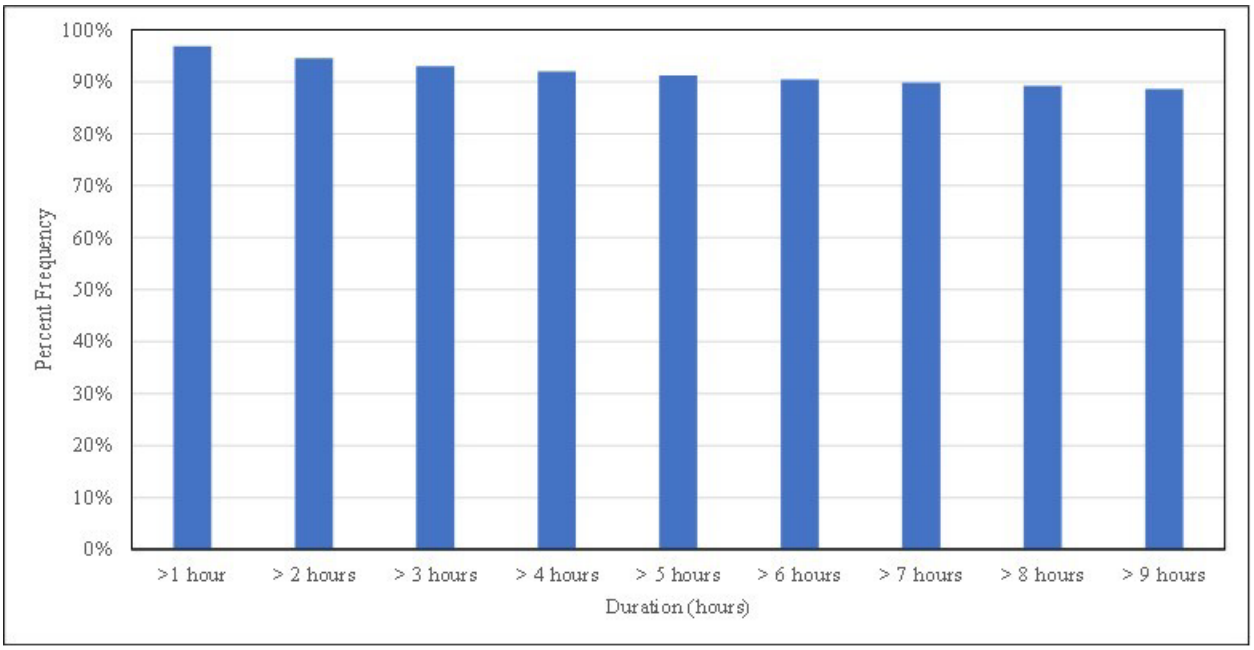


Figure 5.3-11. Duration of boating flows in the Goodell to Copper river segment (USGS gage 12178000), 1991-2021.

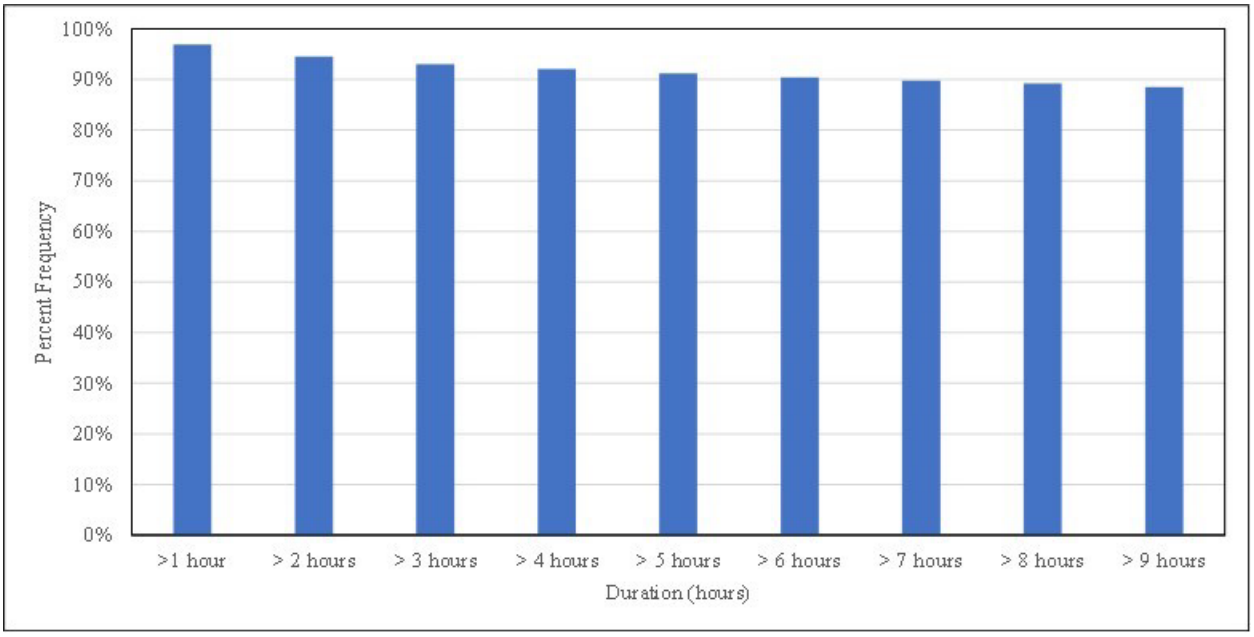


Figure 5.3-12. Duration of boating flows in the Copper to Marblemount river segment (USGS gage 12178000), 1991-2021.

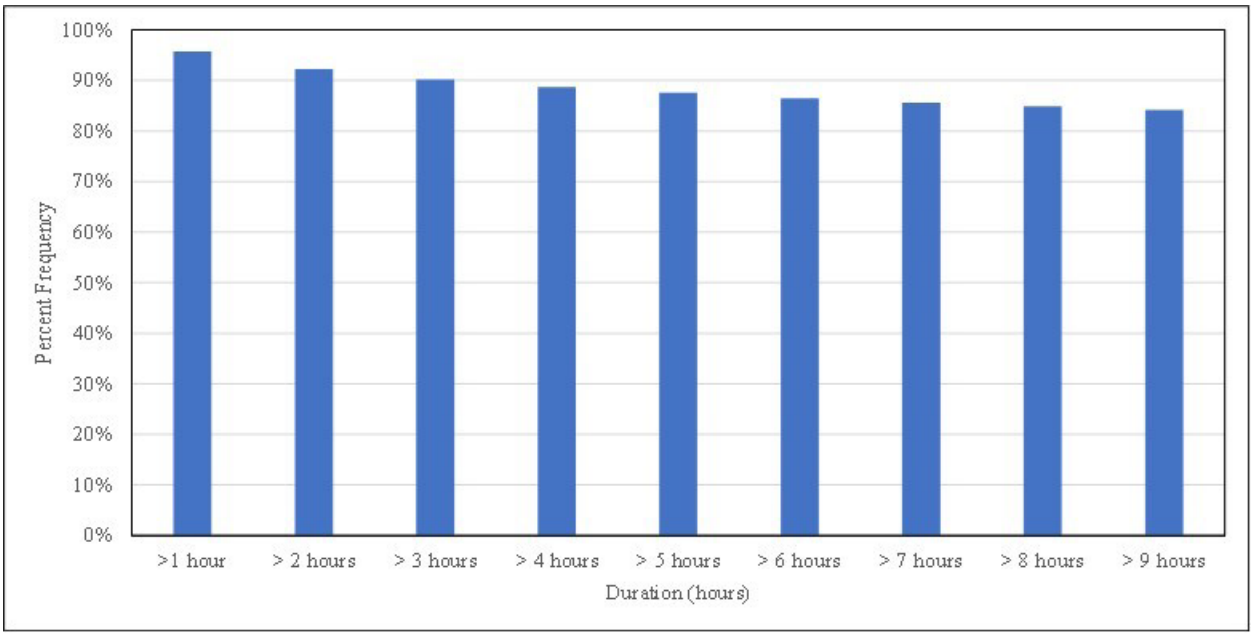


Figure 5.3-13. Duration of boating flows in the Marblemount to Howard Miller river segment (USGS gage 12181000), 1991-2021.

5.3.4 Rate of Change in Boating Flow

The hourly rate of change of boating flows during daylight hours (8 AM to 6 PM) was counted using hydrology data for the period 1991 – 2021 from the Newhalem gage (USGS gage 12178000) and the Marblemount gage (USGS gage 12181000) for the respective river segments. Similar to the duration analysis, the boating flow for the rate of change analysis was defined as the flow

between the lowest mean minimum acceptable for all the watercraft types and highest mean optimum flows for all the watercraft types based on responses from the recreation flow survey for each river segment.

In the river segment from Goodell to Copper, the majority of hourly changes for the period of record were equal to or less than a 1 percent change in flow (Figure 5.3-14). A 1 percent rate of change in this river segment in the boating flow range results in increase or decrease of 12 to 57 cfs in boating flow in a 1-hour period. Rates of change in boating flow range greater than 1 percent were much less frequent within the boating flow range for this river segment. Decreasing hourly rates of change in flow were less common than increasing hourly rates of change.

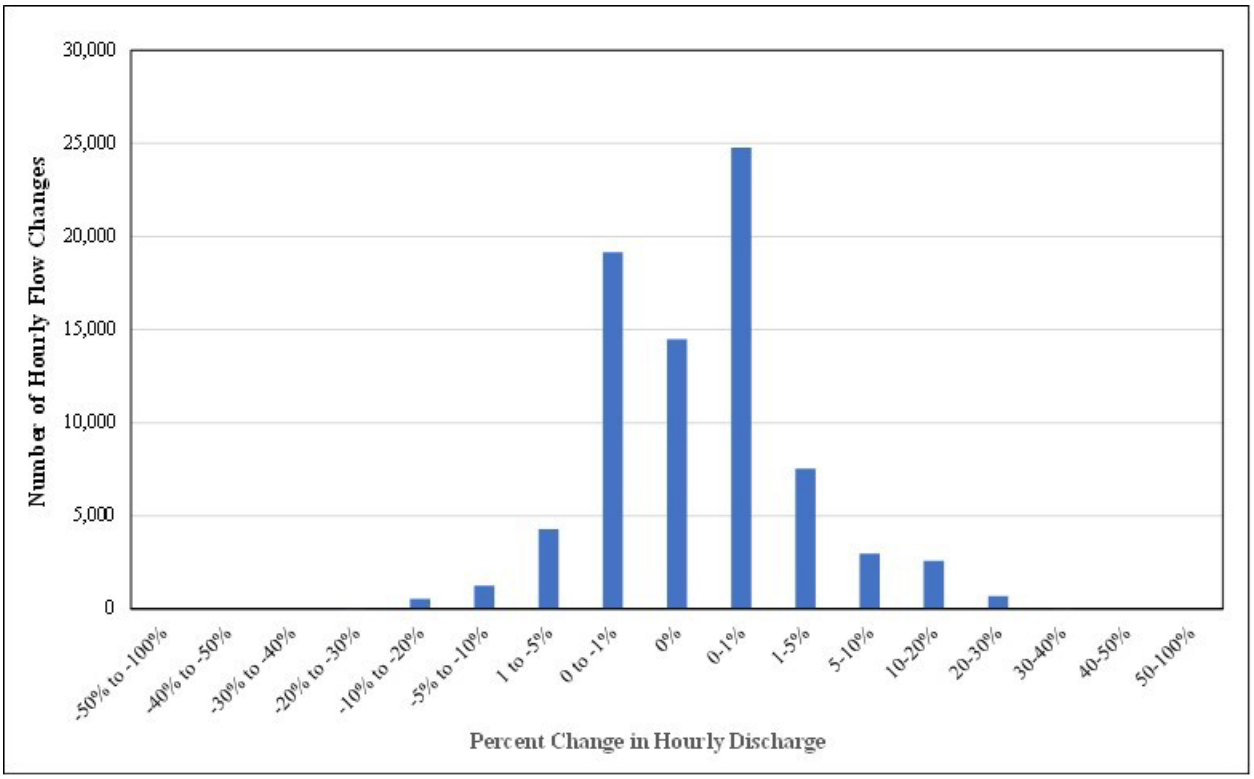


Figure 5.3-14. Rate of change in boatable flows in the Goodell to Copper river segment (USGS gage 12178000), 1991-2021.

In the river segment from Copper to Marblemount, the majority of hourly changes for the period of record were equal to or less than a 1 percent change in flow (Figure 5.3-15). A 1 percent rate of change in this river segment in the boating flow range results in increase or decrease of 10 to 68 cfs in boating flow in a 1-hour period. There was a substantially higher number of 0-1 percent hourly increases in discharge than decreases. Rates of change in boating flow range greater than 1 percent were much less frequent within the boating flow range for this river segment. Decreasing hourly rates of change in flow were less common than increasing hourly rates of change.

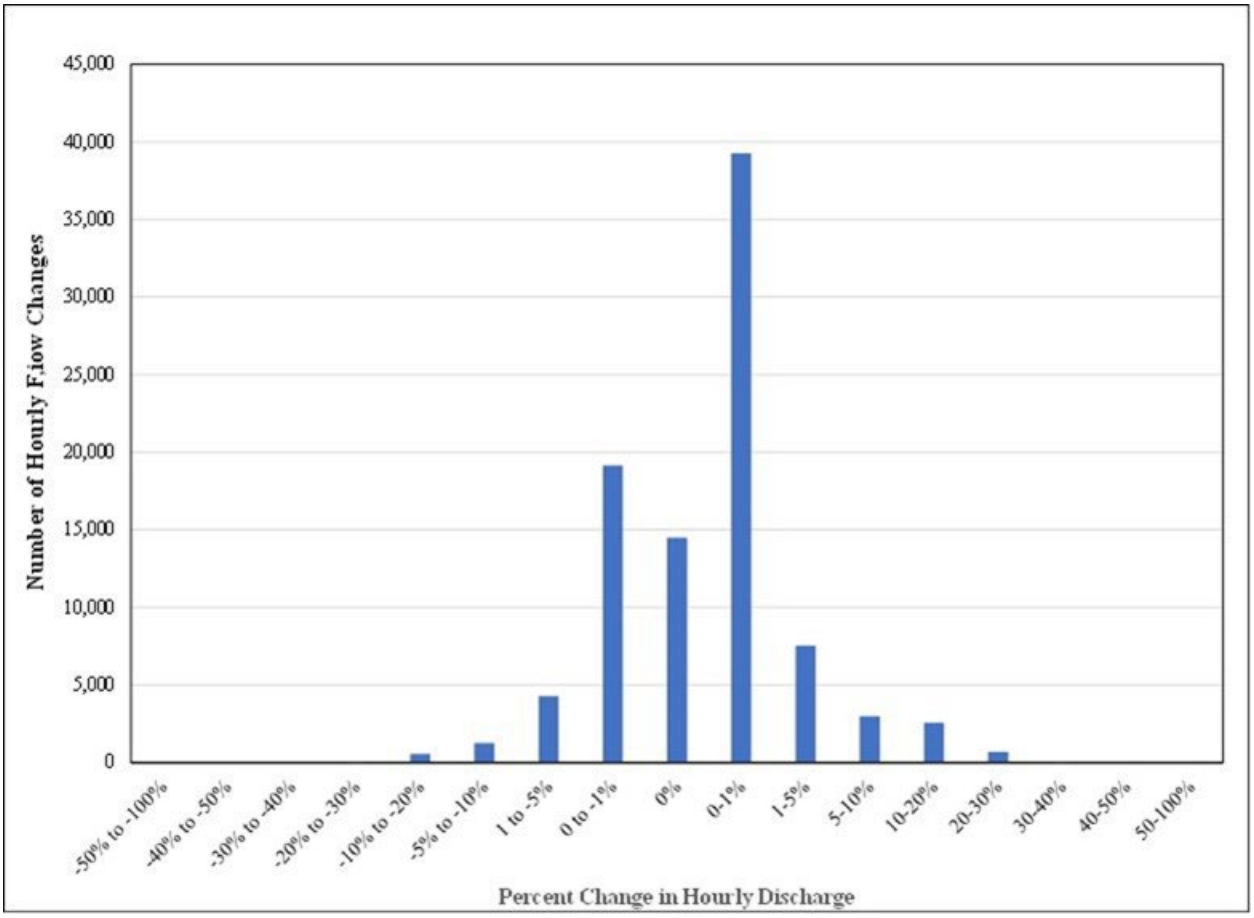


Figure 5.3-15. Rate of change in boatable flows in the Copper to Marblemount river segment (USGS gage 12178000), 1991-2021.

In the river segment from Marblemount to Howard Miller, the majority of hourly changes for the period of record were equal to or less than a 1 percent change in flow (Figure 5.3-16). A 1 percent rate of change in this river segment in the boating flow range results in increase or decrease of 20 to 75 cfs in boating flow in a 1-hour period. There were a larger number of increases from 1-5 percent in the hourly boating flow in this river segment compared to the two segments upstream. A five-percent rate of change ranges from a 100 to 375 cfs increase in boating flow in a 1-hour period. Decreasing hourly rates of change in flow were less common than increasing hourly rates of change.

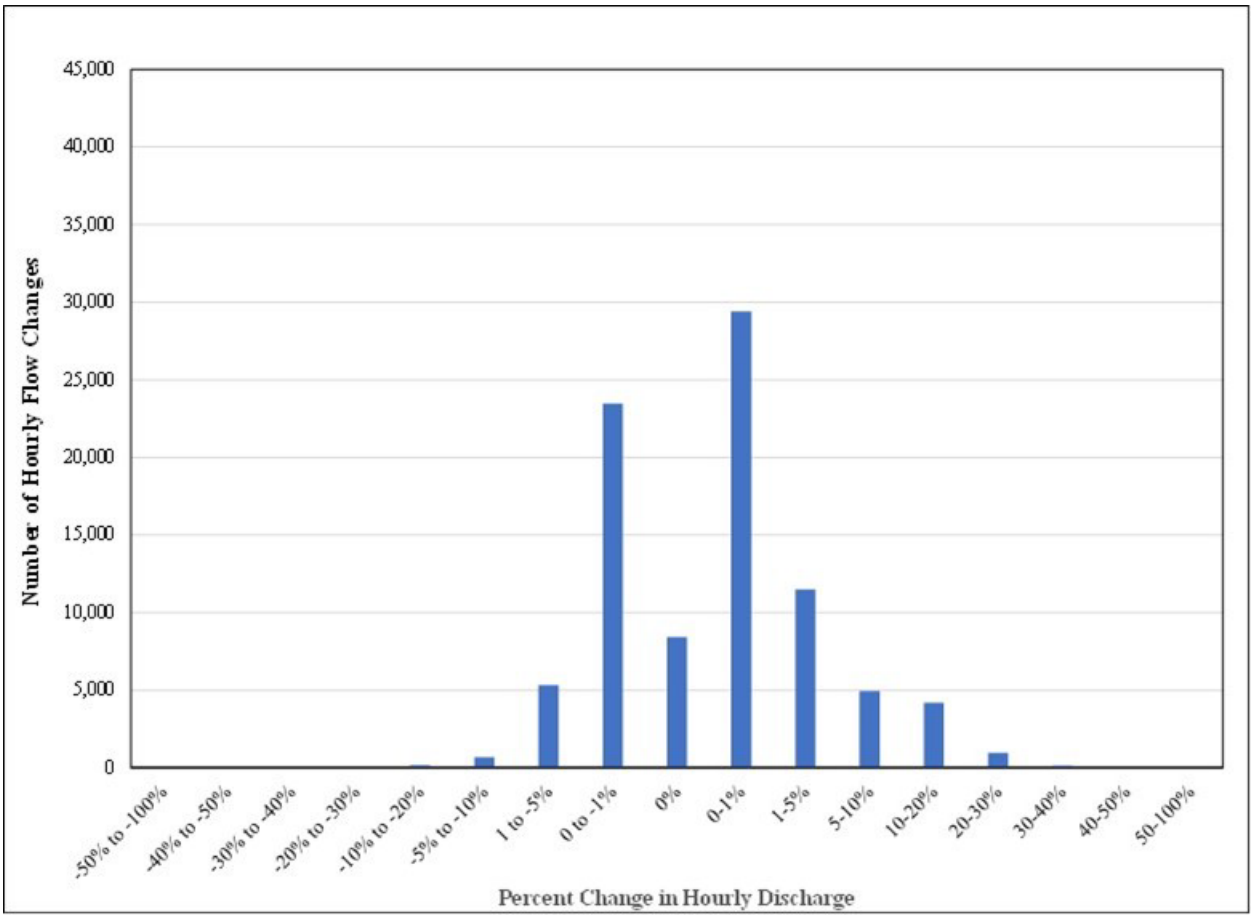


Figure 5.3-16. Rate of change in boatable flows in the Marblemount to Howard Miller river segment (USGS gage 12181000), 1991-2021.

5.4 S-Bends Portage Assessment

The S-Bends, also referred to as Shovel Spur in the North guidebook (North 1992), contain the most difficult rapids on the Goodell to Copper river segment. The S-Bends are three rapids that occur in short succession. The S-Bends Rapids start 5.9 miles downstream from the Goodell Creek Boat Launch. North names the individual rapids from upstream to downstream: Youssarian (Class II), Dolly Parton (Class III), and Jack the Ripper (Class III). More recent guidebooks, i.e., Bennett (n.d.) and the American Whitewater river information page (American Whitewater 2021b), refer only to the series of rapids at S-Bends and do not name the individual rapids. Bennett and American Whitewater rate the S-Bends Rapids Class III (III+ at flows greater than 6,000 cfs).

In the description of the S-Bends Rapids, North notes in parenthesis "(the Portage….)" but provides no explanation beyond that single reference. Bennett and American Whitewater do not mention a portage in their respective descriptions. Both sources recommend scouting the rapid from SR 20 during the shuttle. The potential S-Bends portage route was visited on July 27, 2021 and again on November 6, 2021. Two informal social trails were mapped, the upper trail and lower trail, which provide recreation users access from SR 20 to the Skagit River at the S-Bends Rapids (Figure 5.4-1).

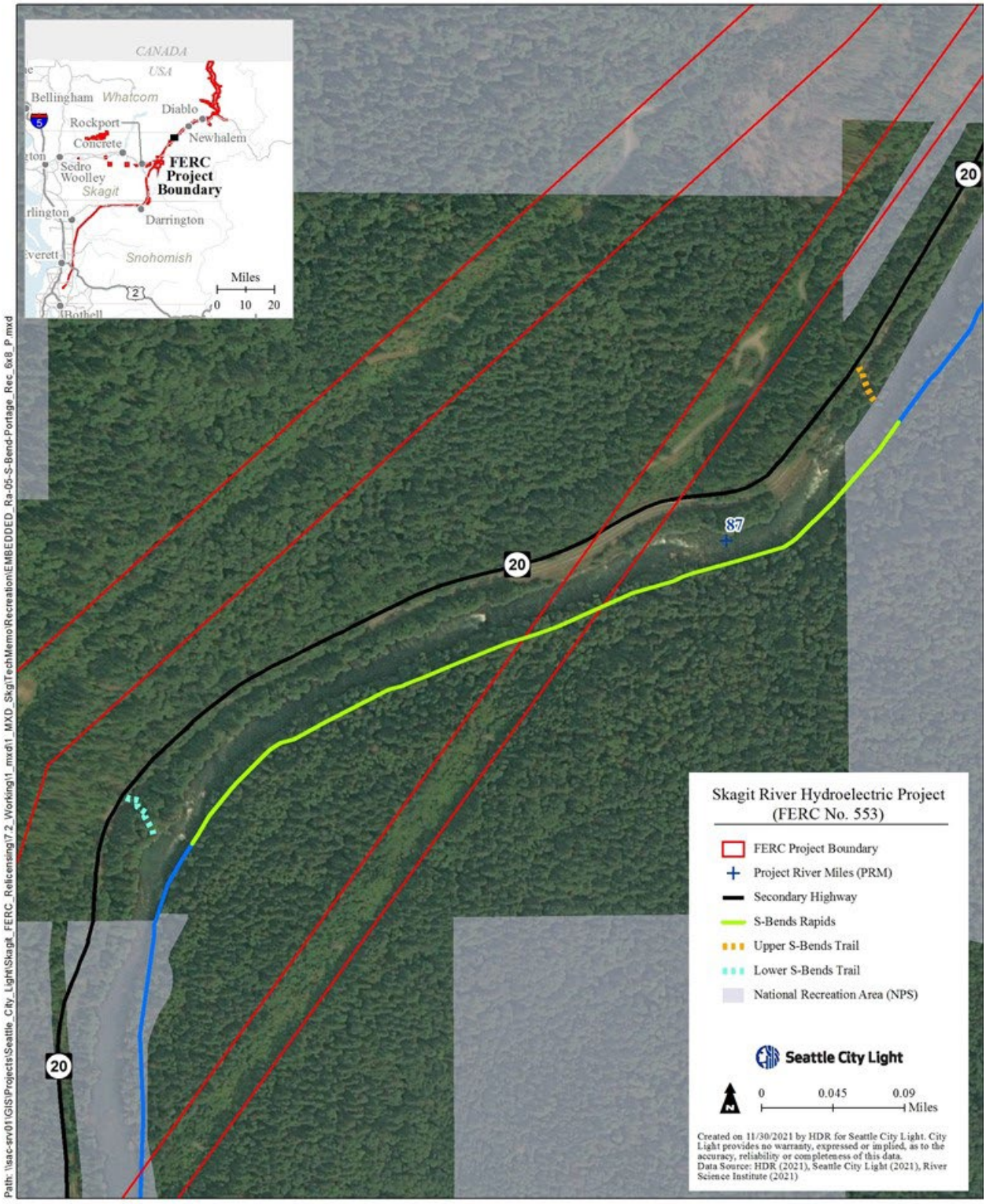


Figure 5.4-1. Informal upper and lower trails at S-Bends Rapids.

The upper trail at the upstream end of the S-Bends Rapids is located at approximately MP 114.1 on SR 20. The lower trail at the downstream end of the S-Bends Rapids is at approximately MP 113.6. These are informal trails that exist through repeated use by recreation users. No signage exists for either trail. Small, unmarked pull-outs exist at the upstream and downstream trails adjacent to SR 20 which are capable of fitting two to three cars only (Figures 5.4-2 and 5.4-3).

Figure 5.4-2. Small pull-out on SR 20 at upstream end of S-Bends Rapids.

Figure 5.4-3. Small pull-out on SR 20 at downstream end of S-Bends Rapids.

The upper trail is steep and narrow (2 to 3 feet wide) with an uneven dirt tread interspersed with tree roots and rocks obstructed from view by grasses and shrubs (Figure 5.4-4). Individuals floating from the Goodell Creek Boat Launch in smaller watercraft may use this as a take-out location, thereby avoiding the Class III rapids in the S-Bends. Individuals carrying a kayak or single person inflatable type of watercraft could climb the embankment to the pull-out on SR 20 without too much effort. Wider boats such as rafts would require considerable effort to reach the pull-out on SR 20 due to the steepness and narrow width of the trail.

The lower trail is slightly longer than the upper trail and not as steep at the start near SR 20 (Figure 5.4-5). The trail gets steeper and rockier closer to the river (Figure 5.4-6).

Individuals electing to use the informal upper and lower trails to portage around the S-Bends Rapids must walk along SR 20 for 0.6 miles (Figure 5.4-7). The shoulder of SR 20 is narrow and not suitable for carrying larger boats such as rafts. Individuals with single person watercraft could walk along the riverside of the guardrail.

Based on the July 27, 2021 and November 6, 2021 site assessment, the informal trails to and from SR 20 are not likely the route used to portage around the S-Bends Rapids. Individuals electing to portage around the S-Bends Rapids would most likely do so on the river-left below the ordinary high-water mark. The potential portage route on river-left is much shorter and requires less effort compared to climbing the steep bank on the river-right to SR 20. The river-left portage option is visible at the top center of the image where kayaks are pulled up on shore in Figure 5.4-4. In fact, North recommends scouting the S-Bends Rapids on river-left rather than river-right for boaters already on the river.

The upper and lower trails may serve as an informal access to the whitewater rapids in the S-Bends rather than a portage route. In one structured interview, a participant with 22 years of experience guiding commercial trips on the Skagit River noted they have observed kayakers doing multiple laps through the S-Bend rapids using the informal social trails to carry their boats from the bottom of the rapids back to the top for another run. Two recreation flow survey respondents identified a need for additional access at the S-Bend rapids and suggested trail improvements allowing boaters to do multiple laps and/or portage.

Figure 5.4-4. Informal upper trail from milepost 114.1 on SR 20 to Skagit River upstream of S-Bends Rapids.

Figure 5.4-5. Informal lower trail from milepost 113.6 on SR 20 to Skagit River downstream of S-Bends Rapids (Photo: Tom O'Keefe).

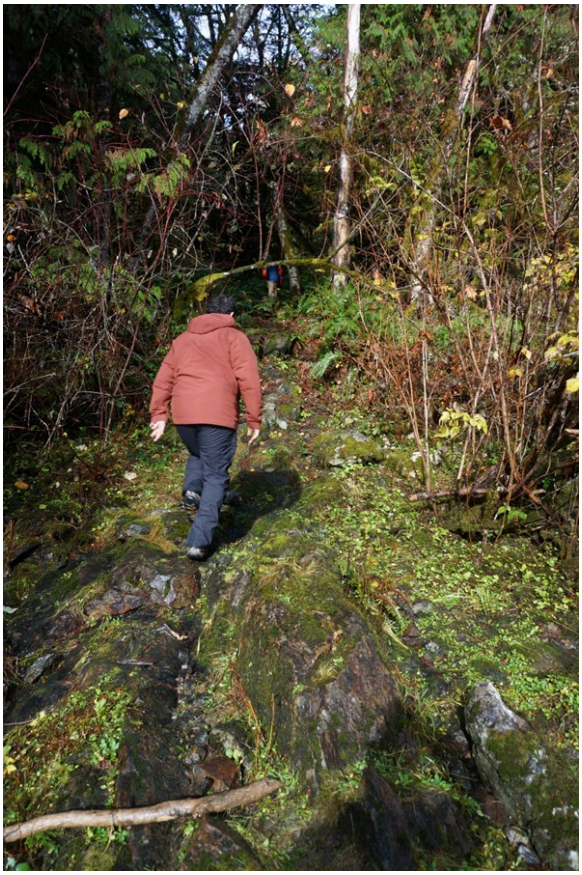


Figure 5.4-6. Informal lower trail viewed from Skagit River.

Figure 5.4-7. Portage path between guardrail and river along SR 20.

6.0 DISCUSSION AND FINDINGS

This study is complete and has met the goals and objectives stated in Section 2.0 of this study report. The goal of the Recreation Flow Study is to document the recreation flow needs in the Skagit River from Goodell Creek Boat Launch to the Howard Miller Steelhead Park near Rockport to better understand how current Project conditions may influence recreation flow opportunities, to inform future operational scenarios that may include a range of instream flow measures in a future license, and to assess potential constraints such as fish and aquatic resource protection measures, Project operations, or safety concerns. Objectives of the study include (1) describing the recreation boating opportunities in the Skagit River from Goodell Creek Boat Launch to the Howard Miller Steelhead Park near Rockport, including delineating the respective recreation segments, access locations, whitewater difficulty, character of rapids, number of portages, watercraft types, and uniqueness of opportunity; (2) determining the range of boating flows for watercraft types for each river segment; and (3) quantifying the frequency, timing, duration, magnitude, and rate of change of flows downstream of the Gorge Powerhouse within the boating flow range.

The Recreation Flow Study divided the study area into three distinct river segments: the 8.7 mile segment from Goodell to Copper; the 5.9 mile segment from Copper to Marblemount; and the 10.6 mile segment from Marblemount to Howard Miller. The discussion and findings associated with the results of the Recreation Flow Study are organized below by the individual river segments incorporating information and data collected in the recreation flow survey, structured interviews, and hydrology analysis.

6.1 River Segment 1: Goodell Creek Boat Launch to Copper Creek Boat Access Site

The Goodell to Copper segment is located entirely within the RLNRA. This river segment is popular with whitewater boaters attracted to the Class III rapids known as the S-Bends. Commercial outfitters offer guided rafting trips typically lasting two to three hours. Commercial outfitters typically do two to three trips per day during the peak summer season in July and August. This is also a popular river segment for non-commercial rafters and kayakers in the summer season because of the dependable flows at a time when flows on other nearby rivers are typically too low. Entry-level intermediate kayakers use this segment to improve skills. Other less common types of watercraft include open canoes, whitewater kayaks, inflatable kayaks, pack rafts, and stand-up paddleboards. Motorized watercraft are not permitted on this segment of the Skagit River. River recreation use occurs year-round but is greatest in the summer months coinciding with favorable weather, dependable river flows, and, for commercial outfitters, summer tourists. River access is provided at the Goodell Creek Boat Launch and the Copper Creek Boat Access Site. There are no other launch locations accessible by vehicle along this river segment.

Boating flows for the river segment from Goodell to Copper identified in the recreation flow survey for all watercraft ranged from 1,200 cfs minimum acceptable flow to an optimum flow of 5,700 cfs. The range of boating flows for individual watercraft types is provided in Table 6.1-1. The range of boating flows for four of the five watercraft types overlaps substantially with the mean-quartile river discharge range recorded between 1991 and 2021 (Figure 6.1-1). The mean annual number of boating days exceeds 200 days per year for four of the five watercraft types with

more than 25-days per month on average in August and September alone overlapping with the highest period of river recreation use.

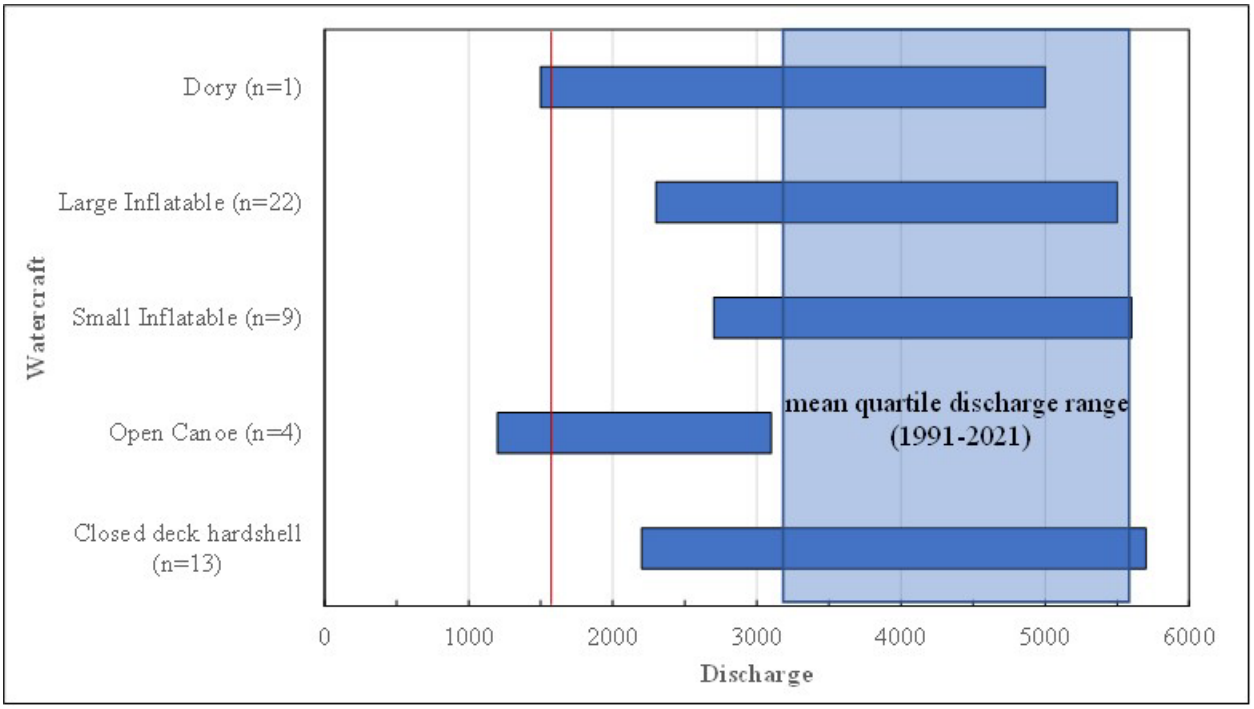
Table 6.1-1. Range of boating flows identified by recreation flow survey respondents for respective watercraft types in the Goodell to Copper river segment.

River Segment	Watercraft Type	Boating Flow Range (rounded to nearest 100 cfs)
Goodell to Copper	Closed-Deck Hardshell (Kayak, C1, or C2) (n=13)	2,200 – 5,700
	Open Canoe (n=4)	1,200 – 3,100
	Small Inflatable (Packraft, IK, or SUP) (n=9)	2,700 – 5,600
	Large Inflatable (Raft or Cataraft) (n=22)	2,300 – 5,500
	Dory (n=1)	1,500 – 5,000

July provides fewer boating days compared to other summer months only because river flows exceed the mean optimum flow on a number of days in the month and, as a result, are not included in the monthly frequency count of boating days. Although river flows exceed the boating flow range calculated from the survey responses on a number of days in July, members of the river community may in fact be boating these higher flows. Structured interview responses to flow preferences identify a much broader range particularly at the higher end for boating flows than was calculated from the recreation flow survey responses. Structured interview participants' upper flow thresholds ranged from 10,000 to 12,000 cfs to as high as 20,000 cfs for this river segment. One interview participant remarked there is no upper threshold for boating flows on this river segment. Another interview participant commented that they preferred higher flows for rafting to improve navigation and lower flows for kayaking to make it more technical. Commercial and non-commercial use numbers reported by the NPS for July further indicate a high amount of boating activity occurring at the same time as higher river flows. Furthermore, flow preference curves illustrate a high acceptability for the highest flows evaluated in the comparative flow survey questions for most watercraft types. It appears the higher flows in July are likely used by the boating community but not included in the frequency count analysis using mean boating flows from survey responses.

Open canoes had fewer annual boating days because flows are typically higher than the narrow range of boatable flows defined for this watercraft type in the recreation flow survey. In structured interviews, open canoe participants indicated lower flows were more suitable for their watercraft in this river segment.

Recreation flow respondents and structured interview participants remarked they are attracted to this river segment on the Skagit River in part for the scenic beauty and plan trips in the summer months for the dependable flows when other rivers elsewhere in the state are too low for boating. Structured interview participants noted that flows were not an important factor in their decision to boat this river segment because of the relatively easy whitewater difficulty and lack of channel features obstructing navigation. In fact, most structured interview participants commented that they do not check flows prior to traveling to the Skagit River.



Vertical red line equals lowest discharge recorded at Newhalem gage (1991-2021).

Figure 6.1-1. Range of boating flows identified by recreation flow survey respondents for respective watercraft types in the Goodell to Copper river segment.

Annual river recreation use (commercial and non-commercial) on this river segment ranged from 986 users in 2011 to 5,538 in 2019. Commercial use has increased in recent years with the exception of 2020 when there was a sharp decline in commercial use coinciding with Covid-19 pandemic restrictions. In contrast, non-commercial use has decreased in recent years compared to a peak in 2016. The NPS does not systematically monitor non-commercial use and changes in annual river recreation numbers may be a reflection of changes in data collection efforts as opposed to changes in non-commercial recreation use patterns.

Table 3.4 in the RLNRA GMP (NPS 2012) establishes a river recreation user-capacity for the Goodell to Copper river segment using a baseline for the number of encounters observed during the peak months in August and September 2010. The 2010 baseline rafting encounter numbers are not specified in the RLNRA GMP. The NPS may initiate the following management actions if the number of rafting encounters exceeds the 2010 threshold: visitor information, voluntary registration, registration/permit/scheduling systems (NPS 2012). The NPS is not currently systematically monitoring raft encounters.

River access sites need better restroom facilities, trash receptacles, more parking, and boat ramp improvements according to recreation flow survey respondents and structured interview participants. Several structured interview participants noted that the Copper Creek Boat Access Site needs to be expanded to address the congestion that occurs during summer weekends. Interview participants recommended a redesign to improve traffic flow, allow more parking, and make the boat ramp more accessible. Survey respondents and interview participants identified the need for more signage at river access locations to communicate relevant information such as river

difficulty, updates on hazards, and river etiquette, including proper use of boat ramps for loading and unloading only.

The Wild and Scenic Rivers Act (WSRA) (16 United States Code [U.S.C.] § 1271-1287) authorizes the NPS to manage the section of the Skagit River from Gorge Powerhouse to Bacon Creek as "wild and scenic" with the "recreational" classification. Potential improvements to river recreation access sites or other federal actions in the boundaries of this river segment will require a Section 7 review (36 Code of Federal Regulations [CFR] 297) under the WSRA (Deitrich 2004).

The S-Bends contain the most difficult rapids on the Goodell to Copper river segment. Together, the rapids are rated Class III in difficulty (III+ at flows greater than 6,000 cfs). LPs requested this study investigate the condition of the "S-Bends Portage Trail." Two informal social trails were observed—the upper trail and lower trail, upstream and downstream respectively of the S-Bends Rapids. The trails are steep and narrow (2 to 3 feet wide) with an uneven dirt tread interspersed with tree roots and rocks. Connecting the upper and lower trail requires walking on the narrow shoulder of SR 20 for 0.6 miles. The curves on SR 20 in this section obscure motorists' vision making it unsafe as a portage route particularly for individuals carrying boats. A more suitable portage route exists at water level on river-left but requires portaging each individual rapid combined with paddling between rapids in the calmer water. The portage route on the left crosses bedrock and boulders requiring less effort compared to the steep banks and dangerous section along SR 20. Information obtained in structured interviews and recreation flow survey comments indicated the informal trails at the S-Bends are more likely used by boaters doing multiple laps of the S-Bends rapids rather than portaging. Although quick access to the more difficult rapids might be desirable for some boaters, the limited parking and narrow shoulder on SR20 would likely create traffic hazards in its present configuration.

6.2 River Segment 2: Copper Creek Boat Access Site to Marblemount Boat Launch

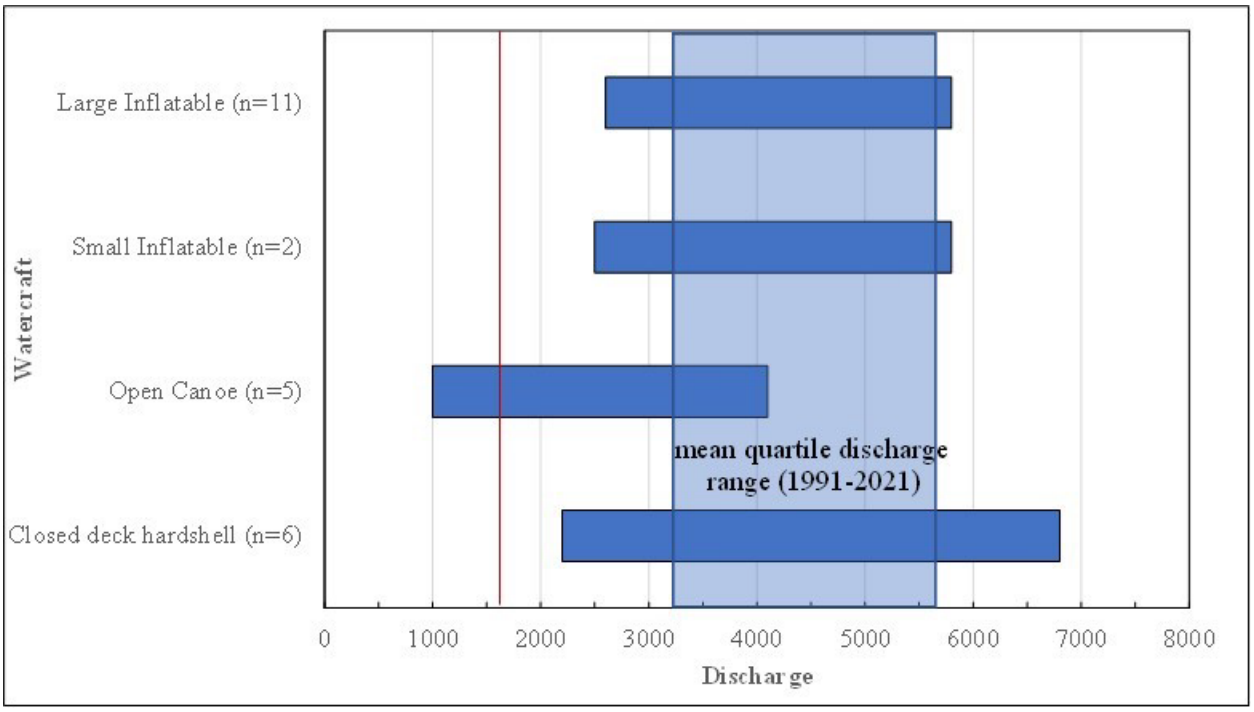
The Copper to Marblemount segment contains Class I–II moving water suitable for novice and intermediate boaters. Structured interview participants remarked that the river difficulty should not be underestimated on this river segment due to hazards such as downed trees in the river channel, which can present dangers for less skilled boaters. This segment is not a routinely sought destination for a stand-alone river recreation opportunity. Boaters typically add this river segment onto the upstream or downstream river segments to increase the length of the trip or avoid congestion at the respective boat ramps. River recreation users are attracted to this river segment for the scenic views, opportunities to observe wildlife, and fishing. Interviewees reported using and seeing the following types of watercraft on this river segment: rafts, canoes, sea kayaks, whitewater kayaks, dories, inflatable kayaks, and pack rafts. Developed river access is provided at the Copper Creek Boat Access Site and the Marblemount Boat Launch.

Boating flow ranges were calculated for four watercraft types for the river segment from Copper to Marblemount based on recreation flow survey responses (Table 6.2-1). Boating flows ranged from 1,000 cfs minimum acceptable flow to an optimum flow of 6,800 cfs. The range of boating flows for the four watercraft types overlap substantially with the mean-quartile river discharge range recorded between 1991 and 2021 (Figure 6.2-1). The mean annual number of boating opportunities exceeds 200 days per year for three of the four watercraft types. All four watercraft

types have more than 20-days per month on average in August and September alone. Similar to the upstream river segment, July provides fewer boating days compared to other summer months only because discharge is higher on a number of days in the month than the mean optimum flow calculated from the recreation flow survey responses. Structured interview participants were generally willing to boat higher flows in this river segment than the boating flow range calculated from the recreation flow survey responses. Open canoes had fewer annual boating days because flows are typically higher than the narrow range of boating flows defined for this watercraft type in the recreation flow survey.

Table 6.2-1. Range of boating flows identified by recreation flow survey respondents for respective watercraft types in the Copper Creek to Marblemount river segment.

River Segment	Watercraft Type	Boating Flow Range (rounded to nearest 100 cfs)
Copper Creek to Marblemount	Closed-Deck Hardshell (Kayak, C1, or C2) (n=6)	2,200 – 6,800
	Open Canoe (n=5)	1,000 – 4,100
	Small Inflatable (Packraft, IK, or SUP) (n=2)	2,500 – 5,800
	Large Inflatable (Raft or Cataraft) (n=11)	2,600 – 5,800



Vertical red line equals lowest discharge recorded at Newhalem gage (1991-2021).

Figure 6.2-1. Range of boating flows identified by recreation flow survey respondents for respective watercraft types in the Copper to Marblemount river segment.

As noted for the upstream river segment, survey respondents and structured interview participants commented that the Copper Creek Boat Access Site needs to be expanded to address the congestion that occurs during summer weekends. Interview participants recommended a redesign to improve traffic flow, allow more parking, and make the boat ramp more user friendly.

The USFS (Mt Baker Snoqualmie National Forest) is authorized to manage this river segment under the legislation designating the Skagit River Wild and Scenic (USFS 1983). The 1983 Skagit Wild and Scenic River Management Plan lumps the Copper Creek to Marblemount river segment and the Marblemount to Howard Miller river segment into a single river segment for managing river recreation carrying capacity. The current recreation use numbers for commercial and non-commercial boaters in the combined river segments are well below the carrying capacity established in the USFS 1983 Skagit Wild and Scenic River Management Plan. Potential improvements to river recreation access sites or other federal actions in the boundaries of this river segment will require a Section 7 review (36 CFR 297) under the WSRA (Deitrich 2004).

6.3 River Segment 3: Marblemount Boat Launch to Howard Miller Steelhead Park

The Marblemount to Howard Miller river segment contains Class I–II moving water suitable for novice and intermediate boaters with tree hazards similar to those described for the river segment directly upstream. This segment offers scenic views, opportunities to observe wildlife, and fishing. River recreation use occurs year-round but is highest in the winter season coinciding with opportunities to view eagles. Commercial outfitters market wildlife viewing, scenery, novice kayak instruction, and wine tasting floats for this segment. Large inflatables are the most common watercraft used on this river segment, although a broad range of other watercraft are used, including recreational kayaks, sea kayaks, canoes, pack rafts, dories, and motorized boats. Crowding has been observed by some interviewees at river access locations and on the river in the winter period associated with specially organized events focused on eagle viewing. Land ownership adjacent to this river segment is largely private, limiting river access locations. Developed river access locations are provided at the Marblemount Boat Launch, the Howard Miller Steelhead Park, and Sutter Creek. Damage to the Sutter Creek access site from flooding in Sutter Creek scoured the site, limiting access in this river segment.

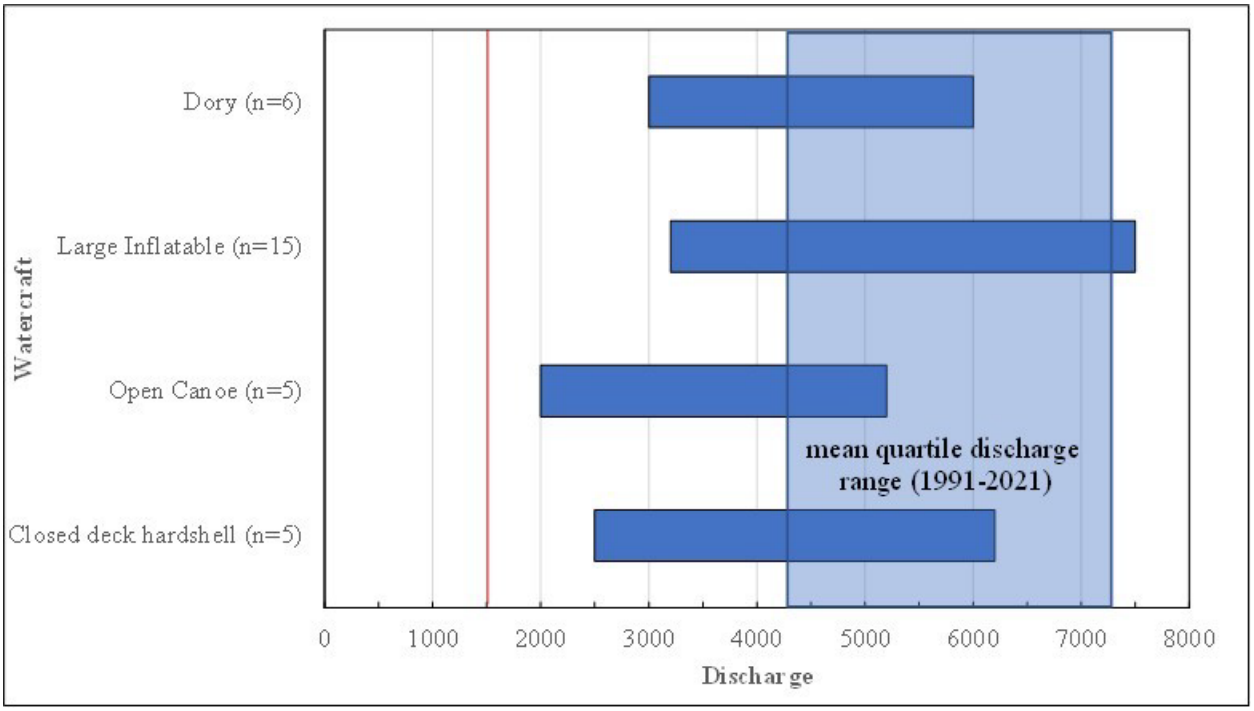
The USFS is authorized to manage on-water recreation use under the 1983 Skagit Wild and Scenic River Management Plan. Current recreation use numbers for commercial and non-commercial users are well below the carrying capacity for this river segment established in the 1983 Skagit Wild and Scenic River Management Plan.

Boating flow ranges were calculated from recreation flow survey responses for four watercraft types for the river segment from the Marblemount to Howard Miller (Table 6.3-1). Boating flow preferences ranged from 2,000 cfs minimum acceptable flow to an optimum flow of 7,500 cfs. The quartile range of river discharge for the period 1991 – 2021 overlaps with the boating flow range for all four watercraft types (Figure 6.3-1). During the popular eagle viewing period in December, January, and February, discharge can exceed the boating flow range defined by survey respondents for the four watercraft types for this river segment resulting in a low number of boating days for each month. Structured interview participants identified higher flows for this river segment compared to the survey respondents. Structured interview participants emphasized higher flows

were needed to reduce the length of time on the water during the shorter, colder days in the winter months. The structured interview boating flow range suggest a higher frequency of boating day opportunities in December, January and February than the analysis suggests using only the survey response boating flow range.

Table 6.3-1. Range of boating flows identified by recreation flow survey respondents for respective watercraft types in the Marblemount to Howard Miller river segment.

River Segment	Watercraft Type	Boating Flow Range (rounded to nearest 100 cfs)
Marblemount to Howard Miller	Closed-Deck Hardshell (Kayak, C1, or C2) (n=5)	2,500 – 6,200
	Open Canoe (n=5)	2,000 – 5,200
	Large Inflatable (Raft or Cataraft) (n=15)	3,200 – 7,500
	Dory (n=6)	3,000 – 6,000



Vertical red line equals lowest discharge recorded at Marblemount gage (1991-2021).

Figure 6.3-1. Range of boating flows identified by recreation flow survey respondents for respective watercraft types in the Marblemount to Howard Miller river segment.

Site specific river access improvements were not specified for this river segment by survey respondents or structured interview participants. Crowding on weekends was listed as an issue at river access sites during the winter eagle viewing period particularly when groups organize an event. Several structured interview participants noted that boat launches in the winter should occur after 11 AM to reduce human interference during the morning eagle feeding period and should apply to all river users including anglers.

7.0 VARIANCES FROM FERC-APPROVED STUDY PLAN AND PROPOSED MODIFICATIONS

There are no variances from or proposed modifications to the methods in the FERC-approved study plan for the Recreation Flow Study. Due to the timing of issuance of FERC's SPD, City Light delayed the study implementation schedule originally proposed in the RSP.

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LOWER SKAGIT RIVER RECREATION FLOW STUDY REPORT

ATTACHMENT A

RECREATION FLOW SURVEY

Seattle City Light

Skagit River Recreation Flow Survey

Welcome to the Skagit River Recreation Flow Survey.

The purpose of this recreation flow survey is to gather information about recreation flow preferences for three river segments on the Skagit River along a 25.2-mile length from Goodell Creek Boat Launch to the Howard Miller Steelhead Park near Rockport:

- **Goodell Creek Boat Launch to Copper Creek Boat Access Site (the S-Bends whitewater section) (8.7 miles);**

- **Copper Creek Boat Access Site to Marblemount Boat Launch (5.9 miles); and**

- **Marblemount Boat Launch to Howard Miller Steelhead Park (the eagle viewing section) (10.6 miles).**

A map of the Skagit River delineating these three river segments is provided below (Figure 1). However, on this stretch of the Skagit River, boaters may both combine or further divide these segments using both formal and informal access points along the river.

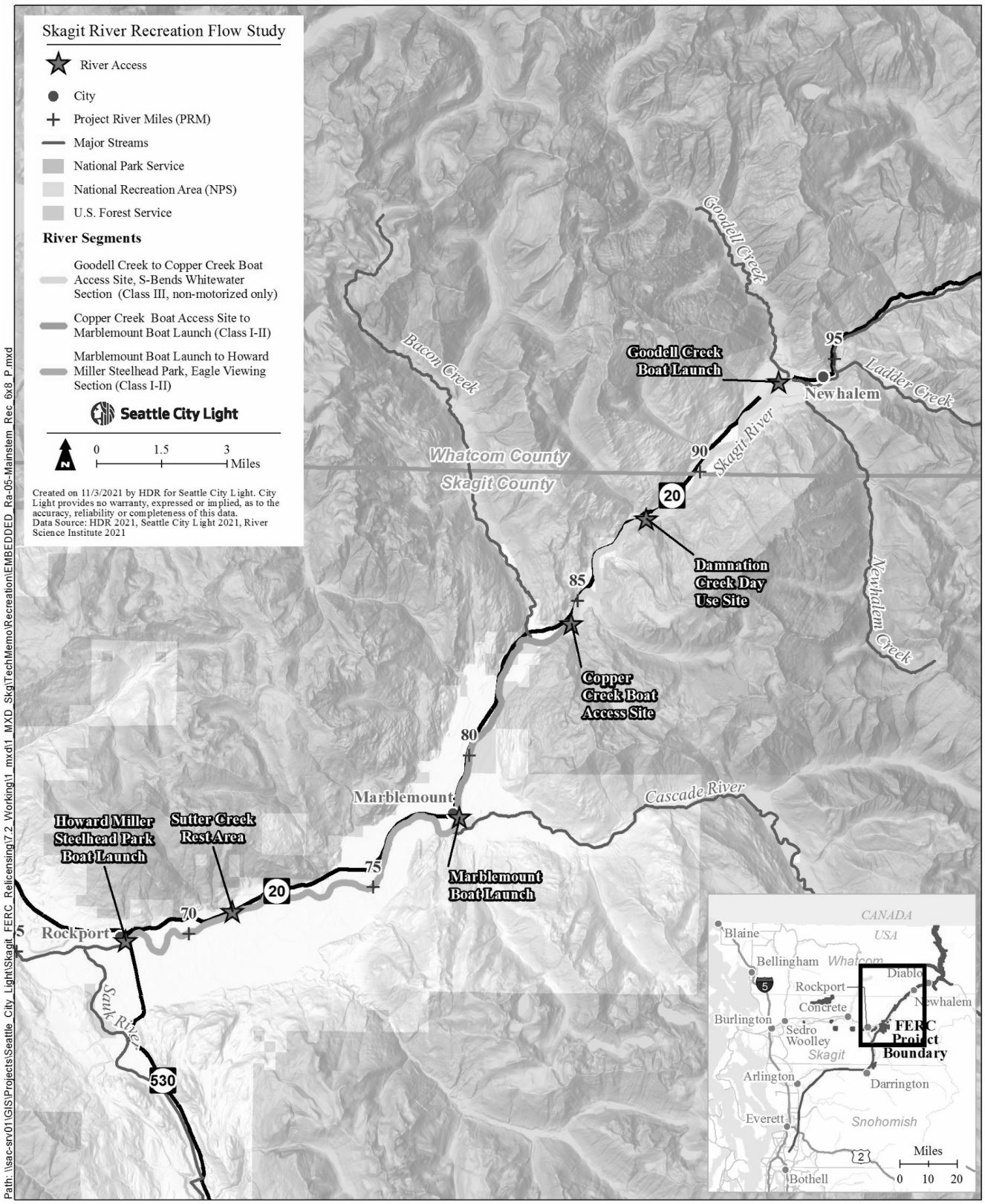
As you complete the survey, please base your responses on YOUR trips within these three river segments on the Skagit River. Limit your responses to the river segments where you have direct knowledge and experience. Survey results will be used in part to define the range of boatable flows for watercraft types for these three distinct river segments. The information gathered will help inform current and future opportunities for recreation flows in these segments of the Skagit River.

The recreation flow survey is part of a suite of studies associated with the relicensing process for the Skagit River Hydroelectric Project (Project). American Whitewater, Mt. Baker-Snoqualmie National Forest and North Cascades National Park participated in the development of this study plan. The Project is licensed to the City of Seattle, Washington, and operated through its publicly-owned electric power utility Seattle City Light (City Light). The Project is located in northern Washington state in the Cascade Mountains of the upper Skagit River watershed. Project operations release flows into the Skagit River downstream of Gorge Powerhouse.

This online survey is best viewed using a computer screen. Question formats are not ideal for smaller screens such as mobile devices.

Thank you for taking the time to complete this survey. Your input is greatly appreciated. Participation in this recreation flow survey is important to the success of the study. Please encourage others with knowledge of recreation flows in these three segments of the Skagit River to participate in the survey.

Figure 1: Skagit River Recreation Flow Survey River Segments



Seattle City Light

Skagit River Recreation Flow Survey

Background Information

1. Name: (for sorting purposes only):

2. Please enter the 5-digit zip code for your primary residence:

5-digit zip code

Country name for individuals whose primary residence is outside the United States

3. Please provide the age of the individual completing this survey using the ranges provided below:

- Under 18
- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65 and older

4. What is your Gender?

- Male
- Female
- Non-binary
- Prefer not to specify

* 5. Have you ever boated on the Skagit River between Goodell Creek Boat Launch and Howard Miller Steelhead Park in Rockport?

- Yes
- No

Frequency and Timing of Visits

6. Which of these three river segments (all or portions) have you boated? Check all that apply.

- [ ] Goodell Creek Boat Launch to Copper Creek Boat Access Site (S-Bends whitewater segment)
- [ ] Copper Creek Boat Access Site to Marblemount Boat Launch
- [ ] Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch (eagle viewing segment)

7. How many years have you been boating on these segments of the Skagit River?

Goodell Creek to Copper Creek (S-Bends whitewater segment)

Copper Creek to Marblemount

Marblemount to Howard Miller (eagle viewing segment)

8. How many times per year, on average, do you boat on these segments of the Skagit River?

Goodell Creek to Copper Creek (S-Bends whitewater segment)

Copper Creek to Marblemount

Marblemount to Howard Miller (eagle viewing segment)

9. What days of the week do you typically boat these segments of the Skagit River? Select all that apply per respective river segment.

	Weekdays	Weekends	Holidays
Goodell Creek to Copper Creek (S-Bends whitewater segment)	☐	☐	☐
Copper Creek to Marblemount	☐	☐	☐
Marblemount to Howard Miller (eagle viewing segment)	☐	☐	☐

10. What month(s) do you typically boat these segments of the Skagit River? Select all that apply per respective river segment.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Goodell Creek to Copper Creek (S-Bends whitewater segment)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Copper Creek to Marblemount	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Marblemount to Howard Miller (eagle viewing segment)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Skagit River Recreation Flow Survey

River Recreation Activities

11. Why do you choose to boat on one or more of these three respective segments of the Skagit River? Check all that apply.

- ☐ Close proximity to work or home
- ☐ I like the river recreation on these river segments
- ☐ Level of whitewater difficulty is suitable for my skill/experience level
- ☐ Flows are typically suitable for my skill/experience level
- ☐ Late season flows
- ☐ Eagle viewing

Other (please specify)

12. In addition to boating, what other types of recreation activities do you participate in when on any of these three segments of the Skagit River? Check all that apply.

- [ ] Birding/Wildlife Viewing
- [ ] Angling
- [ ] Photography
- [ ] Hiking/Walking
- [ ] Swimming
- [ ] Picnicking
- [ ] Camp at Goodell Creek Campground
- [ ] Camp at Howard Miller Steelhead Park

Other (please specify)

Seattle City Light

Skagit River Recreation Flow Survey

Watercraft and Flow Preferences

13. What type of watercraft do you use on these segments on the Skagit River? Check all watercraft types you use on each respective river segment.

	Goodell Creek to Copper Creek	Copper Creek to Marblemount	Marblemount to Howard Miller
Closed Deck Hardshell (kayak, C1, or C2)	☐	☐	☐
Open Canoe	☐	☐	☐
Small Inflatable (IK, pack raft, or SUP)	☐	☐	☐
Large Inflatable (raft or cataraft)	☐	☐	☐
Dory	☐	☐	☐
Motor Boat	☐	☐	☐
Other Watercraft	☐	☐	☐

Please specify other watercraft type.

* 14. For the segment from **Goodell Creek Boat Launch to Copper Creek Boat Access Site (S-Bends whitewater segment)**, please identify your preferred watercraft type. Select only one watercraft type.

- I do not boat the segment from Goodell Creek Boat Launch to Copper Creek Boat Access Site
- Closed Deck Hardshell (kayak, C1, or C2)
- Open Canoe
- Small Inflatable (IK, pack raft, or SUP)
- Large Inflatable (raft or cataraft)
- Dory
- Other Watercraft

Please specify other watercraft type.

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Skagit River Recreation Flow Survey

Goodell Creek to Copper Creek (S-Bends whitewater section)

15. For the segment from **Goodell Creek Boat Launch to Copper Creek Boat Access Site (S-Bends whitewater segment)**, please rate the quality of each flow for your skill level and watercraft. In your evaluation please consider the flow dependent characteristics that contribute to a high quality trip (e.g., travel time, challenge, safety, availability of whitewater play features, navigability, and aesthetics). If you have not boated this segment or do not feel comfortable evaluating a flow you have not observed, don't rate it.

Base your evaluation on the **preferred watercraft you selected for this river segment in question 14**. Please confirm your preferred watercraft for which you evaluated the range of flows at the bottom of this question.

The range of flows in the table are based on the **Newhalem gage** (USGS Gage 1218000).

	1 Totally Unacceptable	2 Moderately Unacceptable	3 Slightly Unaccecceptable	4 Marginal	5 Slightly Acceptable	6 Moderately Acceptable	7 Totally Acceptable
500 cfs	○	○	○	○	○	○	○
1000 cfs	○	○	○	○	○	○	○
1500 cfs	○	○	○	○	○	○	○
2000 cfs	○	○	○	○	○	○	○
2500 cfs	○	○	○	○	○	○	○
3000 cfs	○	○	○	○	○	○	○
3500 cfs	○	○	○	○	○	○	○
4000 cfs	○	○	○	○	○	○	○
4500 cfs	○	○	○	○	○	○	○
5000 cfs	○	○	○	○	○	○	○
5500 cfs	○	○	○	○	○	○	○
>5500 cfs	○	○	○	○	○	○	○

Preferred watercraft type used for this rating

16. For the segment from **Goodell Creek Boat Launch to Copper Creek Boat Access Site (S-Bends whitewater segment)**, please specify the **minimum acceptable flow and optimum flow** in cubic feet per second (cfs) for your preferred watercraft. The minimum acceptable flow is the lowest flow you would return to boat, not the minimum flow necessary to navigate. The optimum flow is your preferred flow to boat this segment.

Base your flow recommendations on the **Newhalem gage** (USGS Gage 1218000).

Minimum Acceptable Flow (cfs)

Optimum Flow (cfs)

Seattle City Light

Skagit River Recreation Flow Survey

* 17. For the segment from **Copper Creek Boat Access Site to Marblemount Boat Launch** , please identify your preferred watercraft type. Select only one watercraft type.

- ○ I do not boat the segment from Copper Creek Boat Access Site to Marblement Boat Launch
- ○ Closed Deck Hardshell (kayak, C1, or C2)
- ○ Open Canoe
- ○ Small Inflatable (IK, pack raft, or SUP)
- ○ Large Inflatable (raft or cataraft)
- ○ Dory
- ○ Other Watercraft

Please specify other watercraft type.

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Skagit River Recreation Flow Survey

Copper Creek to Marblemount

18. For the segment from **Copper Creek Boat Access Site to the Marblemount Boat Launch**, please rate the quality of each flow for your skill level and watercraft. In your evaluation please consider the flow dependent characteristics that contribute to a high quality trip (e.g., travel time, challenge, safety, availability of whitewater play features, navigability, and aesthetics). If you have not boated this segment or do not feel comfortable evaluating a flow you have not observed, don't rate it.

Base your evaluation on the **preferred watercraft you selected for this river segment in question 17**. Please confirm your preferred watercraft for which you evaluated the range of flows at the bottom of this question.

The range of flows in the table are based on the **Newhalem gage** (USGS Gage 1218000).

	1 Totally Unacceptable	2 Moderately Unacceptable	3 Slightly Unaccecceptable	4 Marginal	5 Slightly Acceptable	6 Moderately Acceptable	7 Totally Acceptable
500 cfs	○	○	○	○	○	○	○
1000 cfs	○	○	○	○	○	○	○
1500 cfs	○	○	○	○	○	○	○
2000 cfs	○	○	○	○	○	○	○
2500 cfs	○	○	○	○	○	○	○
3000 cfs	○	○	○	○	○	○	○
3500 cfs	○	○	○	○	○	○	○
4000 cfs	○	○	○	○	○	○	○
4500 cfs	○	○	○	○	○	○	○
5000 cfs	○	○	○	○	○	○	○
5500 cfs	○	○	○	○	○	○	○
>5500 cfs	○	○	○	○	○	○	○

Preferred watercraft type used for this rating

19. For the segment from **Copper Creek Boat Access Site to Marblemount Boat Launch**, please specify the **minimum acceptable flow and optimum flow** in cubic feet per second (cfs) for your preferred watercraft. The minimum acceptable flow is the lowest flow you would return to boat, not the minimum flow necessary to navigate. The optimum flow is your preferred flow to boat this segment.

Base your flow recommendations on the **Newhalem gage** (USGS Gage 1218000).

Minimum Acceptable Flow (cfs)

Optimum Flow (cfs)

Seattle City Light

Skagit River Recreation Flow Survey

* 20. For the segment from **Marblemount Boat Launch to Howard Miller Steelhead Park (the eagle viewing segment)**, please identify your preferred watercraft type. Select only one watercraft type.

- ○ I do not boat the segment from Marblement Boat Launch to Howard Miller Steelhead Park
- ○ Closed Deck Hardshell (kayak, C1, or C2)
- ○ Open Canoe
- ○ Small Inflatable (IK, pack raft, or SUP)
- ○ Large Inflatable (raft or cataraft)
- ○ Dory
- ○ Motor Boat
- ○ Other Watercraft

Please specify other watercraft type.

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Skagit River Recreation Flow Survey

Marblemount to Howard Miller Steelhead Park (the eagle viewing section)

21. For the segment from **Marblemount Boat Launch to Howard Miller Steelhead Park (the eagle viewing segment)**, please rate the quality of each flow for your skill level and watercraft. In your evaluation please consider the flow dependent characteristics that contribute to a high quality trip (e.g., travel time, challenge, safety, availability of whitewater play features, navigability, and aesthetics). If you have not boated this segment or do not feel comfortable evaluating a flow you have not observed, don't rate it.

Base your evaluation on the **preferred watercraft you selected for this river segment in question 20**. Please confirm your preferred watercraft for which you evaluated the range of flows at the bottom of this question.

The range of flows in the table are based on the **Marblemount gage** (USGS Gage 1218100).

	1 Totally Unacceptable	2 Moderately Unacceptable	3 Slightly Unaccecceptable	4 Marginal	5 Slightly Acceptable	6 Moderately Acceptable	7 Totally Acceptable
1000 cfs	○	○	○	○	○	○	○
2000 cfs	○	○	○	○	○	○	○
3000 cfs	○	○	○	○	○	○	○
4000 cfs	○	○	○	○	○	○	○
5000 cfs	○	○	○	○	○	○	○
6000 cfs	○	○	○	○	○	○	○
7000 cfs	○	○	○	○	○	○	○
8000 cfs	○	○	○	○	○	○	○
9000 cfs	○	○	○	○	○	○	○
10,000 cfs	○	○	○	○	○	○	○
>10,000 cfs	○	○	○	○	○	○	○

Preferred watercraft type used for this rating

22. For the segment from **Marblemount Boat Launch to Howard Miller Steelhead Park (the eagle viewing segment)**, please specify the **minimum acceptable flow and optimum flow** in cubic feet per second (cfs) for your preferred watercraft. The minimum acceptable flow is the lowest flow you would return to boat, not the minimum flow necessary to navigate. The optimum flow is your preferred flow to boat this segment.

Base your flow recommendations on the **Marblemount gage** (USGS Gage 1218100).

Minimum Acceptable Flow (cfs)

Optimum Flow (cfs)

Seattle City Light

Skagit River Recreation Flow Survey

River Access Sites and Facilities

23. Which of these river access sites do you use on the Skagit River?

	Use	Do Not Use
Goodell Creek Boat Launch	○	○
Damnation Creek Boat-in Picnic Site	○	○
Copper Creek Boat Access Site	○	○
Marblemount Boat Launch	○	○
Howard Miller Steelhead Park Boat Launch	○	○

24. How satisfied are you with the amenities (e.g., restrooms, picnic tables, parking, boat launch, etc.) at each of the following recreation sites? Select one response per row.

	Very Satisfied	Satisfied	Neither	Dissatisfied	Very Dissatisfied	Do Not Use
Goodell Creek Boat Launch	○	○	○	○	○	○
Damnation Creek Boat-in Picnic Site	○	○	○	○	○	○
Copper Creek Boat Access Site	○	○	○	○	○	○
Marblemount Boat Launch	○	○	○	○	○	○
Howard Miller Steelhead Park Boat Launch	○	○	○	○	○	○

25. Please rate the need for improvements to amenities at the existing river recreation access sites. Select one response per row.

	High Need	Slight Need	Neither	Not Much Need	Do Not Need At All	Do Not Use
Restrooms	○	○	○	○	○	○
Trash receptacles	○	○	○	○	○	○
Picnic tables	○	○	○	○	○	○
Firepits	○	○	○	○	○	○
Pavilion/shelter	○	○	○	○	○	○
Additional vehicle parking	○	○	○	○	○	○
Additional trailer parking	○	○	○	○	○	○
Boat ramp improvements	○	○	○	○	○	○
Carry-in boat launches	○	○	○	○	○	○
Trails	○	○	○	○	○	○
Other	○	○	○	○	○	○

Other (please specify)

26. Based on your response in question 25, please describe the additional amenities and/or improvements you believe are needed to enhance your river recreation experience for the sites listed below.

Goodell Creek Boat Launch

Damnation Creek Boat-in Picnic Site

Copper Creek Boat Access Site

Marblemount Boat Launch

Howard Miller Steelhead Park Boat Launch

27. Please share any additional information or comments about your boating trips. Include any information describing the special or unique qualities of these three segments of the Skagit River.

Seattle City Light

Skagit River Recreation Flow Survey

28. We are interested in interviewing individuals with experience boating these three segments of the Skagit River as part of this study. Please provide your contact information if you are interested in a follow-up interview. If yes, we may contact you to set up a convenient time for an interview over the phone or computer.

Email Address

Phone Number

Seattle City Light

Skagit River Recreation Flow Survey

Thank you for taking the time to complete this survey. Your input is greatly appreciated. Participation in this recreation flow survey is important to the success of the study. Please encourage others with knowledge of recreation flows in these three segments of the Skagit River to participate in the survey. The survey will remain open until October 2022.

City Light will publish the results of this study in a technical report available to the public in March 2023. For more information about the Skagit Hydroelectric Project relicensing process please visit the Skagit River relicensing website.

For questions or comments on the recreation flow survey please contact Mike Aronowitz at Seattle City Light.

LOWER SKAGIT RIVER RECREATION FLOW STUDY REPORT

ATTACHMENT B

RECREATION FLOW SURVEY ANNOUNCEMENT

Skagit River Recreation Flow Survey

Seattle City Light is conducting an online recreation flow survey for three river segments on the Skagit River. The recreation flow survey is part of a suite of studies associated with the relicensing process for the Skagit River Hydroelectric Project (Project). American Whitewater, Mt. Baker-Snoqualmie National Forest and North Cascades National Park participated in the development of this study plan. The Project is licensed to the City of Seattle, Washington, and operated through its publicly-owned electric power utility Seattle City Light (City Light).

The purpose of this recreation flow survey is to gather information about recreation flow preferences for three river segments on the Skagit River along a 25.2-mile length from Goodell Creek Boat Launch to the Howard Miller Steelhead Park near Rockport. A map of the Skagit River delineating these three river segments is provided below (Figure 1). The river segments include the following:

- Goodell Creek Boat Launch to Copper Creek Boat Access Site (the S-Bends whitewater section) (8.7 miles);
- Copper Creek Boat Access Site to Marblemount Boat Launch (5.9 miles); and
- Marblemount Boat Launch to Howard Miller Steelhead Park (the eagle viewing section) (10.6 miles).

The online survey is best viewed using a computer screen. The survey will take approximately 15 – 20 minutes to complete. Question formats are not ideal for smaller screens such as mobile devices.

Thank you for taking the time to complete the survey. Your input is greatly appreciated. Participation in the recreation flow survey is important to the success of the study. Please encourage others with knowledge of recreation flows in these three segments of the Skagit River to participate in the survey. The survey will remain open until October 2022.

For more information about the Skagit Hydroelectric Project Relicensing process please visit the Skagit River relicensing website at https://www.seattle.gov/city-light/in-the-community/current-projects/skagit-relicensing. For questions or comments on the recreation flow survey please contact Mike Aronowitz at Seattle City Light.

Skagit recreation flow survey url:
https://www.surveymonkey.com/r/Skagitrecflowsurvey

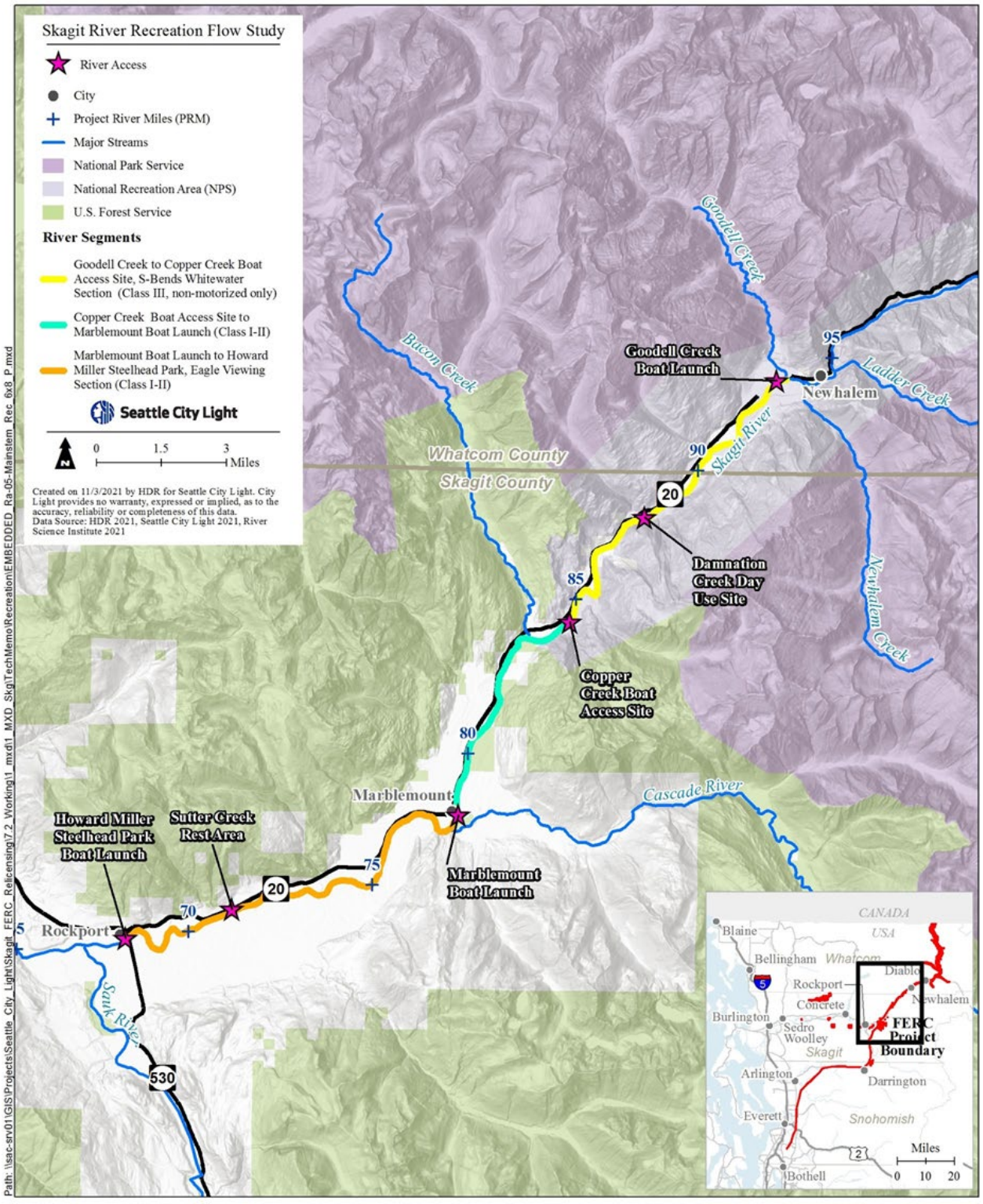

Figure 1: Skagit River Recreation Flow Survey River Segments

LOWER SKAGIT RIVER RECREATION FLOW STUDY REPORT

ATTACHMENT C

STRUCTURED INTERVIEWS WITH RESOURCE AGENCY STAFF

Seattle City Light

Structured Interview Questions
Lower Skagit River Recreation Flow Study

Introduction

Seattle City Light (City Light) is in the process of relicensing the Skagit River Hydroelectric Project (Project). The Project consists of three reservoirs, Gorge, Diablo and Ross, the associated power generation facilities, transmission lines, and infrastructure facilities for operation and maintenance of the Project. City Light is conducting a suite of studies developed collaboratively with resource agencies, Indian Tribes, and public participants.

This structured interview is part of the Lower Skagit River Recreation Flow Study. The purpose of this study is to gather information about river recreation use patterns and flow preferences for three river segments on the Skagit River downstream of the Project. The three river segments encompass 25.2-miles of the Skagit River from the Goodell Creek Boat Launch to Howard Miller Steelhead Park near Rockport. A map of the Skagit River delineating these three river segments is provided below (Figure 1). The river segments include the following:

- Goodell Creek Boat Launch to Copper Creek Boat Access Site (the S-Bends whitewater section) (8.7 miles);
- Copper Creek Boat Access Site to Marblemount Boat Launch (5.9 miles); and
- Marblemount Boat Launch to Howard Miller Steelhead Park (the eagle viewing section) (10.6 miles).

The questions in this structured interview will be repeated for each of the three river segments where you have direct knowledge or experience. The interview will take approximately 15 – 20 minutes to complete for each river segment where you have direct knowledge or experience (i.e., 45-60 minutes if completing for all 3 reaches).

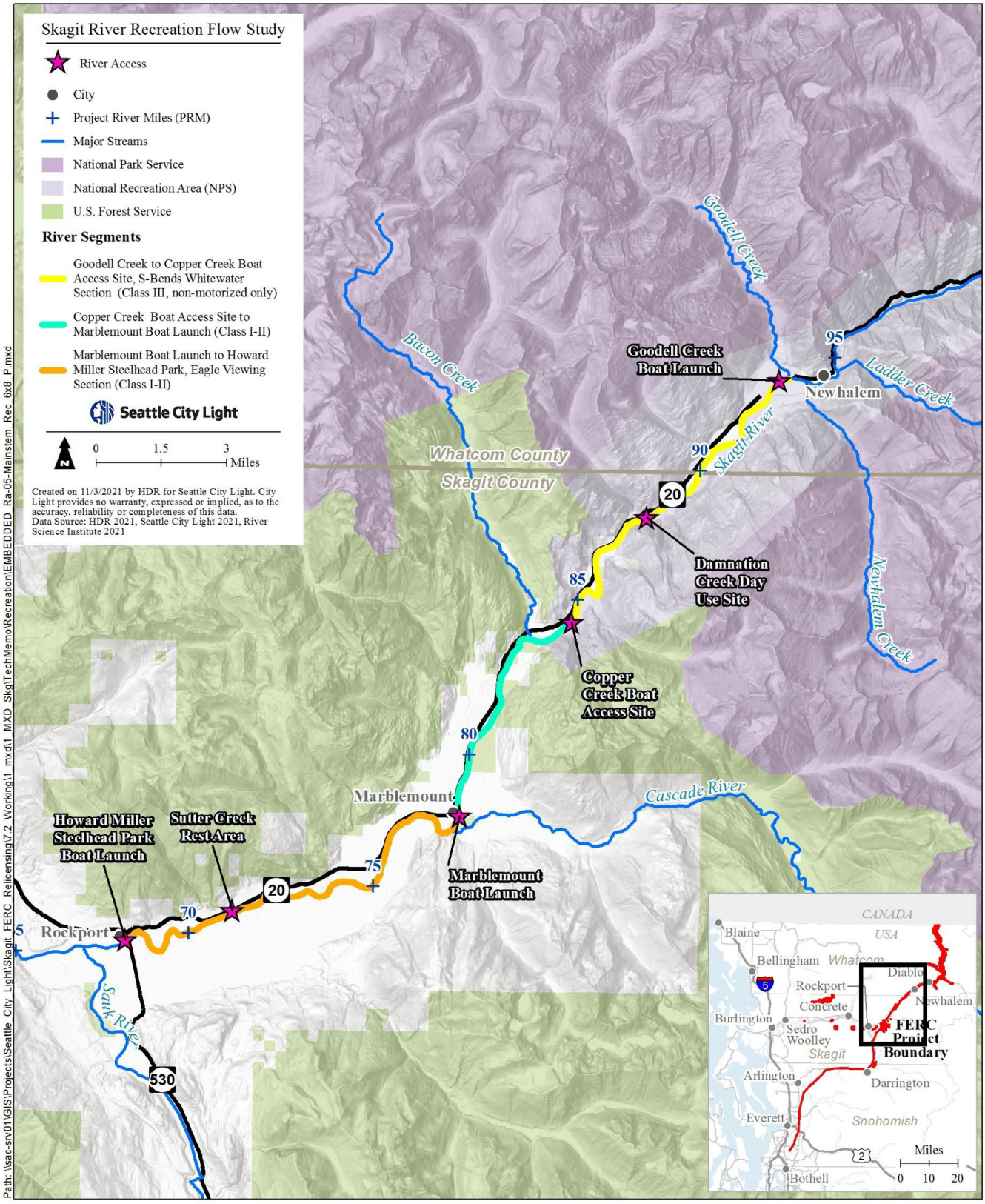

Figure 1: Skagit River Recreation Flow Study River Segments

Structured Interview Questions

Background Information:

1. Name:

   USFS – 3 staff participated in interviews.

   NPS – 3 staff participated in interviews.

   Skagit County Parks – 1 staff participated (names omitted for privacy).

2. Do you have direct knowledge and experience with river recreation on one or more of the river segments?

   NPS – No. We issue Commercial Use Authorizations for commercial raft guides to access these locations, but neither of us have direct knowledge or experience with the river.

   a. Goodell Creek Boat Launch to Copper Creek Boat Access Site (S-Bends whitewater segment): *USFS.*
   b. Copper Creek Boat Access Site to Marblemount Boat Launch: *USFS.*
   c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch (eagle viewing segment): *USFS, Skagit County Parks.*

3. In what capacity were you acting to gain this direct knowledge and experience with the respective river segments?

   a. Commercial guide: *Yes.*
   b. Resource agency management: *USFS; NPS – we issue permits for the commercial users, Skagit County Parks.*
   c. Personal river recreation activities: *USFS.*
   d. Scientific research:
   e. Other? *Skagit County Parks – Living here most of life and fishing on the river.*

Agency Specific Questions on permits, use numbers and management:

A-1. What agency do you work for?

USFS.

North Cascades National Park.

Skagit County Parks.

A-2. What is your job title?

USFS – (1) Visitor information assistant, (2) Skagit W&S Program Assistant, (3) Permit administrator.

NPS – Commercial Services Specialist/Commercial Services Assistant.

Skagit County Parks – East County Supervisor.

A-3. Does your agency manage commercial use permits for river recreation on the river segments?

a. Which river segments?

USFS 1 – Yes, not sure which ones.

USFS 2 – Lower half of Copper Creek (just above Bacon Creek to Marblemount and all of Marblemount to Rockport.

USFS 3 – Yes, Skagit River at Marblemount Boat Launch.

NPS – Goodell Creek Campground (Put-in) to Copper Creek (Take-Out). Non-Commercial users may be taking out further down the river.

Skagit County Parks – Yes, commercial boat launch permits on County lands. Issued annually.

b. How many commercial use permits are issued?

USFS 1 – No.

USFS 2 – At least a dozen, maybe 15.

USFS 3 – 7.

NPS – Commercial Use Authorizations are issued to 5 or 6 rafting companies; the permits are issued for a two-year basis. The companies run their trips annually.

Skagit County Parks – about 6-10 permits annually; number has been decreasing in recent years due to lack of applications.

c. Do the individual commercial use permits specify the number of user days annually?

USFS 1 – No.

USFS 2 – 6 people in a boat equals a 6-user day. 1 person is 1-user day. Guide does not count. Each outfitter has their own allocation of user days. Not the same for each outfitter. Dependent on past use.

USFS 3 – Yes, annual number of days per company.

NPS – The Park does not currently restrict the number of user days for permittees. We do limit the operators to a maximum of 45 people per trip (including guides) and no more than 100 clients per day.

Skagit County Parks – commercial permit good for one year. No limitation on daily or annual number of user days.

d. What time of year is commercial use allowed on the respective river segments?

USFS – No restriction on when they can use/time of year.

NPS – We have not limited use to specific times of the year. River levels and weather/interest in rafting naturally dictate the season. Generally, operators run from May-September with highest use in July and August.

Skagit County Parks – year round.

A-4. Can you provide annual number of user days for each river segment?

a. Commercial user days:

USFS – Yes, see schedule established in W&S management plan allocated across seasons. Same numbers since 1983 plan published. Still not anywhere near the cap.

USFS – 2020 – 263 service days for all outfitters. USFS will send last 10 years.

NPS – See attached spreadsheets for user days and passenger numbers.

Skagit County Parks – use numbers are not quantified but the river segment is typically used 60 to 90 days annually.

b. Non-commercial user days:

USFS – Limited data. For 2021: 240 service days for non-commercial.

Not aware of counts being done currently. Was an attempt in the past to have boxes at Marblemount but was removed because it was ineffective.

Anecdotal during the winter. Busiest time of year. 50% of use is non-commercial in winter. Most launch (vast majority) at Marblemount but some do at Copper Creek. Fishermen launch at variety of places depending on watercraft type. Dories/drift boats: launch at Marblemount. Motorized watercraft typically launch and take-out at same location. For anglers, choice of launch sites depends on fishing seasons which are change with returns / regs.

NPS – See attached spreadsheets that shows number of non-commercial users on the river (not sure how reported use translates to user days for the purpose of this interview). Statistics collected are from self-reporting station at the Goodell Launch, so it's highly likely that not all use is captured via these stats.

Skagit County Parks – non-commercial use is not counted.

A-5. Recreation Use Conflicts

a. Are you aware of any resource conflicts between commercial and non-commercial use on the river?

USFS 1 – Yes, seen some conflicts between commercial and private boaters and among private groups principally at the boat launch related to crowding. Not sharing launch when trying to launch at same time.

USFS 2 – Sometimes the take-out at Howard Miller will get crowded on winter afternoons. Park manager at Howard Miller would try to manage during periods of heavy use. Some fishermen not sympathetic to eagle watchers. Some individuals had

issues with commercial outfitters which left a bad taste for them. Sometimes Marblemount Boat Launch would get crowded in the AM.

USFS 3 – No.

NPS – I have received verbal complaints about Goodell and Copper Creek launch ramps and parking congestion.

Skagit County Parks – Yes, commercial rafters made a big stink about motorboats going upstream of Marblemount bridge in years past. Rafters complained it causes wakes and rafts bounce around. In reality, only a few motorboats were going above Marblemount bridge. Subsequently, rules were put in place to restrict motorboats upstream of bridge.

b. Are you aware of any conflicts between river recreation users (commercial and non-commercial) with other recreation activities and/or Tribes?

USFS 1 – Yes, between the wildlife viewing folks on shore and volunteers that feel that on-water activities are disturbing the wildlife.

USFS 2 – Did not observe.

USFS 3 – Not aware of any conflicts.

NPS – Commercial raft users used to regularly stay in Goodell Creek Campground for prolonged periods of time displacing other potential campers. I believe the NPS corrected the problem by contacting the offending companies and advising this was against the terms of their permit. Overflow raft parking spills out onto SR 20 at the NPS entrance station monument, making parking and photo opportunities more difficult for park visitors wishing to park and/or take photographs at the entrance sign.

Skagit County Parks – Just between fishermen and Indian Tribes.

c. What type of management tools can be implemented to reduce either of these conflicts?

USFS 1 – Main idea is education on how to share the resource, use it respectfully, stewardship.

USFS 2 – In general, agency for specific launch sites needs to be aware of what is going on and minimize conflicts when it is busy.

NPS – The NPS could more closely monitor commercial use authorization holders if they had the staffing to do so. The launch ramps and parking areas at Goodell and Copper Creek could be improved to allow more users and decrease impacts to other users.

Skagit County Parks – Well, all of a sudden now the river is closed on certain days to general public but open to Indian Tribes. Causes animosity.

A-6. Are you aware of any resource degradation resulting from river recreation use?

a. If yes, what type of resource degradation?

USFS 1 – No.

USFS 2 – No. Some littering and user trails that are not regulated or built by resource agencies. No erosion issues or planting of non-native species. Most degradation from land-use activities. Some disturbance of Bald Eagles when feeding in AM and roosting in PM.

USFS 3 – Not that he is aware of.

NPS – A "turnout" has been created by vehicles pulling off SR 20 on both the eastbound and westbound lanes. Vessels have been launched/retrieved there in violation of NPS regulations, as well as a location further east destroying vegetation and causing erosion. I'd like to look into either improving the area to allow for launching at or near that site (and/or "lapping" the Portage Rapid) or better closing the area to make using that impossible.

Skagit County Parks – No.

b. What is the source of this resource degradation?

NPS – Vehicle wheels, foot traffic, visitors dragging vessels to and from the water. In one case, visitors were contacted constructing a wood frame and plywood ramp, using tree mounted pulleys, and using their vehicle to pull vessels up the steep embankment.

c. What type of management tools can be implemented to reduce the resource degradation?

NPS – NPS needs additional staff to enforce current rules, and to work with other partners to create and implement improvement projects.

Skagit County Parks – Salmon habitat improvement projects.

A-7. What are the resource management challenges, if any, specific to river recreation on these river segments?

USFS 1 – Not anything different than what was discussed in questions above.

USFS 2 – Actions over past 30 years have helped mitigate past degradation / resource issues from land use practices. Having an educated public such as the Eagle Watch program helps protect resource. Agency manages river access that is appropriate for use numbers and patterns. There are currently the correct amount of access sites. Mitigation lands acquired for fish and wildlife habitat through City Light funds, State F&W, and TNC.

USFS 3 – Not familiar with any challenges.

NPS – Any improvements require NEPA compliance to ensure any potential resource impacts are appropriately evaluated, and to make informed decisions. It is a Wild and Scenic River and shorelines are particularly sensitive to potential constructions.

A-8. Is there a need for additional amenities for river recreation in these three river segments? If yes, what type of amenities?

USFS 1 – How to get out the stewardship message effectively: signs, social media, people on the ground.

USFS 2 – Improve the Sutter Creek Access—helpful for fishermen. They don't want to cover more than 8-10 miles in non-motorized watercraft.

USFS 3 – Paved parking would be great due to potholes.

NPS – I would like to see the Goodell and Copper Creek need the ramps and parking areas improved, signed to facilitate efficient traffic flow, etc. I would also like to explore the feasibility and public interest in improving the portage around "Portage Rapid" on the south side of the Skagit River. That would allow more recreation opportunities for those that aren't comfortable or equipped for the Class III rapid or those that would like to watch eagles in winter without danger of getting wet or swamped, etc.

Skagit County Parks – No need for more amenities.

A-9. Is there any other information you would like to share about the river recreation on these river segments from an agency management perspective?

USFS 1 – No.

USFS 2 – The river guides are partners in providing the public with experience the USFS cannot provide.

NPS – Use historically increases in late season when other rivers become too low to navigate. With my understanding of climate change, I anticipate this will get more pronounced as the North Cascades receives less snowfall and more rainfall instead. I expect the Skagit will still provide adequate flows, based on my understanding of required minimum outflows for fish preservation. This will be a challenge for NPS to manage with likely dwindling staff to manage the increase in river use. The anticipated increase in use also makes the infrastructure improvements more important to maintain an adequate visitor experience.

Skagit County Parks – Would be nice to see more river access.

Personal experience and preferences on respective river segments:

Two USFS staff provided answers to following questions based on personal experience on the respective river segments.

1. How many years have you boated the respective river segments?
   a. Goodell Creek Boat Launch to Copper Creek Boat Access Site (S-Bends whitewater segment):
   b. Copper Creek Boat Access Site to Marblemount Boat Launch: *5 years.*

c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch (eagle viewing segment: *2 trips; 15 years.*

2. In your estimation, what is the whitewater difficulty of the respective river segments?
   a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:
   b. Copper Creek Boat Access Site to Marblemount Boat Launch: *Class II.*
   c. Marblemount Boat Launch to Howard Miller Steelhead Park: *Class II, Class II.*
3. What types of watercraft do you use personally on the respective river segments?
   a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:
   b. Copper Creek Boat Access Site to Marblemount Boat Launch: *Raft (14 ft, self-bailer).*
   c. Marblemount Boat Launch to Howard Miller Steelhead Park: *Rafts; raft (14 ft, self-bailer).*
4. What types of watercraft do you see others using on the respective river segments?
   a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:
   b. Copper Creek Boat Access Site to Marblemount Boat Launch: *Rafts, drift boats, motorized fishing boats (outboard), jet boat.*
   c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch:
      i. *Rafts, kayaks, motorized boats, SUPs.*
      ii. *Rafts, drift boats, motorized fishing boats (outboard), jet boat, SUPs, canoes, sea kayaks, WW kayaks, catarafts, single person fishing tubes, generic kayaks sold at home-goods store. Not usually monitoring in summer.*
5. What is the most popular watercraft type on the respective river segments?
   a. Goodell Creek Boat Launch to Copper Creek Boat Access Site: *WW Raft.*
   b. Copper Creek Boat Access Site to Marblemount Boat Launch: *WW Raft.*
   c. Marblemount Boat Launch to Howard Miller Steelhead Park:
      i. *It's changed. When Matt first started in 2000's it was rafts. Now it is motorized boats. Even the eagle viewing outfitter is using heated, motorized boats.*
      ii. *WW Raft and fishing boats.*
6. For those watercraft you are personally familiar with, what is the preferred range of flow for boating on the respective river segments?
   a. Goodell Creek Boat Launch to Copper Creek Boat Access Site based on flows measured at the Newhalem gage (USGS Gage 1218000) (S-Bends whitewater segment):
   b. Copper Creek Boat Access Site to Marblemount Boat Launch based on flows measured at the Newhalem gage (USGS Gage 1218000): *Marblemount gage: 2,000 –*

7,500 cfs. In winter, higher flows are storm related which presents other hazards such as wood.

c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch based on flows measured at the Marblemount gage (USGS Gage 1218100):

i. *No.*

ii. *Marblemount gage: 2,000 – 7,500 cfs. In winter, higher flows are storm related which presents other hazards such as wood.*

7. What would you estimate is the minimum acceptable flow that individuals would return to boat for watercraft which you are familiar?

a. Goodell Creek Boat Launch to Copper Creek Boat Access Site based on flows measured at the Newhalem gage (USGS Gage 1218000) (S-Bends whitewater segment):

b. Copper Creek Boat Access Site to Marblemount Boat Launch based on flows measured at the Newhalem gage (USGS Gage 1218000): *Marblemount gage: 2,500 cfs in winter due to the slower travel time. Can be navigated down to 2,000 cfs.*

c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch based on flows measured at the Marblemount gage (USGS Gage 1218100): *Marblemount gage: 2,500 cfs in winter due to the slower travel time. Can be navigated down to 2,000 cfs.*

8. What factor(s) influence the minimum acceptable flow for boating. Consider the following factors for your response:

- Is there a specific channel feature in the river segment impeding navigation at the minimum acceptable flow? *Travel time in winter. Reaches are depositional zone from storm events so gravel bars are an issue at lower flows.*
- Does the whitewater difficulty change or become unacceptable below the flow you specified? *Has not been his experience.*
- Does the overall enjoyment of the whitewater boating opportunity decrease below the flow you specified? *No, other factors are motivating me to enjoy the opportunity. Weather can be the factor.*
- Other?

a. Goodell Creek Boat Launch to Copper Creek Boat Access Site based on flows measured at the Newhalem gage (USGS Gage 1218000) (S-Bends whitewater segment):

b. Copper Creek Boat Access Site to Marblemount Boat Launch based on flows measured at the Newhalem gage (USGS Gage 1218000):

c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch based on flows measured at the Marblemount gage (USGS Gage 1218100):

9. For watercraft you are familiar with, what would you estimate is the optimum flow to boat?
    a. Goodell Creek Boat Launch to Copper Creek Boat Access Site based on flows measured at the Newhalem gage (USGS Gage 1218000):
    b. Copper Creek Boat Access Site to Marblemount Boat Launch based on flows measured at the Newhalem gage (USGS Gage 1218000): *Marblemount gage 2,500 – 7,500 cfs.*
    c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch based on flows measured at the Marblemount gage (USGS Gage 1218100): *Marblemount gage 2,500 – 7,500 cfs.*
10. For watercraft you are familiar with, what would you estimate is the highest flow for boating the respective river segments?
    a. Goodell Creek Boat Launch to Copper Creek Boat Access Site based on flows measured at the Newhalem gage (USGS Gage 1218000):
    b. Copper Creek Boat Access Site to Marblemount Boat Launch based on flows measured at the Newhalem gage (USGS Gage 1218000): *Marblemount gage 2,500 – 7,500 cfs.*
    c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch based on flows measured at the Marblemount gage (USGS Gage 1218100): *Marblemount gage 2,500 – 7,500 cfs.*
11. Are existing flow conditions an important factor for you before choosing to boat the respective river segments?
    a. *No.*
    b. *Sure.*
12. Why / Why not are existing flow conditions an important factor for you before choosing to boat this section of the Skagit? *Gives me a reasonable expectation of the conditions I will see on the river segment.*
13. What do you use as a reference for checking existing flow conditions? *USGS Marblemount Gage.*
14. When do boaters use the respective river segments?
    a. Goodell Creek Boat Launch to Copper Creek Boat Access Site: *Summer.*
    b. Copper Creek Boat Access Site to Marblemount Boat Launch: *All year.*
    c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch:
        i. *Winter for eagle viewing. In past Steelhead fishing.*
        ii. *All year.*

15. Is there a preferred or more popular time of year to boat the respective river segments for various watercraft types?
    a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:
    b. Copper Creek Boat Access Site to Marblemount Boat Launch: *Busiest time is the winter.*
    c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch: *Busiest time is the winter.*
16. Are there different patterns of use between commercial and non-commercial boaters in the respective river segments, e.g.: *No, they overlap.*
    a. Time of year? *Commercial boaters there when it is busiest – typically winter only. Non-commercial tend to use any time (Marblemount to Howard Miller).*
    b. Day of week? *Weekends.*
    c. Time of day? *Midday due to shorter days (Marblemount to Howard Miller).*
    d. River access locations used? *No difference. Marblemount has large parking lot attractive to user groups.*
17. Is crowding an issue on weekends or during the week during certain times of the year for the respective river segments?
    a. Goodell Creek Boat Launch to Copper Creek Boat Access Site: *In summer Goodell and Copper Creek can get crowded.*
    b. Copper Creek Boat Access Site to Marblemount Boat Launch:
    c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch:
        i. *Yes, at the boat launch. Not aware of crowding on the river.*
        ii. *Busiest in January on weekends.*
18. Where does crowding typically occur?
    a. On the river segment: *People appear to be spread out on the river.*
    b. At the river access locations: *At river access locations.*
    c. Other?
19. Do the amenities at the river access sites meet your needs?
    a. *Yes.*
    b. *Yes, that is what I am used to.*
20. What type of amenities would improve the river access sites? *Can't think of anything. Folks use the parking area to access the interpretive trail.*
21. What is the attraction to the respective river segments for river recreation?
    a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:

b. Copper Creek Boat Access Site to Marblemount Boat Launch: *Scenery, sound of water, forested hillslopes.*

c. Marblemount Boat Launch to Howard Miller Steelhead Park:

i. *Wildlife viewing.*

ii. *Scenery, views of peaks, wildlife viewing/eagles, adjacent protected lands/riparian corridor, off-channel habitat restoration areas for salmonids.*

22. How do the respective river segments compare to other river recreation opportunities?

- In the Skagit River basin?

a. *No, does not have experience to comment on that.*

b. *WW on Sauk is superior to the Goodell section in its complexity. Scenery is different on all the rivers. Spectacular.*

- In the Pacific Northwest?

a. Goodell Creek Boat Launch to Copper Creek Boat Access Site: *One of the advantages is the August – September opportunities for boating due to flow control.*

b. Copper Creek Boat Access Site to Marblemount Boat Launch: *Hard for me to compare other similar section in PNW to this section because they are all different.*

c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch: *Hard for me to compare other similar section in PNW to this section because they are all different.*

Close-out Questions:

23. Do you have any additional comments or information you would like to share that we did not cover in the interview questions? *Only that fishing on the Skagit has been an important recreation activity for float fishermen. Need to factor in the season and needs for them. WDFW sets regs for respective runs.*

24. Is there anyone else with knowledge of boating on these river segments you would recommend we interview? *WA Recreational River Runners, WW Outfitter guides. Jerry and Lori Michelich, Shane Turnbull in Index.*

Thank you for taking the time to participate in this interview. Your input is greatly appreciated. Public participation is important to the success of the study. We are interested in interviewing other individuals with experience boating these three segments of the Skagit River as part of this study. Please provide the contact information for other individuals that may be interested in participating in an interview.

In addition to this structured interview, Seattle City Light is also conducting a recreation flow survey for the three river segments listed above. The survey is available online at the URL below. Please take the time to complete the Skagit River Recreation Flow Survey and encourage others with knowledge of recreation flows in these three segments of the Skagit River to participate in the survey.

Skagit Recreation Flow Survey URL: https://www.surveymonkey.com/r/Skagitrecflowsurvey

Seattle City Light will publish the results of this study in a technical report available to the public in March 2023. For more information about the Skagit River Hydroelectric Project relicensing process please visit the Project relicensing website at https://www.seattle.gov/city-light/in-the-community/current-projects/skagit-relicensing. For questions or comments on the Lower Skagit River Recreation Flow Study please contact Michael Aronowitz at Seattle City Light (michael.aronowitz@seattle.gov).

LOWER SKAGIT RIVER RECREATION FLOW STUDY REPORT

ATTACHMENT D

STRUCTURED INTERVIEWS WITH COMMERCIAL OUTFITTERS

Seattle City Light

Structured Interview Questions
Lower Skagit River Recreation Flow Study

Introduction

Seattle City Light (City Light) is in the process of relicensing the Skagit River Hydroelectric Project (Project). The Project consists of three reservoirs, Gorge, Diablo and Ross, the associated power generation facilities, transmission lines, and infrastructure facilities for operation and maintenance of the Project. City Light is conducting a suite of studies developed collaboratively with resource agencies, Indian Tribes, and public participants.

This structured interview is part of the Lower Skagit River Recreation Flow Study. The purpose of this study is to gather information about river recreation use patterns and flow preferences for three river segments on the Skagit River downstream of the Project. The three river segments encompass 25.2-miles of the Skagit River from the Goodell Creek Boat Launch to Howard Miller Steelhead Park near Rockport. A map of the Skagit River delineating these three river segments is provided below (Figure 1). The river segments include the following:

- Goodell Creek Boat Launch to Copper Creek Boat Access Site (the S-Bends whitewater section) (8.7 miles);
- Copper Creek Boat Access Site to Marblemount Boat Launch (5.9 miles); and
- Marblemount Boat Launch to Howard Miller Steelhead Park (the eagle viewing section) (10.6 miles).

The questions in this structured interview will be repeated for each of the three river segments where you have direct knowledge or experience. The interview will take approximately 15 – 20 minutes to complete for each river segment where you have direct knowledge or experience (i.e., 45-60 minutes if completing for all 3 reaches).

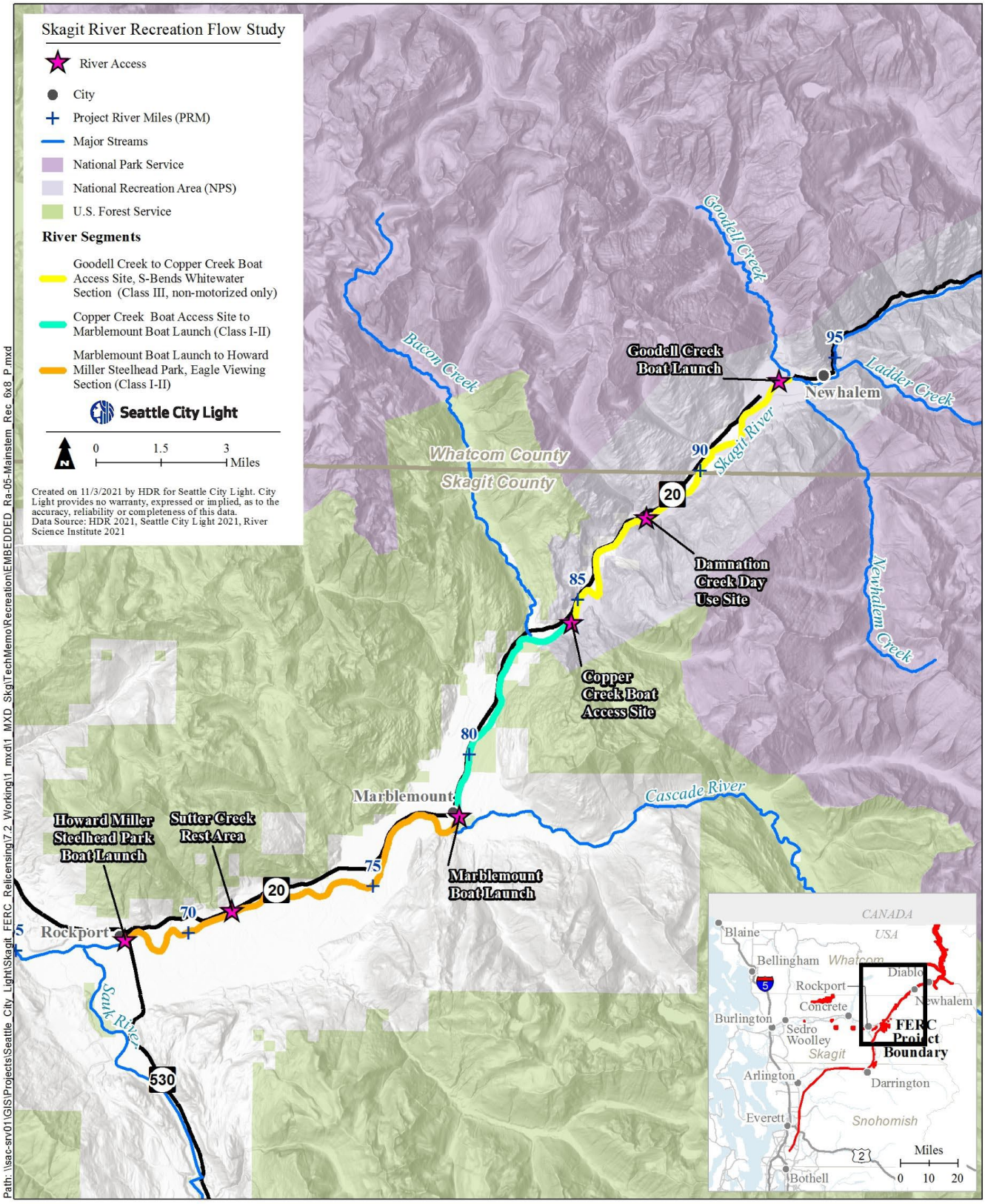

Figure 1: Skagit River Recreation Flow Study River Segments

Structured Interview Questions

Background Information:

1. Name:

   Outfitters participating in structured interviews:

   Triad – Luke Baugh.

   North Cascades River Expeditions – Jerry Michalec.

   Wildwater River Guides – Lance Reif.

2. Do you have direct knowledge and experience with river recreation on one or more of the river segments? *Yes, a lot of experience. New compared to some of the other guides in the business. Since I have been here, I am 99% sure our company has more user days on Skagit than any other outfitter.*

   a. Goodell Creek Boat Launch to Copper Creek Boat Access Site (S-Bends whitewater segment): *Triad, North Cascades, and Wildwater.*

   b. Copper Creek Boat Access Site to Marblemount Boat Launch: *Triad and North Cascades.*

   c. Marblemount Boat Launch to Howard Miller Steelhead Park (eagle viewing segment): *Triad, North Cascades, and Wildwater.*

3. In what capacity were you acting to gain this direct knowledge and experience with the respective river segments?

   a. Commercial guide: *Yes.*

   b. Resource agency management:

   c. Personal river recreation activities: *Yes.*

   d. Scientific research:

   e. Other?

Commercial Outfitter Specific Questions:

C-1. What is the name of your Company?

Triad River Tours, Skagit River Guide Service.

North Cascades River Expeditions (NCRE).

Wildwater River Guides (WRG).

C-2. Does your company operate commercially on the Skagit River?

Triad – Yes, two contracts. NPS for upper segment. USFS from Copper Creek to Baker River.

NCRE – Yes.

WRG – Used to but have not in a couple of years.

C-3. How many years has your company operated commercially on the Skagit River?

Triad – 11 years, and Skagit River Guide Service 2 years—formerly Wayne Ackerlund since 1997.

NCRE – 42.

WRG – Company started in 1980. Running trips back then. Last trips on Skagit were 2016 or 17. Decided to stop running trips for several factors.

C-4. Which river segments do you operate commercially on the Skagit River?

a. Goodell Creek Boat Launch to Copper Creek Boat Access Site (S-Bends whitewater segment): *Triad, NCRE, WRG.*

b. Copper Creek Boat Access Site to Marblemount Boat Launch: *Triad.*

c. Marblemount Boat Launch to Howard Miller Steelhead Park (eagle viewing segment): *Triad/Skagit River Guide Service, NCRE, WRG.*

C-5. What times of year do you operate on the respective river segments?

a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:

May through September.

May – Oct.

April – August.

b. Copper Creek Boat Access Site to Marblemount Boat Launch:

***Respondent 1** – May through Sept. but rarely. Section is awkward. Copper Creek Boat Launch is a bottleneck limiting efficiency for launching trips. Efficiency is key for business model. Copper Creek to Bacon Creek is classified as WW section by state (only 1 mile). This requires outfitter to meet WW protocols for state requirements but is really just a scenic reach. Dories are easier to launch at Marblemount compared to Copper Creek. Outfitter is conscious of their role in public. If they launch Dories at Copper Creek then public will but will likely get stuck.*

***Respondent 2** – Nov – Mar.*

c. Marblemount Boat Launch to Howard Miller Steelhead Park:

***Respondent 1** – All Year. Busy time is Eagle watching season (Dec – Jan). In summertime do a scenic float May – Sept.*

***Respondent 2** – Nov – Mar.*

***Respondent 3** – Dec – Jan.*

C-6. What types of trips do you offer for the respective river segments, e.g., watercraft types, trip length (hours)?

a. Goodell Creek Boat Launch to Copper Creek Boat Access Site: *Perfect introductory WW trip. Paddle and oar rafts ranging from 12 to 16 feet in length carrying max of 8 guests. Fits safety protocol well with access to highway. Great scenery, wildlife and Class III WW at end. Good for their less experienced guides to break into industry. Protects company liability wise for customers that are new to WW. Always there and always running. Trip length 3.5 hrs. Shuttle up from Marblemount boat launch to avoid congestion at put-in and take-out. Can be as short as 1.5 hours during high flows. At low water (2500 cfs) takes 2:15 hours.*

b. Copper Creek Boat Access Site to Marblemount Boat Launch: *Alternative to Segment 3 below (Marblemount to Howard Miller). If Copper Creek boat ramp was blocked they would dead-head to Marblemount.*

c. Marblemount Boat Launch to Howard Miller Steelhead Park: *Catch basin for everything. Kayak instruction, dories, wine tasting, might start doing pack rafting. Section is a scenic river tour. Customer skill requirements are eased. Kids have to be 7 years old and >50 lbs. Good section to take people with disabilities and bring people out to public lands that may not have ability to do WW.*

Eagle viewing in 14' oar rigs. Prefer bucket boats to keep people dry. 2.5 to 3 hour trips.

C-7. Which river segment/trip is your most popular on the Skagit River? *Goodell to Copper Creek, limited in permit to 50 people per trip and 100 per day.*

C-8. How many user days are you allocated annually for the respective river segments?

a. Goodell Creek Boat Launch to Copper Creek Boat Access Site: *NPS limits commercial use to 50 people per trip and 100 per day.*

b. Copper Creek Boat Access Site to Marblemount Boat Launch: *Some confusion among respondents regarding who controls this river segment and no defined use limits.*

c. Marblemount Boat Launch to Howard Miller Steelhead Park: *Summary of response left blank for proprietary reasons at request of interviewees.*

C-9. Do you typically fill all of those user days for each river segment annually?

a. Goodell Creek Boat Launch to Copper Creek Boat Access Site: *Yes and no depending on outfitter.*

b. Copper Creek Boat Access Site to Marblemount Boat Launch: *No, use is infrequent.*

c. Marblemount Boat Launch to Howard Miller Steelhead Park: *Yes and no depending on outfitter.*

C-10. Do you have a commercial/special use permit with the USFS or NPS for the respective river segments?

a. Goodell Creek Boat Launch to Copper Creek Boat Access Site: *NPS.*

b. Copper Creek Boat Access Site to Marblemount Boat Launch: *USFS, but there was some uncertainty among respondents on agency jurisdiction for this river segment.*

c. Marblemount Boat Launch to Howard Miller Steelhead Park: *USFS, with one outfitter commenting that a county permit is required to use the Howard Miller Steelhead Park.*

C-11. Recreation Use Conflicts:

a. Are you aware of any resource conflicts between commercial and non-commercial use on the river?

Respondent 1 *–. Outfitter working to help bring underserved communities to the river for recreation. Consider their responsibility to help set good example and watch out for private boaters on the water from a safety perspective. WA has highest rate of river accidents in the nation Private boaters need more guidance for recreating safely. Outfitter goes out of their way to help private boaters. To minimize conflicts we need better access sites and better guidance on safety. Lack of understanding on etiquette on rivers, safety, spacing on water. Memories of issues at launch sites with non-commercial boaters posting up on the ramp which impedes access for commercial boaters on time schedule. Most worrisome area for outfitter is the boat launches from a liability perspective.*

Respondent 2 *– Yes, huge conflict on 1 day per year. Cory Booker poker run on second weekend of August. Large line of trailers at put-in and takeout. (Goodell to Copper Creek). 1 boat per-person with truck and trailer. See WA recreational river runners schedule. All parking spaces filled all the way to road eventually blocking loop at take-out. Difficult to back up the trailers. Sauk boat launch at SR 530 is a good example of well-designed boat ramp and parking area.*

Respondent 3 *– Boat launch is not very big at Goodell Creek.*

b. Are you aware of any conflicts between river recreation users (commercial and non-commercial) with other recreation activities and/or Tribes?

Respondent 1 *– Most certainly there are conflicts between river recreation users and Indian Tribes. Most of the conflicts are associated with fishing.*

Respondent 2 and 3 *– No.*

c. What type of management tools can be implemented to reduce either of these conflicts?

Respondent 1 *– Educate the public about river hazards and safety. Signage. Websites with up to date information. Outfitters do a lot to educate the public. There should be more involvement from the agencies. Resource agencies could collaborate with the*

outfitters more. Share information on river hazards. Outfitters are there all the time and have knowledge for current conditions.

Respondent 2 *– Creating a larger access or additional access point balanced with resource protection.*

C-12. Are you aware of any resource degradation resulting from river recreation use?

Respondent 1 *– No, not really.*

a. If yes, what type of resource degradation?

Respondent 2 *– There are unauthorized outfitters on Skagit that have built their own boat ramps. Litter. Surface poopers. More on USFS lands than NPS lands. Alcohol. Broken glass near water. People bait eagles during eagle watching season. Motorboats.*

Respondent 3 *– Not that he has noticed. No riparian damage.*

b. What is the source of this resource degradation?

c. What type of management tools can be implemented to reduce the resource degradation? *Enforcement. Government agencies could play key role with educating the public about etiquette and proper use of outdoor resource. Increased demand due to pandemic and increased fuel costs require need to educate public about responsible use of public lands.*

C-13. What are the resource management challenges, if any, specific to river recreation on these river segments?

Respondent 1 *– More and more demand for a limited resource. Results in increased negative impacts.*

Respondent 2 *– The take-out at Copper Creek.*

Respondent 3 *– Not observed any.*

C-14. Is there a need for additional amenities for river recreation in these three river segments? If yes, what type of amenities?

Respondent 1 *– More access sites. Could be a take-out upstream of the S-Bends rapids and sign at Goodell about the Class III WW downstream. More signage. Copper Creek boat launch needs improvements. Too many people using a small site which limits public access to public lands. Site improvements need for safety, better signage, better organized, needs to be patrolled by law enforcement.*

Respondent 2 *– Improvements to the Copper Creek take-out. Expand to accommodate more users. Rebuild with decent turn-around and enough space for people to park. Large buses get bottomed out. See Sauk river access at SR 530 as example.*

Respondent 3 *– Can't think of anything else. Potential access improvements/expansion.*

Personal experience and preferences on respective river segments:

1. How many years have you boated the respective river segments?
    a. Goodell Creek Boat Launch to Copper Creek Boat Access Site (S-Bends whitewater segment):

        Respondent 1 *– 10 years.*

        Respondent 2 *– 17 years.*

        Respondent 3 *– 10 years.*

    b. Copper Creek Boat Access Site to Marblemount Boat Launch:

    c. Marblemount Boat Launch to Howard Miller Steelhead Park (eagle viewing segment):

        Respondent 1 *– 10 years.*

        Respondent 2 *– 42 years.*

        Respondent 3 *– 10 years.*

2. In your estimation, what is the whitewater difficulty of the respective river segments?
    a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:

        Respondent 1 *– Class II-III *when it is high it becomes Class III+ at 15-20K cfs.*

        Respondent 2 *– Class III.*

        Respondent 3 *– Class I-II with one Class III rapid.*

    b. Copper Creek Boat Access Site to Marblemount Boat Launch:

        Respondent 1 *– Class I-II.*

    c. Marblemount Boat Launch to Howard Miller Steelhead Park:

        Respondent 1 *– Class I-II.*

        Respondent 2 *– Class II.*

        Respondent 3 *– Class I*

3. What types of watercraft do you use personally on the respective river segments?
    a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:

        Respondent 1 *– Rafts.*

        Respondent 2 *– 14' rafts and IKs.*

        Respondent 3 *– Kayaks and rafts and SUP.*

    b. Copper Creek Boat Access Site to Marblemount Boat Launch:

        Respondent 1 *– Rafts and drift boats.*

    c. Marblemount Boat Launch to Howard Miller Steelhead Park:

Respondent 1 *– Rafts and drift boats.*

Respondent 2 *– 14' rafts.*

Respondent 3 *– Kayaks and rafts.*

4. What types of watercraft do you see others using on the respective river segments?
    a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:

    Respondent 1 *– 80% raft, 10% kayak, 10% canoes, some SUPS but not many, Cats.*

    Respondent 2 *– Whole range of WW watercraft, Cats, IKs, OCs, rafts, kayaks, no SUPS (yet) and no innertubes (too cold).*

    Respondent 3 *– Kayaks and rafts, Cats, IKs, SUPs.*

    b. Copper Creek Boat Access Site to Marblemount Boat Launch:

    Respondent 1 *– Anything that can be filled with air.*

    c. Marblemount Boat Launch to Howard Miller Steelhead Park:

    Respondent 1*--Anything that can be filled with air.*

    Respondent 2 *– Pretty much same as Goodell to Copper Creek with addition of canoes. Most users have decent equipment. No box store boats.*

    Respondent 3 *– Kayaks and rafts, drift boats.*

5. What is the most popular watercraft type on the respective river segments?
    a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:

    Respondent 3 *– Rafts.*

    b. Copper Creek Boat Access Site to Marblemount Boat Launch:

    Respondent 1 *– Raft.*

    c. Marblemount Boat Launch to Howard Miller Steelhead Park:

    Respondent 1 *– Raft.*

    Respondent 2 *– Rafts.*

6. For those watercraft you are personally familiar with, what is the preferred range of flow for boating on the respective river segments?
    a. Goodell Creek Boat Launch to Copper Creek Boat Access Site based on flows measured at the Newhalem gage (USGS Gage 1218000) (S-Bends whitewater segment):

    Respondent 1 *– 15 ft. raft. 2,500 – 15,000 cfs.*

    Respondent 2 *– 1,500 – 16,000 cfs.*

Respondent 3 *– I do not pay attention to flows because it is dam controlled. Flows are stable with little fluctuation so don't pay attention to it. Not overly hard so not concerned.*

b. Copper Creek Boat Access Site to Marblemount Boat Launch based on flows measured at the Newhalem gage (USGS Gage 1218000):

Respondent 1 *– 2,500 – 15,000 cfs.*

c. Marblemount Boat Launch to Howard Miller Steelhead Park based on flows measured at the Marblemount gage (USGS Gage 1218100):

Respondent 1 *– 5,000 – 15,000 cfs in drift boats.*

Respondent 2 *– 3,000 – 16,000 cfs.*

Respondent 3 *– See response to (a) above.*

7. What would you estimate is the minimum acceptable flow that individuals would return to boat for watercraft which you are familiar?

a. Goodell Creek Boat Launch to Copper Creek Boat Access Site based on flows measured at the Newhalem gage (USGS Gage 1218000) (S-Bends whitewater segment):

Respondent 1 *– 3,000 cfs.*

Respondent 2 *– 1,000 cfs.*

Respondent 3 *– Never been on Skagit when thought it was getting to a minimum flow.*

b. Copper Creek Boat Access Site to Marblemount Boat Launch based on flows measured at the Newhalem gage (USGS Gage 1218000):

Respondent 1 *– 3,000 cfs.*

c. Marblemount Boat Launch to Howard Miller Steelhead Park based on flows measured at the Marblemount gage (USGS Gage 1218100):

Respondent 1 *– 5,000 cfs.*

Respondent 2 *– 1,000 cfs. Tough day when it is <3,000 cfs.*

8. What factor(s) influence the minimum acceptable flow for boating. Consider the following factors for your response:

- Is there a specific channel feature in the river segment impeding navigation at the minimum acceptable flow?
- Does the whitewater difficulty change or become unacceptable below the flow you specified?
- Does the overall enjoyment of the whitewater boating opportunity decrease below the flow you specified?

- Other?

    a. Goodell Creek Boat Launch to Copper Creek Boat Access Site based on flows measured at the Newhalem gage (USGS Gage 1218000) (S-Bends whitewater segment):

    Respondent 1 *– Skagit is very predictable compared to other rivers. With that said, minimum is based on shallow features in river channel. Few of these features on the Goodell section. But there is always a feature at low flows that makes navigation tough.*

    Respondent 2 *– No.*

    b. Copper Creek Boat Access Site to Marblemount Boat Launch based on flows measured at the Newhalem gage (USGS Gage 1218000):

    Respondent 1 *– Braid in river that gets low.*

    c. Marblemount Boat Launch to Howard Miller Steelhead Park based on flows measured at the Marblemount gage (USGS Gage 1218100):

    Respondent 1 *– Drift boats used in winter with 6-8 people which requires draft in deeper water.*

    Respondent 2 *– Long day at lower flows.*

9. For watercraft you are familiar with, what would you estimate is the optimum flow to boat?

    a. Goodell Creek Boat Launch to Copper Creek Boat Access Site based on flows measured at the Newhalem gage (USGS Gage 1218000):

    Respondent 1 *– 5,000 cfs.*

    Respondent 2 *– 8,000 cfs.*

    b. Copper Creek Boat Access Site to Marblemount Boat Launch based on flows measured at the Newhalem gage (USGS Gage 1218000):

    Respondent 1 *– 5,000 cfs.*

    c. Marblemount Boat Launch to Howard Miller Steelhead Park based on flows measured at the Marblemount gage (USGS Gage 1218100):

    Respondent 1 *– 8,000 cfs.*

    Respondent 2 *– 12,000 cfs*

10. For watercraft you are familiar with, what would you estimate is the highest flow for boating the respective river segments?

    a. Goodell Creek Boat Launch to Copper Creek Boat Access Site based on flows measured at the Newhalem gage (USGS Gage 1218000):

    Respondent 1 *– 20,000 cfs.*

Respondent 2 *– Might be willing to try flows > 16,000 up to the recent 31,000. You can stay in the middle at higher flows. You don't want any trouble. Sides of river at high flows have hazards because flow is into the trees.*

b. Copper Creek Boat Access Site to Marblemount Boat Launch based on flows measured at the Newhalem gage (USGS Gage 1218000):

Respondent 1 *– 20,000 cfs.*

c. Marblemount Boat Launch to Howard Miller Steelhead Park based on flows measured at the Marblemount gage (USGS Gage 1218100):

Respondent 1 *– 20,000 cfs.*

Respondent 2 *– Sky is the limit. Make sure you can get to the takeout.*

11. Are existing flow conditions an important factor for you before choosing to boat the respective river segments?

Respondent 1 *– Yes.*

Respondent 2 *– No.*

Respondent 3 *– See response above. Flood events typically occur outside the commercial season.*

12. Why / Why not are existing flow conditions an important factor for you before choosing to boat this section of the Skagit?

Respondent 1 *– Safety.*

Respondent 2 *– Money for commercial operation.*

Respondent 3 *– See response above.*

13. What do you use as a reference for checking existing flow conditions?

Respondent 1 *– Internet every morning. Also use markers on the river.*

Respondent 2 *– Internet (USGS) and WA River recreation river runners list all flows.*

14. When do boaters use the respective river segments?

a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:

Respondent 1 *– July and August.*

Respondent 2 *– July – August. Outfitters focus on other rivers earlier in summer then use shifts to the Tieton in September.*

b. Copper Creek Boat Access Site to Marblemount Boat Launch:

Respondent 1 *– July and August.*

c. Marblemount Boat Launch to Howard Miller Steelhead Park:

Respondent 1 *– July and August.*

Respondent 2 *– January is largest and some activity in Dec and Feb.*

15. Is there a preferred or more popular time of year to boat the respective river segments for various watercraft types?

    a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:

       Respondent 2 *– No.*

       Respondent 3 *– WW watercraft are spring and summer.*

    b. Copper Creek Boat Access Site to Marblemount Boat Launch:

       Respondent 3 *– During fishing season.*

    c. Marblemount Boat Launch to Howard Miller Steelhead Park:

       Respondent 2 *– No.*

       Respondent 3 *– During fishing season.*

16. Are there different patterns of use between commercial and non-commercial boaters in the respective river segments?

    Respondent 1 *– Not really, commercial users tend to be out earlier in season (May and June).*

    Respondent 2 *– July and August for Goodell to Copper Creek. Jan and Feb for Marblemount to Howard Miller.*

    a. Time of year?

       Respondent 2 *– July and August for Goodell to Copper Creek. Jan and Feb for Marblemount to Howard Miller.*

       Respondent 3 *– Commercial from April to Sept.*

    b. Day of week?

       Respondent 2 *– Weekends for private boaters.*

       Respondent 3 *– Commercial on weekends.*

    c. Time of day?

       Respondent 2 *– Commercial outfitters start early. Private boaters sleep in.*

       Respondent 3 *– Commercial do two trips per day.*

    d. River access locations used?

       Respondent 2 *– No.*

       Respondent 3 *– Main access locations.*

17. Is crowding an issue on weekends or during the week during certain times of the year for the respective river segments?
    a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:

       Respondent 1 *– Weekends. Number one obstacle to operations. Goodell and Copper Creek.*

       Respondent 2 *– Only on the Cory Booker poker run day in August.*

    b. Copper Creek Boat Access Site to Marblemount Boat Launch:

    c. Marblemount Boat Launch to Howard Miller Steelhead Park:

       Respondent 2 *– January weekends can be challenging at both put-in and take-out. No crowding on the river.*

18. Where does crowding typically occur?
    a. On the river segment?

       Respondent 2 *– No.*

    b. At the river access locations?

       Respondent 1 *– Goodell and Copper Creek.*

       Respondent 2 *– Yes.*

       Respondent 3 *– At the access locations.*

    c. Other?

19. Do the amenities at the river access sites meet your needs?
20. What type of amenities would improve the river access sites?
21. What is the attraction to the respective river segments for river recreation?
    a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:

       Respondent 1 *– Ideal beginner WW section available to a public that wants to pursue water sports. Perfect for boaters with low skill level.*

       Respondent 2 *– Beautiful WW trip. One of the best trips around. Accessible to beginners with no experience.*

       Respondent 3 *– WW and scenery.*

    b. Copper Creek Boat Access Site to Marblemount Boat Launch:

       Respondent 1 *– Similar but lesser so because they don't have the WW draw.*

    c. Marblemount Boat Launch to Howard Miller Steelhead Park:

       Respondent 1 *– Fishing and eagle watching as well as intro to kayaking.*

       Respondent 2 *– Special, natural trip watching eagles and other wildlife. Nice place.*

       Respondent 3 *– Fishing and eagle watching.*

22. How do the respective river segments compare to other river recreation opportunities?

- In the Skagit River basin?

  Respondent 2 *– Very well. Only trip that is better is the Sauk from Whitechuck to Darrington. Also the Suiattle from Boundary Bridge to SR 530 access. Long day but need to be ready to deal with trees.*

- In the Pacific Northwest?

  a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:

  Respondent 1 *– No other river in PNW offers what Goodell to Copper Creek has to offer for beginner WW boaters.*

  Respondent 2 *– Very well again. There are a couple of trips that might be better but these are right up there.*

  Respondent 3 *– Same. Consistent flows most of the year. For Commercial WW it is one of the easiest sections in the PNW with low risk.*

  b. Copper Creek Boat Access Site to Marblemount Boat Launch:

  Respondent 1 *– Similar to segment downstream but lacks sufficient access.*

  c. Marblemount Boat Launch to Howard Miller Steelhead Park:

  Respondent 1 *– In category of lower Skykomish near Goldbar and Nooksack. Scenic.*

  Respondent 2 *– This might be the best segment to look at birds.*

Close-out Questions:

23. Do you have any additional comments or information you would like to share that we did not cover in the interview questions?

Respondent 1 *– If the Skagit is not available the public will go to another river which is more dangerous. Flows and predictability of Skagit are more consistent and makes it safer for beginner and intermediate boaters. This can save human lives. Adjacent highway is a good safety net for rescue. Skagit is vital for river recreation. Skagit needs to be available as resource to public.*

Respondent 2 *– Persuade City Light that number one priority is improving Copper Creek access site to accommodate more users for parking and vehicle flow. Copper Creek access site is the limiting factor. River access site can be designed to be sustainable long term similar to the Sauk access site at SR 530. Current access means that river recreation cannot grow on this segment of the Skagit. Also see responses to C-11 and C-14 about Copper Creek.*

24. Is there anyone else with knowledge of boating on these river segments you would recommend we interview?

    Name(s):
    Jerry at North Cascade Expeditions;
    Shane Turnbull, Alpine Adventures – Steve and Dustin;
    WA recreation river runners – Brennan Filippini;
    Rusty at Howard Miller;
    Skagit County Sheriff named Kyle with Swiftwater Rescue Training (boats that section a lot);
    Alpine Adventures – Steve Fore;
    James Moore at Orion (509-548-1401);
    WA River Recreation Runners;
    River Dog Outfitters;
    Neils_h@aol.com

Thank you for taking the time to participate in this interview. Your input is greatly appreciated. Public participation is important to the success of the study. We are interested in interviewing other individuals with experience boating these three segments of the Skagit River as part of this study. Please provide the contact information for other individuals that may be interested in participating in an interview.

In addition to this structured interview, Seattle City Light is also conducting a recreation flow survey for the three river segments listed above. The survey is available online at the URL below. Please take the time to complete the Skagit River Recreation Flow Survey and encourage others with knowledge of recreation flows in these three segments of the Skagit River to participate in the survey.

Skagit Recreation Flow Survey URL: https://www.surveymonkey.com/r/Skagitrecflowsurvey

Seattle City Light will publish the results of this study in a technical report available to the public in March 2023. For more information about the Skagit River Hydroelectric Project relicensing process please visit the Project relicensing website at https://www.seattle.gov/city-light/in-the-community/current-projects/skagit-relicensing. For questions or comments on the Lower Skagit River Recreation Flow Study please contact Michael Aronowitz at Seattle City Light (michael.aronowitz@seattle.gov).

LOWER SKAGIT RIVER RECREATION FLOW STUDY REPORT

ATTACHMENT E

STRUCTURED INTERVIEWS WITH NON-COMMERCIAL BOATERS

Seattle City Light

Structured Interview Questions
Lower Skagit River Recreation Flow Study

Introduction

Seattle City Light (City Light) is in the process of relicensing the Skagit River Hydroelectric Project (Project). The Project consists of three reservoirs, Gorge, Diablo and Ross, the associated power generation facilities, transmission lines, and infrastructure facilities for operation and maintenance of the Project. City Light is conducting a suite of studies developed collaboratively with resource agencies, Indian Tribes, and public participants.

This structured interview is part of the Lower Skagit River Recreation Flow Study. The purpose of this study is to gather information about river recreation use patterns and flow preferences for three river segments on the Skagit River downstream of the Project. The three river segments encompass 25.2-miles of the Skagit River from the Goodell Creek Boat Launch to Howard Miller Steelhead Park near Rockport. A map of the Skagit River delineating these three river segments is provided below (Figure 1). The river segments include the following:

- Goodell Creek Boat Launch to Copper Creek Boat Access Site (the S-Bends whitewater section) (8.7 miles);
- Copper Creek Boat Access Site to Marblemount Boat Launch (5.9 miles); and
- Marblemount Boat Launch to Howard Miller Steelhead Park (the eagle viewing section) (10.6 miles).

The questions in this structured interview will be repeated for each of the three river segments where you have direct knowledge or experience. The interview will take approximately 15 – 20 minutes to complete for each river segment where you have direct knowledge or experience (i.e., 45-60 minutes if completing for all 3 reaches).

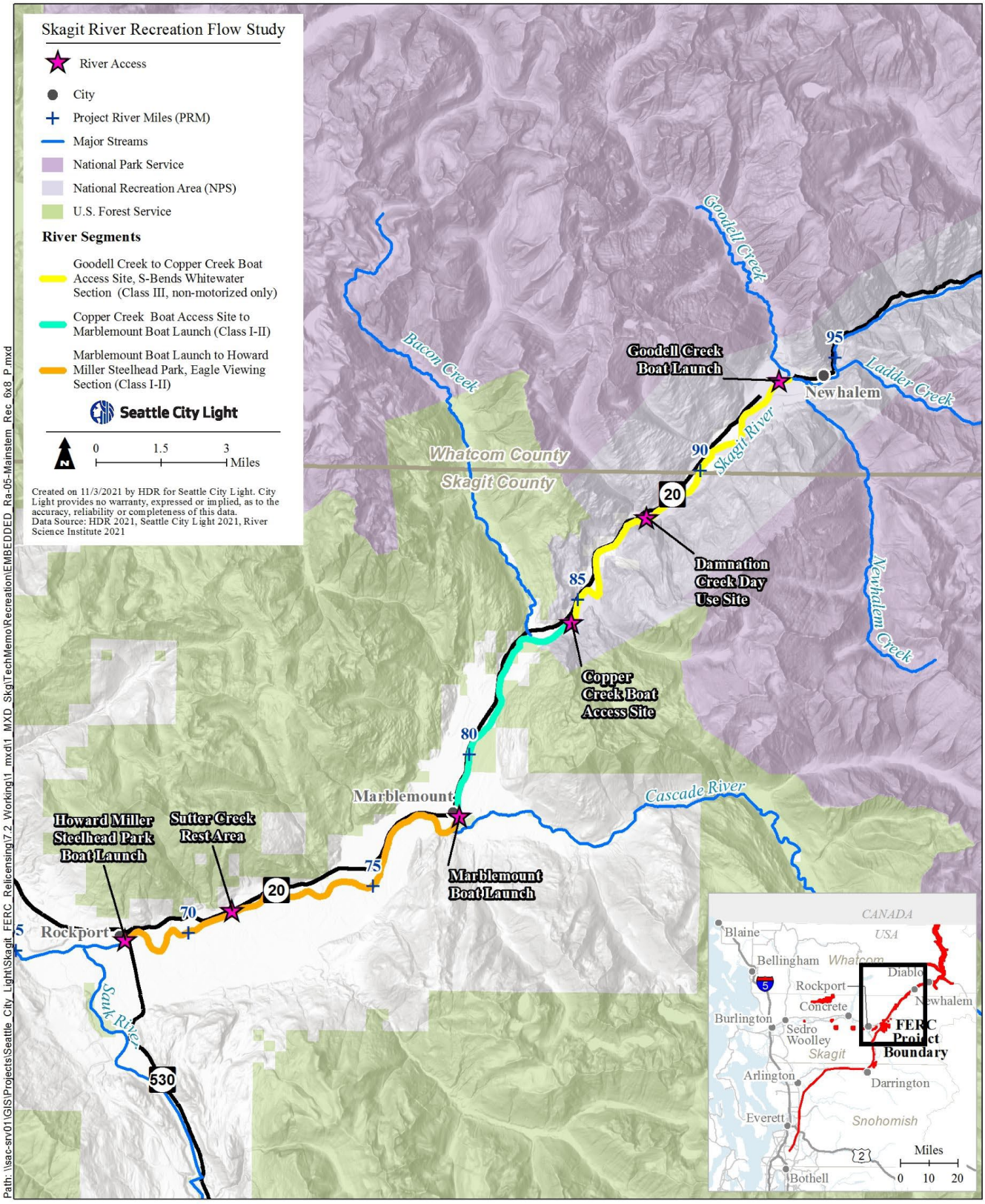

Figure 1: Skagit River Recreation Flow Study River Segments

Structured Interview Questions

Background Information

1. Name: **7 individuals (names withheld for privacy)**
2. Do you have direct knowledge and experience with river recreation on one or more of the river segments?
   a. Goodell Creek Boat Launch to Copper Creek Boat Access Site (S-Bends whitewater segment):
      6 respondents.
   b. Copper Creek Boat Access Site to Marblemount Boat Launch:
      6 respondents.
   c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch (eagle viewing segment):
      5 respondents.
3. In what capacity were you acting to gain this direct knowledge and experience with the respective river segments?
   a. Commercial guide:
      2 respondents.
   b. Resource agency management:
   c. Personal river recreation activities:
      6 respondents.
   d. Scientific research:
      1 respondent.
   e. Other?
      Kayak racing: US Nationals for downriver racing.
      Working for TNC doing media relations and following restoration efforts and eagle habitat and Salmon. Illabot CK W&S.
      Paddle Trails Canoe Club—eagle float first Saturday in January—Trip Coordinator for last 8 years. Trips occurring for past 40 years.

Personal experience and preferences on respective river segments

1. How many years have you boated the respective river segments?

   a. Goodell Creek Boat Launch to Copper Creek Boat Access Site (S-Bends whitewater segment):

   32
   22
   16
   34
   7
   10

   b. Copper Creek Boat Access Site to Marblemount Boat Launch:

   32
   22
   16
   5-6 times over the years
   5
   10

   c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch (eagle viewing segment):

   32
   22
   20
   17
   12 years (only done this segment commercially)
   6

2. In your estimation, what is the whitewater difficulty of the respective river segments?

   a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:

   Class II-III+
   Class III at S-Bends but rest is Class II
   Class II with one Class III
   Class III-
   Class III-
   Class III

   b. Copper Creek Boat Access Site to Marblemount Boat Launch:

   Class II
   Class I-II
   Class I+
   Class II
   Class II-
   Class I+

   c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch:

   Class I+
   Class I-II

Class I
Class I+
Class I-II
Class I+

3. What types of watercraft do you use personally on the respective river segments?

   a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:

   WW kayak, wildwater race boat
   14’ raft
   solo WW canoe and raft
   WW 14’ raft (18” spirit when running commercially), catarafts, kayaks, IK’s swam sections on purpose
   WW kayak and raft
   SUP

   b. Copper Creek Boat Access Site to Marblemount Boat Launch:

   wildwater race boat, open canoe
   14’ raft
   solo WW canoe and raft, Often combine this segment with Marblemount due to water volume and speed of float
   WW 14’ raft
   canoe
   SUP

   c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch:

   wildwater race boat, open canoe
   14’ raft
   Tandem canoe, solo canoe, sea kayak, raft
   solo WW canoe and raft
   WW 14’ raft (18” spirit when running commercially)
   canoe

4. What types of watercraft do you see others using on the respective river segments?

   a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:

   rafts, WW kayaks, decked c1, race boats
   rafts, IKs, SUPs, kayaks, closed deck canoes
   everything. Small cats, IKs, hardshell kayaks, solo canoes, tandem canoes, and rafts.
   rafts, IK’s, kayaks, catarafts, paddle cats,
   drift boats
   primarily raft, some IKs and handful of closed deck kayaks

   b. Copper Creek Boat Access Site to Marblemount Boat Launch:

   rafts, WW kayaks, decked c1, race boats, sea kayaks, open canoes
   rafts, IKs, SUPs, kayaks, closed deck canoes, open canoes
   everything. Small cats, IKs, hardshell kayaks, solo canoes, tandem canoes, and rafts.
   rafts, IK’s, catarafts,
   canoes

mostly fishing in rafts and some dories

c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch:

rafts, kayaks, decked c1, race boats, sea kayaks, dories, fishing pontoons/float tubes, open canoes
Every type of watercraft, hard sided boats for fishing, motorboats
dories / drift boats, sea kayaks, canoes, rafts, motor boats
everything. Small cats, IKs, hardshell kayaks, solo canoes, tandem canoes, and rafts.
Rafts
canoes

5. What is the most popular watercraft type on the respective river segments?

a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:

WW kayaks
Raft
raft or cataraft
rafts
toss up between rafts and kayaks
inflatable raft

b. Copper Creek Boat Access Site to Marblemount Boat Launch:

rafts during eagle viewing, open canoes
raft
raft or cataraft
rafts
drift boats mostly used for fishing

c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch:

rafts during eagle viewing, open canoes
raft
see lots of canoes (because she is with canoe club) and lots of rafts
raft or cataraft
rafts
drift boats mostly used for fishing

6. For those watercraft you are personally familiar with, what is the preferred range of flow for boating on the respective river segments?

a. Goodell Creek Boat Launch to Copper Creek Boat Access Site based on flows measured at the Newhalem gage (USGS Gage 1218000) (S-Bends whitewater segment):

WW kayak: 2000-4000. WW race boat: same (never seen it too low for WW race boat)
raft—7,000 – 10,000
4,000 to 6,000 cfs at Marblemount but don't pay that much attention because there is usually plenty of water
>2,000 cfs to a lot (10,000-12,000 cfs). never been on the Skagit when there was too much water.
3,000 to 4,000 cfs
5,000+

b. Copper Creek Boat Access Site to Marblemount Boat Launch based on flows measured at the Newhalem gage (USGS Gage 1218000):

Can handle lower and higher flows due to less gradient
raft—7,000 – and above with no ceiling
4,000 to 6,000 cfs at Marblemount but don't pay that much attention because there is usually plenty of water
Probably similar to range for Goodell to Copper
Only done this section a couple of times and was not aware of flows
5000 +. Higher the better because there is flatwater

c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch based on flows measured at the Marblemount gage (USGS Gage 1218100):

Can handle lower and higher flows due to less gradient
raft—7,000 – and above with no ceiling
Use Newhalem gage as a reference. Likes it at 7000-8000 for travel time—faster. Lower levels are also fine in canoes. Never seen it too low to go.
4,000 to 8,000 cfs at Marblemount but don't pay that much attention because there is usually plenty of water
Never been too high. ~20,000 cfs
Only done this section a couple of times and was not aware of flows

7. What would you estimate is the minimum acceptable flow that individuals would return to boat for watercraft which you are familiar?

a. Goodell Creek Boat Launch to Copper Creek Boat Access Site based on flows measured at the Newhalem gage (USGS Gage 1218000) (S-Bends whitewater segment):

Never boated it when it is too low
3,000 cfs for the beauty of the river
Not fully aware of the lower flows at Newhalem gage. Would be interested in seeing 1500 cfs to see if there are rock gardens. Maybe 1500 cfs?
1,300 -1,500 cfs
1,000 cfs
2,500 cfs

b. Copper Creek Boat Access Site to Marblemount Boat Launch based on flows measured at the Newhalem gage (USGS Gage 1218000):

no minimum
5,000 cfs
Not fully aware of the lower flows at Newhalem gage. Would be interested in seeing 1500 cfs to see if there are rock gardens. Maybe 1500 cfs?
similar to Goodell to Copper
2,500 cfs

c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch based on flows measured at the Marblemount gage (USGS Gage 1218100):

no minimum
5,000 cfs
Never seen it too low to go. Might be 1000 – 2000 cfs. River is never low in the winter so she has not seen flows in this range while boating.
3,000 cfs. Not familiar with it at flows lower.
Might require a little more water because it is broader and slower.

8. What factor(s) influence the minimum acceptable flow for boating. Consider the following factors for your response:

- Is there a specific channel feature in the river segment impeding navigation at the minimum acceptable flow?
- Does the whitewater difficulty change or become unacceptable below the flow you specified?
- Does the overall enjoyment of the whitewater boating opportunity decrease below the flow you specified?
- Other?

a. Goodell Creek Boat Launch to Copper Creek Boat Access Site based on flows measured at the Newhalem gage (USGS Gage 1218000) (S-Bends whitewater segment):

Upper section of Goodell segment (near put-in) becomes shallow
No, just more challenging
No flow specified
time on the water, anything below flow is not super exciting
Channel features. Gravel bars making you drag your boat or difficult rock gardens to navigate and/or sieves
navigability which feeds into overall enjoyment
for a raft I prefer a higher flow to navigate. I prefer a lower flow for kayaking to bring out the technical feel to it because it is not that difficult to start with.
At higher flows it is more fun. Lower flows it is more technical. Shallow at lower flows so you will get hurt if you fall. Safety issues with shallower flows. Too boney at low flows

b. Copper Creek Boat Access Site to Marblemount Boat Launch based on flows measured at the Newhalem gage (USGS Gage 1218000):

same and wind. Wind can really affect getting downstream, travel time. Especially if you have a paddle crew.
Channel features. Gravel bars making you drag your boat
Same here…navigability
Similar to upstream segment but less of factor because it is mellower.

c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch based on flows measured at the Marblemount gage (USGS Gage 1218100):

same, travel time on water is too slow and wind.
Has not observed a minimum flow for this segment
Channel features. Gravel bars making you drag your boat
Only reason I go here is to see the birds so want to make sure the boat will get through the channel.

9. For watercraft you are familiar with, what would you estimate is the optimum flow to boat?

a. Goodell Creek Boat Launch to Copper Creek Boat Access Site based on flows measured at the Newhalem gage (USGS Gage 1218000):

does not have an optimum flow
9,000 cfs
Marblemount gage: 3,000 to 4,000 cfs
4,000 -10,000 cfs
For raft and kayak 4,000 cfs
10,000 cfs

b. Copper Creek Boat Access Site to Marblemount Boat Launch based on flows measured at the Newhalem gage (USGS Gage 1218000):

does not have an optimum flow
10,000 cfs
Marblemount gage: 4,000 to 6,000 cfs, more of a float for scenery
4,000 -10,000 cfs
10,000 cfs

c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch based on flows measured at the Marblemount gage (USGS Gage 1218100):

does not have an optimum flow
10,000 cfs
5,000 – 7,000 cfs but not certain on this volume
Marblemount gage: 4,000 to 8,000 cfs, more of a float for wildlife viewing and scenery
4,000 -10,000 cfs

10. For watercraft you are familiar with, what would you estimate is the highest flow for boating the respective river segments?

a. Goodell Creek Boat Launch to Copper Creek Boat Access Site based on flows measured at the Newhalem gage (USGS Gage 1218000):

5,000 cfs
15,000 cfs
Marblemount gage: solo WW canoe 5,000 cfs; raft 8,000 cfs
I have never seen it. ~20,000 range
10,000 to 11,000 c fs but has not run it at those flows.
Not familiar with anything past 15,000 cfs. Would need to observe higher flows before paddling. Difficult to rescue capsized boater at higher flows because you are moving so fast.

b. Copper Creek Boat Access Site to Marblemount Boat Launch based on flows measured at the Newhalem gage (USGS Gage 1218000):

if water is at or beyond bankful
15,000 cfs
Marblemount gage: solo WW canoe 8,000 cfs; raft 8,000 cfs
Could go even higher on this segment but unlikely I would raft this stretch alone without running the segment upstream.
Not familiar with anything past 15,000 cfs. Would need to observe higher flows before paddling. Difficult to rescue capsized boater at higher flows because you are moving so fast.

c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch based on flows measured at the Marblemount gage (USGS Gage 1218100):

if water is at or beyond bankful
25,000 cfs
When flows are high >8,000 it is hard to pull into Illabot Ck confluence. Canoes can tip over where Illabot meets the Skagit.
Marblemount gage: solo WW canoe 8,000 cfs; raft 10,000 cfs
Somewhere between 20,000 to 30,000 cfs. Hard to gage it since I've never seen it.

11. Are existing flow conditions an important factor for you before choosing to boat the respective river segments?

    Yes, somewhat
    Yes
    Medium factor. Robin has never canceled a trip based on flows
    Yes
    Not really. Primarily I raft the Skagit for the beauty and fun factor. Skagit is so steady that during the primary rafting season from end of April – October it always in acceptable range.
    Yes
    No

12. Why / Why not are existing flow conditions an important factor for you before choosing to boat this section of the Skagit?

    Depends on the experience I want from the trip and type of boat I plan to use. Ask myself if that water level has features I want to play in (for WW kayak). If I am using an open boat then flow is more important. If using WW boat likely go no matter what the flows.
    Because it could take too long to do certain sections at low flows
    Skagit is big and does not have WW features so it can handle wide range of flows on this segment.
    Check to see if it is too high or too low
    Flow information is important for safety and to determine if I have the right watercraft for the flow.
    Only concerned with flows if they are extremely low or high. Weather is more important factor.

13. What do you use as a reference for checking existing flow conditions?

    USGS gages directly or through AW
    USGS
    AW page based on Marblemount gage (8100)
    USGS gage at Marblemount. Has 10 day flow forecast
    USGS at times to look at gage heights and graphs but more for other rivers than the Skagit. Generally, look at water at the put in at Goodell.
    USGS
    Gage at Marblemount. And word of mouth from folks traveling back to east side from the west side.

14. When do boaters use the respective river segments?

    a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:

    WW kayaks and canoes later in summer when there are no other boating opportunities available in WA. Used to be more important in the past before changes in boat design allowed folks to paddle other rivers at other flows and bump off rocks.
    year round unless it is snowed in
    Most popular August – October. But can run it any time of year. If there are other closer rivers that are running with more challenging WW then generally we run those. Use the S-Bends when those other runs are not in.
    End of April through middle of October. Heaviest in August and September when other rivers are too low.
    I boat several times a year. Random on when I go. Could be middle of winter or August. Not a month he won't go.

When SR 20 opens across the pass and when boating opportunities on East side diminish.

b. Copper Creek Boat Access Site to Marblemount Boat Launch:

year round if accessible to launch
July-Sep for summer floats for social trip (not WW). And Dec – Jan for eagle watching
same as above
Summer

c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch:

eagle viewing in winter
year round
Winter for eagle viewing
July-Sep for summer floats for social trip (not WW). And Dec – Jan for eagle watching
End of November through early February
Summer

15. Is there a preferred or more popular time of year to boat the respective river segments for various watercraft types? No difference in time of year with the type of boat.

a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:

later in summer when there are no other boating opportunities available in WA
spring and summer and early fall
See response to 14 above
Drift boating traffic picks up significantly during fall salmon run. Overall, more boaters out in summer than in January.
August and September when it is warm, never busy there.

b. Copper Creek Boat Access Site to Marblemount Boat Launch:

Same
See response to 14 above

c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch:

Winter for eagle viewing
seems more common during Bald eagle season, December to early March, fishing has its own season
Dec to Feb
See response to 14 above

16. Are there different patterns of use between commercial and non-commercial boaters in the respective river segments, e.g.

a. Time of year?

b. Day of week?

c. Time of day?

d. River access locations used?

Commercial fishing trips on Copper Ck to Marblemount and Marblemount to Howard Miller during fishing season
Howard Miller there is more commercial use. Not as many people at Copper Ck

Yes, commercial is all week long, non-commercial on weekends. Can get congestion on the weekends Have seen kayakers lapping S-Bends rapid
Non-commercial use on Marblemount to Howard Miller typically occurs from December to February, on weekends, during middle of day using standard access locations
Yes based on when I am up there. More use around the eagle float. Weekends are busier with commercial outfitters. During the week there are no cars in parking lot at Marblemount. Lot can be nearly full at Marblemount in winter on weekends. Paddle club shows up at 10 -11 to launch. Lot more use at Marblemount during eagle float. In summer at Copper Creek on weekends can be quite busy.
Same use patterns as when he was commercially rafting
Not really. Commercial folks are out in summer and fall
Yes, commercial has set times daily to launch. Use same locations as commercial outfitters

17. Is crowding an issue on weekends or during the week during certain times of the year for the respective river segments?

    a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:

    no overall
    Yes on weekends
    In summer, August, crowding. Plenty of parking at Goodell but tougher at Copper Creek boat access.
    I have not experienced significant crowding issues but I have not been on the segment in July or August in a long time
    No, not for the upper.
    No

    b. Copper Creek Boat Access Site to Marblemount Boat Launch:

    not really because most folks are using the S-Bends but the Copper Ck access gets chaotic during summer weekends.
    Launch at Copper Ck gets crowded
    Similar to above

    c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch:

    Maybe on big eagle watching weekend when organized events occur
    Not usually
    Yes, particularly at Howard Miller. Never not been able to park.
    Parking can be difficult at Howard Miller during eagle viewing on weekends.
    Has not been on this stretch in long time but when he was it was not crowded.

18. Where does crowding typically occur?

    a. On the river segment:

    Marblemount to Howard Miller on big eagle watching weekend when organized events occur
    Not usually
    Not on the river segment

    b. At the river access locations?

    No crowding at Goodell or Copper
    on summer weekends
    Yes, access locations

Yes at Copper Creek boat launch in summer and Howard Miller on weekends during eagle viewing.
Copper Creek access site has parking space limitations.
Maybe parking

c. Other?

19. Do the amenities at the river access sites meet your needs?

Yes
Goodell Ck outhouses are awful. Have been for years.
No
Yes
Put-in at Goodell Campground is great. Copper Creek is OK.
Could be a little cleaner.

20. What type of amenities would improve the river access sites?

If use was to increase in future then parking space will be limited at Copper; Goodell has limited space for multiple groups to launch at same time; Howard Miller parking can get full in winter during organized events
New bathrooms at Goodell, more parking at Goodell and Copper
More toilets at Marblemount
Would be great to have a toilet at Goodell boat launch.
Pit toilets at Goodell Ck Campground need help
Pavilion on both ends of Godell to Copper river segment would be nice.
Cleaning outhouses on a regular basis

21. What is the attraction to the respective river segments for river recreation?

a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:

Scenery, WW rapid, access is easy, roadside, reliable water when other rivers are too low. Wildwater racing opportunity, WW boating for beginning intermediate wanting to move up.
Beauty of the Skagit
Scenery and WW
Beautiful and enough WW to be fun.
Relatively good WW and very scenic.
Different paddling opportunity compared to East side of WA pass, exciting in an SUP, scenic and lush, beautiful water, opportunity to view salmon.

b. Copper Creek Boat Access Site to Marblemount Boat Launch:

Long segment with consistent moving water with lots of choices for navigation across a range of flows. Not a lot of this type of opportunity in WA for open canoes. Shuttle is straightforward.
Beauty of the Skagit
Scenery and wildlife viewing
Adds a longer run to segment above and does have a place to camp so you can do an overnighter.
Scenery and fishing

c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch:

Long segment with consistent moving water with lots of choices for navigation across a range of flows. Not a lot of this type of opportunity in WA for open canoes. Shuttle is straightforward.

Beauty of the Skagit and eagle viewing
Eagle viewing, nice easy stretch of river for people that don't want to do hard WW.
Scenery and wildlife viewing
100 %Eagle viewing
Scenery and fishing

22. How do the respective river segments compare to other river recreation opportunities?

- In the Skagit River basin?

  Mainstem is easier than other tributaries in the basin and segments can be combined for a longer continuous trip. Less wood in Skagit compared to tribs.
  Upper Sauk has equal scenic and more challenging WW. Middle Sauk has similar scenery and WW. Sauk is better WW, Upper and Lower Suiattle are better WW. Skagit is much more family friendly. Often has slightly or significantly better weather compared to Sauk and Suiattle.

- In the Pacific Northwest?

  Skagit is a W&S river
  Way less crowded than the Wenatchee and more beautiful. Wenatchee is the most popular and most rafted in state. Skagit is less challenging but prettier.
  Proximity. Limited WW but that is not why you are there.

  a. Goodell Creek Boat Launch to Copper Creek Boat Access Site:

  bigger river with longer period for paddling.
  Small section of Class III fun and wildlife
  WW opportunities are greater on other runs such as Skykomish, Snoqualmie, Wenatchee and Green and Sauk. Scenery is similar on Sky and Snoqualmie but Skagit has dependable flows year round.
  Scenery is on par with other runs in the Skagit, different but great. The WW difficulty on the Sauk is a lot higher and more attractive personally.
  Other go to rivers include the Middle Fork of Nooksack, Chilliwack and Stillaguamish. WW is the focus on these runs.
  Best run in the Skagit.

  b. Copper Creek Boat Access Site to Marblemount Boat Launch:

  Long segment with consistent moving water with lots of choices for navigation across a range of flows.
  Easy floating and beauty
  Wildlife viewing is very good on these sections for eagles

  c. Marblemount Boat Launch to Howard Miller Steelhead Park Boat Launch:

  Long segment with consistent moving water with lots of choices for navigation across a range of flows.
  Beauty and Bald Eagle viewing and used to be seeing the fish. Not the case anymore.
  Unique opportunity because of the eagles. Nooksack and Sauk also have eagle viewing but boating is more difficult. On Skagit you can get up close and see 100's of eagles. Great landscape scenery when weather is clear. Beautiful even when rainy.
  Wildlife viewing is very good on these sections for eagles

Close-out Questions

23. Do you have any additional comments or information you would like to share that we did not cover in the interview questions?

    Fishermen accessing the Marblemount to Howard Miller segment during Bald Eagle season should be required to follow same schedule as other boaters. No launches before 11 AM. Commercial outfitters are not allowed to launch before 11 AM. Creates conflicts. Commercial outfitters not allowed to even step out of boat between Marblemount and Howard Miller. Fishermen with motorboats can launch and wade in river anytime.

    Skagit is a crucial river for salmon. Approximately 30% of the freshwater in the Puget Sound comes from Skagit. Contains all of the salmon species. While recreation is important the conservation values of the river are the most important thing. Recreation brings people closer to that conservation value cultivating that awareness of the Skagit.

    Importance of the ability to raft (suitable flows for boating) are far less important than the need to maintain / improve salmon runs. Salmon runs have declined in last 2 years. Used to be fun thing to raft and see the fish.

24. Is there anyone else with knowledge of boating on these river segments you would recommend we interview?

    a. Name:

    Rich Roehner, Steve Reutebuch – PTCC
    Dave Mainer PTCC, Kanako WA Kayak Club
    Shane Turnbull
    Robin Stanton

    b. Contact information:

Thank you for taking the time to participate in this interview. Your input is greatly appreciated. Public participation is important to the success of the study. We are interested in interviewing other individuals with experience boating these three segments of the Skagit River as part of this study. Please provide the contact information for other individuals that may be interested in participating in an interview.

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