Maple Creek Site Plan:
Public River Access and Restoration

January 2021

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About this Document

The *Maple Creek Site Plan: Public River Access and Restoration* document is intended to provide information about the planning process and design recommendations for a new public access site along State Highway 542 of the North Fork Nooksack River. Located between two established river access sites, Horseshoe Bend Trailhead and Welcome Bridge in Whatcom County, Washington, this area has been identified multiple times as needing a new managed river access site. This plan details how potential sites within this reach were identified, inventoried and ultimately analyzed to determine one suitable site for development. Maple Creek was selected as being the most suitable for a new river access site, and later chapters in this plan go into detail about recommendations for site interventions and implementation.

Information and recommendations contained in this plan are a reflection of a year-long, collaborative, community and stakeholder process. Built on past efforts, and newly formed partnerships, this plan seeks to establish a site that reflects the common goals and shared values between local partners and stakeholders. Common shared goals and values include providing safe public access along the North Fork Nooksack River; while working to protect, restore, and enhance the riparian forest and natural river systems. These goals and values helped shape and guide the development of this plan.

Chris Elder and his dog Pippa on the Nooksack River.
Photo Credit: Chris Elder

"The Nooksack River is the best river. It has whitewater and flatwater, all five species of Pacific salmon, many stark and scenic canyons and wide and braided channels. Beavers, mergansers, bald eagles, kingfisher, and even seasonal river gulls call the river home. It supplies water in one way, shape, or form to the majority of the population of Whatcom County, supports almost 50,000 acres of irrigated agriculture (not counting the other 50,000 acres of non-irrigated agriculture) and is born of the glaciers and forests of Mount Baker and the North Cascades. Because of these reasons and many more it is the best river, and it deserves to be stewarded and protected as such."

Chris Elder

Introduction

Project Area

This plan focuses on a project area along 19 river miles of the North Fork Nooksack River, as shown in Figure 1. Located in Whatcom County Washington, the North Fork Nooksack River is known for its natural beauty and cultural resources. Flowing from Mount Baker in the Northern Cascade Range, the North Fork of the Nooksack river is popular with boaters and paddlers who are able to use the river for a range of experiences in a pristine natural environment. Connected to Puget Sound via Bellingham Bay (Figure 2) and the river's main stem, the North Fork Nooksack River is part of the historic migratory routes for several protected salmon species. This river is also culturally important to several tribes who have historically used the land and the river for thousands of years. Tribal governments such as the Nooksack Tribe and Lummi Nation are actively working in the area to restore the riparian forest and protect critical salmon habitat. Several other entities and government agencies are actively working in the region to protect and restore the river and its natural landscape. Primarily these include the US Forest Service, Washington Department of Fish and Wildlife, Whatcom Land Trust, other state and local government agencies, among others. In particular, the Whatcom Land Trust is a land management organization that is actively restoring their land to promote river and wildlife conservation. They also partner with others such as the Nooksack Tribe to leverage success in protecting and conserving the area's natural resources.

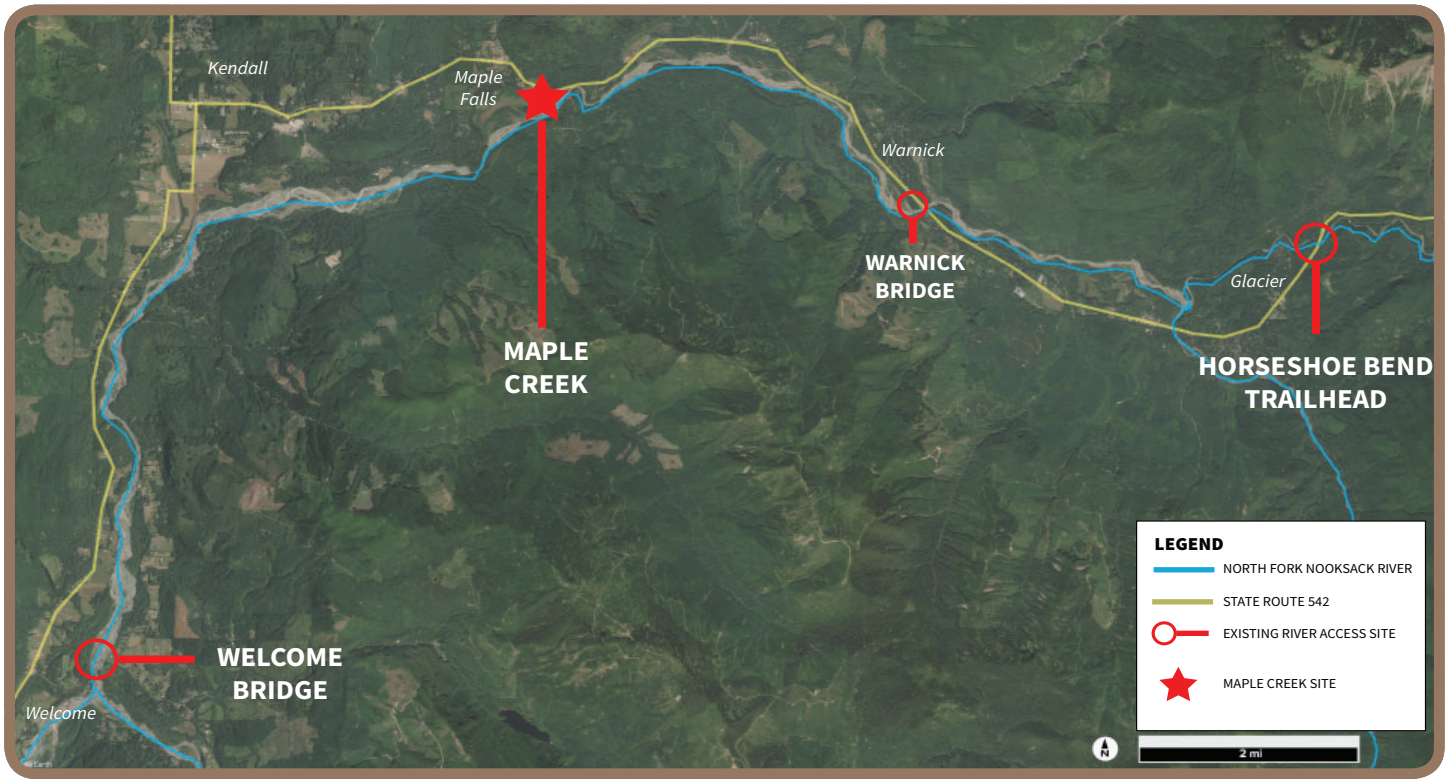


Figure 1: This aerial map of the North Fork Nooksack River shows the established sites of Horseshoe Bend, Warnick Bridge, and Welcome Bridge in context with each other and the towns of Glacier and Welcome Washington. Credit: Brianna Truden

As a popular river for boaters and paddlers to run, the community has identified a need for more public access to accommodate current use levels, and protect the area's natural and cultural resources. Being in close proximity to growing urban areas such as Seattle and Bellingham has increased pressure on the river. These 19 river miles flow between two well established and managed river access sites, Horseshoe Bend Trailhead and Welcome Bridge. Horseshoe Bend Trailhead is owned and managed by the US Forest Service as a river access

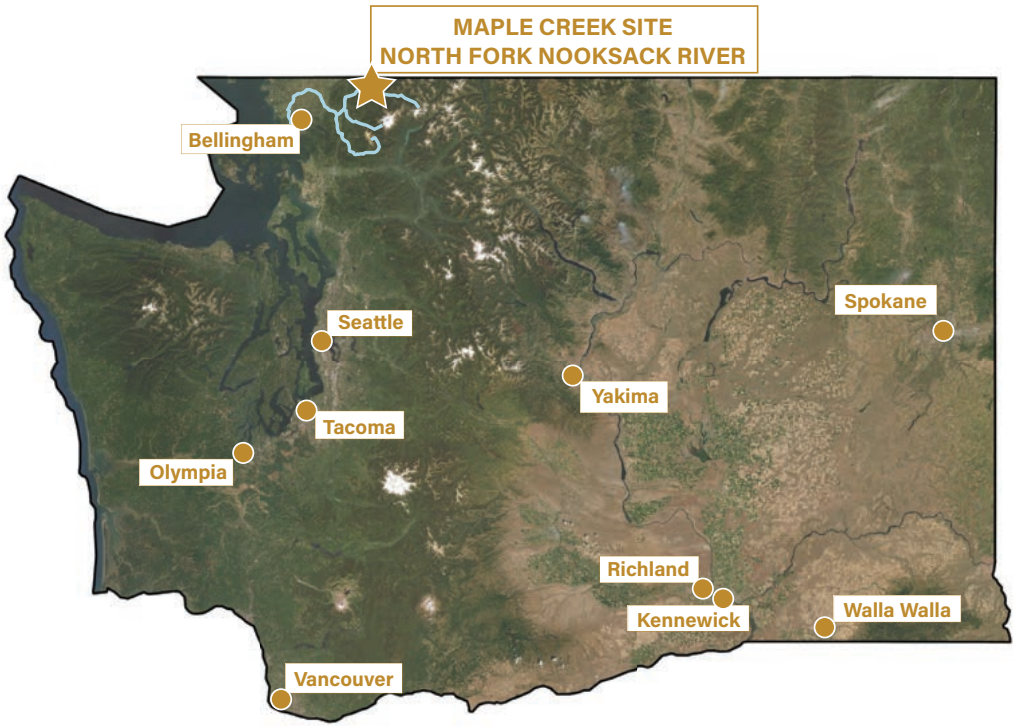


Figure 2: Location of the North Fork Nooksack River within Washington state. Credit: Brianna Truden

site adjacent to the Douglas Fir Campground. This campground is located along Mount Baker Scenic Byway (State Highway Route 542), upstream from the town of Glacier, Washington. Welcome Bridge, owned and managed by Whatcom County Parks and Recreation, is a formalized put-in and take-out river access site under the bridge of Mosquito Lake Road upstream from the town of Welcome, Washington. Several illegal and unmanaged access sites within this project area have also been established. These illegal access sites have led to several safety, trespassing, and environmental concerns. More information on past planning efforts and these concerns can be found below.

Project Need

Past Planning Efforts

Planning for the Maple Creek River Access site was influenced by three previous planning efforts which are detailed below. These planning efforts identified the need for more sustainable river access and outdoor recreation opportunities along the North Fork of Nooksack River. In particular, they identified a gap in public access along the 19 river miles of the project area. Recommendations also include the need to explore opportunities for low-impact outdoor recreation activities such as river access for boating, paddling, fishing, walking, wildlife viewing, sight-seeing, photography, and picnicking. More information about these efforts can be found in Appendix 1.

It should also be noted that this plan acknowledges that there are several tribes, land managers, owners, and government entities working to protect, restore and enhance the river and surrounding riparian forest. This includes conservation efforts from the Nooksack Indian Tribe, Lummi Nation, Washington Department of Natural Resources, Washington Department of Fish and Wildlife, Whatcom Land Trust, US Fish and Wildlife Service, and other private efforts. These efforts were also taken into consideration for the development of this plan and later chapters will address these restoration efforts as influencing the Maple Creek River Access Site.

Baker to Bellingham Non-motorized Recreation Plan – *Washington Department of Natural Resources (2019)*

» Provide river access on the North Fork Nooksack River.

» Design and develop water access and protect natural resources.

Upper Nooksack River Recreation Plan - *American Rivers (2015)*

» Community need for a take-out site between Glacier and Maple Falls.

» Create a water access near Whatcom Land Trusts Maple Creek Reach.

» Discourage use of Boulder Creek as take-out.

Whatcom County Recreation and Open Space Plan - *Whatcom County Parks and Recreation (2016)*

» Develop launch sites for canoes and kayaks that extend the length of the entire North Fork and Main Stem Nooksack River from Maple Falls to the bay.

Gap In Public Access

The gap in public access identified by past planning efforts has caused several issues and concerns. Current access sites – Horseshoe Bend Trailhead and Welcome Bridge – are far apart. Nineteen river miles is too long for a day trip, which causes boaters and paddlers to establish unmanaged sites to put-in and take-out their boats to accommodate a day-trip. Illegal trespassing on public and private lands along this stretch of the river has become an issue. Several illegal put in and take out sites are being established, including at the mouths of creeks that are home to sensitive salmonid species and are deemed critical spawning habitat. User groups are also parking along the shoulder of Washington State Route 542 creating a safety issue for both vehicles driving through the area and for pedestrians loading and unloading their gear. This has become a concern of the Washington Department of Transportation who owns and manages the state route. Establishing a managed site within this area for river access and outdoor recreation opportunities will help alleviate some of these issues and concerns.

North Fork Nooksack River. Photo Credit: Thomas O'Keefe

North Fork Nooksack River

This chapter goes into more information about the natural and cultural resources that the North Fork Nooksack River offers. Recognizing that this area is valued as a place that is abundant in natural and cultural resources, care was taken to include these values into the planning process, decision making, and recommendations found in this plan. The North Fork Nooksack River and its accompanying riparian forest supports many natural systems for both plants and wildlife. These values were used to directly influence the recommendations for the Maple Creek river access site. More information on the river's characteristics including natural and cultural resources, important plants and wildlife, and current recreational uses and values can be found below.

About the North Fork Nooksack River

The North Fork Nooksack River is one of three forks of the 830 square mile Nooksack River watershed. The Nooksack River is the largest river system within Whatcom County and is the northernmost river in Washington State[1]. The North Fork is fed from runoff of rainfall, snowmelt, and glacial melt from the Mount Baker Wilderness. Glacial scour from 13,000 years ago carved U-shaped valleys and deposited glacial moraines which define the river basin. The glacial history left behind a sediment-rich channel system, creating a diverse river pattern full of side-channels and sloughs (especially in the lower reaches of the North Fork). The Nooksack river system is full of unique natural, cultural, and recreational values as well as communities who use the water resources for agriculture and drinking water.

North Fork Nooksack River and Mount Shuksan. Photo Credit: Wendy McDermott

Natural Characteristics

Fish and Wildlife

The Nooksack River is home to nine species of native salmonids and is one of the few remaining rivers that supports all five species of Pacific salmon (Coho, Chum, Pink, Chinook, and Sockeye). Salmon is an important cultural and sustinent resource for the Nooksack Tribe and Lummi Nation. Recreational anglers seek out salmon for their prized flavor, thrilling fight, and the health benefits of the fillets. There are three salmonid species – bull trout, steelhead, and Chinook salmon – that are listed as threatened under the federal Endangered Species Act. There are two genetically-distinct populations of native spring Chinook salmon that return to the Nooksack River; one of which occupies the waters of the North Fork. There are two Endangered Species Act-listed populations of wild steelhead that utilize the Nooksack River. The winter-run steelhead are of these threatened populations that utilize the North Fork River. Efforts are underway to restore these populations and their habitats (see section on Salmon Recovery Plan on page 61).

1 - Nooksack River, Washington. 2019. American Rivers. URL: https://www.americanrivers.org/river/nooksack-river/

Large aggregations of bald eagles occur in the winter months and feed primarily on native chum salmon for their winter food source. Other notable birds within the river basin are kingfishers, harlequin duck, American dipper, great blue heron, osprey, common merganser, spotted sandpiper, Canada goose, trumpeter swan, pileated woodpecker, downy woodpecker, red-breasted sapsucker, a variety of duck species, and numerous songbirds. Critical habitat for Endangered Species Act-listed marbled murrelets and northern spotted owls is also within the watershed[2].

Bald Eagles. Photo Credit: Rich Bowers

Mink, wolverines, river otters, black bears, cougars, and elk are few of the native mammals of the watershed. Mountain goats can be found within the headwaters and high altitude habitat. Also within the upper basins of the watershed is the North Cascades Grizzly Bear Recovery Zone where recovery efforts are underway to aid these threatened populations. Wolves have been expanding their populations in recent years and they have the potential to occupy habitat within the Nooksack watershed.

Cultural

The Nooksack River basin has been the home to the Lummi Nation and Nooksack Indian Tribe for thousands of years. The Lummi Nation utilized the lower portion of the river while the Nooksack Tribe mainly occupied the portions up-river. There are many sites and cultural places which are sacred to the Native American peoples indigenous to these lands. The Lummi Nation and the Nooksack Tribe depend upon fishing, hunting, and gathering for cultural events and subsistence purposes.

Salmon are especially important and are used in ceremonies, for subsistence, and are sources of income for many tribal anglers. Deer and elk meat are used in cultural events, such as potlatches, funerals, and naming ceremonies. Tribal members have rights to harvest and gather plants for sustenance, medicine, and other uses. For example, cedar bark is used for hats, baskets, clothing, art, and other products.

Salmon and Fishery Resources

Salmon restoration and protection is important culturally, economically, ecologically, and socially. In Washington State, Tribes and Washington State are co-managers of the fishery resources. As mentioned before, Nooksack River Chinook salmon, bull trout, and wild steelhead are all listed as threatened under the Endangered Species Act. There are many factors that lead to degradation of these salmonid populations and their resources. The Puget Sound Salmon Recovery Plan (2007) and Water Resources Inventory 1 (WRIA 1) Watershed Management Plan are two plans that cover the Nooksack River basin and issues surrounding salmonids.

Chinook Salmon. Design Credit: Erik Hazelton

According to the Puget Sound Salmon Recovery Plan[3], the top ten actions needed for sustainable salmonid populations are:

- Healthy and intact estuaries
- Functioning floodplain areas
- Healthy intact riparian areas
- Sufficient water quantity

2 - A Checklist of Whatcom County Birds. 2020. North Cascades Audubon Society. URL: https://www.northcascadesaudubon.org/birding/whatcom-checklist
3 - Puget Sound Salmon Recovery Plan. 2007 Volume 1. Plan adopted by the National Marine Fisheries Service.

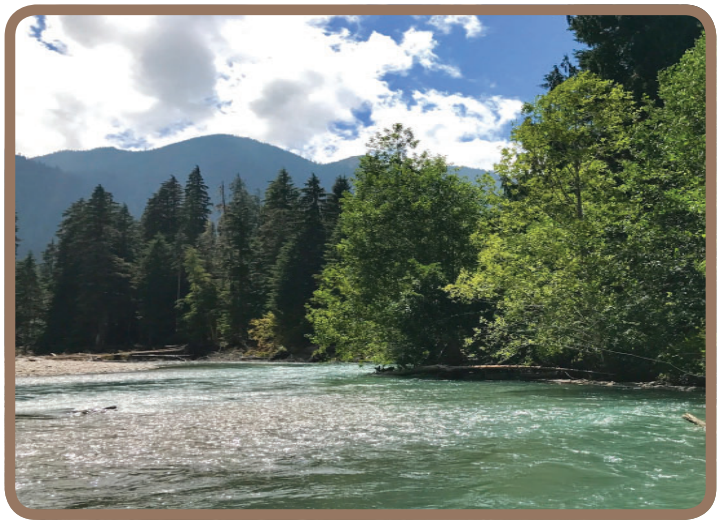
- Suitable water quality
- Fish access to habitat
- Puget Sound shoreline and marine habitat
- Harvest management
- Hatchery management
- H-Integration - the major factors that affect the abundance, productivity, spatial structure and diversity of salmon production are often lumped into "H Factors" of harvest, hatcheries, and habitat (as well as hydropower)

Chum salmon. Photo Credit: Bridget Moran

While already naturally unstable, the Nooksack River basin experiences increasing landslide rates due to human activities. The upper parts of the watershed are steep and naturally prone to landslides. In these sections of the river, the riparian forest would usually stabilize the sediments, but many of those riparian zones are now lost or deeply fragmented from the clearing of land for a variety of land uses. The sediments from these landslides then seep into trout and salmon streams. These sediment-rich waters create unique challenges for humans and fish. The increased sediments, loss and removal of instream woody debris, and lack of new woody inputs from degraded riparian forests, have resulted in more frequent and dramatic shifts of river channels during winter floods (see Channel Migration Zone Appendix II). These factors lead to increased sediments in spawning habitats and decreased salmonid egg survival.

One of the solutions to the issues of sedimentation and erosion is repairing the riparian forest to stabilize the stream banks and filter excess nutrients/sediments from runoff. Other benefits of the riparian zone are:

- Provides woody debris for instream input and habitat complexity
- Provides shade that keeps water cooler which is critical for salmonids
- Habitat for bald eagles and other wildlife
- Provide food for fish and other aquatic organisms
- Habitat corridor for wildlife



Riparian forest along the Nooksack River. Photo Credit: Bridget Moran

Habitat Restoration

The North Fork Nooksack River hosts numerous restoration projects with goals of improving habitat and salmon production. Channel instability and lack of complexity have been limiting factors to salmon production in the river and have been attributed to a lack of woody debris and an increase in large floods. The degraded riparian forest isn't mature enough to provide the river with large trees. Loose woody debris in the river can form logjams that naturally stabilize the river channel as well increase habitat diversity.

Figure 3. Map of Engineered Logjam restoration project locations on the North Fork Nooksack River. Restoration projects are outlined in red. Credit: Nooksack Indian Tribe.

The Nooksack Indian Tribe have been the leaders of the restoration projects in the North Fork Nooksack River (Figure 3). They have designed and implemented over 200 engineered logjams (ELJs) and restored riparian areas. There are multiple types of ELJs in the North Fork Nooksack River. The largest are about 70-feet in width, while smaller ELJs have a width of approximately 40-feet[4].

Newly constructed ELJ in Farmhouse Reach (2016).
Photo credit to Lindsie Fratus-Thomas, Nooksack Indian Tribe.

4 - North Fork Nooksack - Maple Creek Reach Habitat Restoration Project: Preliminary Basis of Design Report. 2019. Natural Systems Design.

ELJ with accumulated natural wood in Farmhouse Reach.
Photo credit to Lindsie Fratus-Thomas, Nooksack Indian Tribe.

The Nooksack Indian Tribe implemented the North Fork Nooksack Wildcat Reach Restoration Project just downstream of the Warnick Bridge[5] (river mile 55). The Wildcat Reach Restoration Project consisted of three phases of construction from 2011 to 2013 and included the formation of 83 ELJs in and adjacent to the river.

The Nooksack Indian Tribe recently completed the implementation of the North Fork Nooksack Farmhouse Reach Restoration Project downstream of Maple Falls from river miles 46.4 to 49. The Farmhouse Reach Restoration Project consisted of four phases constructed over five summer construction seasons from 2014 to 2020 and included the construction of 127 engineered log jams ELJs in and adjacent to the river.

The Nooksack Indian Tribe is planning to implement the North Fork Nooksack Maple Creek Reach Restoration Project immediately downstream of the proposed DNR recreational access site in this section of the North Fork (river miles 49.8 to 50.6). The Maple Creek Reach Restoration Project will consist of two phases of construction from 2021 to 2022 and is anticipated to include the construction of 41 engineered log jams and 6 floodplain fences in and adjacent to the river.

The Nooksack Indian Tribe implemented the North Fork Nooksack Lone Tree Reach Restoration Project at river mile 53 downstream of the Wildcat Reach and upstream of Maple Falls in 2008-2010. The Lone Tree Restoration Project was the Tribe's first restoration project in the North Fork Nooksack and included the construction of 14 engineered log jams in and adjacent to the river.

View immediately upstream from the ELJs at Farmhouse Reach.
Photo credit to Lindsie Fratus-Thomas, Nooksack Indian Tribe.

5 - North Fork Nooksack - Wildcat Reach Phase 2 Restoration Project: Project As-Built Memorandum. 2013. Nooksack Indian Tribe. Natural Resources Department.
6 - North Fork Nooksack - Farmhouse Reach Phase I Restoration Project: Project As-Built Memorandum. 2015. Nooksack Indian Tribe. Natural Resources Department.

Example of how the river at Farmhouse Reach and its ELJs change over time. Photo credit to Lindsie Fratus-Thomas, Nooksack Indian Tribe.

All the mentioned restoration projects are consistent with priorities established in the Water Resource Inventory Area (WRIA) 1 Salmonid Recovery Plan, the project was designed to address the key factors limiting salmon, especially spring Chinook, in the reach, namely channel instability and low habitat diversity.

For additional information regarding these projects, please contact the Nooksack Indian Tribe Natural & Cultural Resources Department.

Recreational Uses and Values

Recreation Uses

The North Fork Nooksack River is known for its class II-III intermediate whitewater. The river is within a 45 minute drive from Bellingham making it easily accessible to this community of 90,000 people and utilized for local day and weekend trips. The river is approximately two hours travel time from the greater Seattle area with a population of approximately four million. Regional use occurs more in the summer season when other rivers drop below optimal flows.

As mentioned in the previous section, there are numerous ELJs in the water as well as natural log jams that may create hazards or obstacles for boaters. In higher flows, boaters might expect to see floating wood and large logs as well. The river is not suitable for unguided beginners. Boaters need to know their skill level, avoid paddling alone, and be aware of the presence and associated hazards of wood in the river. Boaters should educate themselves on where ELJs have been constructed and have the proper skills to avoid them.

The river and major tributaries are free-flowing; river flows are influenced by fall rains and spring and summer snow and glacier melt that provide two distinct paddling seasons annually. Optimal flow for whitewater boating occurs when river discharge is 600-2,000 cfs. The river can be run at lower flows, particularly through the

Rafters on the North Fork Nooksack River. Photo Credit: Wild and Scenic River Tours

canyon section from Horseshoe Bend to Warnick Bridge where the channel is more channelized. The river can also be run at higher flows but requires a greater level of experience. Based on the averaged flow data over the 83-years of recorded flows near Glacier[7], flows during the spring snowmelt exceed 600 cfs on April 19th, peak at 1,620 cfs on June 2nd, and drop below 600 cfs on September 9th. During fall rains, flow consistently exceeds 600 cfs by October 13th, peaks at 888 cfs on November 6th, and drops below 600 cfs on December 22nd. Peak annual flows range from 3,000 to 15,000 cfs with the highest peaks typically occurring during the months of October and November. The North Fork Nooksack River is notable for its long whitewater paddling season and the river serves as an important regional resource for whitewater enthusiasts.

Kayaker on the North Fork Nooksack River.
Photo Credit: Thomas O'Keefe

The North Fork Nooksack River offers a variety of whitewater boating experiences. Expert boaters can push themselves on an adventurous Class V exploratory run from the Mount Baker Snoqualmie National Forest at highway mile 45 downstream to just above Nooksack Falls. Directly below the falls, a short stretch of Class IV exists, but private land associated with a hydropower project and the difficult and dangerous terrain precludes access to this stretch. Below the powerhouse, the river becomes Class II until the Upper Horseshoe Bend Whitewater Boater Access site near milepost 37. This marks the start of another advanced Class IV+ run with challenging and continuous whitewater from this access point down to Douglas Fir Campground and is known as the Horseshoe Bend Run. The run from Douglas Fir Campground to the confluence with Gallup Creek just upstream of Warnick Bridge, known as the Canyon Run, is a spectacular run through a forested canyon with Class III rapids. This reach is perfect for experienced boaters and is also the most popular run for commercial operators who guide trips down the river from late spring until the river is shut down for salmon spawning season in the middle of August. The river transitions from a confined channel in the Canyon Run to an alluvial channel downstream of Warnick Bridge. The run below Gallup Creek to Maple Creek is a fun, scenic Class II+ run. Below Maple Creek to Welcome Bridge is a Class II run. There are many combinations that can be done depending on the time, interest, and skill level of recreation enthusiasts.

The primary sections of the North Fork that are used for whitewater boating are:

- Mt. Baker Wilderness at highway mile 45 Nooksack Falls (Class V)
- Upper Horseshoe Bend to Horseshoe Bend (Class IV)
- Horseshoe Bend to Warnick Bridge – the Canyon Run (Class III)
- Warnick Bridge to Maple Creek – the Scenic Float (Class II+)
- Maple Creek to the confluence with the Middle Fork confluence with North Fork at Welcome Bridge (Class II)

7 - USGS gage 12205000

Recreation Values

Recreational uses are defined by several different characteristics including Landscape Setting, Temporal Difference, Frequency and Density of Use, and the Type and Challenge Level of activities. These are defined below:

Landscape Setting

Natural

The river flows through a natural setting with minimal shoreline development. Access sites along this reach are appropriate for a low level of enhancement.

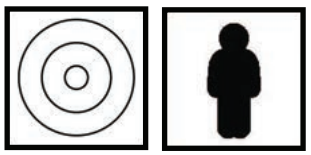
Temporal Dependence

Year Around

The North Fork Nooksack can be run throughout the year. River managers establish a closure to boating when flows are below 1,000 cfs and during salmon spawning between August 15 and October 15. The closure is voluntary for recreational/private boaters and mandatory for commercial outfitters[8].

Frequency and Density of Use

High Frequency, Low Density



Use is sustained throughout the year at a high frequency (daily) since the river is runnable most of the year and used often during the year. Local use occurs year round, with weekends being the most popular. Given the close proximity to Bellingham, weekday use by the local community is common, too. Regional use is more concentrated on the weekends and during the summer. While the frequency of use is high, the density of use is low when compared to other rivers in the region such as the Wenatchee or Skykomish Rivers. The river is rarely in use by more than one or two groups at a time. A commercial outfitter provides guided trips that involve no more than four-boat trips twice a day.

Use Type and Challenge Level

Kayak, Raft, Canoe, Fishing, Sightseeing, Photography
Class II+ to III

The river is used by outfitters and the general public including rafters, kayakers, and canoers. The river is appropriate for intermediate paddlers with the skills and training to paddle Pacific Northwest rivers. Cold water and wood hazards make this river inappropriate for beginner or unguided paddlers or tubers. One outfitter based in Glacier is the primary commercial user of this river. These guided trips offer opportunities for beginners and those without their own craft.

8 - Letters from Forest Service District Ranger Jon Vanderheyden to Devin Smith, August 8, 2006 and August 18, 2006.

Fishing is also a popular activity in the Nooksack River, in sections where fishing opportunities are open. The fishing season is complex, can vary by river fork and by the species of interest. It is recommended that anglers view the Washington Department of Fish and Wildlife website for recreational fishing seasons and emergency rule changes[9].

Downstream of Maple Creek, near the Kendall Creek Hatchery to Welcome Bridge is popular with anglers, in part due to a consistent run of returning hatchery coho. Most anglers will be fishing from shore or wading in the water, while others may fish from drift and pontoon boats. While fish are the primary focus for anglers, many seek out this activity for the escape to the natural beauty of the Nooksack River.

River access sites along this reach also provide opportunities for walking, birding, sightseeing, photography, and picnicking.

Angler near Welcome Bridge. Photo Credit: Susan Rosebrough

9 - https://wdfw.wa.gov/fishing/regulations

Planning Process

Planning and Partnerships

Planning for a new public and river access site began in the Fall 2019, when American Rivers secured a technical assistance grant from the National Park Service Rivers, Trails, and Conservation Assistance program to help identify and develop a new outdoor recreation site. Recognizing the need for increased public access, several land managers, non-government organizations, user groups, and other stakeholders supported the development of this plan. These included: Washington Department of Natural Resources, Whatcom Land Trust, American Whitewater, and the Mount Baker Chamber of Commerce.

Project partners worked in conjunction and consulted with several other government authorities, land managers, tribal governments, and stakeholders to further refine information and recommendations found in this plan. These included working and consulting with the Washington State Department of Transportation, US Forest Service, several departments within the Washington Department of Natural Resources, Washington Department of Fish and Wildlife, the Nooksack Tribe, the Lummi Nation, Whatcom County Planning and Development Services, Whatcom County Parks and Recreation, and various user groups.

In November 2019, a team conducted a site inventory of the existing and potential sites river access sites along the North Fork River. Photo Credit: Susan Rosebrough

Recognizing that this land is sacred and provides many natural resources that support the native culture of the Nooksack Tribe and Lummi Nation, care was taken to be informed and work within parameters of current and future uses, goals, and efforts of these local indigenous communities. The Nooksack Tribe and Lummi Nation are co-managers of the fishery resources of this river, and being a state agency, the Washington Department of Natural Resources has tribal trust responsibilities. The Nooksack Tribe's natural resource staff was engaged in the planning and development of the Maple Creek River Access Site.

Each of the entities listed above, and found on the acknowledgement page of this plan were engaged at various times through the development of this plan. The outcome of all the collaborative decision making and discussions is reflected in the following chapters of this plan.

Inventory and Analysis of Sites

Through the fall and winter of 2019/2020, the National Park Service, American Rivers, American Whitewater, and the Washington Department of Natural Resources worked to map, inventory, and evaluate five potential public river access sites within the defined project area. Some of these sites had previously been identified in past planning efforts as needing to be further explored for potential use, and all were located on public or trust-owned land. Private-owned lands were considered, but the planning groups were unable to identify willing or current sellers at the time of the inventory. These five sites were further analyzed based on identified target recreation characteristics and experiences that were defined through the planning process and partnerships. More information about the inventory and analysis of these sites can be found in the Site Inventory and Analysis chapter of this plan (beginning on page 18). Through this inventory and analysis, the planning group determined that the Maple Creek site was the most suitable for development.

Design Workshop

In the Spring of 2020, a virtual design workshop was held to determine a site design concept and recommendations for development of the Maple Creek site. About 25 people participated in the workshop, including several representatives from the various stakeholder and partner groups mentioned above. During this workshop, two teams focused on developing different design concepts based on predetermined design goals and guidelines. One team was focused on developing water access, and the other team focused on developing restoration, interpretation, and day-use opportunities. The groups had an opportunity to share their outcomes with each other and discuss their ideas. Results from the design workshop produced two preliminary draft design concepts, which were combined and refined through further stakeholder and community meetings in the following months. Ultimately a final conceptual design and associated recommendations were developed. Information detailed in the following chapters of this plan discuss these site recommendations as well as partnerships, implementation, and next steps.

Mapping exercise at a workshop in 2013, for the Upper Nooksack River Recreation Plan (2015).
Photo Credit: Wendy McDermott

Site Inventory and Analysis

This chapter provides information on how potential sites within the project area were identified, inventoried, and analyzed. Previous planning efforts have identified potential sites, and these along with others were evaluated to determine one suitable site for development. Ownership of the land within this reach is a mix between the US Forest Service, Whatcom County Parks and Recreation, Washington Department of Natural Resources, Whatcom Land Trust, private, and commercial timber lands. All available land was considered. Native communities such as the Nooksack Tribe and Lummi Nation operate fishery resource projects within the North Fork Nooksack River and have tribal trust authority to protect their resources.

Potential sites were evaluated using a matrix structure. Desired recreation settings, characteristics, and experiences were evaluated to determine one site as being the most suitable for development – Maple Creek. The following chapters in this plan provide more details on the recommended development for Maple Creek. Below is a summation of this site inventory and analysis, and more information can be found in Appendix III of this plan.

Members of the inventory team at the Maple Creek. Photo Credit: Susan Rosebrough

Site Inventory

Desired Recreation Settings and Characteristics

Sites were inventoried based on desired recreation settings and characteristics, which were collectively defined during the planning process by tribes, stakeholders, land managers, and user groups. Information below identifies these desired Settings and Characteristics that consider physical, social, biological, cultural, and managerial needs.

Physical/Desired Level of Infrastructure

The defined project area is located in a natural setting within a designated scenic byway zone, Mount Baker Scenic Highway. This reach of the river should maintain its natural characteristics, with development recommended to be low impact and sustainable, with minimal site interventions. Development of any potential sites should consider natural topography and existing native vegetation and work to reduce impacts from use and development.

Social/Visitor Use

Water access is expected to be the primary use of the site. The main need for a river access site is to redirect the existing, unregulated use at Mile Post 27 with a location to take-out boats.

Several secondary outdoor recreation activities have been identified, taking advantage of water and land-based opportunities. These include opportunities for anglers, boaters, paddlers, swimming, general public access to the river for restorative mental health, walking, wildlife viewing, picnicking, and general day-use. Use of this site is expected to be high frequency and low density throughout the year. This means that most days there will be paddlers on the river and most groups will encounter no more than a few other groups during their visit.

Angler. Photo Credit: Colin Wiseman

Biological and Cultural

Bald Eagle. Photo Credit: Bridget Moran

Sensitive resources in this reach include habitat for marbled murrelet, elk, northern spotted owl, harlequin duck, bald eagles, and salmon. The river's riparian forest aids in the preservation of natural cycles, habitat, and connected wildlife corridors. Access and development of any site should avoid or minimize the removal of mature trees, and address the minimum need for site interventions. Development should never happen below the ordinary highwater mark to preserve natural features and to address future flooding. Most development should occur away from the river's edge to avoid and reduce impacts to plants and wildlife. Critical habitat for marbled murrelet and other sensitive resources should be avoided or minimized. Mitigation for site development could include enhancing riparian habitat. Salmon is an important cultural resource of the Nooksack Tribe and Lummi Nation.

Managerial/Level of Management

Public agencies and current land managers within this reach have limited budgets for operation and maintenance. Any development and associated facilities and use of the site should accommodate for intermittent maintenance and monitoring. Some maintenance, management, and monitoring of this site could potentially be shared with user groups, volunteers, and the business community. Potential partnership opportunities should also be identified and explored.

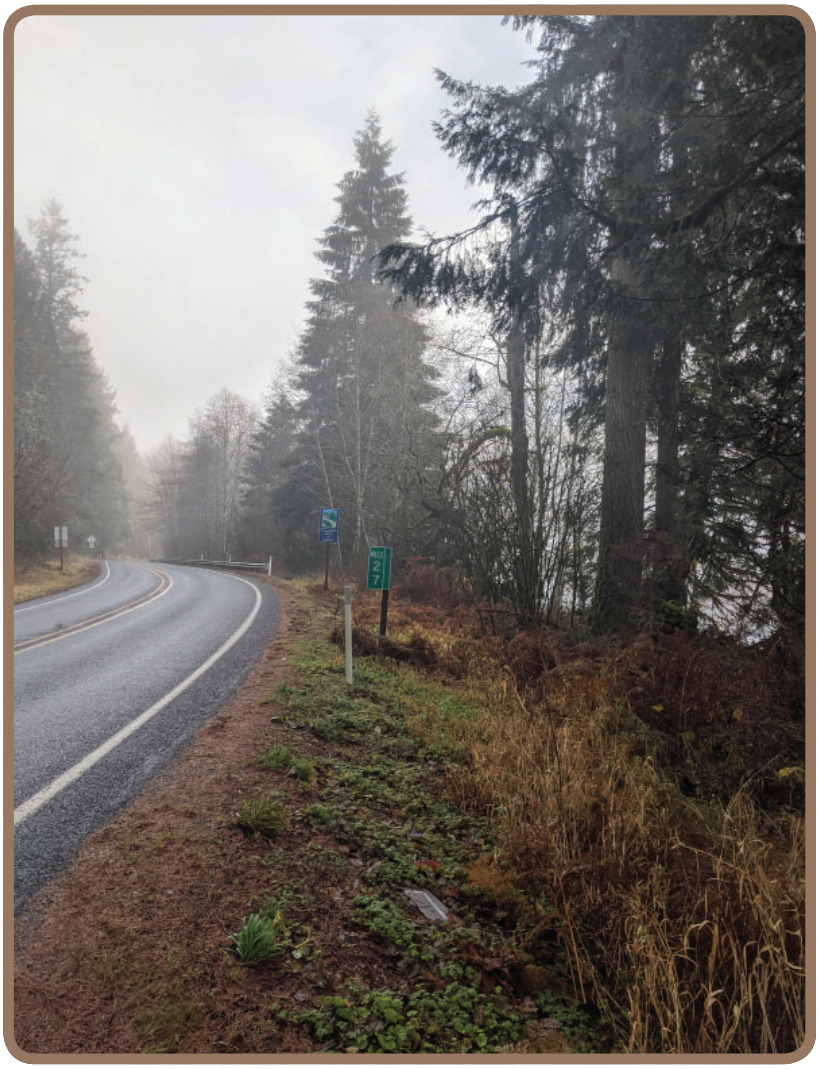
Desired Recreation Experiences

A new public access site should accommodate a range of recreation experiences and related activities. Identified target recreation experiences include water access for anglers, human-powered boaters and paddlers, and for the general public. Day-use activities

include walking, picnicking, wildlife viewing, and restorative mental health opportunities. Future development should consider use and needs for each desired recreation experience. For example, trails should be the appropriate width and length to accommodate associated use and activity; parking should be adequate for the density of use. Amenities should be incorporated to support these uses for all individuals and must comply with the Americans with Disabilities Act. A new public access site would require intermittent facilities management, maintenance, and monitoring, which were all taken into consideration when determining a final site for development. Several precedent examples of river access sites were looked at to determine desired recreation settings, and to learn how those sites have been managed for success. These examples can be found in Appendix IV.

Site Evaluation

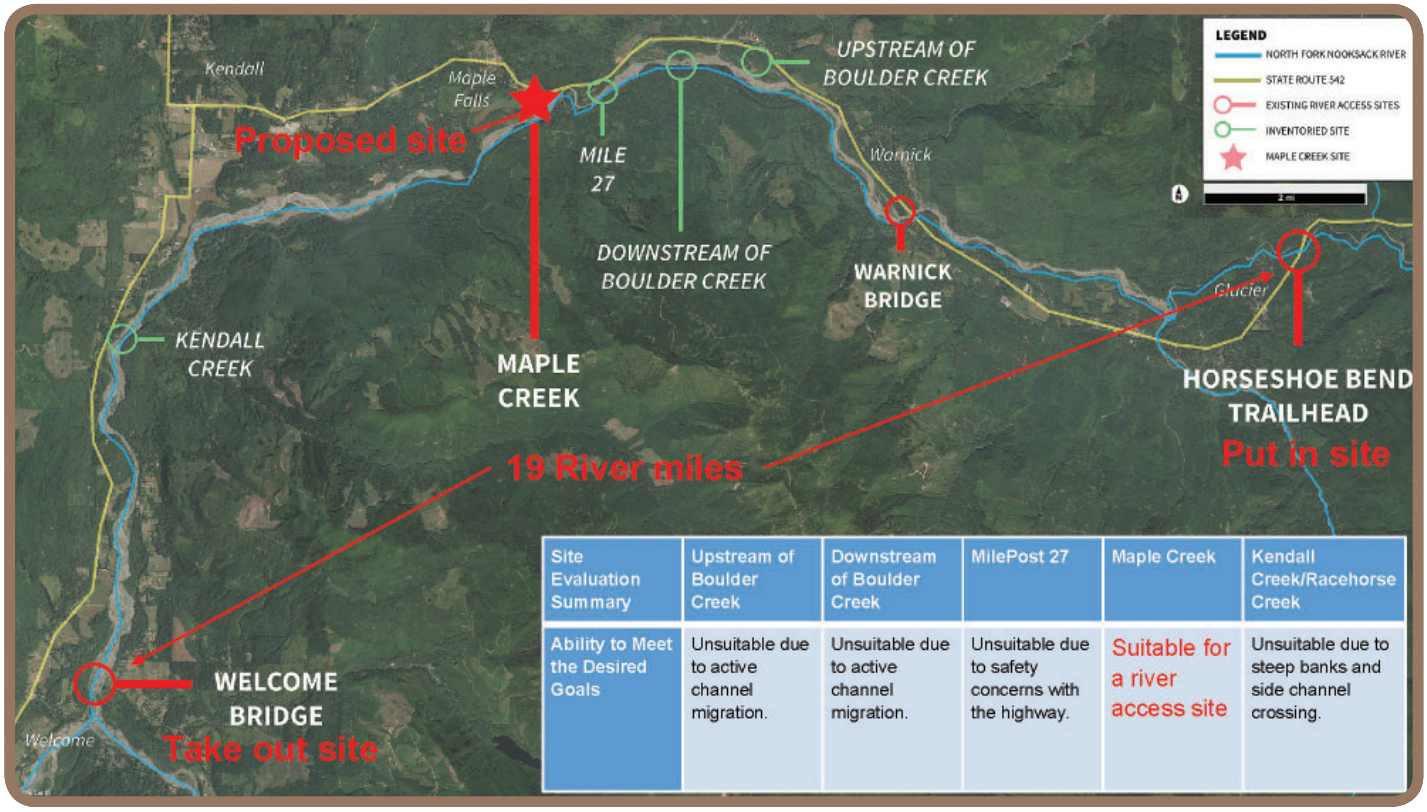
The five identified sites were evaluated using factors summarized in Table 1 and Figure 4 below. The table was developed using defined opportunities and constraints for each site. Sites were evaluated on the following criteria: visitor experience, natural resources, river character, safety, ability to provide for a variety or desired recreation uses, and the ability to develop desired recreation facilities that meet the project goals. Appendix V provides more details on each of the evaluation factors. Additional sites were evaluated but are not included in the plan due to private land ownership and/or other land restrictions.



Mile post 27 on the Mount Baker Highway. Photo Credit: Erik Hazelton

Table 1: Site Evaluation Summary

Site	Upstream of Boulder Creek	Downstream of Boulder Creek	MilePost 27	Maple Creek	Kendall Creek/ Racehorse Creek
Ownership	Whatcom Land Trust and DNR	Whatcom Land Trust and DNR	Highway Right-of-Way	DNR	Whatcom Land Trust
River Trip Distance	6.8 miles	7.5 miles	8.3 miles	9 miles	14.6 miles
River Character	Dynamic, active migration	Dynamic, active migration	Stable, swift current	Stable, calm eddy at the site	Dynamic, side channels
Natural Resources	Forested/ shrub wetlands present. Salmonid breeding/ migration.	Riparian forest and riverine habitat. Salmonid breeding/ migration.	Recovering riparian forest and riverine habitat. Salmonid breeding/ migration.	Hardwood forest with cleared previously impacted pockets. Salmonid breeding/ migration.	Known bald eagle habitat. Salmonid breeding/ migration.
Safety	Side channel crossings.	Side channel crossings.	No parking; loading boats while standing on the state highway is unsafe.	Entry and exit to the site from the highway is on a corner with poor sight lines.	Steep bank and side channel crossings.
Ability to Meet the Desired Goals	Unsuitable due to active channel migration.	Unsuitable due to active channel migration.	Unsuitable due to safety concerns with the highway.	Suitable for a river access site	Unsuitable due to steep banks and side channel crossing.



Site Evaluation Summary	Upstream of Boulder Creek	Downstream of Boulder Creek	MilePost 27	Maple Creek	Kendall Creek/Racehorse Creek
Ability to Meet the Desired Goals	Unsuitable due to active channel migration.	Unsuitable due to active channel migration.	Unsuitable due to safety concerns with the highway.	Suitable for a river access site	Unsuitable due to steep banks and side channel crossing.

Figure 4. Site suitability map. Credit: Barbara Simpson.

Preferred Site : Maple Creek

Using the Site Evaluation Table above, one site was determined to be the most suitable for development – Maple Creek. The following chapters provide more information about specific site design interventions and recommendations for Maple Creek. As well, they address implementation, long term management, and maintenance of the site.

Maple Creek was identified as the preferred site because:

- The site is adjacent to the Whatcom Land Trust property and this expands the recreational opportunities and experiences that can be offered at the site. The site provides an opportunity to develop a river access site for all human-powered river runner craft (rafts, kayaks, canoes) as well as other public access activities including fishing, photography, walking, and wildlife viewing opportunities.
- Maple Creek is located approximately in the middle of two popular managed river access sites: Horseshoe Bend Trailhead and Welcome Bridge. Horseshoe Bend Trailhead is 9 miles upstream of Maple Creek, and Welcome Bridge is 10 miles downstream; making this an ideal put-in and take-out area for day trips.
- This site has the potential to have a shortened walking distance to the river for boaters and paddlers carrying heavy equipment, while still protecting and preserving the river and its natural systems.
- The river channel at this site is stable, with little to no significant channel migration noted over time. This provides for a nice, calm, and safe eddy for boat put-in and take-outs.
- The proposed Maple Creek site is already impacted by maintenance vehicles from Whatcom Land Trust and Washington Department of Natural Resources. The Nooksack Indian Tribe is also considering accessing the site for their Maple Reach Restoration Project which could potentially assist with preliminary site implementation goals. It offers the opportunity to develop the site using already impacted areas, while working to protect, restore, and enhance the riparian forest.
- Provides opportunities for expanding access and partnership building between different jurisdictional agencies.

Upstream view from the proposed Maple Creek site. Photo Credit: Lindsay Taylor

Maple Creek: Site Design and Recommendations

Maple Creek Site

The Maple Creek Site is located along the Mount Baker Scenic Highway Route 542, on the south side of milepost 26.5 in between the towns of Glacier and Welcome, Washington. Owned and managed by Washington State Department of Natural Resources, the Maple Creek site sits along the north shore of the North Fork Nooksack River. The site narrows to a small stabilizing bank to the east, and shares a land boundary with Whatcom Land Trust to the west. Vegetation on the site consists of a patchwork of the native riparian forest canopy, with large open and impacted areas. The slope to the river is gradual with little erosion along the bank. The river channel offers a nice natural beach with a stable eddy for boat put-in and take-outs. Current use of the site is primarily by Whatcom Land Trust and the Nooksack Tribe to access their river and restoration projects. Their efforts and projects focus on restoring the riparian forest and historic salmon habitat.

Open land at the Maple Creek site. Photo Credit: Erik Hazelton

Whatcom Land Trust owns and manages a large parcel of land adjacent to the Washington Department of Natural Resources site. Their land is used for day-use activities such as walking, wildlife viewing, interpretation, and educational programming. This property is also used to restore the riparian forest, and Whatcom Land Trust is actively planting trees and other vegetation within this area. Whatcom Land Trust mission is to "preserve and protect wildlife habitat, scenic, agricultural and open space lands in Whatcom County for future generations".

Access to their property is currently located in a place that is deemed more valuable and sensitive for salmon spawning habitat. Whatcom Land Trust expressed interest in joining efforts with the Washington Department of Natural Resources to co-develop a shared access area to support recreation and restoration opportunities across both sites. With the construction of a new access site, Whatcom Land Trust can close down their current parking area to further protect and enhance this sensitive habitat. Other opportunities for joint efforts and uses of the land were identified and explored during the Design Workshop held in March 2020.

In the reach, the Nooksack Indian Tribe has began preliminary designs for the "North Fork Nooksack – Maple Creek Reach Habitat Restoration Project". This project has identified that the major factor limiting Chinook spawning potential is the instability of this stream reach. Historic wood removal and fragmented riparian habitat are the two most important mechanisms limiting spawning in this reach. The tribe plans to install engineered log jams in the summer of 2021 and 2022 to address the lack of woody debris in the water and improve the quality of habitat for the salmonids.

Design Goals and Guidelines

During the planning process several design goals and guidelines were developed to help guide the recommendations found in this plan. These were used during the Design Workshop to help facilitate discussion, and to help place site elements and make recommendations to reflect the wants, needs, and desires of the local community and stakeholder groups. Goals and guidelines were centered around shared values between stakeholders, land managers, and user groups. These values focus on increasing connections and partnerships to provide safe access while protecting, restoring, and enhancing the natural systems of the site.

Design Goals

1. Provide Safe and Sustainable Public Access

This site aims to provide for safe access to outdoor recreation opportunities through the use of low-impact site interventions. Opportunities to accommodate multiple activities should be considered including facilities needed for boaters, anglers, and the general public. Walking trails, interpretive displays, wildlife viewing, picnicking, and other low-impact recreation should also be explored. These opportunities and associated infrastructure need to support increased access to the river, be low impact, and consider the natural setting of the site.

Whatcom Land Trust Volunteer planting riparian vegetation Photo Credit: Jennifer Mackey

2. Protect, Enhance, and Restore Natural Systems

Another goal of the site is to protect, enhance, and restore natural systems relating to the North Fork Nooksack River. This goal is intended to promote and preserve the connected ecosystems and watershed that the river anchors. Any site interventions should strive to preserve as much vegetation as possible, be low impact, and be developed in already impacted areas. Opportunities for restoration and the reduction of human impacts should also be identified and considered in relation to the proposed development.

3. Increase Connections and Partnerships

Opportunities for increased connections and partnerships between the Washington Department of Natural Resources, the Whatcom Land Trust, and the Nooksack Tribe should be explored. Connections and partnerships should include exploring opportunities for shared access, opportunities, and amenities. This can also include opportunities for shared efforts and joint management of restoration projects.

Design Guidelines

Building off of the design goals, design guidelines were developed to provide a more detailed framework and parameters in which to identify and place design elements on the site. These guidelines and elements were developed in consultation with several local, state, and federal agencies, user-groups, and tribal governments.

1. Provide Safe and Sustainable Public Access

Consider needs for vehicular and pedestrian access and circulation through the site. The Washington Department of Transportation, and the Whatcom County Permitting office were consulted to determine the access guidelines.

» Provide Access Roads from the Highway.

- Access road should be 20 feet in length for a one way, and 30 feet in length for a two way per Whatcom County Permitting standards.
- Entrances and exits should be perpendicular to the highway per Washington Department of Transportation safety standards.
- A shoulder that incorporates a 30-foot turning radius to be on both sides of the entrance and exit roads per Washington Department of Transportation Safety Standards. See Appendix VI.

- Areas within the highway right-of-way should be paved.
- All parking and recreational development should be outside of the right-of-way.
- Maintains a minimum sight distance of 425 feet to promote safe entry and exit from the highway.

» Parking

- Limits parking to 10-15 spots.
- Provides trailer parking for boat trailers.

Rafters on the Nooksack River. Photo Credit: Bonnie Rice

2. Provide Outdoor Recreation Opportunities

Provide water access for paddlers and boaters, anglers, and the general public. Provide opportunities for day-use activities such as walking, wildlife viewing, resting, and educational programming.

» Provide a trail to the river. Design of the trail should accommodate large rafts that are between 7-10 feet wide, and weigh about 80-500 pounds. This includes providing for an at minimum 12 foot wide trail, with an ideal width of 15-16 feet to accommodate a raft with one person supporting it on each side. It is recommended that the trail be 100 feet or less in length due to the weight of rafts and boaters' ability to get them to the water.

» Provide a dedicated space near the entrance of the river trail for trailers carrying boats to drop off and load their boats.

» Provide parking stalls for at least two boat trailers.

» Provide an open area for boaters and paddlers to stage their gear.

» Provide walking trails to and along the river.

» Provide a day-use area that includes an information kiosk and picnic table.

» Provide accessible restroom facilities and an accessible parking spot.

3. Protect, Enhance, and Restore the Nooksack River and Riparian Forest

Protect, enhance and restore the connected ecosystems of the river and accompanying riparian forest. Work with current site conditions to minimize human impacts and development from development.

» Preserve native vegetation on site by utilizing existing open space and taking advantage of current use patterns and impacted areas.

» Increase native vegetation on the site by restoring open and impacted areas, and by removing invasive species.

» Keep major site improvements more than 100 feet away from the river. If infrastructure needs to be added within this 100 foot area, it should be low impact.

» Keep the beach area of the river natural and protected, with no development happening below the ordinary high water mark.

» Preserve large mature vegetation. If vegetation needs to be removed, size and importance of the vegetation should be considered.

» Identify opportunities for restoration of the riparian forest within the site.

» Provide signage for education and interpretation on the river, salmon restoration, boater safety, and leave no trace principles (see section on Interpretation and Signage on page 47).

» Limit the spread of people and human impacts to intended areas and uses.

» Infrastructure should be designed to fit minimum size standards to reduce infrastructure impacts.

» Materials should be sustainable, locally sourced where possible, permeable, and long lasting.

Family of volunteers at Whatcom Land Trust.
Photo Credit: Jennifer Mackey

4. Increase Connections and Partnerships

Increase connections and partnership opportunities between the Washington Department of Natural Resources, Whatcom Land Trust and the Nooksack Indian Tribe.

» Provide opportunities for walking trails, with the potential to connect to the existing trail located on the Whatcom Land Trust property.

» Continue to provide vehicular access to the Whatcom Land Trust property for Whatcom Land Trust and Nooksack Tribe.

» Identify partnership opportunities for shared management and maintenance of the site between Whatcom Land Trust and the Washington Department of Natural Resources.

» Identify partnership opportunities for restoration efforts that support shared goals between the Washington Department of Natural Resources, Whatcom Land Trust, and the Nooksack Indian Tribe.

» Increase joint educational programming opportunities.

» Provide joint access for day-use activities such as walking trails, river access, wildlife viewing, and restorative and mental health opportunities.

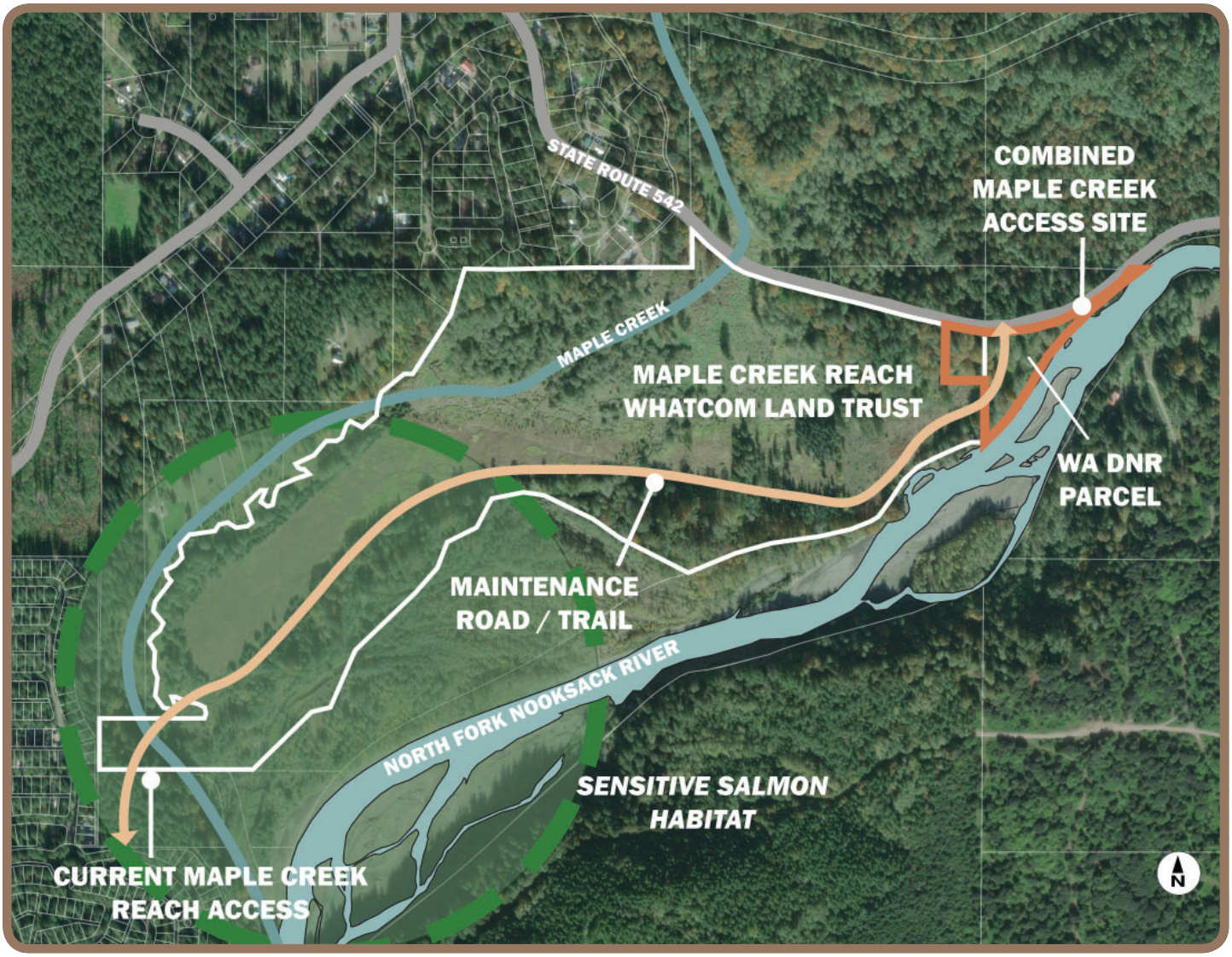


Figure 5. Expanded view of the Whatcom Land Trust property and the potential connections to the Department of Natural Resources parcel. Credit: Brianna Truden.

Conceptual Site Plan

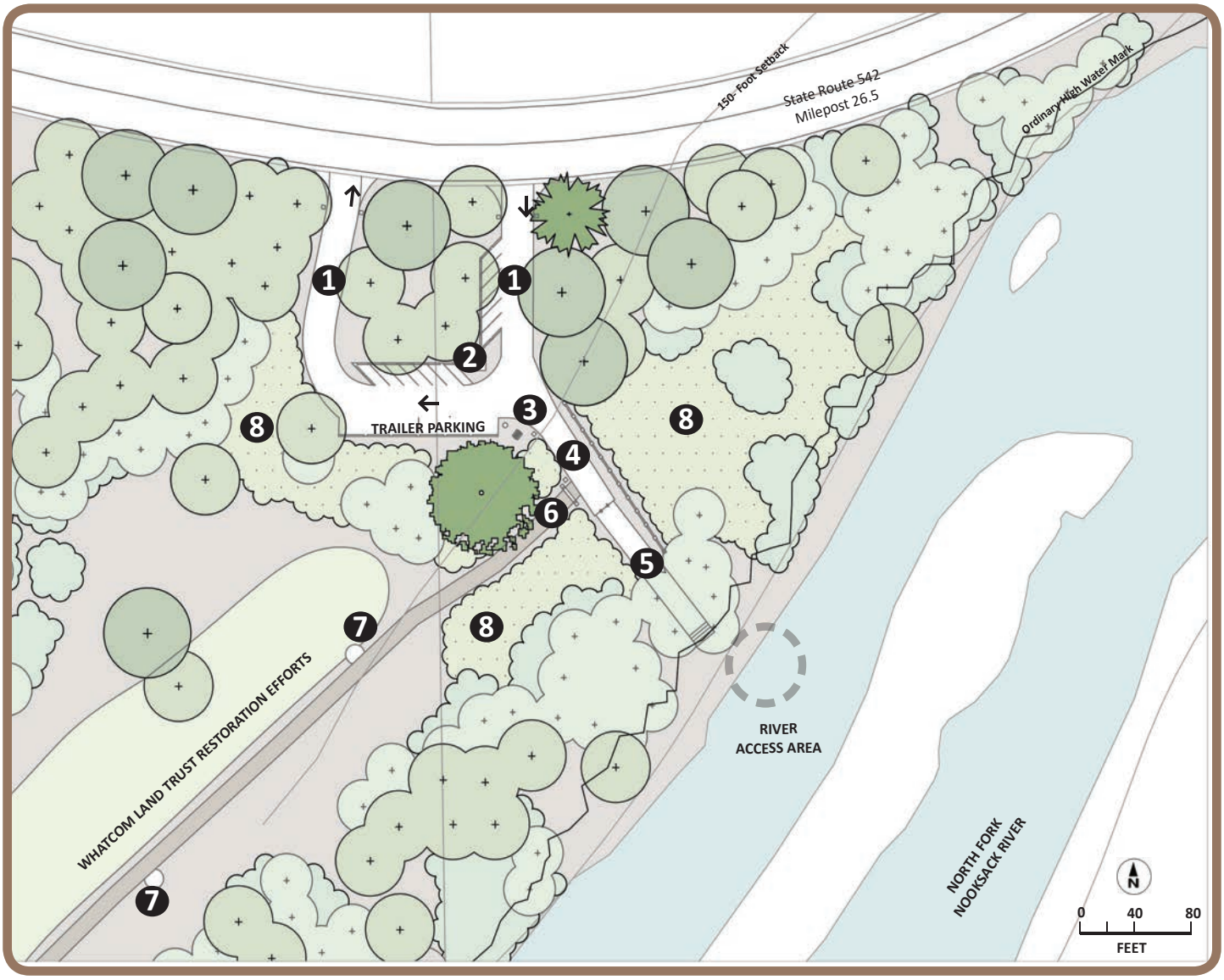


Figure 6: Conceptual Design of the Maple Creek Site. Credit: Brianna Truden.

1 Access Road and Parking

» One-way access road, 20-feet wide

» 11 regular vehicle stalls

» 1 Americans With Disabilities Act (ADA) accessible parking stall, with accessible trail to the restroom

» 2 pull-through trailer parking stalls at 50-feet in length

» Gate or simple chain at the entrance and exit

» Regulatory and parking signs and no parking signs will clearly show where parking is appropriate

» Permeable surfacing and concrete wheel stops

2 Restroom

» Vault pit toilet

3 Day Use Area

» 1 picnic table

» 1 information kiosk with information and regulatory signs

» Interpretive displays

- Entering Protected Salmon Habitat Zone
- Bigleaf maple

4 Trailer Load and Offload Zone

» 80-foot long and 16-foot wide (estimated measurements) trailer back up zone

» Permeable surfacing with natural edging

» Locally sourced boulders at the end this area for wheel stops.

5 River Access Trail and Beach Area

» 14-foot wide trail

» Trail will be 100 feet in length and end at the high water mark

» Stone steps down to the beach area

» Leave river bank and beach area natural

» Permeable surfacing such as locally sourced river gravel

6 Whatcom Land Trust Trailhead

» Maintain the existing 1-mile long (10-foot wide) trail for pedestrian and vehicle access

» Gate at the trailhead with regulatory signage

» Permeable material such as grass grid pavers

7 Whatcom Land Trust Trail and Rest Areas

» Provide for natural seating along the trail such as boulders and tree logs

» Interpretive displays

» Boulders and wood can be sourced on site or found locally

8 Proposed Restoration Areas

» Approximately 0.6 acres of added native vegetation for riparian forest restoration efforts

» Restore vegetation around use areas to direct site users to intended areas of use

» 112-foot linear split rail fence along the larger restoration area in the eastern portion of the site. Wood can be sourced from the site to help build this fence

» Provide temporary fencing around newly restored areas to keep people out until plants have fully established themselves

LiDAR Site Overlay

LiDAR (Light Detecting and Ranging) imaging of existing vegetation and canopy heights on the site were used during the workshop by participants to help locate proposed site features such as roads, parking areas, trails, day-use, and others. Imaging helped to identify open areas and gaps in the riparian forest canopy on the site. Imaging of the parcel also helped identify human use patterns and impacted areas from existing use patterns. Proposed features were depicted in already open and impacted areas to retain the maximum amount of vegetation on the site. All mature trees were preserved.

Figure 7 below shows the final site plan and recommended infrastructure overlaid with existing vegetation heights. The brighter the color (bright purple-pink-red color) the older and more mature the vegetation on site is; the darker color (blue, purple, grey) is younger, less mature vegetation. This is based on canopy height, and is represented in the legend of the image. LiDAR imaging also helped to identify gaps in the riparian forest where targeted focus efforts for restoration should happen.

The recommendations for the Maple Creek site found in this plan achieve several conservation and restoration goals of the site. First, 100% of mature and established trees on site were retained. Care was taken to place features in already open and impacted areas, and these recommendations achieve removing as little vegetation as possible. More land on the site is being restored to the native riparian forest (0.6 acres), than is being developed (0.3 acres). Vegetation that does need to be removed was confirmed to be non-significant from the assessment that Whatcom Land Trust did for the development that occurs on their land. Other areas being restored are in more significant and strategic locations and outweigh the benefits of the removal of some vegetation to keep development away from the river.

It should be noted that based on the location of elements in proximity to canopy height, only the understory is proposed to be removed to accommodate infrastructure, with canopy being retained where possible.

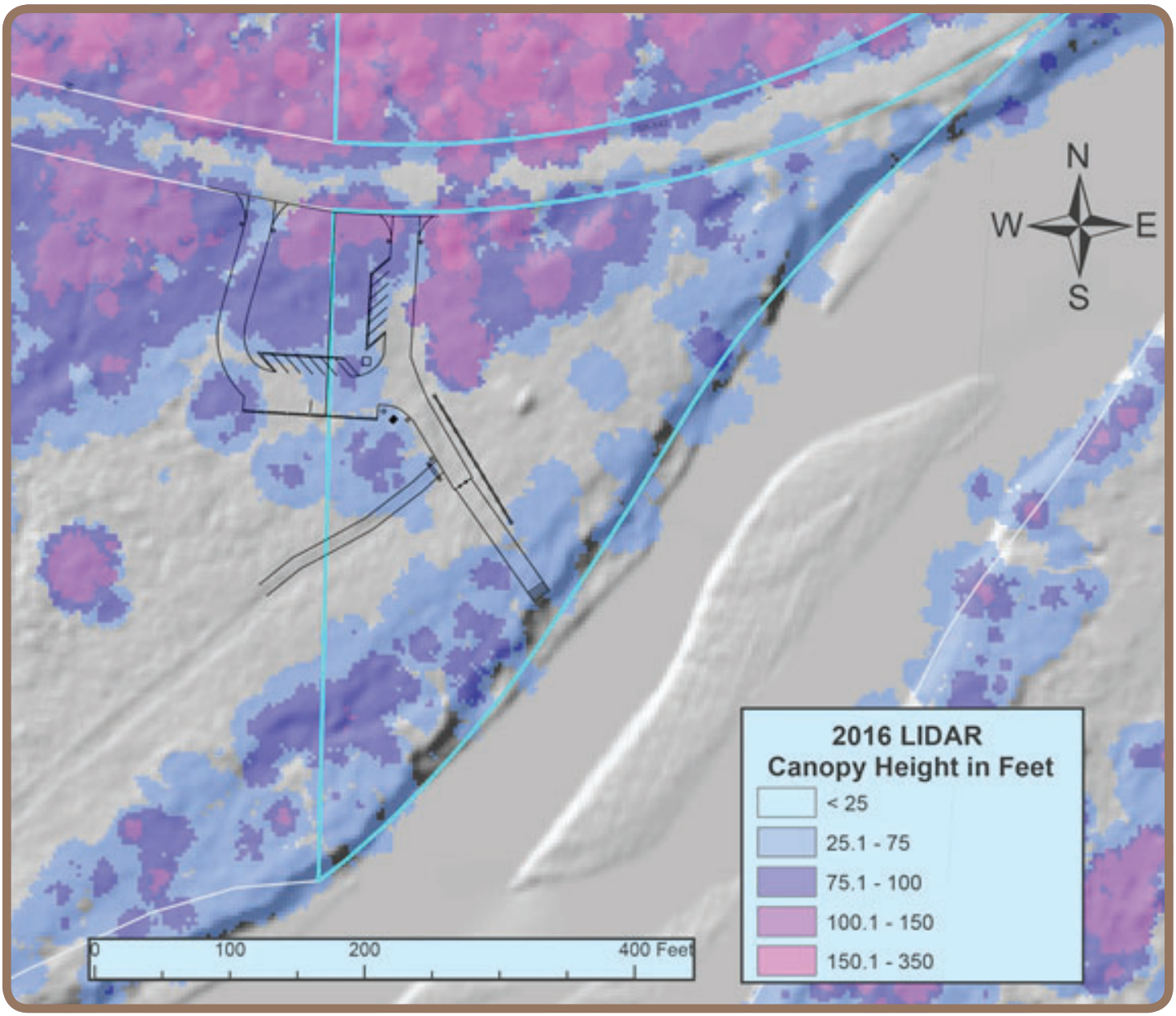


Figure 7: LiDAR Vegetation Canopy Heights. Credit: Chris Elder.

Public Access

Provide for safe public access and parking off of State Highway Route 542 that meets the defined design guidelines.

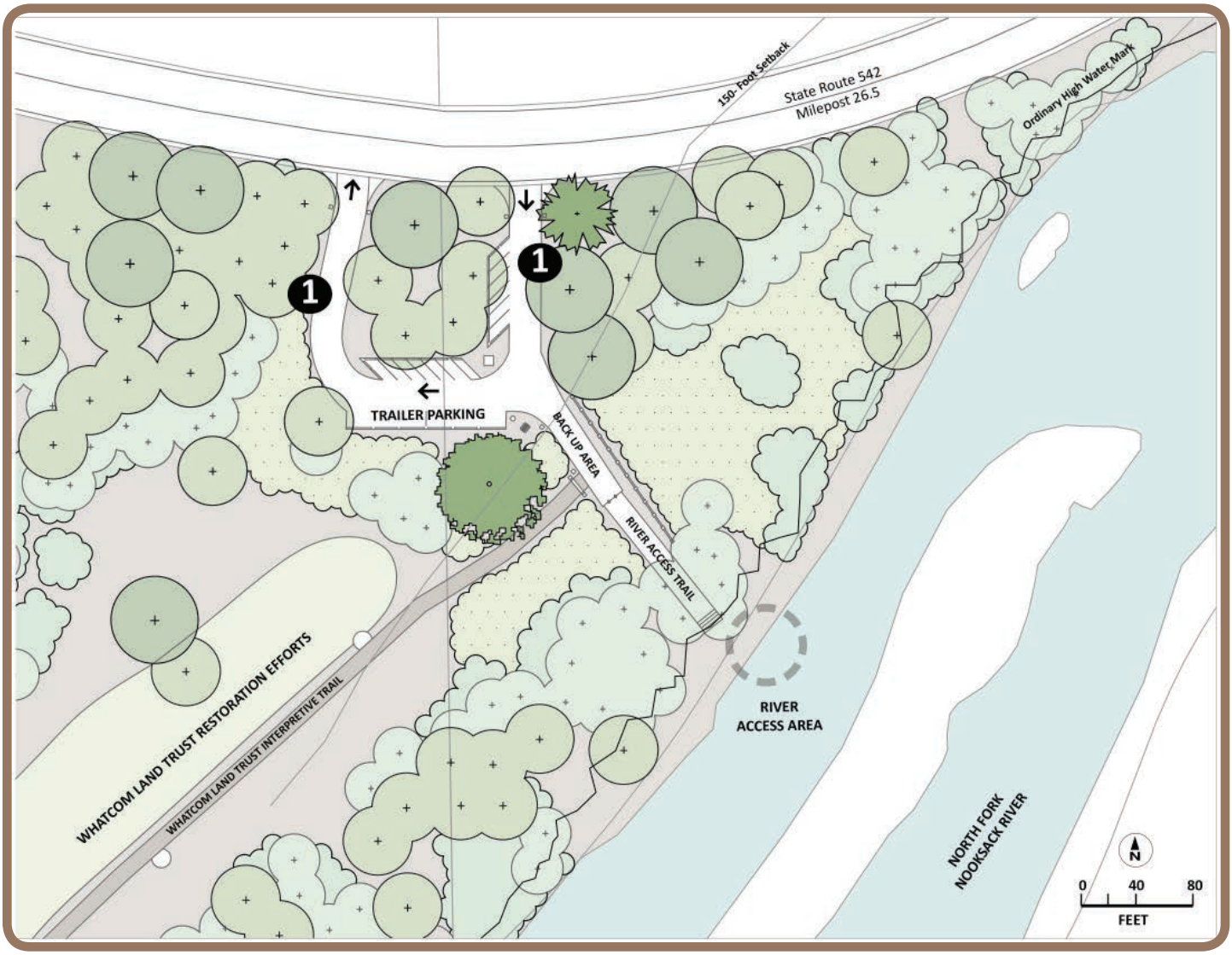


Figure 8: Public access to the site including parking vehicular circulation, parking, and trailer back-up areas. Credit: Brianna Truden.

1 In order to prevent cars and trailers from parking along the shoulder of State Route 542, which creates unsafe driving and pedestrian situations, access roads and parking areas should be constructed to support safe public access to the site. Access to the site is envisioned to be a one way loop made of natural and permeable materials. It is recommended that the current entrance to the site be maintained and enhanced to meet Washington Department of Transportation safety standards as described in the above design guidelines. The access road would follow the existing vehicle route to enter the site, before looping west onto Whatcom Land Trust property. An exit point will need to be constructed on Whatcom Land Trust property. This exit is located primarily in an already open area of the site, but some vegetation will need to be removed. Parking stalls for 12 vehicles should be placed at a 45-degree angle, and a dedicated pull-through parking area for two boat trailers should also be included. The design of the access road and parking area is intentionally placed to reduce the impact to existing vegetation, and to preserve as much on-site vegetation as possible. Determining this position

was possible due to the LiDAR information on vegetation canopy height provided during the design workshop. Design teams worked in conjunction with this LiDAR information to place the access road and parking area in such a way as to achieve the highest amount of retained vegetation on the site.

Technical components of the access road and parking area include:

» Provide one-way access loop, with 20-foot wide travel lane

» Make the access road perpendicular to State Route 542 per Washington Department of Transportation safety standards

» 11 regular vehicle stalls, at a 45 degree orientation to the access road

» 1 ADA-accessible vehicle stall, at a 45 degree orientation to the access road. Provide an accessible trail to the restroom

» Trailer pull-through and parking are for two boat trailers at 50-feet in length

» Provide a gate, or a simple chain at the entrance and the exit of the site to mark when the site is open and/or closed

» Provide an entrance and an exit marker

» Maximize site distance for the exit point

» Regulatory signage regarding information about hours of operation, managing agencies, and contact information can also be included at the entrance to the site. Signage will include parking and no parking signs

Figure 9: This rendering is of the site entrance located off of State Route 542, looking south into the site, towards the river. It shows the access road and parking area. The existing character, vegetation, and infrastructure are proposed to be maintained, with minimal site interventions to accommodate for safe public access. Parking areas will occur in already open areas, and travel lanes will follow existing routes. Artist Rendering: Brianna Truden. Existing Photo Credit: Rick Foster.

Day-Use Area

Provide day-use amenities on site to support a variety of recreational uses, experiences, and needs.

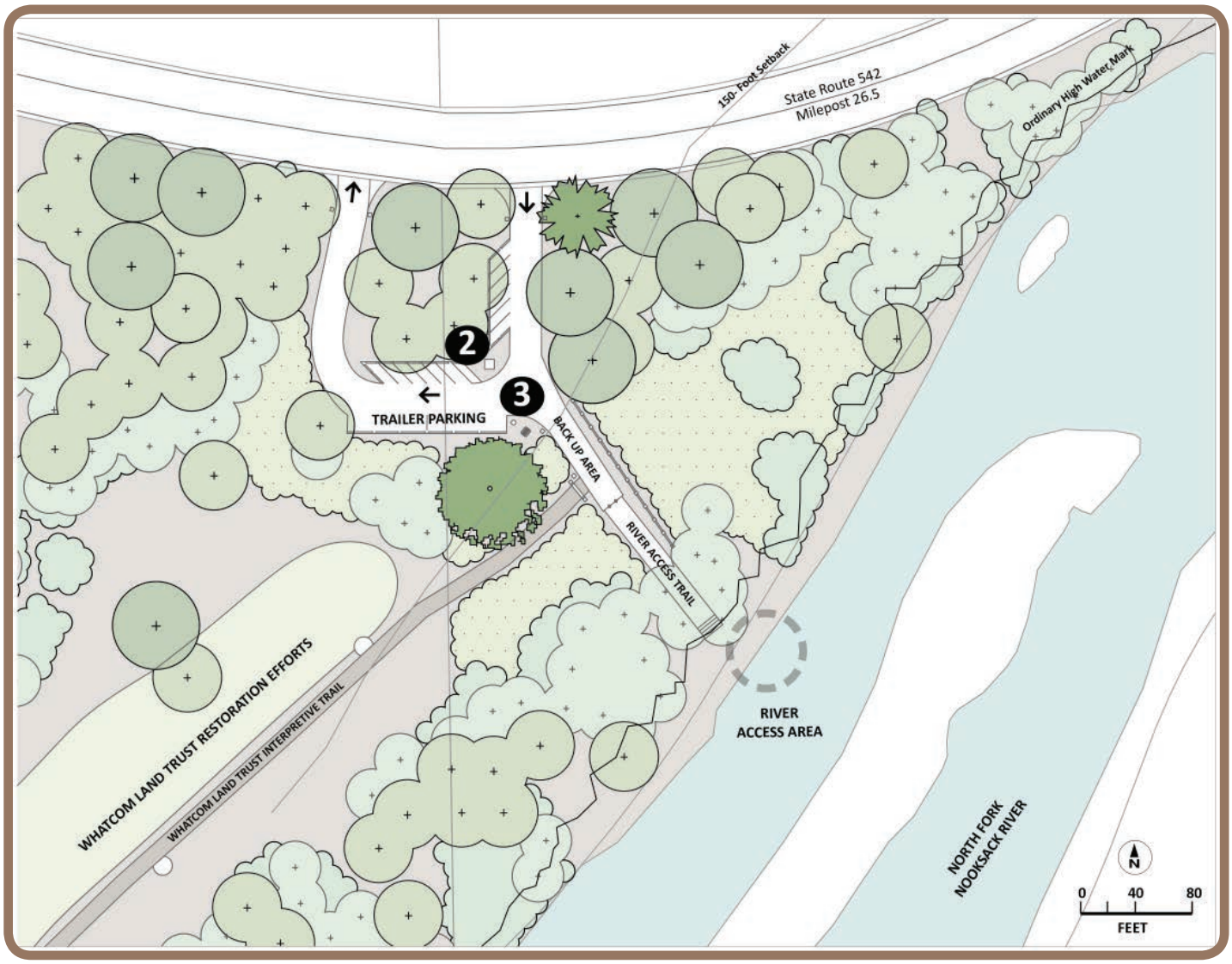


Figure 10: This day-use area shown above is intended to offer low-impact areas for recreation and site visitor needs. This includes providing space for a restroom, picnic table, information kiosk, interpretive displays, and room for paddlers to stage their boats. Credit: Brianna Truden.

2 An accessible vault-pit restroom should be constructed near the ADA-compliant parking stall. An accessible and user friendly trail from the parking area to the restroom should be constructed to meet site accessibility standards.

3 A small day-use area is recommended to support current and future recreation opportunities at the site. This day-use area is intended to be located in an already open and impacted area of the site. It should be left as natural as possible with minimal site interventions. As the location of the information kiosk, and picnic table, this area is envisioned to be the hub of information and gathering at the site. It's location is in a central area of the site which provides easy access to the trailer back-up zone for loading and unloading of watercraft, as well as easy access to the parking area and trails. This area should be left relatively open, and space should be provided to allow for paddlers to stage their gear.

Since this area is intended to have the most visitor use, several different interpretive elements and informational signage should be included. An information kiosk is located here, that will provide users with a map of the site and recreation uses, as well as provide general safety and site information. This area also marks the crossing into a Protected Salmon Habitat Zone. In order to promote stewardship, and environmental preservation of the site, visitors should be educated on the importance of keeping and restoring the riparian habitat and wood in the river to promote salmon recovery. This zone, and accompanying interpretative display, is intended to let users of the space know that they are entering a more protected, natural area of the site. Improvements beyond the day-use area are very minimal, natural, and are intended to protect the river and riparian forest.

Other interpretations in this area should include the preservation of two large mature trees on site. One of these trees, the Bigleaf maple, is the backdrop of the day-use area (as seen in the artist rendering below, Figure 11), and information on this tree species such as age, fun-species facts, and the role it places in the riparian forest, among other information should be included.

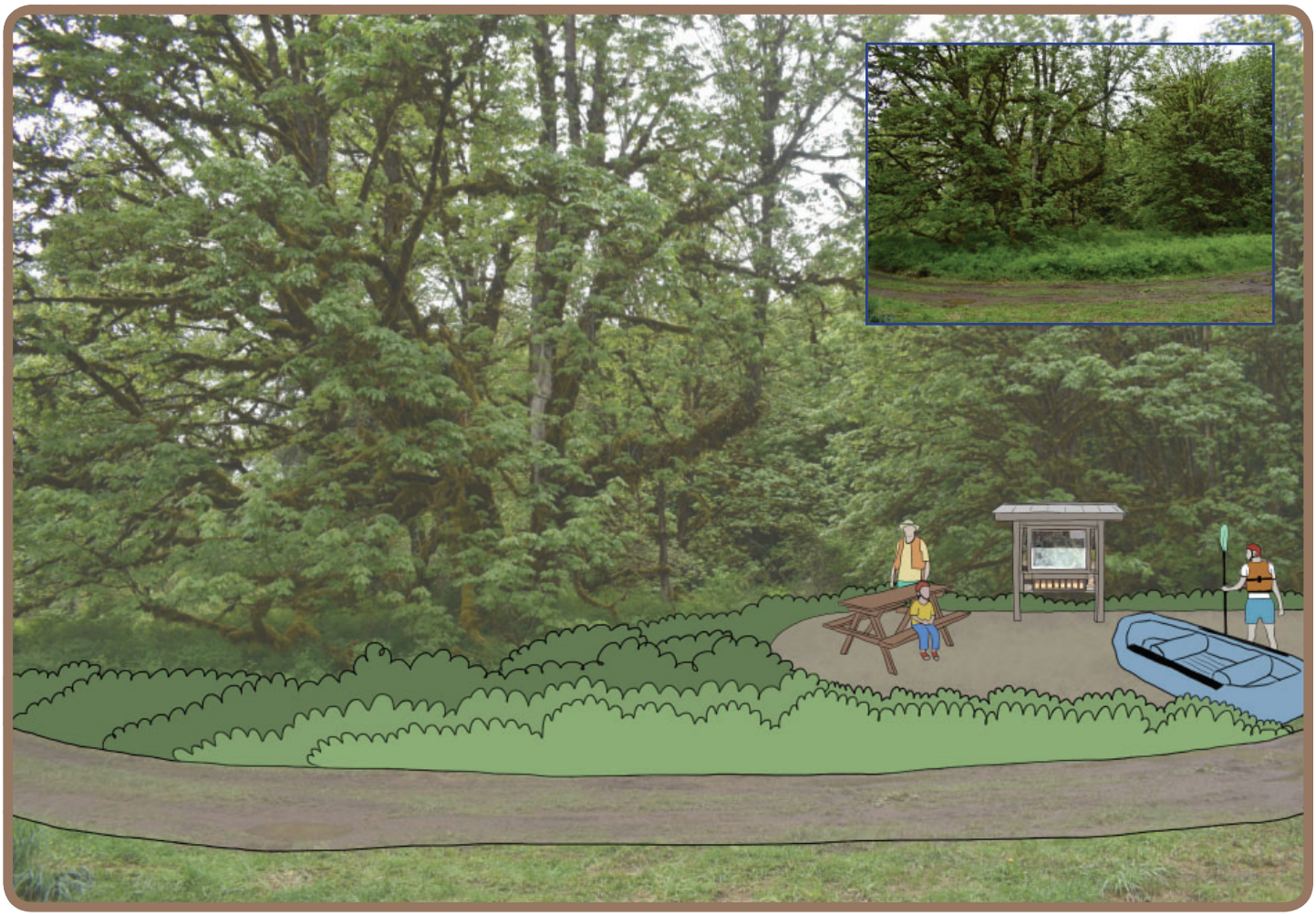


Figure 11: This rendering shows the proposed day-use area with an information kiosk, picnic table, and boat staging area. The backdrop of the day-use area is the Bigleaf maple tree, as pointed out in the image. Artist Rendering: Brianna Truden, Existing Photo Credit: Chris Elder.

River Access

Provide infrastructure for boaters, paddlers, and the general public to access the river.

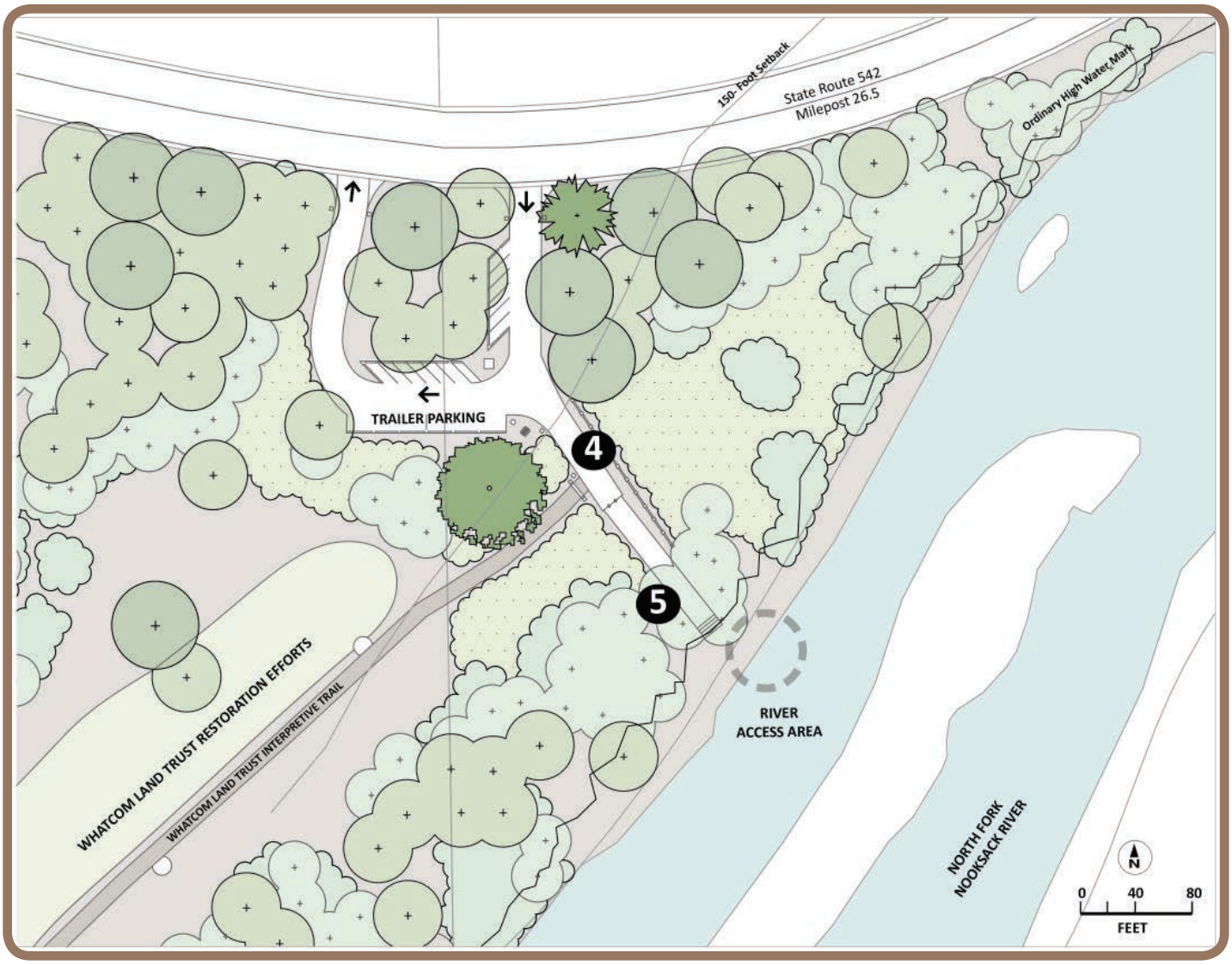


Figure 12: River access illustrated above is the main driving component for the development of this site. Current river access should be maintained and enhanced for recreational users such as boaters and paddlers, and allow for the general public to access the river as well. Credit: Brianna Truden.

4 It is envisioned that from the access road and parking area, a boat trailer back-up, load and off-load zone will be constructed to allow for easy access to the river for boaters and paddlers. This back-up zone should be set back 100 feet from the ordinary highwater mark to reduce impacts to the river and its natural systems from vehicles. It should be 16-feet wide, and made of permeable material. Large, natural, and locally sourced boulders should be placed at the end of this zone to prevent vehicles from going any further. These boulders should be placed in a way that still allows for easy loading and off-loading of boats from trailers, and easy movement between them to access the trail. This large access zone can also be used for safety personnel in case of an emergency, and by maintenance and management personnel looking to access their river and restoration projects.

5 A 14-foot wide trail should be constructed from the end of the trailer back-up zone down to the ordinary highwater mark. This trail is intended to be at maximum 100-feet in length, and wide enough to accommodate boaters and paddlers carrying their boats to the river. Material for this trail is recommended to

be local river gravel, sourced from nearby and regional quarries. Using river gravel that is already present in the Nooksack River will help to maintain existing and naturally present sediment in the river, in case of flooding, a wash-out, or erosion of the trail. Stone stairs or steps are proposed along the existing grade of the river bank to help get boaters and users down to the natural beach area in an easily accessible and low-impact way. No development is proposed below the ordinary highwater mark, and the beach area of the river is to be left natural and untouched.

The river conditions at this site also offer a natural, stable eddy for safe launching of watercraft. This area is indicated on the site design map, and is marked as the "River Access Area".

Figure 13: This perspective drawing illustrates the access to the river. The river bank and beach will be left natural. Visitors will access the site via the river trail and stone steps down to the beach. Artist Rendering: Brandon Parsons

Upstream view from the proposed Maple Creek site. The new river access will utilize the existing natural beach. No development is anticipated below the ordinary high water mark. Photo Credit: Thomas O'Keefe

Whatcom Land Trust Connections

Provide connections and shared outdoor recreation opportunities with Whatcom Land Trust property.

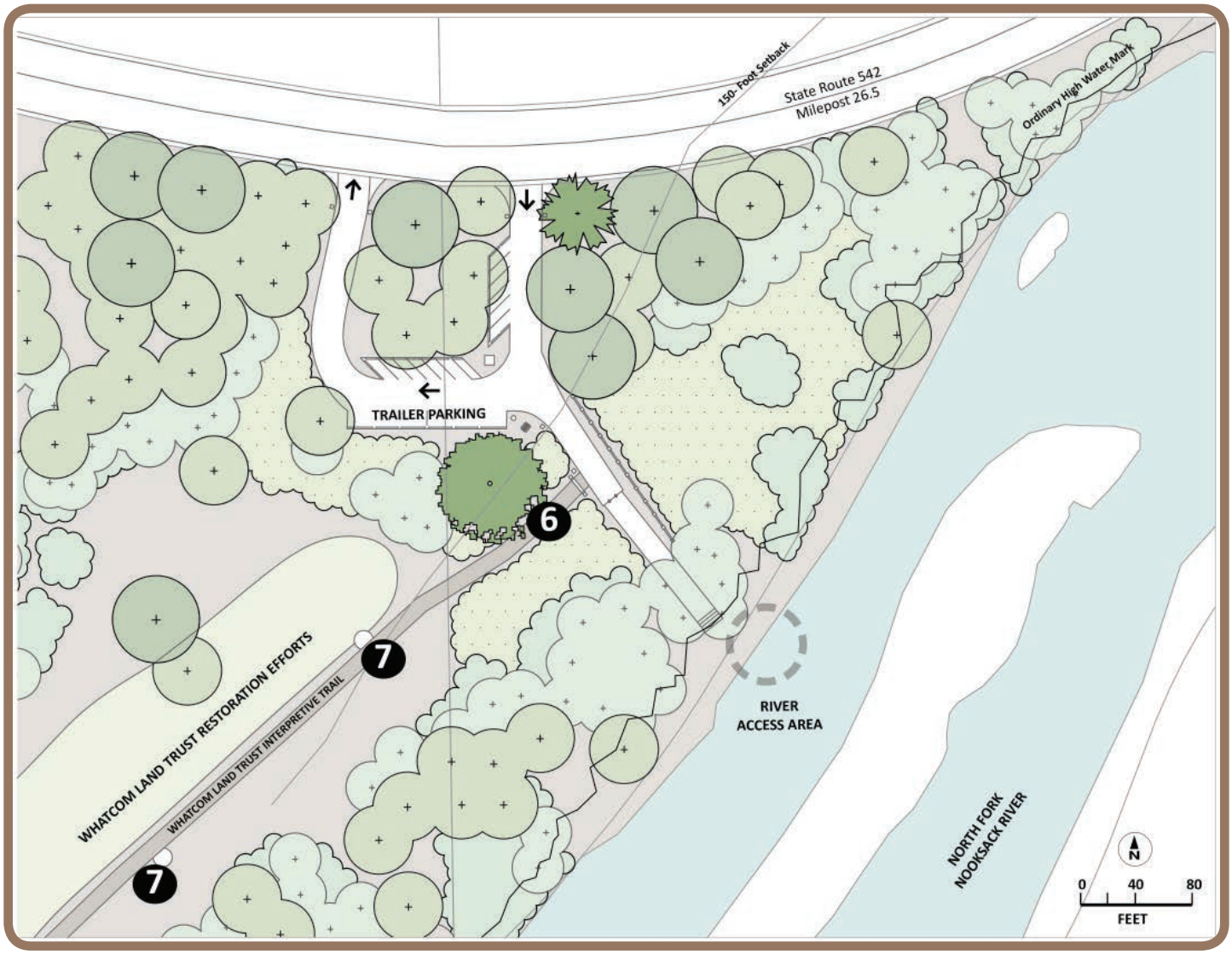


Figure 14. Whatcom Land Trust connections. Credit: Brianna Truden.

Several connections and collaborative opportunities were identified during the virtual workshop between the Washington Department of Natural Resources and the Whatcom Land Trust who share the land boundary at the proposed site. These connections include a shared access and parking area for both of their properties, shared access to walking trails, and joint use of the day-use area for the general public. Joint partnership planning also includes recommendations for shared maintenance and management of the land, with combined efforts for educational programming and environmental stewardship.

Sharing a public parking area with the Washington Department of Natural Resources is advantageous for Whatcom Land Trust, because current access to their property is located in more valuable and sensitive salmonid spawning habitat. With the construction of the Maple Creek Site parking area and access road, Whatcom Land Trust can close down their current access area and work to further protect and enhance that sensitive habitat.

6 Currently the Maple Creek site is used by Whatcom Land Trust and the Nooksack Tribe to access the river and their current restoration projects. An existing impacted pathway that vehicles use is envisioned to be

the basis of the new Whatcom Land Trust Trail. By keeping the existing vehicle infrastructure, site impacts are reduced, and management and maintenance personnel can maintain access. Maintaining the existing road will also benefit responders in case of an emergency. This trail should be maintained to be 10-feet wide, and use natural and permeable materials. The trailhead is located along the trailer back up zone (#4) and connects to the day-use area (#3). A gate is proposed at this juncture so that Whatcom Land Trust has the ability to close access to their land if need be. Regulatory signage about the use of the Whatcom Land Trust property including operational hours, contact information, and rules should be included near or on the gate.

7 The proposed walking trail is intended to promote healthy, active lifestyles by providing a place for users to engage in active and passive recreation opportunities such as wildlife viewing, resting and relaxation, and educational opportunities for learning. Characteristics of the proposed trail include leaving the pathway natural. Places for sitting and resting should be incorporated at various intervals along the trail. Interpretive opportunities about restoration efforts, natural themes and elements, bald eagle habitat, and the river should be incorporated. Species identification plaques can also be incorporated as a simple intervention along the trail to help educate visitors on native and riparian plants.

Figure 15. An artist rendering of the Whatcom Land Trust Trail. The existing maintenance road is envisioned to become a new walking trail with resting and interpretive opportunities along the way to allow for an enjoyable, user-friendly and interactive experience. Natural seating such as boulders and logs should be used. Interpretive themes can include information about bald eagle habitat, restoration efforts, and other natural elements and themes. Artist Rendering: Brianna Truden; Existing Photo Credit: Rick Foster.

Restoration

Restoration of the land should be emphasized, with efforts focusing on restoring large swathes of native vegetation in open and impacted areas. These efforts should support the natural functions and restore the ecosystems of the North Fork Nooksack River.

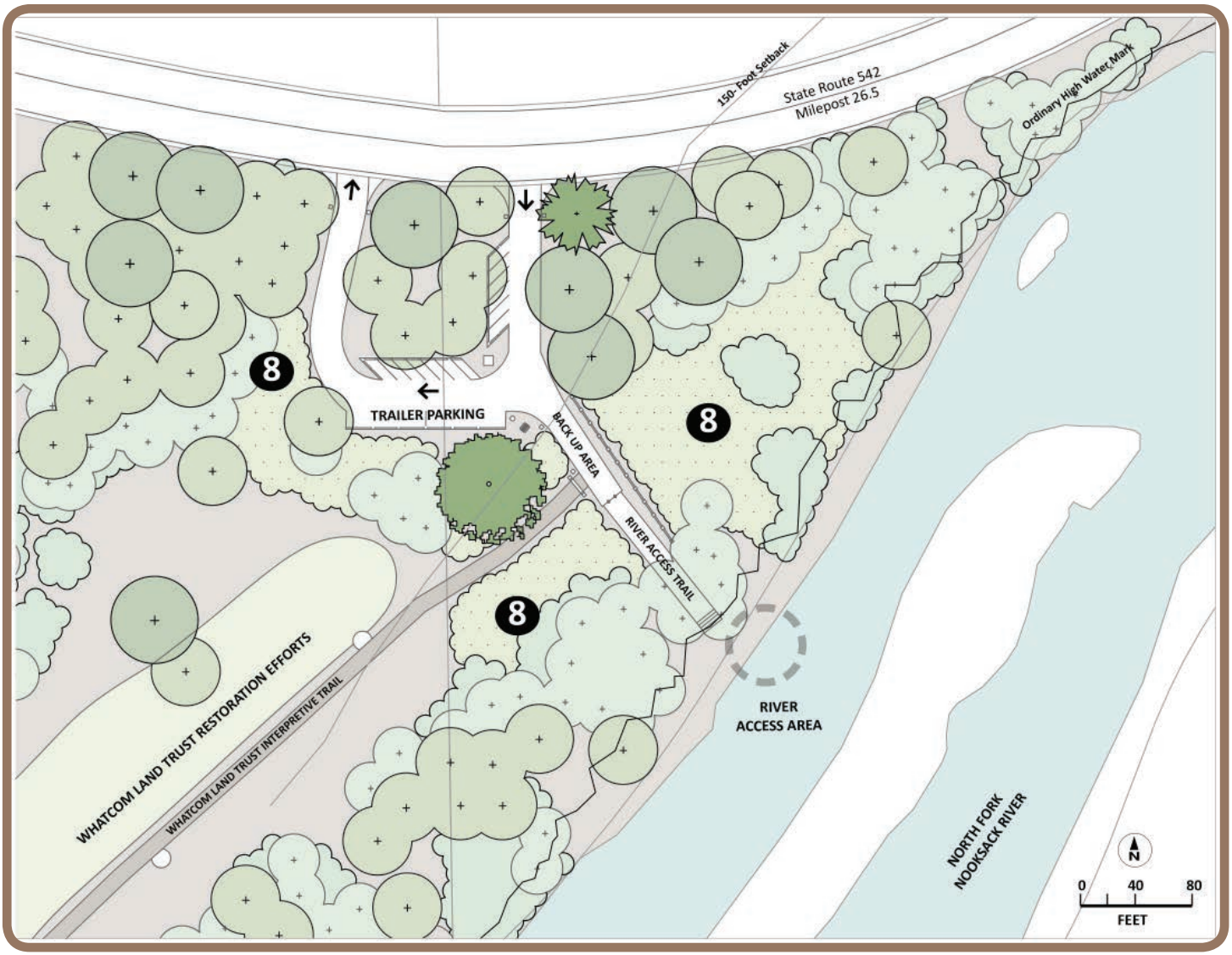


Figure 16: Restoration Areas. Credit: Brianna Truden.

8 The design of this site and recommended interventions emphasize the restoration of the riparian forest and protection of the river's natural systems. More area within this site is being restored (0.6 acres of added native vegetation) than is being developed (0.3 acres of development). By restoring the riparian forest and limiting impacts, the site is regaining some of its natural, healthy ecological functions. Increased native vegetation on site will help with stormwater management by capturing and cleaning the water before it enters the river, promoting groundwater infiltration instead of runoff, and protecting against floodwaters. Native vegetation and increased density of vegetation through restoration efforts will help create more natural microclimates. Salmon and other native wildlife species benefit from a healthy and connected riparian forest. People also can also enjoy the restoration of the land, as adding native vegetation will enhance the scenic natural setting that this area is known for.

Several zones within the site have been identified for restoration. Efforts focus on restoring the riparian forest using conifers and other deciduous native trees, with a mixed and robust understory. To support a health restoration effort, the goal is to plant approximately 300-500 trees per acre to account for some mortality of trees. These restoration efforts will be focused on planting in open and impacted areas that have large gaps in vegetation. Non-native plants including Himalayan blackberry and Japanese knotweed will be removed. Fencing should be incorporated to protect these areas from human impacts and to direct people to the intended areas of use. One permanent split rail fence is envisioned along eastern edge of the trailer back up zone and river access trail. This fence is envisioned to be about four feet in height, and about 112 feet in length. It is recommended that this fence be constructed from reclaimed wood found on site, sourced from the removal of vegetation from any development. Interpretive displays and information can also happen along this fence. Themes could include telling the story of the watershed, salmon use of the river and riparian forest, reconnecting the riparian forest with native vegetation, etc. Other fencing is intended to be used on a temporary basis around other newly restored areas on the site, as the vegetation matures and establishes itself.

Whatcom Land Trust volunteer planting riparian vegetation Photo Credit: Jennifer Mackey

Other restoration efforts in the area include the Whatcom Land Trust's current effort to restore a large portion of the riparian forest along the north side of the proposed walking trail (#7). Native vegetation and restoration is also proposed along the parking area and access roads to help direct people to intended areas of use and designated trailheads. Other gaps in vegetation and open space around proposed features should also be considered for restoration plantings and removal of nonnative species including Himalayan blackberry and Japanese knotweed.

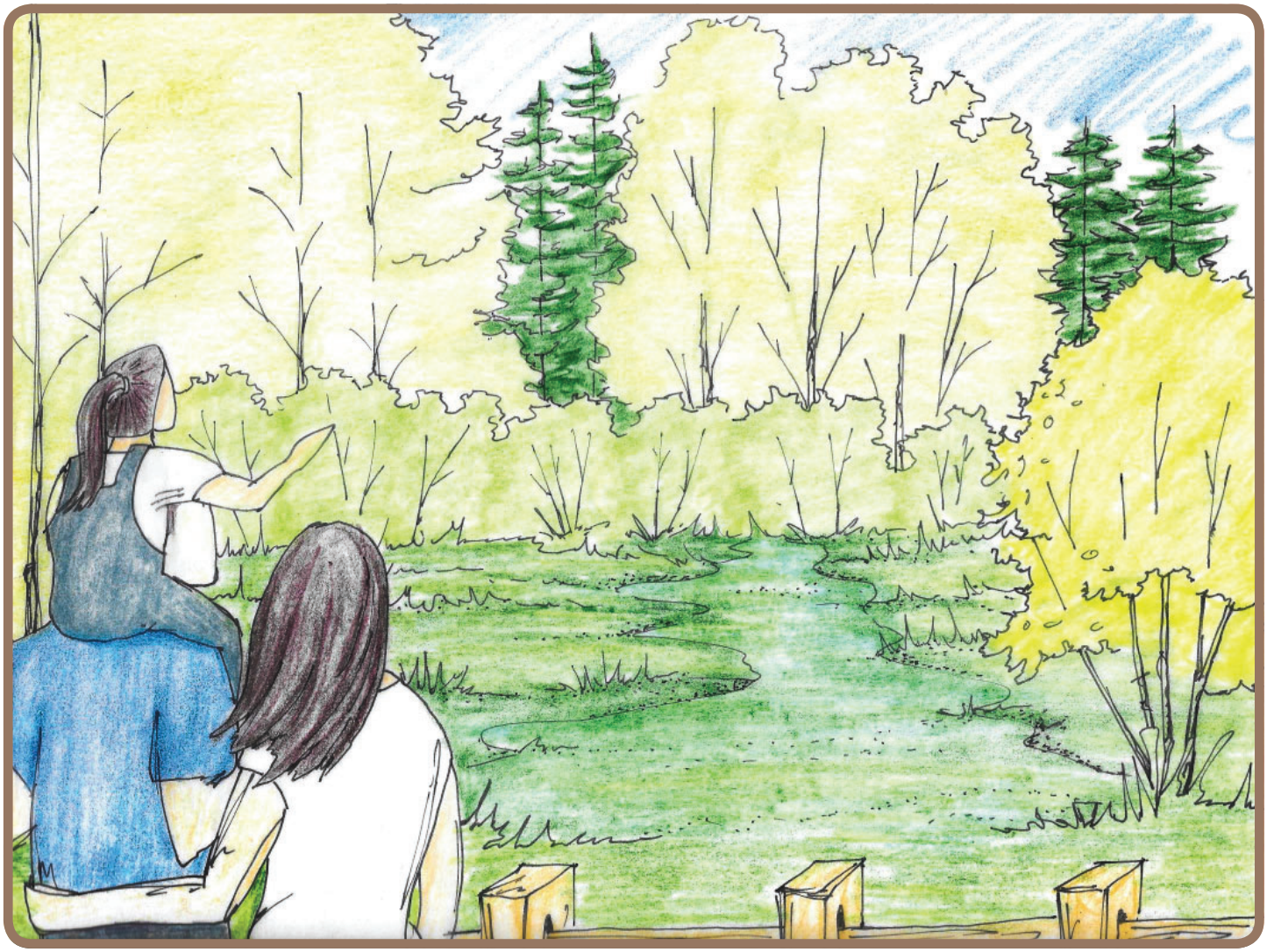


Figure 17. The restoration will be twice as much as the developed areas and will enhance the recreation experience while protecting the environment. This is a rendering of users looking over the restored riparian forest. Fencing and interpretives should be incorporated to protect restoration areas and to increase user-friendly aesthetics. Artist Rendering: Brandon Parsons.

Materials

Materials used on site are intended to be low-impact, sustainable, and environmentally friendly. Several different kinds of material were explored during the planning and design portion of this plan. Some recommended materials are described below. Where possible materials should:

- **Be permeable** as to reduce stormwater runoff, promote groundwater infiltration, and to capture and prevent pollution from entering the river.
- **Be sustainable**. Materials should be long lasting, and environmentally friendly.
- Selected products should be made from recycled content.
- **Be locally and regionally sourced** first. Several materials such as large boulders, and natural river gravel can be sourced from the many quarries present in the region. This will prevent forgein sedimentation from entering the river, and keep with the desired natural characteristics of the site.
- **Use materials that are already present on site**. Incorporate salvaged and secondhand material from the site back into the construction of elements. Determine if trees and vegetation removed on site can be used to

construct elements such as benches, split rail fencing, edging, and for other purposes. Incorporate salvage and second-hand materials from the site where possible.

» During construction of the site, if topsoil is removed, keep it on site and spread it out again after the project is complete.

» Practice Integrated Pest Management to reduce the need for chemical pesticides. Integrated Pest Management (IPM) uses an integrated ecosystem approach to control pests on site. Desired conditions include growing and establishing a healthy, diverse, and native vegetation that promotes healthy wildlife populations that help control pests.

» Use native plants to reduce water consumption, control natural pests, and to improve soil and ecosystem conditions.

Geo-Cell Pavers

Geo-cell pavers are a strong rigid material that can be infilled with locally sourced gravel, and can be used as the basis for vehicle access roads and trails. Geo-cell pavers are recommended to be used in the parking area and as the surfacing for the access roads. This will promote stormwater infiltration, and reduce runoff and pollutants from entering the river. Geo-cell pavers can be ADA friendly and reduce erosion of surfaces by keeping sediment and material contained.

Grass Grid Pavers

Grass grid pavers are another permeable material that uses the same kind of structure as the geo-cell pavers (a rigid structure with infill material to support infiltration). This material offers a more natural aesthetic as native grasses are encouraged to grow in between the structure, making this material almost indistinguishable from the natural ground surface. Grass-grid pavers should be used in areas such as the day-use area, and along the Whatcom Land Trust trail. Installation of grass grid paver is less labor intensive and this material requires less energy and equipment to produce, install, and transport to the site, making it more environmentally friendly than asphalt and concrete. Grass grid pavers promote healthy stormwater management, prevent erosion, and are made from recycled material.

Locally Sourced and Salvaged Materials (River Gravel, Boulders, Wood)

Locally sourced and salvaged materials include using river gravel naturally found in the Nooksack river for trail surfacing and to potentially be used as a filler for the geo-cell pavers. Other materials should include sourcing large boulders to be used for seating along the Whatcom Land Trust trail, and to be used as wheel stops and barriers between the trailer back up zone and the river access trail. Reclaimed wood from the site and surrounding sites should be used as material for fencing, benches, or anything requiring wood.

Geo-Cell Pavers

Grass Grid Pavers

River Gravel

Examples of the suggested materials to use in the site design. Image source and photo credit: https://www.landscapediscount.com/Ground-Grid-DuPont-p/dpgg-5055.htm, Erik Hazelton, and Brianna Truden.

Interpretation and Signage

Opportunities on the site for interpretation and informational displays were identified as part of the planning process. Interpretive, Regulatory, and Informational signs were considered, and themes and messaging were identified using input from land managers and user groups. Sign types can be combined, and messaging should be bilingual, welcoming, and inclusive.

Hannegan Trailhead signage. Photo Credit: Wendy McDermott

Local artists could work in partnership with environmental advocates to determine what the interpretive displays should be and look like, as well as what information should be included.

It is recommended that this site acknowledge the history of indigenous people who inhabit this area and their use of the land and river. Project partners should work with tribal representation to promote and give space for them to share their stories, native knowledge, and traditions. Some suggestions include information on salmon and tribal efforts to restore their habitat, historic uses and natural themes of the river, as well as using native language to describe words related to the site such as Bald Eagle, Salmon, Nooksack River, Water, Wood, Earth, etc.

Types of Signs

Interpretation Displays

Interpretive displays and elements are meant to be interactive and educational. Local artists should provide input into these structures, themes, messaging, and displays. Interpretive elements should be inclusive and reflect the local conditions, uses, and proximities of the area.

Themes and Messaging Include (Figure 19):

A **Entering *Protected Salmon Habitat and Recovery Zone* Display**

» Information about Salmon and Restoration Efforts

- Migratory route, log jams, spawning habitat, seasonality, and status
- Current restoration efforts and why it is important to stay on the trails

Figure 18. Illustration of a restoration interpretive display. Artist Rendering: Erik Hazelton; Existing Photo Credit: Rick Foster.

» Importance of salmon to native people

» Include messaging about how this area should be treated and respected

» Current restoration of the land and salmon habitat by the Nooksack Tribe and Lummi Nation

» Why is wood in the water?

- ELJs and wood are critical to restoring salmon habitat. The Nooksack Tribe and partners have been developing these projects to restore salmon.

» Keep paddle away from gravel – preserve the redds

B Boater Safety

» Recreate responsibly

- Never boat beyond your skill level
- Know and practice river rescue techniques
- Always stay alert for unexpexted hazards
- Don't paddle alone

» Caution: Natural & man made features occur in this river that might be dangerous to people

- Wood, natural logjams, and ELJs are present in the North Fork Nooksack River and the Maple Creek reach just downstream

» Include a sign in a location that has a viewpoint of a ELJ is feasible

» Information on ELJ projects

- Existing and new restoration updates

» Warning: rivers are dangerous

C Bigleaf Maple Interpretive

» Provide information about how the site design protects two mature trees on site

» Life history of the bigleaf maple

D Riparian Forest and Restoration Efforts

» Native plant species and their role in the riparian and forest ecosystem

» Benefits for restoring the riparian forest

- Connected wildlife corridors support gene flow and movement
- Increase in habitat opportunities and safety
- Provides food and refuge for aquatic organisms

» Site design and sustainable, low-impact interventions

- Partnership collaboration
- Re-use of materials sourced on site (wood)
- Need for permeable material to be used to reduce effects from stormwater on the riparian zone

E Information on Bald Eagles

» What about this ecosystem makes it good for bald eagle habitat?

» General bald eagle information

» The use of salmon for a winter food source

F Cultural Resources

» Significance of the river and riparian forest to native people

» History of native use of the area

» Significant plants, fish, and wildlife

Examples of a potential interpretive display. Design and Photo Credit: Erik Hazelton.

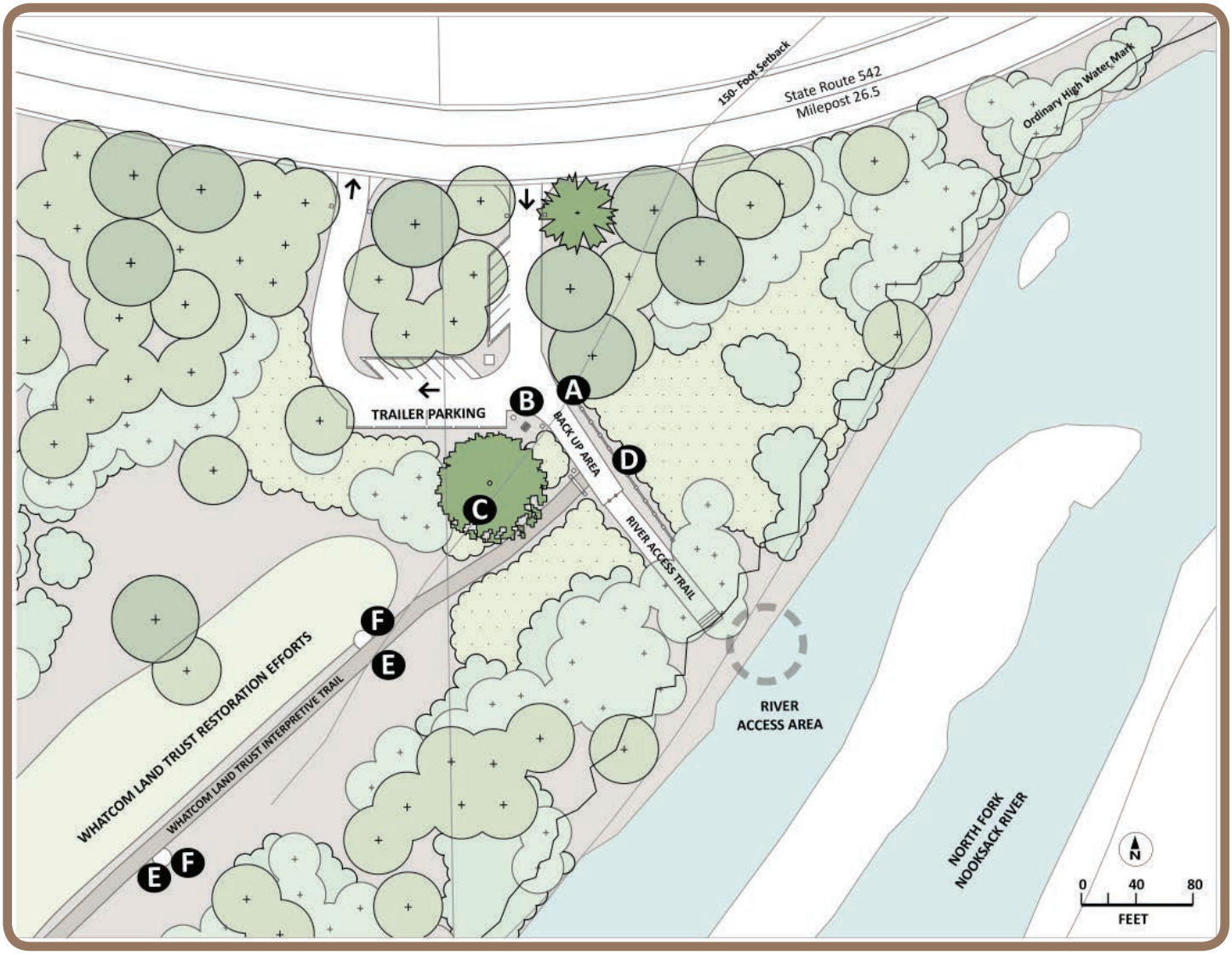


Figure 19. This figure illustrates the recommended locations for the various interpretation themes and messages. Credit: Brianna Truden.

Regulatory Signs

Regulatory signs help inform visitors about rules and regulations of the site. They include information about managing entities and authorities, hours of operation, and emergency contact information. These signs are intended to be placed at the entrance of the site and by or on the gate for the Whatcom County Land Trust trail.

Themes and messaging include:

» Hours of operation of the site

» Management and partnership entities and authorities: logos and contact information

» Rules of the site

- Leave No Trace and Pack-In, Pack-Out Principles
- No Motorized Boats
- No Tubing

- No Camping
- No Fires
- Parking and no parking signs to direct people to park in appropriate places
- No Dumping
- No Shooting

Information Signs

Information signs are intended to provide the audience with site specific information. Topics should include information about river and water safety, visitor education on appropriate behaviors, identify areas and opportunities for recreation and human use, wayfinding, and provide information about partnerships and stewardship of the site.

Themes and messaging include:

» River conditions and water safety: know the river and your skill level, this section is not suitable for tubes

» Site maps: include trail networks, paddling networks, uses of the site and feature locations, river and land miles, and other information

» Entrance and Exit Signs

» Parking signs

» Leave no trace, Pack-In and Pack-Out

Figure 20. Boat safety and restoration information will be displayed at the site. This is a rendering of a visitor reading the bulliten board with recently planted trees in the background. Artist Rendering: Erik Hazelton; Existing Photo Credit: Rick Foster.

Next Steps

Implementation

The Department of Natural Resources, as the primary landowner, has the lead in overseeing implementation of the Maple Creek Access and Restoration Site. Implementation of the plan could be accomplished in two to four years and involves several steps including identifying and pursuing funding sources, developing engineering drawings and construction documents, developing partnerships between authorities and entities, securing land leases and easements, and obtaining any necessary permits for uses and construction.

Funding

Project funding is expected to be obtained mainly through grant opportunities, in-kind donations through partnerships, and appropriations. Appendix VII identifies potential grant opportunities and the key criteria for each. The estimated cost for developing and restoring the site is approximately $260,000 in 2020 dollars. This figure is broken down by the following key elements:

- Engineering, Design, and Permitting: $44,500
- Land easements and acquisition: $98,500
- Restoration and Fencing: $15,000
- River and Day-Use Access Development: $102,000

In 2020, the Department of Natural Resources applied for and was awarded a grant of $200,000 from the Washington Wildlife and Recreation Program water access category.

Engineering and Design

This plan is intended to be conceptual in nature, and does not go into specifics about exact locations, materiality and construction of elements. Once funding is secured, construction level engineered documents will need to be produced based on this concept design and site recommendations. Refinement of the concept design is expected as the project prepares for actual implementation.

Land Leases and Easements

Recreation covenant: The Maple Creek site is currently managed as a state trust land.The Department of Natural Resources would need to purchase a recreation covenant to compensate the trust beneficiary for recreation development on the site.

Easements: The recreation development would span both Whatcom Land Trust and the Department of Natural Resources properties. The Department of Natural Resources would purchase a public use easement from Whatcom Land Trust for the driveway and parking development on their land. Whatcom Land Trust would purchase another easement from the Department of Natural Resources to enable drive-in access on the Department of Natural Resources property for Whatcom Land Trust personnel to be able to maintain their lands.

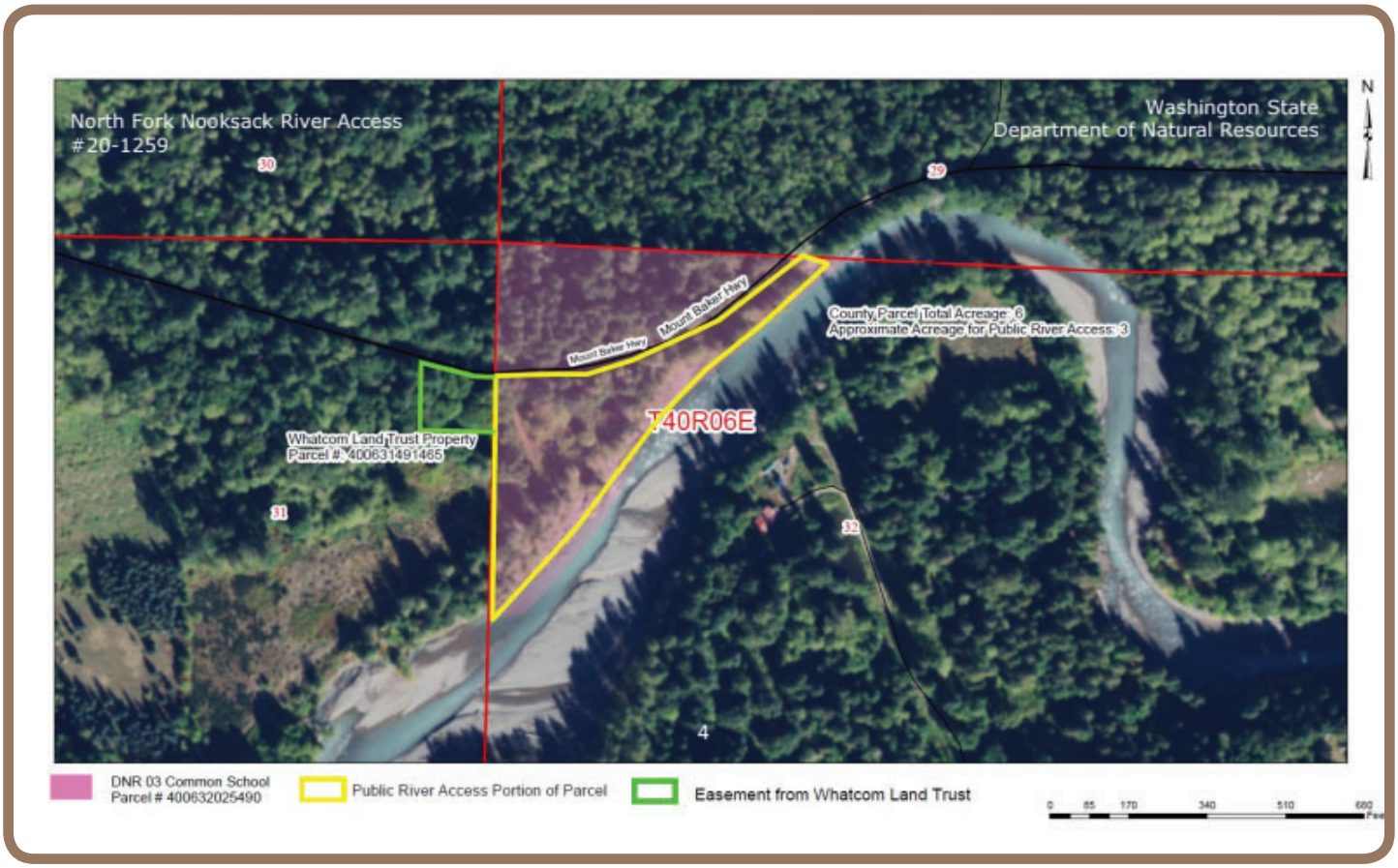


Figure 21. Worksite acquisition and development map. Credit: Barbara Simpson

Permits and Regulatory Processes

Whatcom County Permit

The site is within the Conservancy shoreline area and is subject to permitting guidelines of Whatcom County. Appendix VII describes the various regulations and guidelines that the project may be subject to. After an initial analysis, the planning team, in consultation with Whatcom County Permitting, has assessed that the project is likely consistent with the Shoreline Management Plan and Conservancy Area regulations[10]. All development is outside a 150' buffer from the river. It is likely that the project will just need a Substantial Development Permit without the need for a Shoreline Conditional Use Permit or Shoreline Variance. However, a pre-application conference will be required pursuant to WCC 23.60.060. A pre-application conference should be held at least 1.5 months before the permit is submitted.

Department of Natural Resources Regulatory Process

The Maple Creek site is not subject to forest harvest activities though the parcel is zoned as Rural Forestry[11]. When DNR forest trust land is taken out of timber production the Recreation Program compensates the Trust for lost revenue in fair exchange for ongoing use of the land as a recreation facility. In this case the land is not harvestable due to riparian and other setbacks so the Trust will be compensated for the value of the property as if it was sold for revenue.

10 - https://www.whatcomcounty.us/837/Shoreline-Management-Program
11 - https://www.codepublishing.com/WA/WhatcomCounty/html/WhatcomCounty20/WhatcomCounty2042.html

Development of the water access facility will be conducted by DNR's Recreation Program which must comply with all Federal, State and local laws and regulations. Federal law such as the Endangered Species Act are followed by DNR under it's Habitat Conservation Plan (HCP). The HCP describes how DNR complies with the Federal Endangered Species Act while carrying out its duties managing DNR lands for the citizens of the State of Washington. Other federal rules this project must comply with are the Americans with Disabilities Act and the Environmental Protection Act.

On a state level DNR will follow the State Environmental Protection Act (SEPA) process as agency-of-record. SEPA and grant funding through the RCO requires DNR to file for Section 0505 Archeology permits as a part of development permitting.

And for critical areas permitting requirements the Recreation Program within DNR does not conduct forestry nor does it enjoy coverage under the State's Forest Practices Act. DNR's Recreation Program is expressly excluded from self-permitting under the FPA to address critical areas. Therefore DNR with its partner The Whatcom County Land Trust must apply for development permits on a local level with Whatcom County, complying with all relevant county rules and regulations including Critical Areas and Shoreline Management Program. In the County RF zone certain recreation facilities and trails are a permitted use: "20.42.063 Trails, trailheads, restroom facilities and associated parking areas for no more than 30 vehicles".

Whatcom Land Trust Volunteer planting riparian vegetation Photo Credit: Jennifer Mackey

Washington State Department of Transportation Permit

An access permit[12] is required from the Washington State Department of Transportation for any new river access sites along the highway. The planning team in consultation with the Washington State Department of Transportation has considered and incorporated the design guidelines needed to meet this permit process including site lines, access road widths, and turn radius parameters. As part of implementation, the Department of Natural Resources would need to apply for an access permit.

United States Army Corp of Engineers Permitting

The Army Corps of Engineers provides permits for work below the ordinary high water mark through Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act[13]. The planning team does not anticipate any work being located below the ordinary high water mark and therefore it is unlikely that a permit from the Army Corps of Engineers would be needed.

12 - Washington State Department of Transportation Access Permit, https://www.wsdot.wa.gov/Design/DevelopmentServices/home.htm
13 - U.S. Army Corps of Engineers Permitting, https://www.nwp.usace.army.mil/Missions/Regulatory.aspx

Washington Department of Natural Resources Aquatic Lands Program

The Department of Natural Resources Aquatic Lands Program manages state aquatic lands including navigable lakes, rivers, and marine waters. Similar to Army Corps of Engineer permits, the Aquatic Lands Program would need to be engaged for any development that would occur below the ordinary high water mark. Since the desired recreation facilities do not include any proposals within the bed and banks of the river, this project should not require review or engagement of staff support from the Aquatic Lands Program. However, the planning team will keep the Aquatic Lands Program appraised of any proposals for river access in this reach.

Washington Department of Fish and Wildlife Hydraulic Project Approval

Washington State law (RCW 77.55)[14] requires those developing projects in or near state waters to get a Hydraulic Project Approval from the Washington Department of Fish and Wildlife[15]. This includes most marine and fresh waters. An HPA ensures that construction is done in a manner that protects fish and their aquatic habitats.

Maintenance, Operations, and Monitoring

Site maintenance is important to ensure the longevity of the facilities and the enjoyment by the public. The site design includes sustainable durable elements that were selected to minimize maintenance needs. Maintenance can be a challenge with limited agency budgets. Several options are possible in looking at maintenance and stewardship of the site in the short and long term. Maintenance and operation agreements are currently in-progress and participating groups will be in consensus before the development of the site occurs.

» DNR manages and maintains the site. In this scenario, DNR would take the primary role in maintaining the site. This option may be more feasible if DNR is able to hire more staff or retain contracting services at their Sedro Woolley location to support recreation maintenance of existing and new facilities that are developed while implementing the Baker to Bellingham Plan. DNR would seek grants to help fund the staff and maintenance needs. Volunteers and stewardship efforts could assist the DNR and Whatcom Land Trust with restoration efforts.

» DNR retains ownership but develops an agreement with Whatcom County Parks and Recreation to manage and maintain the site for the public. Whatcom County Parks and Recreation would need to be willing to take on this role. Volunteers could also help assist Whatcom County Parks and Recreation with certain elements of the restoration or facility maintenance.

» DNR works with a nonprofit or other organization to adopt the site to address the primary maintenance and stewardship of the site. Mount Baker Chamber of Commerce has stated that they would be willing to assist DNR with maintenance measures.

Maintenance activities are anticipated to include cleaning the restroom; maintaining the surfacing on the road, parking area, and trail; litter pick-up; vegetation management and restoration; and clean up of any vandalism, camping, or fires activity. DNR will be responsible for maintenance on their property and the easement they receive from Whatcom Land Trust. This could be achieved by DNR staff or through an agreement with another entity or volunteer organization as described above. Whatcom Land Trust will be responsible for continuing to maintain their property.

14 - RCW 77.55, https://apps.leg.wa.gov/rcw/default.aspx?cite=77.55
15 - Washington State Department of Fish and Wildlife Hydraulic Project Approval https://wdfw.wa.gov/licenses/environmental/hpa

It is anticipated that DNR and/or its partners and volunteers will monitor the site throughout the year and address any maintenance needs that come up. The restoration and vegetation will be monitored closely the first two years and then it will be re-assessed annually. Additional volunteer work parties and vegetation plantings will be developed to maintain the riparian vegetation on the site. The site currently provides a stable location and eddy for paddlers. The DNR will work with partners to monitor the river morphology and site stability on an annual basis. If the site stability changes, the DNR will convene the planning team to discuss and identify next steps.

Whatcom Land Trust and the Nooksack Salmon Enhancement Association are both interested in partnering on organizing volunteer work parties and stewardship activities to help restore and protect the site.

Partnerships and Stewardship

The planning and development of this site has involved building and expanding partnerships to support outdoor recreation and restoration. Many parties have come together to provide input on the site development. For the implementation of the site to be successful, partnerships will be a key ingredient. Whatcom Land Trust has an interest in promoting stewardship and educational opportunities on their land. Whatcom Land Trust and the Nooksack Salmon Enhancement Association have agreed to support volunteer work parties to meet the restoration goals. Other nonprofit organizations and community groups could also be tapped to help implement the site and build community stewardship.

Interpretation and education is an important component of the plan. Partnering with the Nooksack Tribe, Lummi Nation, and nonprofit organizations on messaging and delivery of visitor education will enrich the experience and ensure key messages are shared with visitors. For maintenance of the site, the Mount Baker Chamber of Commerce has offered to provide volunteer support to maintain the site. By working together, the community can build a recreation and natural resource for future generations to enjoy and protect.

Baker to Bellingham Non-motorized Recreation Plan

The Washington State Department of Natural Resources (WA DNR)[16] developed the Baker to Bellingham Non-motorized Recreation Plan (2019). The plan was created through a public process in consultation with the Recreation Planning Committee, convened by DNR. This plan provides guidance for recreation and public use on DNR-managed lands in Whatcom County for the next 10-15 years. The plan identified four sub areas, one of which was the North Fork Unit which includes portions of the North Fork block of trust land[17]. One of the objectives of the plan recommends providing a river access facility on the North Fork Nooksack River adjacent to the northern edge of the North Fork Unit (based on available staffing and funding). This proposed access site was labeled as a Tier I priority. The strategies identified to complete this were:

- Evaluate water-access facility needs as part of a day use assessment to determine the types and levels of future use
- Coordinate with adjacent landowners, Tribes, and public agencies on project proposals
- Work to design and develop water access to provide public access, protect resources (including water quality), and minimize future maintenance needs

Upper Nooksack River Recreation Plan

The Upper Nooksack River Recreation plan (2015)[18] was developed to help guide the management of recreation and natural resources along the upper Nooksack River system in Washington state. The plan recognizes and supports the economic and health benefits of recreation, along with protection and restoration of the natural and cultural values of the upper river basin.

The recreation plan was developed through a collaborative planning process led by American Rivers and an advisory committee comprised of representatives from American Whitewater, Hydropower Reform Coalition, Mount Baker Club, National Park Service, Nooksack Tribe, Nooksack Salmon Enhancement Association, Pacific Northwest Trail Association, the United States Forest Service – Mt. Baker Ranger District, Whatcom Chapter of Back Country Horsemen of Washington, Whatcom County Parks and Recreation Department, Whatcom Events (Ski to Sea Race), Whatcom Land Trust, and Wild and Scenic River Tours. Planning assistance was provided by the National Park Service's Rivers, Trails, and Conservation Assistance Program.

The plan identified over eighty recommendations to help meet the five conservation and recreation goals. One of the goals of the plan was to coordinate, design, and formalize safe river access. The lack of formal river access sites was causing trespassing, impacts to native vegetation, increased erosion, and parking on dangerous narrow roads. Some general recommendations for completing this goal were:

- Collaborate with public, non-profit, business owners, timber companies, and willing private partners for more walk-in river access sites
- Collaborate with Whatcom Land Trust to manage walk-in public access for boating

16 Baker to Bellingham Non-motorized Recreation Plan. 2019. Washington State Department of Natural Resources. URL: https://www.dnr.wa.gov/BakertoBellingham.
17 DNR manages 3 million acres of federally-granted trust lands to provide a continuous flow of revenue to beneficiaries through revenue-producing activities.
18 Upper Nooksack River Recreation Plan. 2015. American Whitewater. URL: www.americanrivers.org/conservation-resource/upper-nooksack-river-recreation-plan

Puget Sound Salmon Recovery Plan

The salmon recovery plan was completed in 2007 by leaders across the Puget Sound from many different federal, state, tribal, and local governments, businesses, agricultural/forestry industries, environmental groups, and watershed planning areas. The long term goal of the plan was to achieve self-sustaining levels of Puget Sound Chinook salmon, distribution, and diversity. Salmon recovery was happening prior the time of the listing as threatened in 1999 of Puget Sound Chinook and Coastal/Puget Sound bull trout. Rather than starting over to address the needs of these fish, state and regional leaders began to build off of the already existing restoration and protect efforts within the 14 local Puget sound watersheds.

The plan's strengths are built upon three factors: 1) the needs of fish and people are addressed together; 2) the plan is built on the foundation of the 14 local watershed planning areas; and 3) although the plan is focused on Chinook recovery, it is done with the whole ecosystem in mind. The plan then identifies the top ten actions needed for salmon:

How does the Maple Creek site development compliment the needs of the Puget Sound Salmon Recovery plan?

The desired Maple Creek river access site will address the key actions needed for salmon recovery by:

- Providing interpretation and education about the importances of water quality, salmon restoration, and riparian forests
- Restoration of the riparian forest on the site will improve water quality for salmonids, recreation, and stabilize the sediments adjacent to the river
- Providing formal recreation access will deter users from disturbing nearby salmonid habitat, critical wildlife habitat, and protect stream banks from eroding from dispersed foot traffic

Water Resources Inventory 1 (WRIA 1): Watershed Management Plan - Phase 1

The Washington State Watershed Management Act (Chapter 90.82 RCW) was created in 1998. This act allowed local stakeholders and governments to work together on watershed management issues and develop a plan to address them. A water resource inventory area (WRIA) is a geographic boundary defined by the state to assist in the management of water resources. The key challenges that are going to be addressed throughout this plan are:

- Adequate water supplies for in stream and out-of-stream needs
- Endangered species listings
- Clean Water Act violations
- Public health concerns associated with drinking water and shellfish
- Uncertainty regarding unquantified tribal water rights and implications for water management and uses
- Community education and involvement
- Adequate data and tools to assess the impacts of management actions
- Enhanced coordination between land use management and water resources management

Community and government and funding to support comprehensive management

WRIA-1 Watershed Management Goals

- Have enough water quantity and quality to meet the needs of current and future human generations, including restoration of salmonids, and the improvement of aquatic habitats
- Assess water supply, use, and develop strategies to meet current and future use. Enough water should be present to protect and restore fish habitat and ensure that water supplies are available for agriculture, energy production, and population and economic growth under the requirements of the state's Growth Management Act
- To ensure that water quality is sufficient for fish, shellfish, recreation, cultural resources, protection of wildlife, providing safe and affordable domestic water supplies
- Supply water in sufficient quantities for in-stream flows for salmonids so that those populations remain healthy and harvestable and their habitats are improved
- Protect and enhance fish habitat and restore salmonids to healthy and harvestable populations and improve their habitats

Water Quality Concerns for the North Fork Nooksack

- Temperature could be increasing due to lack of riparian cover, increased water surface area, lower stream depths due to widening channels, and/or channel modifications due to debris flows
- Low dissolved oxygen from urban and agricultural impacts in the lower basin
- Turbidity caused by timber harvesting and other forest practices

How does the Maple Creek site development address the needs of the Watershed Management Plan?

The desired Maple Creek river access site will address the key challenges and management goals by:

- Providing interpretation and education about the importances of water quality, salmon restoration, and riparian forests
- Restoration of the riparian forest on the site will improve water quality for salmonids, recreation, and stabilize the sediments adjacent to the river
- Providing formal recreation access will deter users from disturbing nearby salmonid habitat, critical wildlife habitat, and protect streambanks from eroding from dispersed foot traffic

The desired Maple Creek river access site will help address the water quality concerns within the North Fork Nooksack River by:

- Restoring the riparian forest which can decrease sedimentation (turbidity)
- Decreasing water temperatures by providing shade from the riparian buffer
- Sustainably designed with minimal to no development within the riparian zone will decrease potential erosion and sedimentation
- Formal river access in this stretch of the river decreases the risk of dispersed foot-traffic in riparian restoration areas and critical riparian habitats. River access at this site is centralized in one spot decreasing the overall potential for unnatural stream bank erosion

Appendix II: Channel Migration Zone

Channel migration[19] is an important natural process that can pose risks to infrastructure and housing in Washington State. The channel migration zone[20] is defined as "the area where the active channel of a stream is prone to move and this results in a potential near-term loss of riparian function and associated habitat adjacent to the stream, except as modified by a permanent levee or dike. For this purpose, near-term means the time scale required to grow a mature forest."

The migration can occur steadily over decades or happen rapidly when a flood starts to carve a new path. Factors that influence this may include: the stream gradient, geology of the region, sediment supply, flow, vegetation, and human development. Local governments are required to identify these zones and limit developments because of the risks the migrating river might pose on human resources.

Identifying the channel migration zone is a site-specific process that can have varying scales of complexity. State shoreline and floodplain regulations, habitat conservation, and restoration efforts are key to developing an assessment. Aerial imagery and mapping is essential for developing a site plan.

The lateral channel movement of the North Fork Nooksack River is generally constrained because of the mountainous valleys. The lateral movement sometimes can be restricted due to the "bedrock geology, deep-seated bedrock landslide deposits, and localized deposits of Mt. Baker Lahar."

The characteristics of the Nooksack River that we see today, have evolved from the natural conditions due to forestry, agriculture, and development in the late 1800's. The Nooksack went from a narrow, stable system to a wider, braided, less stable river. There is now an overall higher velocity in the river channels. Hydromodifications cause disturbances to the floodplains and active channel area such as reduced floodplain area, increased channel area, increased constriction points, alterations to sediment transport and deposition areas, increased sediment loading, loss of riparian vegetation, and loss of large woody debris. [21]

19 State of Washington Department of Ecology. 2020. URL: https://ecology.wa.gov/Water-Shorelines/Shoreline-coastal-management/Hazards/Stream-channel-migration-zones.

20 Washington State Legislature website accessed on 1/28/2020 <https://app.leg.wa.gov/wac/default.aspx?cite=222-16-010>

21 Erosion and Avulsion Hazard Mapping and Methodologies for use in the Nooksack Channel Migration Zone Mapping, September 2009 <https://www.whatcomcounty.us/DocumentCenter/View/15492/4---Whatcom-Co---Erosion-and-Avulsion-Hazard-Mapping-2009>

Appendix III: Site Inventory of Potential River Access Sites

Below is a description of existing and potential river access sites along the reach between Horseshoe Bend and Welcome Bridge. These sites are located on lands managed by the Forest Service, Whatcom County, the Department of Natural Resources, and Whatcom Land Trust. In addition to these sites described on public and land trust land, several private lands exist in this reach. Two known sites owned by private individuals have previously been used by river runners. One of those private parcels is located near an important salmon spawning stream. Any access on private land would need to be a partnership with a willing seller and no known willing sellers are available at this time.

A map of the existing and potential river sites was developed (see Figure 22). River Miles were determined utilizing Washington State Department of Ecology's dataset. [22]

Figure 22: Map of Existing and Potential River Access Sites

22 River Mile data was obtained through Washington Department of Ecology dataset <http://geo.wa.gov/datasets/fff25ee77f9e43ff9539688ba8ab3af3_0> River Mile data was obtained through Washington Department of Ecology dataset <http://geo.wa.gov/datasets/fff25ee77f9e43ff9539688ba8ab3af3_0>

Horseshoe Bend River Access Site (Forest Service)

River Mile 59.5, Highway 542 mile 35.4, 48.9020, -121.9118

Stairway at Horseshoe Bend Trailhead River Access. Credit: Thomas O'Keefe.

Horseshoe Bend River Access Under Highway

This existing site serves as the standard put-in for trips through the North Fork Nooksack Canyon and is managed by the Forest Service. The site includes a dedicated parking area off the highway with steps down to the river and a launch area under the bridge. This site is also a trailhead for the Horseshoe Bend Trail that extends upstream from this site. A campground is adjacent to this day-use area. Soon after launching at this site, paddlers pass the Forest Service boundary and float through lands that are largely private.

Site Character, Opportunities, and Constraints:

- Site character and river trip distance: This site is a designated site that serves as a put-in for trips on the Canyon Run and is also used as the take-out for expert kayakers paddling Horseshoe Bend. The site provides approximately 15 parking spots with capacity for additional parking.
- Natural resources and channel migration: salmonid breeding/migration area, northern spotted owl management area, and harlequin duck breeding area[23]. No historic channel migration zone data available at this time.
- Ownership: Forest Service
- Safety: No known considerations
- Visitor experience
  - Shuttle: Easy shuttle on Mount Baker Highway
  - River character: Class III whitewater
  - Distance to walk: 150' from parking area to river
  - Diversity of users: This site serves as a put-in for rafts, kayaks, and canoes and a take-out for expert kayakers. The river launch site also serves as a trailhead for a hike upstream on the Horseshoe Bend Trail. It is adjacent to the Douglas Fir Campground

23 Washington Department of Fish and Wildlife: Priority Habitat and Species Map <http://apps.wdfw.wa.gov/phsontheweb/>

Warnick Bridge River Access Site (Whatcom County)

River Mile 55.0, Highway 542 mile 30.7, 48.9047, -121.9927

A local outfitter monitors the Warnick Bridge site, Credit: Thomas O'Keefe.

Warnick Bridge River Access Site

The Warnick Bridge serves as a take-out for those doing a short run (4.5 mile) on the Nooksack River. The site is mixed ownership but the parking area is approximately 900' from the river and is managed by Whatcom County Parks. A restoration project by the Nooksack Tribe requiring access to the river bed by heavy equipment resulted in improvements to the road corridor that accesses the river.

The Nooksack Indian Tribe implemented the North Fork Nooksack Wildcat Reach Restoration Project just downstream of the Warnick Bridge in this section of the North Fork. The Wildcat Reach Restoration Project consisted of three phases of construction from 2011 to 2013 and included the construction of 83 engineered log jams in and adjacent to the river. Consistent with priorities established in the Water Resource Inventory Area (WRIA) 1 Salmonid Recovery Plan, the project was designed to address the key factors limiting salmon, especially early-timed Chinook, in the reach, namely channel instability and low habitat diversity. For additional information regarding this project, please contact the Nooksack Indian Tribe Natural & Cultural Resources Department.

Site Character, Opportunities, and Constraints:

- Site character and river trip distance: This site serves as a take-out for the Canyon Run located 4.5 miles downstream from Horseshoe Bend, making it an appropriate length for short trips of a couple hours. The outfitter is able to use it to run a morning and afternoon trip with time to utilize the same guides and gear. There are about five to seven parking spaces available for the general public outside the gated road.
- Natural resources and channel migration: The alluvial channel is dynamic in this reach and the location of the thalweg can vary between years but the site is immediately downstream of the bridge and generally protected by the river right bridge abutment. Salmonid breeding/migration area and northern spotted owl management area. This access site is within the historic channel migration zone data. [24]
- Ownership: Whatcom County
- Safety: Engineered log jams are present downstream

24 Whatcom County Channel Migration Zone: 1859, 1918, and 1933 GIS layers

Warnick Bridge River Access Site *(Cont'd)*

Site Character, Opportunities, and Constraints (cont'd):

- Visitor experience
  - Shuttle: The shuttle distance is 4.5 miles one-way on the Mount Baker Highway and approximately 6 minutes by vehicle. A bicycle is also an option for this shuttle
  - River character: Transition point where the river leaves the canyon becomes more alluvial in character with easier whitewater (class II+)
  - Distance to walk: Drive-in access to the river is limited to a local outfitter who has a key to the gate. The general public is required to walk 900' from the parking area to the river; while this distance is tolerable for those with smaller hand-carry craft, it is impractical for those who are rafting
  - Diversity of users: Site serves primarily as an access point for river runners including the commercial rafting outfitter and private kayaks and canoes

Upstream of Boulder Creek (Whatcom Land Trust and DNR Lands)

River Mile 52.7, Highway 542 mile 28.5, 48.9237, -122.0269

Site Character, Opportunities, and Constraints:

- Site character and river trip distance: This site serves as a take-out for the Canyon Run located 4.5 miles downstream from Horseshoe Bend, making it an appropriate length for short trips of a couple hours. The outfitter is able to use it to run a morning and afternoon trip with time to utilize the same guides and gear. There are about five to seven parking spaces available for the general public outside the gated road.
- Natural resources and channel migration: The alluvial channel is dynamic in this reach and the location of the thalweg can vary between years but the site is immediately downstream of the bridge and generally protected by the river right bridge abutment. Salmonid breeding/migration area and northern spotted owl management area. This access site is within the historic channel migration zone data.
- Ownership: Whatcom County
- Safety: No known considerations
- Visitor experience
  - Shuttle: The shuttle distance is 6.8 miles one-way on the Mount Baker Highway and approximately 9 minutes by vehicle. A bicycle is also an option for this shuttle
  - River character: Alluvial, dynamic channel that is actively migrating towards this property. Class II+ whitwater
  - Distance to walk: 1,200' from road to river assuming no new road construction; requires crossing side channels
  - Diversity of users: Potential users include kayaks, canoes, and anglers. If the site was developed to reduce the walking distance the site may also be suitable for rafts

Downstream of Boulder Creek (Whatcom Land Trust)

River Mile 52.0, Highway 542 mile 27.8, 48.9248, -122.0412

Vegetation at Downstream of Boulder Creek Access Site, Credit: Thomas O'Keefe.

Potential river access "Downstream of Boulder Creek" is currently being managed for natural resource values and not used for river access.

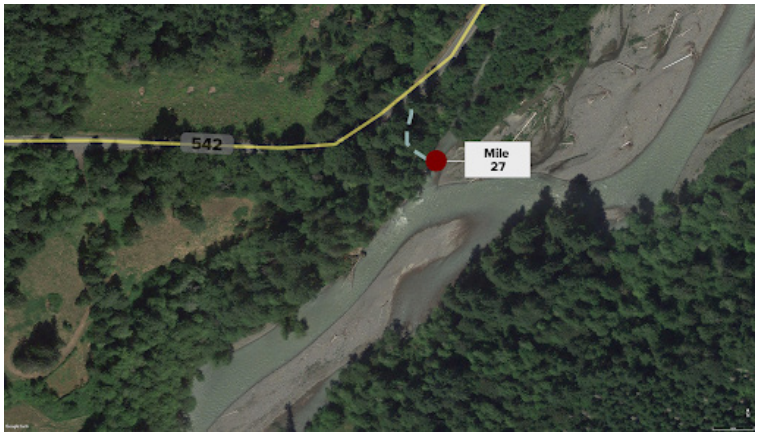
Site Character, Opportunities, and Constraints:

- Site character, river trip distance: This site is not currently being used for river access. Located 7.5 miles downstream from Horseshoe Bend making it an acceptable length for a day trip on the river
- Natural resources and channel migration: Site is managed for natural resource values. Development of river access would impact the natural character of the site that is a recovering riparian forest and riverine habitat with no trails or roads. The channel in this reach is dynamic with off-channel habitat that would make it difficult to develop a stable river access site. Salmonid breeding/migration area and this site is completely within the historic channel migration zone
- Ownership: Whatcom Land Trust and DNR
- Safety: It requires side channel crossings
- Visitor experience
  - Shuttle: The shuttle distance is 7.5 miles one-way on the Mount Baker Highway and approximately 10 minutes by vehicle. A bicycle is also an option for this shuttle
  - River character: Alluvial, dynamic channel that is actively migrating. Class II+ whitewater
  - Distance to walk: 1,100' from road to river assuming no new road construction; requires crossing side channels
  - Diversity of users: Potential users could include kayaks, canoes, and anglers. If the site was developed to reduce the walking distance, the site may also be suitable for rafts

Milepost 27 (Highway Right-of-Way)

River Mile 51.3, Highway 542 mile 27.0, 48.9210, -121.0545

Currently boaters unloading Boats on and by the Highway at Mile 27 creating unsafe conditions, Credit: Thomas O'Keefe.



Mile 27 River Access Site

Milepost 27 is the primary access site that has been used by the public for decades. It is described as the take-out in whitewater guidebooks. The parking is extremely limited however and loading boats requires standing in the active travelway of the state highway on a curve. Users assume the access point is within the public right-of-way for Mount Baker Highway, but it may contain a narrow band of private land between the road and the river.

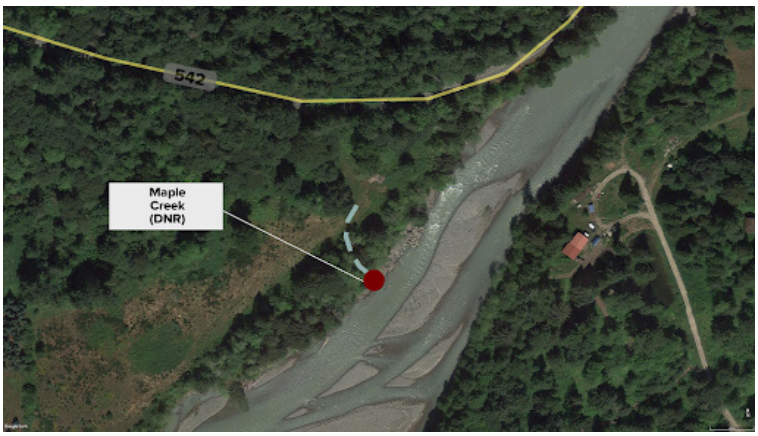
Site Character, Opportunities, and Constraints:

- Site character and river trip distance: This informal site is the primary takeout used by river runners. Located 8.3 miles downstream from Horseshoe Bend making it an ideal length for a day trip on the river
- Natural resources and channel migration: Site is managed for natural resource values. Development of river access would impact the natural character of the site that is a recovering riparian forest with no trails or roads. Site is within the historic channel migration zone. Riverine habitat is adjacent to and within a small portion of this site. This section of river is important for salmonid breeding and migration
- Ownership: Washington State Department of Transportation Right-of-Way but possibly some private (would require a survey to confirm)
- Safety: The site has no parking; loading boats while standing in the travelway of the state highway is unsafe
- Visitor experience
  - Shuttle: The shuttle distance is 8.3 miles one-way on the Mount Baker Highway and approximately 11 minutes by vehicle. A bicycle is also an option for this shuttle
  - River character: The site has been stable for years and the channel is relatively defined but the current is swift; locating the access and catching an eddy can be challenging
  - Distance to walk: 150' from road to river on a user-created trail
  - Diversity of users: This site has only been used by river runners including rafts, kayaks, and canoes. It is inadequate for other uses

Maple Creek (DNR)

River Mile 50.5, Highway 542 mile 26.4, 48.9190, -122.0655

DNR parcel at Maple Creek River Access Site, Credit: Thomas O'Keefe.



Maple Creek River Access Site (DNR)

The Upper Nooksack River Recreation Plan identified eleven early action recommendations as being ripe for implementation with a great deal of support[25]. The actions were recommended by the Advisory Committee[26] with the intent of improving visitor experience, minimizing conflict, protecting natural resources, and enhancing awareness of the river and its recreation resources. Among these proposed actions was the creation of "a river access site (boating take-out/put-in site) adjacent to Whatcom Land Trust's Maple Creek Reach property on the North Fork Nooksack." This DNR parcel was identified as "an ideal spot for a river access site. [27]

Site Character, Opportunities, and Constraints:

- Site character and river trip distance: This informal site is not currently being used for river access. Located 9.0 miles downstream from Horseshoe Bend making it an ideal length for a day trip on the river
- Natural resources and channel migration: Channel migration at this site has been stable in recent years[28] with only a small portion of the 1859 channel migration zone entering some of the site. The site provides a hardwood forest with cleared open sections that have been previously impacted. This section of river is important for salmonid breeding and migration
- Ownership: Washington Department of Natural Resources
- Safety: Entry and exit to the site is on a corner with poor sight lines on the Mount Baker Highway.
- Visitor experience
  - Shuttle: The shuttle distance is 8.8 miles one-way on the Mount Baker Highway and approximately 11 minutes by vehicle. A bicycle is also an option for this shuttle.
  - River character: The river provides a nice eddy here to take-out and put-in boats. Class II+ whitewater
  - Distance to walk: 100' from cleared upland area to river bank and 370' from the road to the river
  - Diversity of users: Potential users include rafts, kayaks, canoes, and anglers. This site is adjacent to Whatcom Land Trust property and has the potential to serve visitors seeking access to this property to walk, sight-see, picnic, or view wildlife

25 At Page 77, Upper Nooksack River Recreation Plan, March 2015 <https://www.americanwhitewater.org/content/Document/view/documentid/1386/>.
26 Advisory Committee members included representatives from American Rivers; American Whitewater; Back Country Horsemen of Washington - Whatcom Chapter; Hydropower Reform Coalition; Nooksack Salmon Enhancement Association; Nooksack Tribe; North Cascades National Park Complex; Pacific Northwest Trail Association; United States Forest Service; Whatcom County Parks & Recreation; Whatcom Events, Ski to Sea Race, Mount Baker Club; Whatcom Land Trust; and Wild and Scenic River Tours.
27 At Page 81, Upper Nooksack River Recreation Plan, March 2015 <https://www.americanwhitewater.org/content/Document/view/documentid/1386/>.
28 Google Earth Imagery (1998-2019)

Kendall Creek/Racehorse Creek (Whatcom Land Trust)

River Mile 44.9, Highway 542 mile NA, 48.8865, -122.1480

Kendall Creek /Racehorse Creek Access Site is currently utilized by anglers, Credit: Thomas O'Keefe.

Kendall Creek/Racehorse Creek Access Site (Whatcom Land Trust)

Site Character, Opportunities, and Constraints:

- Site character and river trip distance: this site is currently being used by anglers. Located 14.6 miles downstream from Horseshoe Bend making the site too far for most day trips
- Natural resources and channel migration: This site is managed for natural resources. It is within a known bald eagle habitat area. This is an alluvial reach with off-channel habitat. This section of river is important for salmonid breeding and migration. It falls within the historic channel migration zone
- Ownership: Whatcom Land Trust
- Safety: The steep bank makes it impractical for carrying boats. It would also require crossing a side channel
- Visitor experience
  - Shuttle: The shuttle distance is 23 miles one-way on the Mount Baker Highway, requires crossing the river at Welcome Bridge, and traveling on the forest road on the south side of the river. The trip is approximately 32 minutes by vehicle. A bicycle is not a practical option for this shuttle
  - River character: Class II+ whitewater. The reach below Maple Creek to Welcome Bridge transitions to a more low gradient stream that tends to collect wood causing additional hazards for boaters
  - Distance to walk: 100' from road to river bank; 200' from the river bank to current active channel; requires crossing side channels. A total of 300' from the road to the active channel
  - Diversity of users: Popular with fishermen providing access to the river reach immediately downstream of the Kendall Creek Hatchery

Welcome Bridge (Whatcome County)

River Mile 40.8, Highway 542 mile NA, 48.8378, -122.1539

Welcome Bridge Access Site is a public boat launch and popular fishing site, Credit: Thomas O'Keefe.

Welcome Bridge River Access Site (Whatcom County Parks and Recreation)

Whatcom County Parks and Recreation manages the Welcome Bridge Access Site. It serves as a public boat launch for rafts, kayaks, canoes, and drift boats. It is also a popular fishing spot and for those seeking to be near the water for wildlife viewing, picnicking, and photography.

Site Character, Opportunities, and Constraints:

- Site character and river trip distance: This designated site is popular for fishing and boating. It primarily serves as a put-in for the reach downstream. Located 18.7 miles downstream from Horseshoe Bend making the site too far for most day trips. It has approximately eight parking spaces. During busy times, visitors park along-side the road
- Natural resources and channel migration: This site falls within the historic channel migration zone. Known harlequin duck and bald eagle habitat. This section of river is important for salmonid breeding and migration
- Ownership: Whatcom County
- Safety: No known considerations.
- Visitor experience
  - Shuttle: The shuttle distance is 19.2 miles one-way on the Mount Baker Highway and then south to Welcome Bridge. The trip is approximately 25 minutes by vehicle. A bicycle is not a practical option for this shuttle
  - River character: The reach below Maple Creek to Welcome Bridge transitions to a more low gradient stream that tends to collect wood causing additional hazards for boaters
  - Distance to walk: ~170 ft from the parking area to the river
  - Diversity of users: The site is used for fishing, boating, sightseeing, photography, and wildlife viewing

Appendix IV: Precedent Examples

Precedent examples are existing sites that provide inspiration and inform design principles for development of a new site. In identifying these examples, we reviewed day-use sites utilized for river access along the North Fork Nooksack as well as a river access site managed by the Department of Natural Resources in Western Washington. While a new site would need to be designed to address specific user needs, site-specific resource issues, and the unique setting, the following precedents provide guidance for the type of sites that currently provide public access to the North Fork Nooksack River as well as a site on another river currently managed by Department of Natural Resources.

Shuksan Picnic Area, North Fork Nooksack, Forest Service

The Shuksan Picnic Area is a developed day-use site along the North Fork Nooksack River with designated parking, picnic tables, a toilet, and a path to access the river down a stone stairway.

Steps to the river at Shuksan Picnic Area. Credit: Thomas O'Keefe.

Upper Horseshoe Bend River Access, North Fork Nooksack, Forest Service

The Upper Horseshoe Bend Access was developed by the Forest Service as a hand-carry access that is primarily used by experienced whitewater kayakers who paddle the short class V Horseshoe Bend run on the North Fork Nooksack. The access utilizes a pull out along the Mount Baker Highway. A trail extends from the parking area down to the river. A wooden boardwalk and short set of stairs is used to traverse a section of terrain with grade changes that were not suitable for a trail.

Upper Horseshoe Bend River Access Trailhead. Credit: Thomas O'Keefe.

Horseshoe Bend Trailhead River Access, North Fork Nooksack, Forest Service

The Horseshoe Bend Trailhead is located along the Mount Baker Highway where a bridge crosses the river adjacent to the Douglas Fir Campground. A wide stairway was designed to accommodate rafts with enough space for individuals to stand on both sides of the raft as they carry it down the stairs. The parking area accommodates approximately 15 parking spots with capacity for additional parking.

Stairway at Horseshoe Bend Trailhead River Access Credit: Thomas O'Keefe.

Mine Creek Access, Middle Fork Snoqualmie, Department of Natural Resources

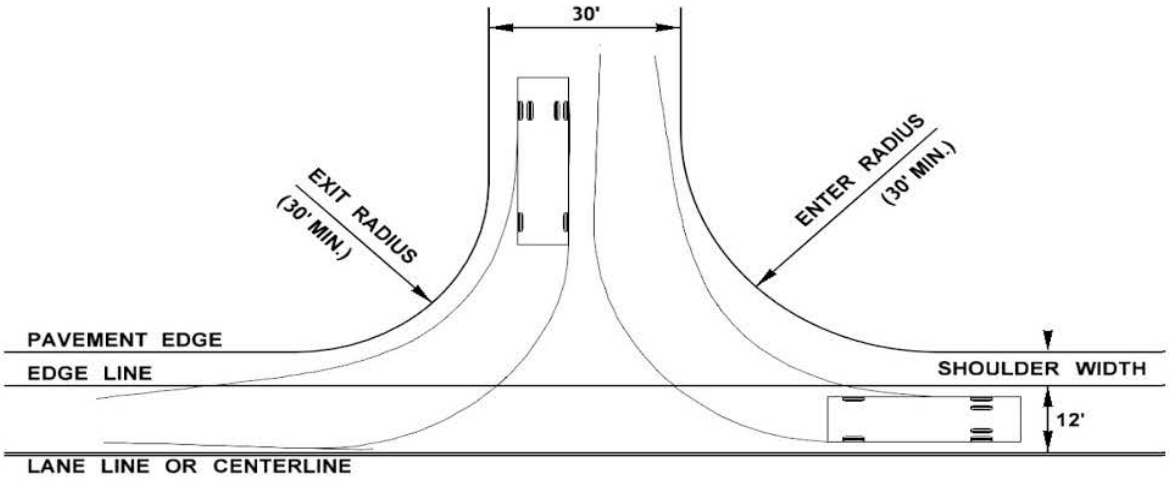
The Mine Creek Access is on the Middle Fork Snoqualmie River on land managed by the Department of Natural Resources just outside the town of North Bend. Parallel parking is available in designated areas along the paved road that accesses the valley. A staging area provides space for individuals to unload their boats from vehicles and set them down as they prepare for a river trip. A short trail is used to access the river at a natural beach. It includes a small stream crossing where a short bridge was constructed.

Shoulder parking and boater staging area at Mine Creek Access. Credit: Thomas O'Keefe.

Appendix V: Site Evaluation Criteria

Table 2: Summary of the sites inventoried and the evaluation factors.

	Upstream of Boulder Creek River Mile 52.7	**Downstream of Boulder Creek** River Mile 52.0	**MilePost 27** River Mile 51.3	**Maple Creek** River Mile 50.5	**Kendall Creek/ Racehorse Creek** River Mile 44.9
Ownership	Whatcom Land Trust and DNR	Whatcom Land Trust and DNR	Highway Right-of- Way	DNR	Whatcom Land Trust
River Trip Distance	6.8 miles, acceptable length for a shorter day trip	7.5 miles, acceptable length for a day trip.	8.3 miles, ideal length for a day trip.	9 miles, ideal length for a day trip.	14.6 miles, too far for most day trips.
Shuttle	9 minutes via vehicle; possible on a bicycle	10 minutes via vehicle; possible on a bicycle	11 minutes by vehicle; possible on a bicycle	11 minutes via vehicle; possible on a bicycle	32 minutes via vehicle
Distance to Walk	1,200’	1,100’	150’	100’ from the cleared area	300’
River Character	Dynamic, active migration	Dynamic, active migration	Stable, swift current	Stable, calm eddy at the site	Dynamic, side channels
Natural Resources	Site is managed for natural resource values. Forested/ shrub wetlands present. Salmonid breeding/ migration area.	Site is managed for natural resource values. Riparian forest and riverine habitat. Salmonid breeding/ migration area.	Site is managed for natural resource values. Recovering riparian forest and riverine habitat. Salmonid breeding/ migration area.	Site is part of the state forest land trust. Hardwood forest with cleared previously impacted pockets. Salmonid breeding/migration area.	Site is managed for natural resources. Known bald eagle habitat. Salmonid breeding/ migration area.
Safety	It would require crossing side channels.	It would require crossing side channels.	The site has no parking; loading boats while standing in the the state highway is unsafe.	Entry and exit to the site is on a corner with poor sight lines on the Mount Baker Highway.	The steep bank and side channel crossing makes it impractical for carrying boats.
Ability to Develop Desired Recreation Facilities and Meet the Desired Goals	Unsuitable to create a stable river access site due to active channel migration	Unsuitable to create a stable river access site due to active channel migration	Unsuitable due to safety concerns with the highway.	Suitable for a river access site	Unsuitable due to steep banks and side channel crossing



DOUBLE LANE APPROACH - 30' WIDE
(for SU-30, WB-40, and WB-50 design vehicles)

DESIGN VEHICLE	SHOULDER WIDTH	MINIMUM RADIUS		DESIGN VEHICLE	SHOULDER WIDTH	MINIMUM RADIUS	
		ENTER	EXIT			ENTER	EXIT
SU-30	10'	30'	30'	WB-50	10'	37'	52'
	9'	30'	30'		9'	40'	53'
	8'	30'	30'		8'	42'	54'
	7'	30'	30'		7'	45'	56'
	6'	30'	30'		6'	48'	57'
	5'	30'	30'		5'	52'	58'
	4'	30'	30'		4'	56'	59'
	3'	30'	30'		3'	61'	60'
	2'	30'	30'		2'	66'	61'
	1'	32'	30'		1'	73'	62'
	0'	38'	30'		0'	83'	63'
WB-40	10'	30'	30'				
	9'	30'	30'				
	8'	30'	31'				
	7'	30'	32'				
	6'	30'	33'				
	5'	31'	34'				
	4'	34'	36'				
	3'	37'	37'				
	2'	41'	38'				
	1'	46'	39'				
	0'	52'	40'				

RCO Whatcom County Contact

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Applications open: 2/13/2020 , Plan due (comprehensive plan is required to be eligible for a grant): 3/1/2020

Application due: 6/1/2020

Manuel	WWRP -Water Access
Public Need	Considering the availability of existing public water access sites within at least 15 miles of the project site, what is the need for additional such sites and how will this project address the priorities for underserved populations and in the Washington State Recreation and Conservation Plan 2018-2022?
Immediacy of Threat	To what extent will this project reduce a threat to the public availability of water access? (acquisition and combination projects only)
Project Design	Does the project demonstrate good design criteria; does it make the best use of the site?(development and combination projects only)
Sustainability and Environmental Stewardship	Will the project result in a quality, sustainable, recreational opportunity while protecting the integrity of the environment?
Site Suitability	Is the site well suited for the intended recreational uses?
Expansion	Will the project expand an existing recreation area or facility?
Diversity of Recreational Uses	To what extent does this project provide diversity of possible water-based recreational activities? (development and combination projects only)
Project Support	The extent that the public (statewide, community, and/or user groups) has been provided with an adequate opportunity to become informed, and/or support for the project seems apparent.
Cost Efficiencies	To what extent does this project demonstrate efficiencies or a reduction in government costs through documented use of donations or other resources?
Growth Management Act Preference	Has the applicant made progress toward meeting the requirements of the Growth Management Act?

Appendix VII: Grant Opportunities

Applications open: 2/13/2020

Plan due (comprehensive plan is required to be eligible for a grant): 3/1/2020

Application due: 5/1/2020

Manuel	Land and Water Conservation Fund
Need	Considering the availability of existing outdoor recreation facilities within the service area, what is the need for new or improved facilities?
Need Satisfaction and Diversity of Recreation	To what extent does this project fill the need described in Question 1 and provide or contribute to the diversity of outdoor recreation assets within the service area, and address the priorities for underserved populations and health recommendations in the Washington State Recreation and Conservation Plan 2018-2022?
Immediacy of Threat and Viability (acquisition and combination projects only)	Why purchase this particular property at this time? How viable are the anticipated future uses and benefits of the site?
Project Design	Is the project well designed?
Sustainability and Environmental Stewardship	Will the project result in a quality, sustainable, recreational opportunity while protecting the integrity of the environment?
Community support	To what extent has the community been provided with an adequate opportunity to become informed about the project and provide input? What is the level of community support for the project?
Cost Efficiencies	To what extent does this project demonstrate efficiencies or a reduction in government costs through documented use of donations or other resources?
Population Proximity	Is the project in a populated area? This question is scored based on a map provided by the applicant. To receive a score, the map must show the project location and project boundary in relationship to a city's or town's urban growth boundary.
Applicant Compliance	Is the sponsor in compliance with its RCO grant agreements?

Appendix VII: Grant Opportunities

Applications open: 2/13/2020

Application due: 5/1/2020

Manual	**Aquatic Lands Enhancement Account Grant Program** *(Projects Meeting the Single Purpose of Public Access)*	**Aquatic Lands Enhancement Account Grant Program** *(Projects Meeting the Purpose of Public Access AND Protection and Enhancement)*
Fit with ALEA Program?	How well does it fit the goals to enhance, improve, or protect aquatic lands and provide public access to aquatic lands?	
Project Need	What is the need for this project and how will this project address the priorities for underserved populations and health in the Washington State Recreation and Conservation Plan 2018-2022?	
Site Suitability	Is the site well suited for the intended uses?	
Urgency and Viability	Only acquisition or combination (acquisition and development) projects answer this question	
Project Design and Viability	Only development or combination (acquisition and development) projects answer this question.	Acquisition only projects do not answer this question. Projects involving development, answer Public Access Elements. Projects involving restoration answer Protection and Enhancement Elements. Projects involving development and restoration, answer both.
Community Involvement and Support	How involved and informed is the community about the project? What level of community support is there?	
Growth Management Act Preference	Has the applicant made progress toward meeting the requirements of the Growth Management Act?	
Proximity to People	RCO is required by law to give funding preference to projects in populated areas. Populated areas are defined as a town or city with a population of 5,000 or more, or a county with a population density of 250 or more people per square mile.	

The Maple Creek site falls within the Conservancy Area in accordance with Whatcom County regulations (WCC 23.30.094). WCC 23.30.094 provides a list of permitted uses within the Conservancy area and the project will likely fall under 23.30.094(B), which reads:

> *B. Low intensity water-oriented recreation; provided, that facilities do not require substantive alterations to topography, such as public forest preserves, wildlife reserves, natural systems education, and/or interpretive areas, trails, trailheads, with associated restroom facilities and parking areas for no more than 30 vehicles, and buildings for interpretive facilities not exceeding 2,000 square feet, subject to the criteria in WCC 23.100.100*

The Shoreline Master Program (SMP) expands on this type of low intensity water-oriented recreational use in the "Recreation" section of the Shoreline Use Policies and Regulations (WCC 23.100.100). Projects that meet the criteria along with the general standards generally do not need a Shoreline Conditional Use Permit. Specifically, WCC 23.100.100(B)(7) reads:

> *7. Conservancy. Low intensity water-oriented recreational use and development is permitted subject to policies and regulations of this program and the following criteria:*
>
> *a. Structures on sites of one acre or less will not result in more than 10 percent building coverage or 2,000 square feet, whichever is greater, and total Impervious surface will not exceed 20 percent or 5,000 square feet, whichever is greater*
>
> *b. Structures on sites greater than one acre will not result in more than five percent building coverage or 2,000 square feet, whichever is greater, and total impervious surface will not exceed 10 percent or 10,000 square feet, whichever is greater*
>
> *c. Alteration of topography shall be limited to the minimum necessary to accommodate allowed development, and generally less than 30 inches*
>
> *d. Use of areas or facilities will not result in use patterns that lead to degradation of shoreline ecological functions*

Project must also meet the following general standards for "Recreation" (WCC 23.100.100):

> *B. Regulations. Where significant adverse impacts are adequately mitigated, recreational development is a priority use for shoreline location, subject to the following:*
>
> *1. Water-related and water-enjoyment uses do not displace water-dependent uses and are consistent with existing water-related and water-enjoyment uses*
>
> *2. Activities provided by recreational facilities must bear a substantial relationship to the shoreline, or provide physical or visual access to the shoreline. Facilities for water-dependent recreation such as fishing, clam digging, swimming, boating, and wading, and water-related recreation such as picnicking, hiking, and walking should be located near the shoreline, while non-water-related recreation facilities shall be located inland*
>
> *3. Recreation areas or facilities on the shoreline shall provide physical or visual public access consistent with the criteria of WCC 23.90.080*

(General standards for "Recreation" (WCC 23.100.100) continued)

4. Recreational facilities with large grass areas, such as golf courses and playing fields, and facilities with extensive impervious surfaces shall incorporate means to prevent erosion, control the amount of runoff, and prevent harmful concentrations of chemicals and sediment from entering water bodies in accordance with the policies and regulations of WCC 23.90.040

5. Recreational use of motor vehicles including unlicensed off-road vehicles is permitted only on roads or trails specifically designated for such use. Such use is prohibited on tidelands, backshore beaches, streams, or wetlands; except as necessary for public health and safety or maintenance

Other standards/regulations that may be relevant to the project are the boating facilities section (WCC 23.100.040).

Guidelines for restoration within shoreline areas are found in WCC 23.100.120.

A. Policies

1. This program recognizes the importance of restoration of shoreline ecological functions and processes and encourages cooperative restoration efforts and programs between local, state, and federal public agencies, tribes, nonprofit organizations, and landowners to address shorelines with impaired ecological functions and/or processes

2. Restoration actions should restore shoreline ecological functions and processes as well as shoreline features and should be targeted towards meeting the needs of sensitive and/or locally important plant, fish and wildlife species as well as the biological recovery goals for early Chinook and bull trout populations, and other salmonid species and populations

3. Restoration should be integrated with other parallel natural resource management efforts such as the WRIA 1 Salmonid Recovery Plan and the WRIA 1 Watershed Management Plan

4. Priority should be given to restoration actions that:

a. Create dynamic and sustainable ecosystems

b. Restore connectivity between stream/river channels, floodplains and hyporheic zones

c. Restore natural channel-forming geomorphological processes

d. Mitigate peak flows and associated impacts caused by high stormwater runoff volume

e. Reduce sediment input to streams and rivers and associated impacts

f. Improve water quality

g. Restore native vegetation and natural hydrologic functions of degraded and former wetlands

h. Replant native vegetation in riparian areas to restore functions

i. Restore nearshore ecosystem processes, such as sediment transport and delivery and tidal currents that create and sustain habitat

j. Restore pocket estuaries that support salmon life histories, including feeding and growth, refuge, osmoregulation, and migration

k. Address contamination along industrial shoreline regions